Buffumville Lake Master Plan

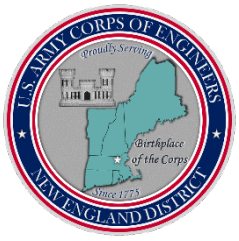
Thames River Basin

Charlton, Worcester County, Massachusetts

June 2025 **DRAFT REPORT**

US Army Corps of Engineers®
New England District

The Buffumville Lake Master Plan was produced by the U.S. Army Corps of Engineers Regional Planning and Environmental Center (RPEC) for the New England District (NAE).



EXECUTIVE SUMMARY

Buffumville Lake Master Plan
U.S. Army Corps of Engineers
Prepared by the Southwestern Division
Regional Planning and Environmental Center (RPEC)
June 2025

ES.1 PURPOSE

The Buffumville Lake Master Plan (hereafter Plan or Master Plan) is a complete revision of the 1976 *Buffumville Lake Master Plan*. The revision is a framework built collaboratively to guide appropriate stewardship of the U.S. Army Corps of Engineers (USACE) administered resources at Buffumville Lake over the next 25 years. The 1976 Master Plan has served well past its intended 25-year planning horizon and does not reflect the growing population around the lake and regional recreation needs.

Buffumville Dam was authorized in 1941 for flood control in conjunction with the other projects in the basin. In addition to this primary mission, the project is managed to provide recreation opportunities and protect and manage natural resources. The USACE has an inherent mission for environmental stewardship of project lands while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities.

During the 2025 Master Plan revision, Geographic Information System (GIS) and Light Detection and Ranging (LiDAR), mapping technologies were utilized to digitize the 1976 maps. Due to these more precise measurement technologies, discrepancies were found between the acreages documented in the 1976 plan and the recalculated acres. The 2025 Buffumville Lake Master Plan revision reflects the recalculated 1976 Master Plan acres throughout the document. Both the 1976 and the 2025 acres may differ from the acres on record with the USACE New England District Real Estate Office or those documented within the Water Control Manual for Buffumville Lake, which is maintained by the USACE New England District. Any water control management and real estate studies or transactions should be coordinated with the appropriate USACE offices.

The Master Plan and supporting documentation provide an inventory and analysis of goals, objectives, and recommendations for USACE lands and waters at Buffumville Lake in Massachusetts with input from the public, stakeholders, and subject matter experts. The Master Plan is primarily a land use and outdoor recreation strategic plan that does not address the specific authorized purposes of flood risk management. Although water management is addressed in the 2001 Thames River Basin Water Control Manual, the Master Plan acknowledges that fluctuating water level for flood risk management can have a dramatic effect on outdoor recreation, especially at the boat ramp and swim beach. The project location is shown within the Commonwealth of Massachusetts in Figure ES.1.

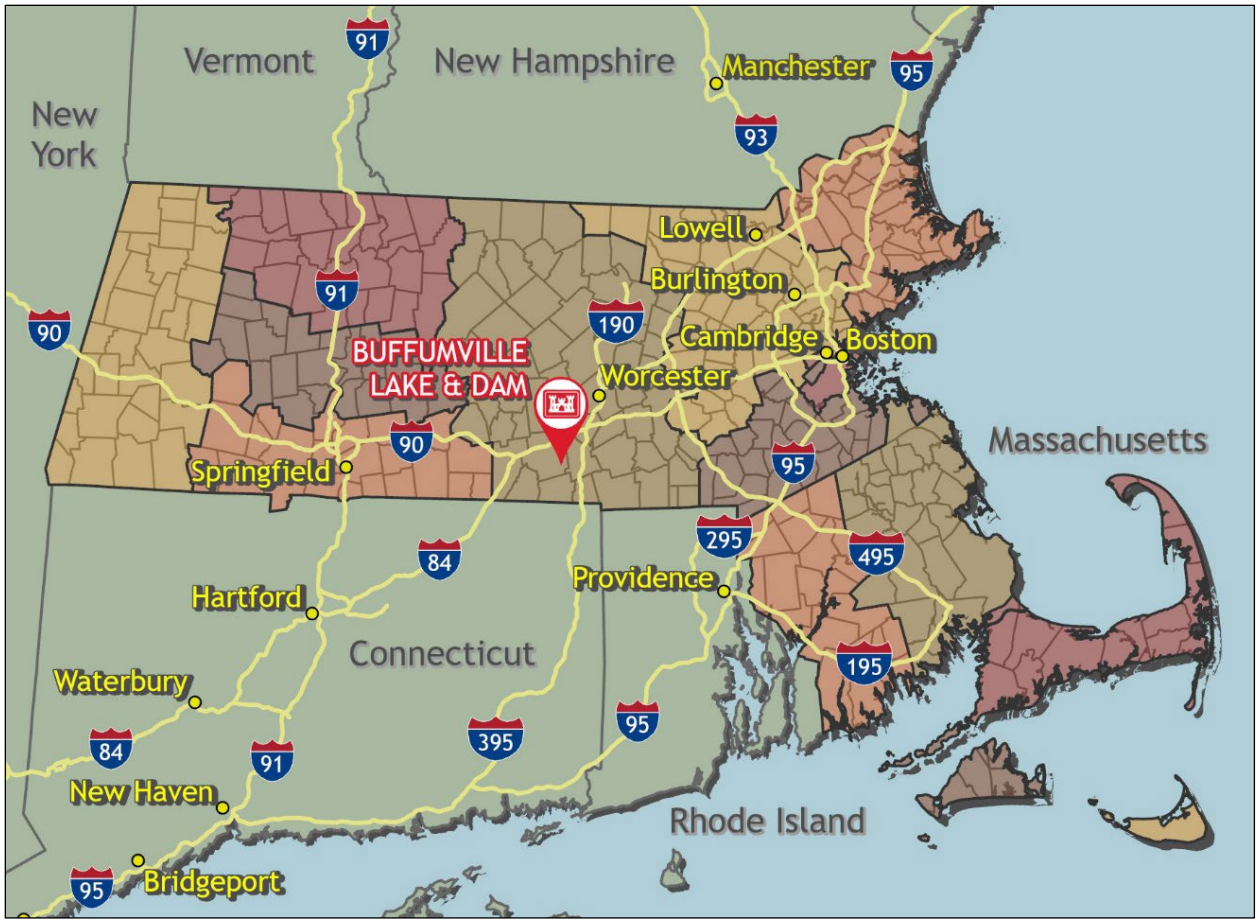


Figure ES.1 Vicinity Map of Buffumville Lake

The mapping used for this Master Plan revision uses modern satellite imagery and Geographic Information System (GIS) mapping, resulting in new acreage calculations. The 1976 Master Plan did not include the total acreage of land owned in fee nor did it identify land and water surface classifications. Using GIS measurements and LiDAR, Buffumville Lake has a water surface of 214 acres at the conservation pool of 492.5 feet NGVD29 mean sea level, and approximately 255 acres of federal land lie above the conservation pool. This equates to approximately 9.5 miles of shoreline at the top of the permanent conservation pool.

ES.2 PUBLIC INPUT

To ensure a balance between operational, environmental, and recreational activities, the USACE obtained both public and agency input on the Master Plan. An Environmental Assessment (EA) was completed in conjunction with the Master Plan to evaluate the impacts of alternatives and can be found in Appendix B.

On May 1, 2024, a public open house was held at the Charlton Public Library Community Meeting Room in Charlton, Massachusetts to inform the public of the intent to revise the Master Plan. The public input period remained open for 30 days from May

1, 2024 to May 31, 2024. At the public information meeting a presentation was given that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

The USACE received 9 comments from 3 members of the public for Buffumville Lake. These comments and USACE responses can be found in Appendix E.

A second public open house will be held for the Buffumville Lake Draft Master Plan revision. The purpose of this open house will be to provide attendees with information regarding the proposed Master Plan revision as well as to provide an opportunity to provide comments on the proposed plan. The open house will initiate a 30-day comment period where the public and stakeholders can provide comments on the Draft Master Plan. These comments will be reviewed and addressed as the USACE revises a final version of the Master Plan.

ES.3 RECOMMENDATIONS

The following land and water classification changes (detailed in Chapter 8) were a result of the inventory, analysis, synthesis of data, documents, and public and agency input. In general, most USACE land at Buffumville Lake was reclassified either by a change in nomenclature required by regulation or changes needed to identify actual and projected use. Table ES.1 illustrates the original and revised land and water classifications, which includes a small increase in Project Operations and a large increase in Low Density Recreation (from the obsolete classification Operations: Natural Area). Additionally, the revision designated a small amount of land under the Environmentally Sensitive Area classification for the preservation of sensitive environmental, cultural, and/or aesthetic resources and Vegetative Management for the management of grassland and pollinator habitat.

Table ES.1 Change from 1976 Land and Water Surface Classification to 2025 Land and Water Surface Classification

Prior Land Classifications (1976)	Acres	Proposed Land Classifications (2025)	Acres	Net Difference
Project Operations	44	Project Operations (PO)	48	4
Operations: Recreation – Intensive Use Area	54	High Density Recreation (HDR)	53	(1)
Operations: Recreation – Low Density Area	4	Low Density Recreation (LDR)	148	144
Operations: Natural Area	128	–	–	(128)
–	–	Vegetative Management (VM)	5	5
–	–	Environmentally Sensitive Area (ESA)	1	1
Land Not Classified in 1976 Master Plan	34	–	–	(34)
LAND TOTAL	**264**	**LAND TOTAL**	**255**	**(9)**
Prior Water Surface Classifications (1976)	**Acres**	**Proposed Water Surface Classifications (2025)**	**Acres**	**Net Difference**
Water Surface	205	Water Surface	214	10
–	–	• Open Recreation	213	213
–	–	• Restricted	1	1
WATER TOTAL	**205**	**WATER TOTAL**	**214**	**9**
TOTAL FEE	**469**	**TOTAL FEE**	**469**	**0**

* 1976 acres are approximate based on digitizing the 1976 land and water classification map. Total fee acreage differences from the 1976 totals to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels. REMIS reports total fee of 479 acres.

The acreages of the conservation pool and USACE land lying above the conservation pool were measured using satellite imagery and Geographical Information System (GIS) technology and LiDAR. The GIS software allows for more finely tuned measurements and, thus, stated acres vary from official land acquisition records and acreage figures published in the 1976 Master Plan. Some changes may also be due to erosion and siltation. A more detailed summary of changes and rationale can be found in Chapter 8.

ES.4 PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction to Buffumville Lake. Chapter 2 consists of an inventory and analysis of Buffumville Lake and associated land resources. Chapters 3 and 4 lay out management goals, resource objectives, and land

classifications. Chapter 5 is the resource management plan that identifies how project lands will be managed for each land use classification. This includes current and projected overall park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details special topics that are unique to Buffumville Lake. Chapter 7 identifies the public involvement efforts and stakeholder input gathered for the development of the Master Plan, and Chapter 8 gives a summary of the changes in land classification from the previous master plan to the present one. Finally, the appendices include information and supporting documents for this Master Plan revision, including Land Classification and Park Plate Maps (Appendix A).

An Environmental Assessment was developed with the Master Plan, which analyzed alternative management scenarios for Buffumville Lake, in accordance federal regulations including the National Environmental Policy Act of 1969 (NEPA), as amended; regulations of the Council on Environmental Quality; and USACE regulations, including Engineer Regulation 200-2-2: Procedures for Implementing NEPA. The EA is a separate document that informs this Master Plan and can be found in its entirety in Appendix B.

The EA evaluated two alternatives as follows: 1) No Action Alternative, which would continue the use of the 1976 Master Plan, and 2) Proposed Action. The EA analyzed the potential impact these alternatives would have on the natural, cultural, and human environments. The Master Plan is conceptual and broad in nature, and any action proposed in the Plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation at the time the action takes place.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PHOTOS

LIST OF TABLES

CHAPTER 1 – INTRODUCTION

1.1 GENERAL OVERVIEW

The Buffumville Lake and Dam (referred to hereafter as “Buffumville Lake”) is located in eastern Charlton, Worcester County, Massachusetts along the Little River and South Fork in the upper Thames River Basin. Buffumville Lake is situated approximately 1.3 miles upstream of the Little River’s confluence with the French River, 2 miles west of Oxford and 5 miles north-northwest of Webster. The project location is shown on Figure 1-1.

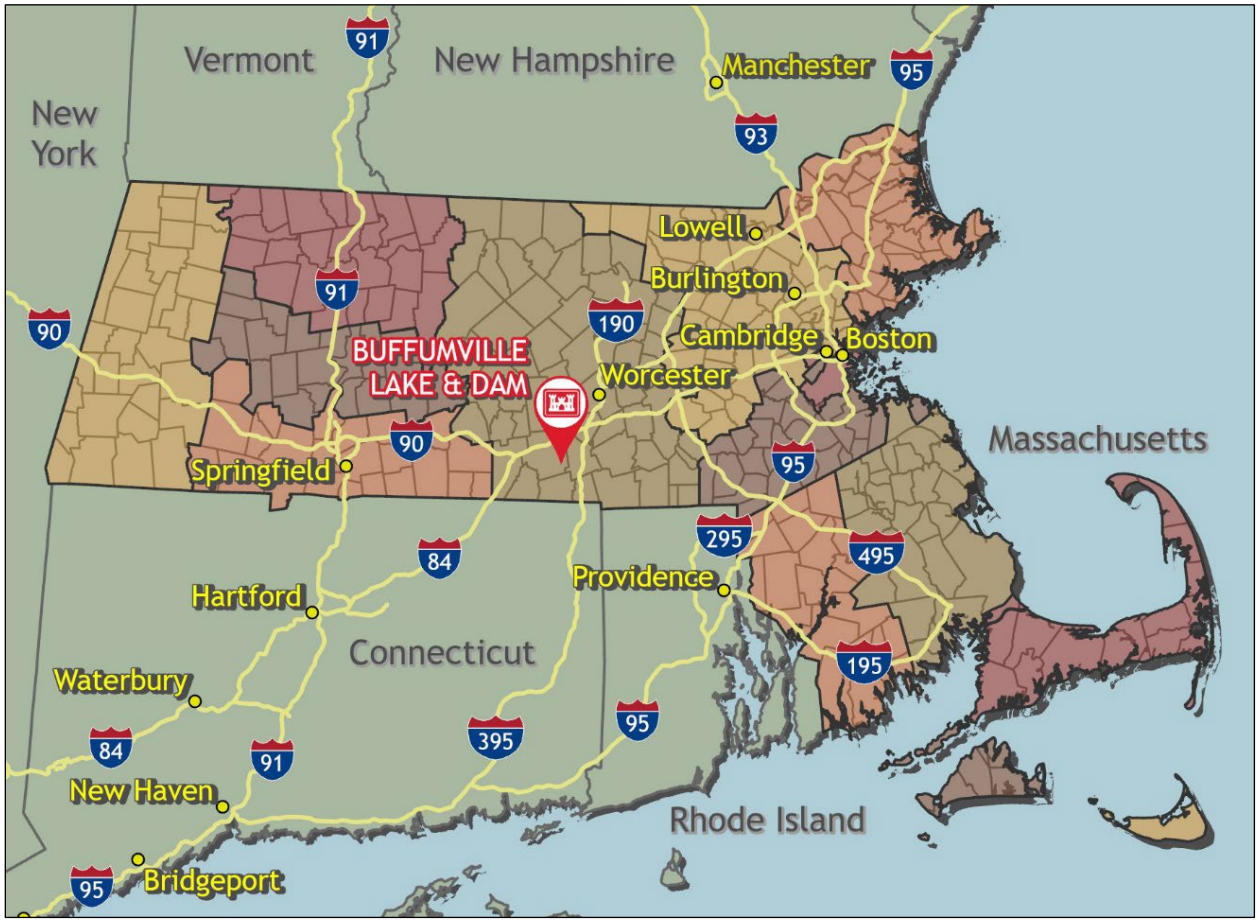


Figure 1.1 Buffumville Lake Vicinity Map

The Little River flows into the French River, which then converges with the Quinebaug River before it joins the Shetucket River. The Shetucket converges with the Yantick River to form the Thames River in Norwich, Connecticut. The Thames River then drains into the Atlantic Ocean at Fishers Island Sound in New London, Connecticut.

The U.S. Army Corps of Engineers’ New England District (formerly New England Division) built Buffumville Dam in 1958 and continues to operate the project. Prior to construction, within the north end of Buffumville Lake was a smaller lake called Colicum

Lake. The name still exists on some local place names including Colicum Drive which was to the west of the Colicum Lake. The New England District manages Buffumville Lake with five other dams and lakes in the Thames River Basin – Mansfield Hollow Lake, East Brimfield Lake, Westville Lake, West Thompson Lake, and Hodges Village Dam. Hodges Village Dam is operated and maintained in conjunction with Buffumville Lake.

The Master Plan is intended to serve as a comprehensive land and recreation management guide with an effective life of approximately 25 years. The focus of the plan is to guide the stewardship of natural and cultural resources and make provision for outdoor recreation facilities and opportunities on federal land associated with Buffumville Lake. The Master Plan identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the Master Plan. The Master Plan does not address the flood risk management purpose of Buffumville Lake.

The Master Plan for Buffumville Lake was written as Master Plan for Recreation Resources Development (Design Memorandum) in 1976. There has not been a Master Plan revision completed since the original 1976 Master Plan which has served past the intended planning horizon of 25 years. In 2012, Buffumville Lake and New England District staff began a revision of the Master Plan that was ultimately not completed. In 1999, the USACE discontinued use of the Design Memorandum system as a means of organizing the many phases of civil works projects, therefore, the term “Design Memorandum” is not used in the title of this Master Plan revision. Furthermore, since Master Plans address a variety of land uses and classifications, the 1976 title “Master Plan for Recreation Resources Development” is not used and is just titled Master Plan as described in EP 1130-2-550.

National USACE missions associated with water resource development projects may include flood risk management, water supply, water quality, navigation, recreation, environmental stewardship, and hydroelectric power generation. Most of these missions serve to protect the built environment and natural resources of a region from the climate extremes of drought and floods. These multiple missions help to create a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Mitigation, while not a formal mission at USACE lakes, may be implemented to achieve the stewardship and recreation missions. Maintaining a healthy vegetative cover, including native grassland or tree cover where ecologically appropriate on Federal lands within the constraints imposed by primary project purposes, helps reduce stormwater runoff and soil erosion, mitigates air pollution, and moderate temperatures.

1.2 PROJECT AUTHORIZATION

The Rivers and Harbors Act of 1941 (also known as the Flood Control Act of 1941), Public Law 77-228, United States 77th Congress authorized Buffumville Lake as part of the Thames River Basin flood control system consisting of six USACE-operated reservoirs and one local protection project.

The Flood Control Act of 1944, Public Law 78-534, United States 78th Congress, as amended, authorized the development and use of reservoirs for recreation and water conservation purposes.

1.3 PROJECT PURPOSE

The USACE initiated construction of the dam in September 1956 and completed Buffumville Lake in June 1958 at a cost of $3,068,600. Buffumville Lake is an integral part of the comprehensive Thames River Basin Flood Control Program. Working with the other five USACE reservoirs, Buffumville helps mitigate flood risk within the Thames River watershed in Massachusetts and Connecticut. This project primarily provides flood protection to Webster, Massachusetts and several small towns downstream along the French River to Putnam, Connecticut. Buffumville Lake coordinates with Hodges Village Dam in Oxford to provide optimum flood protection.

The USACE also constructed a recreation facility south of Oxford Street along the west shore of Buffumville Lake between 1961 and 1963 for a total cost of $71,900. The Commonwealth of Massachusetts Department of Natural Resources (now the Department of Conservation and Recreation) signed a 25-year lease in 1964 to operate the USACE-built recreation area known as Buffumville State Park. The MADCR moved the location of Buffumville State Park in 1989 to the north of Oxford St along the east shore of the lake. Upon the expiration of the lease in 1989, the USACE renovated Buffumville Park from 1991-1993 and reopened the park in 1992 due to high public demand. To date, the USACE operates all recreation facilities at Buffumville Lake, which mainly consists of a swim and picnic area, boat ramp, disc golf course, and multi-use trail network. The USACE also provides fishing and hunting opportunities at the lake and continues to support recreation opportunities to the public.

In addition to these missions, the USACE has an inherent mission for environmental stewardship of project lands while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities. Other laws, including but not limited to 42 U.S.C 4321 et seq, National Environmental Policy Act of 1969 (NEPA) and Public Law 86-717, Forest Cover Act, place emphasis on the environmental stewardship of Federal lands and USACE-administered Federal lands, respectively.

1.4 PURPOSE AND SCOPE OF MASTER PLAN

In accordance with Engineering Regulation (ER) 1130-2-550, Recreation Operations and Maintenance Policies, Change 07, dated 30 January 2013 and Engineering Pamphlet (EP) 1130-2-550, Recreation Operations and Maintenance Guidance and Procedures, Change 05, dated 30 January 2013, most USACE water resources development projects having a federally owned land base require a master plan. The master plan works in tandem with the Operational Management Plan (OMP), which is the task-oriented implementation tool for the resource objectives and development needs identified in the master plan. This revision of the Master Plan aims to bring the master plan up to date to reflect current ecological, socio-demographic, and

outdoor recreation trends that are impacting the lake, as well as those anticipated to occur within the next 25 years.

The Buffumville Lake and Dam Master Plan (hereafter Buffumville Lake Master Plan, Master Plan, or just Plan) is the strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Buffumville Lake project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources for the benefit of present and future generations. The Master Plan guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is a dynamic and flexible tool designed to address changing conditions. The Master Plan focuses on carefully crafted resource-specific goals and objectives. It ensures that equal attention is given to the economy, quality, and needs in the management of resources and facilities, and that goals and objectives are accomplished at an appropriate scale.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. With a generalized conceptual framework, the process focuses on the following four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitability
- Expressed public interests that are compatible with Buffumville Lake's authorized purposes
- Environmental sustainability elements

It is important to note what the Master Plan does not address. The Master Plan does not address details of design, management and administration, and implementation. The Buffumville Lake OMP instead covers these topics. In addition, the Master Plan does not address the specifics of regional water quality, shoreline management (a term used to describe primarily vegetation modification or permits by neighboring landowners), or water level management, nor does it address the operation and maintenance of prime project operations facilities such as the dam embankment, gate control outlet, and spillway. Additionally, the Master Plan does not address the flood control, water supply, and low flow augmentation purposes of Buffumville Lake with respect to management of the water level in the lake.

The previous Master Plan was sufficient for prior land use planning and management; but changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy have occurred over the past decades. Additionally, broader factors such as increasing fragmentation of wildlife habitat, national policies related to land management, climate change, and growing demand for recreational access and protection of natural and cultural resources affect Buffumville Lake and the region in general. In response to these escalating pressures and trends, a full revision of the 1976 Buffumville Lake Master Plan is

necessary as set forth in this Master Plan. The Master Plan revision will update land classifications and include new resource management goals and objectives.

1.5 BRIEF WATERSHED AND PROJECT DESCRIPTION

Buffumville Lake occurs within the French River watershed and the Buffumville Lake-Little River sub-watershed. These watersheds are part of the larger Quinebaug regional watershed and the Thames River major watershed, which drains large portions of Massachusetts and Connecticut. The Quinebaug regional watershed covers the eastern half of the Thames River major watershed and drains 744 square miles, over 50% of its total area. The French River watershed drains a total of 112 square miles. 85% of the drainage area occurs in Massachusetts with the remainder in Connecticut. The watershed stretches north-northwest about 24.5 miles and is nearly 8 miles at its widest. Hodges Village Dam also falls within the French River watershed. The Buffumville Lake-Little River sub-watershed drains 16,739.7 acres, about 26.2 square miles. The sub-watershed stretches almost 9.7 miles north-northwest and is 3.8 miles at its widest. The lands drained by these watersheds are primarily mixed woodlands with abundant ponds and wetlands. In addition to Buffumville Lake and Hodges Village Dam, the watershed contains four reservoirs operated by non-USACE entities. The watershed also includes Webster Lake, the fourth largest overall and second largest natural freshwater body in Massachusetts. Webster Lake is also known as Lake Chaubunagungamaug and Lake Chargoggagogmanhauggagoggchaubunagungamaugg, that latter of which is the longest place name in the United States. The watershed includes several small towns and supports agriculture, as well as rock quarries and solar farms.

Buffumville Dam is a rolled earth fill embankment with a length of 3,225 feet and a maximum height of 57.5 feet. The dam crest reaches an elevation of 539 feet National Geodetic Vertical Datum of 1929 (NGVD29). All elevations in this document are NGVD29 unless otherwise stated. The dam crest supports a paved access road which allows incidental recreational use of the road. The dam has a concrete ogee spillway section at elevation 524 feet NGVD29 that is 220 feet long. This spillway joins the earth dam by concrete non-overflow gravity walls at each end between the north and south abutments. The spillway contains an outlet works in its center that consists of three grated rectangular conduits. These conduits have inverts at elevation 481.5 feet NGVD29. Three 3 feet by 4.5 feet electrically operated slide gates control the flow of water through the conduits. The outlet works has an intake channel with an average bottom width of about 10 feet excavated into the bedrock. The piers between the passages at these gates are elongated on the upstream side in order to form a weir to control the elevation of the permanent recreation pool.

The flood control structures also include a rolled earthfill dike on a saddle at the south end of Pierpont Meadow Pond, approximately 2.75 miles south of the Buffumville Lake spillway. This dike is 610 feet long and crests at 539 feet NGVD29. The main dike’s top width is 24 feet with a 16 feet-wide bituminous-treated gravel pavement road flanked by four-foot-wide gravel shoulders. The section of the dike lacking a road is only 12 feet wide. In 2023, it was determined that the USACE is also responsible for the

maintenance of a pre-1880's mill dam on the northeastern shore of Pierpont Meadow Pond. Located on flowage easement, the dam provides a foundation for Beach Road and contains a 30 by 34-foot box culvert which allows water to flow in and out of Buffumville Lake along the South Fork River. The box culvert and rock slope protection were installed by the USACE in 1958 along with the construction of Buffumville Dam. The dam itself is located on USACE flowage easement property. Only the inlet to the box culvert is located on USACE fee property.

The flood control structures at Buffumville Lake support a permanent pool of 11-feet throughout the year. The top of this pool reaches elevation 492.5 feet NGVD29. At this level the permeant pool contains roughly 200 surface acres of water that extends 1.1 miles north through to the Little River and 1 mile south to the South Fork. At this elevation Buffumville Lake stores about 1,400 acre-feet of water. Oxford Road crosses the lake via a causeway that divides the lake in half. A large culvert allows vessels to pass under the roadway to either half of the lake. In flood events, when Buffumville Lake's level reaches the spillway crest elevation of 524 feet NGVD29, it boasts a surface area of 530 acres, maximum depth of 43 feet, and net storage of 11,300 acre-feet. This corresponds roughly to 8 inches of runoff from the drainage area. At this elevation, Buffumville Lake extends up the Little River 1.7 miles north and up the South Fork 1.9 miles.

During the winter months, Buffumville Lake is drawn down by 4 feet to an approximate 7-foot pool. The drawdown is started mid-October each year and extends until the spring or when flood waters alter the pool. Winter drawdowns were started in 2014 and has been used since 2017 to control the growth of invasive non-native aquatic weeds such as fanwort, spiny naiad, Eurasian milfoil, and water milfoil, in combination with selective chemical treatments.

1.6 PROJECT ACCESS

Buffumville Lake lies within the town limits of Charlton, Massachusetts. Charlton has a population of 13,315 in the 2020 census. More information about local populations and demographics is described in Section 2.12. Buffumville Lake is within easy driving distance from several large cities. Worcester, Massachusetts is about 11 miles northeast of Buffumville Lake. Springfield, Massachusetts is about 35 miles from Buffumville Lake. Boston, Massachusetts is 45 miles east-northeast from the lake. Hartford, Connecticut is about 45 miles southwest of Buffumville Lake. Providence, Rhode Island is 30 miles southeast from Buffumville Lake.

Several highways and tollways provide relatively easy access to Buffumville Lake from major metropolitan areas. U.S. Interstate 395 provides access from Worcester and Boston from the north and east and Providence from the southwest and southeast. U.S. Interstate 84 also provides access for Hartford. U.S. Interstate 90 provides access from Springfield to the west and Boston to the east.

Local roads provide direct access to Buffumville Lake from the major regional highways. Oxford Road (Charlton Street) provides access from Oxford and the western

portions of Charlton. A.F. Putnum Road (Colburn Road) provides access to the western portion of the lake. Other local roads provide varying degrees of access.

1.7 PRIOR DESIGN MEMORANDA AND PLANNING REPORTS

Design Memoranda (DM) and Project Reports approved and set forth design and development plans for all aspects of the project including the prime flood risk management facilities, real estate acquisition, road and utility relocations, reservoir clearing, and the master plan for recreation development and land management prior to 1999. The USACE prepared all DMs for Buffumville Lake in 1956. These DMs include Hydrology and Hydraulics, Geology and Soils, Embankment Design, Structural Design, and Structural Computation. The USACE completed the Master Plan for Recreation Resources Development in 1976. A list of the DMs for Buffumville Lake is listed in Table 1.1 , and related manuals and reports for Buffumville lake are listed in Table 1.2.

Table 1.1 Buffumville Lake Design Memoranda

DM No.	Design Memoranda Title	Date Approved
1	Reservoir Area and General Plan	April 1956
2	Dam – Plan	April 1956
3	Dam – Embankment Sections No. 1	April 1956
4	Dam – Embankment Sections No. 2	April 1956
5	Dam – Embankment Sections No. 3	April 1956
6	Spillway and Outlet Works – Plan and Section	April 1956
7	Spillway and Outlet Works – Sections and Elevations	April 1956
7	Outlet Structure – Concrete Details No. 1	April 1956
8	Outlet Structure – Concrete Details No. 2	April 1956
9	Outlet Structure – Concrete Details No. 3	April 1956
10	Outlet Structure – Concrete Details No. 4	April 1956
11	Control House – Architectural Details	April 1956
12	Control House – Plans and Sections	April 1956
12	Control House – Sections	April 1956
13	South Abutment – Concrete Details	April 1956
14	South Retaining Wall – Plan and Sections	April 1956
15	North Retaining Wall – Plan and Sections	April 1956
16	Control House – Arrangement of Equipment	April 1956
17	Operating Gallery – Sections and Details	April 1956
18	Gate Assembly – Sections and Details	April 1956

DM No.	Design Memoranda Title	Date Approved
19	Building Area – Plan and Details	April 1956
	Pierpont Meadow Pond Dike – Plan and Sections	April 1956
21	Treatment – Pierpont Meadow Pond Dam – Plan and Sections	April 1956
	Relocations	April 1956
23	Hydrology and Hydraulics	April 1956
	Geology and Soils	April 1956
25	Master Plan for Recreation Resources Development	March 1976

Table 1.2 Manuals and Reports for Buffumville Lake

Subject	Date Approved
Operations and Maintenance (O&M) Manual	April 1971
Water Control Manual (Thames River Basin)	July 1967, revised in 1980 and 2001
Emergency Action Plan	June 2020

1.8 PERTINENT PROJECT INFORMATION

Table 1.3 provides general pertinent information for Buffumville Lake. Table 1.4 provides pertinent data regarding key reservoir elevations and storage capacity at Buffumville Lake.

Table 1.3 General Pertinent Information for Buffumville Lake

Location	
Basin	Thames River
Stream	Little River and South Fork River
River Mile	1.3 miles upstream from the Little River's confluence with the French River
County	Worcester
State/Commonwealth	Massachusetts
Drainage Area	
Above Dam	26.5 square miles
Dam	
Type	Rolled earth fill embankment and impervious core
Length	3,255 feet
Height	57.5 feet
Top Width	20 feet
Spillway	
Type	Uncontrolled concrete Ogee weir with combined outlet works conduits
Crest Elevation	524.0 feet NGVD29
Crest Length	297.5 feet
Design Discharge	29,800 cfs
Outlet Works	3 rectangular concrete conduits 3'x4' wide and 44' long capable of 1,820 cfs
Real Estate Acquisition	
Fee Purchase	Elevation 510 feet NGVD29 (488 acres)
Flowage Easement*	Varies, up to elevation 529 feet NGVD29 (273 acres)

(Source: Thames River Basin MMWC 2001)

* Surface acre references within the text of the 2025 Master Plan align with Table 4.1 Change from 1976 Land and Water Surface Classifications to 2025 Land and Water Surface Classification. See Section 4.2.5 for more information about Flowage Easement Land.

Table 1.4 Pertinent Data for Buffumville Lake

Reservoir Feature	Elevation (feet NGVD29)	Surface Area (acres)	(acre-feet)	Capacity (inches of runoff)	(billion gallons)
Streambed	481.5	–	–	–	–
Conservation (Normal) Pool	492.5	214	1,400	–	–
Top of Flood Control Pool (Spillway Crest)	524	530	11,280	8	0.42
Preliminary Inflow Design Flood	534.3	–	–	25.4	–
Top of Dam	539	530	12,700	29.7	–

CHAPTER 2 – PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1 HYDROLOGY

2.1.1 Surface water

Surface waters are categorized by hydrologic units. Hydrologic units are classified by the United States Geologic Survey (USGS) using a Hydrologic Units Code (HUC) system. The units are classified from largest HUC with a two-digit region (i.e., the Mid-Atlantic Region), encompassing the largest area, to a twelve-digit sub-watershed HUC. The hydrologic units for the Buffumville Lake watershed are mapped on Figure 2.1 and classified by sub-watersheds as follows:

- 01 (HUC 2: Region) – New England Region
- 0110 (HUC 4: Sub-region) – Connecticut Coastal
- 011000 (HUC 6: Basin) – Connecticut Coastal
    - Thames River lies within eastern portion of Connecticut Coastal Basin. Quinebaug River lies within the Thames River watershed.
- 01100001 (HUC 8: Sub Basin) – Quinebaug River
- 0110000102 (HUC 10: Watershed) – French River
- 011000010202 (HUC 12: Sub-watershed) – Buffumville Lake-Little River (includes Buffumville Lake)
- 011000010203 (HUC 12: Sub-watershed) – Middle French River (includes southern portion of Pierpont Meadow Pond)

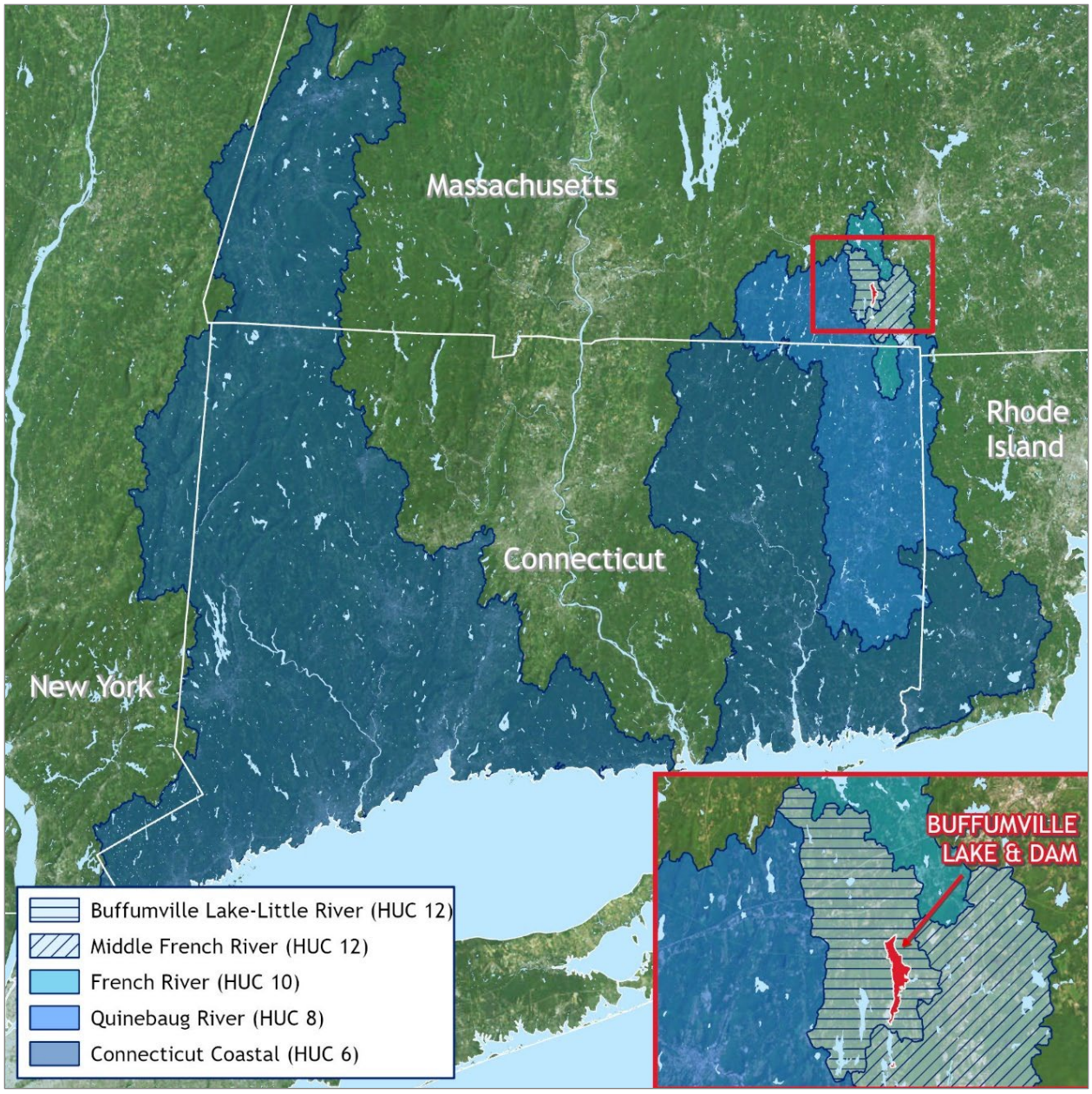


Figure 2.1 Hydrology (HUC 6, 8, 10, 12) Map for Buffumville Lake (USGS, 2023)

2.1.2 Ground water

The groundwater at Buffumville Lake is limited to New England crystalline-rock aquifers. Igneous and metamorphic rocks, primarily gneiss and schist, characterize the aquifers in Massachusetts. Well depths of 100-400 feet are common, with the potential for some wells exceeding 1,000 feet before reaching water. Groundwater generally yields 1-20 gallons per minute but can exceed 300 gallons per minute. Groundwater is generally suitable for most uses but may corrode pipes and appliances. The nearest major aquifer is the northernmost portion of sandstone Early Mesozoic Basin Aquifers, approximately 26 miles to the west. The USGS maintains a groundwater monitoring

station roughly 10.5 miles from Buffumville Lake. This station is in a local stratified deposits-type aquifer in the broader sand and gravel aquifers (glaciated regions) type. This station reports an average annual depth to water between 2.97 feet and 3.99 feet. However, the Commonwealth of Massachusetts does indicate this station is on an aquifer of significance. The state data indicates that a medium yield aquifer capable of providing 100-300 gallons per minute occurs on the southern extreme of the Buffumville Lake fee area. A larger medium yield aquifer lies underneath portions of Oxford roughly 1.5 miles from the lake. This medium yield aquifer contains two high yield areas capable of producing over 300 gallons per minute. A smaller medium yield aquifer with a single high yield area also occurs directly north of the Oxford-area aquifer. Overall, some groundwater resources are available in the area. Areas outside of the aquifers mapped by the USGS and the state wells may have low yields. In the scattered local and larger regional aquifers, wells may have higher yields. Groundwater resources should not affect the management of Buffumville Lake's lands and resources. The USGS map shown in Figure 2.2 shows the groundwater mapped around Buffumville Lake.

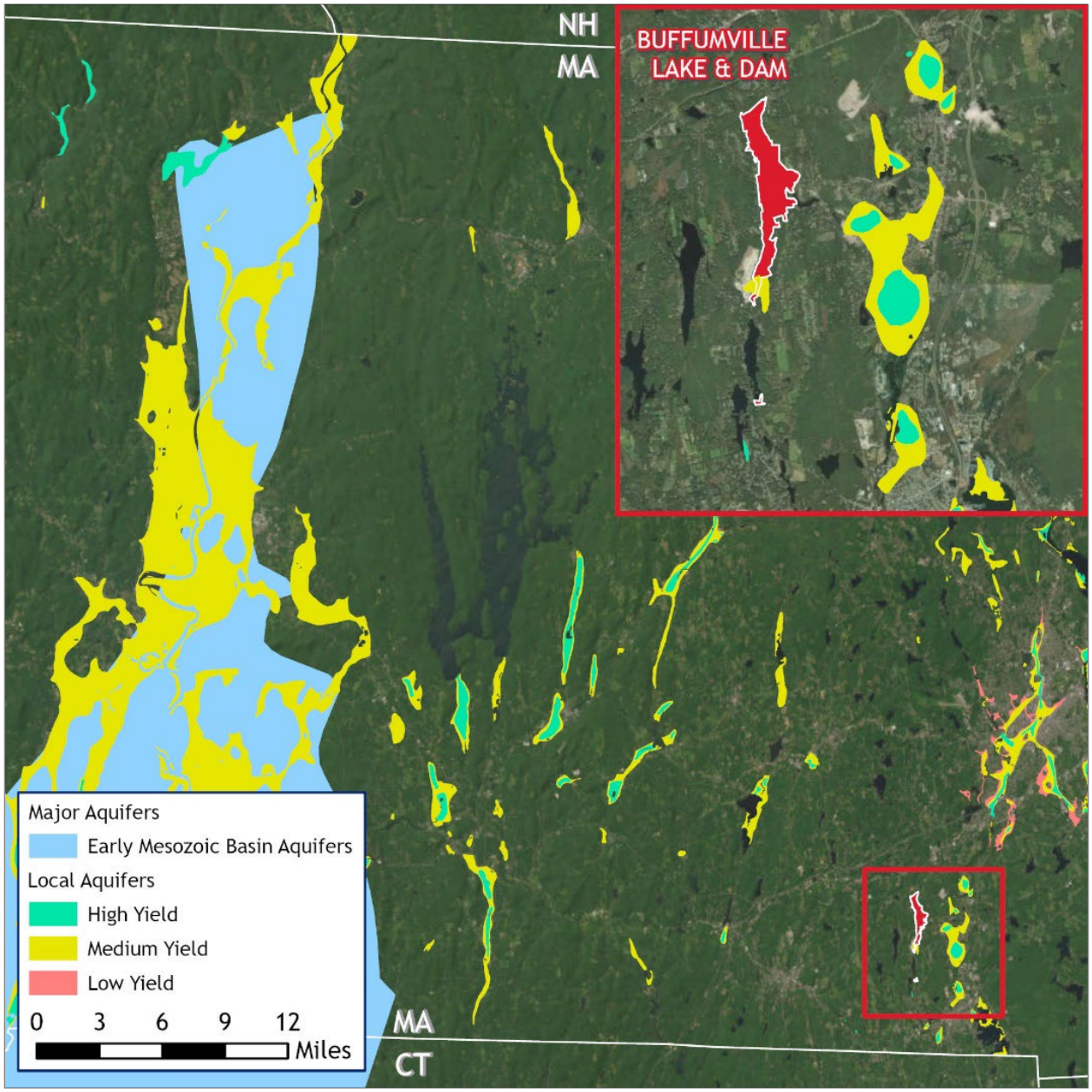


Figure 2.2 Groundwater Map for Buffumville Lake (USGS, 2007, 2023)

2.2 SEDIMENTATION AND SHORELINE EROSION

2.2.1 Sedimentation

There are no sedimentation monuments installed at any dams within the Thames River Basin. As sedimentation occurs at any impounded waterway, the district staff has utilized bathymetric data to estimate sedimentation within Buffumville Lake and monitor the effects on flood control. There are several soil conservation structures in the Thames River Basin that help to reduce sedimentation, but none within the Buffumville Lake-Little River watershed. There are currently no sedimentation concerns for the project site.

2.2.2 Shoreline Erosion

Shoreline erosion and under-cutting has occurred at various areas along the lake shoreline which have affected trails and shoreline access in some locations. Project staff regularly monitor for erosion at Buffumville Lake and develop strategies for stabilizing eroding shoreline.

2.3 WATER QUALITY

The Massachusetts Surface Water Quality Standards designate water quality criteria required for the designated uses of surface water. These standards allow for the protection of the chemical, physical, and biological integrity of the Nation's waters pursuant to the Clean Water Act. Buffumville Lake is designated as Class B Warm Water (MassDEP, 2024). Class B waters are designated fish, aquatic life, and wildlife habitat. Class B waters allowed uses include recreation, treated water supply, irrigation, agriculture, and industrial cooling and process uses. Water Quality Standards for Class B Waters include the following parameters: dissolved oxygen, temperature, pH, bacteria, solids, color and turbidity, oil and grease, and taste and odor.

Buffumville Lake is listed as impaired in the Massachusetts Department of Environmental Protection's 2022 Integrated Water Quality Report (MassDEP, 2023a) Non-native aquatic plants and mercury in fish tissue were identified as impairments (MassDEP, 2023b). The Little River, upstream of Buffumville Lake, is also considered impaired due to benthic macroinvertebrate and dissolved oxygen (MassDEP, 2023b).

The swim beach at Buffumville Park is tested for *Escherichia coli* (*E.coli*) and visually inspected for *Cyanobacteria* once a week during the recreation season from mid-May to mid-September. Weather patterns and lake levels influence the bacteria levels each season. The park is immediatly shut down for swimming upon confirmation of high bacteria levels. The Massachusetts Department of Public Health (MDPH) single sample maximum for freshwater *E. coli* levels is 235 colony forming units per 100 milliliters of water (cfu/100 ml), and the geometric mean is 126 cfu/100 ml. The single sample maximum is the MDPH standard for the amount of bacteria in the water that should not be exceeded and reflects short-term conditions. It is used to protect swimmers from a brief exposure to high levels of bacteria. The geometric mean is calculated from the five most recent samples and is intended to reflect typical water

quality found during the preceding time period (typically a month). It was developed to protect swimmers from potential long-term exposures to levels of bacteria that are below the single sample maximum value, yet consistently elevated.

In 2023, there were 17 weekly water samples collected and analyzed, with a mean *E. coli* level of 22.94 cfu/100 ml. In 2024, there were 18 weekly water samples collected and analyzed with a mean *E. coli* level of 18.9 cfu/100 ml . Water samples never exceeded the single sample maximum nor geometric mean in either year. Table 2.1 shows the water quality data reported by MassDEP in Buffumville Lake and Little River.

Table 2.1 DEP 2022 Integrated Water Quality Report Data for Buffumville Lake (MassDEP, 2023b)

Waterbody	Impairment	Source	Affected Use Category
Buffumville Lake	Non-Native Aquatic Plants	Introduction of Non-native Organisms (Accidental or Intentional)	Fish and other Aquatic Life and Wildlife
Buffumville Lake	Mercury in Fish Tissue	Atmospheric Deposition; Unknown	Fish Consumption
Little River (from Pikes Pond to Buffumville Lake)	Benthic Macroinvertebrate	Unknown	Fish and other Aquatic Life and Wildlife
Little River (from Pikes Pond to Buffumville Lake)	Dissolved Oxygen	Unknown	Fish and other Aquatic Life and Wildlife

2.4 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants. These include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. An area is considered to be in attainment if it is meeting or below a given safe standard set by the EPA for the criteria pollutant.

The Massachusetts Department of Environmental protection monitors air quality to determine compliance with NAAQS. The Massachusetts's 2022 Air Quality Report determined that the Commonwealth of Massachusetts is currently in attainment for all six principal pollutants (MassDEP, 2023c)

2.5 CLIMATE AND GREENHOUSE GASES

2.5.1 Climate

Climatic regions are described using Köppen Climate Classifications (KCCs) and represented by three letters, according to their main climate group, precipitation, and temperature. Buffumville Lake has a KCC of Dfa, which is described as a humid continental climate (Belda et al., 2014; NOAA, 2023). A humid continental climate can be broadly described as having four distinct seasons with large seasonal temperature differences, warm to hot summers, and cold, snowy winters. The Northeast region of the United States experiences extreme heat, flooding, droughts, and poor air quality (U.S. Global Change Research Program (USGCRP) 2023), as well as an increase in extreme precipitation events and more severe and long-lasting heatwaves.

The National Weather Service provides climatic data for weather stations through the Applied Climate Information System. The average monthly climate data was obtained using the Buffumville Lake weather station, which is in close proximity to Buffumville Lake. Figure 2.3 includes the average precipitation for each month, as well as the average minimum, maximum, and daily average temperatures for each month.

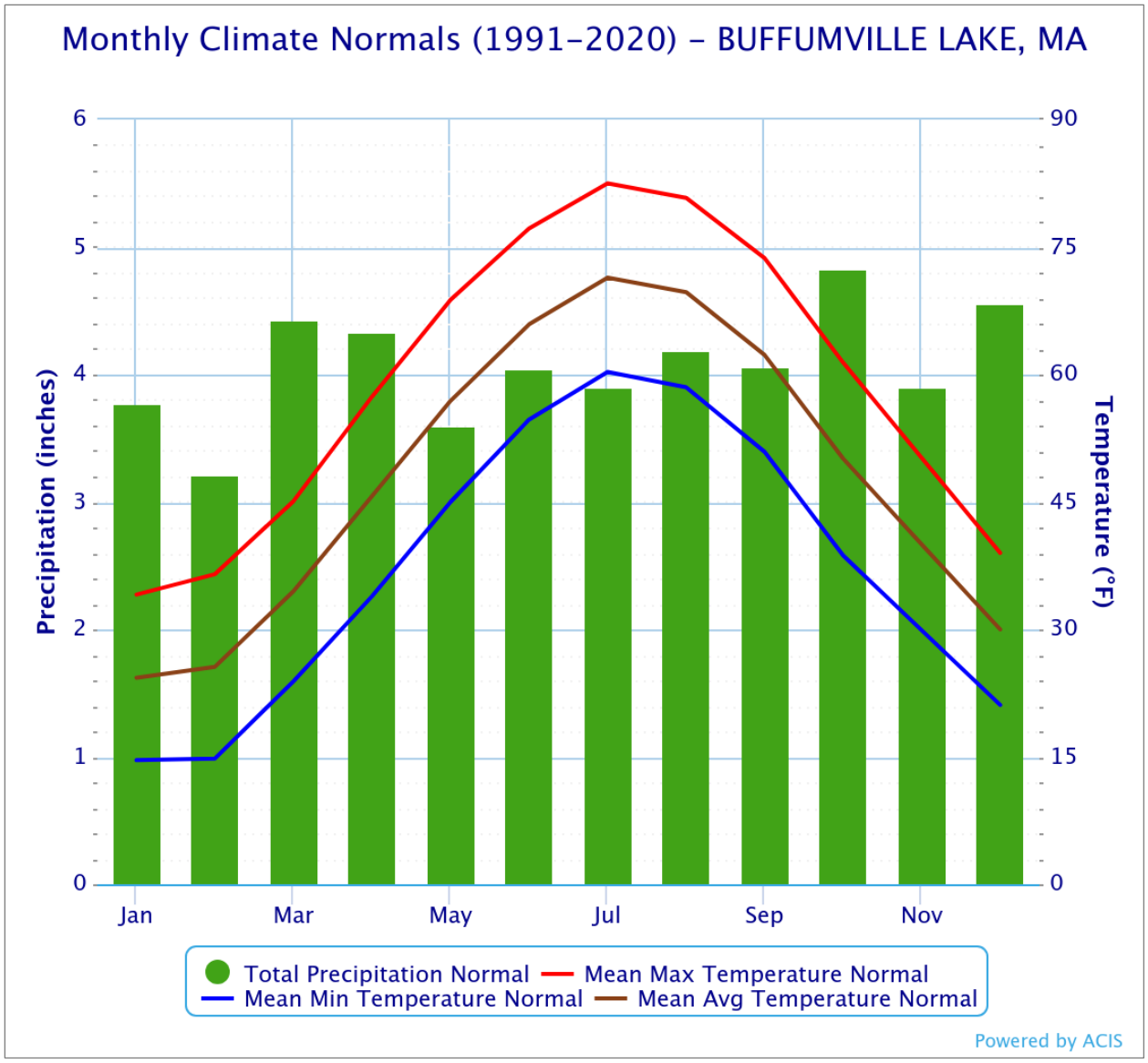


Figure 2.3 Average Monthly Climate Buffumville Lake, Massachusetts, 1991-2020

(NOAA, 2024)

2.5.2 Greenhouse Gases

The EPA Facility Level Information on Greenhouse gases Tool (FLIGHT) provides data on large emitters of GHGs. EPA records show that there are 13 large point source GHG contributors located in Worcester County, MA, all of which had reported emissions for year 2022 (EPA, 2024a). Table 2.2 describes these GHG contributors in Worcester County, MA. GHG emissions quantities are reported by the EPA in Metric Tons of Carbon Dioxide equivalent (CO2e). The subpart column describes the type of industry the emitting facility participates in.

Table 2.2 EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) Point Source Emitter Facilities in Worcester County, MA (EPA, 2024a)

Facility Name	City	Total Reported Emissions (metric tons CO_2e)	Sector
Blackstone Power Generation LLC	Blackstone	1,046,845	C, D
Millenium Power	Charlton	444,270	C, D
Wheelabrator Millbury Inc.	Millbury	215,640	C
Eversource Gas	Westwood	94,434	NN, W
UMass Medical School	Worcester	85,142	C
Milford Power, LLC	Milford	70,583	C, D
Saint-Gobain Abrasives and Saint-Gobain Ceramics & Plastics, Inc.	Worcester	51,947	C
Fitchburg Westminster Landfill Recycling Center	Westminster	34,008	C, HH
TGP Station 264	Charlton	32,158	C, W
Newark America	Fitchburg	28,659	C
Wyman-Gordon Company	North Grafton	24,177	C
Southbridge Recycling & Disposal Park	Southbridge	5,528	C, HH
Martone Landfill & Gas Generating Facility	Barre	1,503	HH

*Subpart Codes: D – Electricity Generation; C – General Stationary Fuel Combustion Sources; HH – Municipal Solid Waste Landfills; NN – Suppliers of Natural Gas and Natural Gas Liquids; W – Petroleum and Natural Gas Systems; R – Lead Production; Q – Iron and Steel Production

2.6 TOPOGRAPHY, GEOLOGY, AND SOILS

2.6.1 Topography

Buffumville Lake lies within the Thames River Basin. The Little River flows in a long narrow valley running roughly southerly from the outlet of Pikes Pond, Charlton to Buffumville Lake, then east from the dam through Buffum Pond to the junction with the French River in Oxford. The river flows in a series of riverine sections through several forested wetlands for 5.2 miles to the outlet of Buffumville Lake, and an additional 1.9 miles to its confluence with the French River. The watershed draining to Buffumville Lake covers 24.5 square miles, having a maximum length of 16.7 miles and a maximum width of 7.2 miles. The topography of the project area is generally a narrow strip of steeply pitched hillside surrounding the lake with moderate relief in some areas. Elevations in the vicinity of the lake range from about 492 feet NGVD29 in the stream bed at the dam to about 500 feet NGVD29 in the uplands above Buffumville Park.

2.6.2 Geology

The project area was subject to glaciation during the Ice Age or Pleistocene Epoch beginning about one million years ago. Glaciation rounded and smoothed the bedrock, hills and ridges of the area, and covered them with a thin layer of till. The principle evidence of the Late Wisconsin glacial period is stratified and unstratified drift.

Within the reservoir area, bedrock is composed of metamorphic rocks that range in age from pre-Cambrian to Pennsylvanian. Post-glacial deposits in the project area appear to be similar to those found in other upland sections of the Worcester Plateau. Steeply sloping upland hillsides in and near the area are covered with deposits of stony glacial till, ground moraine, outwash plains, and karme terraces. Broad glacial terrace and outwash deposits make up the valley floor along much of the Little River.

2.6.3 Soils

There are three distinct soil series identified in the project area. The western shore is dominated by Canton Fine Sandy Loam. The eastern shoreline is dominated by Windsor Loamy Fine Sand and stretches of Merrimac Fine Sandy Loam

The non-irrigated land capability classification from the Natural Resource Conservation Service (NRCS) shows there are 8 possible general classifications (Class I through Class VIII), but only 6 occur at Buffumville Lake. The erosion hazards and plant cultivation limitations for use increase as the class number increases. Class I has few limitations, whereas Class VIII has many. The NRCS Web Soil Survey provided the soil class data for project lands in Table 2.3. This data is a standard component of natural resources inventories on USACE lands. This data, however, is not recorded in the USACE Natural Resource Management System (NRM).

Table 2.3 Soil Classifications at Buffumville Lake

Soil Class	Acreage
Class I	0
Class II	138
Class III	16
Class IV	6
Class V	9
Class VI	0
Class VII	102
Class VIII	<1

Source: NRI Level I Inventory

The descriptions of the soils and land capability classifications below demonstrate the relative general potential for project lands. The NRCS maintains detailed information on all soil types surrounding Buffumville Lake in various websites and datasets. These soils are mapped with data from NRCS in Figure 2.5

- Class I soils have slight limitations that restrict their use.
- Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Class III soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
- Class IV soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
- Class V soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- Class VI soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
- Class VIII soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes.

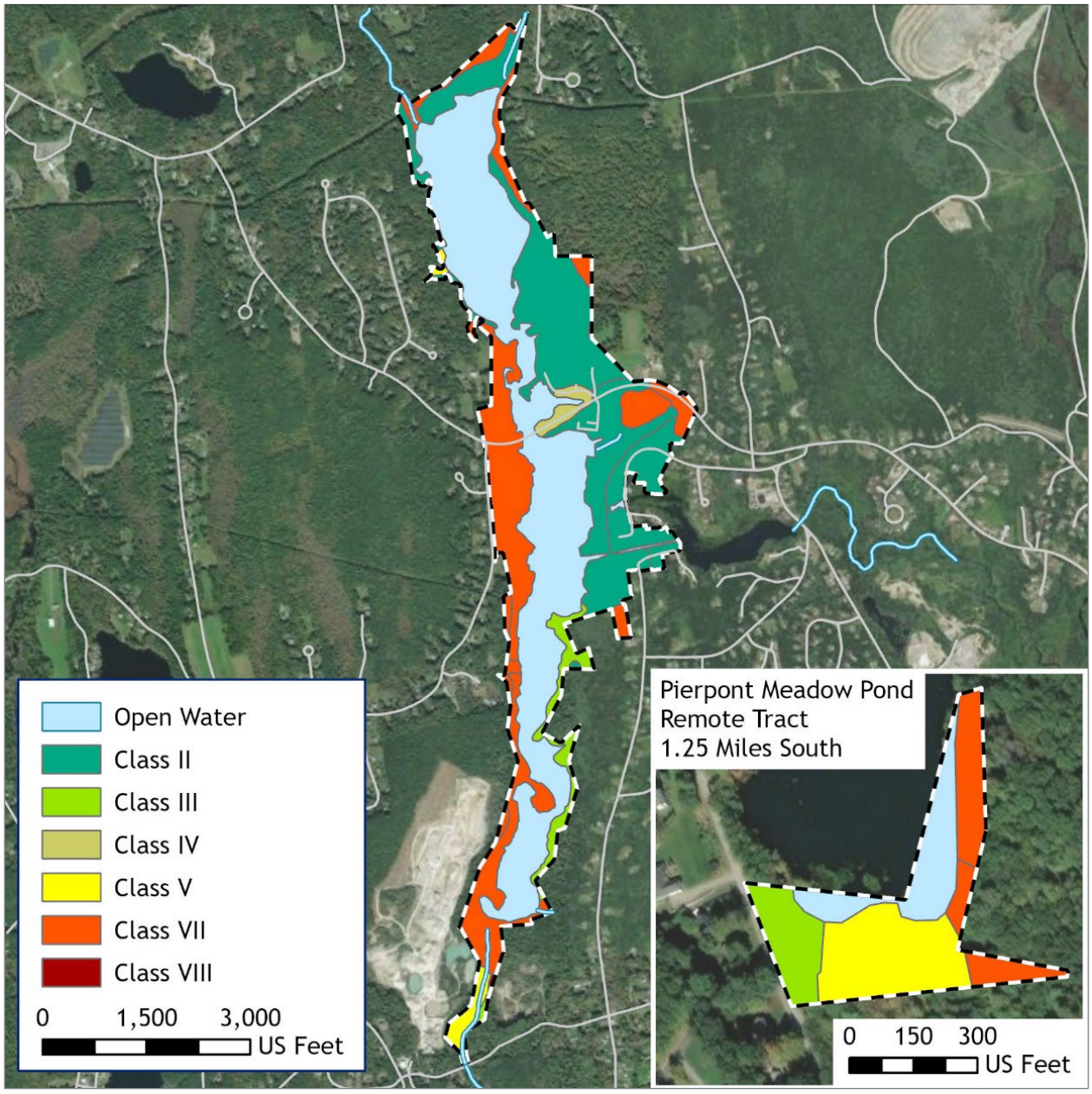


Figure 2.4 Soil Classification Map (NRCS, 2023)

2.6.4 Prime Farmland

Section 1541(b) of the Farmland Protection Policy Act (FPPA) of 1980 and 1995, 7 U.S.C. 4202(b) requires federal and state agencies, as well as projects funded with federal funds, to (a) use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) consider alternative actions, as appropriate, that could lessen adverse effects, and (c) ensure that their programs, to the extent practicable, are compatible with state and units of local government and private

programs and policies to protect farmland. The soil type and farmland classification are shown in Table 2.4 and mapped in Figure 2.6.

Table 2.4 Prime Farmlands Identified at the Buffumville Lake Project Area (NRCS, 2023)

Map Symbol	Map Unit Name	Farmland Classification
245B	Hinckley loamy sand, 3 to 8 percent slopes	Farmland of statewide importance
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	All areas are prime farmland
254C	Merrimac fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance
255B	Windsor loamy sand, 3 to 8 percent slopes	Farmland of statewide importance
255C	Windsor loamy sand, 8 to 15 percent slopes	Farmland of statewide importance
255D	Windsor loamy sand, 15 to 25 percent slopes	Not prime farmland
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	All areas are prime farmland
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	Not prime farmland
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	Not prime farmland
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	Not prime farmland
3A	Scarboro and Walpole soils, 0 to 3 percent slopes	Not prime farmland
420B	Canton fine sandy loam, 3 to 8 percent slopes	All areas are prime farmland
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	Not prime farmland
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	Not prime farmland
422E	Canton fine sandy loam, 15 to 35 percent slopes, extremely stony	Not prime farmland
53A	Freetown muck, ponded, 0 to 1 percent slopes	Not prime farmland
600	Pits, gravel	Not prime farmland
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	Not prime farmland

Map Symbol	Map Unit Name	Farmland Classification
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	Not prime farmland
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	Not prime farmland

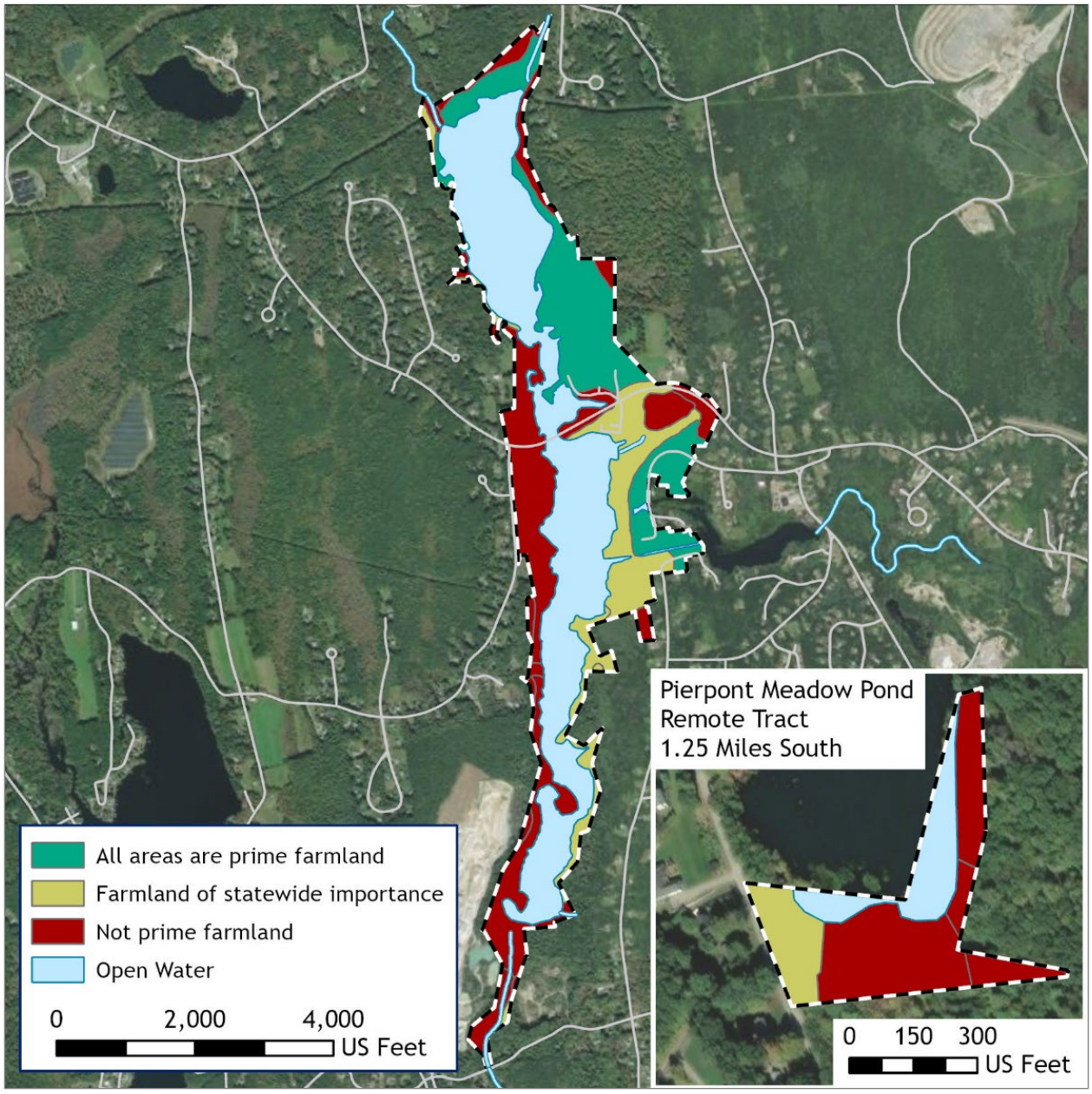


Figure 2.5 Prime Farmland Soils Map (NRCS, 2023)

2.7 NATURAL RESOURCE ANALYSIS

2.7.1 Fish and Wildlife Resources

Common fish and wildlife occurring at Buffumville Lake are typical of Worcester County. Table 2.5 through Table 2.9 provide lists of common birds, reptiles, amphibians, mammal, and fish species occurring around Buffumville Lake (USACE, 1996). Table 2.7 also provides a list of observed fish species from the 2024 electrofishing survey performed by USACE notated by an asterisk (Faughnan, 2024).

Table 2.5 Common Mammal Species Potentially Present at Buffumville Lake

Common Name	Scientific Name
American beaver	*Castor canadensis*
American mink	*Mustela vison*
Bobcat	*Lynx rufus*
Common opossum	*Didelphis marsupialis*
Coyote	*Canis latrans*
Eastern chipmunk	*Tamias striatus*
Eastern cottontail	*Sylvilagus floridanus*
Eastern gray squirrel	*Sciurus carolinensis*
Fisher	*Pekania pennanti*
Grey fox	*Urocyon cinereoargenteus*
Meadow jumping mouse	*Zapus hudsonius*
Muskrat	*Ondatra zibethicus*
North American porcupine	*Erethizon dorsadum*
Northern flying squirrel	*Glaucomys sabrinus*
Raccoon	*Procyon lotor*
Red fox	*Vulpes vulpes*
Red squirrel	*Tamiasciurus hudsonicus*
River otter	*Lontra canadensis*
Striped skunk	*Mephitis mephitis*
White-footed mouse	*Peromyscus leucopus*
White-tailed deer	*Odocoileus virginianus*
Woodchuck	*Marmota monax*

Table 2.6 Common Bird Species Occurring around Buffumville Lake

Common Name	Scientific Name
American black duck	*Anas rubripes*
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tritis*
American kestrel	*Falco sparverius*
American robin	*Turdus migratorius*
American woodcock	*Scolopax minor*

Common Name	Scientific Name
Bald eagle	*Haliaeetus leucocephalus*
Baltimore oriole	*Icterus galbula*
Barn swallow	*Hirundo rustica*
Belted kingfisher	*Megaceryle alcyon*
Black-capped chickadee (state bird)	*Parus atricappilus*
Blue jay	*Cyanocitta cristata*
Brown thrasher	*Toxostoma rufum*
Canada goose	*Branta canadensis*
Cedar waxwing	*Bombycilla cedrorum*
Common European starling	*Sturnus vulgaris*
Common grackle	*Quiscalus quiscala*
Common merganser	*Mergus merganser*
Common redpoll	*Acanthis flammea*
Cooper's hawk	*Accipiter cooperii*
Dark-eyed junco	*Junco hyemalis*
Downy woodpecker	*Dryobates pubescens*
Eastern bluebird	*Sialia sialis*
Eastern phoebe	*Sayornis phoebe*
Evening grosbeak	*Hesperiphona vespertina*
Gray catbird	*Dumetella carolinensis*
Great blue heron	*Ardea herodias*
Great horned owl	*Bubo virginianus*
Hooded merganser	*Mergus merganser*
Hooded merganser	*Lophodytes cucullatus*
House finch	*Haemorhous mexicanus*
House sparrow	*Passer domesticus*
Killdeer	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Mourning dove	*Zenaida macroura*
Mute swan	*Cygnus olor*
Myrtle (yellow-rumped) warbler	*Setophaga coronata*
Northern cardinal	*Cardinalis cardinalis*

Common Name	Scientific Name
Northern mockingbird	*Mimus polyglottos*
Osprey	*Pandion haliaetus*
Pine grosbeak	*Pinicola enucleator*
Pine siskin	*Spinus pinus*
Purple finch	*Haemorhous purpureus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-breasted merganser	*Mergus Serrato*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Rose-breasted grosbeak	*Pheucticus ludovicianus*
Rufous-sided (eastern) towhee	*Pipilo erythrophthalmus*
Rusty blackbird	*Euphagus carolinus*
Song sparrow	*Melospiza melodia*
Tree swallow	*Tachycineta bicolor*
Tufted titmouse	*Baeolophus bicolor*
Turkey vulture	*Cathartes aura*
White-breasted nuthatch	*Sitta carolinensis*
White-throated sparrow	*Zonotrichia albicollis*
Wild turkey (state game bird)	*Meleagris gallopavo*
Wood duck	*Aix sponsa*
Yellow-bellied sapsucker	*Sphyrapicus varius*

Table 2.7 Common Amphibian Species around Buffumville Lake

Common Name	Scientific Name
American bullfrog	*Lithobates catesbeianus*
American toad	*Anaxyrus americanus*
Eastern newt	*Notophthalmus viridescens*
Eastern red-backed salamander	*Plethodon cinereus*
Four-toed salamander	*Hemidactylium scutatum*
Fowler’s toad	*Anaxyrus fowleri*
Gray treefrog	*Hyla versicolor*
Green frog	*Lithobates clamitans*

Common Name	Scientific Name
Marbled salamander	*Ambystoma opacum*
Northern dusky salamander	*Desmognathus fuscus*
Northern leopard frog	*Lithobates pipiens*
Northern two-lined salamander	*Eurycea bislineata*
Pickerel frog	*Lithobates palustris*
Spotted salamander	*Ambystoma maculatum*
Spring peeper	*Pseudacris crucifer*
Spring salamander	*Gyrinophilus porphyriticus*
Wood frog	*Lithobates sylvaticus*

Table 2.8 Common Reptile Species around Buffumville Lake

Common Name	Scientific Name
Common Snapping turtle	*Chelydra serpentina*
Painted turtle	*Chrysemys picta*
Spotted turtle	*Clemmys guttata*
North American racer	*Coluber constrictor*
Ring-necked snake	*Diadophis punctatus*
Blanding's turtle	*Emydoidea blandingii*
Wood turtle	*Glyptemys insculpta*
Eastern hog-nosed snake	*Heterodon platirhinos*
Eastern milksnake	*Lampropeltis triangulum*
Northern watersnake	*Nerodia sipedon*
Smooth greensnake	*Opheodrys vernalis*
Eastern ratsnake	*Pantherophis alleghaniensis*
Eastern musk turtle	*Sternotherus odoratus*
Dekay's brownsnake	*Storeria dekayi*
Red-bellied snake	*Storeria occipitomaculata*
Eastern box turtle	*Terrapene carolina*
Common gartersnake	*Thamnophis sirtalis*
Red-earned slider	*Trachemys scripta elegans*
Common ribbon snake	*Thamnophis saurita*

Table 2.9 Fish Species Likely to Occur at Buffumville Lake

Common Name	Scientific Name
Black crappie*	*Pomoxis nigromaculatus*
Black nosed dace	*Rhinichthys atratulus*
Bluegill*	*Lepomis macrochirus*
Brown bullhead*	*Ictalurus mebulosus*
Chain pickerel*	*Esox niger*
Creek chub	*Semotilus atromaculatus*
Creek chubsucker	*Erimyzon oblongus*
Fallfish	*Semotilus corporalis*
Golden shiner*	*Notemigonus crysoleucas*
Largemouth bass*	*Micropterus salmoides*
Northern pike	*Esox lucius*
Pumpkinseed*	*Lepomis gibbosus*
Red-breast sunfish*	*Lepomis auritus*
Swamp darter	*Etheastoma fusiforme*
White crappie*	*Pomoxis annularis*
White perch*	*Monroe Americana*
White sucker	*Catostomus commersoni*
Yellow bullhead	*Ictalurus natalis*
Yellow perch*	*Perca flavescens*

* Fish observed in 2024 Buffumville Lake Fisheries Survey

2.7.2 Vegetative Resources

Vegetation in the Southern New England Coastal Plains and Hills includes deciduous forests with some mixed and evergreen forests. Dominant vegetation may include Appalachian oak-pine forests, oak-hickory forests, and oak-hemlock-white pine forests (Griffith, et al., 2009). Common species include red oak (*Quercus rubra*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), chestnut oaks (*Quercus montana*), white pine (*Pinus strobus*), red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), shagbark hickory (*Carya ovata*), and mockernut hickory (*Carya tomentosa)* (Griffith, et al., 2009). Before the arrival of chestnut blight (*Cryphonectria parasitica*), the American Chestnut (*Castanea dentata*), was one of the dominant tree species across the ecoregion.

Mesic forests within this Ecoregion may include sugar maple (Acer saccharum), red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), and white ash (*Fraxinus*

americana) (Griffith, et al., 2009). Forested swamps may include red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), hemlock (*Tsuga canadensis*), or Atlantic white cedar (*Chamaecyparis thyoides*). On small river floodplains, pin oak-green ash forests are dominant. Woody swamps may include swamp white oak (*Quercus bicolor*), red maple (Acer rubrum), and American elm (*Ulmus americana*) (Griffith, et al., 2009).

Land uses for this ecoregion include deciduous forest, urban, suburban, rural residential land, hay/pasture, cropland, mixed and evergreen forest, woody wetlands, public state forest, and state park lands (Griffith, et al., 2009).

2.7.3 Threatened and Endangered Species

Federal

The USFWS Information for Planning and Consultation (IPaC) system was consulted to review project area resources and evaluate project compliance. An IPaC report was generated to indicate federal conservation species and other resources under the jurisdiction of USFWS (APPENDIX C). Birds of Conservation Concern (BCC) are identified through IPaC alongside species protected under the Endangered Species Act. BCC species are migratory and non-migratory birds species which have the highest conservation priority as identified by USFWS (USFWS, 2021). Table 2.8 and 2.9 provide lists of federal conservation species listed under the Endangered Species Act and the Migratory Bird Treaty Act (USFWS, 2024a).

Table 2.8. Federal Listed Species Potentially Occurring at Buffumville Lake

Common Name	Scientific Name	Federal Status
Small Whorled Pogonia	*Isotria medeoloides*	Threatened
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered

Table 2.9. Federal Listed Migratory Birds Potentially Occurring at Buffumville Lake

Common Name	Scientific Name	Federal Status
Bald Eagle	*Haliaeetus leucocephalus*	Bald and Golden Eagle Protection Act
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Special Concern
Blue-winged Warbler	*Vermivora cyanoptera*	Bird of Conservation Concern (BCC)
Bobolink	*Dolichonyx oryzivorus*	BCC
Canada Warbler	*Cardellina canadensis*	BCC
Cerulean Warbler	*Setophaga cerulea*	BCC
Chimney Swift	*Chaetura pelagica*	BCC
Eastern Whip-poor-will	*Antrostomus vociferus*	BCC

Common Name	Scientific Name	Federal Status
Lesser Yellowlegs	*Tringa flavipes*	BCC
Prairie Warbler	*Setophaga discolor*	BCC
Prothonotary Warbler	*Protonotaria citrea*	BCC
Rusty Blackbird	*Euphagus carolinus*	BCC
Scarlet Tanager	*Piranga olivacea*	BCC
Semipalmated Sandpiper	*Calidris pusilla*	BCC
Wood Thrush	*Hylocichla mustelina*	BCC

State

A list of state threatened and endangered species was obtained from MassWildlife's Natural Heritage and Endangered Species Program through the use of MassWildlife's Heritage Hub. State-listed species potentially occurring within the project area are listed within Table 2.10 (MassWildlife, 2024a). Five additional species were found to occur in the Town of Charlton, although not identified within the project area, listed in Table 2.11.

Table 2.10 State Listed Conservation Species Potentially Occurring at Buffumville Lake

Scientific Common Name	Common Scientific Name	State Status
Loesel's Wide-lipped orchid	*Liparis loeselii*	Threatened
Showy Lady's-slipper	*Cypripedium reginae*	Endangered
Tule bluet	*Enallagma carunculatum*	Special Concern
Wood turtle	*Glyptemys insculpta*	Special Concern

Table 2.11 State Listed Conservation Species Occurring within Charlton, MA

Common Name	Scientific Name	State Status
Adder's tongue fern	*Ophioglossum pusillum*	Threatened
American bittersweet	*Celastrus scandens*	Threatened
Marbled salamander	*Ambystoma opacum*	Threatened
Northern gama-grass	*Tripsacum dactyloides*	Endangered
Sand violet	*Viola adunca*	Special Concern

2.7.4 Invasive Species

An invasive species is defined as a plant or animal that is non-native (or native nuisance) to an ecosystem and whose introduction causes, or is likely to cause, economic and/or environmental harm, or harm to human health (USDA 2024). These species are characteristically adaptable, aggressive, and have high reproductive capacity. Their vigor, along with a lack of natural enemies or controls, often leads to outbreak populations with some level of negative effects on native plants, animals, and ecosystem functions. They are often associated with disturbed ecosystems and human activities. Invasive species can change community structure, composition, and ecosystem processes on these lands in ways that may not be anticipated or desirable. Careful management can minimize these negative impacts. Table 2.12 lists known invasive species found at Buffumville Lake.

Table 2.12 Invasive Species Occurrence at Buffumville Lake

Common Name	Scientific Name
Autumn olive	*Elaeagnus umbellata*
Bell's honeysuckle	*Lonicera x bella [morrowii x tatarica]*
Black locust	*Robinia pseudoacacia*
Black swallow-wort	*Vincetoxicum nigrum*
Carolina fanwort; fanwort	*Cabomba caroliniana*
Common buckthorn	*Rhamnus cathartica*
Common reed	*Phragmites australis*
Curly-leafed pondweed	*Potamogeton crispus*
Eurasian water-milfoil	*Myriophyllum spicatum*
Garlic mustard	*Alliaria petiolata*
Glossy buckthorn	*Frangula alnus*
Japanese barberry	*Berberis thunbergii*

Common Name	Scientific Name
Japanese honeysuckle	*Lonicera japonica*
Japanese knotweed	*Fallopia japonica*
Morrow's honeysuckle	*Lonicera morrowii*
Multiflora rose	*Rosa multiflora*
Norway maple	*Acer platanoides*
Oriental (Asiatic) bittersweet	*Celastrus orbiculatus*
Purple loosestrife	*Lythrum salicaria*
Sycamore maple	*Acer pseudoplatanus*
Variable-leaved water-milfoil	*Myriophyllum heterophyllum*
Winged euonymus; burning bush	*Euonymus alatus*
Yellow iris	*Iris pseudacorus*

Careful management of invasive species can minimize negative impacts on the ecosystem and immediate natural community. There are five main methods USACE utilizes to manage invasive species:

- Biological: use of other living organisms to suppress invasive species
- Chemical: application of registered pesticides for control of targeted species
- Manual: hand pulling, digging, weed wrenching, cutting
- Mechanical: mechanized removal or control of invasive species including mowing, forestry equipment, chainsaws, aquatic harvesting equipment, and/or the use of traps
- Cultural – education, outreach, and other activities to improve public practices on lands and reduce spread of invasive species and/or manipulation of habitats to increase mortality

Chemical, mechanical and manual methods are used extensively by staff and volunteers at the project; they include:

- Hand pulling
- Cutting
- Mowing
- Digging
- Brush hogging/cutting
- Pulling with a mini excavator and tractor
- Chemical treatment for aquatic invasive weeds

These methods are effective if repeated frequently during a growing season to exhaust a plant's root reserves, or if used in combination with other techniques. An invasive species management plan for the project will be developed in the future as

funding becomes available. This plan would then be directly incorporated into the Master Plan during future updates or revisions.

Buffumville Lake has historically battled moderate to heavy infestations of invasive aquatic vegetation including fanwort (*Cabomba caroliniana*), variable milfoil (*Myriophyllum heterophyllum*), and Eurasian milfoil (*Myriophyllum spicatum*). Ribbonleaf pondweed (*Potamogeton ephihydrus*) and Spiny Naiad (*Najas marina*) have also occurred sporadically on the South end of the lake. Management practices of lake drawdowns have occurred at Buffumville since the winter of 2014. The purpose of a drawdown is to expose the root system of invasive vegetation to cold temperatures, causing an overall decrease in vegetation populations within the lake. No negative effects to aquatic life have been document to date. Drawdowns begin in the month of October and typically last until April. During this period, the lake pool level is decreased from 11 ft to a constant 7 ft at a rate of 2 inches per day. This management practice has been deemed successful at slowing down the growth rate of targeted species of vegetation. Each year beginning in 2017, approximately 25 acres of the lake are chemically treated. Project staff carefully rotate both chemicals used and areas of the lake that are treated.

2.7.5 Ecological Setting

Ecoregions are used to describe areas with similar ecosystems and in type, quality, and quantity of environmental resources (EPA, 2024c). Ecoregions are classified through a hierarchical scale, which ranges from general to detailed ecoregions. Level IV and III ecoregions are described below**.** Level IV ecoregions describe localized vegetation, whereas Level III describe the regional ecosystems. Information in this section is summarized from the North American Level III CEC Descriptions (Wiken et al., 2011). Buffumville Lake's vegetation community are made up of the EPA Level IV Southern New England Coastal Plains and Hills ecoregions, which spans across much of Rhode Island, Eastern Connecticut, and Southeastern Massachusetts (Griffith, et al., 2009).

Buffumville Lake is a part of the Northeastern Coastal Zone Level III ecoregion. This is the predominant Level III ecoregion in Massachusetts alongside the Northeastern Highlands ecoregion which is found in the western and north-western areas of Massachusetts. The Northeastern Coastal zone is found throughout southern New England and coastal areas of New Hampshire and southern Maine.

The Northeastern Coastal Zone is characterized by irregular plains, plains with low to high hills, and open hills. Elevations in this ecoregion range from sea level to over 984 feet. This ecoregion has a humid continental climate with warm summers and severe winters.

Figure 2.6 EPA Level III Ecoregions at Buffumville Lake (EPA, 2015)

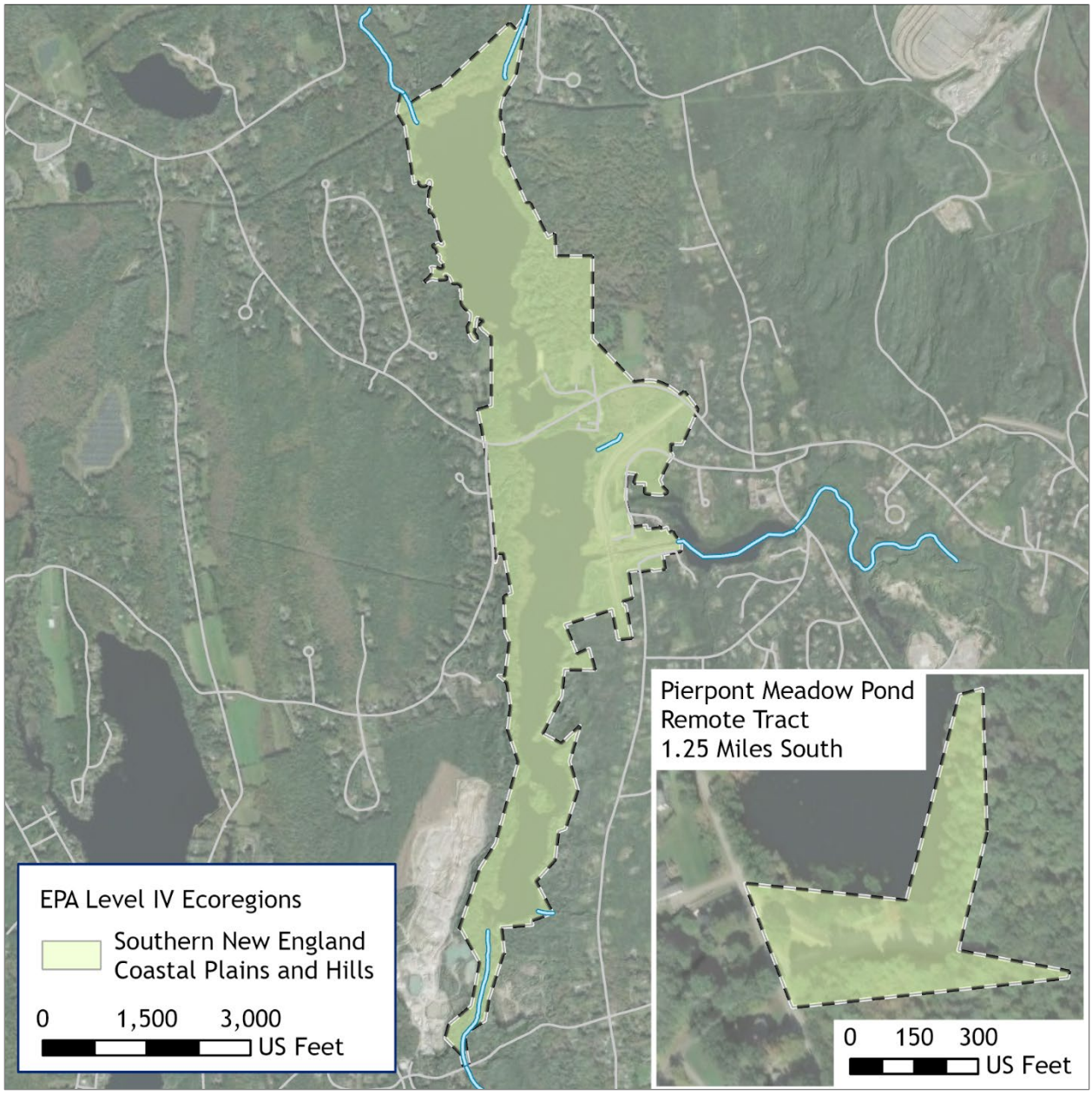


Figure 2.7 EPA Level IV Ecoregions at Buffumville Lake (EPA, 2015)

2.7.6 Wetlands

The USFWS maintains the National Wetlands Inventory (NWI), which is a wetlands database across the United States. Using the NWI's GIS data, there are approximately 146.3 acres of wetlands present within the fee boundary for Buffumville Lake (USFWS, 2024b). Table 2.13 summarizes the wetlands by NWI wetland type (USFWS, 2024b).

Table 2.13 NWI Wetlands by Type at Buffumville Lake

NWI Wetland Type	Acres
Lake	109.5
Freshwater Forested/Shrub Wetland	20.4
Riverine	14.0
Freshwater Emergent Wetland	2.0
Freshwater Pond	0.4

NOTE: Acreages differ from land and water surface calculations due to USFWS using a single snapshot of the water surface that may not reflect the actual conservation pool. Source: USFWS. 2024.

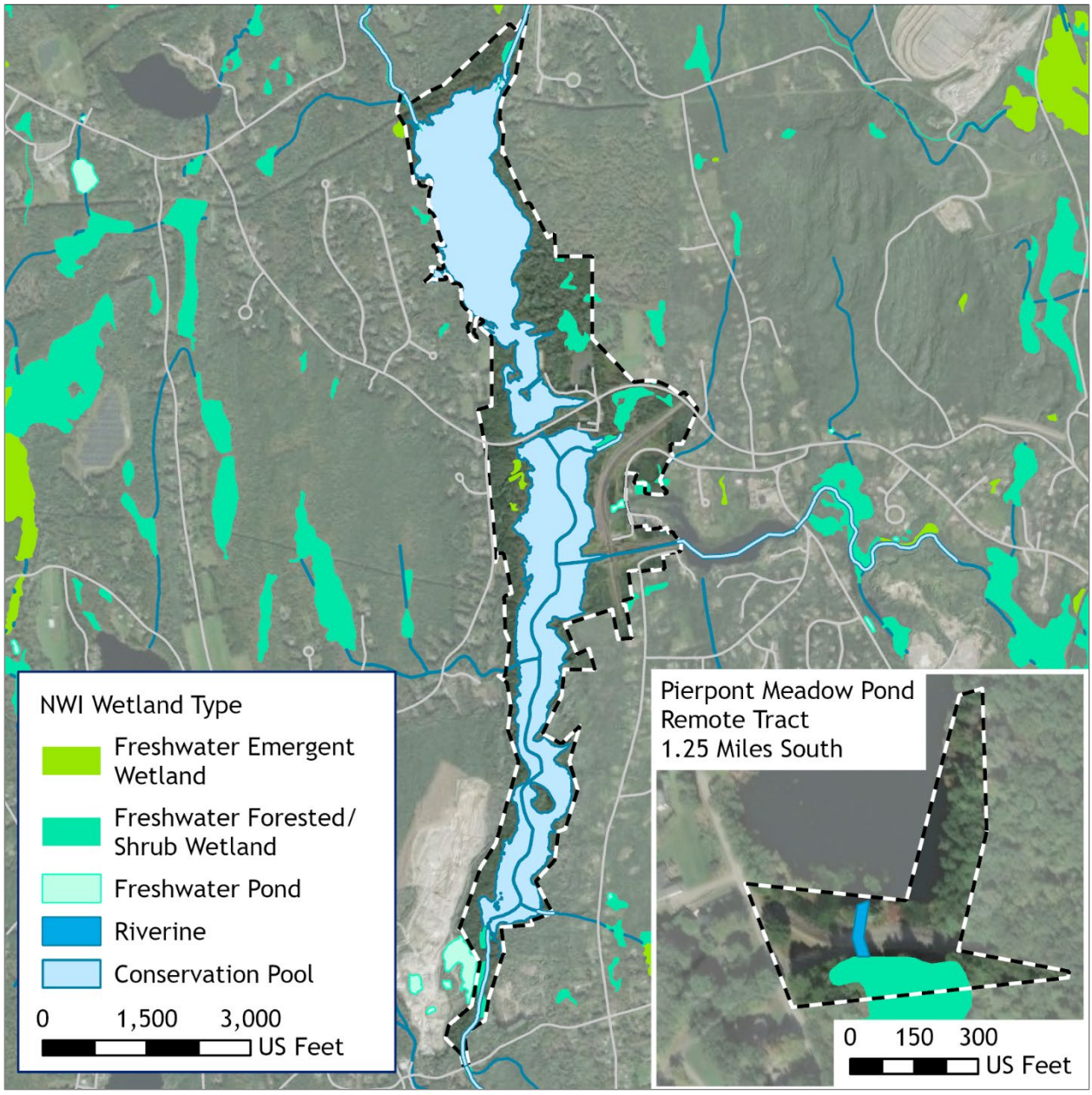


Figure 2.8 NWI Wetlands at Buffumville Lake (NWI, 2023)

2.8 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

There are no hazardous, toxic, radioactive, or solid waste advisories within the Buffumville Lake fee boundary. Figure 2.9 EPA EnviroMapper Facilities within a 5 Mile Radius of Buffumville Lake (EPA, 2023B) shows the EPA Registered Facilities within a 5-mile radius of Buffumville Lake. As part of the USACE annual environmental compliance assessment, members of USACE inspect various areas (leases, easements, and parks) at Buffumville that could potentially emit or store hazardous materials on an annual basis as part of USACE efforts to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

This assessment is completed through a USACE formal process known as the Environmental Review Guide for Operations (ERGO). Upon completion of the assessment if any compliance findings occur then formal remedial actions will take place.

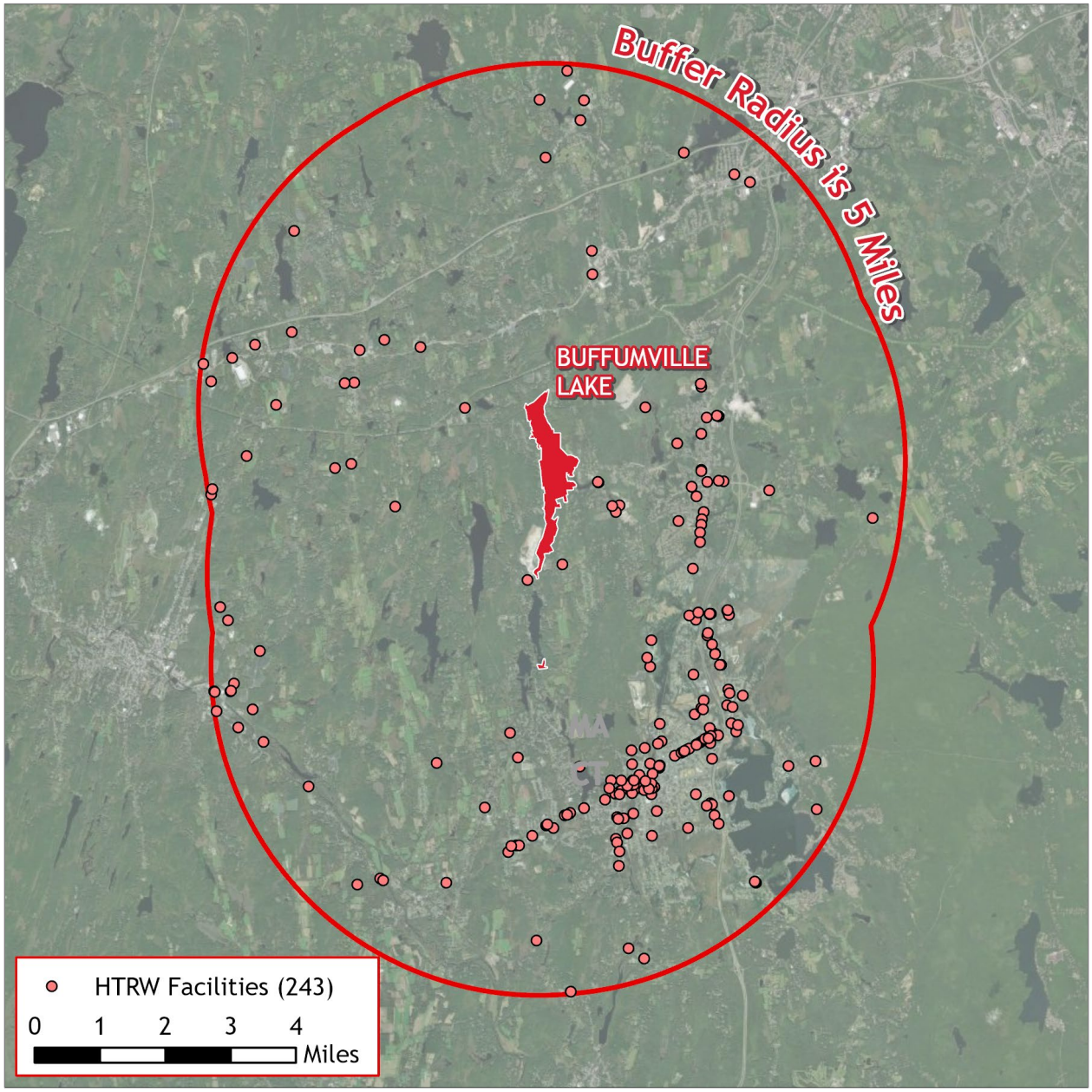


Figure 2.9 EPA EnviroMapper Facilities within a 5 Mile Radius of Buffumville Lake (EPA, 2023B)

2.9 HEALTH AND SAFETY

Buffumville Lake staff work in conjunction with state and federal agencies to provide public outreach programs on water safety and conservation of natural resources. In addition to the water safety outreach programs, the USACE has

established recreation management practices to protect the public. These include safe boating and swimming regulations and speed limit and pedestrian signs for park roads. The USACE also ensures compliance with rules and regulations governing solid waste, wastewater, and potable water management on USACE fee land, including those areas operated by lessees.

2.10 AESTHETIC RESOURCES

Buffumville Lake includes many acres of scenic shorelines, lake views, and wildlife viewing areas providing high visual and scenic qualities. Some areas are admired for their scenic attractiveness (intrinsic scenic beauty that evokes a positive response), scenic integrity (wholeness of landscape character), and landscape visibility (how many people view the landscape and for what reasons and how long). The forest resources located on the project are managed for sustained yield as well as for their wildlife, recreational, and aesthetic values. Buffumville Lake has abundant beauty and provides public access to scenic lands in a region where similar public recreational opportunities are limited.

Adjacent landowners are informed that removing trees from USACE property to obtain a view of the lake not only destroys wildlife habitat but also lowers the scenic quality of the shoreline when viewed by the public from the water surface. Furthermore, unauthorized removal of trees and other vegetation from USACE property is a direct violation of Federal Code, Title 36 – Part 327. Additionally, reasonable measures must be taken to ensure that damage to the natural landscape from invasive species and catastrophic wildfire are minimized. Vegetative management, debris removal, and other shoreline issues are managed by the USACE Buffumville Lake Office.

2.11 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural resources preservation and management is an equal and integral part of all resource management at USACE-administered operational projects. The term “cultural resources” is a broad term that includes, but is not limited to, historic and prehistoric archaeological sites, deposits, and features; burials and cemeteries; historic and prehistoric districts comprised of groups of structures or sites; cultural landscapes; built environment resources such as buildings, structures (such as bridges), and objects; traditional cultural properties; and sacred sites. These property types may be listed on the National Register of Historic Places (NRHP) if they meet the criteria specified by the NRHP (36 CFR 60), reflecting significance in architecture, history, archaeology, engineering, and culture. Cultural resources that are identified as eligible for listing in the NRHP are referred to as “historic properties,” regardless of category. A Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Ceremonies, hunting practices, plant-gathering, and social practices which are part of a culture’s traditional lifeways, are also cultural resources.

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism, establish the importance of cultural resources to our Nation's heritage. With the passage of these laws, the historical intent of U.S. Congress has been to ensure that the Federal government protects cultural resources. Additionally, as stewards of cultural resources and in compliance with federal laws, it is incumbent upon the USACE to consult with the State Historic Preservation Officer (SHPO), Tribal Nations, the Advisory Council on Historic Preservation (ACHP), and other interested stakeholders in the preservation and management of cultural resources.

Guidance is derived from a number of cultural resources laws and regulations, including but not limited to Sections 106 and 110 (54 U.S.C. 306101-306114) of the National Historic Preservation Act (NHPA) of 1966 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended), as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

2.11.1 Summary of Resources and Previous Investigations

The cultural history of New England spans approximately 12,500 years of human occupation. This history is generally divided into pre-contact (prior to Native American contact with Europeans) and post-contact (after Native American contact with Europeans) frameworks that are further subdivided into more specific time periods based technological variation, settlement patterns, land use, and subsistence and consist of (Doucette et al. 2010; Lothrop et al. 2018):

- Pre-Contact Periods
    - Paleo-Indian Period (10,500 to 8,000 BC)
    - Early Archaic Period (8,000 to 5,500 BC)
    - Middle Archaic Period (5,500 to 3,000 BC)
    - Late Archaic Period (3,000 to 1,000 BC)
    - Early Woodland Period (1,000 BC to 300 AD)
    - Middle Woodland Period (300 to 950 AD)
    - Late Woodland Period (950 to 1500 AD)

- Post-Contact Periods
    - Contact and Early Historic (1500 to 1675 AD)
    - Colonial (1675 to 1775 AD)
    - Federal (1775 to 1830 AD)
    - Early Industrial (1830 to 1870 AD)
    - Late Industrial (1870 to 1915 AD)
    - Modern (1915 AD to Present)

Cultural resources within Buffumville Lake include a record of occupations by indigenous populations from as early as the Middle Archaic (ca. 5,500 BC) through the Contact period (1500 to 1675 AD) and into the present day. Pre-contact archaeological sites in the project area range from small scatters of chipped stone tools to campsites or small villages representing multiple episodes of occupation. Sites are typically found on low terraces overlooking ponds, wetlands, and streams. Pre-contact artifacts include stone projectile points, chipped stone tools, shell, bone, ceramics and burned rock. Pre-contact sites in the project area, south of the Oxford Road causeway, include the South Fork Site (Middle to Late Archaic campsite), A.F. Putnam Site, and the Blue Heron Site (Late Archaic). North of the causeway, there are five pre-contact campsites including the Locus 1 Site (Late Archaic to Early Woodland), the Locus 2 Site, the Locus 3 Site, the Locus 4 Site (Late Archaic), the Locus 5 Site, and the mostly submerged Site 19-WR-120 (Late Archaic to Early Woodland) (Atwood 2001; Doucette et al. 2010). The Blue Heron Site has been determined eligible for inclusion in the NRHP and the remaining sites are recommended for additional investigations to determine their eligibility.

Post-contact settlement in the project area begins in the late 17th century in the nearby communities of Charlton and Oxford. While manufacturing and light industry developed around these two towns, most of the project area was focused on livestock and crop agriculture (Doucette et al. 2010). Only three post-contact sites have been identified in the project area. These include a historic mill pond and breakwater/dam (Location 7), the L. Gould Farmstead (destroyed; Late 19th to Early 20th century), and a preserved section of the Old Oxford Road (may date to the Contact period) (Atwood 2001; Doucette et al. 2010). All three of these sites have been determined not eligible for inclusion in the NRHP. Doucette et al. (2010) also note the presence of two additional farmsteads within the project area on an 1870 map of Charlton, the J.A. Rich and G.E. Winston farmsteads, but these sites were not located during previous investigations.

There have been three previous cultural resources investigations within Buffumville Lake project area. The first of these investigations was an archaeological reconnaissance conducted by Gorman et al. (1985) of 33 areas of moderate to high probability for archeological resources. A second investigation was conducted by Public Archaeology Laboratory, Inc. (PAL) in 1993 (Russo 1994). This investigation expanded on the previous reconnaissance with an intensive survey of previously identified moderate to high probability areas. The investigation included archival research, pedestrian survey, and subsurface testing. Four pre-contact (the Blue Heron Site, 19-

WR-571, 572, 573) and three post-contact sites (historic mill pond, Gould Farmstead, and Old Oxford Road) were identified during this survey. The final investigation was conducted by PAL in 2010 (Doucette et al. 2010) and was focused on the survey of 100 acres of Buffumville Lake that had been identified as having a high potential for archaeological sites by Atwood (2001). These investigations included the excavation of 493 test pits, recovering 224 pre-contact artifacts. Doucette et al. (2010) identified seven pre-contact (Loci 1-5, A.F. Putnam Site, and the South Fork Site) sites and four pre-contact find spots as a result of their investigations. It is important to note that archaeological investigations have only been conducted within specific areas and not over the entirety of the project area. Locations within the project area that are inundated, marshlands, or steep slopes have low potential for the recovery of archaeological deposits.

2.11.2 Long-Term Cultural Resource Objectives

Cultural and environmental formation processes have affected cultural resources within the Buffumville Lake project. These formation processes include the displacement of pre-contact archaeological sites by European settlement of the region that included deforestation, agriculture, and the construction of dams, houses, roads. Subsurface looting has not been documented in the project area, but artifacts have been removed by local collectors. Impacts from surface collection are often exacerbated by increased access to site locations. The construction of the lake has had the largest impact to cultural resources, especially to historic age buildings and structures. The primary ongoing threat to cultural resources within the lake area is erosion resulting from surface runoff, inundation, and recreation.

A Historic Properties Management Plan (HPMP) was created by the USACE for Buffumville Lake (Atwood 2001), but it predates the 2010 investigations by PAL. The HPMP should be updated to incorporate the latest cultural resources information and expanded into a comprehensive Integrated Cultural Resources Management Plan (ICRMP) to cover both archaeological and above-ground resources. Additionally, the USACE has acquired an abundance of data from previous investigations for the Buffumville Lake project but lacks a robust synthesis of these data. It is recommended that the USACE develop a comprehensive ICRMP in consultation with the Massachusetts SHPO, Native American Tribes, and other stakeholders to synthesize the existing data, address the effects of cultural and environmental processes on cultural resources and recommendations for managing these impacts, and outline procedures for management of these resources during construction and operations activities. Until an ICRMP is developed, future activities that have a potential to affect cultural resources should look to the 2010 investigations by PAL and the existing HPMP for guidance. Finally, any future activities that have a potential to affect cultural resources must comply with Section 106 and 110 of the NHPA, NAGPRA, and ARPA.

2.12 CURRENT SOCIAL AND ECONOMIC CONDITIONS

2.12.1 Zone of Interest

Buffumville Lake is in Charlton, Massachusetts in Worcester County. It is 4 miles northeast of Webster, Massachusetts. The zone of interest (approximately 25-mile radius) for the socio-economic analysis covers portions of three states including Connecticut, Massachusetts, and Rhode Island.

Table 2.14 Zone of Interest Counties

Zone of interest Counties
Tolland County, CT
Windham County, CT
Franklin County, MA
Hampden County, MA
Hampshire County, MA
Middlesex County, MA
Norfolk County, MA
Worcester County, MA
Providence County, RI

2.12.2 Population

The total population in the zone of interest in 2021 was 4,823,127 (Table 2.15). Approximately 34% of the zone of interest's population resides in Middlesex, MA and 18% reside in Worcester County, MA, 15% reside in Norfolk County, MA, and 14% reside in Hampshire County, MA. The remaining counties in the zone of interest each account for less than 9.7% of the zone's population.

Table 2.15 2010, 2020, 2021, 2040 Population Estimates, and Projections

Geographical Area	2010	2020	2021 Population Estimate	2040 Population Projection Estimates
Connecticut	3,577,073	3,570,549	3,605,330	3,654,015
Massachusetts	6,557,254	6,873,003	6,991,852	7,102,574
Rhode Island	1,052,886	1,057,798	1,091,949	1,070,104
Tolland County, CT	152,781	150,947	150,120	154,561
Windham County, CT	118,519	116,657	116,503	134,875
Franklin County, MA	71,369	70,529	71,085	63,652

Geographical Area	2010	2020	2021 Population Estimate	2040 Population Projection Estimates
Hampden County, MA	463,678	466,647	466,265	441,146
Hampshire County, MA	158,094	161,361	161,810	154,612
Middlesex County, MA	1,506,008	1,605,899	1,623,411	1,662,747
Norfolk County, MA	672,376	703,740	720,403	754,805
Worcester County, MA	799,553	826,655	856,858	871,384
Providence County, RI	627,070	636,161	656,672	635,851
Zone of Interest Total	4,569,448	4,738,596	4,823,127	4,873,633

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021), U.S. Census Bureau, 2020 American Community Survey 5-Year (2016-2020), U.S. Census Bureau, 2010 American Community Survey 5-Year (2006-2010), Connecticut Open Data, Connecticut Town Populations 2015-2040, UMass Donahue Institute, UMDI-V2024 Massachusetts Population Projections, Rhode Island Statewide Planning Program, Rhode Island Population Projections 2010-2040.

From 2021 to 2040, the population in the zone of interest is expected to increase by 1.05% from 4,823,127 to 4,873,633, an average annual growth rate of 0.06%. The forecasted populations of Connecticut and Massachusetts are expected to increase by 1.35%, and 1.58% respectively. The population of Rhode Island is expected to decrease by 2%. Counties within the zone of interest that are expected to grow include: Tolland County, CT (2.96%), Windham, CT (15.77%), Middlesex County, MA (2.42%), Norfolk County, MA (4.78%), and Worcester County, MA (1.70%). Counties forecasted to decrease in population include: Franklin County, MA (-10.46%), Hampden County, MA (-5.39%), Hampshire County, MA (-4.45%), and Providence County, RI (-3.17%). Population for the years 2010 and 2020 are included for historical reference.

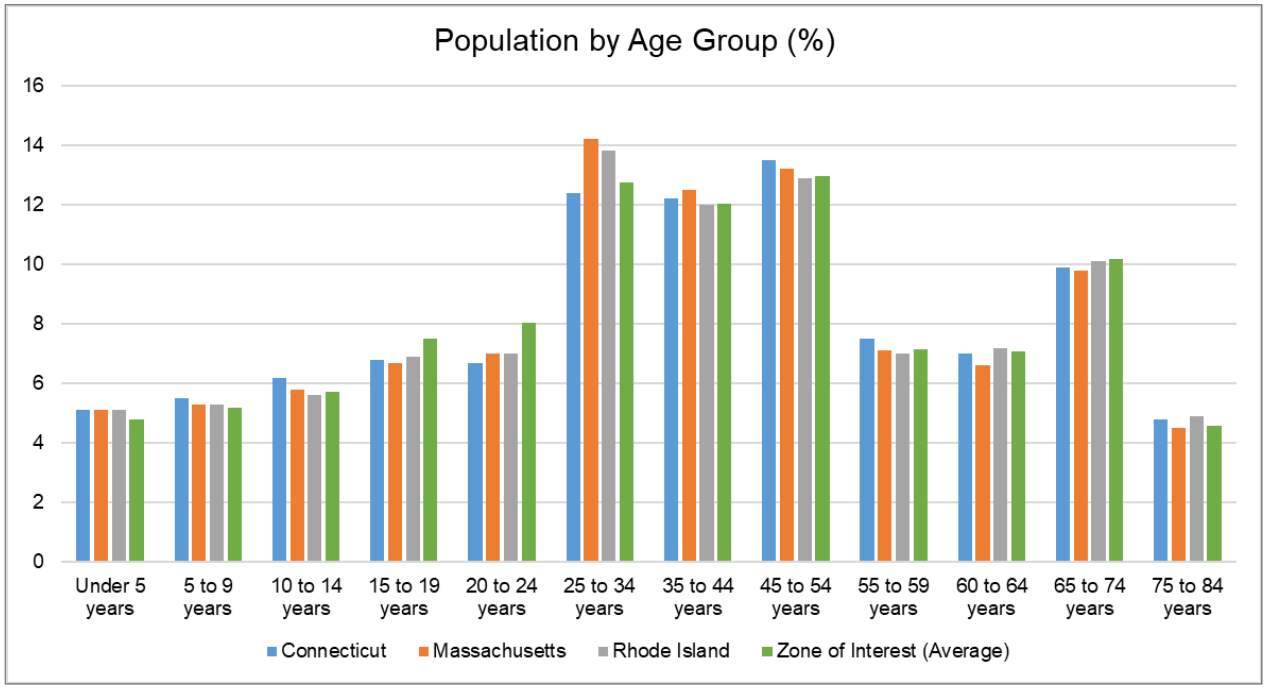
The distribution of the population by gender (Table 2.16) indicates approximately 49% male and 51% female population. Figure 2.10 shows the population by age group for Connecticut, Massachusetts, Rhode Island, and the entire zone of interest. The zone of interest is consistent by age group when compared to the three states.

Table 2.16 2021 Population Estimate by Gender

Geographical Area	Male	Female
Connecticut	**1,768,860**	**1,836,470**
Massachusetts	**3,413,174**	**3,578,678**
Rhode Island	**534,283**	**557,666**
Tolland County, CT	75,675	74,445
Windham County, CT	58,073	58,430
Franklin County, MA	34,792	36,293
Hampden County, MA	226,473	239,792
Hampshire County, MA	75,480	86,330

Geographical Area	Male	Female
Middlesex County, MA	799,938	823,473
Norfolk County, MA	349,092	371,311
Worcester County, MA	424,801	432,057
Providence County, RI	321,795	334,877
Zone of Interest Total	**2,366,119**	**2,457,008**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)



Source: U.S. Census Bureau, 2021 American Community Survey 5-Year Estimates (2017-2021)

Figure 2.10 2021 Percent of Population by Age Group

Population by race and Hispanic Origin is displayed in Table 2.17. The zone of interest is approximately 70% White, 8% Asian, 12% Hispanic or Latino, 5.5% Black, and 3.3% two or more races The other race categories each account for less than 1%. By comparison, the population in the state of Connecticut is 65% White, 17% Hispanic or Latino, 10% Black, .12% American Indian or Alaskan Native, 4.6% Asian, 0.02% Native Hawaiian/Other Pacific, 0.52% Some Other Race, and 2.9% Two or More Races. Massachusetts is 70% White, 12% Hispanic or Latino, 6.7% Black, 0.11% American Indian or Alaskan Native, 6.8% Asian, 0.03% Native Hawaiian/Other Pacific, 0.94% Some Other Race, and 3.4% Two or More Races. Rhode Island is 71% White, 16% Hispanic or Latino, 5.4% Black, 0.27% American Indian or Alaskan Native, 6.8% Asian, 0.05% Native Hawaiian/Other Pacific, 0.74% Some Other Race, and 3.18% Two or More Races.

Table 2.17 2021 Population Estimate by Race/Hispanic Origin

Area	White	Hispanic or Latino	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other race	Two or more races
Connecticut	2,340,848	610,065	359,156	4,225	165,872	761	18,819	105,584
Massachusetts	4,871,674	864,202	467,943	7,977	477,667	1,910	65,840	234,639
Rhode Island	770,700	178,673	59,203	2,968	37,153	539	8,033	34,680
Tolland County, CT	124,144	9,043	4,330	133	7,254	3	998	4,215
Windham County, CT	94,501	14,545	2,234	127	1,584	12	218	3,282
Franklin County, MA	63,485	3,140	786	56	1,163	19	266	2,170
Hampden County, MA	283,947	123,235	35,811	465	11,518	13	1,112	10,164
Hampshire County, MA	133,763	9,805	3,865	134	8,353	138	434	5,318
Middlesex County, MA	1,126,694	134,462	79,354	1,407	205,799	626	15,674	59,395
Norfolk County, MA	521,803	35,978	49,122	639	83,955	215	4,582	24,109
Worcester County, MA	637,645	104,707	39,976	953	43,256	247	5,772	24,302
Providence County, RI	388,467	157,516	51,135	1,555	27,122	512	6,697	23,668
Zone of Interest	3,374,449	592,431	266,613	5,469	390,004	1,785	35,753	156,623

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021)

2.12.3 Education and Employment

Table 2.18 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 43.7% of the population have less than a 9th grade education; another 4.7% have between a 9th and 12th grade education; 23.4% have at least a high school diploma or equivalent; 14.9% have some college education; 7.6% have an associate degree; 24.3% have a bachelor's degree; and 21.3% have a graduate or professional degree.

In Connecticut, 4.03% of the population have less than a 9th grade education; another 4.91% have between a 9th and 12th grade education; 26% have at least a high school diploma or equivalent; 17% have some college education; 8% have an associate degree; 22% have a bachelor's degree; and 18% have a graduate or professional degree.

In Massachusetts, 4.23% of the population have less than a 9th grade education; another 4.6% have between a 9th and 12th grade education; 23% have at least a high school diploma or equivalent; 15% have some college education; 7.68% have an associate degree; 25% have a bachelor's degree; and 20% have a graduate or professional degree.

In Rhode Island, 4.71% of the population have less than a 9th grade education; another 6.19% have between a 9th and 12th grade education; 28% have at least a high school diploma or equivalent; 18% have some college education; 8% have an associate degree; 21% have a bachelor's degree; and 14% have a graduate or professional degree.

Table 2.18 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older

Area	Population 25 years and over	Less than 9th grade	9th to 12th grade, no diploma	High school graduate (includes equivalency)	Some college, no degree	Associate's degree	Bachelor's degree	Graduate or professional degree
Connecticut	2,515,137	101,461	123,560	656,949	418,214	194,987	561,567	458,399
Massachusetts	4,902,868	207,481	225,734	1,137,085	739,611	376,608	1,215,939	1,000,410
Rhode Island	766,615	36,076	47,432	213,716	135,729	62,893	160,523	110,246
Tolland County, CT	95,783	1,830	3,129	25,023	15,870	8,917	23,004	18,010
Windham County, CT	81,955	2,853	5,809	28,630	16,569	8,087	11,354	8,653
Franklin County, MA	53,932	917	2,533	15,077	8,809	5,644	11,297	9,655
Hampden County, MA	318,636	17,324	26,859	96,780	57,079	30,688	54,293	35,613
Hampshire County, MA	100,155	1,468	3,276	21,612	14,635	8,860	24,493	25,811
Middlesex County, MA	1,142,528	37,022	36,427	206,435	135,758	66,902	324,877	335,107
Norfolk County, MA	506,853	14,210	15,246	91,670	67,976	36,252	147,352	134,147
Worcester County, MA	594,147	18,838	31,284	159,573	104,541	53,800	133,744	92,367
Providence County, RI	451,912	29,533	32,988	138,042	78,703	34,438	83,859	54,349
Zone of Interest	3,345,901	123,995	157,551	782,842	499,940	253,588	814,273	713,712

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates (2021 Estimate)

Employment by sector is presented in Figure 2.11 and Table 2.19. Figure 2.11shows that the largest percentage of the zone of interest is employed in the

educational services, and health care and social assistance sector at 14.35%. 7.24% of the population works in professional, scientific, and management, and administrative and waste management services, 5.05% work in manufacturing, 4.96% work in retail trade, 3.73% work in arts, entertainment, and recreation, and accommodation and food services, 3.6% work in finance and insurance, and real estate and rental and leasing. The remainder of the employment sectors each comprise less than 3% of the zone of interest's labor force.

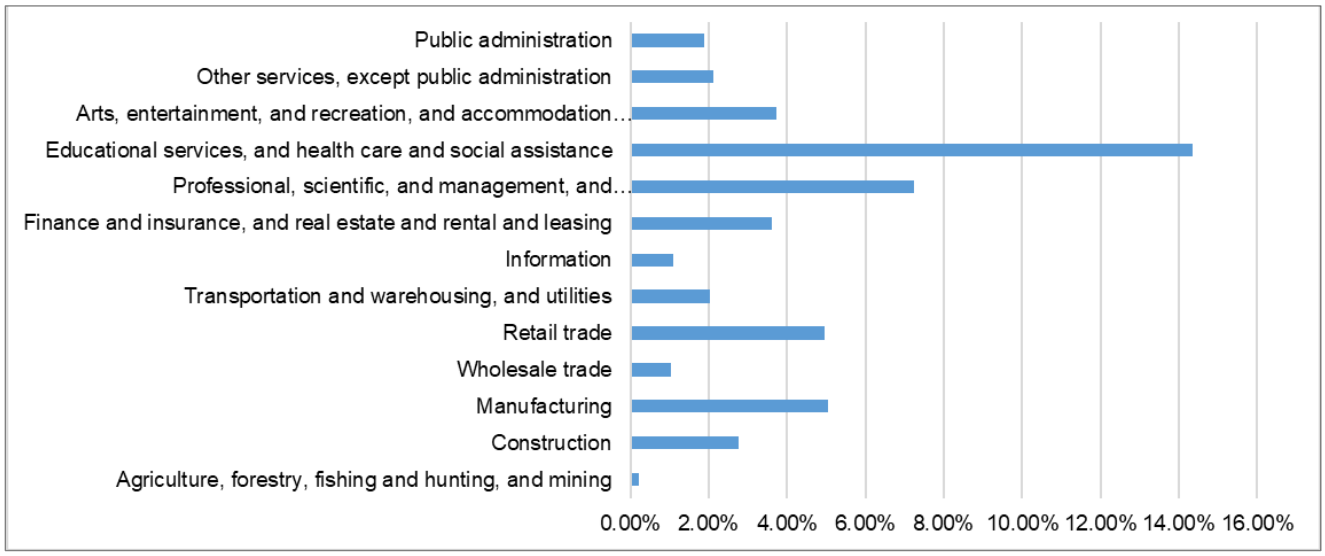


Figure 2.11 Zone of Interest Employment by Sector (2021)

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year Estimates (2017— 2021)

Table 2.19 Annual Average Employment by Sector (2021)

Employment Sector	Connecticut	Massachusetts	Rhode Island	Tolland County, CT	Windham County, CT	Franklin County, MA
Civilian employed population 16 years and over	1,822,995	3,667,019	552,707	77,173	57,987	36,176
Agriculture, forestry, fishing and hunting, and mining	7,314	15,477	2,456	516	1,082	852
Construction	113,665	215,903	34,191	5,025	3,770	2,589
Manufacturing	192,688	327,152	58,412	8,684	8,209	4,119
Wholesale trade	41,165	75,996	12,517	1,652	1,199	610
Retail trade	194,081	367,234	63,561	7,566	7,720	3,924
Transportation and warehousing, and utilities	80,481	150,820	25,610	3,246	3,311	1,326
Information	36,259	79,530	8,383	1,230	766	831
Finance and insurance, and real estate and rental and leasing	164,657	268,309	37,725	6,990	2,807	1,327
Professional, scientific, and management, and administrative and waste management services	212,866	544,131	60,497	7,155	3,920	2,907
Educational services, and health care and social assistance	482,274	1,031,113	148,764	23,312	15,619	12,087
Arts, entertainment, and recreation, and accommodation and food services	148,835	289,688	53,323	5,870	5,113	2,641
Other services, except public administration	82,217	158,526	24,236	2,896	2,268	1,524
Public administration	66,493	143,140	23,032	3,031	2,203	1,439

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates (2021 Estimate)

Employment Sector	Hampden County, MA	Hampshire County, MA	Middlesex County, MA	Norfolk County, MA	Worcester County, MA	Providence County, RI
Civilian employed population 16 years and over	212,917	83,274	895,806	386,932	437,940	327,335
Agriculture, forestry, fishing and hunting, and mining	1,202	623	2,303	1,052	1,831	835
Construction	9,655	3,889	44,641	21,204	27,780	19,988
Manufacturing	23,963	6,135	91,221	24,621	51,232	35,806
Wholesale trade	5,976	1,333	14,965	8,090	9,795	7,972
Retail trade	22,861	8,352	74,309	34,767	49,787	40,353
Transportation and warehousing, and utilities	13,436	2,735	27,423	13,275	20,208	16,526
Information	2,539	1,371	26,515	9,421	7,736	4,768
Finance and insurance, and real estate and rental and leasing	14,963	3,881	63,109	39,710	27,512	20,970
Professional, scientific, and management, and administrative and waste management services	16,651	7,511	176,497	62,978	51,791	34,659
Educational services, and health care and social assistance	65,130	33,175	249,610	111,354	124,164	87,315
Arts, entertainment, and recreation, and accommodation and food services	16,343	7,677	59,170	29,276	31,271	30,308
Other services, except public administration	8,911	3,568	36,737	16,347	18,577	15,104
Public administration	11,287	3,024	29,306	14,837	16,256	12,731

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates (2021 Estimate)

A summary of the civilian labor force in the zone of interest is displayed in Table 2.20. In 2021, the zone of interest had an unemployment rate of 5.33%, lower than the unemployment rates of Connecticut (6.06%), Massachusetts (5.42%), and Rhode Island (6.02%).

Table 2.20 Labor Force, Employment and Unemployment Rates, 2021 Annual Averages

Geographic Area	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate
Connecticut	1,940,626	1,822,995	117,631	6.06%
Massachusetts	3,876,978	3,667,019	209,959	5.42%
Rhode Island	588,135	552,707	35,428	6.02%
Tolland County, CT	80,946	77,173	3,773	4.66%
Windham County, CT	62,261	57,987	4,274	6.86%
Franklin County, MA	38,298	36,176	2,122	5.54%
Hampden County, MA	227,941	212,917	15,024	6.59%
Hampshire County, MA	88,119	83,274	4,845	5.50%
Middlesex County, MA	938,325	895,806	42,519	4.53%
Norfolk County, MA	407,520	386,932	20,588	5.05%
Worcester County, MA	463,375	437,940	25,435	5.49%
Providence County, RI	350,440	327,335	23,105	6.59%
Zone of Interest	**2,657,225**	**2,515,540**	**141,685**	**5.33%**

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year (2017-2021) (2021 averages)

2.12.4 Households, Income and Poverty

Table 2.21 displays the number of households and average household sizes in the state and zone of interest. There were approximately 1,854,660 households in the zone of interest with an average household size of 2.6.

Table 2.21 2021 Households and Household Size

Geographic Area	Total Households	Average Household Size
Connecticut	1,397,324	2.63
Massachusetts	2,714,448	2.66
Rhode Island	426,769	2.61
Tolland County, CT	56,989	2.56
Windham County, CT	45,425	2.54
Franklin County, MA	30,792	2.4
Hampden County, MA	183,309	2.58
Hampshire County, MA	60,903	2.44

Geographic Area	Total Households	Average Household Size
Middlesex County, MA	624,335	2.71
Norfolk County, MA	276,744	2.78
Worcester County, MA	326,571	2.71
Providence County, RI	249,592	2.71
Zone of Interest	**1,854,660**	**2.60**

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates (2021 Estimate)

The median household income in the zone of interest ranged from $61,310 in Hampden County, MA to $123,373 in Norfolk County, MA in 2021, as displayed in Table 2.22. Per capita income in the zone of interest was $42,556 in 2021, higher than the per capita income of the state of Rhode Island ($39,603) and lower than the states of Connecticut ($47,869) and Massachusetts ($48,617).

Table 2.22 2021 Median and Per Capita Income

Geographic Area	Median Household Income (All)	Per Capita Income
Connecticut	$83,572	$47,869
Massachusetts	$89,026	$48,617
Rhode Island	$74,489	$39,603
Tolland County, CT	$88,525	$42,942
Windham County, CT	$71,418	$35,032
Franklin County, MA	$64,949	$37,740
Hampden County, MA	$61,310	$33,375
Hampshire County, MA	$76,959	$38,695
Middlesex County, MA	$111,790	$58,399
Norfolk County, MA	$112,089	$60,406
Worcester County, MA	$81,660	$41,528
Providence County, RI	$65,797	$34,889
Zone of Interest	**$81,611**	**$42,556**

Source: U.S. Census Bureau, 2017-2021 American Community Survey 5-Year Estimates (2021 Estimate)

Table 2.23 displays the percentage of persons and families whose incomes fell below the poverty level in the past twelve months as of 2021. Within the zone of interest, Hampden County, MA had the greatest share of people with incomes below the poverty level at 15.9%, followed by Providence County, RI with 13.6%. In terms of families below the poverty level, Norfolk County, MA has the lowest percentage with 4.0% and Hampden County, MA has the highest with 11.3%. By comparison, the Commonwealth of Massachusetts has the lowest families below the poverty line with 6.6%, while Rhode Island has the highest with 7.4%.

Table 2.23 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2021)

Geographic Area	All Families	All People
Connecticut	6.80%	10.00%
Massachusetts	6.60%	9.90%
Rhode Island	7.40%	11.30%
Tolland County, CT	5.00%	9.70%
Windham County, CT	7.40%	11.30%
Franklin County, MA	6.30%	10.60%
Hampden County, MA	11.30%	15.90%
Hampshire County, MA	4.90%	10.50%
Middlesex County, MA	4.70%	7.40%
Norfolk County, MA	4.00%	6.30%
Worcester County, MA	6.50%	9.80%
Providence County, RI	9.60%	13.60%
Connecticut	6.80%	10.00%
Massachusetts	6.60%	9.90%
Rhode Island	7.40%	11.30%
Tolland County, CT	5.00%	9.70%
Zone of Interest	6.63%	10.57%

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year Estimates (2017-2021)

2.13 RECREATION FACILITIES, ACTIVITIES, AND NEEDS

2.13.1 Visitation Profile

Buffumville Lake visitors are a diverse group that include residents of the immediate area who picnic, swim, boat, observe wildlife, fish, hunt, hike, bike, play disc golf, and sightsee. Buffumville Lake is a popular destination lake for anglers in the surrounding area. The peak visitation months are mid-May through mid-September, with July typically experiencing the highest visitation.

Zone of Interest

The visitation market area, or zone of interest, is the area from which the majority of visitors to the lake originate. The study team determined the majority of visitors travel from a 25-mile radius based on visitation records for Buffumville Lake.

2.13.2 Recreation Analysis

The 2024 Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) was prepared by the Executive Office of Energy and Environmental Affairs' (EEA) Division of Conservation Services (DCS). The SCORP serves to address

emerging issues in Massachusetts outdoor recreation and set priority areas to serve as the foundation for action over the next five years. According to the 2024 Massachusetts SCORP, the following goals were identified:

(1) Improve access to beaches and other water-based recreation facilities

(2) Support trail projects

(3) Create and renovate neighborhood parks, especially to benefit the underserved

(4) Create opportunities, especially for the underserved, to enjoy protected natural areas

To implement these priorities the SCORP identified 3 detailed objectives, for a total of 12 objectives, for each goal.

In order to gain an understanding of statewide participation trends several surveys were conducted to support the development of the SCORP. Some highlights of the participation trends include:

- 44% of respondents indicated that outdoor recreation is “extremely important” and 37% indicated it is “somewhat important”
- Walking was identified as the most popular activity with 9.6% of respondents and reported as most frequently with 68% of respondents who walked more than once a week. The following most popular activities included visiting the beach (6.1%), hiking (5.7%), visiting farmers markets (4.7%), visiting outdoor historic sites or museums (3.9%), swimming in outdoor pools (3.6%), swimming in natural water bodies, (3.6%), camping (3.3%), bird watching or wildlife viewing (3.2%) and running or jogging (3.0%) and basketball (3.0%).
- 46% of respondents live within 5 miles of outdoor recreation area of facility they use most often with another 35% of respondents living between 5 and 10 miles away. Racial-ethnic disparities showed that Black or African American and Hispanic or Latino respondents were more likely to live 5 to 10 miles away from the outdoor recreation area of facility they use more often.
- Beaches were at the top of the list of outdoor recreational areas that respondents would like to see more in Massachusetts with 10.6% of respondents. Picnic facilities were at the top of the list for Asian/ Pacific Islander respondents.
- Factors that most limited the use of outdoor recreational areas and facilities is lack of time (15%), lack of restrooms/ locker rooms (12.3%), and lack of parking (11.1%).

Table 2.24, depicts the activities that outdoor recreation enthusiasts in Massachusetts were most interested in participating in and results are presented with different activities identified by race. Walking consistently ranked on the top of the list for all races, with running or jogging and hiking being other activities that are popular among a diversity of respondents in Massachusetts. Buffumville Lake provides

opportunities for the public to participate in their favorite activities by making use of the numerous hiking trails, access to fishing along the shoreline or by boat, and a swimming beach.

Table 2.24 Top Five Activities by Race

White	Black/African American	Hispanic/Latino	Asian/Pacific Islander
Walking	Walking	Walking	Walking
Running or jogging	Running or jogging	Hiking	Visiting the beach
Hiking	Basketball	Basketball	Hiking
Visiting the beach	Dance	Visiting the beach	Visiting the farmers markets
Dance	Visiting the beach	Visiting the farmers markets	Swimming in natural water bodies

Source: 2023 Massachusetts Outdoor Recreation Plan

The USACE recognizes the importance of recreation to the local community and the Commonwealth of Massachusetts, and the importance that USACE managed land can play in providing access. Information from the SCORP including the survey results and the statewide goals and objectives were considered when developing the goals and objectives for this Master Plan. See Chapter 3 for the resource goals and objectives developed for the Buffumville Lake Master Plan.

2.13.3 Recreation Carrying Capacity

The plan formulated herein proposes to provide a variety of activities and to encourage optimal, safe use of present public use areas without causing irreparable harm to natural resources. The carrying capacity of the land is determined primarily by the distinct characteristics of the site including but not limited to soil type, steepness of topography, and available moisture. Recreational carrying capacity of the lake's water surface is based primarily on available space and numbers of users. These characteristics, both natural and manmade, are development constraints that often determine the type and number of facilities that should be provided.

No formal recreation carrying capacity studies have been conducted at Buffumville Lake. Presently, the USACE manages recreation areas using historic visitation data combined with best professional judgment to address recreation areas, including the water surface, considered to be overcrowded, overused, underused, or well balanced. Compared to other USACE Projects of similar size, Buffumville Lake experiences low visitation. This trend is expected to continue based on regional population projections. The USACE will apply appropriate best management practices including site management, regulating visitor behavior, and modifying visitor behavior as needed to adapt to changes in usage.

2.14 REAL ESTATE

A total of 488.02 acres of fee simple land and 272.90 acres of easements were acquired for the Buffumville Lake project. Of those original acres, 9.49 acres of fee simple and 0.05 easement acre were disposed (sold). These are the official acres and may differ from those in other parts of this plan, which are for planning purposes only, due to improved measurement technology, erosion, and sedimentation. The easement properties are southeast of the dam in the village of North Windham, the southwest corner of Chaplin, and the southeast corner of Mansfield.

2.14.1 Outgrants

The term “outgrant” is a broad term used by the USACE to describe a variety of real estate instruments wherein an interest in real property has been conveyed by the USACE to another party. Outgrants at Buffumville Lake include two licenses and one easement.

The demand for real estate outgrants at Buffumville Lake ranks low among USACE lake projects in terms of the total number and complexity of real estate outgrants. Management actions related to outgrants include routine inspections to ensure compliance with the terms of the outgrant, public safety requirements, and environmental compliance. The management of outgrants is a major responsibility shared by the Operations and Real Estate Divisions of New England District.

2.14.2 Guidelines for Property Adjacent to Public Land

It is the policy of the USACE to manage the natural, cultural, and developed resources of Buffumville Lake to provide the public with safe and healthful recreational opportunities, while protecting and enhancing those resources. While private exclusive use of public land is not permitted, property owners adjacent to public lands do have all the same rights and privileges as any other citizen on their own property. Therefore, the information contained in these guidelines is designed to acquaint the adjoining landowner and other interested persons with the types of property involved in the management of government land at Buffumville Lake. See Section 6.4 for more information about private activities on property owned by the USACE.

2.14.3 Trespass and Encroachment

Government property is monitored by USACE personnel to identify and correct instances of unauthorized use, including trespasses and encroachments. The term “trespass” includes unauthorized transient use and occupancy, such as mowing, tree cutting and removal, livestock grazing, cultivation and harvesting crops, and any other alteration to Government property done without the USACE approval. Unauthorized trespasses may result in a Title 36 citation requiring violators to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See 36 C.F.R. Part 327 Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers). More serious

trespasses will be referred to the USACE Office of Counsel for enforcement under state and federal law, which may require restoration of the premises and collection of monetary damages.

The term “encroachment” pertains to an unauthorized structure or improvement on Government property. When encroachments are discovered, project personnel will attempt to resolve the issue at the project level. Where no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by the USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. The USACE’s general policy is to require removal of encroachments, restoration of the premises, and collection of appropriate administrative costs and fair market value for the term of the unauthorized use. Incidents of unauthorized tree removal and mowing have occurred at the project, as well as placement of unauthorized structures or material.

The most common trespass are unauthorized mowing and paths, unauthorized structures such as fences and temporary structures, storage of personal property on USACE lands, and tree and vegetation removal. Trash dumping is an especially difficult and expensive problem at many USACE lakes. Efforts are continuously underway to resolve these unauthorized acts, but the sheer volume creates a workload that is difficult to accomplish. Encroachments can be prevented. Identifying the USACE fee boundary line and flowage easement designation are critical elements for the public who are planning for any type of activity near a USACE fee boundary. See Appendix A for general maps showing the project boundary, or visit the project office with detailed questions or concerns.

CHAPTER 3 – RESOURCE GOALS AND OBJECTIVES

3.1 INTRODUCTION

The terms “goal” and “objective” are often defined as synonymous, but in the context of this Master Plan goals express the overall desired end state of the Master Plan whereas resource objectives are specific task-oriented actions necessary to achieve the overall Master Plan goals.

3.2 RESOURCE GOALS

The following statements, taken from EP 1130-2-550, Chapter 3, express the goals for the Buffumville Lake Master Plan:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and suitabilities, and expressed public interests consistent with authorized project purposes.

GOAL B. Protect and manage the project’s natural and cultural resources through sustainable environmental stewardship programs.

GOAL C. Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself while sustaining the project’s natural resources.

GOAL D. Recognize the particular qualities, characteristics, and potentials of the project.

GOAL E. Provide consistency and compatibility with national objectives and other state and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.

- Seek ways and means to assess and mitigate cumulative impacts to the environment; bringing systems approaches to the full life cycle of our processes and work.
- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

3.3 RESOURCE OBJECTIVES

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the New England District, Buffumville Lake Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, the USACE Environmental Operating Principles (EOPs), and applicable national performance measures. They are consistent with authorized project purposes, federal laws and directives, regional needs, resource capabilities, and they take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan, as well as regional and state planning documents including:

- Massachusetts Wildlife Action Plan
- Massachusetts Statewide Comprehensive Outdoor Recreation Plan

The objectives in this Master Plan are intended to provide project benefits, meet public needs, and foster environmental sustainability for Buffumville Lake to the greatest extent possible. Tables 3.1 through 3.5 list the objectives for Buffumville Lake.

Table 3.1 Recreational Objectives

Recreational Objectives Goals:	A	B	C	D	E
Consider existing and future potential recreational opportunities for multiple user groups while ensuring visitor safety.	*		*	*	*
Identify potential locations for future LDR areas to accommodate visitation growth on USACE fee property. Provide opportunities for day use activities, especially picnicking and trail improvements.	*		*		
Seek out partnerships on the management of recreation facilities in accordance with public demand. Examples include universally accessible fishing docks, fish cleaning stations near	*		*		

Recreational Objectives Goals:	A	B	C	D	E
boat ramps, playground equipment in day use and camping areas.					
Monitor water quality and respond by opening/closing swimming areas for water safety.	*		*		*
Consider flood/conservation pool to address potential impact to recreational facilities (i.e., primitive campsites, boat ramps, courtesy docks, etc.).	*	*	*	*	
Ensure consistency with USACE NRM Strategic Plan.					*
Continue to monitor the Massachusetts SCORP to ensure that the USACE is responsive to outdoor recreation trends, public needs, and resource protection within a regional framework. All plans by others will be evaluated considering USACE policy and operational aspects of Buffumville Lake.			*		*
Improve accessibility for more user groups in recreation areas.	*		*		*
Develop a trail management plan, adjusting to ongoing erosion and worsening trail conditions, while seeking out partnerships for potential improvements.	*	*	*		*
Continue to manage the disc golf course with potential for improving the course and furthering partnerships.	*	*	*		*
Continue to manage Big Island for limited use via issuance of special use permit, and maintain the area to ensure future use.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.2 Natural Resource Management Objectives

Natural Resource Management Objectives Goals:	A	B	C	D	E
Give priority to the preservation and improvement of open space in public use planning, design, development, and management activities.	*	*		*	
Work with Tribal Nations to provide access to any culturally significant natural resources.		*		*	
Consider flood/conservation pool levels to ensure that natural resources are managed in ways that are compatible with project purposes.	*	*		*	
Actively manage and conserve fish and wildlife resources, especially threatened and endangered species and Species of Greatest Conservation Need, by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the Southern New England Coastal Plains and Hills ecoregion in restoration and mitigation plans.	*	*		*	
Manage high-density and low-density recreation lands in ways that balance visitor use and natural resource management.			*		

Natural Resource Management Objectives Goals:	A	B	C	D	E
Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		*			
Minimize activities which disturb the scenic beauty and aesthetics of the lake.	*	*	*	*	
Work with the MassWildlife on prescribed fire, timber harvests, and removal of targeted species as a management tool to promote the vigor and health of forests, woodlands, and grasslands.	*	*			
Deter unauthorized use and damage of public lands through utilization of Title 36 CFR authorities, as well as state and local rules and regulation related to the protection of natural resources.	*	*	*	*	
Manage lands and waters to reduce the spread of invasive, non-native, and aggressively spreading native species.	*	*		*	
Protect and restore important native habitats such as grasslands, forests, riparian zones, and wetlands where they occur or historically occurred on project lands. Special emphasis should be placed on protection and/or restoration of special or rare plant species. Emphasize promotion of pollinator habitat, migratory bird habitat, and habitat for birds listed by USFWS as BCC.	*	*		*	
As funding permits, complete an inventory of timber resources and prepare a Forest Management Plan.	*	*		*	

*Denotes that the objective helps to meet the specified goal.

Table 3.3 Visitor Information, Education, and Outreach Objectives

Visitor Information, Education, and Outreach Objectives Goals:	A	B	C	D	E
Create opportunities for communication with partner agencies, special interest groups, and the general public. Utilize social media as a platform to share information with visitors and stakeholders.	*			*	*
Provide educational, interpretive, and outreach programs at the project. Topics to include history, project purposes of flood risk management and other key USACE missions including natural resource management, recreation, water quality, water safety, cultural resources, and ecology.	*	*	*	*	*
Promote USACE Water Safety message.	*		*	*	*
Educate adjacent landowners on real estate requirements in order to reduce encroachment actions.	*	*	*	*	*
Work with local communities to engage the public and provide educational and informational opportunities.	*	*	*	*	*

*Denotes that the objective helps to meet the specified goal.

Table 3.4 Cultural Resources Management Objectives

Cultural Resources Management Objectives Goals:	A	B	C	D	E
Maintain the Cultural Resources Management Plan to manage cultural resources at Buffumville Lake.	*	*		*	*
Monitor and enforce Title 36 and ARPA to prevent unauthorized excavation and removal of cultural resources.		*		*	*
Provide access to Tribal Nations to any cultural resources, sacred sites, or other Traditional Cultural Properties.	*	*			
Preserve and protect cultural resources sites in compliance with existing federal statutes and regulations.	*	*	*	*	*
Work with the State Historic Preservation Office to inventory and protect historic and archeological resources.	*	*		*	*

*Denotes that the objective helps to meet the specified goal.

CHAPTER 4 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS

4.1 LAND ALLOCATION

All lands at USACE water resource development projects are allocated by USACE into one of four categories in accordance with the congressionally authorized purpose for which the project lands were acquired: Operations, Recreation, Fish and Wildlife, and Mitigation. At Buffumville Lake, the only land allocation category is Operations. Operations is defined as those lands that are required to construct and operate the project for the primary authorized purpose, which is flood risk management at Buffumville Lake. The remaining allocations of Recreation, Fish and Wildlife, and Mitigation would apply only if lands had been acquired specifically for these purposes.

4.2 LAND CLASSIFICATION

4.2.1 General

The objective of classifying project lands is to identify how a given parcel of land shall be used now and in the foreseeable future. Land classification is a central component of this plan, and once a particular classification is established any significant change to that classification would require a formal process including public review and comment.

4.2.2 Prior Land Classifications

The previous version of the Buffumville Lake Master Plan included land classification criteria that were similar, but not identical to the current criteria. In the previous plan, these prior land classifications were called land-use zones and were not clearly defined or mapped. In the years since the previous Master Plan was published, wildlife habitat values, surrounding land use, and regional recreation trends have changed giving rise to the need for revised classifications. Table 4.1 identifies land and water surface classification changes from the 1976 Master Plan to the proposed 2025 Master Plan Revision, although the acres from the 1976 Master Plan are rough estimates based on imprecise maps and descriptions. The previous land use zones were as follows:

- **Operations: Recreation – Intensive Use** also called **Intensive Recreation Area:** Intensive recreation are those areas which attract high public participation rates and require the development of relatively costly facilities. The presence of large numbers of people and of facilities which require operation and maintenance creates a need for intensive management programs. The high level of public use also demands that intensive recreation lands be accessible from major transportation routes. The degree of development requires that these lands contain some level areas or moderate slopes. Equally important is that access be provided to the project's primary resource - the water. Within the 1976 Master Plan, the only area zoned as

Intensive Recreation as the area that was leased to the State north of Oxford Road on the east shore. That area is no longer leased to the State but still contains intensive recreational uses. It is now referred to as Buffumville Lake Park, which is managed by the USACE.

- **Operations: Recreation – Low Density Use Area** also called **Low Density Recreation Area:** Non-intensive recreation uses are those which require little or no facilities development. These activities generally have lower participation rates within an individual recreation project than the intensive recreation activities. Fewer people and facilities require less management. The land requirements of these activities vary, but generally they need accessibility via an appropriate form of transportation as well as natural, aesthetically appealing settings. Within the 1976 Master Plan, the area that was leased to the Town of Dudley along Hayden Pond Road was classified as Low Density Recreation Area. Most of this area was disposed (sold) except the area needed for Project Operations.
- **Operations: Natural Area:** The areas above the permanent pool that were not part of Project Operations, Intensive Recreation, or Low Density Recreation Areas were classified as Operations: Natural Area. These areas were left undeveloped and managed for natural resources including forest, shoreline, and wetlands. Facilities for recreation generally conflict with the purposes and goals of natural areas. Exceptions might be natural surface (unpaved) hiking trails, vehicular service trails, or access parking. Public use levels will vary from near zero to low or moderate in open hunting areas or along popular trails.
- **Operations Area:** Operations Areas are those where USACE-operated facilities are located, including the dam and outlet works, operations buildings, and spillway as well as any maintenance and laydown areas. Incidental recreation often occurs within these Operation Areas but are ancillary to the primary purpose of project operations for flood risk management. The 1976 Master Plan described a picnic area and scenic outlook within the Operations Area.

Table 4.1 Change from 1976 Land and Water Surface Classifications to 2025 Land and Water Surface Classification

Prior Land Classifications (1976)	Acres	Proposed Land Classifications (2025)	Acres	Net Difference
Project Operations	44	Project Operations (PO)	48	4
Operations: Recreation – Intensive Use Area	54	High Density Recreation (HDR)	53	(1)
Operations: Recreation – Low Density Area	4	Low Density Recreation (LDR)	148	144
Operations: Natural Area	128	–	–	(128)
–	–	Vegetative Management (VM)	5	5
–	–	Environmentally Sensitive Area (ESA)	1	1
Land Not Classified in 1976 Master Plan	34	–	–	(34)
LAND TOTAL	**264**	**LAND TOTAL**	**255**	**(9)**
Prior Water Surface Classifications (1976)	**Acres**	**Proposed Water Surface Classifications (2025)**	**Acres**	**Net Difference**
Water Surface	205	Water Surface	214	10
–	–	• Open Recreation	213	213
–	–	• Restricted	1	1
WATER TOTAL	**205**	**WATER TOTAL**	**214**	**9**
TOTAL FEE	**469**	**TOTAL FEE**	**469**	**0**

* Total Acreage differences from the 1976 total to the 2025 totals are due to improvements in measurement technology, real estate actions, deposition/siltation, and erosion.

4.2.3 Land Classifications

USACE regulations require project lands and waters to be classified in accordance with the primary use for which project lands are managed (EP 1130-2-550). There are six categories of classification identified in USACE regulations as follows:

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

The land and water surface classifications for Buffumville Lake were established after considering public comments and input from key stakeholders, including elected officials, and city and county governments. Additionally, information from the 2024 Massachusetts SCORP, public comments, wildlife habitat values, and trends analysis were used in decision making. Maps showing the various land classifications can be found in Appendix A. The following paragraphs provide acreages and descriptions of allowable uses for each of the land classifications.

Project Operations (PO)

The PO classification includes the lands managed for operation of the dam, project office, spillway, dikes, and maintenance yards, all of which must be maintained to carry out the authorized purpose of flood risk management. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to the shoreline for fishing or the disc golf course. Regardless of any limited recreation use allowed on these lands, the primary classification of PO will take precedent over other uses. There are 48 acres of PO land specifically managed for this purpose.

High Density Recreation (HDR)

HDR lands are developed for intensive recreational activities for the visiting public, including day use areas, campgrounds, marinas, and related concession areas. Recreational areas operated by lessees on USACE lands must follow policy guidance contained in USACE regulations at ER 1130-2-550, Chapter 16. That policy includes the following statement:

> "*The primary rationale for any future recreation development must be dependent on the project's natural or other resources. This dependency is typically reflected in facilities that accommodate or support water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps, and comprehensive resort facilities. Examples that do not rely on the project's natural or other resources include theme parks or ride-type attractions, sports or concert stadiums, and standalone facilities such as restaurants, bars, motels, hotels, non-transient trailers, and golf courses. Normally, the recreation facilities that are dependent on the project's natural or other resources, and accommodate or support water-based activities, overnight use, and day use, are approved first as primary facilities followed by those facilities that support them. Any support facilities (e.g., playgrounds, multipurpose sports fields, overnight facilities, restaurants, camp stores, bait shops, comfort stations, and boat repair facilities) must also enhance the recreation experience, be dependent on the resource-based facilities, [and] be secondary to the original intent of the recreation development…*"

Lands classified for HDR are suitable for the development of comprehensive resorts. The regulation cited above defines Comprehensive Resort as follows:

"*Typically, multi-faceted developments with facilities such as marinas, lodging, conference centers, golf courses, tennis courts, restaurants, and other similar facilities.*"

At Buffumville Lake, prior land classifications included one area under the HDR classification at Buffumville State Park, later renamed to Buffumville Lake Park. Some areas within the portion previously defined as intensive recreation were never developed and/or were determined by the study team to be unsuitable for development resulting in a change to another, more suitable land classification. There are 53 acres at Buffumville Lake classified as HDR. The brief description and resource management plan for each HDR area is described briefly in Chapter 5 and mapped in Appendix A.

Mitigation (MG)

The MG classification is used only for lands allocated by Congress for mitigation for the purpose of offsetting losses associated with the development of the project. There are no lands at Buffumville Lake with this classification.

Environmentally Sensitive Areas (ESA)

ESAs include scientific, ecological, cultural, and aesthetic features identified and in need of preservation. At Buffumville Lake, there is 1 acre with this classification.

Multiple Resource Management Lands (MRML)

This land classification is divided into four sub-classifications: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of MRML land is classified using one of these sub-classifications, with the primary sub-classification reflective of the dominant use of the land. Typically, MRMLs support only passive, non-intrusive uses with very limited facilities or infrastructure. Where needed, some areas may require basic facilities that include, but are not limited to, minimal parking spaces, a small boat launch, and/or primitive sanitary facilities. There are 153 acres of MRML lands at Buffumville Lake. The following sections describes each sub-classification, the number of acres, and primary uses for each designation.

Low Density Recreation (LDR)

LDR lands support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.). The USACE fee property around the lake is rather narrow and is classified as LDR. The primary recreation in those areas is hiking and fishing. There are 148 acres under this land classification at Buffumville Lake.

Wildlife Management (WM)

The WM land classification applies to lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels of land for passive recreation uses such as natural surface

trails, fishing, hunting, and wildlife observation, unless restrictions are necessary to protect sensitive species or to promote public safety. There are no acres of land included in this classification at Buffumville Lake.

Vegetative Management (VM)

VM lands are designated for stewardship of forest, grasslands, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are 5 acres of land included in this classification at Buffumville Lake.

Future or Inactive Recreation (FOIR)

Future or Inactive Recreation lands have site characteristics compatible with HDR development. These are areas where HDR development was anticipated in prior land classifications, but the development either never took place or was minimal, or areas where intensive recreation facilities may be permitted in the future, but there are no current facilities. These areas are typically closed to vehicular traffic and are managed as MRML until development takes place. There are no acres of land included in this classification at Buffumville Lake.

4.2.4 Water Surface Classifications

USACE regulations specify the possible classifications for the water surface, which are intended to promote public safety, protect resources, or protect project operational features such as the dam and spillway. These areas are typically marked by the USACE with navigational or informational buoys, signs, or denotations on public maps and brochures. The lake is divided into classifications based on boating restrictions. There are 214 acres of water surface at the conservation pool of 492.5 feet NGVD29 at Buffumville Lake.

Restricted

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. The areas include the water surface immediately surrounding the gate control tower upstream of the Buffumville Dam and the designated swim beach at Buffumville Park. There is 1 acre of Restricted water surface at Buffumville Lake.

Designated No-Wake

Designated No-Wake areas are intended to protect sensitive shorelines and improve boating safety near key recreational water access areas such as boat ramps. Although there is 1 boat ramp and 1 swim beach at Buffumville Lake, no-wake restrictions are regulated by state law and may be managed for reasons of public safety and protection of property due to changes in water level and safety needs. As such, there are no acres of designated no-wake water surface at Buffumville Lake, and those areas are designated as Open Recreation.

Fish and Wildlife Sanctuary

This water surface classification applies to areas with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. Buffumville Lake has no water surface areas designated as a Fish and Wildlife Sanctuary.

Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses the majority of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at boat ramps that navigational hazards may be present at any time and at any location. Operation of a boat in these areas is at the owner's risk, as specific navigational hazards may or may not be marked with a buoy. There are 213 acres of open recreation water surface at Buffumville Lake.

4.2.5 Project Easement Lands

Project Easement Lands are primarily lands on which easement interests were acquired. Fee title was not acquired on these lands, but the easement interests convey to the Federal government certain rights to use and/or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, and/or Conservation Easement. At Buffumville Lake, Flowage Easement lands are the only type of easements present. A flowage easement, in general, grants to the government the perpetual right to occasionally flood/inundate land during flood risk management operations and to prohibit activities on the flowage easement that would interfere with flood risk management operations such as placement of fill material, construction of habitable structures, or placement of other structures without prior written approval of the government. There are 272.85 acres of Flowage Easement lands at Buffumville Lake according to the 2025 USACE Real Estate Management Information System (REMIS).

CHAPTER 5 – RESOURCE PLAN

5.1 MANAGEMENT BY CLASSIFICATION

This chapter describes the management plans for each land use classification within the Master Plan. The classifications that exist at Buffumville Lake are Project Operations, High Density Recreation, and Multiple Resource Management Lands, which consist of Low Density Recreation and Vegetative Management. The management plans describe how these project lands and water surface will be managed in broad terms. A more descriptive plan for managing these lands can be found in the Buffumville Lake Operational Management Plan (OMP).

5.2 PROJECT OPERATIONS

PO lands are associated with the dam, spillway, dikes, project office, maintenance facilities, and other areas solely for the operation of the project. There are 48 acres of land under this classification, all of which are managed by the USACE. The management plan for the Project Operations area is to continue providing physical security necessary to ensure sustained operations of the dam and related facilities, including restricting public access in hazardous locations near the dam and spillway. Some recreation activities such as the disc golf course, shoreline fishing, and hiking is currently allowed within some areas classified as Project Operations, but the USACE considers this use to be incidental and may prohibit such use without notice for project operations or security needs.

The USACE owns a small tract of land at the south end of Pierpont Meadow Pond. This area includes a part of Hayden Pond Road, Pierpont Road, and a small earthen dike and a portion of shoreline of Pierpont Meadow Pond. This area is managed primarily to operate the dike, continue road access, and shoreline stability along Pierpont Meadow Pond.

Recommended future actions for PO areas include facility upgrades as funding and personnel allow. Implementing low impact design and green infrastructure principles into future building, parking, and site developments will continue to be emphasized. Opportunities to incorporate environmental stewardship objectives for land management will be implemented as appropriate.

Recreation within Project Operations

Buffumville Dam Recreation

A paved, striped parking lot for 20 vehicles is located along Old Oxford Road near the base of the dam. Parking is provided primarily for users of a 18-hole disc golf course that winds around the administrative areas of the dam. A paved, striped parking lot for 10 vehicles is located adjacent to the spillway channel and is provided for visitors to the dam and administrative office. The restroom located behind the project office is available for public use. Each side has one handicapped accessible toilet.

The USACE offers tours of the Buffumville Dam facility, by appointment, to learn about the operation of this flood control facility.

Photo 5.1 Buffumville Dam and Spillway

Buffumville Lake Disc Golf Course

The disc golf course at the Buffumville Dam site has 18 holes –for golfers of all ages. The course consists of 30 tee pads and corresponding basket “holes” and is located adjacent to the office, dam, and surrounding forest land.

Photo 5.2 Disc Golf Player at Buffumville Lake

Paved Dam Road

The ½-mile, paved access road on top of the dam is used by hikers and dog walkers year-round. Public vehicular traffic is not allowed on the road traversing the crest of the dam.

5.3 HIGH DENSITY RECREATION

Buffumville Lake has 53 acres developed for intensive recreational activities for the visiting public, including day use areas, boat launch, and hiking access points, which are all managed by the USACE. National USACE policy set forth in ER 1130-2-550, Chapter 16, adopted March 30, 2009, limits new recreation development within out granted (leased) areas on USACE lands to those activities that are dependent on a project's natural resources and typically include water-based activities, overnight use, and day use (such as campgrounds, picnic areas, and boat launching ramps). Examples of activities that are not dependent on a lake's natural resources include stand-alone theme parks, sport or concert stadiums, restaurants, and hotels. Stand-alone golf courses are considered an example of these activities that cannot be developed following adoption of Chapter 16 of ER 1130-2-550.

Based upon outdoor recreation trends documented in the 2024 SCORP, activities such as hiking, walking/running, camping, wildlife watching/bird watching, paddling, and fishing are the most favorite in the state, and are common activities that can be undertaken at Buffumville Lake (see Section 2.14.4). Seeking opportunities to improve facilities and provide access to outdoor recreation activities in response to public demand are important to USACE recreation goals at Buffumville Lake. The future management of HDR areas includes maintaining and improving existing facilities through partnerships and other funding options, including the Commonwealth of Massachusetts and local stakeholders.

5.3.1 USACE-Managed Recreation Areas, Activities, and Facilities

Recreation at Buffumville Lake is managed by the USACE. The project lands offer many recreational activities such as boating, water skiing, biking, picnicking, fishing, hunting, and volleyball, not to mention an abundance of wildlife viewing opportunities. The USACE divides Buffumville Lake into two public service areas: Buffumville Lake and Damsite, and Buffumville Park and Boat Ramp. Table 2.17 lists the various recreational facilities at Buffumville Lake. Each recreational area is more specifically described in Chapter 5.

Buffumville Park: Day Use and Picnicking

Opportunities for outdoor family fun and recreation at Buffumville Lake include swimming, boating, water skiing, picnicking, and sightseeing. Buffumville Park is a five-acre recreation area open from mid-May to mid-September. The park hours are from 8am to 8pm and is operated by project staff, contracted attendants, and volunteer hosts. A day use fee is required for entry into Buffumville Park. USACE maintains a 320-foot long by 125-foot-wide swimming beach with a target depth of 5-feet. Trail access, a horseshoe pit, cornhole pit, and sand volleyball are located at the north end of the park. Walkways provide visitors access to reservable picnic shelters, approximately 60 picnic tables and charcoal grills, an ADA accessible waterborne restroom, and a drinking water fountain. ADA access improvements were completed with infrastructure funding in 2023 to include 10 handicapped parking spots and a wheelchair ramp to the restroom. The paved parking lot is large enough to park 300 vehicles.

Buffumville Lake does not offer any overnight camping except via special activity permit on a small island at the southern end of the lake. This small camping island features a dock, fire ring, picnic tables, woodshed, and an outhouse toilet.

Boat Ramp: Lake Access

Boaters will find a boat ramp located across the street from Buffumville Park on Oxford Road. There is currently no fee required to use the boat ramp. The ramp features one 12-foot-wide concrete launching lane with a courteously boat dock. Two gravel parking lots provide parking for vehicles and trailers. Two fishing platforms are located within a short walk from the ramp. A corrugated 12-foot-radius culvert under Oxford Road provides boaters access to both sides of the lake during normal summer

pool levels. A composting toilet is located at the ramp for public use and is open year-round. Boating on Buffumville Lake is in accordance with state boating laws and USACE regulations. The use of watercraft, including motorboats, canoes, kayaks, and other vessels are permitted on the lake. Personal watercraft, such as jet skis, are only permitted on the south end of the lake. Navigational buoys are visible on the lake to aid boaters.

Buffumville Dam Site: Disc Golf

Located at the Buffumville Dam site is a paved visitor parking, lot large enough for 10 vehicles. Visitors may access the hiking trails and walk on the top of Buffumville Dam during low security threat levels. The 0.5-mile paved dam provides a safe and flat walking surface. A waterborne comfort station is available for public use. Park Rangers offer tours of the dam during summer months.

The Buffumville Lake Disc Golf Course consists of an 18-hole professional layout that attracts players from all over New England. The course starts from a small parking lot on Old Oxford Road and winds its way around the entire length of the dam. The course features a combination of concrete and stone dust tee pads in conjunction with professional style baskets that were purchased with America the Beautiful funds. The course offers a variety of left and right curved throws through the natural areas of the site. Several holes have an alternate tee pad to accommodate all disc golf abilities. In addition to the larger course, there is a smaller amateur disc golf course layout that features a 12-hole layout. This course was built along the downstream side of the dam and looped back to the parking lot. Note: The amateur course was removed in 2020 due to the low carrying capacity of the parking lot not meeting the high-volume use of both courses.

Hiking Trails

Buffumville Lake provides visitors the opportunity to access 7.2 miles of multiuse trails from several different locations at the project. Visitors may park and access the trails from the boat ramp, Buffumville Park, Fulling Mill Rd., and the dam site. Visitors can hike, dog walk, mountain bike, and view wildlife on the trails. The 3-mile trail around the North end of the lake is a less strenuous, meandering trail that features views of the lake, a fishing pier, and bridges built by scouts. The 4.2-mile trail around the South end of the lake features more challenging hiking, larger hills and difficult footing, more forest and wetland views, and bridges built by volunteers.

All trails at Buffumville Lake are well marked with blue blazing on trees. Blazing with a black dot in the middle indicates you are heading back to the dam. In 2018, an Eagle Scout created Lost Trail signs along the trail system. These signs are placed approximately every 1.5 miles and contain information such as GPS coordinates, a location number, and emergency contact information. These signs correlate to maps in the project office and at the local police departments to aid in emergency situations around the lake. Project staff has recently developed a QR code for visitors to report trail conditions.

Two interpretive trails have been developed at Buffumville. One trail begins at the dam site and loops around to the boat ramp, stopping at several locations of historical note. Visitors can stop by the project office for a brochure and directions for this trail. A second interpretive trail was developed by an Eagle Scout Troop in 2022, located at Buffumville Park. This trail features interpretive signs that depict common plant and wildlife species visitors may encounter on the hiking trails. An overview trail map is shown in Figure 2.12, and detailed trail maps are included in Appendix A.

Photo 5.3 Trail at Buffumville Lake

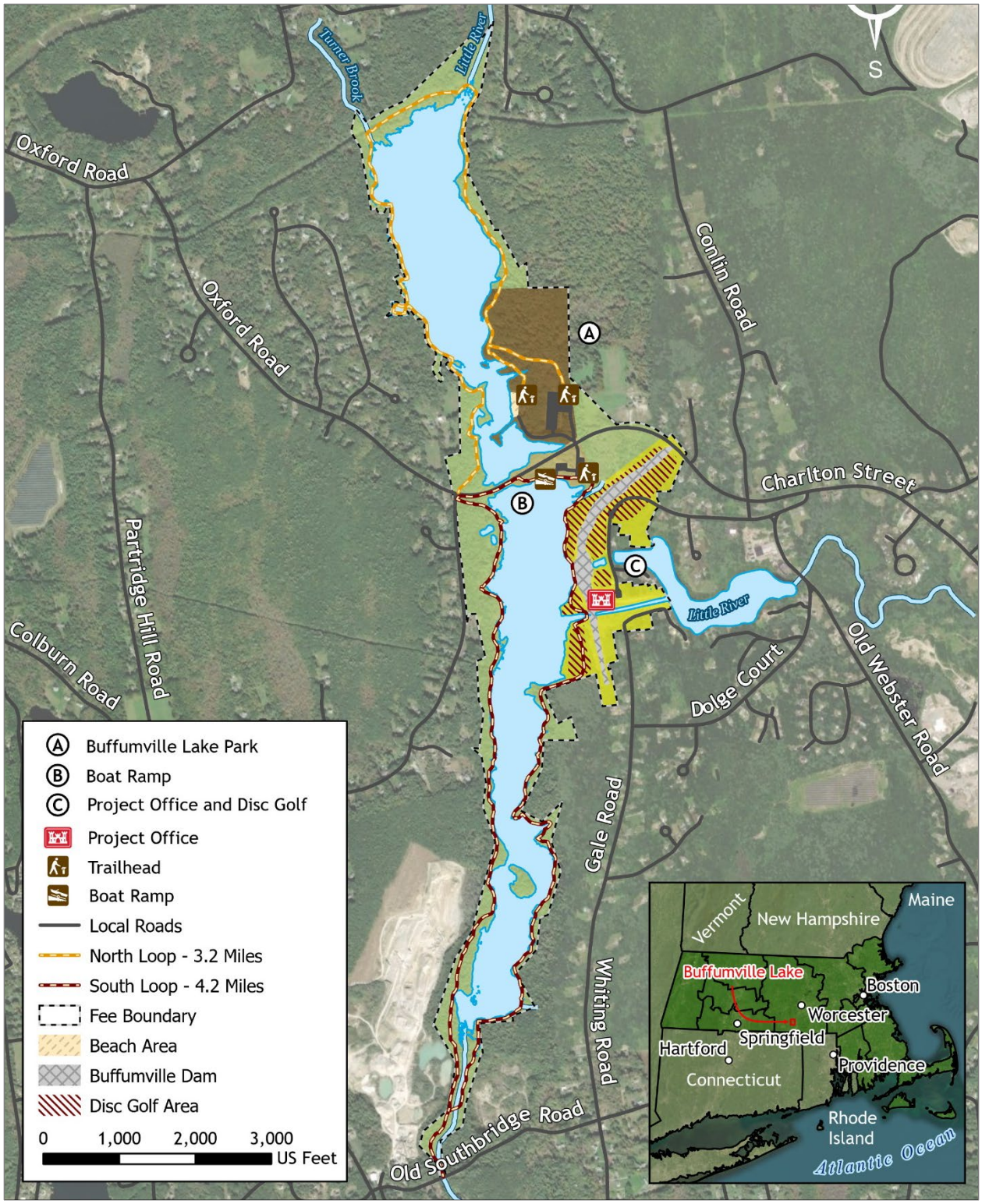


Figure 2.1 Buffumville Lake Trail Map (See Appendix A for Detailed Maps)
Source: USACE

Buffumville Park

Buffumville Park consists of approximately 5 acres, and the USACE charges a small fee to use the area. The park and all its facilities are open during the hours of 8:00 a.m. to 8:00 p.m. from mid-May through mid-September. Three volunteer park host campsites and a fee collection booth are located on the access road to the park.

Photo 5.4 Handicap Parking at a Covered Picnic Shelter in Buffumville Park

Beach Area

The USACE maintains a 320 foot long by 125 foot wide swimming beach along the easterly shore of Buffumville Lake, north of Oxford Road. The swimming area is clearly marked with a float line and buoys. The target depth at summer pool of the swimming area is 5 feet. Horseshoe pits, cornhole, and a sand volleyball court are located at the north end of the beach. The USACE monitors water quality and may close the beach for safety reasons during any time of the year.

Photo 5.5 Swim Beach at Buffumville Park

Picnic Area

A picnic area is located adjacent to the beach and on the hilltop overlooking the beach. A stairway provides access to the beach from the parking lot. This area includes two picnic shelters that may be reserved for a nominal fee. Other amenities include the following:

- An ADA accessible comfort station with flush toilets
- 50 picnic tables
- 50 pedestal grills
- Drinking water fountain
- A barrier-free accessible fishing platform
- An ADA parking lot with 10 accessible parking spaces located adjacent to the beach and restrooms

A paved, striped parking lot containing 300 spaces serves this area and is accessed from Oxford Road.

Photo 5.6 Entrance at Buffumville Park

Boat Launch Area

A boat launch area is located on the south side of Oxford Road opposite the entrance to the park. The boat launch area contains one 12-foot wide concrete launching lane at the water's edge and two gravel parking areas. The main parking lot has approximately 44 parking spaces for vehicles. The second parking lot is designated for vehicles with trailers only and contains 11 trailer spaces. The USACE partnered with the Massachusetts Division of Fisheries and Wildlife's in designing and installing the

concrete launching lane and parking area. A restroom is available for the public. Two barrier free accessible fishing platforms are available within the boat launch area. A corrugated, 12-foot wide, pipe-culvert under Oxford Road with 8 feet of clearance at the normal pool elevation, allows boating access to both ends the lake.

Photo 5.7 Buffumville Lake Boat Ramp

Hunting, Fishing, and Trapping

Hunting, fishing, and trapping are permitted on project lands in accordance with applicable federal and state laws. No hunting is permitted in the developed area of Buffumville Park or in the immediate vicinity of the dam. The USACE does not manage any specific hunting or fishing programs at Buffumville Lake.

5.3.2 Non-USACE Managed High Density Recreation Areas

No other agencies or partners manage any recreation areas at Buffumville Lake.

5.4 MITIGATION

This classification is used for lands that were acquired specifically for the purpose of offsetting losses associated with development of the project. There are no acres at Buffumville Lake under this classification.

5.5 ENVIRONMENTALLY SENSITIVE AREAS

There is one (1) area of ESA-designated land of less than 1 acre at Buffumville Lake in which 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 NHPA or applicable state statues. These areas must be managed to ensure they are not adversely impacted. Typically, limited public use is allowed on these lands. No agricultural or grazing uses are permitted on these lands unless necessary for a specific resource management benefit, such as habitat restoration and management.

5.6 MULTIPLE RESOURCE MANAGEMENT LANDS

The 153 acres of Multiple Resource Management Lands are organized into two sub-classifications at Buffumville Lake – Low Density Recreation (LDR) and Vegetative Management (VM). The following is a description of each sub-classification's resource objectives, acreages, and description of use.

5.6.1 Low Density Recreation

At Buffumville Lake, LDR lands are generally associated with primitive access points including natural surface trails, non-powered boating access (such as kayaks), as well as narrow shorelines, and areas generally used for passive recreation by the public. Development is generally limited to unpaved parking, and trails. The public may use these LDR lands for primitive camping on Big Island by special use permit only. Hiking, access to the shoreline, shoreline fishing, and hunting are permitted on these project lands in accordance with applicable federal and state laws. Future management of these lands call for minimal development to maintain a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics. Future uses may include additional designated multipurpose, natural surface trails. There are 148 acres classified as Low Density Recreation.

Low Density Recreation Areas

Fulling Mill Drive Hiking Access Point

Located on Fulling Mill Drive, but off USACE owned land, is a small gravel parking lot that provides access to the hiking trail that heads towards Little River. This part of the trail is classified as LDR and is part of the entire trail network that circumnavigates Buffumville Lake.

Primitive Camping on Big Island

Primitive camping is allowed through the issuance of a special use permit and is only allowed on a 3-acre island at the southern end of the lake called Big Island. A small dock, fire ring, two picnic tables, three tent sites, and an outhouse-style toilet are provided on the island.

Photo 5.8 Big Island Special Permit Camping Area

5.6.2 Vegetative Management

These are lands that are designated for stewardship of forest, prairie, and other native vegetative cover or have vegetative types considered to be sensitive and needing special classification to ensure success. The only area classified as Vegetative Management at Buffumville Lake is a roughly triangle-shaped parcel between Oxford Road, Buffumville Park parking lot, and the project boundary. This area is actively managed for pollinator habitat as well as invasive plant species removal. There are 5 acres currently identified at Buffumville Lake for Vegetative Management purposes.

There are three pollinator gardens and one wildflower field at Buffumville. One garden is located at the main office. One garden is located at the boat ramp. One garden is located within Buffumville Park. The wildflower field, planted in 2018, is located in the area between Buffumville Park and the neighboring farm on Oxford Rd. Project staff and volunteers maintain the gardens each year and plant native varieties of plants to support native bees and insects. Milkweed is also maintained in all three gardens to support monarch butterflies. Future gardens will be considered, and the wildflower plot will be enlarged and maintained to prevent invasive species.

Photo 5.9 Monarch Butterfly at the Buffumville Lake Pollinator Habitat

5.7 WATER SURFACE

At the permanent pool (also referred to as the summer conservation, or normal pool elevation at 492.5 feet NGVD29) there are 214 acres of surface water within USACE fee boundary at Buffumville Lake. Buoys are managed by the USACE and help mark hazards, swim beaches, restricted, and no-wake areas.

Restricted

Restricted water surface areas are around the swim beach at Buffumville Park and on either side of the dam. Vessels are not allowed to enter Restricted water surface. Water surface zoned as Restricted totals approximately 1 acre.

Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification encompasses the majority of the lake water surface and is open to general recreational boating. Boaters are advised through maps and brochures, or signs at the boat ramp that navigational hazards may be present at any time and at any location in these areas. Specific navigational hazards may or may not be marked with a buoy. There are 213 acres of open recreation water surface at Buffumville Lake. Future management of the water surface includes maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods.

The use of watercraft, including motorboats, canoes, kayaks, and other vessels is permitted. All persons using watercraft are required to comply with applicable U.S. Coast Guard, USACE, and Massachusetts regulations. Personal watercraft, including jet skis, are only permitted on the south end of the lake.

Future Management of the Water Surface

Future management of the water surface includes the maintenance of warning, information, swimming beach delineation, and regulatory buoys and signs as well as routine water safety patrols during peak use periods. Currently, water safety patrols are conducted by USACE Park Rangers.

5.8 SUSTAINABILITY

Sustainability is a multi-pronged aspect of responsible stewardship of USACE lands. The outcome of sustainability initiatives is to have a program that is able to adapt to fiscal challenges, safeguards the environment, and continues to provide high quality recreational opportunities for the public. As the nation's largest provider of outdoor recreation, managing 12 million acres of lands and waters across the country, the USACE is committed to implementing initiatives that link people to water.

The recreational mission of the USACE is to manage and conserve natural resources, while providing quality public outdoor recreation opportunities to serve the needs of the present and future generations. This is in line, and indeed the underpinning, of all the goals and objectives for Buffumville Lake resources and management. The national USACE 2021 Natural Resources Management Strategic Plan identifies several goals and related objectives designed to build a more robust environmental and recreational program on USACE managed lands. The four primary goals are Workforce Development; Improved Communication; Resourcing; and Program Delivery. Under the umbrella goal of Program Delivery, several objectives center specifically on promoting environmental sustainability in all aspects of natural resources management. This includes integrating EOPs and other environmental regulations and initiatives into day-to-day decision making and long-range planning. Other objectives include using Leadership in Energy and Environmental Design (LEED) certified personnel and projects in facility design and maintenance on land-based recreation areas, and updating project Master Plans to include environmental sustainability elements.

Meeting the public's needs and continuing to provide a full range of outdoor recreation opportunities will require collaboration. In support of that, the USACE will maintain and enhance existing rapports while seeking new and innovative types of relationships with federal, state, and local agencies, volunteers, non-government organizations, cooperators, and others to provide certain recreation services and opportunities to the public. Besides pursuing and maintaining partnerships, it is important to continue to identify, analyze, and evaluate authorities and policies such as fee collection and retention, and increased partnership capabilities. Areas identified for changes to meet the goals and objectives of this strategy include authorities for fee

collection and retention without budgetary offset, and policies that pertain to funding schedules for partnership projects.

Through creativity, innovation, strong partnerships, and environmentally sustainable stewardship, quality recreational opportunities will continue to be available to the public. This will be done while simultaneously protecting the water, environment, and cultural resources for current and future generations.

CHAPTER 6 – SPECIAL TOPICS/ISSUES/CONSIDERATIONS

6.1 COMPETING INTERESTS OF NATURAL RESOURCES

Buffumville Lake is a multi-purpose project with numerous authorized purposes. The authorized purposes accommodate the needs of federal, state, and municipal users which have developed over time and have contractual rights that must be honored. The benefits provided by virtue of authorized purposes are critical to the local and regional economies and are of great interest to the public. Aside from operating the reservoir to meet the needs of those entities with contractual rights, there are many competing interests for the utilization of federal lands including recreational users, adjacent landowners, those who own mineral rights, utility providers, and all entities that provide and maintain public roads. A growing population and increasing urbanization places additional stress on these competing interests through increased demand for water resources and recreation spaces as well as diminishing quality and space for natural habitat and open spaces. Balancing the interests of each of these groups to ensure that valid needs are met while at the same time protecting natural and cultural resources is a challenge. The purpose of this Plan is to guide management into the foreseeable future to ensure responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

6.2 UTILITY CORRIDORS

USACE policy encourages the establishment of designated corridors on project lands, where feasible, to serve as the preferred location for future outgrants such as easements for roads or utility lines. After obtaining public input and examining the location of existing roads and utility lines on project lands, the USACE determined that utility corridors would not be designated at Buffumville Lake, however the two existing utility corridors will be identified in this Master Plan. The Tennessee Gas Pipeline Company, L.L.C. has a Real Estate easement with USACE for a natural gas pipeline right of way across the northern end of Buffumville Lake property for the purpose of transporting gas over, across, in, and upon land of USACE. An additional utility corridor exists at the southern side of Buffumville Lake, which is operated by ExxonMobil Pipeline Company. This gas line runs from the Gale Road side of the dam and crosses onto AF Putnam Road. The easement for this utility line was in place prior to USACE acquiring the land at Buffumville Lake, which is why there is no Real Estate easement agreement for this second gas line.

Any utility seeking an easement to cross USACE property will need to consider alternate routes around USACE property and demonstrate that a feasible alternative does not exist. Additionally, any expansion of existing or newly proposed utility corridors would need to undergo the required NEPA permitting process.

6.3 CULTURAL RESOURCES AND CONSULTATION WITH TRIBAL NATIONS

It is required for federal agencies to consult with affiliated Federally Recognized Tribes on various activities that take place on federal land under federal guidance including but not limited to Sections 106 and 110 of the NHPA; NAGPRA; and 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of NEPA as amended. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

Additionally, Executive Order 13007 states that each federal agency with responsibility for the management of Federal lands shall accommodate access to and ceremonial use of Native American sacred sites by religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.

The New England District takes its responsibilities for consultation on a government-to-government basis very seriously and consulted extensively with Federally Recognized Tribes on the Buffumville Lake Master Plan. The Tribes the USACE consults with are the Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, and Narragansett Tribe. The New England District consulted with Tribes primarily on developing best practices and ensuring areas of Tribal concern were addressed. This process has allowed Tribes to become more familiar with USACE property at Buffumville Lake, and has increased USACE staff awareness of Tribal histories, sites, and concerns in the area. This exchange of knowledge from developing the Master Plan will allow USACE staff to better engage with Tribes on future projects at Buffumville Lake and will likely lead to more efficient reviews and better outcomes meeting objectives for both parties.

6.4 PRIVATE ACTIVITIES AND SHORELINE MANAGEMENT

It is the policy of the USACE to protect and manage shorelines of all civil works water resource development projects to promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. The objectives of all management actions will be to achieve a balance between permitted private uses and resource protection for general public use. Public pedestrian access to and exit from these shorelines shall be preserved. The New England District generally does not permit private exclusive uses by adjacent landowners. Private exclusive use (often called private shoreline use) is defined in ER 1130-2-406 as “Any action, within the context of this regulation [36 CFR Part 327.30], which gives a special privilege to an individual or group of individuals on land or water at a Corps project, that precludes use of those lands and waters by the general public, is considered to be private shoreline use.” The Master Plan does not concern private use of federal property; instead private use is managed per guidance in ER 1130-2-406 at the discretion of the New England District and project manager. See Section 2.15 for more information about Real Estate including outgrants, trespass, and encroachment.

CHAPTER 7 – PUBLIC AND AGENCY COORDINATION

7.1 PUBLIC, AGENCY, AND TRIBAL COORDINATION OVERVIEW

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management of cultural, natural, and recreational resources of Buffumville Lake. An integral part of this effort is gathering public comment and engaging stakeholders in the process of planning. USACE policy guidance in ER and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the Master Plan revision process including any associated NEPA process. Public involvement is especially important at Buffumville Lake to ensure that future management actions are environmentally sustainable and responsive to public outdoor recreation needs. The following milestones provide a brief look at the overall process of revising the Buffumville Lake Master Plan.

The USACE began planning to revise the Buffumville Lake Master Plan in the fall of 2024. The objectives for the Master Plan revision are to (1) revise land classifications to reflect changes in USACE land management policies since the 1976 Master Plan, (2) prepare new resource goals and objectives, and (3) revise the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013.

7.2 INITIAL STAKEHOLDER AND PUBLIC MEETINGS

On March 1, 2024 a public open house was held at the Charlton Public Library Community Meeting Room in Charlton, Massachusetts to inform the public of the intent to revise the Master Plan. The public input period remained open for 30 days from May 1, 2024 to May 31, 2024. At the open house, a presentation was running that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

The USACE received 9 comments from 3 members of the public. These comments and USACE responses can be found in Appendix E.

7.3 PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, AND FONSI

A public open house will be held for the Buffumville Lake Draft Master Plan revision. The purpose of this open house will be to provide attendees with information regarding the proposed Master Plan revision as well as to provide them with the opportunity to provide comments on the proposed Buffumville Lake Draft Master Plan. The open house will include the following topics:

- What is a Master Plan?
- What a Master Plan is Not;
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process;
- Master Planning process;
- Proposed Changes to the Master Plan; and
- Instructions for submitting comments.

The open house will begin a 30-day comment period where the public and stakeholders can provide comments on the draft Master Plan. These comments will be reviewed and addressed as the USACE revises a final version of the Master Plan.

7.4 TRIBAL CONSULTATION

In 2024, the USACE consulted with the appropriate Tribal Nations on the notice of availability for the scoping effort for this Master Plan and Environmental Assessment seeking their comments and confirmation of interest. A sample letter is included in Appendix B.

The following recognized Tribal Nations were consulted in 2024 prior to the initial Open House:

- Wampanoag Tribe of Gay Head (Aquinnah)
- Mashpee Wampanoag Tribe
- Narragansett Tribe

For the Draft Master Plan and Environmental Assessment, the same group of recognized Tribal Nations were consulted to notify of the Open House the availability of the draft documents.

CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

8.1 SUMMARY OVERVIEW

The preparation of this Master Plan for Buffumville Lake followed the USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 30 January 2013. Three major requirements set forth in the guidance include the preparation of contemporary resource objectives, classification of project lands using the approved classification standards, and the preparation of a resource plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include rigorous public involvement throughout the process, consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities, and consultation with local Tribal Nations.

The study team endeavored to follow this guidance to prepare a Master Plan that will provide for enhanced recreational opportunities for the public, improve environmental quality, and foster a management philosophy conducive to existing and projected USACE staffing levels at Buffumville Lake as also reflected in ER 1130-2-540 Change 2 dated July 2005. Factors considered in the Plan development were identified through public involvement and review of regional and statewide planning documents including the current Massachusetts SCORP prepared by the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) 2024, EPA Ecoregion Handbook and descriptions, and the USFWS ICAP website. This Master Plan will guide the long-term sustainability of the outdoor recreation program and natural resources associated with Buffumville Lake.

8.2 LAND CLASSIFICATION

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to the updated land classification standards that reflect how lands are being managed now and will be managed in the foreseeable future. The updated land classification standards will also comply with current USACE standards. Public comment was solicited to assist in making these land reclassification decisions. Consultation was also conducted with Tribal Nations to provide input on cultural and natural resources to help inform the land classification decisions. Chapter 7 of this Plan describes the public involvement process and Appendix E provides a summary of public comments received. After analyzing public comment, examining recreational trends, and taking into account regional natural resource management priorities, USACE team members reclassified the Federal lands and waters associated with Buffumville Lake as described in Table 8.1 and explained in Table 8.2. See the Land Classification Changes map in Appendix A to see detailed changes from the 1976 Master Plan to proposed changes.

Table 8.1 Change from 1976 Land and Water Surface Classification to 2025 Land and Water Surface Classification

Prior Land Classifications (1976)	Acres	Proposed Land Classifications (2025)	Acres	Net Difference
Project Operations	44	Project Operations (PO)	48	4
Operations: Recreation – Intensive Use Area	54	High Density Recreation (HDR)	53	(1)
Operations: Recreation – Low Density Area	4	Low Density Recreation (LDR)	148	144
Operations: Natural Area	128	–	–	(128)
–	–	Vegetative Management (VM)	5	5
–	–	Environmentally Sensitive Area (ESA)	1	1
Land Not Classified in 1976 Master Plan	34	–	–	(34)
LAND TOTAL	**264**	**LAND TOTAL**	**255**	**(9)**
Prior Water Surface Classifications (1976)	**Acres**	**Proposed Water Surface Classifications (2025)**	**Acres**	**Net Difference**
Water Surface	205	Water Surface	214	10
–	–	• Open Recreation	213	213
–	–	• Restricted	1	1
WATER TOTAL	**205**	**WATER TOTAL**	**214**	**9**
TOTAL FEE	**469**	**TOTAL FEE**	**469**	**0**

* 1976 acres are approximate based on digitizing the 1976 land and water classification map. Total fee acreage differences from the 1976 totals to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels. REMIS reports total fee of 479 acres.

Table 8.2 Changes [1] and Justifications for Land Classifications [2]

Land Classification	Description of Changes [3]	Justification
Project Operations (PO)	Net increase in Project Operations lands from 44 to 48 acres.	All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation. The area at the south end of Pierpont Meadow Pond which contains roads, an earthen dike, and small amount of shoreline was reclassified from Operations: Recreation – Low Density Area in the 1976 Plan to PO.
High Density Recreation (HDR)/ Operations: Recreation – Intensive Use Area	Net decrease in High Density Recreation lands from 54 to 53 acres.	A vast majority of this change is in name only, as the land was classified as Operations: Recreation – Intensive Use Area in the 1976 Master Plan but reclassified as HDR. Small areas were unclassified in the 1976 Plan and classified as HDR due to the existing land use in that area. A small amount of water surface was reclassified as HDR due to more precise mapping of the shoreline. Big Island at the southern end of the lake is approximately 3 acres and was classified as Operations: Recreation – Intensive Use Area in the 1976 Plan but reclassified as LDR to reflect the existing and planned usage of the island.

Land Classification	Description of Changes [3]	Justification
MRML – Low Density Recreation (LDR)/ Operations: Recreation – Low Density Area	Net increase in Low Density Recreation acres from 4 acres to 144 acres.	In the 1976 Master Plan, the Operations: Recreation – Low Density Area was comprised of the area that was leased to the Town of Dudley at the south end of Pierpont Meadow Pond and included two roads, earthen dike and portion of the shoreline of Pierpont Meadow Pond. Most of that area was disposed of and no longer owned by the USACE. The remaining area was reclassified to Project Operations. Most of the land classified as Operations: Natural Area in the 1976 Master Plan was undeveloped land including narrow shoreline. This land was reclassified to LDR to better reflect the existing uses which include hiking, fishing, hunting, observing nature, and access to the shoreline. Big Island at the southern end of the lake is approximately 3 acres and was classified as Operations: Recreation – Intensive Use Area in the 1976 Plan but reclassified as LDR to reflect the existing and planned usage of the island.
Operations: Natural Area	Net decrease in Operations: Natural Area acres from 128 acres to 0 acres.	The Operations: Natural Area land classification is no longer a valid land classification. Most of the area was reclassified to LDR which reflects the existing uses.
MRML – Vegetative Management (VM)	Net increase in Vegetative Management lands from 0 acres to 5 acres.	Approximately 5 acres that were unclassified in the 1976 Master Plan were classified as Vegetative Management. This area is actively managed for pollinator habitat as well as invasive plant species removal.
Environmentally Sensitive Area	Net increase in Environmentally Sensitive Area acres from 0 acres to 1 acre.	An island of approximately 1 acre was unclassified in the 1976 Master Plan and was classified as ESA to protect the sensitive resources located on the island.

Land Classification	Description of Changes [3]	Justification
Water Surface	Net increase in Water Surface from 205 to 214 acres.	The change in water surface acres is due to more precise mapping of the shoreline using available LiDAR data. Most of the shoreline was from areas classified as Operations: Natural Area, with smaller amounts changing from Operations: Recreation – Intensive Use Area, Operations: Recreation – Low Density Area, Project Operations, and areas that were not classified in the 1976 Plan.

[1] 1976 acres are approximate based on text descriptions of each area since the areas were not mapped.
[2] The land classification changes described in this table are the result of changes to individual parcels of land ranging from a few acres to several hundred acres. New acreages were measured using more accurate GIS technology, thus total changes will not equal individual changes. The acreage numbers provided are approximate.
[3] Acreages are based on GIS measurements and may vary from net difference detailed in Table 8.1.

CHAPTER 9 – BIBLIOGRAPHY

Atwood, Kathleen A. 2001. *Final Historic Properties Management Plan, Buffumville Lake, Charlton, Massachusetts*. In Appendix C: Buffumville Lake Operational Management Plan, U.S. Army Corps of Engineers, Concord, Massachusetts.

Assessment and Listing Decision Summary. https://www.mass.gov/doc/2022-integrated-list-of-waters-appendix-11-french-river-basin-assessment-and-listing-decision-summary/download

Doucette, Dianna L., Gregg Laskoski, and Erin Flynn. 2010. *Intensive (Locational) Archaeological Survey, Buffumville Lake, Charlton, Massachusetts*. PAL Report No. 2422, PAL, Pawtucket, Rhode Island.

Faughnan, D. 2024. U.S. Army Corps of Engineers, personal communication, August 19, 2024.

Gorman, F.J.E., Scott Andrus, and John Cheney. 1985. *Archaeological Reconnaissance of the French River Quality Improvement District, Buffumville, Massachusetts to North Grosvenor Dale, Connecticut*. Environmental Archaeology Group Report. Waltham, Massachusetts.

Griffith, G. E., et al. 2009. Ecoregions of New England (color poster with map, descriptive text, summary tables, and photographs). Reston, Virginia.

Lothrop, Jonathan C., Adrian L. Burke, Susan Winchell-Sweeney, and Gilles Gauthier. 2018. *Coupling Lithic Sourcing with Least Cost Path Analysis to Model Paleoindian Pathways in Northeastern North America. American Antiquity* 83(3):462-484

Massachusetts Division of Conservation Services. 2023. Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP). March 6, 2024. Accessed October 16, 2024: https://www.mass.gov/doc/massachusetts-statewide-comprehensive-outdoor-recreation-plan-2023-scorp-2023.

MassDEP. 2023a. Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle. https://www.mass.gov/doc/final-massachusetts-integrated-list-of-waters-for-the-clean-water-act-2022-reporting-cycle/download

MassDEP. 2023b. 2022 Integrated List of Waters Appendix 11: French River Basin

MassDEP. 2023c. Massachusetts 2022 Air Quality Report. https://www.mass.gov/doc/2022-annual-air-quality-report/download

MassDEP. 2024. MassDEP Water Quality Data Viewer. Retrieved September 27, 2024, from https://arcgisserver.digital.mass.gov/MassDEPWaterQuality/Home/Index

MassGIS. 2024. State Aquifer Data. Accessed 2024 from: https://www.mass.gov/info-details/massgis-data-aquifers

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2024a. MassWidlife's Heritage Hub. Retrieved on August 30, 2024, from https://eeaonline.eea.state.ma.us/dfg/nhesp/#/home

Massachusetts Division of Fisheries and Widllife (MassWildlife). 2024b. Rare species viewer. Retrieved on October 28, 2024, from https://www.mass.gov/info-details/rare-species-viewer

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2024c. Mammals in Massachusetts. Retrieved on November 20, 2024 from https://www.mass.gov/info-details/mammals-in-massachusetts

National Oceanic and Atmospheric Administration (NOAA). (2023). JetStream Max: Addition Köppen-Geiger Climate Subdivisions. Retrieved on October 17, 2024 from https://www.noaa.gov/jetstream/global/climate-zones/jetstream-max-addition-k-ppen-geiger-climate-subdivisions.

NOAA. (2024). NOWData – NOAA Online Weather Data. Retrieved on October 16, 2024 from https://www.weather.gov/wrh/Climate?wfo=box.

Natural Resources Conservation Service (NRCS). 2010. Web Soil Survey. United States Department of Agriculture, Washington, DC. Accessed 2024 from http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

NRCS, 2024. "Web Soil Survey Tool." Usda.gov, 2024, websoilsurvey.nrcs.usda.gov/app/. Accessed 2024.

NWI, 2024. "National Wetlands Inventory." Usgs.gov, 2023, fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/. Accessed 2023.

Russo, Paul A. 1994. *Historic and Archaeological Reconnaissance/Inventory Survey Cultural Resource Management Plan: Buffumville Lake, Charlton, Massachusetts*. Contract No. DACW 33-92-R-0002. The Public Archaeology Laboratory, Inc. Report No. 499. Submitted by Normandeau Associates, Inc., Bedford, New Hampshire.

U.S. Department of Agriculture (USDA). 2024. "What Are Invasive Species?" accessed 29 April 2025 from https://www.invasivespeciesinfo.gov/what-are-invasive-species.

U. S. Environmental Protection Agency (EPA). 2024a. Facility Level Information on Greenhouse Gases Tool (FLIGHT). Retrieved September 30, 2024, from https://ghgdata.epa.gov/ghgp/main.do/

U.S. EPA. 2024c. Ecoregions. Retrieved September 30, 2024, from https://www.epa.gov/eco-research/ecoregions

U.S Fish and Wildlife Services (USFWS). (2021). Birds of Conservation Concern 2021. https://www.fws.gov/media/birds-conservation-concern-2021

U.S. Geological Survey (USGS). 2024. Groundwater Atlas of the United States Data accessed 2024 from the following URLs: https://pubs.usgs.gov/ha/ha730/ch_m/M-text6.html; https://pubs.usgs.gov/ha/ha730/ch_m/gif/M010.GIF; https://pubs.usgs.gov/ha/ha730/ch_m/gif/Mtab16.GIF.

USACE. 1996. Operational Management Plan for Buffumville Lake.

USACE. 2022. Climate Preparedness and Resilience. Retrieved on 12 November 2024 from https://www.usace.army.mil/corpsclimate/#:~:text=Mission%20Statement,or%20expected%20changes%20in%20climate

USACE. 2025. Environmental Operating Principles. Retrieved April 15, 2025 from https://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/

USFWS. 2024a. Information for Planning and Consultation (IPac). Retrieved on August 30, 2024. https://ipac.ecosphere.fws.gov/

USFWS. 2024b. Wetlands Mapper. National Wetlands Inventory. Retrieved on September 30, 2024, from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

USGCRP. 2023. “Fifth National Climate Assessment.” Nca2023.Globalchange.gov, 2023, pp. 1–470, nca2023.globalchange.gov/

USGS. National Water Information System. Accessed 2024 from https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=420610071421402;

Wiken, E., Nava, F.J, Griffith, G. 2011. North American Terrestrial Ecoregions – Level III. Commissions for Environmental Cooperation, Montreal, Canada. https://gaftp.epa.gov/EPADataCommons/ORD/Ecoregions/pubs/NA_TerrestrialEcoregionsLevel3_Final-2june11_CEC.pdf

APPENDIX A – LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS

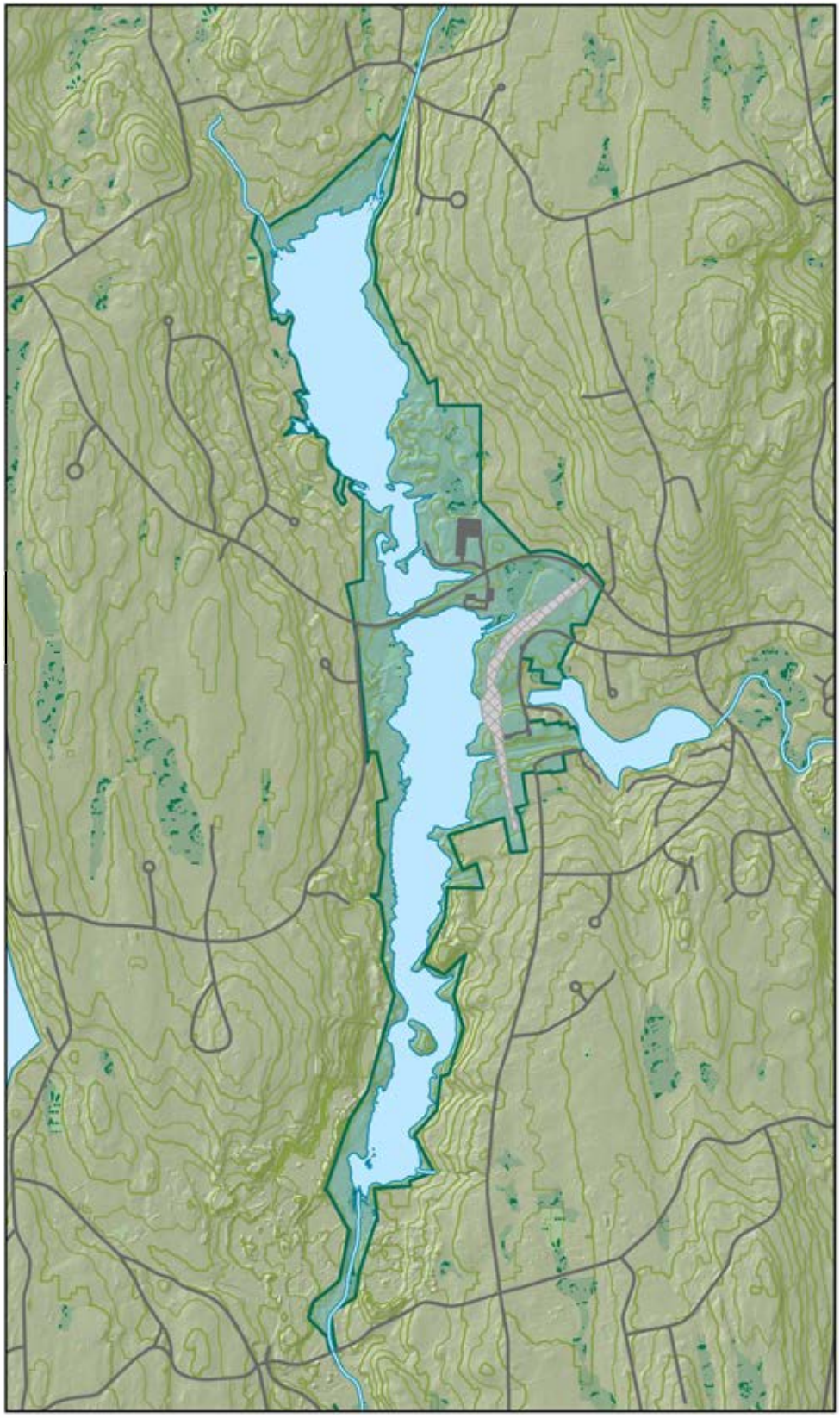
This page intentionally left blank.

US Army Corps of Engineers®
New England District

BUFFUMVILLE LAKE

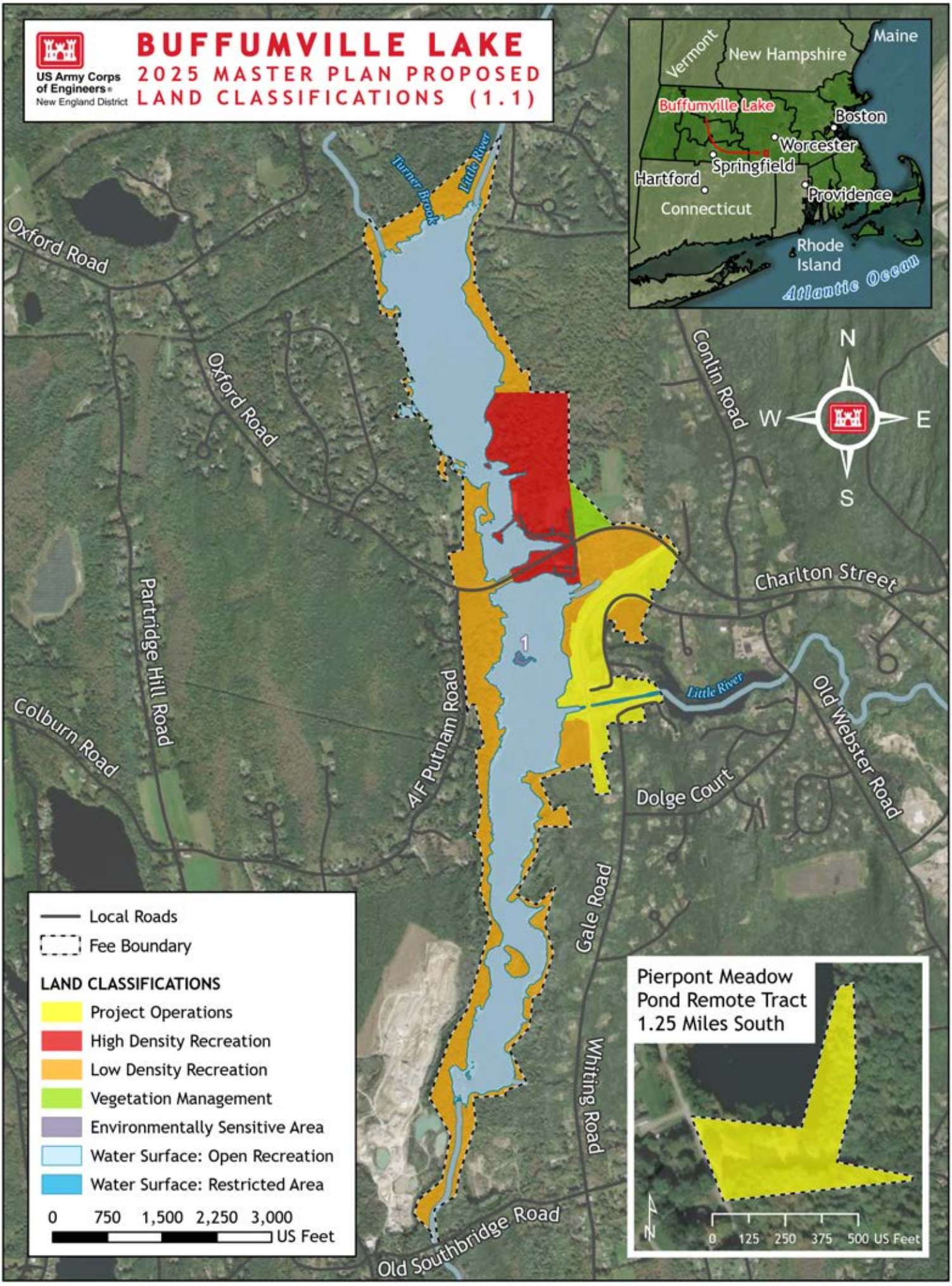
2025 MASTER PLAN REVISION

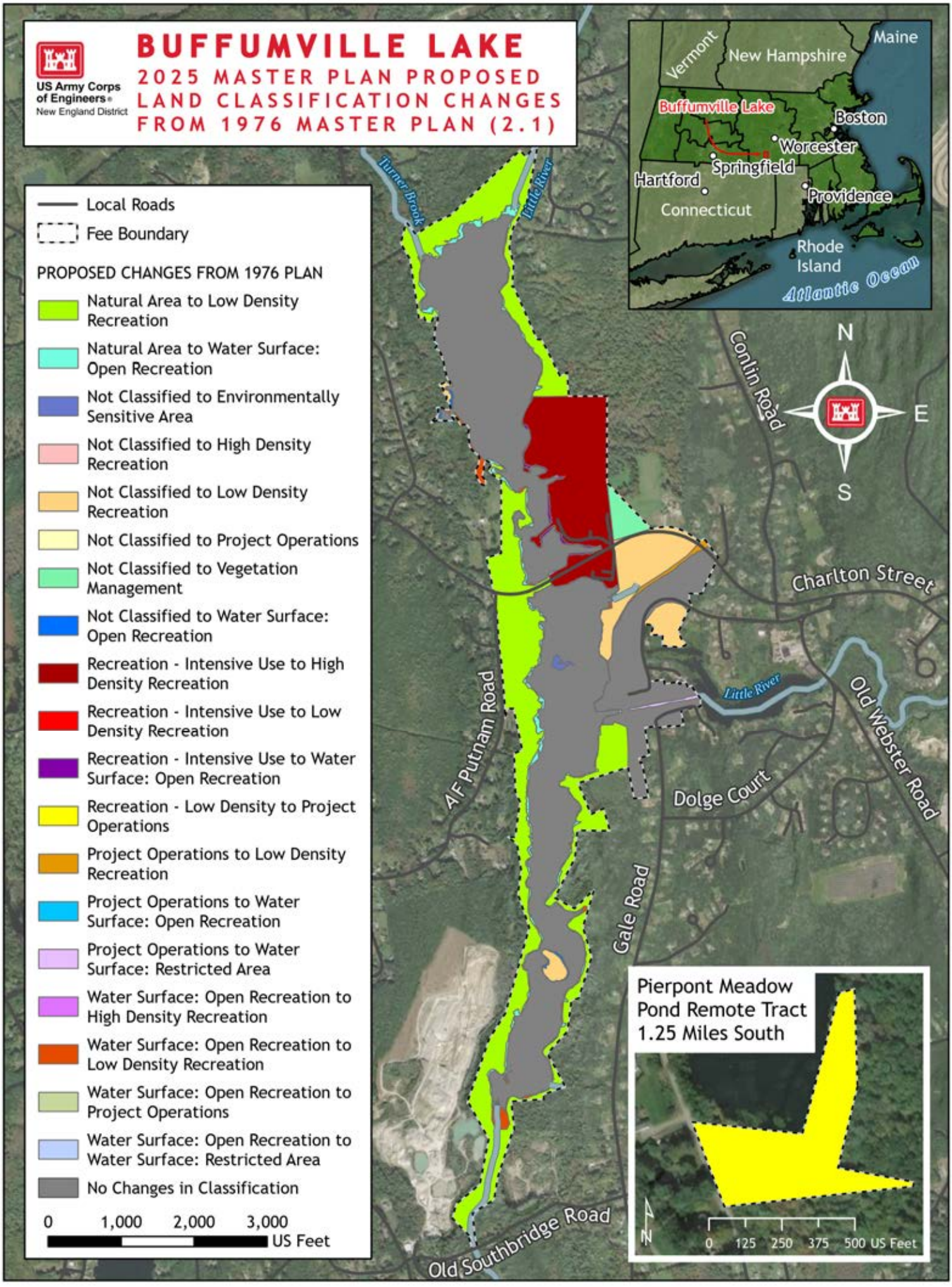
SHEET INDEX (0.1)

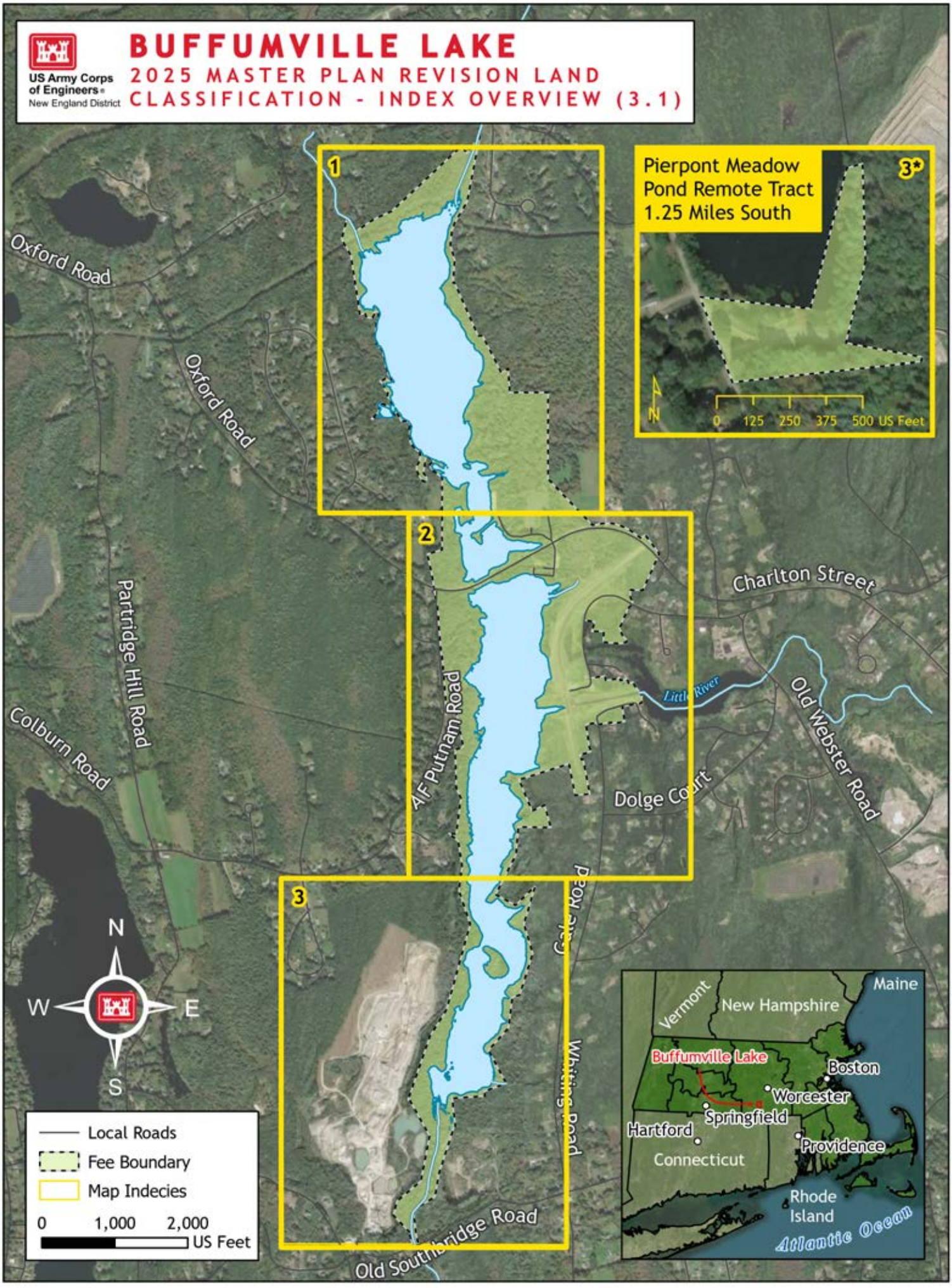


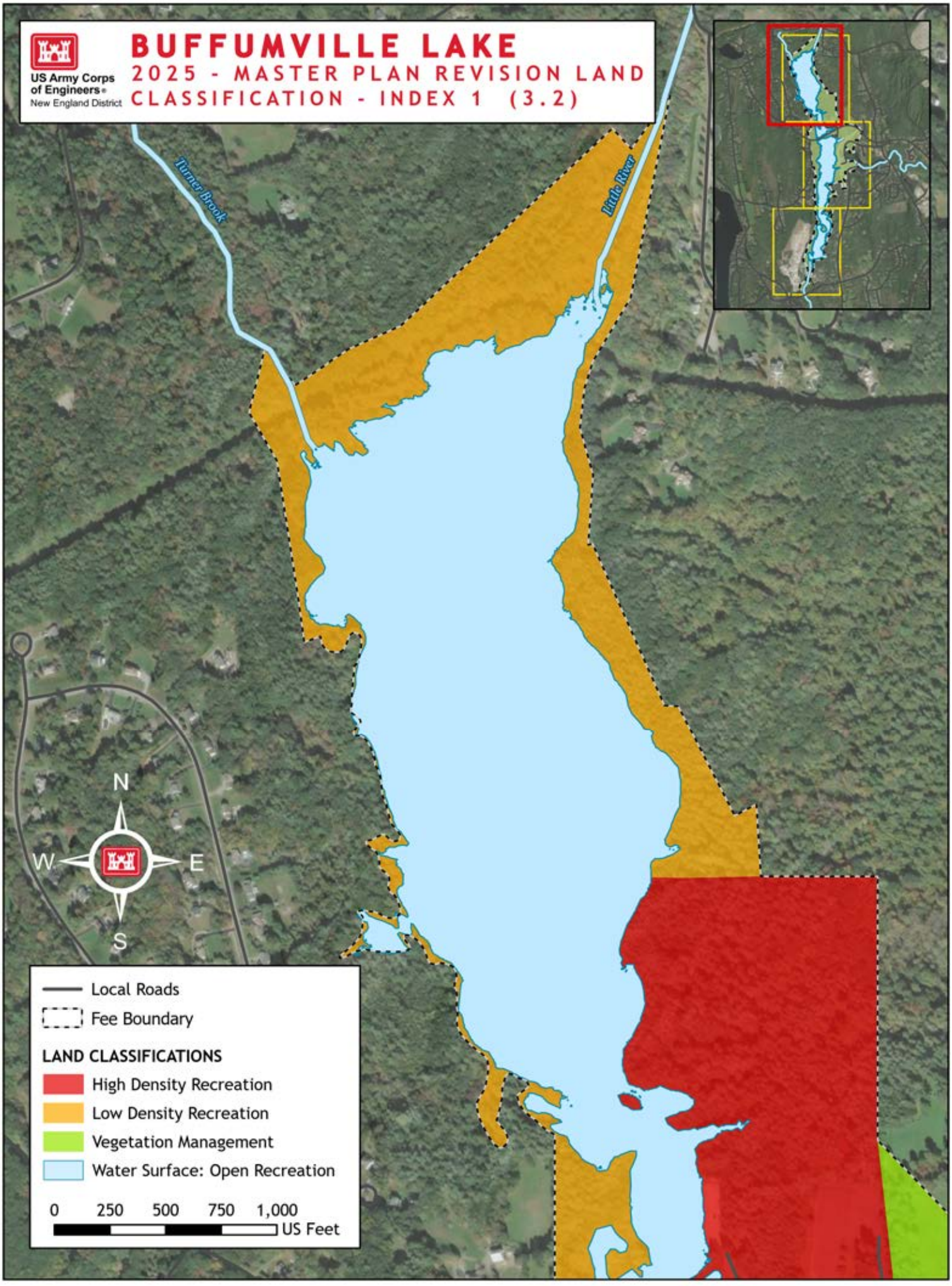
Sheet Index

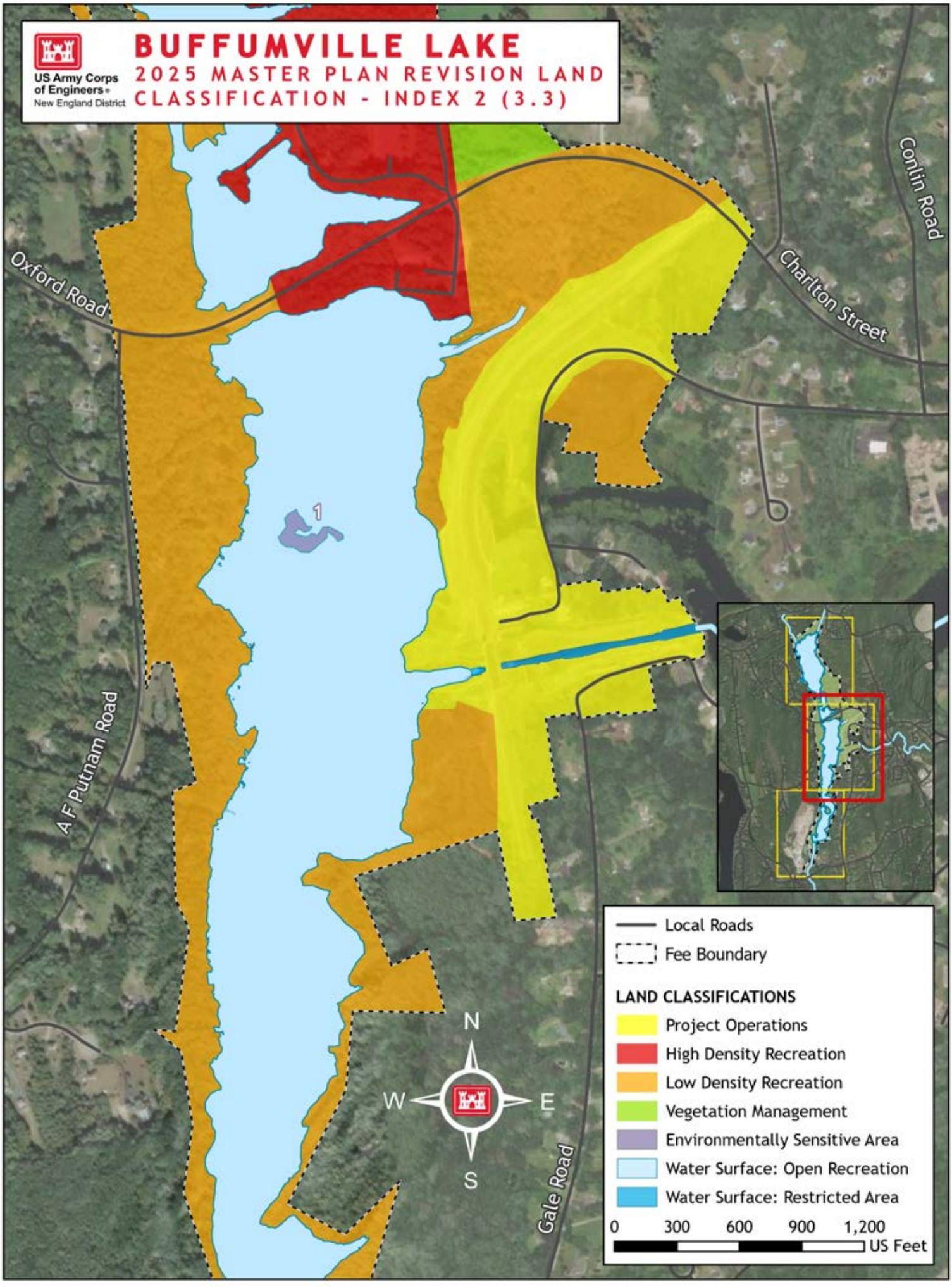
U.S. ARMY

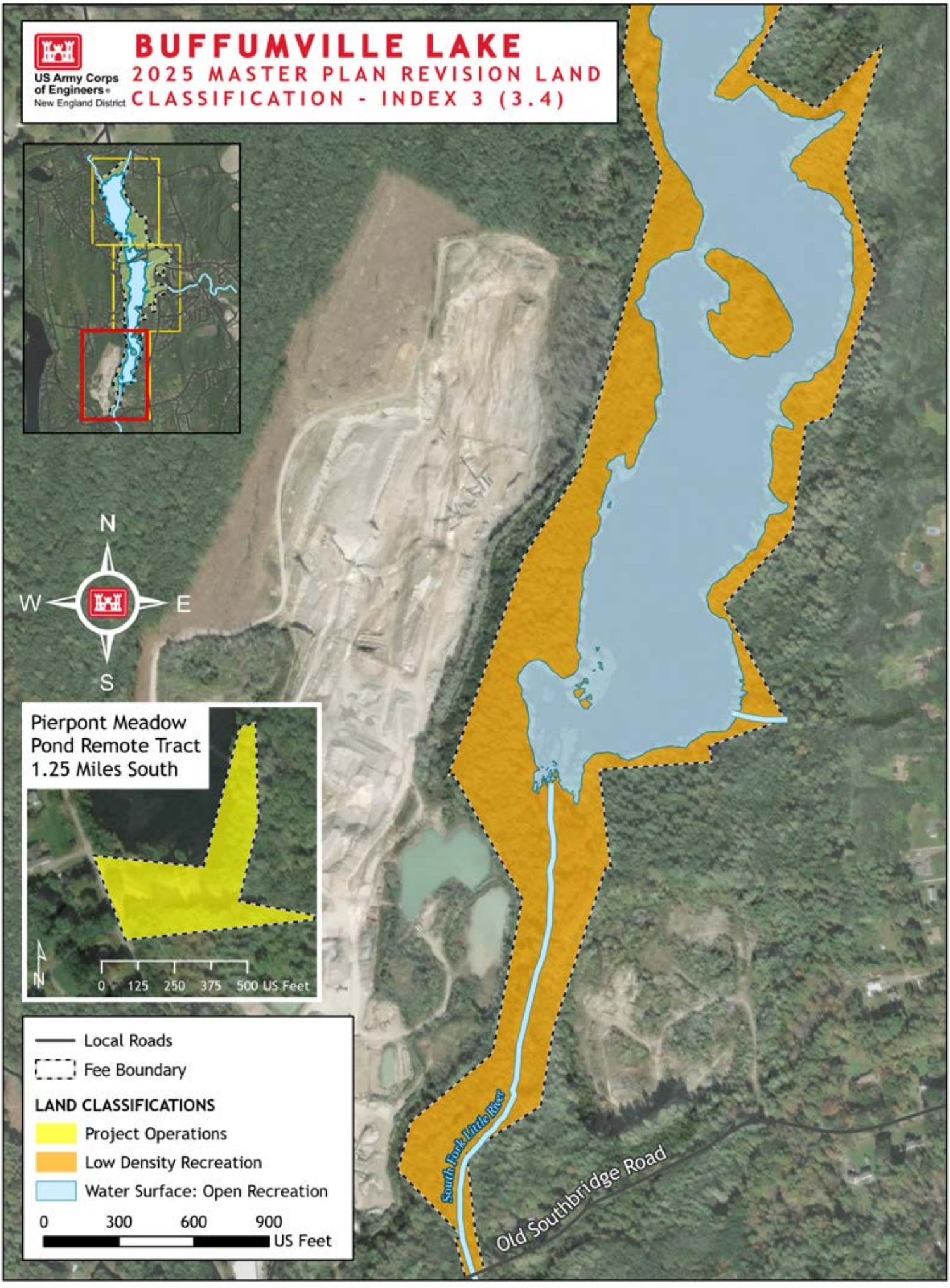

BUFFUMVILLE LAKE
2025 MASTER PLAN PROPOSED
LAND CLASSIFICATIONS (1.1)
US Army Corps of Engineers
New England District
Vermont
New Hampshire
Maine
Buffumville Lake
Boston
Worcester
Springfield
Hartford
Providence
Connecticut
Rhode Island
Atlantic Ocean
N
W
E
S
Turner Brook
Little River
Oxford Road
Oxford Road
Conlin Road
Charlton Street
Partridge Hill Road
Colburn Road
AF Putnam Road
Little River
Old Webster Road
Dolge Court
Gale Road
Whiting Road
Old Southbridge Road
1
Local Roads
Fee Boundary
LAND CLASSIFICATIONS
Project Operations
High Density Recreation
Low Density Recreation
Vegetation Management
Environmentally Sensitive Area
Water Surface: Open Recreation
Water Surface: Restricted Area
0 750 1,500 2,250 3,000
US Feet
Pierpont Meadow
Pond Remote Tract
1.25 Miles South
N
0 125 250 375 500 US Feet

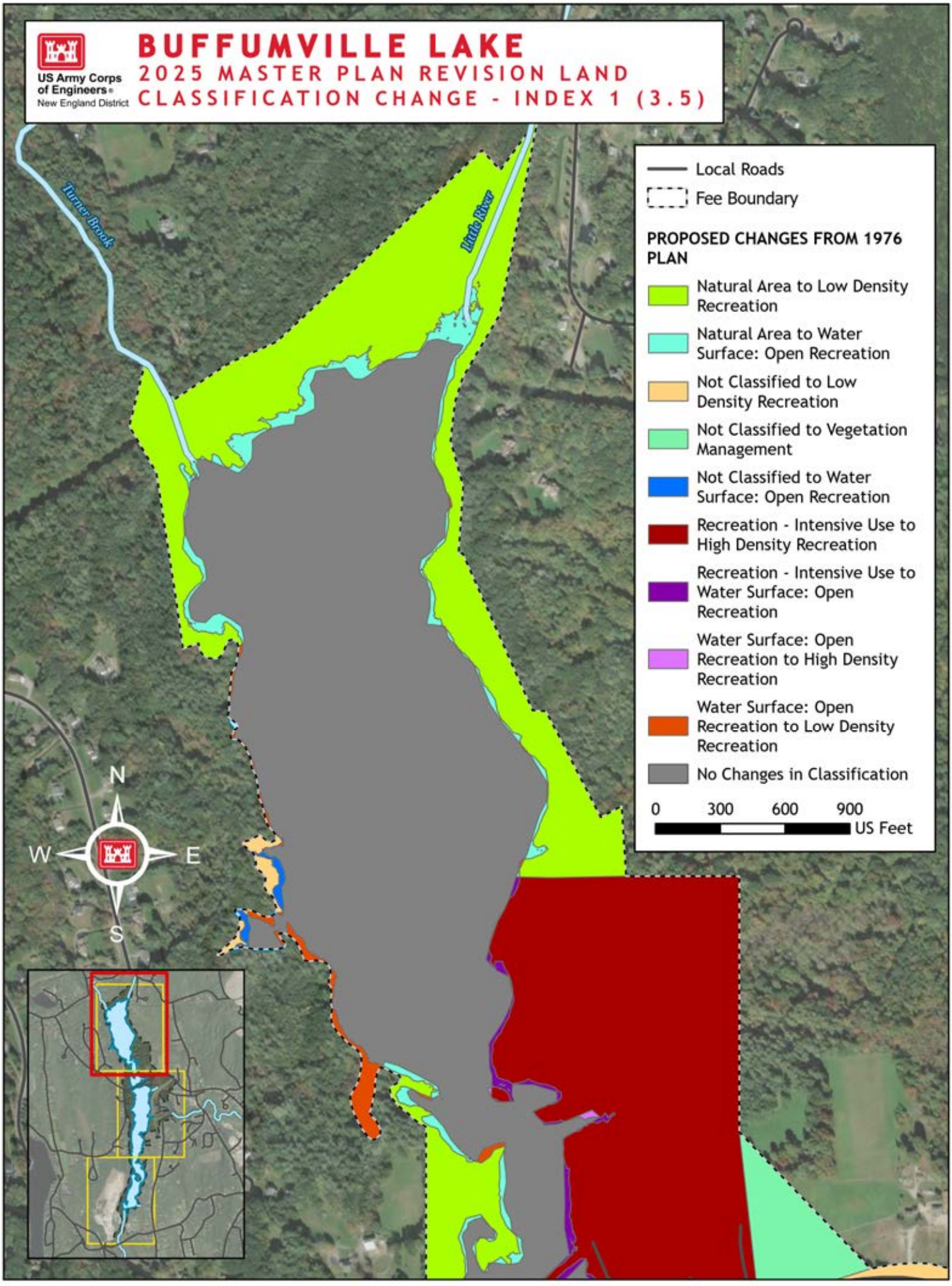

BUFFUMVILLE LAKE
2025 MASTER PLAN PROPOSED LAND CLASSIFICATION CHANGES FROM 1976 MASTER PLAN (2.1)
US Army Corps of Engineers
New England District
Local Roads
Fee Boundary
PROPOSED CHANGES FROM 1976 PLAN
Natural Area to Low Density Recreation
Natural Area to Water Surface: Open Recreation
Not Classified to Environmentally Sensitive Area
Not Classified to High Density Recreation
Not Classified to Low Density Recreation
Not Classified to Project Operations
Not Classified to Vegetation Management
Not Classified to Water Surface: Open Recreation
Recreation - Intensive Use to High Density Recreation
Recreation - Intensive Use to Low Density Recreation
Recreation - Intensive Use to Water Surface: Open Recreation
Recreation - Low Density to Project Operations
Project Operations to Low Density Recreation
Project Operations to Water Surface: Open Recreation
Project Operations to Water Surface: Restricted Area
Water Surface: Open Recreation to High Density Recreation
Water Surface: Open Recreation to Low Density Recreation
Water Surface: Open Recreation to Project Operations
Water Surface: Open Recreation to Water Surface: Restricted Area
No Changes in Classification
0 1,000 2,000 3,000
US Feet
Vermont
New Hampshire
Maine
Buffumville Lake
Boston
Worcester
Springfield
Hartford
Providence
Connecticut
Rhode Island
Atlantic Ocean
Turner Brook
Little River
Conlin Road
N
E
S
Charlton Street
Little River
AF Putnam Road
Old Webster Road
Dolge Court
Gale Road
Old Southbridge Road
Pierpont Meadow Pond Remote Tract
1.25 Miles South
0 125 250 375 500 US Feet

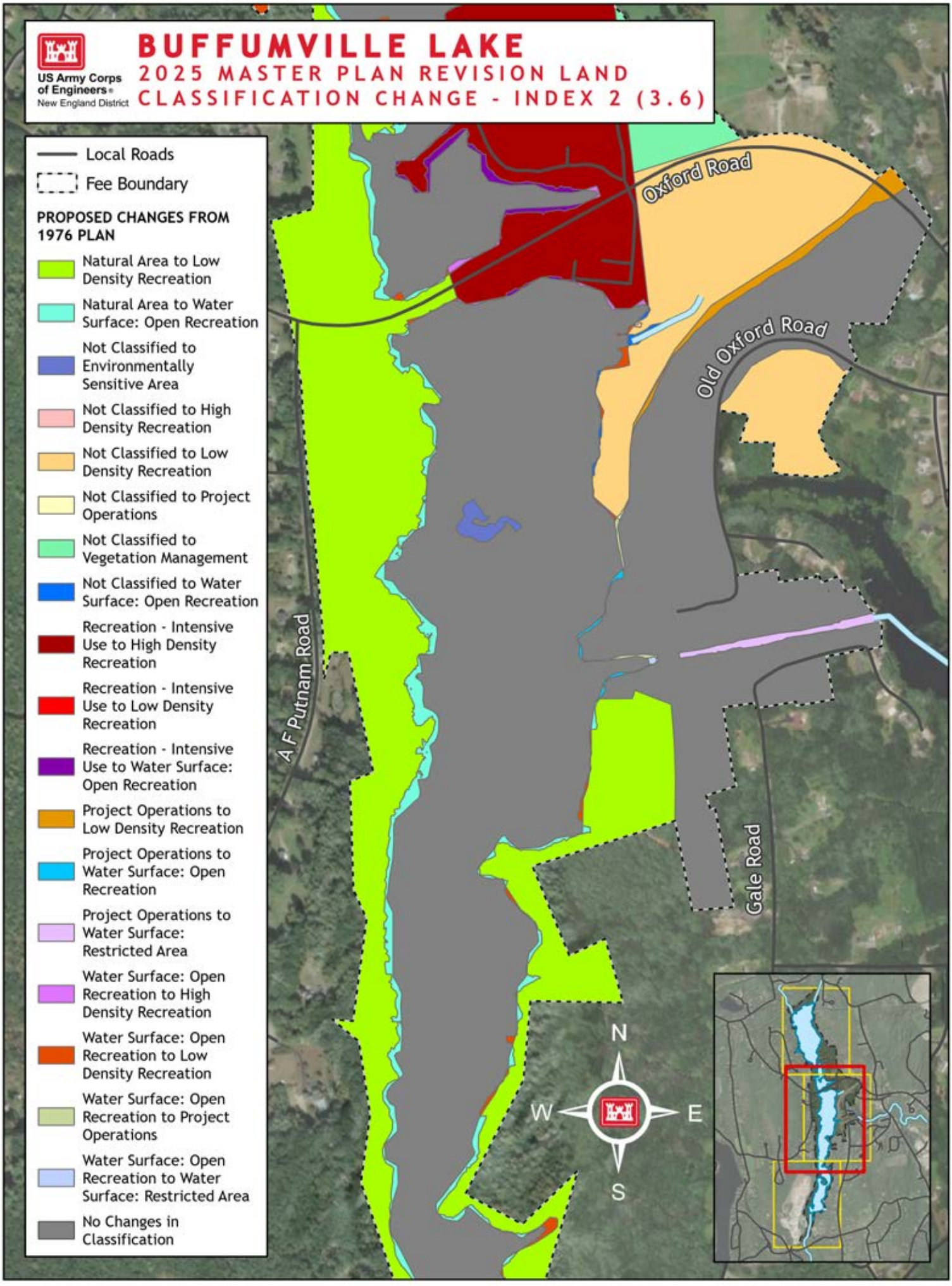

BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION - INDEX OVERVIEW (3.1)
US Army Corps of Engineers
New England District
1
2
3
Pierpont Meadow Pond Remote Tract 1.25 Miles South
3*
N
0 125 250 375 500 US Feet
Oxford Road
Oxford Road
Partridge Hill Road
Colburn Road
Charlton Street
Old Webster Road
Little River
A F Putnam Road
Dolge Court
Dolge Road
Whiting Road
Old Southbridge Road
N
W
E
S
Local Roads
Fee Boundary
Map Indecies
0 1,000 2,000 US Feet
Maine
Vermont
New Hampshire
Buffumville Lake
Boston
Worcester
Springfield
Hartford
Connecticut
Providence
Rhode Island
Atlantic Ocean

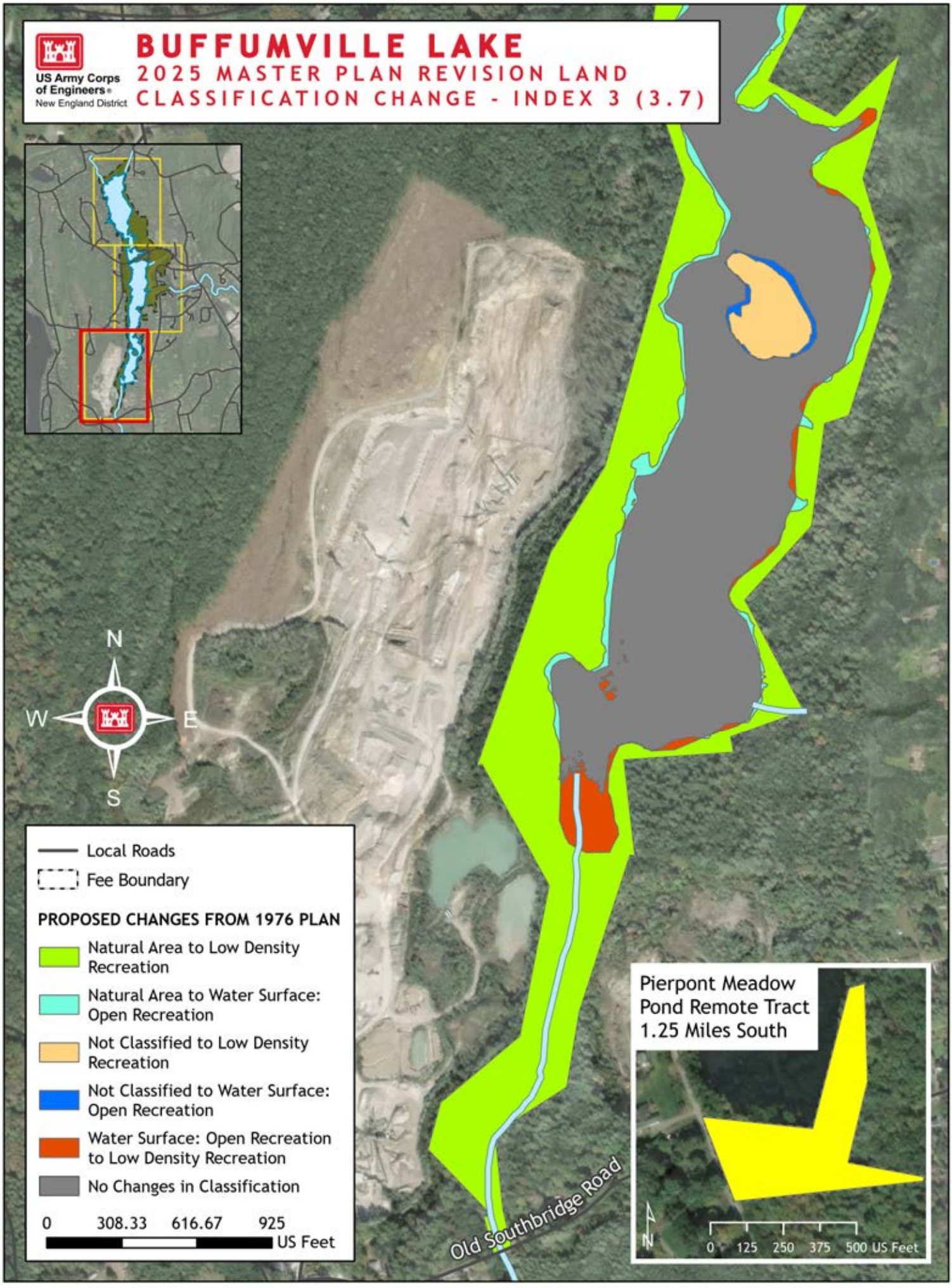

US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 - MASTER PLAN REVISION LAND CLASSIFICATION - INDEX 1 (3.2)
Turner Brook
Little River
N
W
E
S
Local Roads
Fee Boundary
LAND CLASSIFICATIONS
High Density Recreation
Low Density Recreation
Vegetation Management
Water Surface: Open Recreation
0 250 500 750 1,000
US Feet

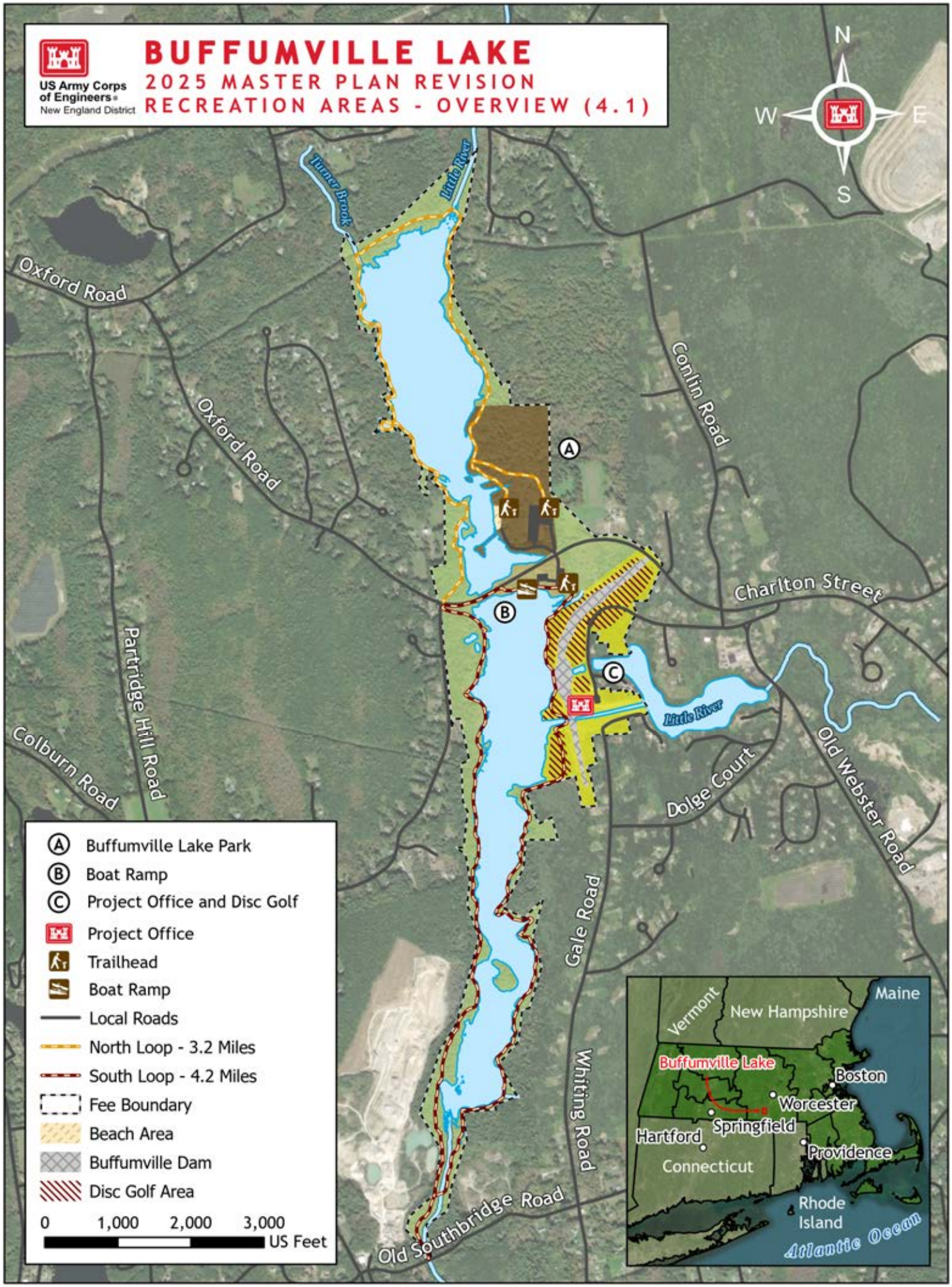

US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION - INDEX 2 (3.3)
Oxford Road
Charlton Street
Conlin Road
A F Putnam Road
Gale Road
1
N
W
E
S
Local Roads
Fee Boundary
LAND CLASSIFICATIONS
Project Operations
High Density Recreation
Low Density Recreation
Vegetation Management
Environmentally Sensitive Area
Water Surface: Open Recreation
Water Surface: Restricted Area
0
300
600
900
1,200
US Feet

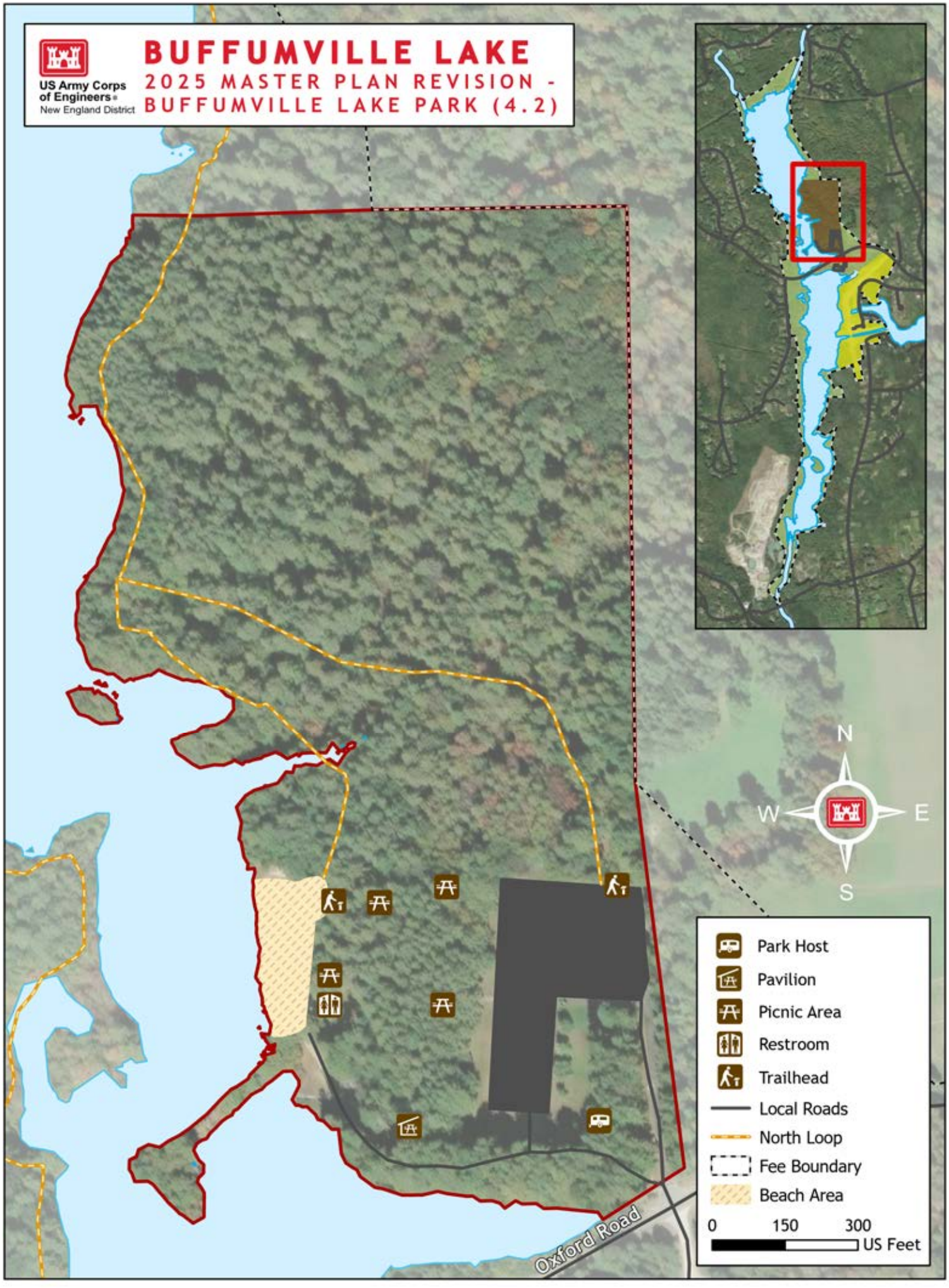

US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION - INDEX 3 (3.4)
N
W
E
S
Pierpont Meadow Pond Remote Tract 1.25 Miles South
0 125 250 375 500 US Feet
Local Roads
Fee Boundary
LAND CLASSIFICATIONS
Project Operations
Low Density Recreation
Water Surface: Open Recreation
0 300 600 900
US Feet
South Fork Little River
Old Southbridge Road


US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION CHANGE - INDEX 1 (3.5)
Turner Brook
Little River
Local Roads
Fee Boundary
PROPOSED CHANGES FROM 1976 PLAN
Natural Area to Low Density Recreation
Natural Area to Water Surface: Open Recreation
Not Classified to Low Density Recreation
Not Classified to Vegetation Management
Not Classified to Water Surface: Open Recreation
Recreation - Intensive Use to High Density Recreation
Recreation - Intensive Use to Water Surface: Open Recreation
Water Surface: Open Recreation to High Density Recreation
Water Surface: Open Recreation to Low Density Recreation
No Changes in Classification
0 300 600 900
US Feet
N
W
E
S

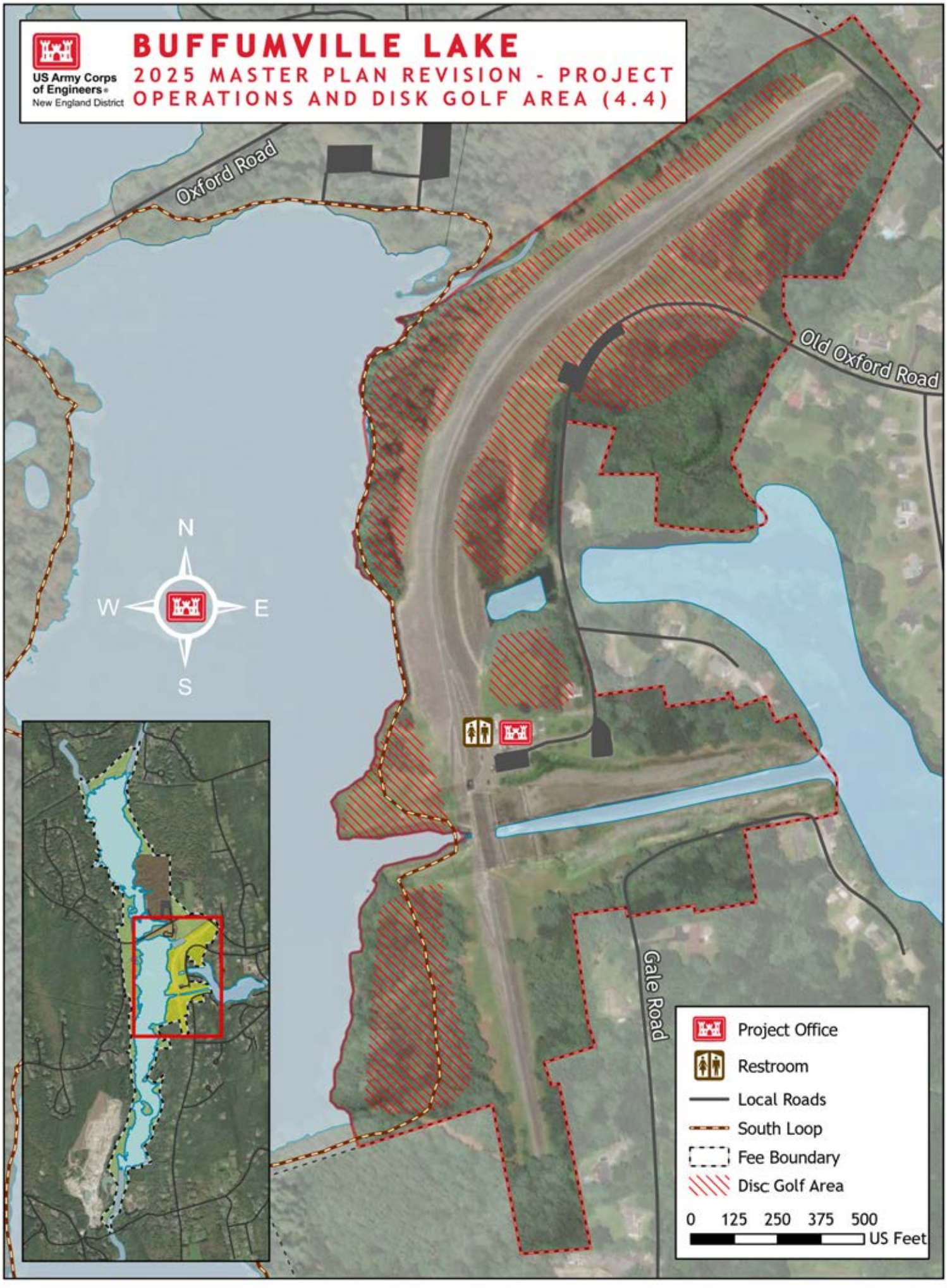

US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION CHANGE - INDEX 2 (3.6)
Local Roads
Fee Boundary
PROPOSED CHANGES FROM 1976 PLAN
Natural Area to Low Density Recreation
Natural Area to Water Surface: Open Recreation
Not Classified to Environmentally Sensitive Area
Not Classified to High Density Recreation
Not Classified to Low Density Recreation
Not Classified to Project Operations
Not Classified to Vegetation Management
Not Classified to Water Surface: Open Recreation
Recreation - Intensive Use to High Density Recreation
Recreation - Intensive Use to Low Density Recreation
Recreation - Intensive Use to Water Surface: Open Recreation
Project Operations to Low Density Recreation
Project Operations to Water Surface: Open Recreation
Project Operations to Water Surface: Restricted Area
Water Surface: Open Recreation to High Density Recreation
Water Surface: Open Recreation to Low Density Recreation
Water Surface: Open Recreation to Project Operations
Water Surface: Open Recreation to Water Surface: Restricted Area
No Changes in Classification
Oxford Road
Old Oxford Road
A F Putnam Road
Gale Road
N
W
E
S

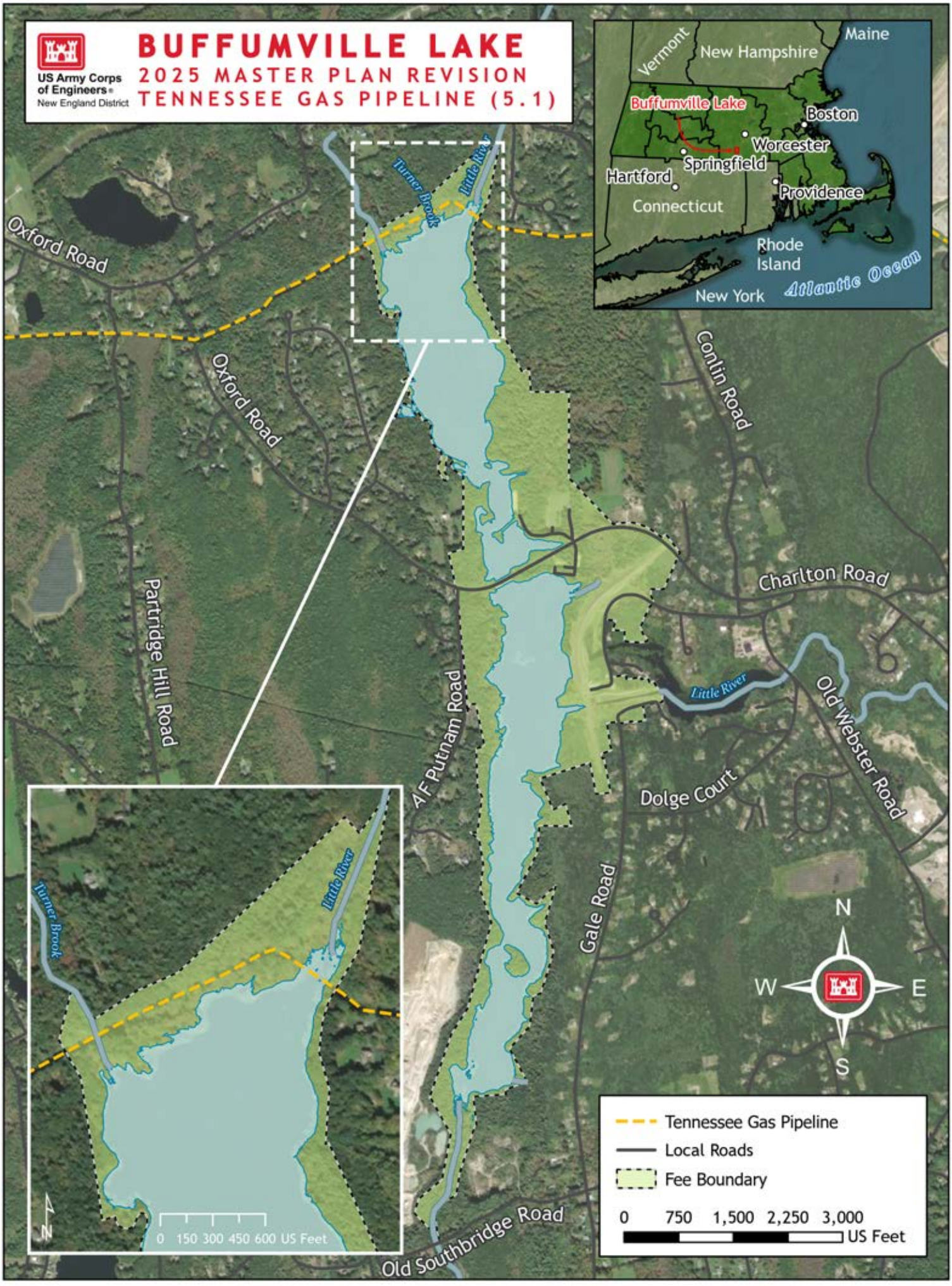

US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION LAND CLASSIFICATION CHANGE - INDEX 3 (3.7)
N
W
E
S
Local Roads
Fee Boundary
PROPOSED CHANGES FROM 1976 PLAN
Natural Area to Low Density Recreation
Natural Area to Water Surface: Open Recreation
Not Classified to Low Density Recreation
Not Classified to Water Surface: Open Recreation
Water Surface: Open Recreation to Low Density Recreation
No Changes in Classification
0 308.33 616.67 925
US Feet
Old Southbridge Road
Pierpont Meadow Pond Remote Tract 1.25 Miles South
N
0 125 250 375 500 US Feet


BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION
RECREATION AREAS - OVERVIEW (4.1)
US Army Corps of Engineers
New England District
N
W
E
S
Turner Brook
Little River
Oxford Road
Oxford Road
Conlin Road
Charlton Street
Partridge Hill Road
Colburn Road
Little River
Dolge Court
Old Webster Road
Gale Road
Whiting Road
Old Southbridge Road
A Buffumville Lake Park
B Boat Ramp
C Project Office and Disc Golf
Project Office
Trailhead
Boat Ramp
Local Roads
North Loop - 3.2 Miles
South Loop - 4.2 Miles
Fee Boundary
Beach Area
Buffumville Dam
Disc Golf Area
0 1,000 2,000 3,000
US Feet
Vermont
New Hampshire
Maine
Buffumville Lake
Boston
Worcester
Springfield
Hartford
Providence
Connecticut
Rhode Island
Atlantic Ocean


BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION -
BUFFUMVILLE LAKE PARK (4.2)
US Army Corps of Engineers
New England District
N
W
E
S
Park Host
Pavilion
Picnic Area
Restroom
Trailhead
Local Roads
North Loop
Fee Boundary
Beach Area
0
150
300
US Feet
Oxford Road


US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION -
BOAT RAMP AREA (4.3)
Oxford Road
Boat Ramp
Restroom
Trailhead
Local Roads
South Loop
Fee Boundary
Beach Area
0
100
200
300
US Feet
N
W
E
S


US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION - PROJECT OPERATIONS AND DISK GOLF AREA (4.4)
Oxford Road
Old Oxford Road
Gale Road
N
W
E
S
Project Office
Restroom
Local Roads
South Loop
Fee Boundary
Disc Golf Area
0 125 250 375 500
US Feet


US Army Corps of Engineers
New England District
BUFFUMVILLE LAKE
2025 MASTER PLAN REVISION
TENNESSEE GAS PIPELINE (5.1)
Vermont
New Hampshire
Maine
Buffumville Lake
Boston
Worcester
Springfield
Hartford
Providence
Connecticut
Rhode Island
New York
Atlantic Ocean
Turner Brook
Little River
Oxford Road
Oxford Road
Conlin Road
Partridge Hill Road
Charlton Road
Little River
Old Webster Road
A F Putnam Road
Dolge Court
Gale Road
Old Southbridge Road
N
W
E
S
Tennessee Gas Pipeline
Local Roads
Fee Boundary
0 750 1,500 2,250 3,000
US Feet
0 150 300 450 600 US Feet

APPENDIX B – NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

This page intentionally left blank.

Finding of No Significant Impact (FONSI) And Environmental Assessment

Buffumville Lake

Master Plan

Worcester County, Massachusetts

E6-O-1741697234

US Army Corps of Engineers ®
New England District

June 2025

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the 2025 Buffumville Lake Master Plan.

SECTION 1	*INTRODUCTION* of the Proposed Action summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA.
SECTION 2	*PROPOSED ACTION AND ALTERNATIVES* examines alternatives for implementing the Proposed Action and describes the recommended alternative.
SECTION 3	*AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting.
	ENVIRONMENTAL CONSEQUENCES identifies the potential environmental and socioeconomic effects of implementing the Proposed Action and alternatives.
SECTION 4	*COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements.
SECTION 5	*PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
SECTION 6	*REFERENCES* provides bibliographical information for cited sources.
APPENDIX A	*COORDINATION* National Environmental Policy Act (NEPA) Coordination and Scoping
APPENDIX B	*WILDLIFE DOCUMENTATION* provides information on USFWS resources (including threatened and endangered species) and Massachusetts's NHESP state-listed species.

Table of Contents

List of Tables

List of Acronyms

CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Environmental Sensitive Areas
FONSI	Finding of No Significant Impact
HDR	High Density Recreation
HTRW	Hazardous, Toxic, and Radioactive Waste
IPaC	Information for Planning and Consultation
LDR	Low Density Recreation
MP	Master Plan
MRML	Multiple Resource Management Lands
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHESP	Natural Heritage & Endangered Species Program
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
O&M	Operation and Maintenance
PO	Project Operations
SHPO	State Historic Preservation Office
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VM	Vegetation Management

FINDING OF NO SIGNIFICANT IMPACT
2025 Buffumville Lake Master Plan
Worcester County, Massachusetts

The U.S. Army Corps of Engineers (USACE), New England District, and the Regional Planning and Environmental Center (RPEC), propose to revise, adopt, and implement the Buffumville Lake Master Plan, as required by Engineering Regulation 1130-2-550 and Engineering Pamphlet 1130-2-550. Buffumville Dam is a rolled earth fill embankment dam that provides flood risk management to the Thames River basin. The Rivers and Harbors Act of 1941 (also known as the Flood Control Act of 1941) authorized Buffumville Lake and Dam (referred to hereafter as "Buffumville Lake") as a part of the Thames River Basin flood control system. The Flood Control Act of 1944, as amended, authorized the development of Buffumville Lake for recreation.

The Buffumville Lake Master Plan is a strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources located at Buffumville Lake project. The Master Plan and supporting documentation provide an inventory and analysis of goals, objectives, and recommendations for USACE lands and waters at Buffumville Lake with input from the public, stakeholders, and subject matter experts.

USACE has completed an Environmental Assessment (EA) for this action in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. USACE is fully revising the 1976 Master Plan to reflect current ecological, socio-demographic, and outdoor recreation trends that are impacting the lake, as well as those anticipated to occur within the next 25 years.

The revised 2025 Master Plan includes updated land classifications, resource goals and objectives. The land classifications include a small increase in Project Operations, large increase in Low Density Recreation, a small increase in High Density Recreation, a small increase in Environmentally Sensitive Area, and a small increase in Vegetative Management lands.

I find that based on the evaluation of environmental effects discussed in the EA, this action is not a major federal action significantly affecting the quality of the environment. The EA includes an evaluation of the affected environment and the geographical context and intensity of the direct, indirect, and cumulative long-term and short-term effects of the action. The effects of the proposed action relative to significance criteria are summarized below. None are implicated to warrant a finding of NEPA significance.

(i) The degree to which the action may adversely affect public health and safety. The action will not adversely affect public health and safety.

(ii) The degree to which the action may adversely affect unique characteristics of the geographic area such as historic or cultural resources, parks, Tribal sacred sites, prime farmlands, wetlands, wild and

scenic rivers, or ecologically critical areas. The action will have no potential for adverse impacts to unique characteristics of the geographic area such as Tribal sacred sites, prime farmlands, wild and scenic rivers, or ecologically critical areas. The project will have no potential for adverse impacts on historical and cultural resources.

(iii) Whether the action may violate relevant Federal, State, Tribal, or local laws or other requirements or be inconsistent with Federal, State, Tribal, or local policies designed for the protection of the environment**.** The action will not violate federal, state, tribal or local laws or policies for the protection of the environment.

(iv) The degree to which the potential effects on the human environment are highly uncertain. The effects are not uncertain. USACE has revised numerous master plans.

(v) The degree to which the action may adversely affect resources listed or eligible for listing in the National Register of Historic Places (NRHP)**.** The action will have no potential for adverse effects on historic properties eligible or listed on the NRHP.

(vi) The degree to which the action may adversely affect an endangered or threatened species or its habitat, including habitat that has been determined to be critical under the Endangered Species Act of 1973. The action will have no effect on any federal or state threatened or endangered species or designated critical habitat for such species.

(vii) The degree to which the action may adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders. The action will not adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders.

Based on my review and evaluation of the environmental effects as presented in the EA, I have determined that the revision, implementation, and adoption of the Buffumville Lake Master Plan is not a major federal action significantly affecting the quality of the environment and is therefore exempt from requirements to prepare an Environmental Impact Statement.

_____ _____

Date

Justin R. Pabis, P.E.
Colonel, Corps of Engineers
District Engineer

This page left intentionally blank

SECTION 1: INTRODUCTION

The U.S. Army Corp of Engineers (USACE), New England District, has prepared this Environmental Assessment (EA) to analyze the potential environmental effects associated with the adoption and implementation of the Buffumville Lake Master Plan (MP). This MP is a programmatic document subject to evaluation under the National Environmental Policy Act (NEPA) of 1969, as amended, and all appropriate federal and state environmental regulations, laws, and executive orders.

The 2025 MP is a strategic land use management plan that provides direction to preserve, conserve, restore, maintain, manage, and develop all natural, cultural, and recreational resources of a USACE water resource project, which includes all government-owned lands in and around a reservoir. It is a vital tool for responsible stewardship and sustainability of the project's natural, cultural, and recreational resources. The 2025 MP identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the 2025 MP.

1.1 PROJECT LOCATION AND SETTING

Buffumville Lake is a multi-purpose reservoir located in Charlton, Massachusetts in Worcester County. Buffumville Lake is located along the Little River and South Fork in the upper Thames River Basin. Construction of Buffumville Dam was completed in 1958. Buffumville Lake and Dam was authorized in 1936 for flood risk management and recreation. Buffumville Lake property spans approximately 469 acres total, with a water surface area of 214 acres. Buffumville Dam's drainage area is 26.5 square miles. For more information on Buffumville Dam, please refer to Chapter 1.5 of the 2025 MP.

1.1 PURPOSE AND NEED

The 2025 MP is intended to serve as a comprehensive land and recreation management plan with an effective life of approximately 25 years. The purpose of the 2025 MP is to ensure that the conservation and sustainability of the land, water, and recreational resources at Buffumville Lake comply with applicable environmental laws and regulations and to maintain quality lands for future public use. Engineer Pamphlet (EP) 1130-2-550 requires a revision of an MP that no longer serves its intended purpose due to a combination of age and substantial changes to the project. Therefore, the revised MP is being adopted and implemented to provide effective guidance in USACE decision-making.

SECTION 2: PROPOSED ACTION AND ALTERNATIVES

During the alternative development process, different land classifications were evaluated for each parcel of USACE land. Land classifications were determined by primary use alongside the consideration of the multiple Congressionally authorized missions of the Project, public and agency comments, USACE staff knowledge, and potential impacts to the social, cultural, and environmental resources. The goals for the 2025 MP include the following:

GOAL A. Provide the best management practices to respond to regional needs, resource capabilities and suitability, and expressed public interests consistent with authorized project purposes.

GOAL B. Protect and manage the project's natural and cultural resources through sustainable environmental stewardship programs.

GOAL C. Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself while sustaining the project's natural resources.

GOAL D. Recognize the particular qualities, characteristics, and potentials of the project.

GOAL E. Provide consistency and compatibility with national objectives and other state and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows (USACE, n.d.):

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all USACE activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by USACE, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic, and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.

- Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

Resource objectives were developed to support the goals of the Master Plan, USACE Environmental Operating Principles, and applicable national performance measures. Recreational and natural resources carrying capacities were considered alongside state planning documents, including the Massachusetts Wildlife Action Plan and the Massachusetts Statewide Comprehensive Outdoor Recreation Plan. Refer to Chapter 3 of the 2025 MP for a description of the resource objectives.

During the alternative development workshop, project lands were classified to identify how a given parcel of land shall be used now and in the foreseeable future. Land classifications to be used are defined as follows:

- **Project Operations (PO):** Lands required for operation of the dam, spillway, dikes, project office, maintenance facilities, and other areas used for the operation of Buffumville Lake. These lands allow for limited recreational use such as public access to the shoreline for fishing or the disc golf course, but the primary classification of Project Operations will take precedent over other uses.

- **High Density Recreation (HDR):** Lands developed for intensive recreational activities for the visiting public including day use areas and campgrounds. These areas could also be for commercial concessions and quasi-public development.

- **Environmentally Sensitive Areas (ESA):** Areas where scientific, ecological, cultural, or aesthetic features have been identified and are in need of preservation.

- **Multiple Resource Management Lands (MRML):** Allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands.

    - Low Density Recreation (LDR): Lands with minimal development or infrastructure that supports passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.)
    - Wildlife Management (WM): Lands designated for stewardship of fish and wildlife habitat that permit passive recreation unless restrictions are necessary to protect sensitive species or promote public safety.
    - Vegetation Management (VM): Lands designated for stewardship of vegetative resources.
    - Future or Inactive Recreation (FOIR): Areas with site characteristics compatible with potential 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.

- **Water Surface:** Allows for surface water zones.

- Restricted: Water areas restricted for project operations, safety, and security.
- Designated No-Wake: Water areas to protect environmentally sensitive shoreline areas and recreational water access areas from disturbance and areas to protect public safety.
- Open Recreation: Water areas available for year-round or seasonal water-based recreational use

2.1 NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis for comparison to the anticipated effects of the action alternatives. Under the No Action Alternative, USACE would not adopt and implement the 2025 MP. USACE would continue to manage Buffumville Lake's natural resources as set forth in the 1976 MP.

2.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, USACE will adopt and implement the 2025 MP in replacement of the 1976 MP. The 2025 MP will reclassify all federal land at Buffumville Lake into land management categories. The Proposed Action will meet regional stewardship goals associated with good stewardship of land, water, and recreational resources, address identified recreational trends; and allow for continued use and development of project lands without violating national policies or public laws.

Table 1 provides a summary of prior 1976 MP land classifications alongside the proposed 2025 MP land classifications. Land classification descriptions are included in Section 2.

Table 1. Existing and Proposed Land Classifications

Prior Land Classifications (1976)	Acres	Proposed Land Classifications (2025)	Acres	Net Difference
Project Operations	44	Project Operations (PO)	48	4
Operations: Recreation – Intensive Use Area	54	High Density Recreation (HDR)	53	(1)
Operations: Recreation – Low Density Area	4	Low Density Recreation (LDR)	148	144
Operations: Natural Area	128	–	–	(128)
–	–	Vegetative Management (VM)	5	5
–	–	Environmentally Sensitive Area (ESA)	1	1
Land Not Classified in 1976 Master Plan	34	–	–	(34)
LAND TOTAL	**264**	**LAND TOTAL**	**255**	**(9)**
Prior Water Surface Classifications (1976)	**Acres**	**Proposed Water Surface Classifications (2025)**	**Acres**	**Net Difference**
Water Surface	204	Water Surface	214	10
–	–	• Open Recreation	213	213
–	–	• Restricted	1	1
WATER TOTAL	**204**	**WATER TOTAL**	**214**	**9**
TOTAL FEE	**469**	**TOTAL FEE**	**469**	**0**

* 1976 acres are approximate based on text descriptions of each area since the areas were not originally mapped. Total fee simple title acreage differences from the 1976 total to the 2025 totals are due to improvements in measurement technology, deposition/siltation, and erosion. Totals also differ due to rounding while adding parcels.

SECTION 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the natural, cultural, and social resources found within the Buffumville Lake fee boundary and the environmental consequences of the No Action and Proposed Action Alternative. A description of the existing conditions of resources can be found in Chapter 2 of the 2025 MP. Only those resources that have the potential to be affected by implementation of either alternative will be analyzed in this EA. Impacts are evaluated in terms of type, context, intensity, and duration. The type of impacts can be either beneficial or adverse and can be either directly or indirectly related to the action.

3.1 LAND USE

Please refer to Chapter 4.2 of the 2025 MP for existing land use information in and

around Buffumville Lake.

3.1.1 No Action Alternative

The No Action Alternative will result in moderate, adverse long-term impacts on land use. Under the No Action Alternative, the 2025 MP would not be implemented, and existing land use management would not reflect current and future needs. The operation and maintenance (O&M) at Buffumville Lake would continue to follow the 1976 MP. Land use management would not meet operational and recreational needs identified through scoping efforts. As a result, land use management would be inefficient due to conflicting guidance and management of USACE lands.

3.1.2 Proposed Action

The Proposed Action will result in moderate, long-term beneficial impacts to land use. Under the Proposed Action the 2025 MP would be implemented. The objectives for the 2025 MP describe current and foreseeable land uses while considering expressed public opinion, regional goals and trends, and USACE policies that have evolved to meet day-to-day operational needs. The majority of the reclassifications will maintain and improve current land use management.

The 1976 MP land classifications included multiple operation land classifications, including Recreation – Intensive Use Area, Recreation – Low Density Area, and Natural Area. The Proposed Action includes categorizing lands at Buffumville Lake into the following classifications. Refer to Table 1 for changes in land classification between the 1976 and 2025 MP expressed in acreages.

Project Operations (PO)

The Proposed Action will result in a minor net increase in PO. PO lands are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation. An area near Pierpont Meadow Pond was reclassified from Operations: Recreation – Low Density Area to PO. This area contains roads, an earthen dike, and a small amount of shoreline and is managed primarily to operate the dike, continue road access, and shoreline stability.

MRML – High Density Recreation (HDR)

The Proposed Action will result in a minor net decrease of HDR. The 1976 MP previously classified HDR as Operations: Recreation – Intensive Use Area. The 2025 MP has reclassified Big Island from Intensive Use Area to LDR due to existing and planned uses. Small areas were classified as HDR due to more precise shoreline mapping and prior unclassified areas.

MRML – Low Density Recreation (LDR)

The Proposed Action will result in a net increase of LDR, as the primary proposed land classification at Buffumville Lake. The 1976 MP previously classified a small amount of Operations: Recreation – Low Density Area, which was reclassified to Project Operations to meet existing use. The Proposed Action reclassified Operations: Natural Areas to LDR. This 1976 land classification is no longer valid. This land was reclassified to LDR to better reflect the existing uses which include hiking, fishing, hunting, observing nature, and access to the shoreline. The 2025 MP has reclassified Big Island from Operations: Recreation- Intensive Use Area to LDR to reflect existing and planned usage on the island.

MRML - Vegetation Management (VM)

The Proposed Action will result in a net increase of VM resulting from land previously unclassified. The proposed reclassification includes an actively maintained pollinator habitat which is also managed for the removal of invasive species.

Environmental Sensitive Area (ESA)

The Proposed Action will result in a net increase in ESA, resulting from land previously unclassified. The proposed reclassification includes the protection of sensitive resources within an area.

Water Surface Areas

The Proposed Action will result in a net increase of Water Surface. This is due to more precise shoreline mapping from current LiDAR data. Most of the shoreline was from areas classified as Operations: Natural Area, with smaller amounts changing from Operations: Recreation – Intensive Use Area, Operations: Recreation – Low Density Area, Project Operations, and areas that were not classified in the 1976 Plan.

3.2 WATER RESOURCES

Please refer to Chapters 2.1, 2.3, and 2.7.6 in the 2025 MP for more information on existing conditions for hydrology (including surface and ground water), water quality, and wetlands, respectively.

3.2.1 No Action Alternative

The No Action Alternative will result in no impacts to water resources. Under the No Action Alternative, the 2025 MP would not be implemented. As a result, there would be no changes to existing water resources.

3.2.2 Proposed Action

The Proposed Action will result in minor, negligible beneficial impacts associated with land reclassification. Implementation of the 2025 MP would be compatible with water resources stewardship goals. The Proposed Action would result in an increase of

PO.

3.3 AIR QUALITY

For more information on existing conditions for air quality at Buffumville Lake, please refer to Chapter 2.4 in the 2025 MP.

3.3.1 No Action Alternative

The No Action Alternative will result in no changes to existing air quality at Buffumville Lake. The 1976 MP would remain in compliance with the Clean Air Act as no project activities would result in the contribution of criteria pollutants.

3.3.2 Proposed Action

The Proposed Action will result in no changes to existing air quality at the project and in the region. The 2025 MP would not implement any actions (i.e. ground disturbing activities) that will result in impacts to criteria pollutants and would therefore remain in compliance with the Clean Air Act.

3.4 CLIMATE AND GREENHOUSE GASES

For more information on existing conditions for climate at Buffumville Lake, please refer to Chapter 2.5 in the 2025 MP.

3.4.1 No Action Alternative

The No Action Alternative would result in no changes or impacts to existing climate or greenhouse gas management at Buffumville Lake. There would be no impact on existing or future climate conditions from continued management under the 1976 MP.

3.4.2 Proposed Action

The Proposed Action will result in minor, negligible beneficial long-term impacts to existing air quality at the project and in the region. Impacts would result from land management practices and design standards that promote sustainability. The 2025 MP does not include activities which would contribute to a detectable change in emissions, including greenhouse gases, in the region.

3.5 TOPOGRAPHY, GEOLOGY, AND SOILS

Please refer to Chapter 2.6 of the 2025 MP for more information on existing conditions for topography, geology, and soils at Buffumville Lake.

3.5.1 No Action Alternative

The No Action Alternative will have no impacts to topography, geology, or soils. Under the No Action Alternative, the 1976 MP would remain effective and no benefits to

topography, geology, and soils would result from land reclassification. No ground disturbing activities would take place that could potentially affect topography, geology, or soils resources.

3.5.2 Proposed Action

The Proposed Action will have minor, negligible beneficial long-term impacts to topography, geology, or soils. No ground disturbing activities would take place that could potentially affect topography, geology, or soils at Buffumville Lake. Under the Proposed Action, LDR lands would be managed for minimal development to maintain vegetative cover in order to reduce soil erosion.

3.6 NATURAL RESOURCES

For existing conditions on natural resources (including fish and wildlife resources and vegetation resources), refer to Chapters 2.7.1, 2.7.2, 2.7.5, and 2.7.6 of the 2025 MP.

3.6.1 No Action Alternative

The No Action Alternative will result in minor, adverse long-term impacts to natural resources. Under the No Action Alternative, the 2025 MP would not be implemented, and land management would not be updated to reflect current natural resources management policies and needs at Buffumville Lake.

3.6.2 Proposed Action

The Proposed Action will result in minor, long-term beneficial impacts to natural resources. Under the Proposed Action, the 2025 MP would be implemented, and land management policies would be updated to reflect current needs and natural resource requirements. The 2025 MP resource goals and objectives aim to further enhance, conserve, and protect natural resources, including State and Federally Listed species.

The proposed action includes an increase in ESA (+1 acre), VM (+5 acres), and LDR (+144 acres) lands. ESA lands are designated for scientific, cultural, or aesthetic features and will be managed to ensure no adverse impacts occur. No agricultural or grazing uses will be permitted, and little or no development will occur. VM lands will be actively managed for pollinator habitat and invasive species removal at Buffumville Lake. LDR lands may provide negligible long-term benefits as minimal future development will occur to allow for healthy vegetative cover to develop. Development in LDR may include additional designated multipurpose natural surface trails.

3.7 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) provides a means to conserve threatened and endangered species. An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future

throughout all or a significant portion of its range. Species may be considered endangered or threatened because of any of the following factors (16 U.S.C 1533(a)(1)):

> (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) overutilization for commercial, recreational, scientific, or educational purpose;
> (3) disease or predation;
> (4) the inadequacy of existing regulatory mechanisms; and
> (5) other natural or human-induced factors affecting continued existence.

In addition to threatened and endangered designations, the U.S. Fish and Wildlife Service (USFWS) identifies species that are candidates for listing as a result of identified threats to their continued existence. Proposed species are those that have been proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act.

Section 7(a)(2) of the Endangered Species Act requires Federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to 1) jeopardize the continued existence of any endangered or threatened species, or 2) result in the destruction or adverse modification of critical habitat. Appendix B includes an official species list from the USFWS's Information for Planning and Consultation tool (IPaC) on November 11, 2024 (Project Code No. 2025-0020693). Threatened and Endangered species as well as Migratory Bird Treaty Act, and Bald and Golden Eagle Act species are described in Table 2 and Table 3.

Table 2. Federally Threatened and Endangered Species Potentially Occurring at Buffumville Lake

Common Name	Scientific Name	Federal Listing Status
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered
Small whorled pogonia	*Isotria medeoloides*	Threatened

Table 3. Federally Listed Migratory Species Potentially Occurring at Buffumville Lake

Common Name	Scientific Name
Bald eagle[1]	*Haliaeetus leucocephalus*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Blue-winged warbler	*Vermivora cyanoptera*
Bobolink	*Dolichonyx oryzivorus*
Canada warbler	*Cardellina canadensis*
Cerulean warbler	*Setophaga cerulea*
Chimney swift	*Chaetura pelagica*
Eastern whip-poor will	*Antrostomus vociferus*
Lesser yellowlegs	*Tringa flavipes*
Prairie warbler	*Setophaga discolor*
Prothonotary warbler	*Protonotaria citrea*
Rusty blackbird	*Euphagus carolinus*

Scarlet tanager	*Piranga olivacea*
Semipalmated sandpiper	*Calidris pusilla*
Wood thrush	*Hylocichla mustelina*

[1] *Species protected under the Bald and Golden Eagle Act*

A list of state threatened and endangered species was obtained from MassWildlife's Natural Heritage and Endangered Species Program (NHESP) through the use of MassWildlife's Heritage Hub (Appendix B). Table 4 provides a summary of state-listed threatened and endangered species potentially occurring at Buffumville Lake.

Table 4. State-listed Threatened and Endangered Species

Common Name	Scientific Name	State Listing Status
Wood turtle	*Glyptemys insculpta*	Special Concern
Tule bluet	*Enallagma carunculatum*	Special Concern
Loesel's wide-lipped orchid	*Liparis loeselii*	Threatened
Showy lady's-slipper	*Cypripedium reginae*	Endangered

3.7.1 No Action Alternative

The No Action Alternative will result in no impacts to federal or state-listed species. The No Action Alternative would have no effect on threatened and endangered species and migratory birds. Federally threatened and endangered species and NHESP species would continue to be managed under the existing 1976 MP and in accordance with federal and state laws including the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Act, and the Massachusetts Endangered Species Act (321 CMR 10.00).

3.7.2 Proposed Action

The Proposed Action will result in minor, direct beneficial impacts to federal and state-listed species. The implementation of the 2025 MP will allow for improved management that will help to preserve, enhance, and protect vegetation and wildlife habitat resources that support threatened and endangered that may be occur within Buffumville Lake.

USACE has made a no effect determination for the Proposed Action for any federally listed or proposed threatened, endangered, or candidate species that may occur within Buffumville Lake (Project Code No. 2025-0020693). The implementation of the 2025 would not result in any construction or ground-disturbing activities. No direct or indirect impacts would occur to federal and state-listed species. The proposed action would not affect any species or suitable habitat that may occur within Buffumville Lake. Any future activities that could potentially result in impacts to federally listed species will be coordinated with USFWS under Section 7 of the Endangered Species Act.

3.8 INVASIVE SPECIES

Refer to Chapter 2.7.4 for information on the existing condition of invasive species at Buffumville Lake in the 2025 MP.

3.8.1 No Action Alternative

The No Action Alternative will result in minor, long-term impacts to invasive species. The 2025 MP would not be implemented, and the project would continue to utilize the 1976 MP. As a result, no changes to existing conditions would occur and land management would not be compatible with current invasive species management needs.

3.8.2 Proposed Action

The Proposed Action will result in minor, long-term beneficial impacts to invasive species. The reclassification of lands, improvement of resource management objectives, and improvement of the 2025 MP will allow for more effective invasive species management. The increased VM (+5 acres) lands will increase invasive species management, through actively managed pollinator habitat, alongside invasive species removal.

3.9 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

For information on the existing conditions of Hazardous, Toxic, and Radioactive Waste (HTRW) at Buffumville Lake, please refer to Chapter 2.8 of the 2025 MP.

3.9.1 No Action Alternative

The No Action Alternative will result in no impacts to HTRW resources. Under the No Action Alternative, the 2025 MP would not be implemented and there would be no changes to the existing 1976 MP. No impacts to HTRW resources would occur as no HTRW resources or facilities are located within or in the immediate vicinity of Buffumville Lake.

3.9.2 Proposed Action

The Proposed Action will result in no impacts to HTRW resources. Under the Proposed Action, the 2025 MP would be implemented, and no construction or ground-disturbing activities would occur. No impacts to HTRW resources would occur as no HTRW resources or facilities are located within or in the immediate vicinity of Buffumville Lake.

3.10 HEALTH AND SAFETY

For information on the existing conditions of health and safety at Buffumville Lake, please refer to Chapter 2.9 of the 2025 MP.

3.10.1 No Action Alternative

The No Action Alternative will result in no impacts to health and safety. Under the No Action Alternative, the 2025 MP would not be implemented and there would be no changes to the existing 1976 MP.

3.10.2 Proposed Action

The Proposed Action will result in no impacts to health and safety. The implementation of the 2025 MP will result in no construction or ground-disturbing activities that may impact health and safety.

3.11 AESTHETIC RESOURCES

For information on the existing conditions of aesthetic resources at Buffumville Lake, please refer to Chapter 2.10 of the 2025 MP.

3.11.1 No Action Alternative

The No Action Alternative will result in no impacts on aesthetic resources. No revisions to the 1976 MP would occur, and no changes would occur to existing aesthetic resources.

3.11.2 Proposed Action

The Proposed Action will result in negligible, long-term beneficial impacts to aesthetic resources. The proposed action includes an increase in LDR (+144 acres) lands. Future LDR land management will include minimal development to maintain a healthy vegetative cover in order to improve aesthetics.

3.12 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

The earliest evidence of anthropogenic occupation of Buffumville Lake dates back to 5,500 BC, varying from indigenous populations to colonial Europeans and early Americans. Many artifacts have been found in the project area from both pre-contact and post-contact archaeological sites. Chapter 2.11 of the 2025 Master Plan provides prehistoric and historic background discussions for the Buffumville Lake area as well as a summary regarding previous cultural resources investigations.

3.12.1 No Action Alternative

The No Action Alternative will result in no impacts to existing cultural, historical, or archaeological resources. Buffumville Lake would continue to be managed according to the 1976 Master Plan and the 2001 Historic Properties Management Plan.

3.12.2 Proposed Action

The Proposed Action will result in long-term beneficial impacts to existing cultural resources from the identification and consideration of cultural resources in the MP. Impacts on cultural, historical, and archaeological resources were considered during the

refinement processes of land reclassifications. No ground disturbing activities are associated with the revision of the MP; therefore, no direct impacts are expected to occur to cultural resources at Buffumville Lake.

3.13 SOCIOECONOMICS AND DEMOGRAPHICS

For more information on the existing conditions of socioeconomics and demographics, please refer to Chapter 2.12 of the 2025 MP.

3.13.1 No Action Alternative

The No Action Alternative will result in no impacts to existing socioeconomics or demographics. The 2025 MP would not be implemented and Buffumville Lake would continue management under the 1976 MP.

3.13.2 Proposed Action

The Proposed Action will result in no impacts to existing socioeconomics or demographics. Under the Proposed Action the 2025 MP would be implemented. The 2025 MP would result in no construction or changes that would affect local socioeconomic or demographic factors. No activities proposed in the 2025 MP would impact the changes the local economy or local populations in any perceivable way.

3.14 RECREATION

For information on the existing conditions of recreation and the zone of influence for Buffumville Lake, please refer to Chapter 2.14 of the 2025 MP.

3.14.1 No Action Alternative

The No Action Alternative would result in moderate, long-term adverse impacts to recreation. The 2025 MP would not be implemented, and the 1975 MP land classifications would not reflect current and future recreation needs at Buffumville Lake.

3.14.2 Proposed Action

The Proposed Action would result in moderate, long-term beneficial impacts to recreation. The 2025 MP would update recreation policies and goals and increase recreation land classifications. The 2025 MP would result in increased HDR (+1 acres) and LDR (+144) lands. These land classification changes reflect current recreation needs, allowing for effective land management in the context of recreation and recreational access to the public, as well as more streamlined and current recreation management opportunities for Buffumville Lake.

SECTION 4: COMPLIANCE WITH ENVIRONMENTAL LAWS

This EA has been prepared to satisfy the requirements of all applicable federal environmental laws, regulations, and executive orders. The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each:

Federal Statutes

1. *Archaeological Resources Protection Act of 1979, as amended, 16 U.S.C 470aa et seq.*

   Compliance: In compliance. Prior to any work being done as part of this project, the area will be surveyed for the presence of any archaeological resources.

2. *American Indian Religious Freedom Act of 1978, 42 U.S.C 1996.*

   Compliance: This project will not impede access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

3. *Clean Air Act, as amended, 42 U.S.C 7401 et seq.*

   Compliance: Existing reservoir O&M is compliant with the Clean Air Act and will not change with the 2025 MP. A General Conformity Determination is not required since the emissions of either alternative are negligible at best and are otherwise de minimis.

4. *Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972), 33 U.S.C 1251 et seq.*

   Compliance: A state water quality certification pursuant to Section 401 of the Clean Water Act is not required for the 2025 MP. There will be no change in the existing management of the reservoir that will impact water quality, but minor, long-term benefits to water quality are expected from the Proposed Action.

5. *Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.*

   Compliance: Pending. USACE made a no effect determination for the tri-colored bat and small whorled pogonia. A copy of the draft EA will be provided to USFWS.

6. *Fish and Wildlife Coordination Act, as amended,16 U.S.C. 661 et seq.*

   Compliance: The USACE initiated public involvement and agency scoping activities to solicit input on the 2025 MP EA, and to identify

significant issues related to the Proposed Action. Information provided on fish and wildlife resources has been utilized in the development of the 2025 MP. Coordination with USFWS and MassWildlife is ongoing and the draft EA will be provided to them.

7. *Land and Water Conservation Fund Act of 1965, as amended, 54 U.S.C. 200301 et seq.*

   Compliance: Public notice of availability of this report to the National Park Service (NPS) and Office of Statewide Planning relative to the federal and state comprehensive outdoor recreation plans signifies compliance with this Act.

8. *Migratory Bird Treaty Act of 1918, as amended, 16 U.S.C. 703 et seq.*

   Compliance: The timing of resource management activities at Buffumville Lake will be coordinated to avoid impacts on migratory and nesting birds.

9. *National Historic Preservation Act of 1966, as amended, 54 U.S.C. 300101 et seq.*

   Compliance: Coordination with Massachusetts SHPO and Tribes is ongoing and the draft EA will be provided to them. All previous surveys, site testing, and excavations will be coordinated with the Massachusetts SHPO and Native American Tribes with interest in the project area. Known sites are mapped and avoided by maintenance activities with review and approval from District.

10. *Native American Graves Protection & Repatriation Act (NAGPRA), 25 U.S.C 3001-3013, 18 U.S.C 1170*

    Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

11. *National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.*

    Compliance: Preparation of an Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the FONSI is issued.

12. *Bald and Golden Eagle Protection Act, 16 U.S.C. 668 et seq.*

    Compliance: The project does not involve take, sale, purchase, or transport of any Bald or Golden Eagles.

13. *National Invasive Species Act (NISA), as amended, 16 U.S.C. 4701 et seq.*

    Compliance: The project will not promote or cause the introduction or spread of invasive species into waters of the United States.

Executive Orders

1. *EO 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971*

   Compliance: Ongoing. A copy of the draft EA will be released to the Massachusetts's SHPO..

2. *EO 11988, Floodplain Management, 24 May 1977 amended by EO 12148, 20 July 1979.*

   Compliance: The proposed project will have no impacts to existing floodplains at Buffumville Lake.

3. *EO 11990, Protection of Wetlands, 24 May 1977*

   Compliance: This project does not proposed construction or future activities in wetlands.

4. *EO 13007, Indian Sacred Sites, 24 May 1996*

   Compliance: Access to and ceremonial use of Indian sacred sites by Indian religious practitioners will be allowed and accommodated. No adverse effects to the physical integrity of such sacred sites will occur.

5. *EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April 1997*

   Compliance: The project will not create a disproportionate environmental health or safety risk for children.

6. *EO 13061, and Amendments – Federal Support of Community Efforts Along American Heritage Rivers, 11 September 1997.*

   Compliance: The project is not located along an American Heritage River.

7. *EO 13112, Invasive Species, 8 December 2016.*

   Compliance: The project will not promote or cause the introduction or spread of invasive species.

8. *EO 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000*

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DOD Indian policy, and USACE Tribal Policy Principles signifies compliance.

9. *EO 13186, Migratory Bird Habitat Protection*

   Compliance: The 2025 MP would not result in adverse impacts on migratory birds or their habitat.

Executive Memoranda

1. *Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980*

   Not applicable. The project does not impact Prime Farmland present on Buffumville Lake project lands.

2. *White House Memorandum, Government-to-Government Relations with Native American Tribal Governments, 29 April 1994.*

   Compliance: Consultation with Federally Recognized Indian Tribes signifies compliance.

SECTION 5: PUBLIC AND AGENCY COORDINATION

In accordance with NEPA of 1969, as amended, the USACE initiated public involvement and agency scoping activities to solicit input on the proposed revision of the 1976 MP, as well as identifying any issues related to the Proposed Action.

A public open house was held for the Buffumville Lake Master Plan revision at the Charlton Public Library Community Meeting Room, 1238 County Welfare Road, Leesport, PA 19533 on May 1, 2024 from 4:30-6:30 p.m. The purpose of this open house was to provide attendees with information regarding the proposed Master Plan revision as well as to provide them with the opportunity to provide comments on the proposed 2025 MP Draft, EA, and FONSI. The open house included the following topics:

- What is a Master Plan?
- What a Master Plan is Not;
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process;
- Master Planning process;
- Proposed Changes to the Master Plan; and
- Instructions for submitting comments.

The public input period remained open for 30 days from May 1, 2024, to May 31, 2024. During the 30-day comment period, USACE received 3 comments. These comments and the USACE response can be found in Appendix E of the 2025 MP.

Attachment A to this EA includes the news release, agency coordination letters, and the distribution list for all coordination letters. The EA has been coordinated with the following agencies and stakeholders:

<u>Federal</u>

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service

<u>State</u>

Massachusetts Department of Fish and Game, Division of Fish and Wildlife (MassWildlife)
Massachusetts Historical Commission, State Historic Preservation Officer (SHPO)

<u>Tribes</u>

Wampanoag Tribe of Gay Head (Aquinnah)
Mashpee Wampanoag Tribe
Narragansett Tribe

SECTION 6: REFERENCES

U.S. Army Corps of Engineers (USACE). n.d. *Environmental Operating Principles*. U.S. Army Corps of Engineers Headquarters. Retrieved on April 2, 2025 from https://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/

U.S. Army Corps of Engineers (USACE). 2025. Buffumville Lake and Dam Master Plan.

U.S. Army Corps of Engineers (USACE). 1976. Buffumville Lake Master Plan for Recreation Resources Development.

ATTATCHMENT A – COORDINATION

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

News Release

Contacts:
Buffumville Lake Master Plan Revision Team: BuffumvilleMasterPlan@usace.army.mil
TJ Atwell, Public Affairs Officer: tj.atwell@usace.army.mil

USACE to host open house for Buffumville Lake Master Plan revision

NEW ENGLAND – The U.S. Army Corps of Engineers (USACE) will host an open house on Wednesday, May 1, 2024, to kick off a process to revise the 1976 Buffumville Lake Master Plan. The open house will be held from 4:30-6:30 p.m. at the Charlton Public Library Community Meeting Room at 40 Main Street, Charlton, MA 01507.

During the open house session, there will be no formal presentation. The public is invited to visit at any point during the 4:30-6:30 p.m. time frame to interact with USACE team members. Team members will be stationed around the room and can share information about the revision process, provide the general schedule, and gather initial feedback from the public.

Master Plan Overview

The Master Plan is defined as the strategic land use management document that guides the comprehensive management and development of all recreational, natural, and cultural resources throughout the life of the water resource development project. It defines "how" USACE will manage the resources for public use and conservation.

The current Buffumville Lake Master Plan, last approved in 1976, needs revision to address changes in regional land use, population, outdoor recreation trends, and the USACE management policy. Key topics to be discussed in the revised Master Plan include revised land use classifications, new natural and recreational resource management objectives, recreation facility needs, and special issues such as invasive species management and threatened and endangered species habitat.

The Master Plan revision WILL NOT address the technical and operational aspects of the lake related to flood risk management or the water conservation missions of the project.

Initial Comments

An initial 30-day comment period will begin May 1, 2024, and end May 31, 2024. The public can send comments, suggestions, and concerns during this time. Comments must be submitted in writing at the open house or digitally via the comment form on the Master Plan Revision web page: https://www.nae.usace.army.mil/Missions/Recreation/Buffumville-Lake/Buffumville-Lake-Master-Plan/.

The web page also contains a presentation which will be available during the open house. The presentation provides a schedule as well as details on an additional comment period after the draft report is released (currently scheduled for June 2025).

About Buffumville Lake

Buffumville Lake in Charlton, Massachusetts, Worcester County, is located along the Little River and South Fork River in the upper Thames River Basin. This is a multi-purpose project built and maintained by the U.S. Army Corps of Engineers New England District. The dam was authorized by Congress for flood risk management and recreation purposes. After catastrophic damages resulted in the surrounding towns from Hurricanes Connie and Diane in 1955, construction of Buffumville Dam started in 1956 and was completed in April 1958, at a cost of $3,068,000. Buffumville Dam is a rolled earthfill dam that is 3,255 feet long and 57.5 feet high. The operation of Buffumville Dam helps to reduce flooding in Webster, Massachusetts, and in small towns downstream along the French River to Putnam, Connecticut. Optimum flood protection is achieved by close coordination between Buffumville Dam and Hodges Village Dam in Oxford. The project offers recreational opportunities compatible with the primary function of flood risk management.

While the main purpose of Buffumville Lake is to provide flood risk management to the Thames River Basin, over the years the lake has become a recreational hotspot. With 7 miles of trails, 480 acres of land, 200 acres of water, picnic areas, a swimming beach, 18-hole disc golf course, and a boat launch, the lake can accommodate all kinds of outdoor enthusiasts. During the summer months, the water level is maintained at 11 feet pool stage. In the winter the lake is drawn down 4 feet to aid in control of aquatic invasive species to preserve the native aquatic habitats.

The U.S. Army Corps of Engineers manages the natural resources at Buffumville Lake for multiple uses: flood risk management, wildlife habitat, forest production, watershed protection, and outdoor recreation. The outdoor sports enthusiast can hunt, fish and boat at Buffumville Lake. Buffumville Lake receives approximately 140,000 visitors per year.

-End-

US Army Corps of Engineers®

Comment Form Instructions
Public Meeting May 1, 2024

Master Plan Revision
Buffumville Lake

The U.S. Army Corps of Engineers is in the process of revising the Buffumville Lake Master Plan. The Master Plan revision will guide the land and recreational management of the federally owned property that make up the flood storage area for the next 25 years. Management activities include protecting natural and cultural resources, providing access to public land and water recreation, protecting the public, and ensuring reservoir and dam operations. Pertinent information and a copy of the current master plan and land use map can be found on the USACE website below. To add your comments, ideas, or concerns about the future land and recreational management for the Master Plan, please submit comments using any of the following methods:

- Fill out and return a comment form available below or at the following website: https://www.nae.usace.army.mil/Missions/Recreation/Buffumville-Lake/Buffumville-Lake-Master-Plan/

- Provide comments in an email message or use the comment form and send to: buffumvillemasterplan@usace.army.mil

- Provide comments in a letter or use comment form and send via mail to:

  USACE Buffumville Lake Office
  Attn: Project Manager
  48 Old Oxford Road,
  Charlton, MA 01507

- Drop off written comments to the project office at the address above.

The **30-day comment period is May 1 through May 31, 2024**. Please provide written comments via the methods above. Your input into the Master Plan revision and related environmental concerns under the National Environmental Policy Act (NEPA) is key to developing a successful Master Plan for the lake project. Please write your questions, comments, or suggestions in on the next page and mail or e-mail them to the address above during the comment period. **Comments due by May 31, 2024**. Thank you for your participation!

Comment Form
Public Meeting May 1, 2024
Comments due by May 31, 2024

Questions, comments, or suggestions?

Optional Information (used for mailing list to keep you informed and will not be used for any other purpose):

Name: _____

Affiliation: _____

Address: _____

City: _____ **State:** _____

Zip Code: _____ **Email:** _____

Scan QR Code

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 04/25/2025 20:48:39 UTC
Project code: 2025-0020693
Project Name: Buffumville Lake 2024 Master Plan Revisions

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Record of project representative's no effect determination for 'Buffumville Lake 2024 Master Plan Revisions'

Dear Kelsie Dakessian:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on April 25, 2025, for 'Buffumville Lake 2024 Master Plan Revisions' (here forward, Project). This project has been assigned Project Code 2025-0020693 and all future correspondence should clearly reference this number. **Please carefully review this letter.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the **Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey)**, invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat and/or Tricolored Bat

Based upon your IPaC submission and a standing analysis, your project has reached the following effect determinations:

Species	Listing Status	Determination

Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	No effect

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17).

Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no consultation with the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13].

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened
- Small Whorled Pogonia *Isotria medeoloides* Threatened

You may coordinate with our Office to determine whether the Action may affect the animal species listed above and, if so, how they may be affected.

Next Steps

If there are no updates on listed species, no further consultation/coordination for this project is required with respect to the species covered by this key. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals

the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place to ensure compliance with the Act.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference Project Code 2025-0020693 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Buffumville Lake 2024 Master Plan Revisions

2. Description

The following description was provided for the project 'Buffumville Lake 2024 Master Plan Revisions':

> Master plan revisions including updated land classifications and resource objectives and goals

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.11587485,-71.90892637725213,14z

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the species covered by this determination key. Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Does the action area contain (1) talus or (2) anthropogenic or naturally formed rock shelters or crevices in rocky outcrops, rock faces or cliffs?

    No

13. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

14. Will the action result in effects to a culvert or tunnel at any time of year?

    No

15. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

16. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

17. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

18. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Kelsie Dakessian
Address: 696 Virginia Road
City: Concord
State: MA
Zip: 01742
Email kelsie.dakessian@usace.army.mil
Phone: 9783188685

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 04/25/2025 20:45:00 UTC
Project code: 2025-0020693
Project Name: Buffumville Lake 2024 Master Plan Revisions

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'Buffumville Lake 2024 Master Plan Revisions'

Dear Kelsie Dakessian:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on April 25, 2025, for "Buffumville Lake 2024 Master Plan Revisions" (here forward, Project). This project has been assigned Project Code 2025-0020693 and all future correspondence should clearly reference this number.

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northeast Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative effect(s)), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17). Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no further consultation with, or concurrence from, the Service is

required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13]).

The IPaC results indicated the following species is (are) potentially present in your project area and, based on your responses to the Service's Northeast DKey, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Small Whorled Pogonia (*Isotria medeoloides*)	Threatened	No effect

Conclusion If there are no updates on listed species, no further consultation/coordination for this project is required for the species identified above. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project implements any changes which are final or commits additional resources.

In addition to the species listed above, the following species and/or critical habitats may also occur in your project area and are not covered by this conclusion:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

To complete consultation for species that have reached a "May Affect" determination and/or species may occur in your project area and are not covered by this conclusion, please visit the "New England Field Office Endangered Species Project Review and Consultation" website for step-by-step instructions on how to consider effects on these listed species and/or critical habitats, avoid and minimize potential adverse effects, and prepare and submit a project review package if necessary: https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

Please Note: If the Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) by the prospective permittee may be required. Please contact the Migratory Birds Permit Office, (413) 253-8643, or PermitsR5MB@fws.gov, with any questions regarding potential impacts to Eagles.

If you have any questions regarding this letter or need further assistance, please contact the New England Ecological Services Field Office and reference the Project Code associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Buffumville Lake 2024 Master Plan Revisions

2. Description

The following description was provided for the project 'Buffumville Lake 2024 Master Plan Revisions':

> Master plan revisions including updated land classifications and resource objectives and goals

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.11587485,-71.90892637725213,14z

QUALIFICATION INTERVIEW

1. As a representative of this project, do you agree that all items submitted represent the complete scope of the project details and you will answer questions truthfully?

   Yes

2. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed species?

   Note: This question could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered, or proposed species.

   No

3. Is the action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

4. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) the lead agency for this project?

   No

5. Are you including in this analysis all impacts to federally listed species that may result from the entirety of the project (not just the activities under federal jurisdiction)?

   Note: If there are project activities that will impact listed species that are considered to be outside of the jurisdiction of the federal action agency submitting this key, contact your local Ecological Services Field Office to determine whether it is appropriate to use this key. If your Ecological Services Field Office agrees that impacts to listed species that are outside the federal action agency's jurisdiction will be addressed through a separate process, you can answer yes to this question and continue through the key.

   Yes

6. Are you the lead federal action agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   Yes

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)?

   No

8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

9. Is the lead federal action agency the Natural Resources Conservation Service?

   No

10. Will the proposed project involve the use of herbicide where listed species are present?

    No

11. Are there any caves or anthropogenic features suitable for hibernating or roosting bats within the area expected to be impacted by the project?

    No

12. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **birds** (e.g., plane-based surveys, land-based or offshore wind turbines, communication towers, high voltage transmission lines, any type of towers with or without guy wires)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

13. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **bats** (e.g., plane-based surveys, land-based or offshore wind turbines)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

14. Will the proposed project result in permanent changes to water quantity in a stream or temporary changes that would be sufficient to result in impacts to listed species?

    For example, will the proposed project include any activities that would alter stream flow, such as water withdrawal, hydropower energy production, impoundments, intake structures, diversion structures, and/or turbines? Projects that include temporary and limited water reductions that will not displace listed species or appreciably change water availability for listed species (e.g. listed species will experience no changes to feeding, breeding or sheltering) can answer "No". Note: This question refers only to the amount of water present in a stream, other water quality factors, including sedimentation and turbidity, will be addressed in following questions.

    No

15. Will the proposed project affect wetlands where listed species are present?

    This includes, for example, project activities within wetlands, project activities within 300 feet of wetlands that may have impacts on wetlands, water withdrawals and/or discharge of contaminants (even with a NPDES).

    No

16. Will the proposed project activities (including upland project activities) occur within 0.125 miles of the water's edge of a stream or tributary of a stream where listed species may be present?

    No

17. Will the proposed project directly affect a streambed (below ordinary high water mark (OHWM)) of the stream or tributary where listed species may be present?

    No

18. Will the proposed project bore underneath (directional bore or horizontal directional drill) a stream where listed species may be present?

    No

19. Will the proposed project involve a new point source discharge into a stream or change an existing point source discharge (e.g., outfalls; leachate ponds) where listed species may be present?

    No

20. Will the proposed project involve the removal of excess sediment or debris, dredging or in-stream gravel mining where listed species may be present?

    No

21. Will the proposed project involve the creation of a new water-borne contaminant source where listed species may be present?

    Note New water-borne contaminant sources occur through improper storage, usage, or creation of chemicals. For example: leachate ponds and pits containing chemicals that are not NSF/ANSI 60 compliant have contaminated waterways. Sedimentation will be addressed in a separate question.

    No

22. Will the proposed project involve perennial stream loss, in a stream of tributary of a stream where listed species may be present, that would require an individual permit under 404 of the Clean Water Act?

    No

23. Will the proposed project involve blasting where listed species may be present?

    No

24. Will the proposed project include activities that could negatively affect fish movement temporarily or permanently (including fish stocking, harvesting, or creation of barriers to fish passage).

    No

25. Will the proposed project involve earth moving that could cause erosion and sedimentation, and/or contamination along a stream or tributary of a stream where listed species may be present?

    Note: Answer "Yes" to this question if erosion and sediment control measures will be used to protect the stream.

    No

26. Will the proposed project impact streams or tributaries of streams where listed species may be present through activities such as, but not limited to, valley fills, large-scale vegetation removal, and/or change in site topography?

    No

27. Will the proposed project involve vegetation removal within 200 feet of a perennial stream bank where aquatic listed species may be present?

    No

28. Will erosion and sedimentation control Best Management Practices (BMPs) associated with applicable state and/or Federal permits, be applied to the project? If BMPs have been provided by and/or coordinated with and approved by the appropriate Ecological Services Field Office, answer "Yes" to this question.

    No

29. Is the project being funded, lead, or managed in whole or in part by U.S Fish and Wildlife Restoration and Recovery Program (e.g., Partners, Coastal, Fisheries, Wildlife and Sport Fish Restoration, Refuges)?

    No

30. [Semantic] Does the project intersect the Virginia big-eared bat critical habitat?

    Automatically answered
    No

31. [Semantic] Does the project intersect the Indiana bat critical habitat?

    Automatically answered
    No

32. Will all activities occur within an area that is currently paved, graveled, routinely maintained, and/or inside a structure?

    No

33. Will the proposed project involve temporary or permanent modification to hydrology, including groundwater recharge, that could result in changes to water quality, water quantity, or timing of water availability in proximity to listed plants?

    No

34. Will the proposed project involve herbaceous native vegetation removal (including prescribed fire that would result in the burning of plants) or mowing?

    No

35. Will the proposed project involve ground disturbance?

    No

36. [Hidden Semantic] Does the project intersect the small whorled pogonia AOI?

    Automatically answered
    Yes

37. Does the project occur within closed canopy mixed-deciduous or mixed-deciduous/ coniferous forests that are generally in second- or third-growth successional stages?

    No

38. [Semantic] Does the project intersect the candy darter critical habitat?

    Automatically answered
    No

39. [Semantic] Does the project intersect the diamond darter critical habitat?

    Automatically answered
    No

40. [Semantic] Does the project intersect the Big Sandy crayfish critical habitat?

    Automatically answered
    No

41. [Hidden Semantic] Does the project intersect the Guyandotte River crayfish critical habitat?

    Automatically answered
    No

42. Do you have any other documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

1. Approximately how many acres of trees would the proposed project remove?

   0

2. Approximately how many total acres of disturbance are within the disturbance/ construction limits of the proposed project?

   0

3. Briefly describe the habitat within the construction/disturbance limits of the project site.

   N/A. The proposed action includes the implementation of the 2025 Buffumville Lake Master Plan. No construction or disturbance will be authorized under the 2025 MP.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Kelsie Dakessian
Address: 696 Virginia Road
City: Concord
State: MA
Zip: 01742
Email kelsie.dakessian@usace.army.mil
Phone: 9783188685

APPENDIX C – WILDLIFE DOCUMENTS

RESOURCES REPORT – USFWS

OFFICIAL SPECIES LIST – USFWS

LIST OF STATE RARE, THREATENED, and ENDANGERED SPECIES – MA NHESP

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Worcester County, Massachusetts

Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found This species only needs to be considered if the following condition applies: • This species only needs to be considered if the project includes wind turbine operations. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	**Endangered**
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	**Proposed Endangered**

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	**Candidate**

Flowering Plants

NAME	STATUS
Small Whorled Pogonia Isotria medeoloides No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1890	**Threatened**

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	**Breeds Oct 15 to Aug 31**

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence ( )

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )

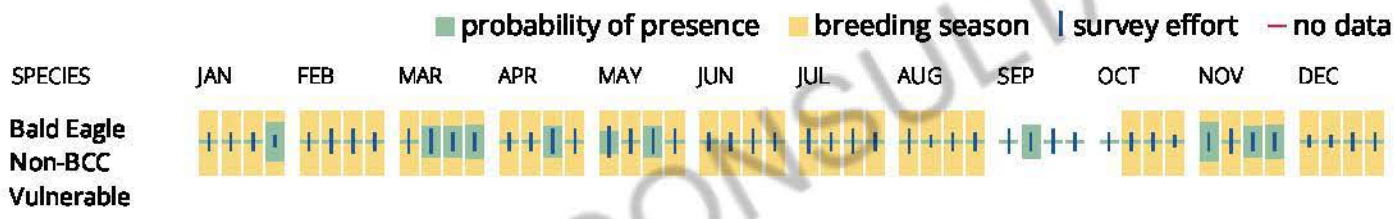
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your

list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler *Vermivora cyanoptera* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cerulean Warbler *Setophaga cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 29 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler Setophaga discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Scarlet Tanager Piranga olivacea This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 10
Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

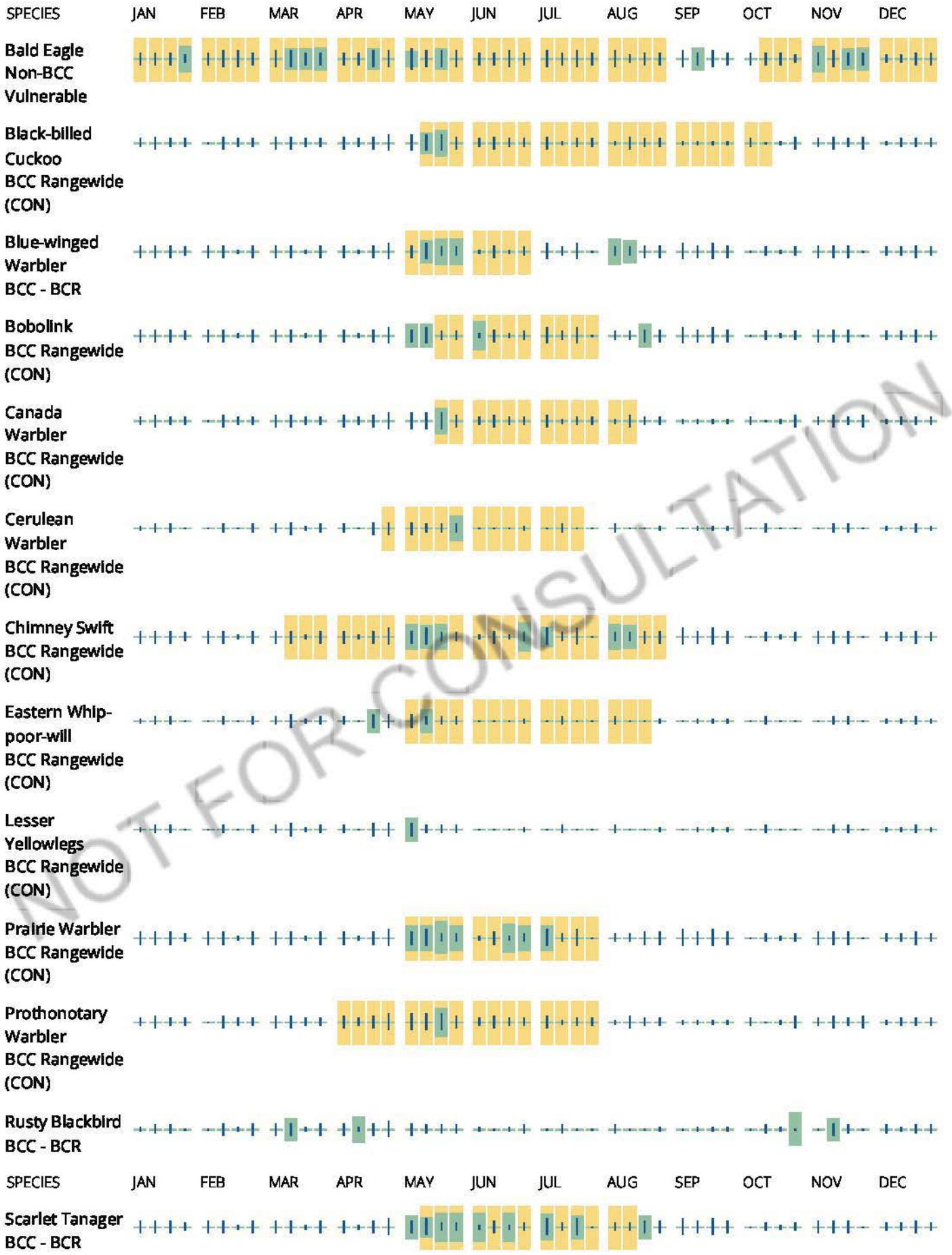
Breeding Season (▮)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

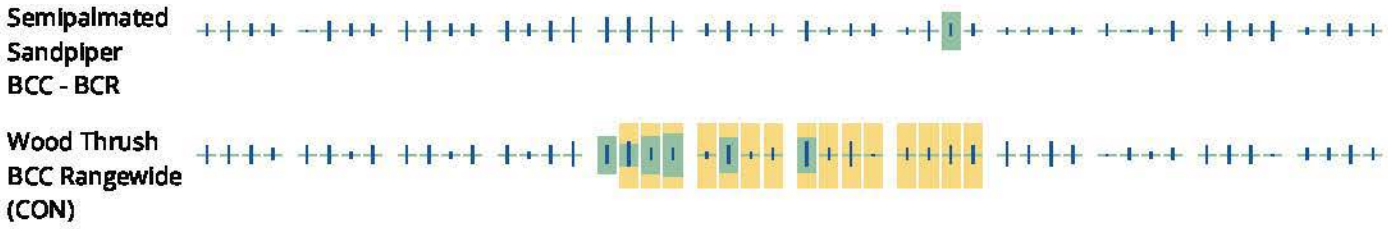
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of

presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1C

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1/4E
- PFO1E
- PFO1C
- PSS1E
- PSS1C

FRESHWATER POND

- PUBH

LAKE

- L1UBH
- L2ABH

RIVERINE

- R5UBH
- R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 11/18/2024 14:16:56 UTC
Project Code: 2025-0020693
Project Name: Buffumville Lake 2024 Master Plan Revisions

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2025-0020693
Project Name: Buffumville Lake 2024 Master Plan Revisions
Project Type: Land Management Plans - NWR
Project Description: Master plan revisions including updated land classifications and resource objectives and goals
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.11588825,-71.90893490365595,14z

Counties: Worcester County, Massachusetts

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Small Whorled Pogonia *Isotria medeoloides* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Kelsie Dakessian
Address: 696 Virginia Road
City: Concord
State: MA
Zip: 01742
Email kelsie.dakessian@usace.army.mil
Phone: 9783188685

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

September 06, 2024

Kelsie Dakessian
696 Virginia Road
Concord, MA 01742

RE: Project Location: 48 Old Oxford Road Charlton, MA 01507
Town: Charlton
Heritage Hub Form ID: IR-86633
NHESP Tracking No.: -

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife (the "Division") for information regarding state-listed species in the vicinity of the above referenced site. Based on the information provided, this project site or a portion thereof is located **within** the current *Massachusetts Natural Heritage Atlas*. The following state-listed species are mapped for either *Priority Habitat (PH)* alone, or for both *Priority Habitat (PH)* and*Estimated Habitat (EH)*, as indicated in the following table:

Scientific Name	Common Name	Taxonomic Group	State Status	EH	PH
Glyptemys insculpta	Wood Turtle	Reptile	Special Concern	643	815

The species listed above is protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the Massachusetts Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed species can be found on our website (www.mass.gov/nhesp).

Please note that projects and activities located within Priority and/or Estimated Habitat **must** be reviewed by the Division for compliance with the state-listed species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00).

Wetlands Protection Act (WPA)
If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the Division so that it is received at the same time as the local conservation commission. If the Division determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, then the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with the Division to discuss potential project design modifications that would avoid adverse effects to state-listed wildlife habitat.

A streamlined joint MESA/WPA review process is available. When filing an NOI, the applicant may file concurrently under the MESA and qualify for a 30-day streamlined joint review. Please visit our website for filing instructions: www.mass.gov/regulatory-review.

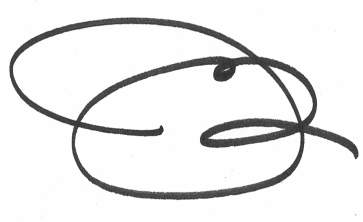
MA Endangered Species Act (MESA)

If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be submitted to the Division to determine whether a Take under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). Please visit our website for filing instructions: www.mass.gov/regulatory-review.

We recommend that state-listed species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to state-listed species and their habitats is likely to expedite regulatory review. Please visit our website for more information on how to request a pre-filing consultation with the Division: www.mass.gov/how-to/request-a-pre-filing-consultation

This evaluation is based on the most recent information available in the NHESP database, which is constantly being expanded and updated through ongoing research and inventory. If the purpose of your inquiry is to generate a species list to fulfill the federal Endangered Species Act (16 U.S.C. 1531 et seq.) information requirements for a permit, proposal, or authorization of any kind from a federal agency, we recommend that you use the NOAA Fisheries Greater Atlantic Region ESA Section 7 Mapper (https://noaa.maps.arcgis.com/apps/webappviewer/index.html?id=1bc332edc5204e03b250ac11f9914a27) and the U.S. Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac). If you have any questions regarding this letter please contact Melany Cheeseman, Endangered Species Review Assistant, at Melany.Cheeseman@mass.gov.

Sincerely,



Jesse Leddick
Assistant Director

APPENDIX D – PERTINENT LAWS

- Antiquities Act of 1906, Public Law 59-209, 34 Stat. 225, 54 U.S.C. Sections 320301-320303: 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.
- Flood Control Act of 1938, Public Law 75-761: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. Sections 668-668d: This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines “take” as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.
- Flood Control Act of 1944, Public Law 78-534: Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes USACE 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.
- River and Harbor Act of 1946, Public Law 79-525: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Flood Control Act of 1954, Public Law 83-780: This act authorizes the construction, maintenance, and operation of public parks and recreational facilities in reservoir areas under the control of the Department of the Army and authorizes the Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the public interest.
- Fish and Wildlife Coordination Act, Public Law 85-624: 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 effects on these resources shall be examined along with other purposes which might be served by water resources development.
- An Act to provide for the protection of forest cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers, Public Law 86-717: This act provides for the protection of forest and other vegetative cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.

- River and Harbor Act of 1962, Public Law 87-874: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

- Land and Water Conservation Fund Act of 1965, Public Law 88-578: This act established a fund from which U.S. Congress can make appropriations for outdoor recreation. This law 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.

- Outdoor Recreation Planning and Development Act, Public Law 88-29: Authorized the Secretary of the Interior to inventory and classify outdoor recreation needs and resources and to prepare a comprehensive outdoor recreation plan taking into consideration the plans of the various Federal agencies, State, and other political subdivisions. It also states that the federal agencies undertaking recreational activities shall consult with the Secretary of the Interior concerning these activities and shall carry out such responsibilities in general conformance with the nationwide plan.

- Federal Water Project Recreation Act, Public Law 89-72: 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. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.

- Water Resources Planning Act, Public Law 89-80: 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.

- National Historic Preservation Act of 1966, Public Law 89-665, 54 U.S.C. Sections 300101 et seq.: 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.
- Flood Control Act of 1968, Section 210, Public Law 90-483: Restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- National Environmental Policy Act of 1969 (NEPA), Public Law 91-190, 42 U.S.C. Sections 4321 et seq.: 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. It is Section 102 that requires consideration of environmental impacts associated with Federal actions. Section 101 of NEPA requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony.

Specifically, Section 101 of NEPA declares:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings
- Attain the widest range of beneficial uses of the environment without degradation risk to health or safety or other undesirable and unintended consequences
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain wherever possible an environment which supports diversity and variety of individual choice
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

- River and Harbor Act of 1970 and Flood Control Act of 1970, Public Law 91-611: Establishes the requirement for evaluating the economic, social, and environmental impacts of projects.
- To restore the Golden Eagle program to the Land and Water Conservation Fund Act, Public Law 92-347: This act revises Public Law 88-578, the Land and Water Conservation Fund Act of 1965, to require Federal agencies to collect special recreation user fees for the use of specialized sites developed at Federal expense and to prohibit the USACE from collecting entrance fees to projects.
- Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500: The Federal Water Pollution Control Act of 1948 (PL 845, 80th U.S. Congress), as amended in 1961, 1966, 1970, 1972, 1977, and 1987, established the basic tenet of uniform State standards for water quality. Public Law 92-500 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."
- To amend certain provisions of the Land and Water Conservation Fund Act of 1965 relating to the collection of fees in connection with the use of Federal areas for outdoor recreation purposes, Public Law 93-81: This law amends Section 4 of the Land and Water Conservation Fund 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.

- Endangered Species Act of 1973, Public Law 93-205, 16 U.S.C. Sections 1531 et seq.: This law repeals the Endangered Species Conservation Act of 1969. It also directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This Act establishes a procedure for coordination, assessment, and consultation.
- Water Resources Development Act of 1974, Public Law 93-251: 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.
- Archeological and Historic Preservation Act of 1974, Public Law 93-291: 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. This amends the Reserve Salvage Act of 1960 (PL-86-523).
- An act to amend the Land Water Conservation Fund Act, as amended, to provide for collection of special recreation use fees at additional campgrounds, and for other purposes, Public Law 93-303: This law amends Section 4 of the Land and Water Conservation Fund 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.
- Safe Drinking Water Act, Public Law 93-523: 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.
- An Act to amend the Land and Water Conservation Fund Act of 1965, as amended, to establish the National Historic Preservation Fund, and for other purposes, Public Law 94-422: Expands the role of the Advisory Council on Historic Preservation. Section 201 amends Section 106 of the National 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.
- Clean Water Act of 1977, as amended, Public Law 95-217: This Act amends the Federal Water Pollution Control Act Amendments of 1972 and extends the appropriations authorization. The Clean Water Act is a comprehensive Federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4.

- American Indian Religious Freedom Act, Public Law 95-341: The Act protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objections, and the freedom to worship through ceremonials and traditional rites.
- Endangered Species Act Amendments of 1978, Public Law 95-632: This law amends the Endangered Species Act of 1973. Section 7 directs agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a Federal agency's compliance with the requirements of Section 102 of NEPA.
- Archeological Resources Protection Act of 1979, Public Law 96-95: This Act protects archeological resources and sites that are on public and tribal lands and that fosters increased cooperation and exchange of information between governmental authorities, the professional archeological community, and private individuals. It also establishes requirements for issuance of permits by the Federal land managers to excavate or remove any archeological resource located on public or Indian lands.
- Supplemental Appropriations Act, 1983, Public Law 98-63: This Act authorized the USACE 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 USACE, except policymaking or law or regulatory enforcement.
- Water Resources Development Act of 1986, Public Law 99-662: Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.
- North American Wetland Conservation Act of 1989, Public Law 101-233: This act directs the conservation of North American wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- Americans with Disabilities Act of 1990 (ADA), PL101-336, as amended by the ADA Amendments Act of 2008 (PL110-325): This law prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodations for persons with disabilities.
- Native American Graves Protection and Repatriation Act, Public Law 101-601: This act requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.
- Water Resources Development Act (WRDA) of 1992 PL 102-580: This act authorizes the USACE to accept contributions of funds, materials and services from non-Federal public and private entities to be used for managing recreational sites and facilities and natural resources.
- Omnibus Reconciliation Act of 1993, Public Law 103-66: Day use fees - authorizes the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches and boat ramps.

- WRDA 1996, PL 104-303: authorizes recreation and fish and wildlife mitigation as purposes of a project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of a project.
- Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333: This act created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes or reservoirs managed by the Federal Government and to develop alternatives to enhance such opportunities for such use by the public.
- Neo-tropical Migratory Bird Conservation Act of 2000, Public Law106-147: This act promotes the conservation of habitat for neo-tropical migratory birds

APPENDIX E – PUBLIC COMMENT

INITIAL PUBLIC SCOPING (MAY 1, 2024 – MAY 31, 2024)

COMMENT	USACE RESPONSE
Can the speed limit on Oxford Road at the Park be reduced from 45 to 30-35 for safety of pedestrians crossing?	The City of Charlton, Massachusetts owns and manages the road surface, and they are responsible for setting speed limits on that road.
The grass mowing schedule on the south/Gale Rd side is inadequate. Could the grass on the south/Gale Rd side be mowed on the same schedule as the grass on the north/Old Oxford Rd side? The grass on the south side is often knee high, making it impossible to avoid ticks. Many people come into the dam from the Gale Rd gate - there is a large neighborhood on that side. The tall grass makes walking in from Gale Rd hazardous.	Mowing details including schedules is not part of the Master Plan. There are currently no available resources for more mowing than is already being performed. That area is a Natural Resource Area, managed for the benefit of natural resources including wildlife and plants. There are limited paths mowed through that area for use as a trail.
Unleashed dogs are a constant problem in all the areas of the dam. Can something be done to require that all dogs be leashed, to make the park safer? At one time owners were ticketed for unleashed dogs, perhaps this is again necessary. Unleashed dogs, no matter how "friendly," are hazardous to leashed dogs, dog owners, walkers, and children.	Setting and enforcing rules for dogs and their owners is not a part of the Master Plan. Per Title 36, dogs are required to be leashed on USACE property. The project staff does write warnings and tickets to offenders but are not able to monitor all areas of the project at all times. Users should contact the project staff or police if they have immediate concerns for safety.
The stairs on the south/Gale Rd side have been in disrepair for almost a year. Will they be repaired soon?	Volunteers recently repaired some steps on the stairs, and project staff is actively monitoring for ongoing maintenance.
The trail around the lake is impassible in places, due to erosion and debris. Is the trail scheduled for maintenance this year?	The trail was flooded in December and January, leading to damage and debris along the trail. Significant trail work has been ongoing during the spring and summer, and project staff is actively monitoring for ongoing maintenance.

COMMENT	USACE RESPONSE
The amateur disc golf holes have been closed since Covid. Will they ever be reopened? Both beginners and children enjoyed using the amateur course as an introduction to the sport.	It is unknown if the amateur disc golf holes will be re-opened. The section was closed not only due to the pandemic, but reoccurring misconduct by visitors that was difficult to monitor and enforce.
The Buffumville ranger station also oversees Hodges Village Dam. There are new restrooms at Hodges, which have been designated as unisex. Since there are two restrooms, could one side be designated for women and the other side for men, instead of both restrooms being unisex? Women and small children would be much more comfortable with a designated gender space.	The new restrooms are single stall toilets which lock when a user is in the stalls. They are family designated to be useable by any users.
These suggestions/concerns have been collected from conversations with fellow walkers since the master plan meeting was announced. We all appreciate having Buffumville and Hodges Village nearby and we also appreciate the hard work the rangers and volunteers do to keep both dams such wonderful places to visit.	Noted.
Please ensure that mountain biking continues to be an allowed activity on the Buffumville trails!	There are no plans to make changes to allowing mountain bikes on multi-use trails at Buffumville Lake.

DRAFT MASTER PLAN PUBLIC COMMENTS

Comments from Draft Public Open House and Comment Period and USACE Responses will be listed here in the final Master Plan.

APPENDIX F – ACRONYMS

ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ARPA	Archeological Resources Protection Act of 1979
BCC	Bird of Conservation Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	U.S. Code of Federal Regulations
CO2e	Carbon Dioxide equivalent
CRMP	Cultural Resources Management Plan
CT	Connecticut
DM	Design Memorandum
EA	Environmental Assessment, NEPA Document
EEA	Massachusetts Office of Energy and Environmental Affairs
EO	Executive Order
EOP	Environmental Operating Principles
EP	Engineering Pamphlet
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
ERGO	Environmental Guide for Operations
ES	Executive Summary
ESA	Environmentally Sensitive Area
°F	Degrees Fahrenheit
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GIS	Geographical Information Systems
HDR	High Density Recreation
HUC	USGS Hydrological Unit Code
IPaC	Information for Planning and Consultation
KCC	Köppen Climate Classifications
LDR	Low Density Recreation
LEED	Leadership in Energy and Environmental Design
LiDAR	Light Detection and Ranging, remote sensing technology
MA	Massachusetts
MassDEP	Massachusetts Department of Environmental Protection
MassWildlife	Massachusetts Division of Fisheries and Wildlife
MP	Master Plan or Master Planning
MRML	Multiple Resource Management Lands
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act, 1970
NGVD/NGVD29	National Geodetic Vertical Datum (1929)
NHPA	National Historic Prevention Act
NRHP	National Register of Historic Places
NOA	Notice of Availability

NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NRM	USACE Natural Resource Management system
NWI	National Wetland Inventory
OMB	Office of Management and Budget
OMP	Operations Management Plan for a specific lake Project
PL	Public Law
PM	Project Management or Project Manager
PMP	Project Management Plan
PO	Project Operations
RPEC	Regional Planning and Environmental Center
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SGCN	Species of Greatest Conservation Need
SHPO	State Historical Preservation Office
USGCRP	U.S. Global Change Research Program
USACE	United States Army Corps of Engineers
USFWS	U. S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VM	Vegetative Management Area
WM	Wildlife Management