



**LAKE
GEORGETOWN
MASTER PLAN**
San Gabriel River
Brazos River Basin

Williamson County,
Texas

May 2020

LAKE GEORGETOWN VISION

"The land, water, and recreational resources of Lake Georgetown is managed to protect, conserve, and sustain natural and cultural resources, especially environmentally sensitive resources, and provide outdoor recreation opportunities that complement overall project purposes for the benefit of present and future generations."



**US Army Corps
of Engineers®**

Page intentionally left blank



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, FORT WORTH DISTRICT
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

CESWF-PEC

03 AUG 2020

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers (USACE),
Fort Worth District (SWF)

SUBJECT: Lake Georgetown, Texas Master Plan Revision (July 2020)

1. PURPOSE: Enclosed subject Master Plan is submitted for review and approval in accordance with Engineering Regulations (ER) 1130-2-550, Change 7 and Engineering Pamphlet (EP) 1130-2-550, Change 5.
2. BACKGROUND/DISCUSSION: In accordance with ER *1130-2-550 Change 07*, dated 30 January 2013 and EP *1130-2-550 Change 05*, dated 30 January 2013, Lake Project master plans are required for most USACE water resources development projects having a federally-owned land base. This revision of the Lake Georgetown Master Plan is intended to bring the Master Plan up to date to reflect ecological, socio-demographic, and outdoor recreation trends that are currently affecting the lake, as well as those anticipated to occur within the planning period of 2020 to 2045, a 25-year period.
3. SUMMARY OF CHANGES: The revision resulted in the preparation of new resource management objectives and the following changes to land use classifications:

Prior (1973) Land Classifications	Acres	New Land Classifications	Acres
Project Operations	148	Project Operations (PO)	234
Operations: Recreation Intensive Use	675	High Density Recreation (HDR)	566
		Environmentally Sensitive Areas (ESA)	376
Operations: Recreation Low Density and Recreational Lands	1,991	Multiple Resource Management – Low Density Recreation (MRML-LDR)	483
Wildlife Management Hunt Hollow Wildlife Area	1,272	Multiple Resource Management – Wildlife Management (MRML-WM)	2,514
*Total Fee Lands (1973)	4,086	*Total Fee Lands (2020)	4,173
WATER SURFACE			
*Water Surface	1,310	Restricted	7
		Designated No-wake	70
		Open Recreation	1,210
*Conservation Pool 791.0 NGVD29 (1973)	1,310	*Conservation Pool 791.0 NGVD29 – 2005 Survey (2020)	1,287
*Total Fee and Pool (1973)	5,396	*Total Fee and Pool (2020)	5,460
Flowage Easement	514	Flowage Easement	514

*Acreage differences from the 1973 totals to the 2010 totals are due to improvements in measurement technology, siltation and erosion.

a. The above changes were the result of public and stakeholder review and comment, review of regional trends in outdoor recreation and resource protection, and compliance with Federal policies and mandates governing Federal land use. Environmentally Sensitive Areas were identified for the protection of threatened and endangered species and their habitat, as well as culturally significant sites and unique views and landscapes.

b. In accordance with the National Environmental Policy Act of 1969, including guidelines in 33 Code of Federal Regulations Part 230, an Environmental Assessment (EA) was prepared to assess the potential impacts that the alternative management scenarios set forth in the 2020 Lake Georgetown Master Plan (2020 Master Plan) would have on the natural, cultural, and human environments. The EA evaluated and analyzed two alternatives: a No Action Alternative (continued use of the 1973 Master Plan) and the implementation of the 2020 Master Plan. Based on the findings of the EA, the implementation of the 2020 Master Plan would not result in

CESWF-PEC

SUBJECT: Georgetown Lake, Texas Master Plan Revision (July 2020)

significant adverse impacts on the environment or constitute a major Federal action significantly affecting the quality of the human environment.

c. The Master Plan and EA have been reviewed by the Regional Planning and Environmental Center, SWF Operations, and SWF Office of Counsel. The final version of the documents went through a 30-day public and agency review. All comments from the reviews have been addressed.

4. RECOMMENDATION: The Project Delivery Team members have reviewed and approved the Master Plan revision. The team recommends approval by each signatory, as well as approval and signature of the Finding of No Significant Impact by the commander.

Approve x
Disapprove
Date 27 July 2020

Approve
Disapprove
Date

Approve x
Disapprove
Date 28 July 2020

Approve x
Disapprove
Date

NEWMAN.ARNOL
D.R.1231040958
Digitally signed by
NEWMAN.ARNOLD.R.123104095
8
Date: 2020.07.27 11:12:25 -05'00'

ARNOLD R. NEWMAN
Director, Regional Planning & Environmental
Center

LEE.ROCKY.DU
ANE.11277019
42
Digitally signed by
LEE.ROCKY.DUANE.11277
01942
Date: 2020.07.28
12:47:15 -05'00'

ROCKY D. LEE
Chief, Real Estate Division


Digitally signed by
PHELPS.BRIAN.G.1231017573
Date: 2020.07.28 14:38:28 -05'00'

BRIAN G. PHELPS
Assistant Chief, Operations Division


KENNETH N. REED, PMP
Colonel, EN
Commanding

EXECUTIVE SUMMARY

PURPOSE

The revision of the *Lake Georgetown Master Plan* (hereafter Plan or Master Plan) is a framework built collaboratively to serve as a guide toward appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Lake Georgetown over the next 25 years. The 1973 Lake Georgetown Master Plan (Design Memorandum (DM) No. 16) served well past its intended 25-year planning horizon. The Master Plan is primarily a land use and outdoor recreation strategic plan. The lake and dam's primary purposes are flood risk management, water conservation storage, recreation, and fish and wildlife enhancement.

The 1973 Master Plan classifies a total of 5,320 acres of USACE land, which includes 1,310 acres of surface water at conservation pool within the fee boundary. Due to land changes from erosion and sedimentation, as well as more advanced measurement technology, these numbers have changed¹. Currently, Lake Georgetown encompasses 4,173 acres of land and 1,287 acres of surface water for total fee lands of 5,460 acres, protecting the areas below the dam, including the cities of Georgetown and Round Rock, TX. This Plan and supporting documentation provides an inventory, analysis, goals, objectives, and recommendations for USACE lands and waters surface at Georgetown, Texas.

PUBLIC INPUT

Public and agency input toward the Master Plan was obtained to ensure a balance between operational, environmental, and recreational outcomes. An Environmental Assessment (EA) was completed in conjunction with the Master Plan Revision to evaluate the impacts of alternatives. The EA is included in Appendix B.

Approximately 19 individuals, not including USACE personnel, attended the public scoping meeting held at the onset of the process on 12 February 2019. USACE received a total of five (5) comments during the initial 30-day comment period. Issues that were addressed in the comments included environmental stewardship and preservation, leases, access for fishing and boating, and mountain biking. All the public comments received were noted and will be addressed as future funds and development are considered.

The draft release public meeting was held 11 March 2020. No members of the public or stakeholders attended this meeting, and no comments were received. No material changes were found to be needed to the draft, based on USACE lake

¹ These figures are for planning purposes only and differ from the official real estate records.

operations, and Regional Planning and Environmental Center's (RPEC) planning and environmental expertise.

RECOMMENDATIONS

The following land classifications changes (detailed in Chapter 8, Table 8.2) resulted from the inventory, analysis, and synthesis of data, documents, and public and agency input. In general, 1,488 total acres were reclassified, with fee and conservation pool acreage changes due in part to siltation and improvements in measurement technology using Geographical Information System (GIS) technology. This software allows for more finely tuned measurements and thus acreages may vary slightly from official land acquisition records.

Table ES.1 Land Use Acreage Changes

Prior (1973) Land Classifications	Acres	New Land Classifications	Acres
Project Operations	148	Project Operations (PO)	234
Operations: Recreation Intensive Use	675	High Density Recreation (HDR)	566
		Environmentally Sensitive Areas (ESA)	376
Operations: Recreation Low Density	1,616	Multiple Resource Management – Low Density Recreation (MRML-LDR)	483
Recreational Lands	375		
Wildlife Management Hunt Hollow Wildlife Area	1,272	Multiple Resource Management – Wildlife Management (MRML-WM)	2,514
Conservation Pool 791.0 NGVD29	1,310	Conservation Pool 791.0 NGVD29 – 2005 Survey	1,287
WATER SURFACE			
*Water Surface	1,310	Restricted	7
		Designated No-wake	70
		Open Recreation	1,210
Flowage Easement	514.62		

*Acreage differences from the 1973 total to the 2019 totals are due to improvements in measurement technology, siltation and erosion.

PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction of Lake Georgetown. Chapter 2 consists of an inventory and analysis of project resources. Chapters 3 and 4 lay out management goals, resource objectives, and land allocation and classification. Chapter 5 is the resource plan that identifies how project lands will be managed through a resource use plan for each land use classification. This includes current and projected park facility needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details topics that are unique to Lake Georgetown. Chapter 7 identifies the coordination 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 EA analyzing alternative management scenarios for Lake Georgetown has been prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA); 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 and 2) Proposed Action. The EA analyzed the potential impact the No Action and Proposed Action would have on the natural, cultural, and human environments. Because the Master Plan is conceptual, 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

EXECUTIVE SUMMARY.....	ES-1
PURPOSE.....	ES-1
PUBLIC INPUT.....	ES-1
RECOMMENDATIONS.....	ES-2
PLAN ORGANIZATION.....	ES-3
TABLE OF CONTENTS.....	ES-I
LIST OF TABLES.....	IV
LIST OF FIGURES.....	VI
LIST OF PHOTOS.....	VI
CHAPTER 1: INTRODUCTION.....	1-1
1.1. OVERVIEW.....	1-1
1.2. PROJECT PURPOSE AND AUTHORIZATION.....	1-2
1.3. MASTER PLAN PURPOSE AND SCOPE.....	1-3
1.4. BRIEF PROJECT AND WATERSHED DESCRIPTION.....	1-4
1.5. PROJECT ACCESS.....	1-6
1.6. PRIOR DESIGN MEMORANDUMS.....	1-6
1.7. PERTINENT LAWS.....	1-7
1.8. REAL ESTATE.....	1-9
1.8.1 Project Land Acquisition.....	1-9
1.8.2 Outgrants.....	1-9
1.8.3 Trespass and Encroachment.....	1-9
1.9 PERTINENT PROJECT INFORMATION.....	1-10
CHAPTER 2: PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT.....	2-1
2.1. PHYSIOGRAPHIC SETTING.....	2-1
2.1.1 Ecoregion Setting.....	2-1
2.1.2 Climate.....	2-2
2.1.3 Geology and Topography.....	2-3
2.1.4 Hydrology and Groundwater.....	2-5
2.1.5 Soils.....	2-6
2.2 ECOREGION AND NATURAL RESOURCE ANALYSIS.....	2-8
2.2.1 Vegetative Resources.....	2-8

2.2.2	Wetland Resources	2-10
2.2.3	Fish and Wildlife Resources	2-12
2.2.4	Threatened and Endangered Species	2-13
2.2.5	Invasive Species.....	2-13
2.2.6	Visual and Scenic Resources and Interpretation	2-15
2.2.7	Sedimentation and Shoreline Erosion	2-17
2.2.8	Water Quality.....	2-17
2.3.1	Prehistoric.....	2-18
2.3.2	Historic.....	2-19
2.3.3	Previous Investigations at Lake Georgetown.....	2-19
2.3.4	Recorded Cultural Resources.....	2-19
2.3.5	Long-term Cultural Resources Objectives	2-19
2.4	DEMOGRAPHIC AND ECONOMIC ANALYSIS	2-20
2.4.1	Zone of Interest	2-20
2.4.2	Population.....	2-21
2.4.3	Education and Employment.....	2-25
2.4.4	Households, Income, Poverty.....	2-29
2.4.5	Social, Environmental and Environmental Benefits	2-31
2.5	RECREATION FACILITIES, ACTIVITIES, AND NEEDS	2-34
2.5.1	Zone of Influence and Visitation Statistics	2-34
2.5.2	Visitation Profile.....	2-34
2.5.3	Recreation Areas and Facilities	2-35
2.5.4	Recreational Analysis – Trends	2-36
2.5.5	Recreation Analysis – Needs.....	2-41
2.5.6	Recreational Carrying Capacity	2-41
CHAPTER 3: RESOURCE GOALS AND OBJECTIVES		3-1
3.1	INTRODUCTION.....	3-1
3.2	RESOURCE GOALS	3-1
3.3	RESOURCE OBJECTIVES.....	3-2
CHAPTER 4: LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS		4-1
4.1	LAND ALLOCATION.....	4-1
4.2	LAND CLASSIFICATION	4-1
4.2.1	Current Land and Water Surface Classifications	4-1
4.2.2	Project Operations (PO)	4-2

4.2.3	High Density Recreation (HDR)	4-2
4.2.4	Mitigation	4-3
4.2.5	Environmentally Sensitive Areas (ESA)	4-3
4.2.6	Multiple Resource Management Lands (MRML)	4-3
4.2.7	Water Surface	4-5
4.2.8	Recreational Seaplane Operations	4-6
4.3	PROJECT EASEMENT LANDS	4-7
CHAPTER 5: RESOURCE PLAN		5-1
5.1	MANAGEMENT BY CLASSIFICATION	5-1
5.2	PROJECT OPERATIONS	5-1
5.3	HIGH DENSITY RECREATION	5-1
5.3.1	USACE Class A Parks	5-2
5.3.2	USACE Day Use Parks	5-4
5.3.3	Leased Parks	5-4
5.3.4	Boat Ramps and Marinas	5-5
5.3.5	Trails	5-5
5.4	MITIGATION	5-6
5.5	ENVIRONMENTALLY SENSITIVE AREAS	5-6
5.6	MULTIPLE RESOURCE MANAGEMENT LANDS	5-8
5.6.1	Low Density Recreation	5-8
5.6.2	Wildlife Management	5-8
5.6.3	Vegetative Management	5-9
5.6.4	Future/Inactive Recreation Areas	5-9
5.7	WATER SURFACE	5-10
5.7.1	Restricted	5-10
5.7.2	Designated No-wake	5-10
5.7.3	Fish and Wildlife Sanctuary	5-10
5.7.4	Open Recreation	5-10
5.8	SUSTAINABILITY	5-10
CHAPTER 6: SPECIAL TOPICS/ISSUES/CONSIDERATIONS		6-1
6.1	IMPACTS OF POPULATION GROWTH	6-1
6.2	KARST CREATURES AND PROTECTION	6-1
6.3	GOLDEN-CHEEKED WARBLER	6-2
6.4	INVASIVE SPECIES	6-3

6.5	RECREATIONAL BOATING STUDY	6-5
6.6	SHORELINE MANAGEMENT STATEMENT OF POLICY	6-5
6.7	UTILITY CORRIDORS	6-7
CHAPTER 7: PUBLIC AND AGENCY COORDINATION		7-1
7.1	PUBLIC AND AGENCY COORDINATION OVERVIEW	7-1
7.2	INITIAL STAKEHOLDER AND PUBLIC MEETINGS	7-1
7.3	PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, AND FONSI	7-4
CHAPTER 8: SUMMARY OF RECOMMENDATIONS		8-1
8.1	SUMMARY OVERVIEW	8-1
8.2	LAND CLASSIFICATION PROPOSALS	8-1
CHAPTER 9: BIBLIOGRAPHY		9-1
APPENDIX A – LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS		A
APPENDIX B – NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION		B
APPENDIX C – TRUST RESOURCES REPORT – USFWS & SGCN-TPWD		C
APPENDIX D – OFFICIAL T&E SPECIES LIST – USFWS & STATE LISTED SPECIES - TPWD		D
APPENDIX E – WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP) REPORT ...		E
APPENDIX F – SEAPLANE POLICY		F
APPENDIX G – PERTINENT PUBLIC LAWS		G
APPENDIX H – ACRONYMS		H

LIST OF TABLES

Table 1.1	Design Memorandums	1-6
Table 1.2	Pertinent Data	1-11
Table 2.1	Lake Georgetown 1982-2018 Monthly and Annual Precipitation in Inches ..	2-3
Table 2.2	Soil Classes	2-7
Table 2.3	Vegetation Classification and	2-8
Table 2.4	Wetland Resources	2-11
Table 2.5	Federally-Listed Threatened and Endangered Species with Potential to Occur at Lake Georgetown	2-13
Table 2.6	Invasive Species Found at Lake Georgetown	2-14
Table 2.7	Population Estimates 2000, 2017 and 2045 Projections	2-21
Table 2.8	Percent of Population Estimate by Gender 2017	2-21

Table 2.9 2017 Population Estimate by Race/ Origin	2-24
Table 2.10 Population Estimate by Highest Level of Educational Attainment 2017, Population 25 Years of Age and Older	2-26
Table 2.11 Annual Average Employment by Sector	2-28
Table 2.12. Labor Force, Employment and Unemployment Rates, 2017 Annual Averages	2-29
Table 2.13 Households and Household Size 2017	2-29
Table 2.14 Median and Per Capita Income 2017	2-30
Table 2.15 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2017)	2-30
Table 2.16 Social Benefits 2016.....	2-32
Table 2.17 Economic Benefit 2016	2-33
Table 2.18 Environmental Benefit 2016	2-33
Table 2.19 Lake Georgetown USACE Parks and Facilities	2-36
Table 2.20 Top Five Recreation Facilities Needed by Texas Citizens – TORP 2012.	2-37
Table 2.21 Percent of Population Participating in Recreational Boating in the U.S....	2-37
Table 2.22 Participation in Hunting, Fishing, and Wildlife Watching in Texas.	2-37
Table 2.23 Comparison of Participation Rates of White/Non-Hispanics Versus Hispanics in the Top 10 Outdoor Recreation Activities in Texas 2006-2009	2-39
Table 2.24 Lake Georgetown Comment Cards, 2018	2-40
Table 3.1 Recreational Objectives	3-3
Table 3.2 Natural Resource Management Objectives	3-4
Table 3.3 Visitor Information, Education, and Outreach Objectives	3-5
Table 3.4 General Management Objectives	3-6
Table 3.5 Cultural Resources Management Objectives	3-7
Table 4.1 Land Classification Acres at Lake Georgetown	4-6
Table 5.1 WHAP Points Within ESA's at Lake Georgetown.....	5-7
Table 7.1 Public Comments from 20 February 2019 Public Scoping Meeting.....	7-2
Table 8.1 Change from Prior Land Classification to New Land Classification	8-2
Table 8.2 Reclassification Proposals.....	8-3

LIST OF FIGURES

Figure 1.1 Lake Georgetown Vicinity Map.....	1-5
Figure 2.1 Lake Georgetown Ecoregion.....	2-2
Figure 2.2 Wetland types and locations around Lake Georgetown	2-11
Figure 2.3 Lake Georgetown Zone of Interest.....	2-20
Figure 2.4 2017 Population Estimate and 2045 Projection by Age Group.....	2-22
Figure 2.5 2017 Population Estimates by Age Group - Zone of Interest	2-23
Figure 2.6 2017 Population Estimates by Age Group - Texas.....	2-23
Figure 2.7 Zone of Interest Population Estimate (2017) and Projection (2045) by Race/Ethnicity	2-25
Figure 2.8 Zone of Interest Employment by Sector	2-27
Figure 2.9 USACE Lake Visitation for Fort Worth District, 2016.....	2-35
Figure 2.10 Participation Rates of Texas Residents (2006-2009) versus U.S. Residents (2005-2009) in the Top 10 Outdoor Recreation Activities.....	2-38

LIST OF PHOTOS

Photo 1-1 Lake Georgetown Dam	1-3
Photo 2-1 Downstream View of Outlet Works and Stilling Basin	2-5
Photo 2-2 Prairie Wildflowers at Lake Georgetown	2-9
Photo 2-3 Zebra Mussels at Lake Georgetown	2-15
Photo 2-4 Karst Area at Lake Georgetown.....	2-16
Photo 4-1 Prickly Pear in Field of Black-eyed Susan	4-4
Photo 4-2 Karst Cave at Lake Georgetown	4-7
Photo 5-1 Lake Georgetown at Sunset	5-6

CHAPTER 1: INTRODUCTION

1.1. OVERVIEW

Lake Georgetown is a multipurpose water resources project constructed and operated by the U.S. Army Corps of Engineers (USACE), Fort Worth District. The lake and associated federal lands are located in Williamson County, Texas (TX). Lake Georgetown Dam is situated on the San Gabriel River in the Brazos River Basin about 3.5 miles west of the city of Georgetown, TX in Williamson County. The dam and associated infrastructure, as well as all lands acquired for the Lake Georgetown project, are federally owned and administered by the USACE.

The Lake Georgetown Master Plan (hereafter Plan or Master Plan) is a revision of the 1973 Master Plan, Design Memorandum (DM) 16, and 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 Lake Georgetown. The Plan does not address the flood risk management or water supply purposes of Lake Georgetown (see the USACE Water Control Manual for Lake Georgetown for a description of these project purposes).

National USACE missions associated with water resource development projects may include flood risk management, water conservation, navigation, recreation, fish and wildlife conservation, 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. This creates 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 fish and wildlife and recreation missions. Maintaining a healthy vegetative cover, including a tree canopy 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 moderates temperatures. To this end, USACE has developed the following statements.

The USACE Sustainability Policy and Strategic Plan states that:

“The U.S. Army Corps of Engineers strives to protect, sustain, and improve the natural and man-made environment of our Nation, and is committed to compliance with applicable environmental and energy statutes, regulations, and Executive Orders. Sustainability is not only a natural part of the Corps' decision processes, it is part of the culture.

Sustainability is an umbrella concept that encompasses energy, climate change and the environment to ensure today's actions do not negatively impact tomorrow. The Corps of Engineers is a steward for some of the Nation's most valuable natural resources, and must ensure

customers receive products and services that provide sustainable solutions that address short and long-term environmental, social, and economic considerations.”

The USACE mission of the Responses to Climate Change Program is:

“To develop, implement, and assess adjustments or changes in operations and decision environments to enhance resilience or reduce vulnerability of USACE projects, systems, and programs to observed or expected changes in climate.”

1.2. PROJECT PURPOSE AND AUTHORIZATION

Lake Georgetown is a multipurpose water resource project constructed and operated by USACE for the purpose of flood risk management, water supply, recreation and fish and wildlife. Environmental stewardship, though not listed as a primary project purpose, is a major responsibility and inherent mission in the administration of federally owned lands.

Congressional authority for the construction of the North Lake Dam and Lake, now Lake Georgetown, as a unit of the plan for improvement for the Brazos River Basin, Texas, is contained in Public Law 87-874, (87th Congress, 2nd Session) approved October 23, 1962. This is in accordance with plan outlined in House Document No. 591 (87th Congress, 2nd session.)

Congressional authority for the recreational program at Lake Georgetown is contained in Public Law 87-874, which designates recreation as an authorized project purpose. Congressional authority for the fish and wildlife program at reservoir projects under the control of the Department of the Army is contained in Fish and Wildlife Coordination Act of 1958, as amended, Public Law 85-624 (72 Stat 563), approved August 12, 1958, and Public Law 89-669 (80 Stat 926), approved October 15, 1966.

A number of laws place emphasis on environmental stewardship of Federal lands. These laws, including but not limited to Public Law 91-190, 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.



Photo 1-1 Lake Georgetown Dam (Source: USACE Photo)

1.3. MASTER PLAN PURPOSE AND SCOPE

In accordance with Engineering Regulation (ER) 1130-2-550 Change 07, dated January 2013 and Engineering Pamphlet (EP) 1130-2-550 Change 05, dated 30 January 2013, Master Plans are required for most USACE water resources development projects having a federally owned land base. The revision of the Master Plan is intended to bring it up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are affecting the lake, as well as those anticipated to occur within the planning period of 2020 to 2045 (i.e., 25 years).

The Lake Georgetown Master 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 Lake Georgetown project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources and makes provision for outdoor recreation facilities and opportunities on federal land associated with Lake Georgetown for the benefit of present and future generations. The 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 Plan focuses on carefully crafted resource-specific goals and objectives. It ensures that equal attention is given to economy, quality, and needs in the management of Lake Georgetown resources and facilities, and that goals and objectives are accomplished at an appropriate scale and rate.

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 four primary components, as follows:

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

It is important to note what the Master Plan does not address. As noted in Section 1.1, the Plan does not address the flood risk management or water supply purposes of Lake Georgetown. The Plan also does not address details of design, management and administration, or implementation, as these are addressed in the Lake Georgetown Operational Management Plan (OMP). In addition, the Master Plan does not address the specifics of regional water quality or shoreline management with respect to private actions conducted by adjoining landowners such as vegetation modification. The operation and maintenance of primary project operations facilities, including but not limited to the dam, spillway, and gate-controlled outlet, are also not included in this Plan.

The 1973 Master Plan was sufficient for prior land use planning and management. Changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy have occurred over the past decades. Additionally, increasing fragmentation of wildlife habitat, national policies related to land management, climate change, and growing demand for recreational access and protection of natural resources are all factors affecting Lake Georgetown and the region in general. In response to these continually evolving trends, USACE has determined that a full revision of the 1973 Plan is required as set forth in this Plan.

1.4. BRIEF PROJECT AND WATERSHED DESCRIPTION

Lake Georgetown (formerly North Fork Lake) was completed in October 1980, and is located on the North Fork of the San Gabriel River approximately 3.5 miles west of the city of Georgetown, TX. The North Fork of the San Gabriel, part of the Brazos River Basin, flows east across Williamson County, TX, joining the Middle and South Forks at Georgetown. The Brazos River Basin is the 11th longest river in the United States, containing 11 reservoirs and stretching over 45,573 square-miles from its

The damsite is situated at river mile 4.3 on the North Fork of the San Gabriel River. The dam is rockfill with an impervious earth core, with a total length of 6,929 feet and a top width of 30 feet. The flood control outlet works is an 11-foot-diameter tunnel controlled by two 5-foot by 11-foot hydraulically operated gates. Normal operating release is made from a multilevel, low-flow outlet system with invert elevations 777.0, 764.17, 751.33, and 738.50 feet National Geodetic Vertical Datum (NGVD29.)



1.5. PROJECT ACCESS

Lake Georgetown has a number of major, minor, and tertiary roads that service the area. It is served by Interstate Highway (I) 35, U.S. Highway 183, State Highway (SH) 29, and Farm to Market (FM) 2338. This access brings visitors from major metropolitan areas such as Austin and Dallas/Fort Worth.

1.6. PRIOR DESIGN MEMORANDUMS

Design Memorandums were prepared from 1956 thru 1970 setting forth design criteria 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. A list of the Design Memoranda for Lake Georgetown are in Table 1.1 below.

Table 1.1 Design Memorandums

Title	Date
Design Memorandum No. 1 Hydrology Part A	7/1965
Design Memorandum No. 1 Hydrology Part C	7/1966
Design Memorandum No. 2 (North Fork) on Laneport, North Fork And South Fork Reservoirs: General	11/1966
Design Memorandum No. 9 North Fork Reservoir, Project Building, Visitors' Overlook and Access Road (Revised)	11/1967
Design Memorandum No. 14 Relocations County Roads Part II	2/1972
Design Memorandum No. 16 Master Plan	10/1973
Design Memorandum No. 17 (North Fork) Outlet Works	12/1968
Design Memorandum No. 17 Review Copy North Fork Lake, San Gabriel River, Texas	7/1973
Design Memorandum No. 22 Clearing	12/1972
Design Memorandum No. 22 Clearing (Revised)	12/1976
Design Memorandum No. 23 Embankment, Spillway and South Access Road	7/1972
Design Memorandum No. 23 Embankment, Spillway and South Access Road Appendix I	7/1972
Design Memorandum No. 24 Relocations	8/1974
Design Memorandum No. 29 on North Fork Lake Reservoir Filling Plan	2/1980
Sedimentation and Degradation Ranges	10/1967

Title	Date
Operation and Maintenance Manual North Fork Lake	8/1980
Report on the San Gabriel River Watershed Including Laneport Dam and Reservoir and North Fork Dam and Reservoir	5/1968
Information for Meeting of Board Consultants Appendix A	5/1968
Periodic Inspection Report No. 3	11/1981
Periodic Inspection Report No. 4	3/1983
Periodic Inspection Report No. 5	3/1985
Periodic Inspection Report No. 6	3/1987
Periodic Inspection Report No. 7	11/1992
Periodic Inspection Report No. 8	4/1997
Periodic Inspection Report No. 9	4/2002
Periodic Inspection Report No. 11	5/2012

1.7. PERTINENT LAWS

Numerous public laws apply directly or indirectly to the management of Federal land at Lake Georgetown. Listed below are several key public laws that are most frequently referenced in planning and operational documents. Refer to Appendix G for a more comprehensive listing.

- Public Law 78-534, Flood Control Act of 1944. - 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.
- Public Law 85-624, Fish and Wildlife Coordination Act 1958. - This Act, as amended in 1965, establishes 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.
- PL 89-665, Historic Preservation Act of 1966. - This Act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to

states undertaking historic and archeological resource inventories; and (3) a program of grants-in-aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.

- Public Law 86-717, Forest Conservation. - 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.
- Public Law 89-72, Federal Water Project Recreation Act of 1965. - This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.
- Public Law 91-190, National Environmental Policy Act of 1969 (NEPA). - NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a *"continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."* Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations, and public law of the United States shall be interpreted and administered in accordance with the policies of the Act. 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 the National Environmental Policy Act 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; and

- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.
- Public Law 101-601, Native American Graves Protection and Repatriation Act (16 November 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

1.8. REAL ESTATE

1.8.1 Project Land Acquisition

Public Law 87-874 authorized acquisition of land at Lake Georgetown. Initially, 5,333.12 acres of fee simple land at contour 839.0 NGVD29 and 647.51 acres of easement were acquired. Since that time, 13.15 acres of fee and 132.89 acres of easement have been disposed, leaving a current total of 5,319.97 acres of fee and 514.62 acres of easement.

1.8.2 Outgrants

Real Estate outgrants at Lake Georgetown include easements, licenses, leases, and other formal real estate documents. A summary of outgrants at Lake Georgetown is provided as follows:

- Total Easements: 23
- Total Leases: 3 (1 Public Park and 2 Right-of Ways)
- Licenses: 3
- Consents/Other: 7

Personnel of the Fort Worth District Real Estate Division and Operations Division, in coordination with Operations Division staff at Lake Georgetown, conduct compliance inspections of major outgrants, including concessions, public parks, and wildlife areas annually in accordance with applicable regulations.

Individuals and entities interested in lease acquisition to provide services to the public on USACE fee lands should be aware that specific restrictions and procedures apply to such leases. In many cases, individuals or entities will be encouraged to pursue a sublease with an existing lessee, such as with a marina. Any leases for new services are subject to a competitive bidding process following market studies and a determination by USACE that the prospective service or product would be beneficial to users at Lake Georgetown. Questions regarding this topic can be directed to the lake office.

1.8.3 Trespass and Encroachment

Government property is monitored by Lake Georgetown 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 USACE approval. Unauthorized trespasses may result in a Title 36 citation to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See 36 Code of Federal Regulations (CFR) 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, lake 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 USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. 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.

1.9 PERTINENT PROJECT INFORMATION

Table 1.2 outlines pertinent project information such as key elevations, water storage, and spillway flow capacity at Lake Georgetown. A contract with the Brazos River Authority was approved 24 April 1981 for 100 percent (29,200 acre feet (ac-ft)) of the conservation storage between elevations 698.99 and 791.0 feet (ft) NGVD29. The Brazos River Authority (BRA) will pay an estimated \$6,311,000 exclusive of interest, in addition to their share of the annual O&M cost, for this water supply storage space. The 2005 Texas Water Development Board (TWDB) volumetric survey indicates that Lake Georgetown has a volume of 36,904 ac-ft and a surface area of 1,287 acres at conservation pool elevation 791.0 ft NGVD29.

Table 1.2 Pertinent Data

Feature	Elev Feet* (NGVD29)	Reservoir Area (acres)	Reservoir Capacity		Total Spillway Capacity (cfs)	Outlet Works Capacity (3 Gates)
			Accumulative (ac-ft)	Runoff (inches)		
Top of Dam	861.0					
PMF Design Water Surface (1983 Study)	858.6	5,330	233,680	18.57	331,329	
Design Water Surface (1973 Study)*	856.2	5,090	221,100	17.57	284,000	4,500***
Top of Flood Control pool & Spillway Crest (1983 Study)	834.0	3,220	130,800	9.97		4,800***
Top of Conservation Pool (2005 Survey)	791.0	1,287	36,904	2.83		3,800***
Maximum Tail- water (1983 Study)	750.5					
Streambed (1983 Survey)	699.0					

Shoreline at Designed Conservation Pool – approximately 25 miles

* The elevation listed on the pertinent data sheet is based on the datum of NGVD29. The datum conversion from NGVD29 to NAVD88 is NGVD29+.03 feet = NAVD88

**14,000 ac-ft of storage was reserved for an estimated 100 years of sediment storage distributed as follows: 7,900 ac-ft below elev. 791.0 feet NGVD29; 6,100 ac-ft between elev. 791.0 and 834.0 feet NGVD29

***Based on 1973 Study, the capacity of outlet works is 4,500 cfs at maximum water surface elev. 856.2 feet NGVD29, 4,800 cfs at spillway crest elev. 834.0 feet NGVD29, and 3,800 cfs at top of conservation pool elev. 791.0 feet NGVD29.

CHAPTER 2: PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

2.1. PHYSIOGRAPHIC SETTING

Physiographic settings are the Earth's distinct landform regions defined in a three-tiered system of (1) physiographic divisions; (2) physiographic provinces; and (3) physiographic sections. Lake Georgetown is in the Edwards Plateau section of the Great Plains province of the Interior Plains division. The Interior Plains cover a vast area of central North America, extending from the Gulf Coast to the Arctic Ocean along the east flank of the Rocky Mountains. The Great Plains is the broad expanse of flat land, much of it covered in prairie, steppe, and grassland. The Edwards Plateau is a region of west-central Texas, which is bounded by the Balcones Fault to the south and east, the Llano Uplift and the Llano Estacado to the north, and the Pecos River and Chihuahuan Desert to the west.

2.1.1 Ecoregion Setting

Ecoregions are major ecosystems within physiographic regions defined by geographically distinct plant and animal species, natural communities, and environmental conditions. There are 12 different Level III and 56 Level IV ecoregions in Texas. Lake Georgetown is in the Balcones Canyonlands ecoregion section (Level IV) of the Edwards Plateau ecoregion province (Level III). The Balcones Canyonlands ecoregion forms the southeastern boundary of the Edwards Plateau. The Edwards Plateau was uplifted during the Miocene epoch as the Balcones Fault Zone, separating central Texas from the coastal plain. The Balcones Canyonlands are highly dissected through the erosion and dissolution from springs, streams, and rivers working both above and below ground; percolation through the porous limestone contributes to the recharge of the Edwards Aquifer. High gradient streams originating from springs in steep-sided canyons supply water for development on the Texas Blackland Prairies ecoregion at the eastern base of the escarpment.

The Balcones Canyonlands supports a number of endemic plants and has a higher representation of deciduous woodland than elsewhere on the Edwards Plateau, with escarpment black cherry, Texas mountain-laurel, madrone, Lacey oak, bigtooth maple, and Carolina basswood. Some relicts of eastern swamp communities, such as baldcypress, American sycamore, and black willow, occur along major streamcourses. It is likely that these trees have persisted as relicts of moister, cooler climates following the Pleistocene glacial epoch. Toward the west, the vegetation changes gradually as the climate becomes more arid. Plateau live oak woodland is eventually restricted to north and east facing slopes and floodplains, and dry slopes are covered with open shrublands of juniper, sumac, sotol, acacia, honey mesquite, and ceniza.

To help understand the region and guide future management of the USACE lands at Lake Georgetown, the following sections reflect conditions that are both typical of the Edwards Plateau region and unique to Williamson County. While Section 2.1 covers the specifics of the region, Section 2.2 covers the natural resources specific to the region, its watershed, and the lake.

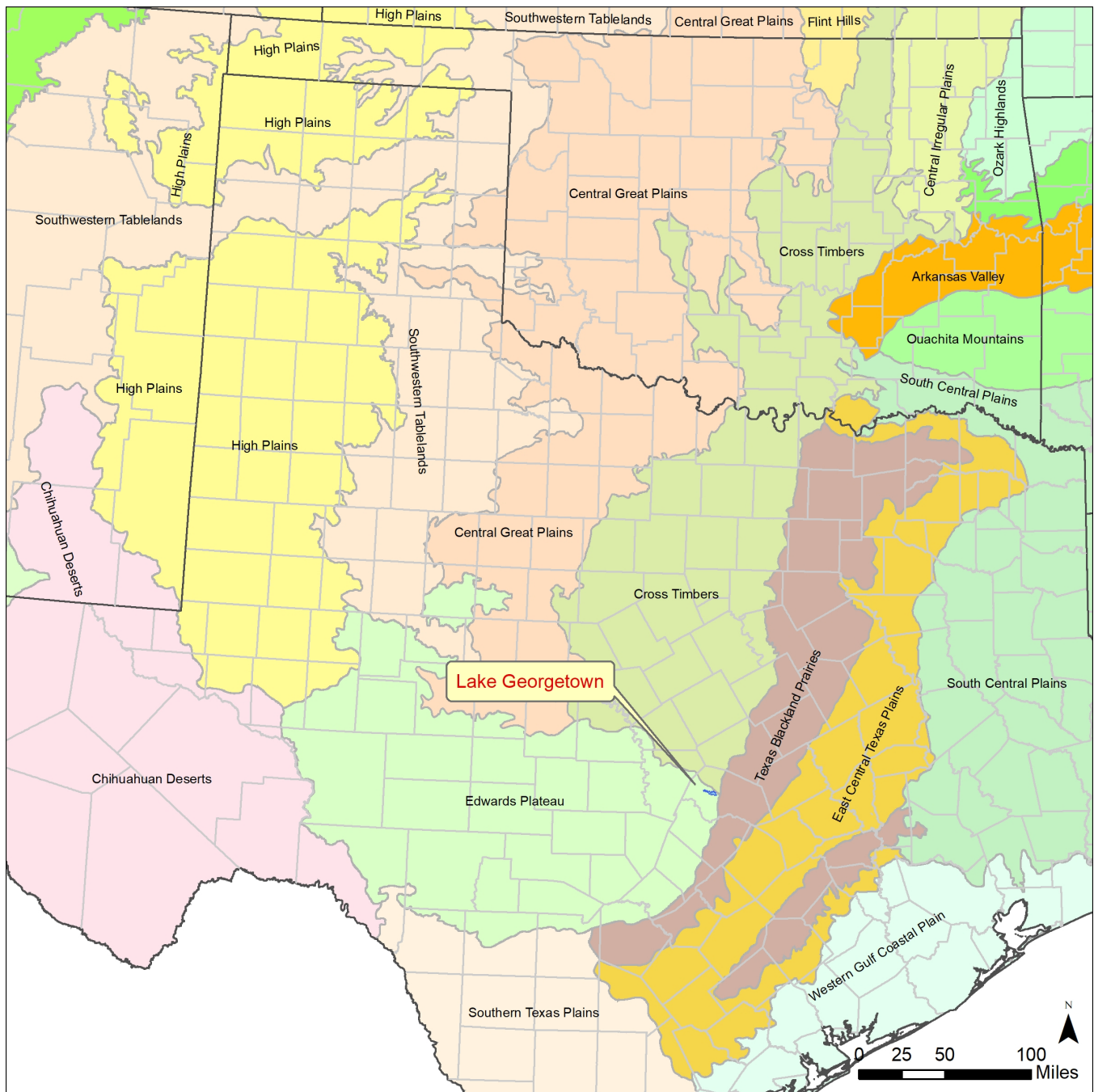


Figure 2.1 Lake Georgetown Ecoregion

2.1.2 Climate

Lake Georgetown lies in a moderately humid region of the southwest United States where the temperature is generally mild. Summer temperatures are generally hot during the day and warm at night, while winter temperatures are generally mild with occasional cold periods, including some freezing temperatures of short duration. Sub-zero temperatures are very rare. While the mean annual temperature is about 68 degrees Fahrenheit (°F), the maximum recorded temperature was 112°F in August 2011, and the minimum recorded

temperature was -2°F in January 1949. The growing season between killing frosts is normally from mid-March to late-November.

Table 2.1 Lake Georgetown 1982-2018 Monthly and Annual Precipitation in Inches

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Rainfall (In.)
1982	0.96	1.09	1.14	4.61	5.56	5.69	0.07	3.38	1.48	2.72	6.01	1.47	34.2
1983	1.98	3.44	5.88	0.34	6.97	2.62	2.66	2.6	1.46	1.98	2.58	0.43	32.9
1984	1.61	0.45	2.1	0.76	2.38	3.42	3.09	0.05	1.7	11.43	2.07	3.67	32.7
1985	1.04	4.43	2.62	4.06	4.83	3.29	1.51	1.36	4.99	7.37	5.47	3.28	44.3
1986	0.38	5.36	0.32	0.49	5.44	4.04	0	2.35	4.44	8.12	2.49	6.53	40.0
1987	0.65	3.39	1.69	0.9	8.01	9.78	2.4	0.07	5.35	0.8	7.36	3.15	43.5
1988	0.47	0.72	1.79	2.15	3.11	3.27	1.25	2.17	1.39	1.52	0.87	1.35	20.1
1989	4.26	1.67	3.35	1.03	4.64	3.91	0.77	2.31	0.72	1.83	1.21	0.14	25.8
1990	1.7	2.91	5.15	4.23	3.69	0.89	2.26	1.43	4.11	3.3	2.96	0.81	33.5
1991	5.2	2.41	1.81	6.96	3.95	4.8	1.07	3.35	3.49	1.03	1.3	10.77	46.1
1992	5.3	8.67	5.25	1.24	8.32	5.91	3.25	2.75	3.07	0.39	6.06	4.01	54.2
1993	3.45	2.45	4.56	3.44	6.06	6.35	0	0	3.01	3.18	1.37	1.87	35.8
1994	1.37	2.01	2.76	1.36	4.98	1.3	0.19	4.61	1.43	8.98	2.05	4.02	35.1
1995	0.93	1.21	1.81	4.91	6.01	1.81	2.1	3.06	2.67	0.33	3.59	0.65	29.1
1996	0.03	0.23	1.18	0.72	3.49	3	0.65	4.09	11.22	1.28	4.69	2.78	33.4
1997	2	4.55	2.3	11.58	5.94	6.9	1.23	1.07	2.55	5	4.16	4.54	51.8
1998	2.66	5.46	3.68	1.33	0.74	3.57	1.09	2.26	3.61	7.36	4.33	1.89	38.0
1999	0.6	0.1	3.82	2.11	5.63	8.58	3.89	0.05	0.07	1.52	0.16	1.65	28.2
2000	2.49	1.41	2.75	1.92	5.91	6.35	0.43	0.22	3.23	8.03	9.48	3.66	45.9
2001	4	2.01	7.17	1.81	4.2	1.85	0.53	3.47	1.84	3	6.09	3.86	39.8
2002	0.83	1.04	1.28	0.83	2.06	3.25	5.43	0.65	3.9	9.96	2.54	4.76	36.5
2003	1.43	4.33	1.15	0.29	2.03	5.11	1.62	2.43	3.28	2.29	0.74	0.67	25.4
2004	4.58	4.69	2.07	3.24	2.18	10.54	2.76	5.63	0.74	8.28	8.37	0.76	53.9
2006	1.39	1.38	2.96	4.03	2.75	3.94	3.88	0.39	4.52	5.55	0.12	3.84	34.8
2007	6.55	0.1	5.82	1.82	8.57	7.79	10.49	2.51	3.54	1.85	1.44	0.8	51.3
2008	0.97	0.08	4.36	2.76	3.29	1.9	1.22	1.14	1.51	1.18	0.56	0.41	19.4
2009	0.94	1.39	3.84	6.55	1.54	0.9	1.09	1.64	12.15	11.67	2.32	2.73	46.8
2010	3.94	3.46	4.24	1.36	0.73	4.09	3.55	0.25	17.76	0	0.74	0.81	40.9
2011	2.72	0.74	0.17	0.54	0.83	1.17	0.02	0	0.02	1.94	2.61	4.59	15.4
2012	2.67	3.65	4.73	0.13	3.15	0.21	2.34	3.94	5.9	0.88	0.29	0.12	28.0
2013	4.32	0.58	1.23	1.33	3.01	1.56	3.74	0.97	4.07	6.19	4.09	1.39	32.5
2014	0.43	0.24	1.2	2.58	7.2	1.98	3.77	0.08	3.15	4.41	4.89	1.19	31.1
2015	4.31	0.87	5	3.16	14.83	6.56	0.39	0.46	0.15	8.57	4.35	2.09	50.8
2016	0.23	1.46	3.16	8.08	6.89	4.03	2.02	14	1.5	0.27	2.93	2.37	47.0
2018	0.1	2.72	2.51	0.88	2.01	2.26	1.03	2.54	10.45	8.57	1.77	4.92	39.8
Avg. (in.)	2.19	2.31	3.00	2.67	4.60	4.07	2.05	2.21	3.84	4.31	3.20	2.63	37.1

Source: NOAA National Centers for Environmental Information (NCEI)

The mean annual precipitation over the 80-mile-long watershed varies from 29 inches at its head to 35 inches at its eastern limits. In the Lake Georgetown area, the overall mean annual precipitation is 33 inches, with the heaviest rains falling from April through June. The greatest source of rain is from frontal storms, although cyclic storms and thunderstorms do occur. The nature of the storms and the fact that the topography is conducive to rapid runoff results in frequent flooding, which can occur at any time of the year. Winds in the region are

generally from a southerly direction. The average wind velocity near the watershed is 10 mile per hour (mph), with 57 mph wind being the maximum recorded.

The average annual precipitation at Lake Georgetown since 1982 is 37.1 inches. Table 2.1 below shows the monthly and annual precipitation recorded at the NOAA weather station located at Lake Georgetown. This table shows the record monthly precipitation was 17.76 inches in September 2010, and the minimum monthly precipitation of 0.0 is seen in July of 1986, July and August of 1993, October of 2010, and August of 2011. The record maximum and minimum annual precipitation were 54.2 in 1992 and 15.4 in 2011. Areas highlighted in orange represent the record lowest precipitation by month and year, and the areas highlighted in green are the highest precipitation recorded for the month and year from 1982 to 2018.

2.1.3 Geology and Topography

Lake Georgetown is located in the Limestone Cut Plains of the Edwards Plateau Ecoregion, which is underlain by Lower Cretaceous limestone, including the Glen Rose Formation and Walnut Clay, which are older than the limestone of the Edwards Plateau. The Glen Rose Formation has alternating layers of limestone, chert, and marl that erode differentially and generally more easily than the Edwards Limestone. The effects of increased precipitation and runoff are also apparent in the increased erosion and dissolution of the limestone layer.

The topography around Lake Georgetown consists of gently rolling hills with some dramatic cliffs and drops due to the limestone dissolution typical of the Hill Country of central Texas. The elevation in Williamson County where the lake and dam exists averages 850 feet NGVD29, with the eastern portion in the low-lying areas east of the Balcones Escarpment, and the western area in the upland Texas Hill Country characterized by rocky terrain with thin layers of soil lying on top of limestone. Some ranching occurs in the uplands, but the area is highly prized for residential development because of the rolling terrain, vistas, hardwood trees, abundant wildlife, and rivers and streams. This terrain and associated vegetation makes for interesting elevation changes and creates a unique experience for cyclists and hikers, both popular activities at the lake.



Photo 2-1 Downstream View of Outlet Works and Stilling Basin (Source: USACE Photo)

2.1.4 Hydrology and Groundwater

The 45,573 square mile Brazos Basin, which feeds Lake Georgetown, is the second largest river basin by area within Texas. The total basin is 840 miles long with an annual flow of 6,074,000 ac-ft per year, most of which is in Texas. Lake Georgetown is located on the North Fork of the San Gabriel River, a tributary of the Brazos River. The portion of the Brazos River within Texas flows from the confluence of its Salt and Double Mountain forks in Stonewall County, TX to the Gulf of Mexico. It is the state's third longest river and has the largest average annual flow volume of any river in the state. Other streams in the basin include the Salt, Double Mountain, and Clear forks of the Brazos River, Lampasas, Little, Leon, Navasota, Nolan, Paluxy, Sabana, and White rivers, and many creeks such as Big Sandy, Cedar, Millers, Salt, Sweetwater, and Yegua creeks. One of the issues in this basin is the increasing demand on surface water resources in the upper basin as groundwater supplies decline, particularly in the Ogallala Aquifer, which has historically supplied the majority of water in the upper basin.

The two primary sources of groundwater in the Lake Georgetown area are the Edwards Balcones Fault Zone (BFZ) Aquifer and the Trinity Aquifer (TWDB, 2015). The Edwards BZF forms a narrow belt extending through most of the southwestern part of the state of Texas, through 13 counties from a groundwater divide in Kinney County through the San Antonio

area, northwestward to the Leon River in Bell County. Water in the aquifer occurs in fractures, honeycomb zones, and solution channels in the Edwards (BFZ) and associated limestone formations of Cretaceous age. Water quality for the Edwards (BFZ) ranges from fresh to slightly saline as it approaches the west side of the Trinity Group, with total mineral dissolve ranging from 100 to 500 milligrams per liter (mg/l). Water from the Edwards (BFZ) is primarily used for municipal, irrigation, and recreational purposes.

The Trinity Aquifer consists of basal Cretaceous-age Trinity Group formations extending across much of the central and northeast parts of the state of Texas, through 61 counties. From the Red River in North Texas to the Hill Country of Central Texas, the aquifer is comprised of the Antlers, Twin Mountains, Glen Rose, Paluxy, Hosston, Travis Peak, and Hensell formations. In general, groundwater in the Trinity Aquifer is fresh but very hard in the outcrop. The dissolved solids increase from 1,000 - 5,000 mg/l, and slightly-to-moderately saline as the depth of the aquifer increases. Sulfate and chloride concentrations increase in the aquifer as depth increases. The Trinity Aquifer is mostly used for municipalities, irrigation, and livestock and is one of the most used groundwater resources in the state of Texas.

The Lake Georgetown area is administratively under the Groundwater Management Area (GMA) 8 as designated by TWDB. In 1993, the Edwards Aquifer Authority (EAA) was created by the legislature to regulate aquifer pumpage to benefit all users. Texas Water Code (TWC) Section 36.0015 states that groundwater conservation districts (GCDs) are the state's preferred method of groundwater management and establishes that GCDs will manage groundwater resources through rules developed and implemented in accordance with TWC Chapter 36. Chapter 36 gives directives to GCDs and the statutory authority to carry out such directives, so that GCDs are provided the proper tools to protect and manage the groundwater resources within their boundaries. The ground water in and around Lake Georgetown is primarily managed by the Clearwater Underground Water Conservation District.

The estimates of the annual amount of recharge to the groundwater resources that are recognized as Major Aquifers by TWDB are based on the Groundwater Availability Models (GAM) simulations provided by TWDB are:

1. Edwards BFZ Aquifer Recharge - 27,565 ac-ft per year
2. Trinity Aquifer Recharge - 2,816 ac-ft per year

The estimates of the annual amount of water discharged to surface water systems by the groundwater recognized as Major Aquifers by TWDB are based the GAM simulations provided by TWDB are:

1. Edwards BFZ Aquifer - 27,556 ac-ft per year
2. Trinity Aquifer - 11,131 ac-ft per year

2.1.5 Soils

Soil type and condition are an important component affecting the lake mission in terms of erosion and sedimentation, recreation options, and environmental stewardship. The Lake Georgetown area has thin limestone soils in the hilly portion, which are timbered with oak, elm,

mesquite, juniper, and ash. Alluvial soils along the streams support pecan, willow, and hackberry trees.

Soils in the Lake Georgetown area are naturally susceptible to soil erosion. The major soil series found in the area are Eckrant-Rock Outcrop association 1 to 10 percent slopes, Eckrant-Rock Outcrop association 8 to 30 percent slopes, Eckrant extremely stony clay, and Brackett gravelly clay loam. The soils in general are well drained and moderately permeable, but can vary in depth, parent material, and slope. Hydrologically, these soil groups generally have moderate water infiltration rates, however in the areas where soils tend to be of clay formation, a very slow infiltration rate (high runoff potential) is recorded which gives the soil a shrink-swell potential. Table 2.2 illustrates the distribution of soil types within Williamson County.

A soil survey by the Natural Resource Conservation Service (NRCS) shows there are all eight possible general classifications (Classes I through Class VIII) occurring in Williamson County. The erosion hazards and limitations for use increase as the class number increases. Class I has few limitations, whereas Class VIII has many. The soil class data for project lands is provided in Table 2.2 This data is compiled by the NRCS and is a standard component of natural resources inventories on USACE lands. This, and other inventory data, is recorded in the USACE Operations and Maintenance Business Information Link (OMBIL).

Table 2.2 Soil Classes

Soil Class	Acreage
Class I	16%
Class II	5%
Class III	2%
Class IV	3%
Class V	1%
Class VI	9%
Class VII	64%

A general description of the soils at Lake Georgetown and the land capability classes are described below.

- *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.

Detailed information on all soil types surrounding Lake Georgetown is available on websites maintained by the NRCS, U.S. Department of Agriculture.

2.2 ECOREGION AND NATURAL RESOURCE ANALYSIS

2.2.1 Vegetative Resources

USACE regulations and policy require a basic inventory of the vegetation at all operational projects. This inventory, referred to in EP 1130-2-540 as a Level 1 inventory, classifies the vegetation in accordance with the National Vegetation Classification System (NVCS) down to the Sub-Class level, which is a very broad classification level. The inventory data, presented in Table 2.3, is recorded in the USACE national database referred to as OMBIL and is useful in providing a general characterization of the vegetation on all operational projects. Daily management of USACE lands requires more detailed knowledge of the vegetation down to the Association level within the NVCS, and for most management prescriptions, down to the individual species level of dominant vegetation.

Table 2.3 Vegetation Classification and Condition 2016 Inventory

Land Cover/Vegetation Type	Acreage
Bare/Disturbed	46.9
Urban	108.2
Grassland	756.6
Scrub/Shrub	417.7
Bottomland Forest	272.2
Upland Forest	2,369.0
Riparian	145.8
Open Water	1,287

The vegetation of the Edwards Plateau section of the Limestone Cut Plain is composed of numerous tree species including post oak (*Quercus stellata*), white shin oak (*Quercus sinuata* var. *breviloba*), cedar elm (*Ulmus crassifolia*), Texas ash (*Fraxinus albicans*), plateau live oak (*Quercus fusiformis*), and bur oak (*Quercus macrocarpa*). Although the grasslands of the Limestone Cut Plain are a mix of tall, mid, and short grasses, some consider it a westernmost extension of the tallgrass prairie, which distinguishes this ecoregion from the Edwards Plateau Woodland. Grasses include big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*), yellow Indiangrass (*Sorghastrum nutans*), silver bluestem (*Bothriochloa saccharoides*), Texas wintergrass (*Nassella leucotricha*), tall dropseed (*Sporobolus compositus*), sideoats grama (*Bouteloua curtipendula*), and common Curly mesquite (*Hilaria belangeri*.). The Cross Timbers wooded areas consist primarily of post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), and hickories (*Carya spp.*), along with tall and midgrasses. A denser woody understory forms in the absence of fire.



Photo 2-2 Prairie Wildflowers at Lake Georgetown (Source: USACE Photo)

A Wildlife Habitat Appraisal Procedure (WHAP) was completed in conjunction with the Lake Georgetown Master Plan and associated EA (see Appendix E for a detailed description). USACE looked at major habitat types throughout USACE lands at Lake Georgetown and scored them based on their value for terrestrial wildlife habitat. A total of 67 WHAP points around the lake were selected, all within USACE fee property. The major habitat types selected and assessed were Grasslands, Shrublands, Upland Forest, and Riparian Forest. The following is a summation of the findings, and the WHAP report and results can be found in Appendix E of this Plan.

Grassland: There were 18 Grassland sites assessed that had WHAP scores ranging from a low of 0.28 to a high of 0.67. The average score for this habitat type was 0.46. The major species observed are prairie verbena (*Glandularia bipinnatifida*), hedge parsley (*Torilis arvensis*), Johnson grass (*Sorghum halepense*), hairy vetch (*Vicia villosa*), Texas thistle (*Cirsium texanum*), yellow wood sorrel (*Oxalis stricta*), and ragweed (*Ambrosia spp.*). Some woody species are observed in the area including Ashe juniper (*Juniperus ashei*), prickly pear (*Opuntia macrorhiza*), cedar elm (*Ulmus crassifolia*), Texas persimmon (*Diospyros texana*), and pecan (*Carya illinoensis*).

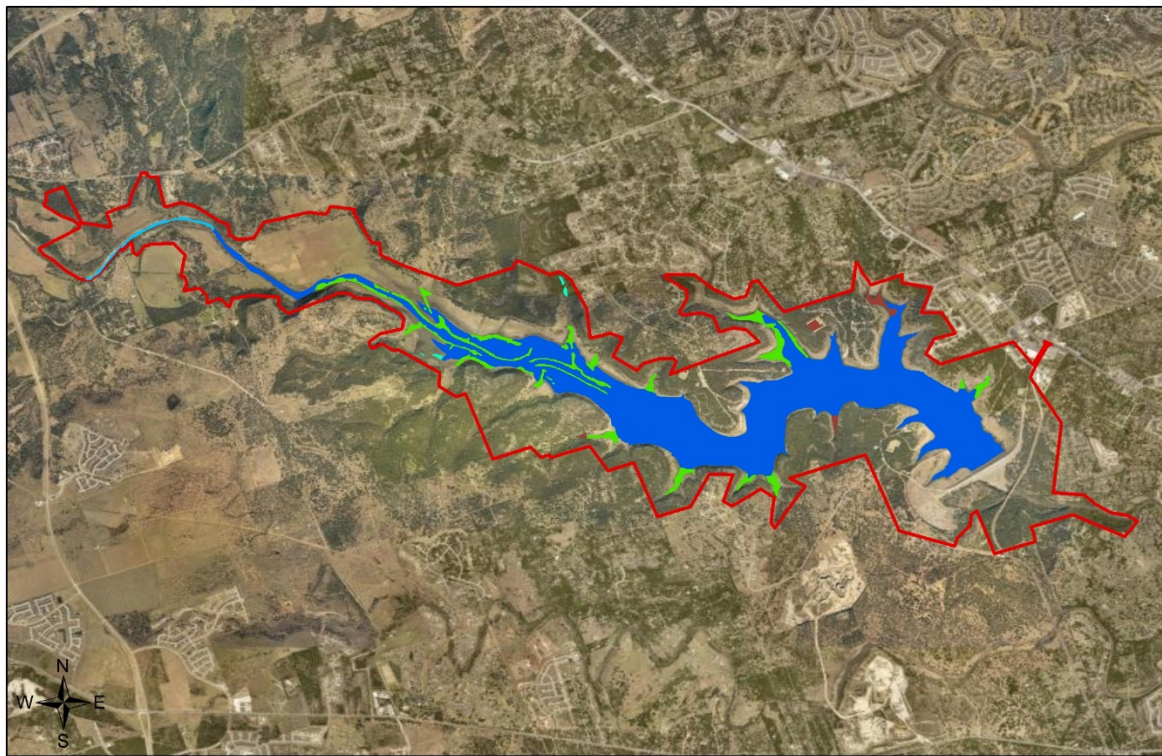
Shrubland: There were 3 Shrubland sites assessed that had WHAP scores ranging from a low of 0.32 to a high of 0.50. The average score for this habitat type was 0.42. The general herbaceous species found in these sites are: hedge parsley (*Torilis arvensis*), yellow wood sorrel (*Oxalis stricta*), buffalo grass (*Buchloe dactyloides*), Drummond's skullcap (*Scutellaria drummondii*), slender false pennyroyal (*Hedeoma acinoides*), Sedge (*Carex texensis*), ragweed (*Ambrosia spp.*), and little bluestem (*Schizachyrium scoparium*). The dominant woody species include: greenbrier (*Smilax rotundifolia*), live oak (*Quercus fusiformis*), muscadine grape (*Vitis rotundifolia*), Ashe juniper (*Juniperus ashei*), and Texas persimmon (*Diospyros texana*).

Upland Forest: There were 35 Upland Forest sites assessed that had WHAP scores ranging from a low of 0.33 to a high of 0.77. The average score for this habitat type was 0.51. Generally the Upland Forest sites observed around Lake Georgetown are in fair condition. The major herbaceous species observed are: yellow wood sorrel (*Oxalis stricta*), hairy vetch (*Vicia villosa*), hedge parsley (*Torilis arvensis*), and rosette grass (*Dichanthelium acuminatum*). The dominant woody species observed are: Dewberry (*Rubus trivialis*), Ashe juniper (*Juniperus ashei*), live oak (*Quercus fusiformis*), hackberry (*Celtis occidentalis*), greenbrier (*Smilax rotundifolia*), Texas persimmon (*Diospyros texana*), cedar elm (*Ulmus crassifolia*), Shumard oak (*Quercus shumardii*), and red oak (*Quercus buckleyi*).

Riparian Forest: There were 11 Riparian Forest sites assessed that had a WHAP score ranging from a low of 0.50 to a high of 0.91. The average score for this habitat type was 0.68. Generally, the Riparian Forests observed around Lake Georgetown were in good condition. The dominant herbaceous species observed were: woodland lettuce (*Lactuca floridana*), Johnson grass (*Sorghum halepense*), yellow wood sorrel (*Oxalis stricta*), hairy vetch (*Vicia villosa*), hedge parsley (*Torilis arvensis*), and catchweed bedstraw (*Galium aparine*). The dominant woody species observed were greenbrier (*Smilax rotundifolia*), dewberry (*Rubus trivialis*), Ashe juniper (*Juniperus ashei*), cedar elm (*Ulmus crassifolia*), live oak (*Quercus fusiformis*), poison ivy (*Toxicodendron radicans*), box elder (*Acer negundo*), button bush (*Cephalanthus occidentalis*), and mustang grape (*Vitis mustangensis*).

2.2.2 Wetland Resources

Waters of the United States are defined within the Clean Water Act (CWA), and jurisdiction is addressed by the USACE and United States Environmental Protection Agency (EPA). Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the Clean Water Act (CWA) (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Figure 2.2 illustrates the different wetland types and locations around Lake Georgetown.



Georgetown Lake: NWI Mapped Wetlands

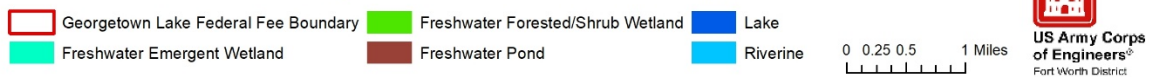


Figure 2.2 Wetland types and locations around Lake Georgetown
(Source: US Fish and Wildlife Service)

Table 2.4 lists the acreages of various types of wetlands present at Lake Georgetown. Wetland classifications presented are derived from the U.S. Fish & Wildlife Service's (USFWS) Trust Resource List generated using the Information, Planning, and Conservation System decision support system.

Table 2.4 Wetland Resources

Wetland Types	Total Acres
Lake	1,141
Riverine	13
Forested Wetland	150
Emergent Wetland	3
Pond	17
Total Inventoried	1,324

Note: These acres are from NRMS and vary from USFWS acres.

2.2.3 Fish and Wildlife Resources

Lake Georgetown provides habitat for an abundance of fish and wildlife species. The lake provides a quality fishery, as well as quality wildlife habitat on public land associated with the project.

Fish Resources

Lake Georgetown provides fishing opportunities for the boater and for the bank angler. Common sport fish species present in Lake Georgetown include striped bass (*Morone saxatilis*), white bass (*Morone chrysops*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white crappie (*Pomoxis annularis*), channel catfish (*Ictalurus punctatus*), and blue catfish (*Ictalurus furcatus*). Other species include a variety of sunfish (*Lepomis spp.*), including bluegill (*Lepomis macrochirus*), and warmouth (*Lepomis gulosus*). Stocking of Lake Georgetown is conducted by Texas Parks and Wildlife Department (TPWD) annually. USACE is committed to continued cooperation with TPWD, whose management strategies include:

- Manage sport fishes at Lake Georgetown with statewide regulations.
- Plant additional native vegetation as water levels allow.
- Maintain invasive species signage at boat ramps and inform the public about the negative impacts of aquatic invasive species when meeting with Lake Georgetown user groups.
- Conduct access and vegetation surveys.
- Conduct surveys with trap nets, gill nets, and electrofishing.
- Work with the USACE and constituent groups to inform and educate about best practices for tournament weigh-ins.

Wildlife Resources

Lake Georgetown provides habitat for an abundance of wildlife species, including game and non-game species, migratory waterfowl, resident and migratory song birds, wading birds, reptiles, amphibians, and insects. The area offers a mixture of geologic features, riparian forest, grasslands, springs, and river habitats, which support white-tailed deer (*Odocoileus virginianus*), gray foxes (*Urocyon cinereoargenteus*), red foxes (*Vulpes vulpes*), coyotes (*Canis latrans*), fox squirrels (*Sciurus niger*), owls (Order *Strigiformes*), and over 100 other species of birds (Class *Aves*).

USACE currently allows hunting at Lake Georgetown in specified areas and in accordance with specific restrictions on allowable game species and means and methods of hunting. USACE Fort Worth District publishes a Public Hunting Guide listing each USACE lake in the Fort Worth District. The guide is updated each year to address any changes in State wildlife/hunting rules that may affect hunting at USACE lakes, as well as any changes in the management of USACE land at each lake. Hunters are advised to obtain a copy of the guide and to visit with USACE lake staff when planning to hunt.

2.2.4 Threatened and Endangered Species

Threatened species are those which are likely to become endangered within the foreseeable future. Endangered species are in danger of extinction throughout all or a significant portion of their range. USFWS also identifies species that are candidates for listing as a result of identified threats to their continued existence. The Candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. The USFWS Information for Planning and Conservation (IPaC) identified several species of birds, flowering plants, insects, and reptiles listed by the USFWS as Threatened, Endangered, or Candidate species that could potentially be found at Lake Georgetown (Table 2.5 - See Appendix C for the IPAC report for Lake Georgetown).

Table 2.5 Federally-Listed Threatened and Endangered Species with Potential to Occur at Lake Georgetown

Common Name	Scientific Name	Federal Status	State Status
Whooping Crane	<i>Grus americana</i>	Endangered	Endangered
Least Tern	<i>Sterna antillarum</i>	Endangered	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened	Threatened
Red Knot	<i>Calidris canufus rufa</i>	Threatened	Not Listed
Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>	Endangered	Endangered
Coffin Cave Mold Beetle	<i>Baetrisodes texanus</i>	Endangered	Not Listed
Tooth Cave Ground Beetle	<i>Rhadine persephone</i>	Endangered	Not Listed
Bone Cave Harvestman	<i>Texella reyesi</i>	Endangered	Not Listed
Tooth Cave Spider	<i>Neoleptoneta myopica</i>	Endangered	Not Listed
Georgetown Salamander	<i>Eurycea naufragia</i>	Threatened	Not Listed
Jollyville Plateau Salamander	<i>Eurycea tonkawae</i>	Threatened	Not Listed
Salado Salamander	<i>Eurycea chisholmensis</i>	Threatened	Not Listed
Smooth Pimpleback	<i>Quadrula houstonensis</i>	Candidate	Threatened
Texas Fawnsfoot	<i>Truncilla macrodon</i>	Candidate	Threatened
Texas Pimpleback	<i>Quadrula petrina</i>	Candidate	Threatened
Bracted Twistflower	<i>Streptanthus bracteatus</i>	Candidate	Not Listed

Source: USFWS 2019

2.2.5 Invasive Species

Invasive species are any kind of living organism which, if uncontrolled, causes harm to the environment, economy, or human health. Invasive species generally grow and reproduce quickly and spread aggressively. Non-native, or exotic, species have been introduced, either intentionally or unintentionally, and can out-compete native species for resources or otherwise alter the ecosystem. Native invasive species are those species that spread aggressively due to an alteration in the ecosystem, such as lack of fire or the removal of a predator from the food chain. Table 2.6 lists invasive and exotic species that occur at Lake Georgetown identified by TPWD and USACE (in white).

Table 2.6 Invasive Species Found at Lake Georgetown

Common Name	Scientific Name	Prevalence
Clams / Crustaceans		
Zebra mussel	<i>Dreissena polymorpha</i>	Significant/Major
Asian Clam	<i>Corbicula flaminea</i>	Moderate
Chinese Mystery Snail	<i>Cipangopaludina malleata</i>	Moderate
Spiny Water Flea	<i>Bythotrephes longimanus</i>	Moderate
Insects		
Red Imported Fire Ant	<i>Solenopsis invicta</i>	Significant/Major
Plants-Aquatic		
Hydrilla	<i>Hydrilla verticillata</i>	Moderate
Plants-Terrestrial		
*Chinaberry	<i>Melia azedarach</i>	Major
*Chinese tallow	<i>Triadica seifera</i>	Major
Common Reed	<i>Phragmites australis</i>	Moderate
Garlic Mustard	<i>Alliaria petiolata</i>	Moderate
*Glossy private	<i>Ligustrum lucidum</i>	Major
Japanese Knotweed	<i>Polygonum cuspidatum</i>	Moderate
Purple Loosestrife	<i>Lythrum salicaria</i>	Moderate
*Saltcedar	<i>Tamarix ramosissima</i>	Major
Shrubby Honeysuckle	<i>Lonicera bella</i>	Moderate
*Willow baccharis	<i>Baccharis salicina</i>	Major

Source: TPWD and *USACE



Photo 2-3 Zebra Mussels at Lake Georgetown (Source: USACE Photo)

2.2.6 Visual and Scenic Resources and Interpretation

Lake Georgetown 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). Some areas have been designated as Wildlife Management or Environmentally Sensitive Areas to preserve specific animal, plant, or environmental features which also add to the scenic qualities at the lake. Nearby parks have

been designed to access the lake, allow access to hiking trails, and take advantage of scenic qualities at the lake and surrounding areas. Adjacent landowners are informed that removing trees 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 general public from the water surface. Additionally, reasonable measures must be taken to ensure that damage to the natural landscape from invasive species and catastrophic wildfire are minimized. The Shoreline Management Policy has details concerning permits for vegetation manipulation. Adjacent landowners are advised to contact USACE lake staff prior to conducting any vegetation manipulation on USACE land.



Photo 2-4 Karst Area at Lake Georgetown (Source: USACE Photo)

Interpretive programming is a systematic approach to providing information and education services to Lake Georgetown visitors. The primary objective is to tell the USACE story, inform visitors of the park rules, and to provide educational opportunities for visitors to develop intellectual and emotional connections to the resources found at Lake Georgetown. A variety of interpretive techniques are used including personal visitor contacts, public speaking engagements, hosting primary, secondary, and college groups. In addition, the staff uses print and video media and various forms of social media to keep the visiting public informed.

Interpretive programming also includes the management of public affairs, community relations, marketing, publications, special events, and cooperation with civic groups and resources partners. A variety of physical components are used to enhance the interpretive programming effectiveness.

2.2.7 Sedimentation and Shoreline Erosion

Based on two methods for estimating sedimentation rates, the 2016 TWDB sedimentation survey estimates Lake Georgetown to have an average loss of capacity of 21 ac-ft per year since impoundment due to sedimentation below conservation pool elevation (791.0 feet NGVD29). The sedimentation survey indicates sediment accumulation varies throughout the reservoir. Sediment accumulation is consistently greater throughout the lower lying floodplains. The TWDB recommends that a similar methodology be used to resurvey Lake Georgetown in 10 years or after a major flood event.

The original design estimate by USACE indicates Lake Georgetown has a water surface of 1,310 acres with a total reservoir capacity of 37,100 ac-ft. The TWDB surveyed Lake Georgetown in 1995 and 2005. The 1995 and 2005 TWDB surveys were re-evaluated using current processing procedures resulting in updated capacity estimates of 37,932 acre-feet and 38,582 acre-feet, respectively.

2.2.8 Water Quality

Lake Georgetown is identified as segment 1249 within the Brazos River Basin. According to the Texas Commission on Environmental Quality (TCEQ) 2014 Texas Integrated Report for Clean Water Act Section 305(b) and 303(d), no water quality parameters measured were considered impaired at Lake Georgetown (TCEQ 2014). All parameters measured such as dissolved oxygen levels, metals in water, organics in water, sediment toxicity sets, and macrobenthos communities, show Lake Georgetown as fully supported (FS) for aquatic life, contact recreation, public water supply and general uses.

Few water quality parameters are monitored closely at Lake Georgetown, such as the concentration of dissolved solids, erosion and sedimentation, levels of oxygen, and the concentrations of total inorganic nitrogen. However, TCEQ has determined that none of these parameters are of concern. The concentration of dissolved solids such as chloride and sulfate in the water of Lake Georgetown average from 10.7 to 15.24 mg/l. The water is very hard due to the high concentration of calcium carbonate. The hardness decreases during the summer and early fall due to the sustained high flow. Concentration of total inorganic nitrogen and phosphorus are greatest during the summer and are generally elevated by runoffs during storm events.

One of the missions of Lake Georgetown is water supply. Three water suppliers withdraw drinking water from Lake Georgetown year round: the City of Round Rock, the City of Georgetown, and Brushy Creek Water Supply. These withdrawals affect the water level at Lake Georgetown, especially during the summer months or in times of drought conditions. The draw-down of water from Lake Georgetown for water supply lowers the water level and thus negatively impacts water-based recreation. Once below conservation pool (791.00 NGVD29), the Brazos River Authority (BRA) controls the removal of water from the lake to these water supply entities. When the water level reaches approximately elevation 777.00 NGVD29, BRA

starts pumping water via the pipeline that connects Stillhouse Hollow Lake and Lake Georgetown to meet the demand. In normal years, lake elevation is maintained at approximately 777.00 NGVD or lower, which has the following impacts: closure of swim beaches, limiting boat ramp availability, making docks unusable due to being on dry ground, and restricting public recreation. Low water levels negatively impacts overall visitation, which can be gauged through diminished Lake Georgetown visitor counts and reduced recreation fees collected.

2.2.9 Air Quality

The Clean Air Act, last amended in 1990, requires the EPA to set National Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for pollutants considered harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards. Primary standards provide public health protection, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. These standards are implemented by the EPA to assign limits to the amount of pollution that can be present in the atmosphere. Based on monitoring data, the EPA has determined that the Lake Georgetown area is currently in attainment, meaning that it meets standards.

2.3 CULTURAL RESOURCE AND ANALYSIS

2.3.1 Prehistoric

The earliest well-documented evidence of human occupation in the San Gabriel River valley dates to about 12,000 years before present (B.P.). Prehistory is divided generally into three broad time periods: Paleo-Indian (12,000-8,500 B.P.), Archaic (8,500-1,250 B.P.), and Late Prehistoric (1,250-300 B.P.).

Evidence for Paleo-Indian period occupation is relatively rare in the Lake Georgetown area, and is known primarily from distinctive projectile point styles dating to this time period found in surface collections or in mixed multi-component sites. It is likely that intact Paleo-Indian camp sites may be buried deeply beneath Holocene floodplain alluvium. Evidence suggests that the region was occupied by small groups of highly mobile hunter-gatherers that traveled over very large territories. Traditionally thought of as big-game hunters of mammoth and bison, more recent evidence indicates Paleo-Indians exploited a much broader range of animal and plant resources.

The Archaic period is divided into Early (8,500-6,000 B.P.), Middle (6,000-3,500 B.P.), and Late (3,500-1,250 B.P.) sub periods. During this long time period, a generalized hunting and gathering subsistence strategy is indicated. Trends through time suggest increasing population density and decreasing group mobility within smaller territories. Sites with Late Archaic components are well represented in the Lake Georgetown area and in Central Texas generally. Archaic period sites at Lake Georgetown include open campsites, burned rock midden features, and rockshelter occupations.

The Late Prehistoric Period (1,250-300 B.P.) is marked by the presence of the bow and arrow and pottery. During the early portion of this time span, subsistence strategies remained similar to those of the preceding Late Archaic. The Late Prehistoric period is divided into early

Austin phase (1,250-650 B.P.) and late Toyah phase (650-300 B.P.) sub periods. The Toyah phase differs from the preceding Austin phase in terms of technology and subsistence strategies. Bison became an important economic resource. Evidence of horticulture also appears, but was of only minor importance to overall Toyah phase subsistence.

2.3.2 Historic

The arrival of Europeans in Central Texas began during the early Spanish Colonial Period. The San Xavier Mission was established further downstream from Lake Georgetown on the San Gabriel River. Intensive occupation of the area for farming and ranching began in the middle 1800s, after the annexation of Texas by the United States in 1845.

Population growth in the area accelerated following the arrival of the railroads in 1881. This improved access to major markets and led to a dramatic increase in the numbers of local farms and ranches. Most of the historic period resources at Lake Georgetown are expected to be the archeological remains of house sites and outbuildings associated with farms and ranches dating from the late 19th century through the mid-20th century.

2.3.3 Previous Investigations at Lake Georgetown

The initial archeological investigations at Lake Georgetown were conducted in the 1960s by the Texas Archeological Salvage Project. During that period, 55 prehistoric sites were recorded, and test excavations were conducted at the John Ischy site (41WM49) and the Barker Site (41WM71). Over the course of several field seasons, the Texas Archeological Survey tested eight additional sites.

Beginning in 1978, a renewed period of investigations was conducted by North Texas State University. Additional sites were recorded, and data recovery excavations were conducted at six prehistoric sites (41WM53, 41WM56, 41WM57, 41WM73, 41WM304, 41WM328). Because high-quality chert is present in the limestone bedrock throughout the Lake Georgetown area, many spatially-extensive “lithic procurement sites/scatters” were recorded. These were found primarily in the uplands and consisted of thousands of pieces of chert debitage, cores, and biface fragments in surface contexts, with little potential for subsurface deposits. Limited survey work since then has added to the number of known archeological sites.

2.3.4 Recorded Cultural Resources

Currently, 128 archeological sites have been recorded at Lake Georgetown. Only three (3) of these sites have been formally evaluated to determine their eligibility for the National Register of Historic Places (all three (3) were determined ineligible). The remaining 125 archeological sites have not yet been evaluated for NRHP eligibility.

2.3.5 Long-term Cultural Resources Objectives

As funding allows, a Cultural Resources Management Plan (CRMP) shall be developed and incorporated into the Operational Management Plan in accordance with EP 1130-2-540. The purpose of the CRMP is to provide a comprehensive program to direct the historic preservation activities and objectives at Lake Georgetown. Completion of a full inventory of

cultural resources at Lake Georgetown is a long-term objective that is needed for compliance with Section 110 of the National Historic Preservation Act (NHPA). All currently known and newly recorded sites must be evaluated to determine their eligibility for the NRHP. In accordance with Section 106 of the NHPA, any proposed ground-disturbing activities or projects, such as those described in this master plan or as may be proposed in the future by others for right-of-way easements, will require cultural resource surveys to locate and evaluate historic and prehistoric resources. Resources determined eligible for the NRHP must be protected from proposed project impacts, or the impacts must be mitigated. All future cultural resource investigations at Lake Georgetown must be coordinated with the State Historic Preservation Officer and federally-recognized Tribes to insure compliance with the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.

2.4 DEMOGRAPHIC AND ECONOMIC ANALYSIS

The following information covers the current demographic and economic data for communities near Lake Georgetown (Zone of Interest). This basic information gives a snapshot of the current population and looks at growth trends for the area.

2.4.1 Zone of Interest

Lake Georgetown is located within Williamson County in Central Texas. The zone of interest for the socioeconomic analysis of Lake Georgetown is defined as Williamson County plus three bordering counties, Bell, Burnet, and Travis.

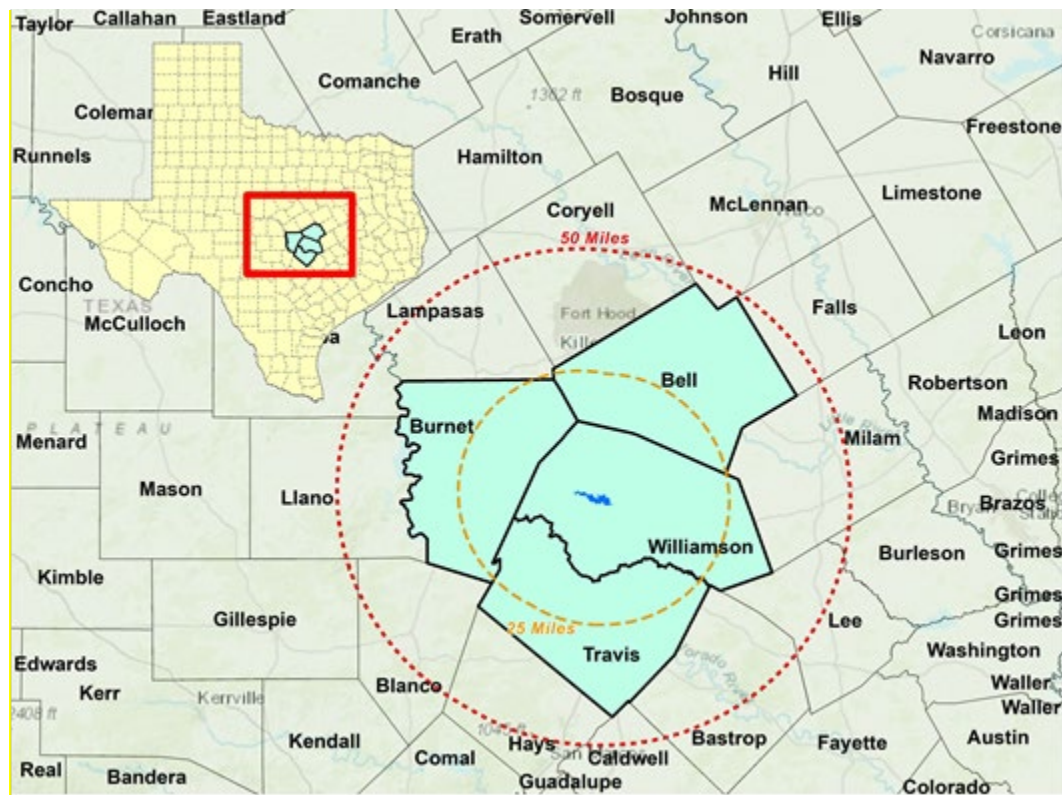


Figure 2.3 Lake Georgetown Zone of Interest

2.4.2 Population

The total population for the zone of interest in 2017 was 2,168,224, as shown in Table 2.7. Approximately 57% of the zone of interest population resides in Travis County, 25% in Williamson County, 16% in Bell County, and 2% in Burnet County.

The zone of interest's population makes up approximately 8% of the total population of Texas. From 2017 to 2045, the population in the zone of interest is expected to increase from 2.2 million to 3.8 million, an annual growth rate of 2%. By comparison, the population of Texas is projected to increase at a rate of 1.7% per year during that same timeframe, and the national growth rate is expected to be 0.6% per year. All counties within the zone of interest are projected to have positive growth between 2017 and 2045 with Williamson growing the fastest (3.4% annually). The annual growth rate is expected to be 1.5% in Travis County and 1% in both Bell and Burnet Counties.

Table 2.7 Population Estimates 2000, 2017 and 2045 Projections

Geographical Area	2000 Population Estimate	2017 Population Estimate	2045 Population Projection
Texas	20,851,820	27,419,612	43,867,040
Bell County	237,974	347,851	461,884
Burnet County	34,147	46,654	59,172
Travis County	812,280	1,227,771	1,880,085
Williamson County	249,967	545,948	1,387,322

Source: U.S. Census Bureau, Population Division (2000 Estimate); U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate); Texas State Data Center, The University of Texas at San Antonio (2045 Projections)

The distribution of the population among gender, as shown in Table 2-8, is split evenly in the zone of interest, which is similar to the overall gender distribution in Texas.

Table 2.8 Percent of Population Estimate by Gender 2017

Geographical Area	Male	Female
Texas	13,616,977	13,802,635
Bell County	168,147	168,359
Burnet County	22,234	22,783
Travis County	593,319	583,265
Williamson County	250,106	258,207
Zone of Interest Total	1,033,806	1,032,614

Figure 2.4, 2.5, and 2.6 display the population by age group. The distribution of age groups between the zone of interest and the state of Texas is similar, with the largest deviation being in the 25 to 34 and the 35 to 44 year old age groups. The zone of interest has 3.2% more people in the 25 to 34 age group and 2% more in the 35 to 44 group when compared to the state. Figure 2.4 shows the zone of interest's population by age group in 2017 compared to

the population projections by age group for 2045. The forecast shows that the population ages 0 to 54 will decrease while ages 55 and over will increase between 2017 and 2045.

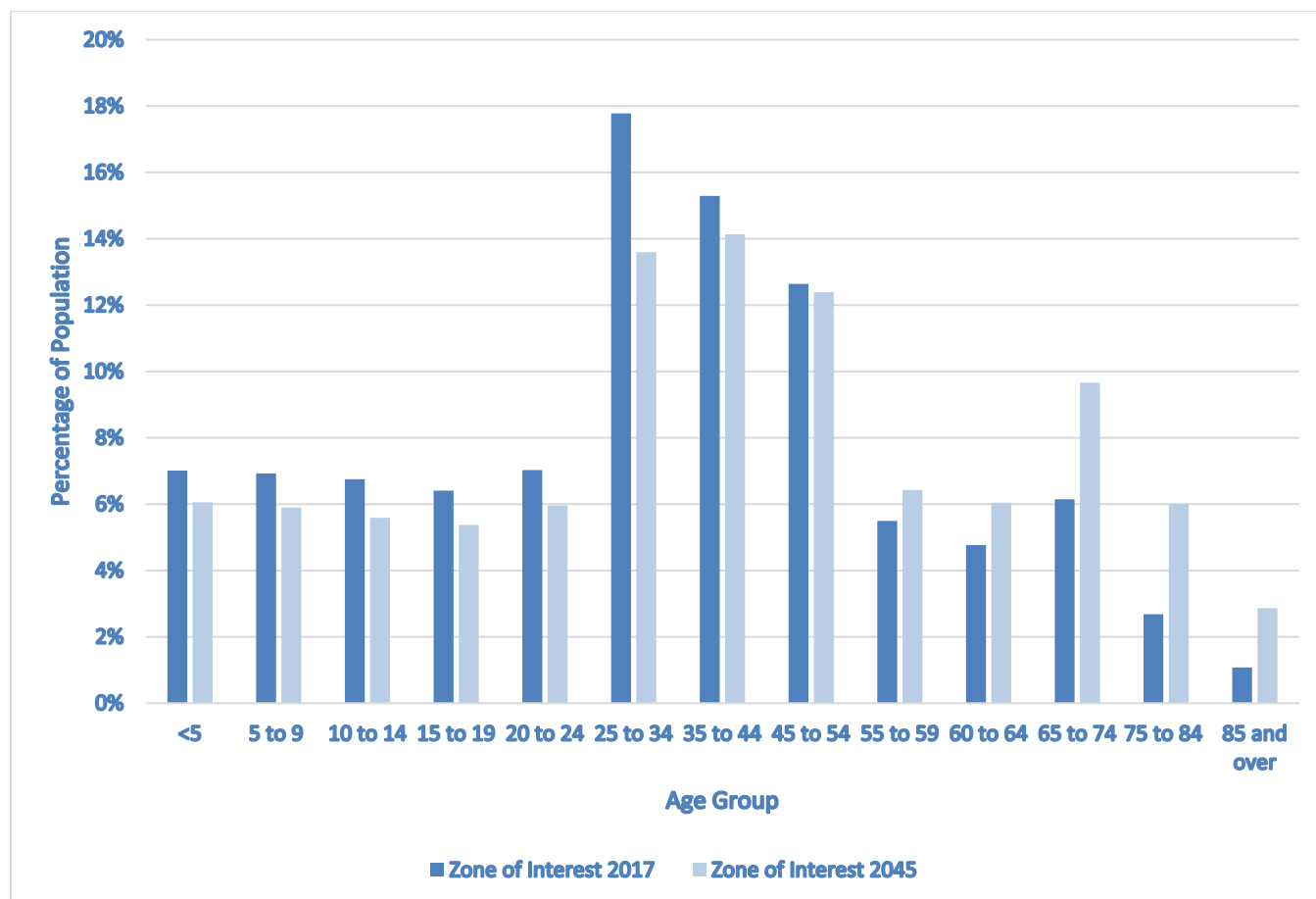


Figure 2.4 2017 Population Estimate and 2045 Projection by Age Group

Source: U.S. Census Bureau, 2012-2017 American Community Survey 5-Year Estimates (2017 Estimate); Texas State Data Center, The University of Texas at San Antonio (2045 Projections)

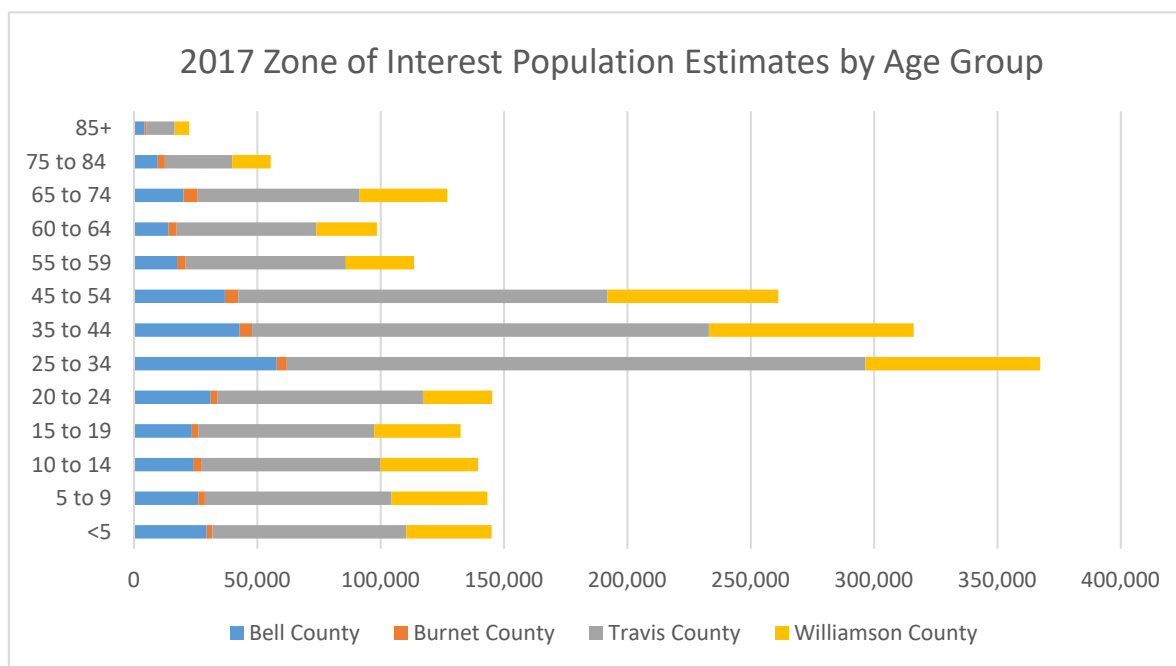


Figure 2.5 2017 Population Estimates by Age Group - Zone of Interest

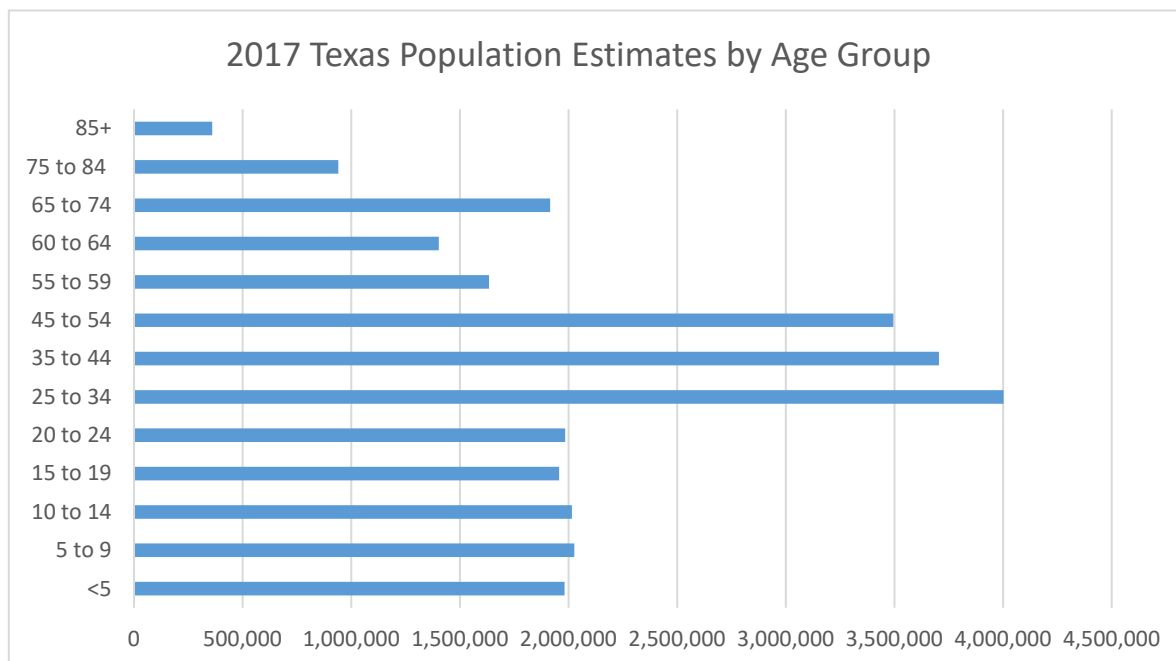


Figure 2.6 2017 Population Estimates by Age Group - Texas

Population by Race and Origin is displayed in Table 2.9. The population in the zone of interest is approximately 52% White, 30% Hispanic or Latino, 9% Black, 6% Asian, and 3% two or more races. The other race categories account for less than 1% each of the population. By comparison, the state's population is approximately 43% White, 39% Hispanic or Latino, 12% Black, 4% Asian, and 2% two or more races. Figure 2.7 shows the 2017 estimate and the 2045 projections of race/ethnicity in the zone of interest distributed between five categories, White, Black, Hispanic or Latino, Asian, and Other. The figure shows that the Hispanic or Latino and the Asian categories are expected to increase in the zone of interest, while the White and Other categories decreases and the Black category remains constant.

Table 2.9 2017 Population Estimate by Race/ Origin

Area	White	Black	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race alone	Two or more races	Hispanic or Latino
Texas	11,755,493	3,199,022	65,883	1,222,975	20,170	39,153	443,007	10,673,909
Bell County	158,932	70,588	977	9,378	2,348	325	13,112	80,846
Burnet County	33,365	696	276	328	0	0	495	9,857
Travis County	580,292	92,653	1,875	74,442	439	2,250	26,235	398,398
Williamson County	309,652	30,364	962	30,611	323	896	13,118	122,387
Zone of Interest Total	1,082,241	194,301	4,090	114,759	3,110	3,471	52,960	611,488

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

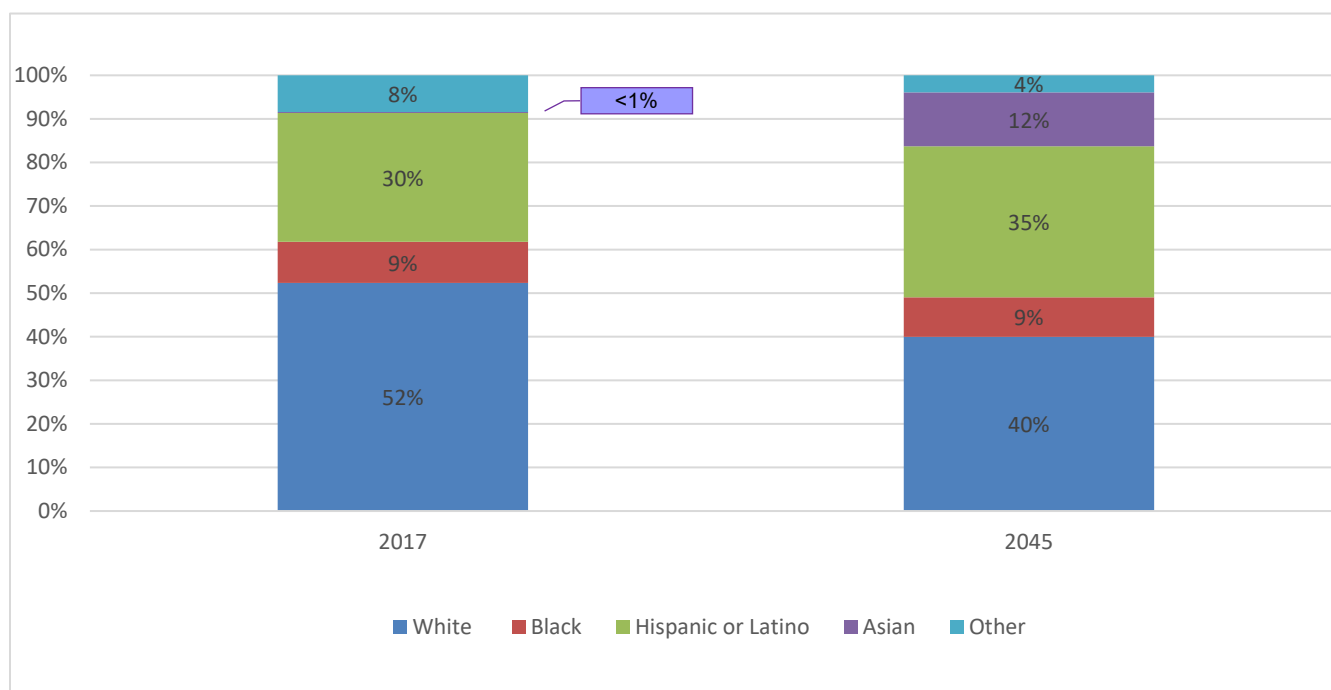


Figure 2.7 Zone of Interest Population Estimate (2017) and Projection (2045) by Race/Ethnicity

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates (2017 Estimate); Texas State Data Center, The University of Texas at San Antonio (2045 Projections)

2.4.3 Education and Employment

Table 2.10 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 5% of the population has less than a 9th grade education, and another 5% has between a 9th and 12th grade education; 20% has a high school diploma or equivalent, and 22% has some college and no degree; 7% has an Associate's degree; 27% has a Bachelor's degree, and 15% has a graduate or professional degree. In the state of Texas, 9% of the population has less than a 9th grade education; another 9% has between a 9th and 12th grade education; 25% has at least a high school diploma or equivalent; 22% has some college; 7% has an Associate's degree; 19% has a Bachelor's degree; and 10% has a graduate or professional degree.

**Table 2.10 Population Estimate by Highest Level of Educational Attainment 2017,
Population 25 Years of Age and Older**

Area	Highest Level of Educational Attainment							
	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 professiona l degree
Texas	17,454,431	1,513,995	1,491,909	4,372,430	3,857,193	1,208,509	3,288,777	1,721,618
Bell County	202,550	8,059	10,795	54,080	59,013	21,546	32,377	16,680
Burnet County	31,237	1,849	2,125	9,632	7,493	2,617	4,998	2,523
Travis County	795,223	48,256	41,080	135,671	148,380	44,460	240,380	136,996
Williamson County	332,250	10,456	12,929	68,056	79,214	27,882	89,380	44,333
Zone of Interest Total	1,361,260	68,620	66,929	267,439	294,100	96,505	367,135	200,532

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

Employment by sector is presented in Figure 2.8 and Table 2.11. Figure 2.8 shows that the largest percentage of the zone of interest is employed in the Educational services, and health care and social assistance sector at 21%, followed by 15% in the Professional, scientific, and management, and administrative and waste management services sector, 11% in Retail Trade, 10% in the Arts, entertainment, and recreation, and accommodation and food services sector, and 8% in Manufacturing. Approximately 7% of the zone of interest population is employed in Construction, and another 7% is employed in the Finance and insurance, and real estate and rental and leasing sector. The remainder of the employment sectors each comprise less than 8% of the zone of interest's labor force.

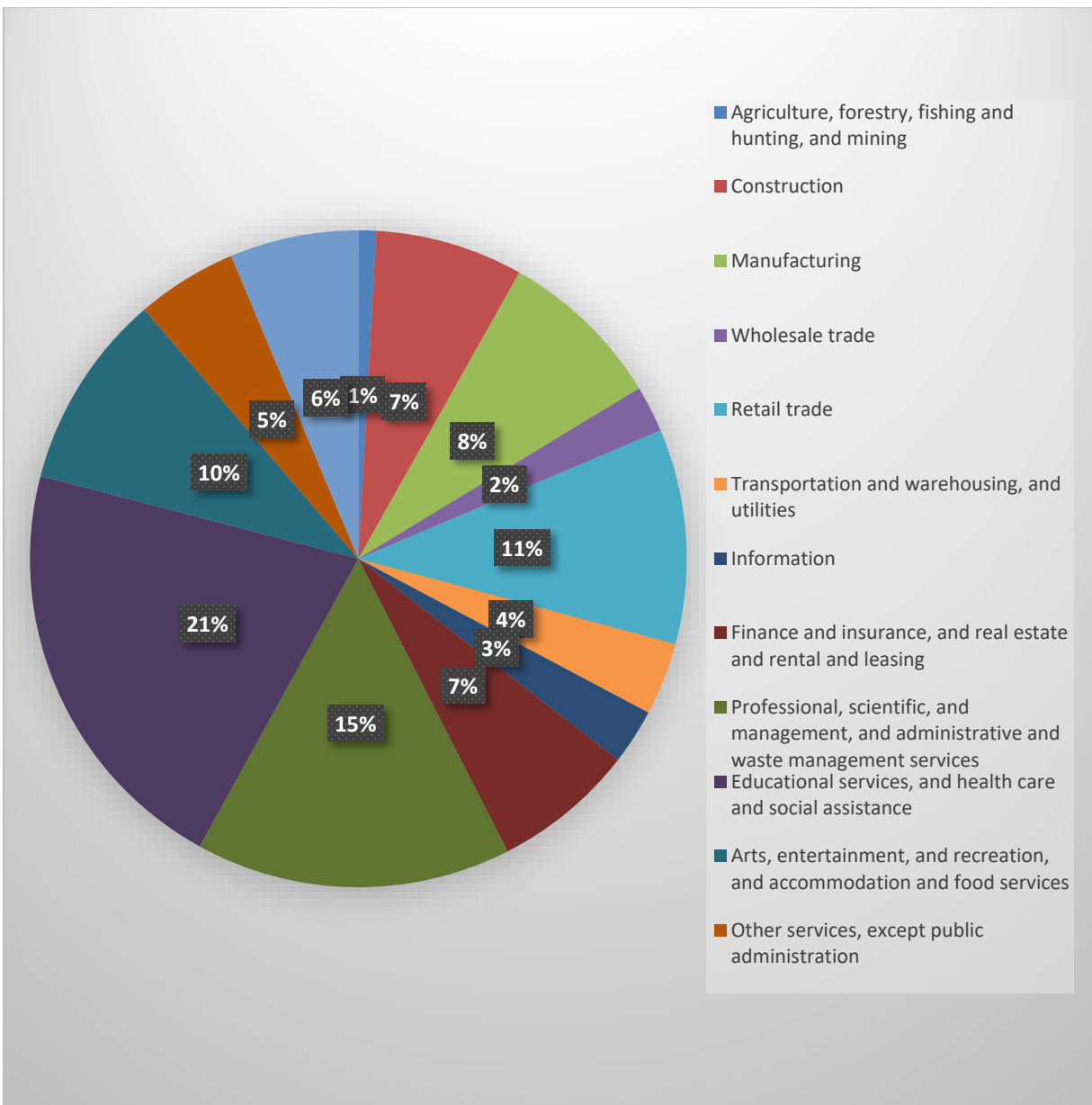


Figure 2.8 Zone of Interest Employment by Sector

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

Table 2.11 displays the number of individuals employed in each sector within the zone of interest and the state. The Texas Workforce Commission forecasts growth in specific industries in the state by Workforce Development Area (WDA). The counties within the zone of interest fall in three different WDAs: Capital Area (Travis County) Central Texas (Bell County), and Rural Capital (Burnet and Williamson Counties). In the Capital Area WDA, the fastest growing industries between 2016 and 2026 according to the Texas Workforce Commission will be Information services (46.6% growth), Home health care services (42.8%), and Highway, street, and bridge construction (42.6%). The fastest growing industries in the Capital Area WDA will be Specialized trucking (57.7%), Machinery and supply merchant wholesalers (55%), and Nonresidential building construction (54.8%). In the Central Texas WDA, the Management of companies and enterprises industry, Home health care services, and Services to buildings and dwellings will be the fastest growing industries.

Table 2.11 Annual Average Employment by Sector

Employment Sector	Geographic Area					
	Texas	Bell County	Burnet County	Travis County	Williamson County	Zone of Interest Total
Civilian employed population 16 years and over	12,689,069	135,361	19,567	645,807	254,840	1,055,575
Agriculture, forestry, fishing and hunting, and mining	412,873	1,214	767	4,810	2,441	9,232
Construction	1,038,063	8,868	2,367	48,291	17,380	76,906
Manufacturing	1,116,657	8,298	1,448	49,417	26,984	86,147
Wholesale trade	381,774	3,082	469	14,010	6,579	24,140
Retail trade	1,454,504	16,406	2,734	63,254	29,275	111,669
Transportation and warehousing, and utilities	702,367	5,962	799	22,530	8,393	37,684
Information	227,592	1,976	266	20,038	6,441	28,721
Finance and insurance, and real estate and rental and leasing	839,234	7,013	929	47,480	18,623	74,045
Professional, scientific, and management, and administrative and waste management services	1,437,711	12,562	1,939	111,032	38,462	163,995
Educational services, and health care and social assistance	2,739,219	35,650	3,542	129,090	53,644	221,926
Arts, entertainment, and recreation, and accommodation and food services	1,154,649	12,536	2,526	66,508	20,312	101,882
Other services, except public administration	663,422	6,442	881	32,906	12,187	52,416
Public administration	521,004	15,352	900	36,441	14,119	66,812

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

The civilian labor force in the zone of interest accounts for approximately 8.5% of the civilian labor force in the state of Texas. As shown in Table 2.12, the zone of interest experienced an unemployment rate of 3.2% in 2017, lower than that of the state of Texas, which had an unemployment rate of 4.3% that same year. The unemployment rate in each of the counties in the zone of interest were lower than that of Texas, ranging from 3% in Travis County to 4.2% in Bell County.

Table 2.12. Labor Force, Employment and Unemployment Rates, 2017 Annual Averages

Geographic Area	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate
Texas	13,538,385	12,960,595	577,790	4.3%
Bell County	141,233	135,305	5,928	4.2%
Burnet County	22,153	21,451	702	3.2%
Travis County	698,755	677,830	20,925	3.0%
Williamson County	287,330	278,071	9,259	3.2%
Zone of Interest Total	1,149,471	1,112,657	36,814	3.2%

Source: Bureau of Labor Statistics, Current Population Survey (State estimate), LAUS (County estimates)

2.4.4 Households, Income, Poverty

Table 2.13 displays the number of households and average household sizes in 2017. There were approximately 9.4 million households in the state of Texas with an average household size of 2.84 in 2017. Approximately 750,554 homes are in the zone of interest, with an average household size of 2.89.

Table 2.13 Households and Household Size 2017

Geographic Area	Total Households	Average Household Size
Texas	9,430,419	2.84
Bell County	116,397	2.81
Burnet County	16,545	2.69
Travis County	447,561	2.58
Williamson County	170,051	2.96
Zone of Interest Total	750,554	2.89

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

The median household income in the zone of interest ranged from \$52,583 in Bell County to \$79,123 in Williamson County in 2017, as displayed in Table 2.14. Per capita income in the zone of interest was \$35,331 in 2017, which was higher than the state of Texas, which had a per capita income of \$28,985.

Table 2.14 Median and Per Capita Income 2017

Geographic Area	Median Household Income	Per Capita Income
Texas	\$57,051	\$28,985
Bell County	\$52,583	\$25,017
Burnet County	\$57,173	\$29,247
Travis County	\$68,350	\$38,820
Williamson County	\$79,123	\$34,575
Zone of Interest Total	N/A	\$35,331

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

Table 2.15 displays the percentage of persons and families whose incomes fell below the poverty level in the past twelve months as of 2017. The zone of interest as a whole had a smaller percentage of people with incomes below the poverty level at 12.1% when compared to the state, which had 16.0% of people below the poverty level. Bell County had the most people with incomes below the poverty level at 14.3%, followed by Travis County at 13.9%, Burnet County at 8.1%, and Williamson County at 7%. In terms of families with incomes below the poverty level, all of the counties in the zone of interest had a smaller percentage of families below the poverty level than the state of Texas in 2017.

Table 2.15 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2017)

Geographic Area	All Persons	All Families
Texas	16.0%	12.4%
Bell County	14.3%	11.3%
Burnet County	8.1%	12.3%
Travis County	13.9%	9.0%
Williamson County	7.0%	4.7%
Zone of Interest Total	12.1%	N/A

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (2017 Estimate)

2.4.5 Social, Environmental and Environmental Benefits

USACE recognized the importance of Lake Georgetown and the activities on USACE lands and waters as being an important part of the local economy. Besides the obvious economic savings through flood risk management and development advantages through water supply, businesses can see investment opportunities, and people are drawn to the natural areas surrounding USACE lakes, as is evidenced by the growing number of residents adjacent to USACE properties. Nationally, USACE lakes attract about 335 million recreation visits every year, with direct economic benefits on local economies within a 30 mile radius. The following information describes some of the extended social, environmental, and economic benefits of Lake Georgetown for surrounding communities for 2016.

Table 2.16 Social Benefits 2016

Facilities in FY 2016
<ul style="list-style-type: none"> • 8 recreation areas • 84 picnic sites • 251 camping sites • 0 playgrounds • 1 swimming areas • 7 number of trails • 31 trail miles • 4 fishing docks • 3 boat ramps • 0 marina slips
Visits (person-trips) in FY 2016
<ul style="list-style-type: none"> • 493,793 in total • 47,027 picnickers • 18,307 campers • 80,515 swimmers • 26,670 water skiers • 0 boaters • 201,197 sightseers • 97,296 anglers • 291 hunters • 48,087 others
Public Outreach in FY 2016
1,470 public outreach contacts
Benefits in Perspective
<p>By providing opportunities for active recreation, USACE lakes help combat one of the most significant of the nation's health problems: lack of physical activity.</p> <p>Recreational programs and activities at USACE lakes also help strengthen family ties and friendships; provide opportunities for children to develop personal skills, social values, and self-esteem; and increase water safety.</p>

Table 2.17 Economic Benefit 2016

Economic Data in FY 2016
<p>*Visitation per year resulted in:</p> <ul style="list-style-type: none"> • \$11,329,477 in visitor spending within 30 miles of the Corps Lake. • \$7,765,941 in sales within 30 miles of the Corps Lake. • 114 jobs within 30 miles of the Corps Lake. • \$3,345,814 in labor income within 30 miles of the Corps Lake. • \$4,490,117 in value added within 30 miles of the Corps Lake. • \$4,587,544 in National Economic Development Benefits. <p>With multiplier effects, visitor trip spending resulted in:</p> <ul style="list-style-type: none"> • \$13,905,263 in total sales. • 155 jobs. • \$5,408,574 in labor income. • \$8,051,808 in value added (wages & salaries, payroll benefits, profits, rents, and indirect business taxes).
Benefits in Perspective
<p>The money spent by visitors to USACE lakes on trip expenses adds to the local and national economies by supporting jobs and generating income. Visitor spending represents a sizable component of the economy in many communities around USACE lakes.</p>

Table 2.18 Environmental Benefit 2016

Resources Data in FY 2016
<ul style="list-style-type: none"> • 3,873 land acres • 1,287 water acres • 25 shoreline miles
Benefits in Perspective
<p>Recreation experiences increase motivation to learn more about the environment; understanding and awareness of environmental issues; and sensitivity to the environment.</p>

Source: *Value to the Nation: Civil Works*;

<https://fastfacts.corpsresults.us/recreation/fastfacts/lake.cfm?LakeID=217>

2.5 RECREATION FACILITIES, ACTIVITIES, AND NEEDS

2.5.1 Zone of Influence and Visitation Statistics

The primary Zone of influence for Lake Georgetown encompasses Williamson, Bell, Burnet, and Travis Counties. These are the primary areas from which visitors to Lake Georgetown originate, thus have the most impact and are impacted the most from activities at the lake.

2.5.2 Visitation Profile

The majority of visitors to Lake Georgetown come from a 100-mile radius of the reservoir, with a greater concentration of visitors from a 50-mile radius. These visitors are a diverse group of people with a wide variety of interests. Examples of visitors include campers who utilize the campgrounds around the reservoir and in the county and federally operated parks; adjacent residents; hunters and anglers who utilize hunting grounds and participate in fishing tournaments; and day users who picnic, hike, bird watch, bicycle, and ride horses. Lake Georgetown is a significant resource for water-related recreation in the region, providing the public with a location for boating, sailing, canoeing/kayaking, paddle boarding, and swimming in the area.

On average from 2007 through 2017, Lake Georgetown, (North Gabriel Dam and Lake Georgetown on the illustration) has entertained almost half a million visits per year, with the peak visitation months running from March through September. From 2014-2018, visitation has been 432,505; 507,001; 530,359; 573,699 and 509,898 respectively. Figure 2.9 depicts a 2016 comparison in visitation between USACE lakes in the Fort Worth District region.

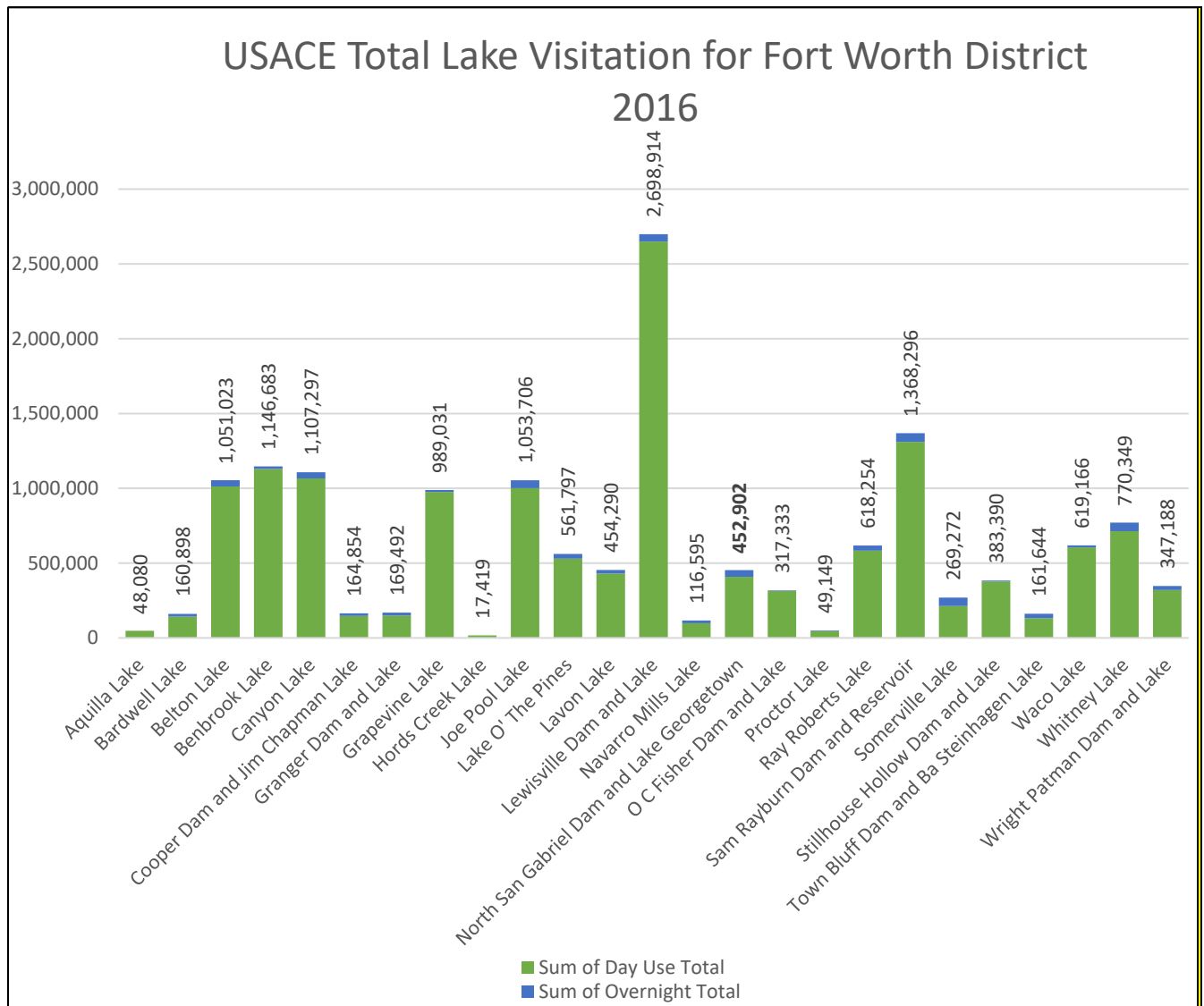


Figure 2.9 USACE Lake Visitation for Fort Worth District, 2016

2.5.3 Recreation Areas and Facilities

The existing recreational opportunities and future potential of Lake Georgetown is considered to be of great importance within the project's zone of influence. The project offers many recreational activities such as swimming, boating, water skiing, fishing, hunting, picnicking, camping, as well as hiking, and cycling trails. Table 2.19 lists the various recreational facilities collectively provided by USACE at Lake Georgetown.

Table 2.19 Lake Georgetown USACE Parks and Facilities

Park Name/Facilities Provided	Restrooms	Parking	Courtesy Docks	Picnic Areas	Camping	Boat Ramps
Cedar Breaks Park	*	*	*	*	*	*
Cedar Hollow Camp					*	
Jim Hogg Park	*	*	*	*	*	*
Overlook Access Point	*	*	*			
Russell Park	*	*	*	*	*	*
Sawyer Camp					*	
Stilling Basin Access Point	*	*				
Tejas Camp	*	*			*	
Walnut Springs Camp					*	

2.5.4 Recreational Analysis - Trends

Recreational use at Lake Georgetown continues to evolve. While visitation in USACE managed recreational areas remains strong, there is demand for recreational opportunities not offered in these parks. The 2012 Texas Outdoor Recreation Plan (TORP) is a comprehensive recreational demand study completed and published by TPWD. The TORP pointed out the top five needs within all park systems in the state as identified by professional recreation providers and by Texas citizens. Tables 2.20 through 2.22 and Figure 2.10 are a summary from the TORP and are provided to illustrate general trends in outdoor recreation. Some of the information in the TORP was extracted directly from the National Survey on Recreation and the Environment (NSRE) and reports generated by the USFWS.

As seen in Table 2.20, the top five recreational facilities needs in Texas focus on walking, hiking, biking, and wildlife observations. As populations grow and urban environments expand, this trend is expected to continue. Having a regional resource like Lake Georgetown can provide these amenities to the rapidly expanding populations in Texas and beyond.

Table 2.20 Top Five Recreation Facilities Needed by Texas Citizens – TORP 2012

Top 5 Facilities Needed Now In Local Parks by Texas Citizens	
Unpaved trails for walking and hiking	43.6%
Natural park area/open space	31.8%
Mountain bike trails	31.4%
Paved trails for walking, hiking, biking, skating	30.1%
Wildlife/nature observation sites	27.8%

Source: NSRE; TORP 2012

Interest in watercraft sports such as boating, canoeing, and kayaking continue to hold strong interest in recreation. Table 2.21 illustrates that over 35% of the population surveyed participate in boating activities. Canoeing and kayaking are seeing an increase in participation amongst those surveyed.

Table 2.21 Percent of Population Participating in Recreational Boating in the U.S.

Percent of Population Participating in Recreational Boating in the U.S.				
	1982-1983	1994-1995	1999-2001	2005-2009
Boating	28.0%	37.8%	36.3%	35.6%
Canoeing/Kayaking	8.0%	9.5%	11.5%	12.4%

Source: (Cordell & Green, *National Survey on Recreation and the Environment, Texas Reports 1994-95, 2000-01 and 2006-09, 2009; TORP – 2012*)

While participation in hunting and fishing show stable growth across those surveyed, there is a large jump in the population of people who are participating in the more passive activity of wildlife watching. As seen in Table 2.22, from 2001 to 2006 one million more people reported participating in this activity.

Table 2.22 Participation in Hunting, Fishing, and Wildlife Watching in Texas.

Participation in Hunting, Fishing and Wildlife Watching in Texas (Residents and Non-Residents, 16 years and older)				
Texas	Fishing	Hunting	Wildlife Watching	Total Participants (Fishing + Hunting + Wildlife Watching)
1996 Survey	2.5 million	829 thousand	3.6 million	4.7 million
2001 Survey	2.4 million	1.2 million	3.2 million	4.9 million
2006 Survey	2.5 million	1.1 million	4.2 million	6.0 million

Source: 1996, 2001, 2006 *National Survey of Fishing, Hunting and Wildlife-Associated Recreation for Texas, USFWS; TORP 2012*

As illustrated in Figure 2.10, Texas and the US are very similar, with more participation in walking and family gatherings, for which the facilities at Lake Georgetown can and do accommodate.

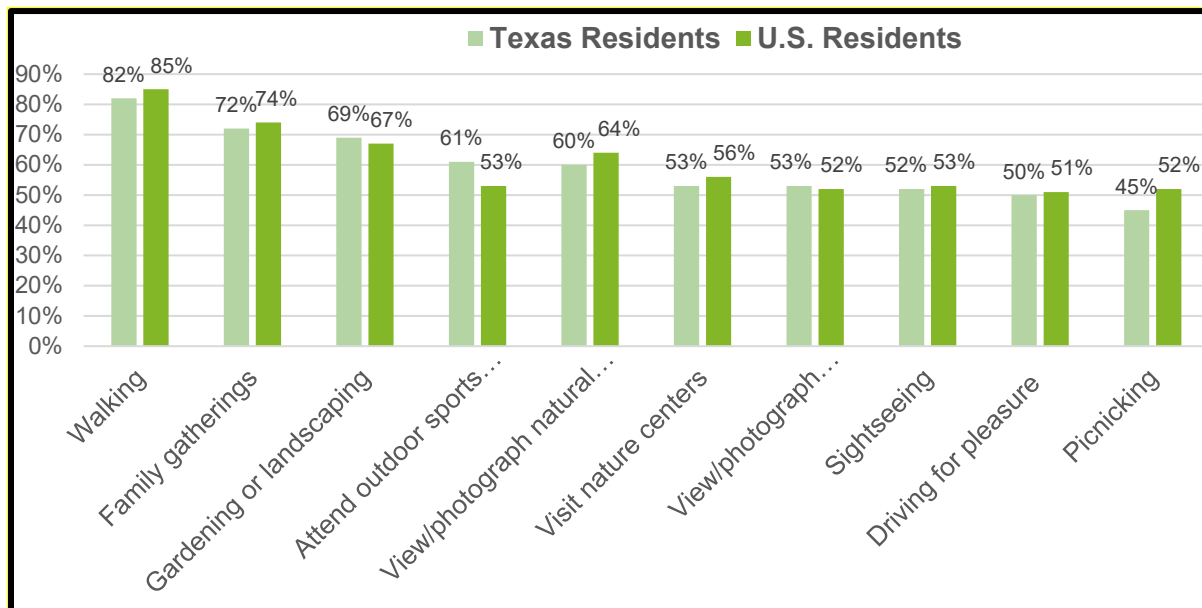


Figure 2.10 Participation Rates of Texas Residents (2006-2009) versus U.S. Residents (2005-2009) in the Top 10 Outdoor Recreation Activities (Source: NSRE; TORP 2012)

Georgetown has a diverse culture of visitors, including Hispanic visitors from the area of influence. Table 2.23 illustrates a slightly larger population of Hispanic respondents participate in many outdoor recreation activities available at Lake Georgetown, including walking for pleasure and family gatherings.

Table 2.23 Comparison of Participation Rates of White/Non-Hispanics Versus Hispanics in the Top 10 Outdoor Recreation Activities in Texas 2006-2009

ACTIVITY	% Texans Participating 2006-2009	
	White/Non-Hispanics	Hispanics
Walking for Pleasure	81.1%	83.4%
Family Gatherings	66.6%	75.8%
Gardening or Landscaping	66.3%	76.3%
Attend Outdoor Sports Events Outdoors	57.3%	68.4%
View/Photograph Natural Scenery	63.3%	57.2%
Visit Outdoor Nature Centers	49.8%	58.4%
View/Photograph Wildflowers	59.3%	49.0%
Sightseeing	54.1%	49.6%
Driving for Pleasure	53.6%	49.4%
Picnicking	43.4%	47.7%

Source: NSRE; TORP 2012

Lake Georgetown recreation areas, natural shoreline, and water add to the attractiveness, vitality, and increased appreciation for the outdoors by users. These areas provide a sense of place and allow a growing urban population to enjoy outdoor recreation opportunities in a rural, natural setting. Outdoor recreation at Lake Georgetown falls within two broad categories; land-based or water-based recreation. Management objectives for each type vary depending on the location and the intensity of use. Recreation management objectives in this Plan project future direction and actions necessary to meet the public's needs for land and/or water based recreation.

The reservoir provides recreational opportunity for swimming, boating, fishing, and other water sports. The area around the reservoir provides picnicking and camping for the casual, overnight, or vacationing visitors. Additionally, horseback riding is permitted in designated areas, and hiking and bird watching are encouraged throughout the project lands. Project lands are open for public hunting except in developed recreational area and lands in the vicinity of the dam and other project structures. Increases in these uses are expected, therefore, future development will be directed primarily toward those activities.

Written comments were collected from visitors in USACE parks for the period 2013 -2018 via the USACE- administered Comment Card program. The most recent customer satisfaction comment card summary for Lake Georgetown is provided below in Table 2.24. The summary from the Lake Georgetown visitor comment cards shows that visitors are very satisfied with the current facilities.

Table 2.24 Lake Georgetown Comment Cards, 2018

Customer Satisfaction Item	No. of Visitor Resp.	Response Distribution (Percent)						Mean Response
		Very Good (5)	Good (4)	Neither Good Nor Poor (3)	Poor (2)	Very Poor (1)	Total	(1-5 Scale)
Facilities:								
Suitability of park facilities for my recreational equipment and activities	205	68%	29%	2%	0%	0%		4.6
Restroom cleanliness and availability of conveniences	194	49%	39%	7%	4%	1%	100%	4.3
Appearance of park grounds	208	73%	27%	0%	0%	0%	100%	4.7
Adequacy of signs providing directions and information	207	69%	29%	2%	0%	0%	100%	4.7
Parking space availability during my visit	208	67%	26%	4%	3%	0%	100%	4.6
Condition of roads and parking areas in the park	209	66%	30%	3%	1%	0%	100%	4.6
Employees:								
Availability of park rangers and staff	203	71%	27%	2%	0%	0%	100%	4.7
Helpfulness of park rangers and staff	201	79%	19%	1%	0%	0%	100%	4.8
Environmental Setting:								
Attractiveness of surrounding scenery and landscape	211	71%	27%	2%	0%	0%	100%	4.7
Quality of land and water resources for my activities	209	67%	29%	3%	0%	1%	100%	4.6

Customer Satisfaction Item	No. of Visitor Resp.	Response Distribution (Percent)						Mean Response
		Very Good (5)	Good (4)	Neither Good Nor Poor (3)	Poor (2)	Very Poor (1)	Total	(1-5 Scale)
Overall:								
Waiting times needed to access park facilities and services	202	73%	24%	1%	0%	0%	100%	4.7
Feeling of safety and security in the park	210	77%	21%	1%	0%	0%	100%	4.7
Value received for any visitor fees paid	194	76%	23%	2%	0%	0%	100%	4.7
Overall satisfaction with my visit to this area	203	78%	21%	0%	1%	0%	100%	4.8

2.5.5 Recreation Analysis – Needs

Lake Georgetown offers an array of recreational opportunities. Public comments received during the master planning process indicate there is a desire to have more recreational facilities to enhance the already outstanding outdoor recreation experience, such as cycling trails and increases in amenities to facilitate fishing and boating, while preserving the natural environment. The TORP supports the expressed need for hiking, biking, and in general more non-motorized outdoor activities. USACE relies on partnerships for recreational amenities, and as time, partnerships, and budget allows, will integrate more facilities to accommodate the public. These activities are balanced with the primary missions of the Lake, namely flood risk management, water supply, and the inherent mission of environmental stewardship.

2.5.6 Recreational Carrying Capacity

Recreational carrying capacity is considered by USACE to ensure that visitors have a high quality and safe recreational experience, and that natural resources are not irreparably damaged. An example of a carrying capacity consideration at Lake Georgetown is the management of public hunting on USACE lands wherein hunting activity may be managed through a permit system or restricted by species or by area, depending on population and/or habitat conditions.

The plan formulated herein proposes to provide a variety of activities and to encourage optimal use of present public use areas, where possible, based on the carrying capability of the land. The carrying capability of the land is determined primarily by the distinct characteristics of the site. These characteristics, both natural and manmade, are development constraints that often determine the type of facilities that should be provided.

Having facilities that cater to a variety of tastes and different members of the family will encourage visitors to enjoy the lake. Presently, USACE manages recreation areas using historic visitation data combined with best professional judgment to address recreation areas considered to be overcrowded, overused, underused, or well balanced. USACE will continue to identify possible causes and effects of overcrowding and overuse and apply appropriate best management practices including: site management, regulating visitor behavior, and modifying visitor behavior.

CHAPTER 3: RESOURCE GOALS AND OBJECTIVES

3.1 INTRODUCTION

This chapter sets forth goals and objectives necessary to achieve the USACE vision for the future of Lake Georgetown. 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. The Master Plan resource objectives will be used as the basis for the OMP, which is the Master Plan strategic implementation plan.

3.2 RESOURCE GOALS

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

- GOAL A.** Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- GOAL B.** Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- GOAL C.** Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- GOAL D.** Recognize the unique 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 (EOPs) 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; bring 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 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 Fort Worth District, Lake Georgetown Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, USACE EOPs, and applicable national performance measures. They are consistent with authorized project purposes, Federal laws and directives, regional needs, resource capabilities, and they consider public input. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan. The Regional and State planning documents including TPWD's Texas Conservation Action Plan (TCAP) and TORP were also reviewed and used in the development of recreational resources.

The objectives in this Master Plan provide project benefits, meet public needs, and foster environmental sustainability for Lake Georgetown to the greatest extent possible. They include recreational objectives; natural resource management objectives; visitor information; education and outreach objectives; general management objectives; and cultural resource management objectives. Tables 3.1 through 3.5 list the objectives along with its associated goal(s) it addresses.

Table 3.1 Recreational Objectives

Recreational Objectives	Goals				
	A	B	C	D	E
Evaluate the demand for improved recreation facilities and increased public access on USACE-managed public lands and water for recreational activities (i.e. camping, walking, hiking, biking, boating, fishing, wildlife viewing, etc.) and facilities (i.e. campsites, picnic facilities, overlooks, all types of trails, boat ramps, courtesy docks, interpretive signs/exhibits, and parking lots).	*		*	*	
Improve, modernize, and implement sustainability measures into day use and campground facilities through addition and repair of amenities, including, but not limited to: road improvements, sewer hook ups, increased electrical service, concrete or asphalt recreational vehicle (RV) pads, tent pads, restrooms, trails, pavilions, and improved park entrances.	*		*	*	
Monitor public use levels (with a special focus on boating congestion) and evaluate potential impacts from overuse and crowding. Take action to prevent/remediate overuse, conflict, and public safety concerns.	*		*		*
Evaluate recreational use zoning and regulations for designated quiet water or no-wake areas with emphasis on natural resource protection, quality recreational opportunities, and public safety concerns.	*		*		*
Follow the Environmental Operating Principles associated with recreational use of waterways for all water-based management activities and plans.		*	*		*
Increase universally accessible facilities on Lake Georgetown lands.	*		*		*
Evaluate established permits/outgrants to determine impacts on public lands and waters. Sustain the Shoreline Management Policy in order to balance private shoreline uses (such as mowing or vegetation removal requests along the Federal property boundary, or paths to the shoreline) with habitat management and impacts to the general public.	*	*	*		
Consider flood/conservation pool fluctuations to address potential impact to recreational facilities (i.e. campsites, boat ramps, courtesy docks, etc.).	*	*	*	*	
Consider long-term sustainable operational and maintenance costs when planning future new recreational facilities or upgrading and expanding existing facilities.	*	*		*	
Ensure consistency with USACE Recreation Strategic Plan.					*

Recreational Objectives	Goals				
	A	B	C	D	E
Monitor the TCAP, the TORP, and adjacent municipality plans to ensure that USACE is responsive to outdoor recreation trends, public needs and resource protection within a regional framework. All plans by others will be evaluated in light of USACE policy and operational aspects of Lake Georgetown.	*	*	*	*	*

*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
Consider flood/conservation pool levels to ensure that natural resources are managed in ways that are compatible with primary project purposes of flood risk management and water supply.	*	*		*	
Ensure project lands are managed with preservation and conservation of natural habitat and open space as a primary objective in order to maintain the public open space.	*	*		*	
Actively manage and conserve fish and wildlife resources, especially habitat for the golden-cheeked warbler and other federally listed species, and special status species, by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the ecological region in restoration and mitigation plans.	*	*		*	*
Consider watershed approach during decision-making process.					*
Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats.		*			*
Minimize activities that disturb the scenic beauty and aesthetics of the lake.	*	*	*	*	
Continually evaluate erosion control and sedimentation issues at Lake Georgetown and develop alternatives to resolve the issues.	*	*			*
Address unauthorized uses of public lands such as off-road vehicle use, trash dumping, unauthorized fires, fireworks, poaching, clearing of vegetation, unauthorized trails and paths, and placement of advertising signs that create negative environmental impacts.	*	*	*	*	*

Natural Resource Management Objectives	Goals				
	A	B	C	D	E
Monitor lands and waters for non-native invasive species, and aggressively spreading native species, and take action to prevent and/or reduce the spread of these species. One invasive species of great concern is the zebra mussel. Implement prescribed fire as a management tool to control the spread of noxious plants including saltcedar, willow baccharis, Chinese tallow, Chinaberry and glossy private and to promote the vigor of native prairie grasses and forbs.	*	*		*	*
Protect and/or restore important native habitats such as Texas Edwards Plateau, riparian zones, grasslands, and wetlands, where they occur, or historically occurred on project lands. Special emphasis should be taken to protect and/or restore special or rare plant communities, to include actions that promote butterfly and/or pollinator habitat, migratory bird habitat, and habitat for birds listed by USFWS as Birds of Conservation Concern. Some of these habitats may be designated as Environmentally Sensitive Areas.	*	*	*	*	*
Continue to manage the public hunting program through a permit system or other means to ensure public safety and sustainability of game species and wildlife habitat.	*	*	*		*

*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
Provide more opportunities for communication with agencies, special interest groups, and the general public (i.e. comment cards, updates to City Managers, web page).	*			*	*
Implement more educational, interpretive, and outreach programs at the lake office and around the lake. Topics to include: history, lake operations (flood risk management and water supply), water safety, recreation, nature, cultural resources, ecology, and USACE missions.	*	*	*	*	*
Enhance network among local, state, and federal agencies in order to exchange lake-related information for public education and management purposes.	*			*	*

Visitor Information, Education and Outreach Objectives	Goals				
	A	B	C	D	E
Increase public awareness of special use permits or other authorizations required for special activities, organized special events, and commercial activities on public lands and waters of the lake.	*	*	*		*
Capture trends concerning boating accidents and other incidents on public lands and waters and coordinate data collection with other public safety officials.	*		*	*	*
Promote USACE Water Safety message.	*		*	*	*
Educate adjacent landowners on Shoreline Management Statement of Policy and permit processes in order to reduce encroachment actions.	*	*	*	*	*

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

Table 3.4 General Management Objectives

General Management Objectives	Goals				
	A	B	C	D	E
Resurvey and maintain the public lands boundary line to ensure it is clearly marked and recognizable in all areas to reduce habitat degradation and encroachment actions.	*	*		*	
Secure sustainable funding for the shoreline management program.	*	*	*	*	*
Ensure consistency with USACE Campaign Plan (national level), IPlan (regional level), OPlan (District level).					*
Ensure green design, construction, procurement, and operation practices, such as the Leadership in Energy and Environmental Design (LEED) criteria for government facilities, are considered as well as applicable Executive Orders (EO).					*
Carefully manage non-recreation outgrants such as utility and road easements in accordance with national guidance set forth in ER-1130-2-550 and applicable chapters in ER 405-1-12.	*	*			*
Manage project lands and recreational programs to “meet such statutory requirements in a manner that increases efficiency, optimizes performance, eliminates unnecessary use of resources, and protects the environment”, as set forth in Executive Order 13834 and related USACE policy.					*

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

Table 3.5 Cultural Resources Management Objectives

Cultural Resources Management Objectives	Goals				
	A	B	C	D	E
Monitor and coordinate lake development and the protection of cultural resources with appropriate entities.	*	*		*	*
Complete an inventory of cultural resources.	*	*		*	*
Increase public awareness and education of regional history.		*		*	*
The project office will ensure any current or future historical preservation is fully integrated into the Lake Georgetown Master Plan and planning decision making process (Section 106 and 110 of the NHPA; the Archeological Resources Protection Act; and the Native American Graves Protection and Repatriation Act) on public lands surrounding the lake.		*		*	*
Develop partnerships that promote and protect cultural resources at Lake Georgetown.		*	*	*	*
Stop unauthorized use of public lands as it pertains to the illegal excavation and removal of cultural 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. There are four possible categories of allocation identified in USACE regulations including Operations, Recreation, Fish and Wildlife, and Mitigation. At Lake Georgetown the only land allocation categories that apply are Operations and Recreation. Operations is defined as those lands that are required to operate the project for the primary authorized purposes of flood risk management, and water conservation. Recreation is defined as those lands acquired specifically for the congressionally authorized purpose of recreation. These are referred to as separable recreation lands. Recreation lands in this allocation can only be given a land classification of "Recreation." The remaining allocations of Fish and Wildlife and Mitigation would apply only if lands had been acquired specifically for these purposes. The entire fee simple federal estate at Lake Georgetown is 4,173 acres of land at conservation pool, all of which are allocated to Operations and Recreation.

4.2 LAND CLASSIFICATION

Previous versions of the Lake Georgetown Master Plan included land classification criteria that were similar to the current criteria. These prior land classifications were based more on projected need than on actual experience, which resulted in some areas being classified for a type of use that has not, or is not likely to occur. Additionally, in the 40-plus 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. Refer to Table 8.1 in Chapter 8 for a summary of land classification changes from the prior classifications to the current classifications.

4.2.1 Current Land and Water Surface Classifications

USACE regulations require project lands and waters to be classified in accordance with the primary use for which project lands are managed. There are six categories of classification identified in USACE regulations including:

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

The land and water surface classifications for Lake Georgetown were established after taking into account public comments, input from key stakeholders including elected officials, city and county governments, and lessees operating on USACE land. Additionally, public comment, wildlife habitat values, and the trends analysis provided in TPWD's TORP and TCAP were also used in decision making. Maps showing the various land classifications can be found in Appendix A. Each of the land classifications, including the acreage and description of allowable uses is described in the following paragraphs.

4.2.2 Project Operations (PO)

This classification includes the lands managed for operation of the dam, project office, 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 fishing piers. Regardless of any limited recreation use allowed on these lands, the primary classification of Project Operations will take precedent over other uses. There are 234 acres of Project Operations land specifically managed for this purpose.

4.2.3 High Density Recreation (HDR)

These are lands developed for intensive recreational activities for the visiting public including day use areas, campgrounds, marinas and related concession areas. Recreation development by lessees operating 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 High Density Recreation 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 Lake Georgetown, prior land classifications included a number of areas under the High Density Recreation classification. Several of these areas 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. At Lake Georgetown there are 566 acres classified as High Density Recreation land. Each of the High Density Recreation areas is described briefly in Chapter 5 of this Plan.

4.2.4 Mitigation

This classification is used only for lands allocated for mitigation for the purpose of offsetting losses associated with the development of the project. There are no lands at Lake Georgetown with this classification.

4.2.5 Environmentally Sensitive Areas (ESA)

These are areas where scientific, ecological, cultural, and aesthetic features have been identified. At Lake Georgetown several distinct areas have been classified as Environmentally Sensitive Areas (ESA), primarily for the protection of sensitive habitats or cultural resources. Each of these areas is discussed in Chapter 5 of this Plan and illustrated on the maps in Appendix A. There are 376 acres classified as ESA at Lake Georgetown.

4.2.6 Multiple Resource Management Lands (MRML)

This classification is divided into four sub-classifications identified as: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of land may be classified using one or more of these sub-classifications but the primary sub-classification should reflect the dominant use of the land. Typically, Multiple Resource Management Lands 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 ramp, and/or primitive sanitary facilities. There are 2,997 acres of land under this classification at Lake Georgetown. The following paragraphs list each of the sub-classifications, and the number of acres and primary uses of each.

4.2.6.1 Low Density Recreation (LDR)

These are lands that may support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.). Under prior land classifications, several relatively large tracts were classified for Low Density Recreation, but during the study process to develop this Plan, these larger tracts were reclassified under the sub-classification of Wildlife Management. Low Density Recreation lands are typically narrow strips of land lying between the shoreline at the conservation pool elevation and the USACE property boundary line, and are often located adjacent to private residential areas. The narrow

configuration and location next to residential areas make these areas unsuitable for other uses such as High Density Recreation, Vegetation Management or Wildlife Management. There are 483 acres under this land classification at Lake Georgetown, which includes 22.21 acres that are the separable lands allocated as Recreation and purchased for this primary purpose.

4.2.6.2 Wildlife Management (WM)

This land classification applies to those lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels, most of which are located within the flood pool of the lake. Passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation are compatible with this classification unless restrictions are necessary to protect sensitive species or to promote public safety. There are 2,514 acres of land included in this classification at Lake Georgetown.



Photo 4-1 Prickly Pear in Field of Black-eyed Susan (Source: USACE Photo)

4.2.6.3 Vegetative Management (VM)

These are lands designated for stewardship of forest, prairie, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are no acres of land included in this classification at Lake Georgetown.

4.2.6.4 Future or Inactive Recreation

These are lands with site characteristics compatible with High Density Recreation development. These are areas where High Density Recreation development was anticipated in prior land classifications, but the development either never took place or was minimal. These areas are typically closed to vehicular traffic and will be managed as multiple resource management lands until development takes place. There are no acres of land included in this classification at Lake Georgetown.

4.2.7 Water Surface

USACE regulations specify four possible sub-categories of water surface classification. These classifications 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 USACE or lessees with navigational or informational buoys or signs, or are denoted on public maps and brochures. The Water Surface Classification map can be found in Appendix A of this Plan. The four sub-categories of water surface classification include:

4.2.7.1 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 upstream and downstream of the Lake Georgetown Dam. There are 7 acres of restricted water surface at Lake Georgetown.

4.2.7.2 Designated No-Wake

Designated No-Wake areas are intended to protect environmentally sensitive shorelines and improve boating safety near key recreational water access areas such as boat ramps. There are 3 boat ramps at Lake Georgetown where no-wake restrictions are in place for reasons of public safety and protection of property. There are 70 acres of designated no-wake water surface at Lake Georgetown.

4.2.7.3 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. Lake Georgetown has no water surface areas designated as a Fish and Wildlife Sanctuary.

4.2.7.4 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 and marinas, that

navigational hazards may be present at any time and at any location in these areas. Operation of a boat in these areas is at the owner's risk. Specific navigational hazards may or may not be marked with a buoy. There are 1,210 acres of open recreation water surface at Lake Georgetown.

Future management of the water surface includes the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods.

4.2.8 Recreational Seaplane Operations

Seaplane restrictions are part of Title 36 Code of Federal Regulations. At Lake Georgetown and other USACE lakes across the nation, areas where recreational seaplane operations are prohibited were established through public meetings and environmental assessments circa 1980. The seaplane policy for USACE Fort Worth District is found in the Notice to Seaplane Pilots (see Appendix F), which lays out the general restrictions as well as lake-specific restrictions for seaplane operation. Seaplane operations at Lake Georgetown are generally prohibited in several major coves and bays off the main body of the lake and within 500 feet of structures such as bridges and the dam. Once on the water, seaplanes are considered to be water vessels and fall under guidelines for watercraft.

Table 4.1 provides a summary of land and water surface classifications at Lake Georgetown. Acreages were calculated by historical and GIS data. A map representing these areas can be found in Appendix A.

Table 4.1 Land Classification Acres at Lake Georgetown

CLASSIFICATION	ACRES
Project Operations	234
*High Density Recreation	566
Environmental Sensitive Areas	376
Multiple Resource Managed Lands - Low Density Recreation	483
Multiple Resource Managed Lands - Wildlife Management	2,514
Multiple Resource Managed Lands - Vegetative Management	-
Multiple Resource Managed Lands - Future/Inactive Recreation Areas	-
Water Surface: Restricted	7
Water Surface: Designated No-Wake	70
Water Surface: Fish and Wildlife Sanctuary	-
Water Surface: Open Recreation	1,210

Note: Acreages were measured using GIS technology and may vary from the official land acquisition records. Acreage varies depending on changes in lake levels, sedimentation and shoreline erosion. Total Water Surface: 1287 acres - Miles of Shoreline at conservation pool: approximately 25 miles

4.3 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 Lake Georgetown, Flowage Easement lands exist for one primary purpose. A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private 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 or construction of habitable structures. There are 514.62 acres of Flowage Easement lands at Lake Georgetown.



Photo 4-2 Karst Cave at Lake Georgetown (Source: USACE Photo)

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 Lake Georgetown are Project Operations, High Density Recreation, Environmentally Sensitive Areas, and Multiple Resource Management Lands, which consist of Low Density Recreation and Wildlife Management. The Water Surface is divided into classifications of Restricted, No-Wake, and Open Recreation. The management plans describe how these project lands will be managed in broad terms. A more descriptive plan for managing these lands can be found in the Lake Georgetown OMP.

5.2 PROJECT OPERATIONS

Project Operations is land associated with the dam, spillway, levees, lake office, maintenance facilities, and other areas solely for the operation of the project. There are 234 acres of lands 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.

Recommended future actions for these areas include facility upgrades to meet USACE sustainability objectives as funding and personnel allow. Opportunities to incorporate environmental stewardship objectives for land management such as invasive species control and wildlife management through use of food or pollinator plots will be implemented as appropriate.

5.3 HIGH DENSITY RECREATION

Lake Georgetown has 566 acres classified as High Density Recreation. These lands are developed for intensive recreational activities for the visiting public including day use and campgrounds. National USACE policy set forth in ER 1130-2-550, Chapter 16, limits recreation development 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 marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps and comprehensive resorts. Examples of activities that are not dependent on a project's natural resources include, theme parks or ride-type attractions, sports or concert stadiums, and stand-alone facilities such as restaurants, bars, motels, hotels, and golf courses.

USACE operates and manages numerous areas designated as High Density Recreation. The following is a description of each park operated by USACE along with a conceptual management plan for parks by classification groups. Groups include Class A

(highly developed listed in section 5.3.1) and Class C (basic facilities listed in section 5.3.2). Maps showing existing parks and facilities managed by USACE can be found in Appendix A. In addition to the USACE managed and operated High Density Recreation areas, USACE leases one High Density Recreation area that is managed as a park by the City of Georgetown. Following is a brief description of these parks and notes the recreational partners who manage them.

5.3.1 USACE Class A Parks

In accordance with historical visitation rates and recent outdoor recreation trends documented in the 2012 TORP, camping in both highly developed and primitive settings has declined significantly in Texas since 2000. NSRE surveys documented that in the period 2006-2009 only 21.9% of Texans participated in developed camping and only 9.7% participated in primitive camping. These percentages are down significantly from surveys conducted in 2000-2001. Visitation rates for some of the Class A parks at Lake Georgetown are growing, while other parks at the Lake are steady or decreasing. Facilities provided are sufficient in some parks, while at others demand exceeds available resources during peak use periods. USACE intends to continue to operate the Class A campgrounds and day use areas by maintaining and improving existing facilities, but has no long range plans to add additional campsites aside from replacing the current water line in Russell Park. In response to trends documented in the TORP, USACE will endeavor to improve access to some swim beaches and to develop hiking and biking trails in or adjacent to some park areas as funding permits. USACE encourages partnerships with agencies who lease and manage parks to respond to increasing demands and build on the current quality of USACE parks for present and future visitors.

Boating is the most popular way to enjoy the clear waters of the lake. Fishing is excellent in the area, and the lake contains Black bass, White bass, Hybrid stripers, White crappie, Channel catfish and Flathead catfish, but it's most known for its abundance of Smallmouth bass. The San Gabriel River Trail – Goodwater Loop is a 26 mile rugged trail winding through dense juniper forest, hardwood bottomlands and prairie grasslands. The trail wraps completely around Lake Georgetown via the dam and is open to both hiking and biking. Hunting is available for small game like dove, waterfowl, rabbit and squirrel, as well as white-tailed deer. Hunting is by permit only.

Cedar Breaks Park – Cedar Breaks Park is located on the south shore near the dam. The park includes the following:

- 64 campsites with water and electric hookups, parking pad, covered picnic table, fire ring, and grill
- Four-lane concrete ramp and fishing dock
- Dump station
- Restroom with hot showers and flush toilet
- Picnic areas
- Launch Fee Required
- Open all year, 6 am - 10 pm with 24-hour exit

Jim Hogg Park – Jim Hogg Park facility is located on the north shore at mid-lake. Individual campsites are released on a 6-month rolling basis. The park includes the following amenities:

- 148 campsites with water and electric hookups, parking pad, covered picnic table, fire ring, and grill
- Five large group camping shelters
- Four-lane concrete ramp and fishing dock
- Dump station
- Restroom with hot showers and flush toilet
- Launch fee required
- Open all year, 6 am - 10 pm with 24-hour exit

Russell Park – Russell Park facility is located on the north shore at mid-lake. During the above season(s), individual campsites are released on a 6-month rolling basis. Currently, reservable availability is released through March 03, 2020. On September 4, 2019 at 09:00 am CDT, reservable availability will be released through March 04, 2020. During the above season(s), group campsites are released on a 12-month rolling basis.

Russell Park is open year round and offers the following amenities:

- 17 primitive, tent-only camp sites with covered picnic table, fire ring and grill
- Three (3) group shelters. Shelters one (1) and two (2) are for day use or overnight camping and has water, an electric outlet, group grill, and vault restrooms. Shelter three (3) in an enclosed shelter with picnic table inside, and has one electrical outlet.
- Restroom with running water and flush toilets
- 10 screened shelter sites containing bunk beds without electric or water open year-round
- Drinking water and flush toilets
- Four-lane concrete ramp
- Launch fee required
- Open all year, 6 am - 10 pm with 24-hour exit

Tejas Camp – Tejas Park has a group tent camp area that offers a picnic table, lantern stand, and ground fire ring. Water is available at a central location in the park and vault restrooms are nearby. This site is ideal for groups such as Boy Scouts who wish to utilize primitive camping, but still be close to a water source. It is located in an open field directly behind Tejas Camp. Vehicles cannot access the group site directly, campers will carry their equipment from their vehicles/parking lot to the site. Tejas Park sits on the south side of Lake Georgetown and contains the following amenities:

- 12 primitive, tent-only camp sites with picnic table, tent pad, fire ring and grill
- One (1) group shelter
- Potable water available at a central location
- Vault toilets

5.3.2 USACE Class C Parks

The following parks at Lake Georgetown are classified as Class C parks as defined in Appendix M of EP-1130-2-550. Future management plans for these parks consists of continuing to operate them as they currently are, with emphasis placed on improvements such as upgrading aging water and electrical infrastructure, repairing or replacing outdated restrooms, paving gravel roads in some parks and installing site amenities such as fire rings, lantern posts and cookers as funds and personnel allow.

Cedar Hollow Camp – Cedar Hollow Camp is located on the south shore of the lake toward the middle and consists of four camp sites.

Sawyer Camp – Sawyer Camp is located on the south shore of the lake toward the east end and consists of four camp sites.

Walnut Springs Camp – Walnut Springs Camp is located on the north shore of the lake toward the middle of the lake and consists of five camp sites.

5.3.3 USACE Day Use Parks

The management plan for all the parks listed below is to continue to operate them as day use areas and access points by maintaining and improving existing facilities. Similar to Class A parks, emphasis will be placed on improvements such as upgrading aging water and electrical infrastructure, repairing or replacing outdated restrooms, paving gravel roads in some parks and installing site amenities such as fire rings, lantern posts and cookers. Trails within parks will be considered in cooperation with other agency partners for development and operation.

Russell Park – The Day Use area at Russell Park is open April 1 to September 30 from 6:00 a.m. to sunset and consists of a washed Pebble Swim beach, and 39 shelters, 10 of which are in the swim beach area.

Overlook Access Point – Though not a park, the overlook is a day use area located near the dam and is open from 8:00 a.m. until sunset, with a fishing dock, vault toilets, and hiking trailhead. The shoreline at this area is steep and rocky, the water may be up to 85' deep.

Stilling Basin Access Point – Though not a park, the stilling basin is a day use area located near the dam and is open from 8:00 a.m. until sunset, with a pit toilet, parking, and hiking trailhead.

5.3.4 Leased Parks

The City of Georgetown holds the lease for Booty's Road Park. There are no other recreational outgrants issued in the form of permits or leases to recreational partners, referred to as grantees, at the lake. If future new leases are developed, each grantee would be responsible for the operation and maintenance of their leased area, and although USACE does not provide direct maintenance within any of the leased

locations, it may occasionally lend support where appropriate. The USACE reviews requests and ensures compliance with applicable laws and regulations for proposed activities in all leased and USACE-operated HDR areas. USACE works with partners to ensure that recreation areas are managed and operated in accordance with the objectives prescribed in Chapter 3.

5.3.5 Boat Ramps and Marinas

There are three (3) boat ramps operated by USACE at Lake Georgetown that provide recreational access to the lake. These have varying hours of operation and have a fee associated with use. Ramps may be closed from time to time due to flooding or other damage. The maps in Appendix A of this Plan indicate the location of these ramps. Currently, there are no plans to expand or add additional boat ramps at Lake Georgetown. Management will include maintaining and improving facilities as time and funding permits.

5.3.6 Trails

As stated in the TORP, there is a growing demand for trails of all kinds. Lake Georgetown features the San Gabriel River Trail (Good Water Loop), which is a 26 mile rugged trail winding through dense Juniper Forest, Hardwood Bottomlands, and Prairie Grasslands . The trail extends completely around Lake Georgetown via the dam. Another section of the trail extends from Overlook Park eastward toward the San Gabriel River and the City of Georgetown trail system. This section of the trail is paved and ADA accessible. Parking is provided at Cedar Breaks Park, Tejas Camp, Russell Park, Overlook Park, the Nature Center, and the Stilling Basin on Booty's Road. No equestrian use is allowed, but the entire Goodwater Loop is open to both hikers and bikers. Closing times for parking areas are posted near the entrances. Restrooms and rest stops are provided along portions of the trail.



Photo 5-1 Lake Georgetown at Sunset (Source: USACE)

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 Lake Georgetown under this classification.

5.5 ENVIRONMENTALLY SENSITIVE AREAS

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

The results of the WHAP conducted in April of 2019 were used, in part, to assist in determining which areas should be classified as ESA. Other factors, including the presence of cultural resources, species of conservation concern, and visual aesthetics were also included in the selection of ESA areas. At Lake Georgetown there are 376 acres classified as ESA. Each of these areas are numbered on the land classification maps in Appendix A. Table 5.1 provides a listing of the ESA areas, including habitat type, acreage WHAP scores. More information on the WHAP can be found in Appendix E of this Plan.

Table 5.1 WHAP Points Within ESA's at Lake Georgetown

ESA Area Number	WHAP Scores Per Sample Point Number and Associated Habitat Type		
	Point #	Score	Habitat Type
ESA 1	1	0.68	Riparian
ESA 2	7	0.49	Upland Forest
ESA 3	10	0.43	Grassland
ESA 4	14	0.66	Upland Forest
ESA 5	22	0.47	Grassland
	23	0.60	Upland Forest
ESA 6	35	0.78	Riparian
ESA 7	36	0.91	Riparian
ESA 8	43	0.44	Upland Forest
	44	0.28	Grassland
ESA 9	56	0.37	Grassland
ESA 10	66	0.59	Upland Forest
	67	0.77	Upland Forest
	68	0.67	Upland Forest
	69	0.68	Riparian
	70	0.65	Grassland

Future management of ESA areas will be designed to protect and improve the resources that qualify these areas for ESA classification. All of these areas are suitable for development of natural surface pedestrian trails unless the areas are critically important as habitat for sensitive species. Hunting is also allowed on these areas, taking into consideration public safety and resource protection. Specific management measures may include but are not limited to the following:

- Cultural Resource Sites: Known sites will be protected from vandalism and/or erosion. Additional reconnaissance surveys will be conducted as needed to determine the extent of cultural resource sites. Tribal coordination will continue to insure proper management and/or protection of known sites.
- Sites supporting Species of Conservation Concern: The site characteristics that cause these areas to be favored by individual species will be protected and improved. Perch and/or nesting sites for the southern bald eagle are examples of site characteristics that need protection.

- Steep Slope Sites: These areas will be monitored to protect their scenic value, wildlife habitat value, and to reduce shoreline erosion.

5.6 MULTIPLE RESOURCE MANAGEMENT LANDS

Multiple Resource Management Lands are organized into four sub-classifications. These sub-classifications are Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. The following is a description of each sub-classification's resource objectives, acreages, and description of use.

5.6.1 Low Density Recreation

These lands are generally narrow parcels of land that are adjacent to private residential developments. Future management of these lands calls for maintaining a healthy, ecologically adapted vegetative cover to reduce erosion and improve aesthetics. Prevention of unauthorized use such as trespass or encroachments is an important management objective for all USACE lands, but is especially important for those lands in close proximity to private development. These lands are typically open to the public, including adjacent landowners, for pedestrian traffic and are frequently used by adjacent landowners for access to the shoreline near their homes. Adjacent landowners may apply for a permit to mow a meandering path to the shoreline, and if conditions warrant, may apply for a permit to mow a narrow strip along the USACE boundary line as a precaution against wildfire. The general public may use these lands for bank fishing, hiking, and for access to the shoreline. Hunting is strictly limited to controlled hunts in designated hunting areas. Future uses may include additional designated natural surface hike/bike/equestrian trails. There are 483 acres classified as Low Density Recreation.

5.6.2 Wildlife Management

These are lands designated for the stewardship of fish and wildlife resources and are managed by USACE. There are currently 2,514 acres of land under this classification at Lake Georgetown, however, areas of low density recreation, ESA's and vegetative management all support wildlife. Management efforts focus on producing native wildlife food and habitat.

The broad objective of fish and wildlife management is to conserve, maintain and improve the fish and wildlife habitat to produce the greatest dividend for the benefit of the general public. Implementation of a fish and wildlife management plan is the first step toward achieving the goals of the Fish and Wildlife Coordination Act (Public Law 85-624). The TPWD and the USFWS share responsibility with USACE for managing fish and wildlife, primarily through enforcement of laws and regulations and establishing seasons and bag limits for game species. Future management plans for wildlife areas include continued cooperation with partners and managing and improving wildlife management areas under this land classification.

Lake Georgetown also has Wildlife Management Areas. These are areas adjacent to the lakeshores that were acquired for project operations but are designated for the management of wildlife habitat. These areas are best suited for sustaining and improving viable habitat for all native species including white-tailed deer, songbirds, waterfowl species and other game and non-game species. A holistic management approach is taken in conserving these areas with some emphasis on white-tailed deer, Golden cheeked warbler, and pollinator habitat management. Techniques such as prescription burning, and native grass and forbs species planting will be utilized. Such lands are available to the public for sightseeing, nature study, hiking, hunting and other activities that enhance environmental awareness and promote environmental stewardship.

There is at least two federally-listed endangered species that could utilize habitat within the Lake Georgetown area. Therefore, any work conducted on this project will be in accordance to the Endangered Species Act and will be appropriately coordinated with the USFWS. These species (Table 2.5) will continue to receive attention to ensure they are managed in accordance to their habitat needs.

Non-game wildlife is also managed by USACE. Other non-game programs, such as song bird nest box construction and installation of bat boxes, are performed on an intermittent basis. The plan is to continue these initiatives in order to provide some form of management for non-game species.

5.6.3 Vegetative Management

These are lands that have vegetative types considered to be sensitive and needing special classification to ensure success. A good example of these types of vegetation would be forested wetlands and Cross Timbers forests. There are no acres currently identified at Lake Georgetown for vegetative management purposes.

5.6.4 Future/Inactive Recreation Areas

These are areas with site characteristics compatible with potential future recreational development or recreation are that are closed. Until there is an opportunity to develop or reopen these areas, they will be managed for multiple resources. There are no acres classified under this sub-classification at Lake Georgetown.

5.7 WATER SURFACE

At conservation pool level of 791.0 NGVD29 there are 1,287 acres of surface water. Buoys are managed by USACE and help mark hazards, swim beaches, boats keep-out and no-wake areas.

5.7.1 Restricted

Restricted areas are around swim beaches as well as the dam for project operations, safety, and security purposes. Water surface zoned as restricted total approximately seven (7) acres.

5.7.2 Designated No-wake

No-wake areas are located near boat launch areas for the safety of launching and loading boat or personal watercraft. Currently, approximately 70 total acres at Lake Georgetown is designated for no-wake.

5.7.3 Fish and Wildlife Sanctuary

These areas are managed with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. There are no water surface acres under this classification at Lake Georgetown.

5.7.4 Open Recreation

The remaining lake area not in the above classifications is open to recreational use. No specific zoning exists for these areas, but there is a buoy system in place to help aid in public safety. Future management of the water surface includes the maintenance of warning, information, and regulatory buoys as well as routine water safety patrols during peak use periods. Approximately 1,210 total acres of Lake Georgetown is zoned for open recreation.

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 county, USACE is committed to implementing initiatives that link people to water.

The recreational mission of 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 Lake Georgetown resources and management. The USACE 2011 Recreational Strategic Plan identifies a number of goals and objectives designed to build a more robust environmental and recreational program on USACE managed lands. Many of the goals center specifically on promoting

environmental sustainability in all aspects of recreation resources management. This includes integrating environmental operating principles 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, adopting Sustainable Sites Initiative criteria where applicable 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, 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 IMPACTS OF POPULATION GROWTH

The population around Lake Georgetown continues to grow. As seen in Table 2.7, from 2000 to 2017 the population of Williamson County, where the lake resides, increased by approximately 296,000 residents and is expected to increase an additional 841,000, bringing the population in Williamson County to approximately 1.38 million by 2045. The other counties that make up the Zone of Interest are also experiencing similar growth, with an increase of almost 538,000 from 2000 to 2017 and an expected additional 779,000 people by 2045, bringing the population in the Zone of Interest to 3.78 million people. The current and expected growth in population brings with it tremendous pressures in a number of areas. The lake has already seen an increase in the recreational intensity of day use at facilities around the lake, including hiking, cycling, and boat traffic. Additionally, the increase in population brings with it a demand for more water, which has been discussed in section 2.2.8 of this plan. Lake Georgetown provides a plethora of natural settings for the public to enjoy, and thus protecting its lands through a robust natural stewardship program is a chief goal of this master plan.

6.2 KARST CREATURES AND PROTECTION

Karst at Lake Georgetown are created by the dissolving of bedrock (typically limestone) that creates landscape sinkholes, sinking streams, caves and springs. Species living within these caves and related voids become physically isolated from each other through time, resulting in genetic isolation that has produced new species known to occur only within small geographic areas. The population growth around Lake Georgetown poses a threat to the survival of karst creatures due to destruction and sealing of caves, changes in moisture input into caves, contaminants introduced into caves, and competition with, and predation by, non-native species introduced by urbanization.

Seven species of karst invertebrates in the region are federally listed as endangered by the USFWS to insure their survival:

Batrisodes texanus (Coffin Cave mold beetle)
Neoleptoneta myopica (Tooth Cave spider)
Rhadine persephone (Tooth Cave ground beetle)
Tartarocreagris texana (Tooth Cave pseudoscorpion)
Texamaurops reddelli (Kretschmarr Cave mold beetle)
Texella reddelli (Bee Creek Cave harvestman)
Texella reyesi (Bone Cave harvestman)

Two species of karst amphibians, *Eurycea tonkawae* (Jollyville Plateau salamander) and *Eurycea naufragia* (Georgetown salamander), in the region are federally listed as threatened by the USFWS.

Of these endangered and threatened species, there are five potentially present on federal property at Lake Georgetown:

Batrises texanus (Coffin Cave mold beetle)
Neoleptoneta myopica (Tooth Cave spider)
Rhadine persephone (Tooth Cave ground beetle)
Texella reyesi (Bone Cave harvestman)
Eurycea tonkawae (Jollyville Plateau salamander)

Lake Georgetown is in Zone 1 of the four endangered species habitat and management zones designated in 1992 by USFWS for karst creatures. This zone is defined as “areas known to contain endangered cave fauna...” All but the northwest corner of Georgetown Karst Fauna Region, a region bounded to the south by Brushy Creek and to the north by the San Gabriel River, has been designated Zone 1. Forty caves with listed species occur mostly in the western, southern and northeast portion of the zone. Relatively few caves are known or biologically studied in the east-central portion, partly due to the presence of a large limestone quarry. Of these forty caves, this zone contains thirty caves with rare species, and all but 11 also contain listed species; two of the 11 caves are located beyond the area where caves with listed species are known. (George Veni, Ph.D and Cecilio Martinez July, 2007 for Texas Parks and Wildlife Department).

In response to proposed excavation for replacement and/or installation of underground utility lines in 2020 at Jim Hogg and Russell Parks, Pedestrian Karst Surveys were conducted to evaluate the likelihood of encountering karst features. No evidence of karst features was detected. In the event karst features are discovered during construction, work shall immediately cease and USFWS will be consulted. Prior to all construction work involving excavation, pedestrian karst surveys will be conducted and if karst features are detected, work shall immediately cease and USFWS will be consulted.

6.3 GOLDEN-CHEEKED WARBLER

Golden-cheeked warblers (GCWA) (*Setophaga chrysoparia*) are federally endangered migratory songbirds that breed exclusively in the juniper-oak (*Juniperus ashei-Quercus* spp.) woodlands of central Texas. Campbell (2003) described vegetation associations where GCWA are expected to occur as woodlands with mature Ashe juniper in a natural mix with oaks (*Quercus* spp.), elms (*Ulmus* spp.), and other hardwoods, in relatively moist areas such as steep canyons, slopes, and adjacent uplands.

Significant amounts of lands at Lake Georgetown provide habitat for GCWA. As a federal agency, USACE is responsible for participating in the recovery actions for federally endangered and threatened species occurring on USACE-managed lands. GCWA habitat will be preserved and no activities which may interfere with the GCWA breeding season will be permitted. Existing GCWA habitat outside of USACE-managed lands continues to be removed and fragmented due to urban expansion, making GCWA habitat within USACE-managed lands highly valuable for the endangered GCWA.

Several field surveys have been conducted to detect the presence of male GCWA within designated areas at Lake Georgetown. The latest field survey conducted by Fort Hood Natural Resource Branch biologists in 2019 at USACE operated parks (Cedar Breaks Park, Russell Park and Jim Hogg Park) presumed presence of at least 16 male GCWA territories (10 at Cedar Breaks Park, 5 at Russell Park and 1 at Jim Hogg Park). In 2018, the USFWS and American Bird Conservancy conducted a field survey in the southwest portion of the lake outside recreational areas and detected one GCWA.



Photo 6.1 Golden-cheeked Warbler *(Courtesy, USFWS)*

6.4 INVASIVE SPECIES

The extent of invasive species currently documented as present at Lake Georgetown lands and waters is presented in Table 2.6. While efforts are made to prevent and eradicate invasive species from the lands and waters at Lake Georgetown, special attention is given to particularly destructive species, including the zebra mussel. Population levels of zebra mussels at several Texas lakes have quickly risen to levels that are impacting raw water intakes for water supply and internal piping. At present, these impacts are mainly in the form of increased maintenance costs due to having to remove the mussels. The zebra mussel is roughly the size of a fingernail, but can grow up to 2 inches long and is characterized by an alternating light and dark striped pattern resembling zebra stripes on two connected hard shells. In September 2013, zebra mussels were positively documented in Lake Georgetown. Precautions are being taken

and educational and warning signs are posted at the lake and affiliated websites. Currently, USACE is working with TPWD to help educate the public at Lake Georgetown, including creating a series of informational YouTube videos for boaters, hunters and anglers. Management plans will be formulated in the coming months to address zebra mussels at Lake Georgetown.

Several invasive shrub and tree species are prevalent around Lake Georgetown (descriptions below). These species are abundant, a nuisance, and detrimentally alter the historical habitat conditions due to their prolific growth and high moisture consumption.

Saltcedar is found along shoreline areas of Lake Georgetown and is especially prevalent at Cedar Breaks Park. Saltcedar is a non-native, deciduous, phreatophytic shrub or small tree which grows rapidly, attaining a height of 30 feet, and forming dense, impenetrable thickets. Saltcedar is a native of Europe and Asia that was introduced in the United States in the early 1800's where it was sold as an ornamental, escaping cultivation in the 1870's. In the early 1900's, an attempt was made to use the trees for erosion control along waterways. From April through October, each plant can produce 500,000 small, wind-disseminated seeds. Additionally, the plant has strong vegetative reproduction properties with the ability to establish new plants from removed stems, and resprouting from the root collar if established plants are disturbed. Saltcedar became naturalized and spread rapidly in the 1930s and 1940s. An extremely invasive plant, saltcedar is now found across the western half of Texas and throughout the southwest. Saltcedar crowds out native stands of riparian and wetland vegetation and increases the salinity of soil through salt exudation from its leaves.

Willow baccharis is found throughout lands surrounding Lake Georgetown. It is a weedy, noxious, perennial shrub that grows between three to nine feet tall. The plant prefers wet sites along rivers, streams and lakes, but has begun spreading into the upland sites, tolerating saline soils. Originally used to control erosion, it is a prolific seed producer, reproducing by seed and rhizomes, rapidly spreading and invading mesic sites. It frequently forms dense, closed canopy stands and utilizes more water than most native species. While native, it is toxic and aggressively invades in disturbed areas.

Chinese tallow is a deciduous, exotic tree species with a 12" to 18" diameter crooked trunk and a height of 50 feet at maturity. It is found in various areas at Lake Georgetown, most notable at Crockett Garden. The USDA first introduced it to the Gulf coast in the 1900's to develop a soap-making industry from the seeds. Eradication of the tree is difficult due to its fast growth and ability to adapt to all soils. The species causes large-scale ecosystem modification by replacing native vegetation, thereby reducing native species diversity that, in turn, has a negative effect on wildlife. Additionally, the plant can cause dermatitis on contact, and is toxic to humans and cattle if ingested.

Chinaberry is another invasive, exotic tree found across Lake Georgetown that is becoming more abundant. It is a very drought tolerant tree native to Asia that grows extremely fast (5-10 feet each year) and has very few diseases, allowing it to out-compete native species. While it has brilliant yellow fall foliage and lavender spring flowers, the berries, bark, leaves, and flowers produced by the tree are all toxic to livestock, humans and pets. The plant was originally introduced for its ability to thrive in poor conditions, and its berries were used to make soap. Extracts from the tree have been used as natural pesticides. Seeds are spread by birds, and the plant spreads by root sprouts, thus forming a dense thicket.

Glossy privet is a fast-growing evergreen tree found at Lake Georgetown along areas adjacent to subdivisions. Trees grow up to 40 feet in height and 25 feet in width. It forms a very dense canopy of dark green leaves on the surface with pale green undersurface attached to bending branches. Highly fragrant, small cream-colored flowers are produced large clusters of purple berries which are spread by birds and animals. Both leaves and fruit are poisonous to humans.

Development around and adjacent to USACE lands at Lake Georgetown has grown significantly, and continues to expand. As subdivisions have developed, Lake Georgetown has experienced a significant increase in exotic invasive plants. These spread primarily through conveyance along stormwater systems and birds. Management of these invasive plants will require many partnerships and significant funding. Currently, these species are being monitored by USACE staff.

6.5 RECREATIONAL BOATING STUDY

In 2002, the Fort Worth District adopted a policy governing water-related recreation development that has the potential to affect the degree of boating traffic on the water surface of all Fort Worth District lakes. In brief terms, the policy established a target capacity of 22 surface acres of boatable water surface for each vessel on the water during peak use periods. Using the number of boat ramp parking spaces, wet storage slips and dry stacked storage slips as a basis for calculating potential boating activity, USACE can determine whether any proposed additions of parking spaces or storage slips has the potential to exceed the target capacity. USACE has determined that the number of existing parking spaces and slips at Lake Georgetown as of the date of this Plan has the potential to exceed the target capacity and may have already done so. In view of this potential, USACE would require a comprehensive water-related recreation use study prior to making a decision to approve or deny a proposal for additional slips or boat ramp parking spaces at Lake Georgetown. The policy allows limited flexibility in decision-making. Adequate funding to conduct a Recreational Boating Study at the same time as the Master Plan revision was made available, and the Boating Study will be done as a follow-on effort.

6.6 SHORELINE MANAGEMENT POLICY STATEMENT

On 13 December 1974 the USACE published a new regulation, ER 1130-2-406, in the Federal Register entitled "Civil Works Projects: Lakeshore Management." This

regulation was published as Part 327.30 of Chapter III, Title 36 of the Code of Federal Regulations. A subsequent change to the regulation was published in the Federal Register on 31 October 1990, incorporating the results of recent legislation and changing the name to “Shoreline Management at Civil Works Projects.” The focus of this regulation is to establish national policy, guidelines, and administrative procedures for management of certain private uses of Federal lands administered by USACE. A key requirement in the regulation is that private shoreline uses, as defined in the regulation, are not allowed at lakes where no such private uses existed as of 13 December 1974. At Lake Georgetown, no such private uses existed as of that date and therefore private shoreline uses are not allowed.

The private uses described in the regulation primarily include privately-owned floating facilities such as floating boat docks, fixed or movable piers, and vegetation modification activities such as plantings, mowing, and selective removal of shrubs and trees to the extent that exclusive benefits accrue to an individual or group and the general public is denied use of public lands or waters. Not included in the above definition are certain limited private activities that do not provide exclusive benefits to an individual or group, nor preclude general public use. These limited private activities may be allowed by written shoreline use permit for reasons of public safety, erosion control, benefits to wildlife, or to provide reasonable pedestrian access to the shoreline. A key requirement of the regulation is stated as follows: “Except to honor written commitments made prior to publication of this regulation, private shoreline uses are not allowed on water resources projects where construction was initiated after 13 December 1974, or on water resources projects where no private shoreline uses existed as of that date.” The regulation requires USACE to prepare a Shoreline Management Plan for those projects where private uses existed as of 13 December 1974, and a Shoreline Management Policy Statement (SMPS) for all other projects. In response to this requirement a SMPS was prepared for Lake Georgetown.

In FY 2012, an administrative update to the Lake Georgetown SMPS was prepared to incorporate current terminology and to ensure compliance and compatibility with the most current versions of ER 1130-2-406 and ER 1130-2-540, as well as Fort Worth District policy decisions related to shoreline management. One of the primary reasons for the administrative update was to incorporate language that supports the USACE natural resources mission statement to “manage and conserve natural resources consistent with ecosystem management principles” as set forth in ER 1130-2-540.

The purpose of the SMPS is to set forth the policy and procedures by which USACE manages certain private uses of public lands at Lake Georgetown. Private uses that accrue exclusive benefits to an individual are not allowed at Lake Georgetown. The non-exclusive private uses that may be authorized by written permit from USACE include mowing and removal of underbrush to the extent needed for protection from wildfire and limited clearing to provide a pedestrian access path from private property to the shoreline. These non-exclusive uses may not be authorized in all areas and are

subject to restrictions set forth in the SMPS. To further inquire about the SMPS at Lake Georgetown, please contact the lake office.

6.7 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, USACE determined that only three (3) utility corridors would be designated at Lake Georgetown. USACE policy in ER 1130-2-550, Chapter 17, states that project lands will generally be available only for roads that are considered regional arteries or freeways. If regional and county mobility plans call for widening of some existing roadways across USACE lands, these will be addressed on a case-by-case basis.

The following three (3) utility corridors have been designated across USACE land at Lake Georgetown, with each corridor incorporating and/or running parallel to an existing easement. These corridors are shown on map number LG19MP-01-02 provided in Appendix A. Future use of these corridors, where the corridor is limited to an existing easement, would in most cases require prior approval of those entities that have legal rights to the easement. The three utility corridors at Lake Georgetown follow existing roadways.

- Corridor 1 (D.B. Wood Road): This corridor runs along D.B. Wood Road east of the dam. The existing right-of-way is 100 feet wide and 9,450 feet long.
- Corridor 2 (Cedar Breaks Rd): This corridor runs along Cedar Brakes Road south of the dam. The existing right-of-way is 100 feet wide and 3,170 feet long.
- Corridor 3 (Farm to Market (FM) 3405): This corridor runs along FM 3405 north and west of the dam where it crosses a small finger of USACE land for a distance of 270 feet. Use of the corridor is limited to the existing right-of-way which is 184 feet wide.

In summary, the following best management practices shall be applied in the future use of the corridors.

- Use existing easements before using additional space.
- Efficient use of the designated corridor space to allow the maximum number of utilities possible to occupy the space. Reduced cost is not a reason to occupy more space. A typical drawing depicting how utility lines can be placed efficiently within a corridor is provided in Appendix A following the map of corridor locations.
- In accordance with USACE policy at Chapter 17 of ER 1130-2-550, Non-Recreation Outgrant Policy, avoid placement of utility lines on USACE land unless there is no reasonable alternative route.

- Underground utilities shall be installed by boring at all creek crossings, and where feasible, across the full extent of designated corridors. Bore pits shall be a minimum of 100 feet from the centerline of creeks and, depending on site conditions, may need to be placed farther than 100 feet.
- Overhead electric and communication lines must meet minimum sag height requirements to be specified by USACE.
- Natural resources damaged or destroyed within corridors shall be mitigated per USACE requirements.
- Current and future identified cultural resources will be protected.

CHAPTER 7: PUBLIC AND AGENCY COORDINATION

7.1 PUBLIC AND AGENCY COORDINATION OVERVIEW

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management for cultural, natural, and recreational resources of Lake Georgetown. 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 Lake Georgetown to ensure that future management actions are both environmentally sustainable and responsive to public outdoor recreation needs in a region which is experiencing rapid population growth. The following milestones provide a brief look at the overall process of revising the Lake Georgetown Master Plan.

The USACE began planning to revise the Lake Georgetown Master Plan in September 2018. The objectives for the Master Plan revision were to (1) update land classifications to reflect changes in USACE land management policies since 1973 and (2) update the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, Change 7, 30 January 2013 and EP 1130-2-550, Change 5, 30 January 2013.

7.2 INITIAL STAKEHOLDER AND PUBLIC MEETINGS

The first action was a scheduled public scoping meeting providing an avenue for public and agency stakeholders to ask questions and provide comments. The public scoping meeting was held on 12 February 2019 at the Lake Georgetown Project Office, Georgetown, TX 78633. The Fort Worth District placed advertisements on the USACE webpage, social media and print publications two weeks prior to the public scoping meeting.

USACE employees hosted the workshop, which was conducted in an open format. Participants were asked to sign in at a table where staff provided the participants with information regarding the structure of the scoping meeting and comment forms. After signing in, participants were directed to be seated in the auditorium for a presentation by USACE for the Master Plan Revision Project Delivery Team (PDT) to convey information about the following topics:

- Public involvement process
- Project overview
- Overview of the NEPA process
- Master Plan and current land classifications
- How to submit comments

At the conclusion of the presentation USACE representatives were available to answer questions and receive written comments at information tables. Interested persons had the opportunity to comment about the project using a variety of methods, including the following:

- Filling out a comment form at the open house
- Taking a comment form home to be returned at a later date
- Submitting a comment using electronic mail
- Submitting a comment and mailing it in on letterhead or choice of paper

Approximately 19 individuals, not including USACE personnel, attended the 12 February 2019 public scoping meeting for interest groups, partner agencies, other government agencies, and businesses. Among the attendees were representatives from the TPWD, the City of Georgetown, Williamson County, and a local mountain bike club. A total of five (5) comments were received following this meeting. Issues that were addressed in the comments included environmental stewardship and preservation, leases, access for fishing and boating, and mountain biking. Lake Georgetown is a federally-owned and managed public property, and it is USACE's goal to be a good neighbor, as well as steward for public interest as it concerns Lake Georgetown. As such, USACE is bound to the equal enforcement of policies and fees for this publically held national asset. Table 7.1 provides a summary list of the comments received during the initial scoping comment period for the Master Plan, followed by the USACE response.

Table 7.1 Public Comments from 20 February 2019 Public Scoping Meeting

Commenter	Comment Description	USACE Response
Williamson County Conservation Foundation (WCCF)	Environmental Stewardship - The WCCF has specific interest in any activities that will affect listed species, species of interest per the HCP and any future species status assessment activities. Particular coordination and collaboration on <i>Setophaga chrysoparia</i> (GCWA) and <i>Eurycea</i> spp (Brook salamanders) should be warranted with existing HCPs.	Concur

Commenter	Comment Description	USACE Response
City of Georgetown Parks and Recreation	Consider extending leases with other public agencies to greater than 5 years.	Lease agreement issues are not part of the master planning process. The issue of lease length can be addressed through the District Real Estate office.
TPWD	<p>Would like fishing activities and boating access to be fully supported. Would like to see improvements in bank/wade angler access upriver for anglers pursuing white bass fishing during the spring spawning run. Recommends considering river access for passive recreation along the river (highlighted on supplied maps). Ideal access would provide adequate roads, parking, and short walking distance to the river.</p> <p>"We have linked restroom amenities as extremely important to angler engagement; so I would also recommend this be considered as well. Finally, since white bass are highly consumed by anglers, a fish cleaning station would serve a good purpose if USACE finds it manageable."</p>	<p>USACE supports reasonable fishing and boating access that would not detract from other uses and the general aesthetics of any given area. Adding more public access to areas along the river in the upper reaches of the lake would carry with it a major maintenance expense and may invite problems such as trash dumping, unauthorized shooting and loitering at access points. Fish cleaning stations are also maintenance intensive and would only be placed in areas where maintenance can be efficient. USACE is committed to working closely with our recreational partners to provide the highest quality recreational opportunities within budget and personnel constraints.</p>

Commenter	Comment Description	USACE Response
Public (2 Comments)	Mountain biking interests growing in region. Interested in preservation of natural environment and accommodating an expanded mountain bike layout with assistance from the local mountain bike community. Would also like to see interconnected beginning and intermediate single tract mountain bike trail, perhaps around spillway or along existing hike and bike trail downstream from dam.	Non-concur. While USACE welcomes continued partnerships in providing and maintaining the current 27 miles of hiking and mountain biking trails, expansion of existing trails into the areas in question would affect use of these public lands for hunting, bird watching, and other passive outdoor recreation activities. USACE current priorities for trails include trail maintenance, as well as considering options to loop some trails where possible to provide minimal disturbance and maximum recreational use.

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

The draft release public meeting was held 11 March 2020. No member of the public or stakeholders attended this meeting, and no comments were received. No material changes were found to be needed to the draft, based on USACE lake operations and RPEC's planning and environmental expertise.

CHAPTER 8: SUMMARY OF RECOMMENDATIONS

8.1 SUMMARY OVERVIEW

The preparation of the Lake Georgetown Master Plan followed the new USACE Master Planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 13 January 2013. Three major requirements set forth in the new guidance include (1) preparation of contemporary Resource Objectives, (2) Classification of project lands using the newly approved classification standards, and (3) 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, and consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities. 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 staff levels at Lake Georgetown. Factors considered in the Plan were identified through public involvement and review of statewide planning documents including TPWD's 2012 TORP (synonymous with SCORP) and the TCAP – Edwards Plateau Ecoregion. This Master Plan will ensure the long-term sustainability of the USACE managed recreation program and natural resources associated with Lake Georgetown.

8.2 LAND CLASSIFICATION PROPOSALS

A key component in preparing this Master Plan was examining prior land classifications and addressing the needed transition to the new land classification standards. During the public involvement process, USACE sought public input into whether, besides the simple change in nomenclature, a shift in land classification was desired (for example, should lands with a recreation classification be reclassified to a wildlife classification or vice versa.). Chapter 7 of the Plan describes the public input process.

Of the five (5) public comments received as a result of the initial public scoping meeting, most concerned an interest in maintaining the environmental uniqueness of the area and increased access to boating, fishing, and bike trails. The land classifications presented in the Plan were formulated based on these comments, first-hand experience and professional training of USACE Lake Georgetown Project staff, Operations Division Staff and Regional Planning and Environmental Center (RPEC) staff assigned to the Master Plan PDT, as well as proven best management practices. There were 1,488 acres reclassified or updated to the new land classification name. All changes reflect historic and projected public use and new guidance from ER 1130-2-550 and EP 1130-2-550. A summary of acreage changes from prior land classifications

to the current classifications is provided in Table 8.1, and key decision points in the reclassification of project lands are presented in Table 8.2.

Table 8.1 Change from Prior Land Classification to New Land Classification

Prior (1973) Land Classifications	Acres	New Land Classifications	Acres
Project Operations	148	Project Operations (PO)	234
Operations: Recreation Intensive Use	675	High Density Recreation (HDR)	566
		Environmentally Sensitive Areas (ESA)	376
Operations: Recreation Low Density Recreational Lands	1,616 375	Multiple Resource Management – Low Density Recreation (MRML-LDR)	483
Wildlife Management Hunt Hollow Wildlife Area	1,272	Multiple Resource Management – Wildlife Management (MRML-WM)	2,514
Conservation Pool 791.0 NGVD29	1,310	Conservation Pool 791.0 NGVD29 – 2005 Survey	1,287
WATER SURFACE			
*Water Surface	1,310	Restricted	7
		Designated No-wake	70
		Open Recreation	1,210
Flowage Easement	514.62		

*Acreage differences from the 1973 total to the 2019 totals are due to improvements in measurement technology, siltation and erosion.

Table 8.2 Reclassification Proposals

Proposal	Description	Justification
Project Operations (PO)	A total of 86 acres of fee lands were reclassified from the prior classification of Operations: Recreation Low Density to PO, bringing the total PO acres from 148 to 234.	The Project Operations land classification was expanded to take in the spillway, staging area, and operations by other entities associated with the water supply mission. The conversion of these lands will have no effect on current or projected public use.
High Density Recreation (HDR)	Lands under the prior classification of Operations: Recreation Intensive Use were converted to the new and similar classification of High Density Recreation but were reduced by 109 acres; 56 acres were converted to MRML-LDR, and 53 acres were converted to MRML-WA, bringing HDR to 566 acres.	Changes to the HDR land classification were the result of a slight increase to account for establishment of the City of Georgetown Booty Road Park, expansion of Overlook Park, and establishment of Tejas Park. Decreases in prior Recreation Intensive Use lands were the result of reclassifying to MRML-WM along an existing creek, an area west of Jim Hogg Park, and Russell Park, and changing Cedar Hollow separable lands to LDR. These changes were done to reflect current and projected uses. The conversion of these lands will have no effect on current or projected public use.
Environmentally Sensitive Areas (ESA)	The classification of 376 acres as Environmentally Sensitive Areas resulted from reclassifying acres in the prior classifications of Operations: Recreation Low Density (245 acres) and Wildlife Management (131 acres).	These classification changes were necessary to recognize those areas at Lake Georgetown having the highest ecological value, including areas of high value for protection of important habitat for the endangered GCWA as designated by the USFWS, and to protect

Proposal	Description	Justification
		unique views and cultural and archeological sites. The conversion of lands will have little to no effect on current or projected public use. Lands classified as ESA are given the highest order of protection among possible land classifications.
MRML – Low Density Recreation (LDR)	The reclassification of 1,508 acres to MRML-LDR resulted from converting lands under the previous classification of Operations: Recreation Low Density to HDR (20 acres), ESA (245 acres), and PO (86 acres), and MRML-WM (1,157 acres), including classifying the Walnut Springs Point separable recreation lands as MRML-LDR. These changes resulted in reducing MRML-LDR to 483 acres.	The land in the former classification of Operations: Recreation Low Density were converted to other land uses due to the areas having historic land use patterns supporting the change. The conversion of these lands will have no effect on current or projected public use.
MRML – Wildlife Management (WM)	The increase of 1,242 acres to MRML-WM resulted from the reclassification of Operations: Recreation Intensive Use (23 acres), and Operations: Recreation Low Density (1,088 acres), and classifying some areas as ESA (131 acres).	The land in the former classification Operations: Recreation Intensive Use and Operations: Recreation Low Density Use were converted to MRML-WM to more appropriately align with historic land use patterns supporting the change, as well as lands converted to ESA to protect important cultural and habitat areas. The conversion of these lands will have no effect on current or projected public use.

Proposal	Description	Justification
Water Surface	<p>The classification of 1,287 acres of water surface of the lake at the conservation pool elevation is as follows:</p> <ul style="list-style-type: none"> • 7 acres of Restricted water surface at Lake Georgetown include the water surface in front of Lake Georgetown Dam and designated swimming areas in the parks around Lake Georgetown. Buoys mark the line in front of the dam. Keep-out buoys and floating barrier pipes mark the designated swimming areas in each park. • 70 acres of Designated No-Wake areas are in place near the boat ramps at Lake Georgetown. • There are 1,210 acres of Open Recreation water surface at Lake Georgetown. 	<p>The previous Master Plan for Lake Georgetown did not specify different classifications on the water surface, though these classifications were recognized in practice. This Master Plan revision recognizes and specifies these uses. The classification of water surfaces will have no effect on current or projected public use</p>

Note: The land classification changes described in this table are the result of changes to parcels of land ranging from a few acres to over 100 hundred acres. Acreages were measured using GIS technology. The acreage numbers provided are approximate.

CHAPTER 9: BIBLIOGRAPHY

- Campbell, L. 2003. Endangered and Threatened Animals of Texas: Their Life History and Management.
https://www.fws.gov/southwest/es/Documents/R2ES/GCWA_Survey_Guidelines_20100113.pdf
- Cordell & Green, National Survey on Recreation and the Environment, Texas Reports 1994-95, 2000-01 and 2006-09, 2009
- Environmental Protection Agency (EPA). 2017. <https://www.epa.gov/>
- EPA National Ambient Air Quality Standards (NAAQS). 2017.
<https://www.epa.gov/criteria-air-pollutants/naaqs-table>
- EPA Ecoregions. 2019 <https://www.epa.gov/eco-research/ecoregion-download-files-state-region-6>
- Google Maps. 2019
- MRCC Cli-MATE Tool <http://mrcc.isws.illinois.edu/CLIMATE/Hourly/WindRose2.jsp>. Retrieved August 2017
- National Vegetation Classification System. 2017. EP 1130-2-540.Level 1 inventory
- National Oceanic and Atmospheric Administration (NOAA).2017. US Climate Data; National Centers for Environmental Information
- Texas Commission on Environmental Quality (TCEQ). 2018
- Texas Commission on Environmental Quality (TCEQ) 2014 Texas Integrated Report for Clean Water Act
- Texas State Historical Association. 2017
- TPWD. 2012. Texas Outdoor Recreation Plan. 2012 Statewide Comprehensive Outdoor Recreation Plan (TORP/SCORP). TPWD, State Parks Division.
- TPWD. 2011. Texas Outdoor Recreation Plan Surveys (TORP). TPWD, State Parks Division.
- TPWD. 2012. Texas Conservation Action Plan 2012 – 2016: Statewide/Multi-region Handbook.

TWDB. 2012. Texas State Water Plan: Water for Texas. Texas Water Development Board, Austin, Texas.

Texas Water Development Board. October 2005. Volumetric Survey

USACE. 2013. ER 1130-2-550, Project Operations, Recreation Operations and Maintenance Guidance and Procedures. HQ, USACE.

USACE. 2013. EP 1130-2-550, Project Operations, Recreation Operations and Maintenance, Guidance and Procedures. HQ, USACE.

USACE. 2018. <http://www.corpsresults.us/recreation/fastfacts/lake.cfm?LakeID=32>
Lake Georgetown “Value to the Nation Fast facts – Recreation 2016

US Bureau of the Census. 2017. American Fact Finder Website.

USGS Texas Geology Map, <https://txpub.usgs.gov/dss/texasgeology/>, Accessed 2019

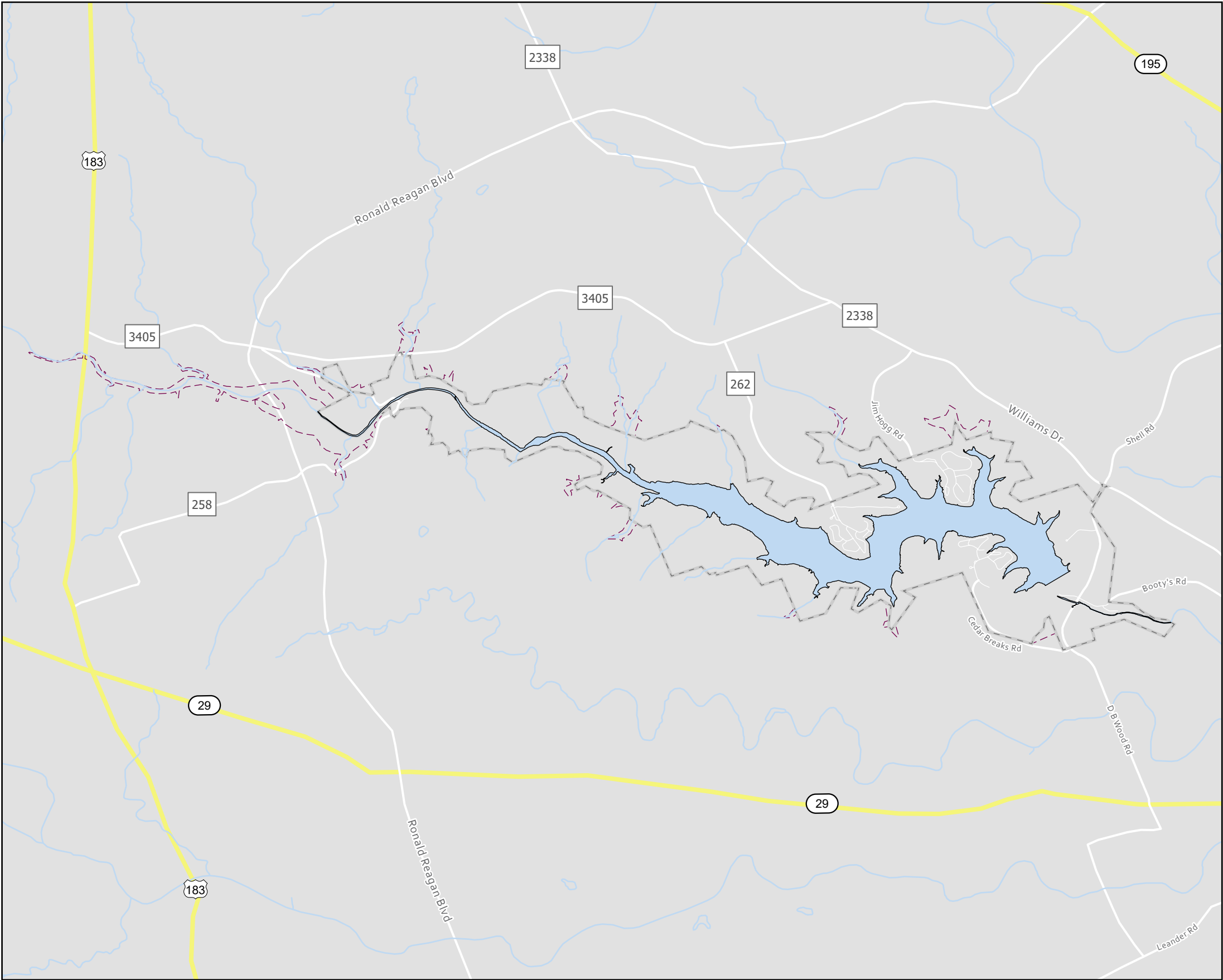
USFWS. 2019. Classification of Wetlands and Deepwater Habitats of the United States

USFWS. 2019. Information for Planning and Conservation (IPaC) website:
<https://ecos.fws.gov/ipac/>

Veni, George, Ph.D and Cecilio Martinez. July, 2007 for Texas Parks and Wildlife Department



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

Page intentionally left blank



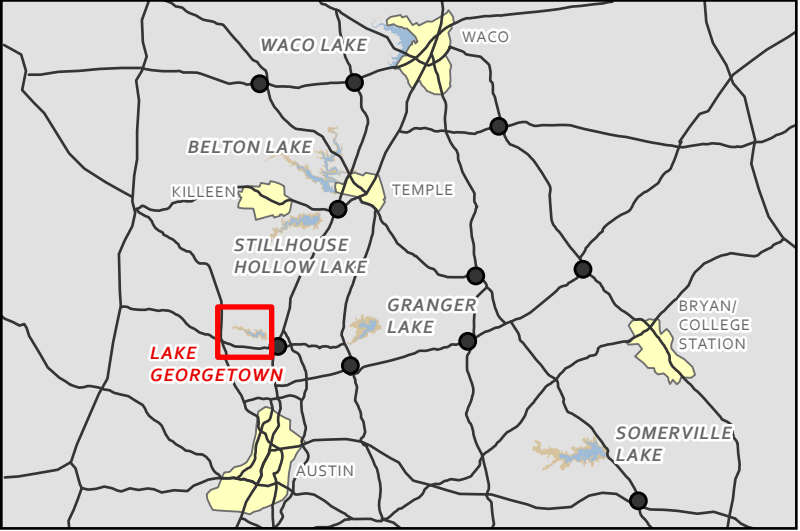
LEGEND

 **FEE PROPERTY**
 **FLOWAGE EASEMENT**

 **WATER SURFACE AREA**
 **TRIBUTARY**




THIS PRODUCT IS REPRODUCED FROM GEOSPATIAL INFORMATION PREPARED BY THE U.S. ARMY CORPS OF ENGINEERS. GIS DATA AND PRODUCT ACCURACY MAY VARY. THEY MAY BE DEVELOPED FROM SOURCES OF DIFFERING ACCURACY, ACCURATE ONLY FOR CERTAIN SCALES, BASED ON MODELING OR INTERPRETATION, INCOMPLETE WHILE BEING CREATED OR REVISED. USING GIS PRODUCTS FOR PURPOSES OTHER THAN THOSE FOR WHICH THEY WERE CREATED MAY YIELD INACCURATE OR MISLEADING RESULTS.



INDEX TO MASTER PLAN MAPS

<u>GENERAL</u>	
MAP NO.	TITLE
LG19MP-01-00	PROJECT LOCATION & INDEX
LG19MP-01-01	AGENCY LAND MANAGEMENT
LG19MP-01-02	UTILITY CORRIDOR
<u>LAND CLASSIFICATION</u>	
MAP NO.	TITLE
LG19MP-OC-00	LAND AND WATER CLASSIFICATION (INDEX)
LG19MP-OC-01	LAND AND WATER CLASSIFICATION (SHEET 1)
LG19MP-OC-02	LAND AND WATER CLASSIFICATION (SHEET 2)
LG19MP-OC-03	LAND AND WATER CLASSIFICATION (SHEET 3)
LG19MP-OC-04	LAND AND WATER CLASSIFICATION (SHEET 4)
LG19MP-OC-05	LAND AND WATER CLASSIFICATION (SHEET 5)
LG19MP-OC-06	LAND AND WATER CLASSIFICATION (SHEET 6)
LG19MP-OC-07	LAND AND WATER CLASSIFICATION (SHEET 7)
<u>RECREATIONAL AREAS</u>	
MAP NO.	TITLE
LG19MP-OR-0A	RECREATIONAL DEVELOPMENT MAP
LG19MP-OR-0B	TRAILS MAP
LG19MP-OR-01	CEDAR BREAKS PARK PLATE
LG19MP-OR-02	JIM HOGG PARK PLATE
LG19MP-OR-03	RUSSELL PARK PLATE
LG19MP-OR-04	TEJAS CAMP PLATE
LG19MP-OR-05	CEDAR HOLLOW CAMP PLATE
LG19MP-OR-06	SAWYER CAMP PLATE
LG19MP-OR-07	WALNUT SPRINGS CAMP PLATE
LG19MP-OR-08	OVERLOOK PLATE
LG19MP-OR-09	STILLING BASIN ACCESS POINT PLATE



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

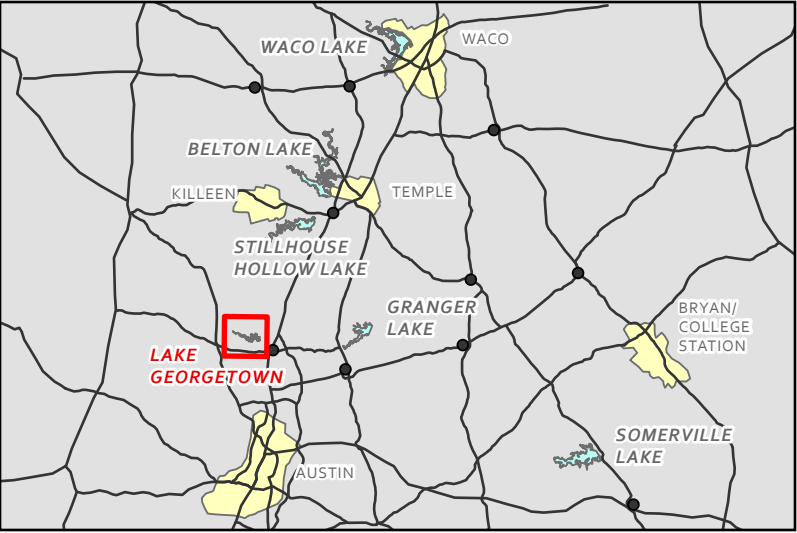
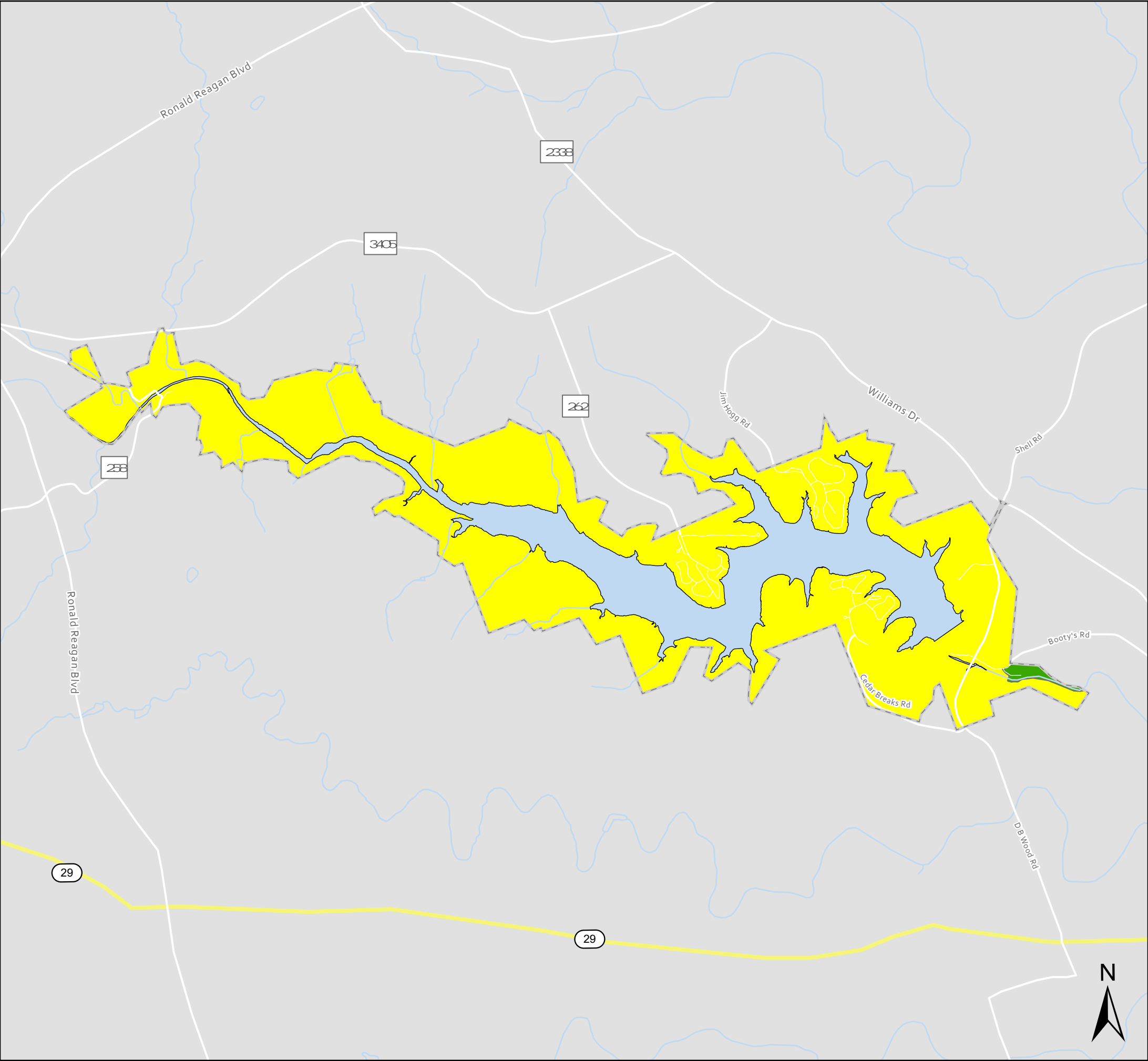
PROJECT LOCATION AND INDEX

1.501.53

Miles


DATE:
JULY 2019

MAP NO.
LG19MP-01-00



LEGEND

- FEE PROPERTY
- WATER SURFACE AREA
- TRIBUTARY
- MANAGING AGENCY**
- U.S. Army Corps of Engineers
- City of Georgetown



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

AGENCY LAND MANAGEMENT MAP

1012

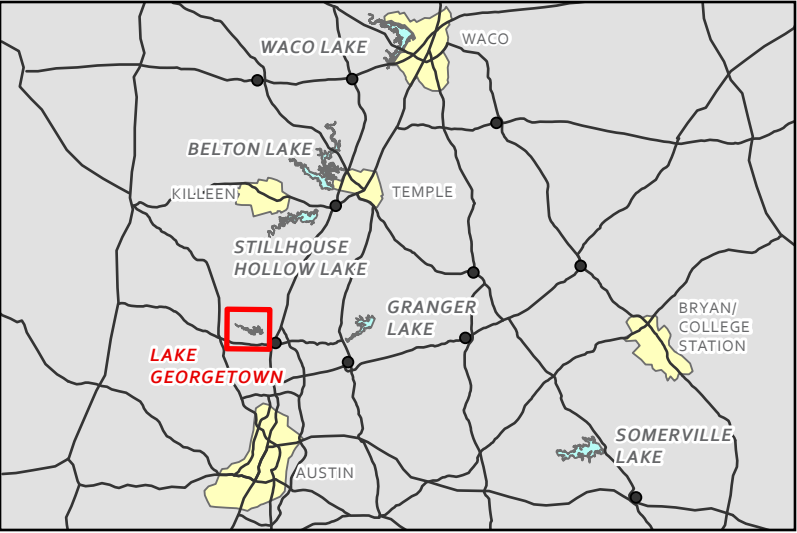
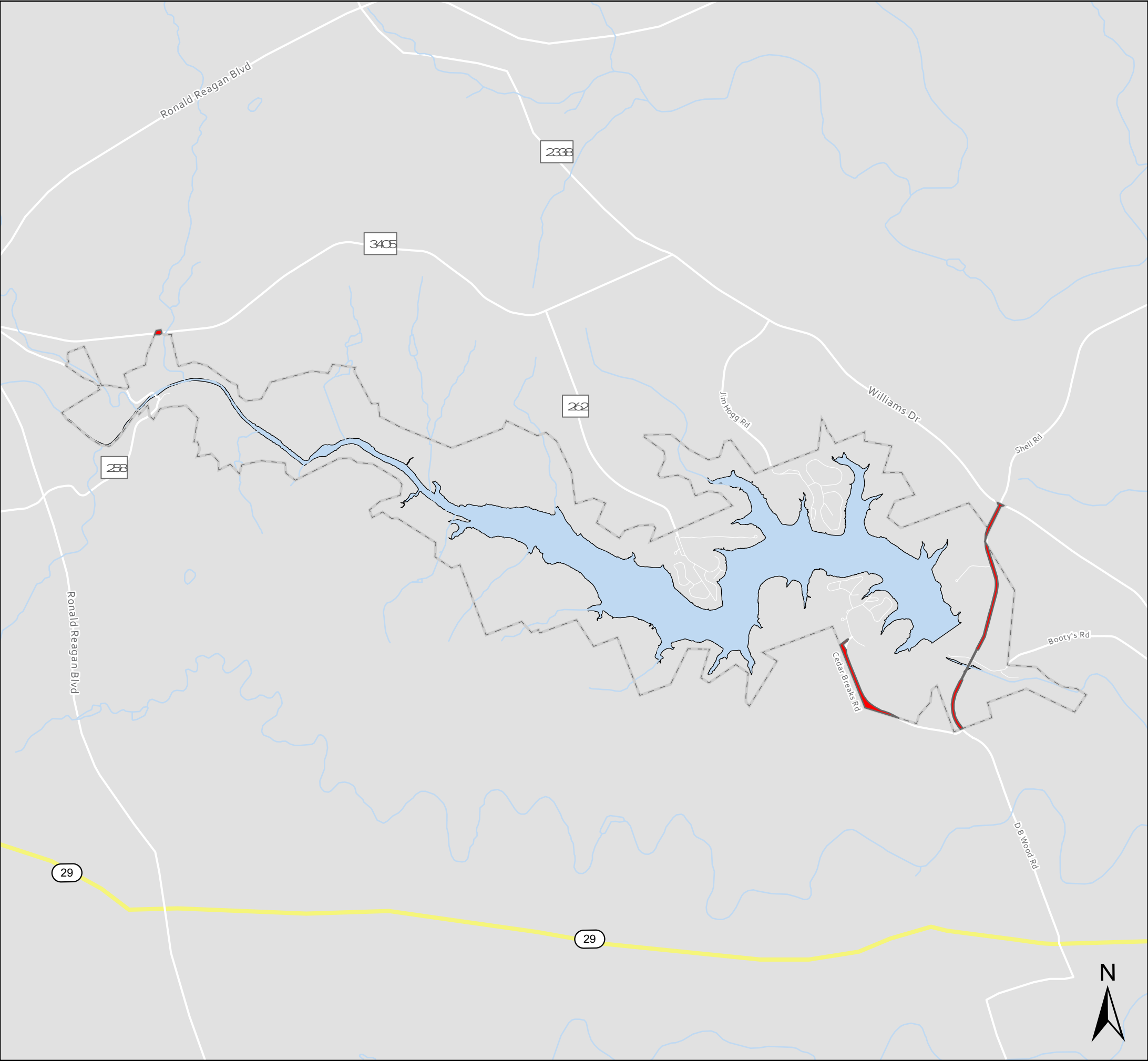
Miles

DATE





JULY 2019


MAP NO

LG19MP-01-01



LEGEND

-  UTILITY_COORIDOR
-  FEE PROPERTY
-  TRIBUTARY
-  WATER SURFACE AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

UTILITY COORIDOR MAP

1

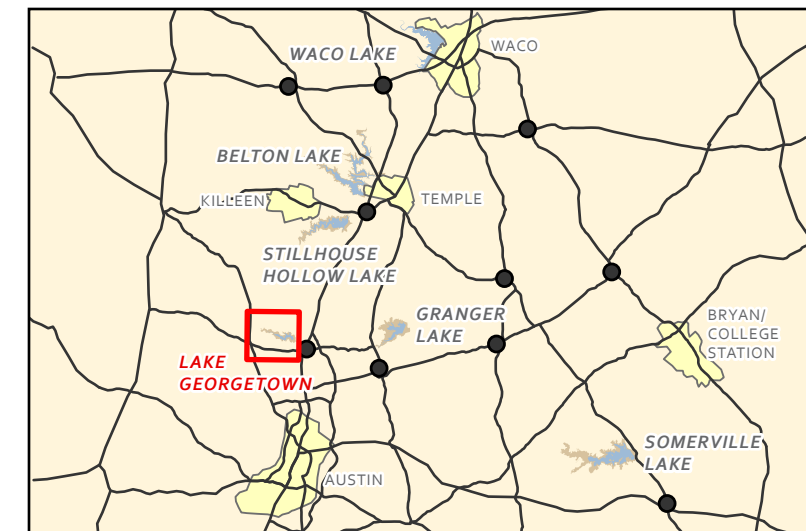
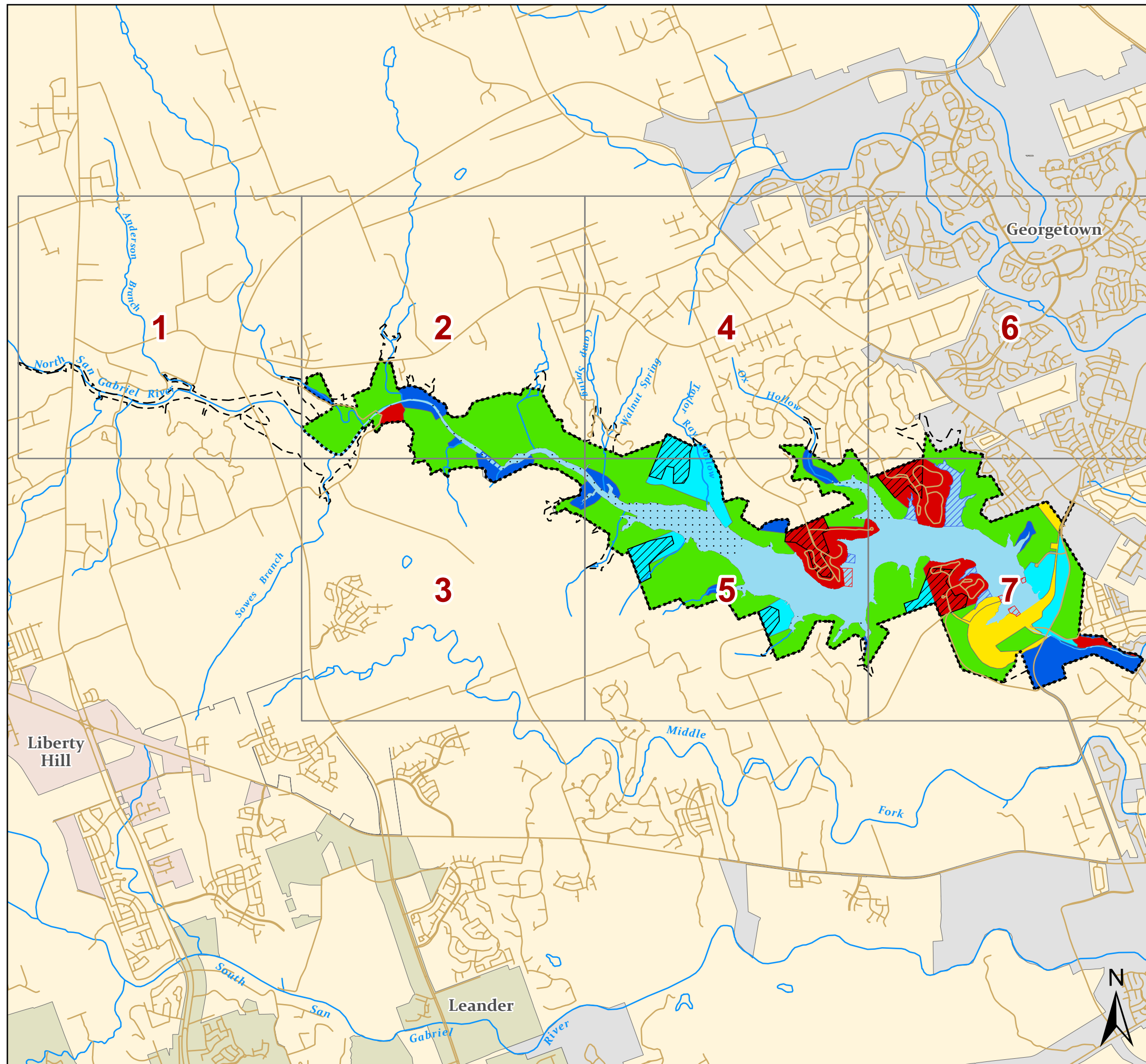
0

1

2

Miles

DATE:	MPNO:
JULY 2019	LG19MP-01-02



LEGEND

- | | |
|--------------------------------|----------------------------|
| FEE PROPERTY | WATER SURFACE |
| FLOWAGE EASEMENT | RESTRICTED |
| LAND CLASSIFICATION | DESIGNATED NO-WAKE |
| PROJECT OPERATIONS | OPEN RECREATION |
| HIGH DENSITY RECREATION | UNCLEARED WATER SURFACE |
| ENVIRONMENTALLY SENSITIVE AREA | LAND ALLOCATION |
| LOW DENSITY RECREATION | SEPARABLE RECREATION LANDS |
| WILDLIFE MANAGEMENT AREA | |

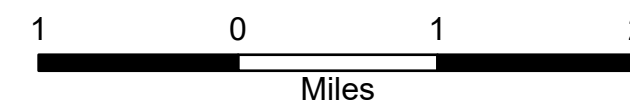


US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN LAKE GEORGETOWN MASTER PLAN LAND CLASSIFICATION INDEX

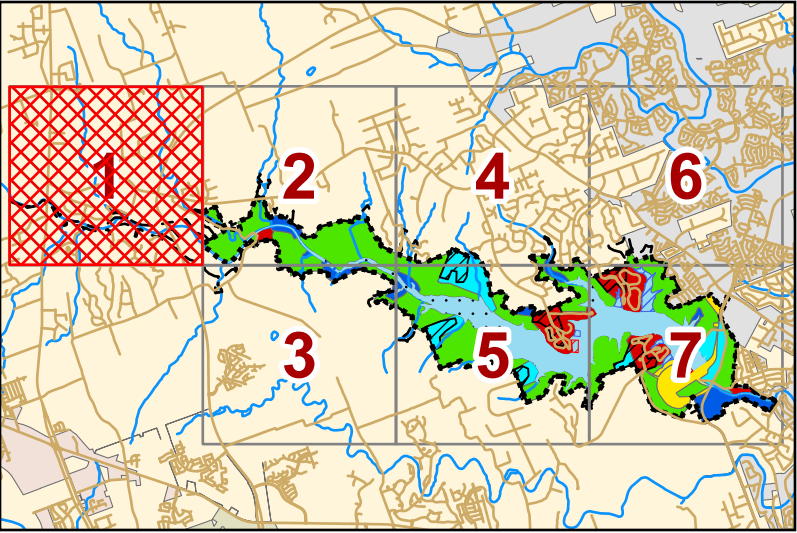
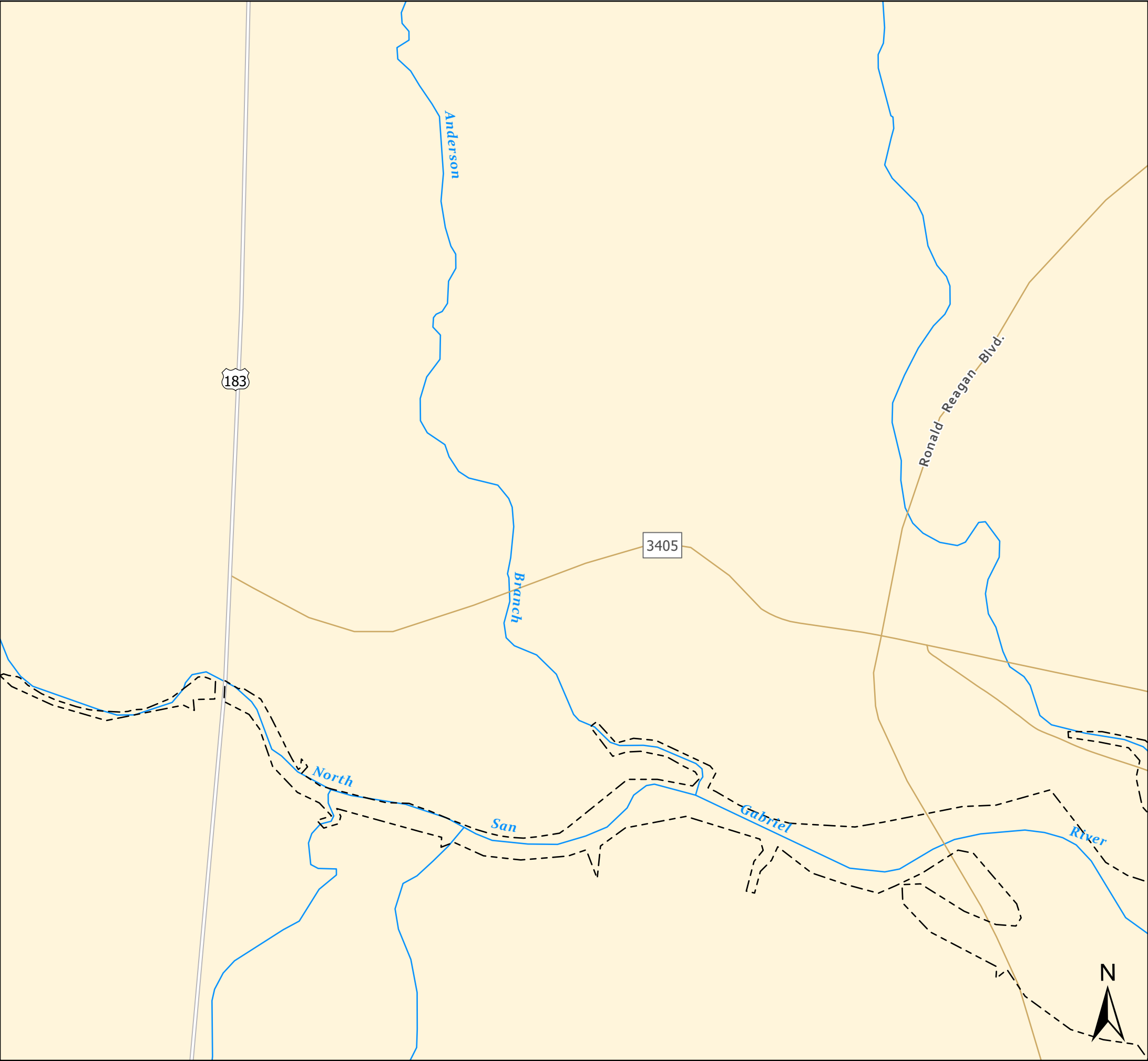


DATE

JULY 2019

MAP NO

LG19MP-OC-00



LEGEND

- Fee Property
- Flowage Easement
- Flood Control Structure
- Water Intake
- Boat Ramp
- Swim Beach

WATER SURFACE


- Restricted
- Designated No-Wake
- Open Recreation
- Uncleared Water Surface

LAND ALLOCATION

- Separable Recreation Lands

LAND CLASSIFICATION

- Project Operations
- High Density Recreation
- Environmentally Sensitive Area
- Low Density Recreation
- Wildlife Management Area


US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN GEORGETOWN, TEXAS

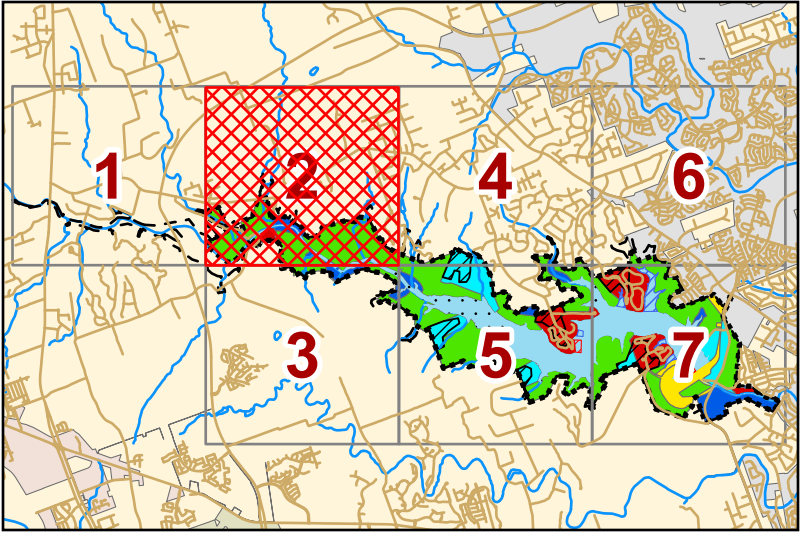
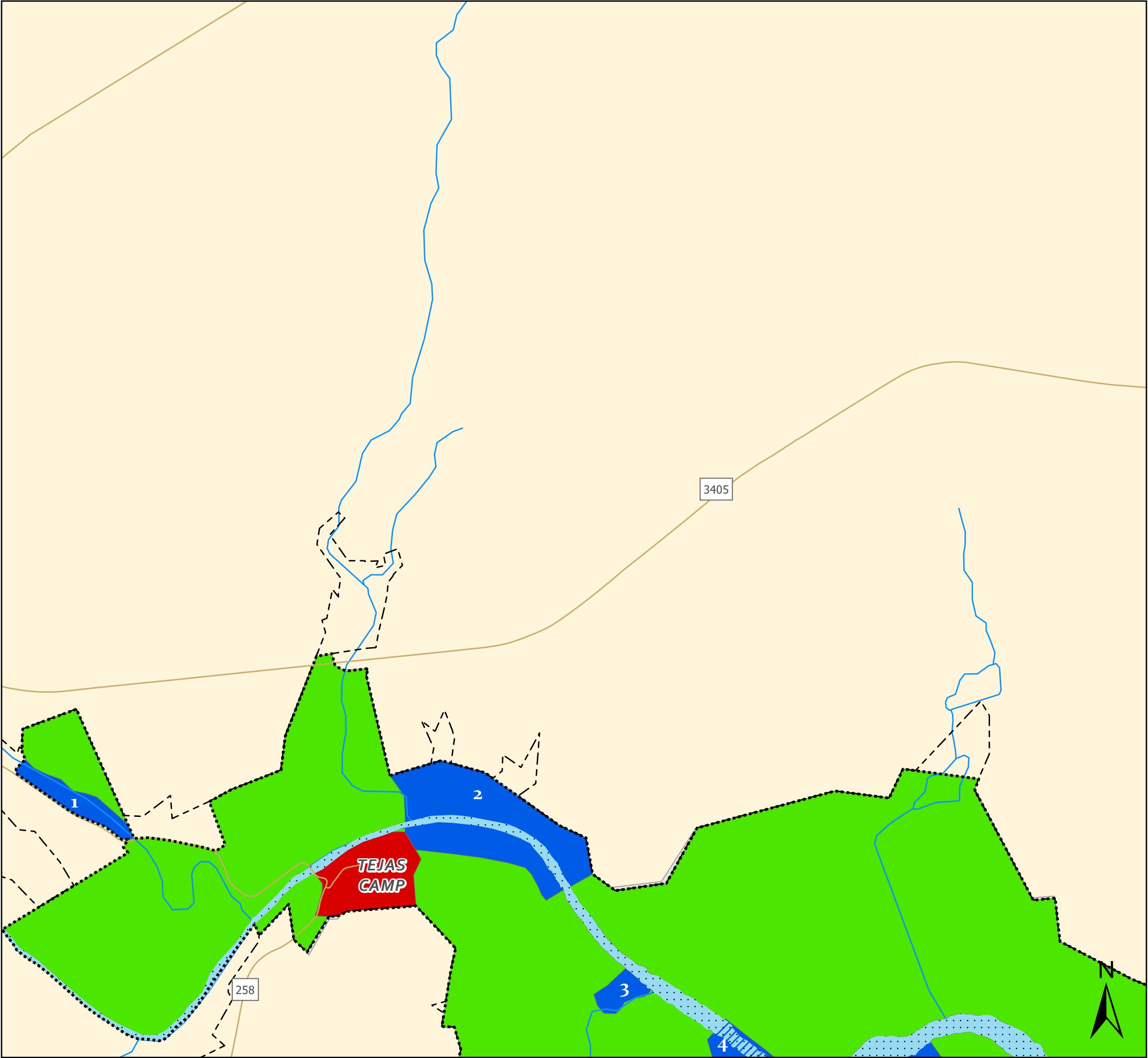
LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

LAND CLASSIFICATION (SHEET 1)

1,000 0 2,000
Feet

DATE: JULY 2019 MAP NO. LG19MP-OC-01



LEGEND

- FEE PROPERTY

--- FLOWAGE EASEMENT

FLOOD CONTROL STRUCTURE

WATER INTAKE

BOAT RAMP

SWIM BEACH
- WATER SURFACE**

RESTRICTED

DESIGNATED NO-WAKE

OPEN RECREATION

UNCLEARED WATER SURFACE

LAND ALLOCATION

SEPARABLE RECREATION LANDS
- LAND CLASSIFICATION**

PROJECT OPERATIONS

HIGH DENSITY RECREATION

ENVIRONMENTALLY SENSITIVE AREA

LOW DENSITY RECREATION

WILDLIFE MANAGEMENT AREA

US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

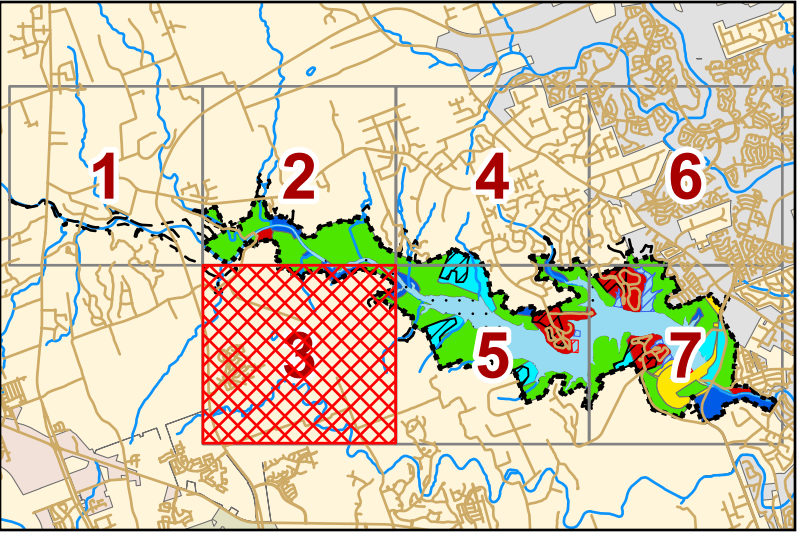
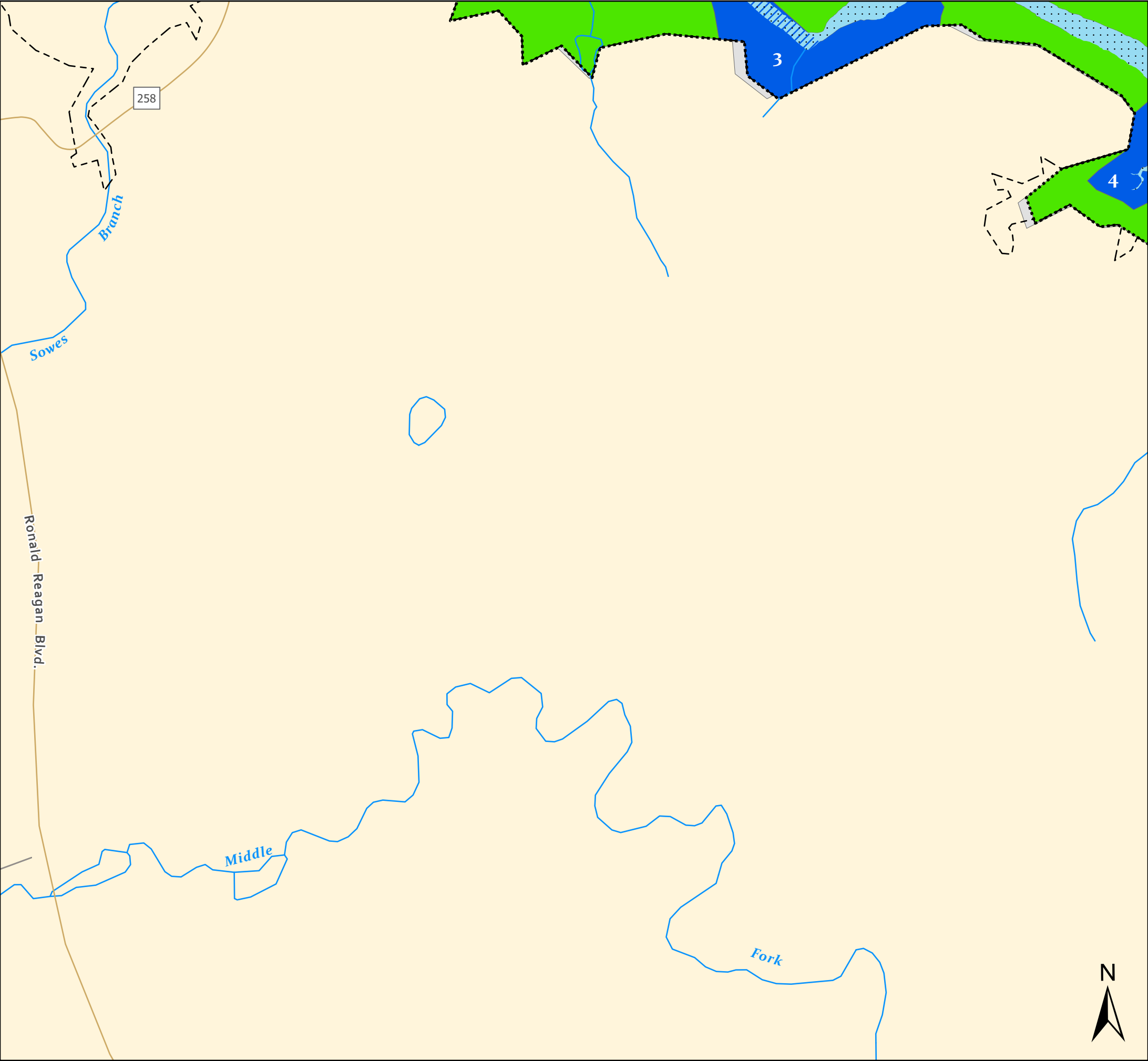
LAND CLASSIFICATION (SHEET 2)

1,000 0 2,000

Feet

DATE: JULY 2019

MAP NO. LG19MP-OC-02



LEGEND

FEE PROPERTY

FLOWAGE EASEMENT

FLOOD CONTROL STRUCTURE

WATER INTAKE

BOAT RAMP

SWIM BEACH

WATER SURFACE

RESTRICTED

DESIGNATED NO-WAKE

OPEN RECREATION

UNCLEARED WATER SURFACE

LAND ALLOCATION

SEPARABLE RECREATION LANDS

LAND CLASSIFICATION

PROJECT OPERATIONS

HIGH DENSITY RECREATION

ENVIRONMENTALLY SENSITIVE AREA

LOW DENSITY RECREATION

WILDLIFE MANAGEMENT AREA

US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

LAND CLASSIFICATION (SHEET 3)

1,000

0

2,000

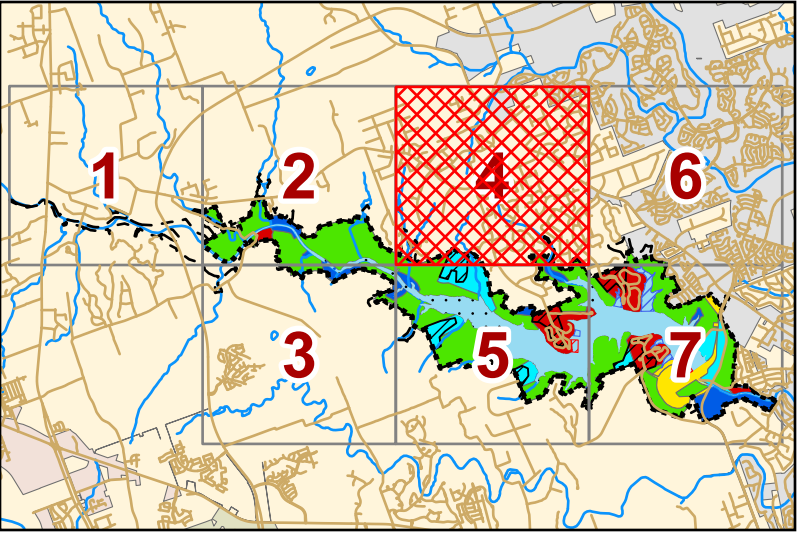
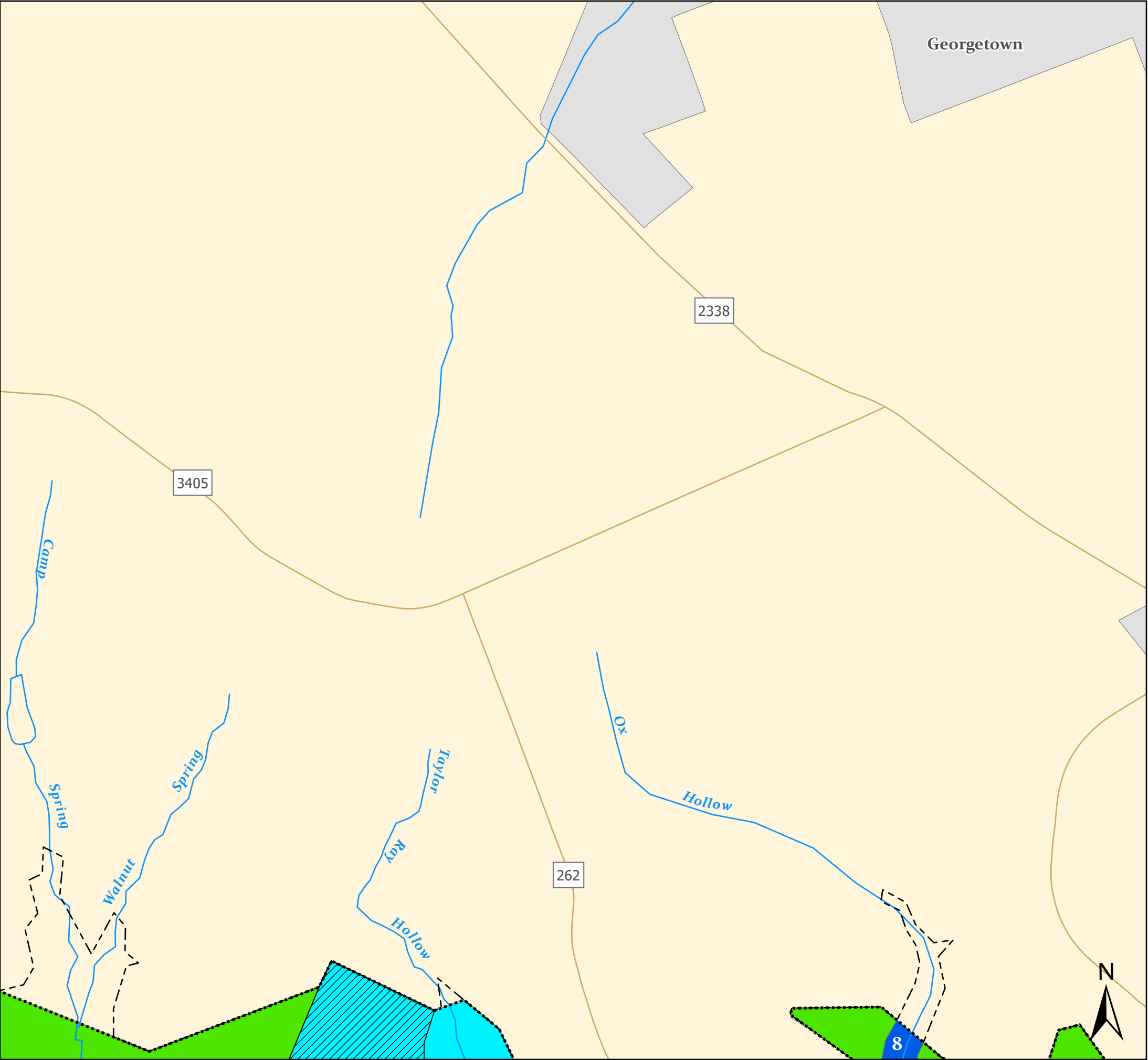
Feet

DATE:

JULY 2019

MAP NO.

LG19MP-OC-03



LEGEND

- FEE PROPERTY

FLOWAGE EASEMENT

FLOOD CONTROL STRUCTURE

WATER INTAKE

BOAT RAMP

SWIM BEACH
- RESTRICTED

DESIGNATED NO-WAKE

OPEN RECREATION

UNCLEARED WATER SURFACE
- LAND ALLOCATION


SEPARABLE RECREATION LANDS
- PROJECT OPERATIONS

HIGH DENSITY RECREATION

ENVIRONMENTALLY SENSITIVE AREA

LOW DENSITY RECREATION

WILDLIFE MANAGEMENT AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

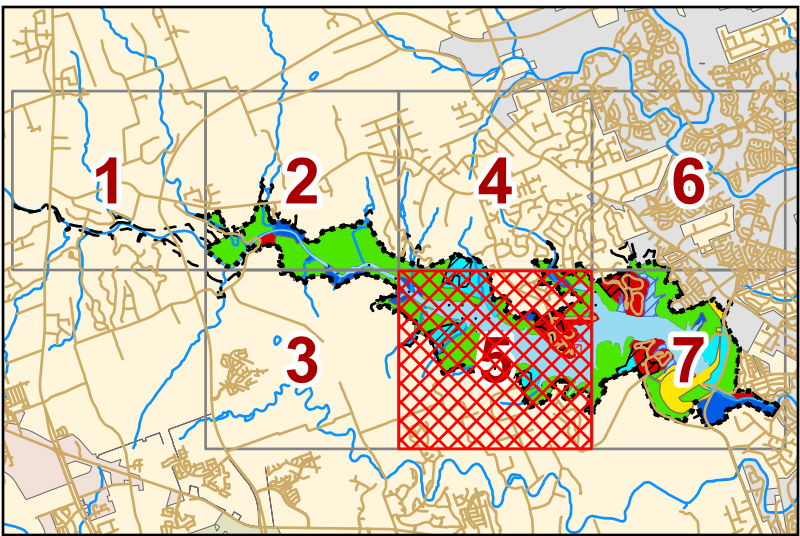
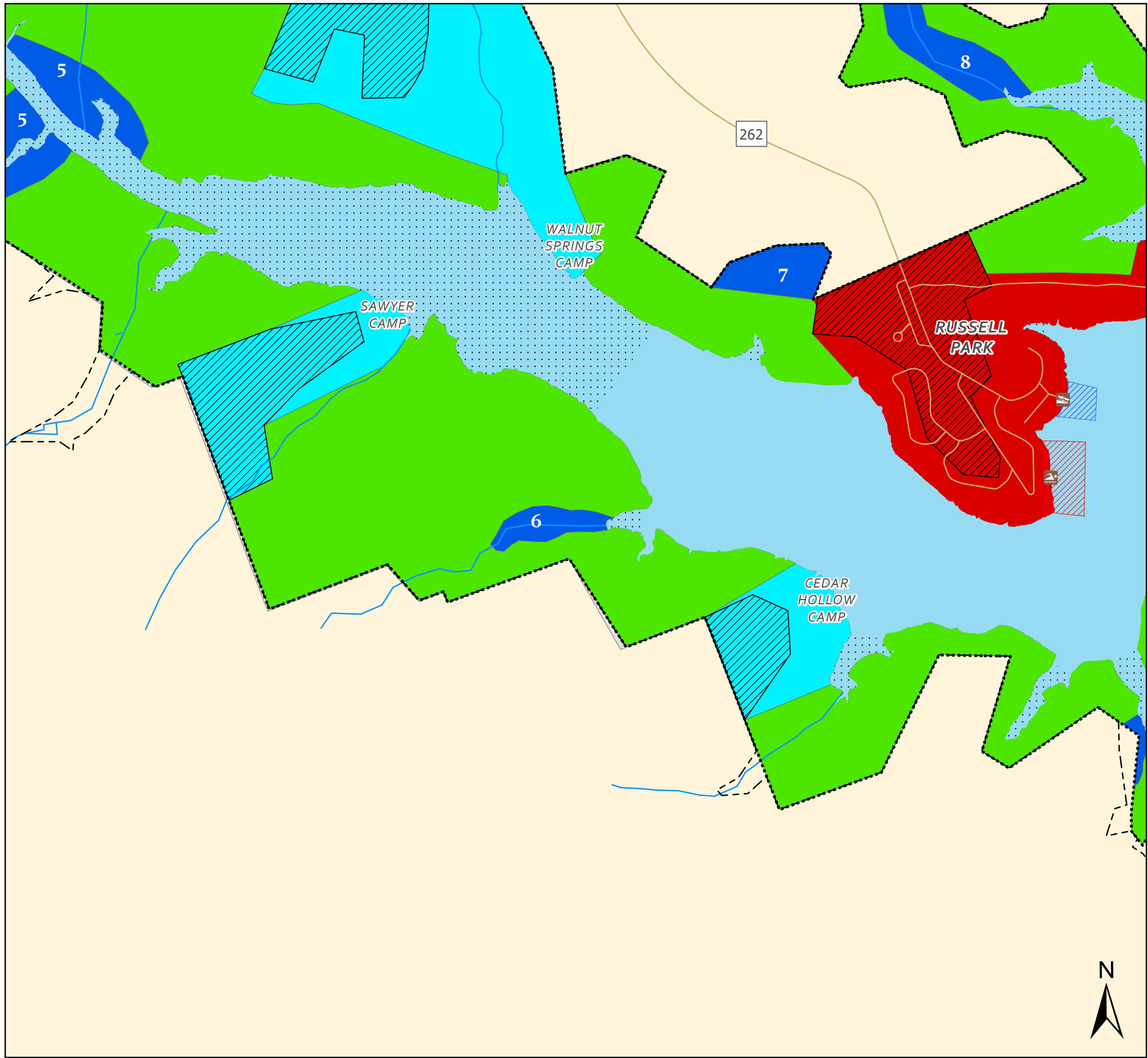
LAND CLASSIFICATION (SHEET 4)

1,000 0 2,000

Feet


DATE: JULY 2019

MAP NO. LG19MP-OC-04



LEGEND

- | | |
|---|---|
| <ul style="list-style-type: none"> FEE PROPERTY FLOWAGE EASEMENT FLOOD CONTROL STRUCTURE WATER INTAKE BOAT RAMP SWIM BEACH | <p>WATER SURFACE</p> <ul style="list-style-type: none"> RESTRICTED DESIGNATED NO-WAKE OPEN RECREATION UNCLEARED WATER SURFACE <p>LAND ALLOCATION</p> <ul style="list-style-type: none"> SEPARABLE RECREATION LANDS |
|---|---|
- LAND CLASSIFICATION**
- PROJECT OPERATIONS
 - HIGH DENSITY RECREATION
 - ENVIRONMENTALLY SENSITIVE AREA
 - LOW DENSITY RECREATION
 - WILDLIFE MANAGEMENT AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

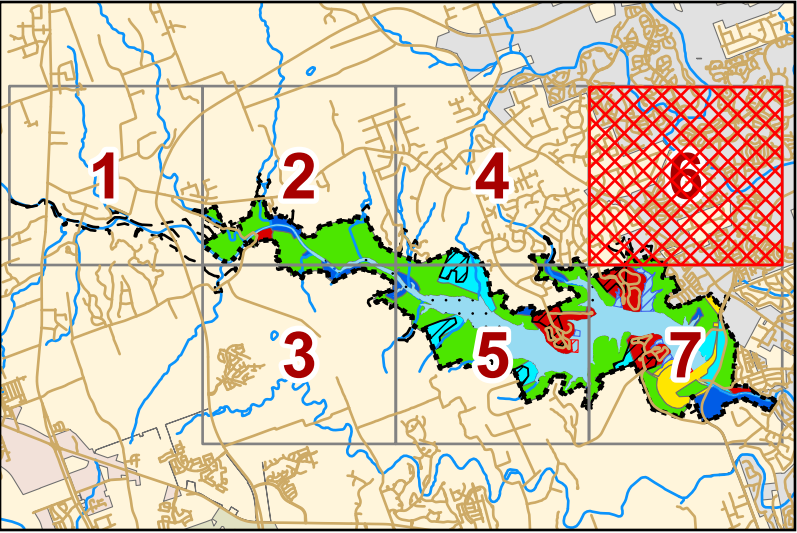
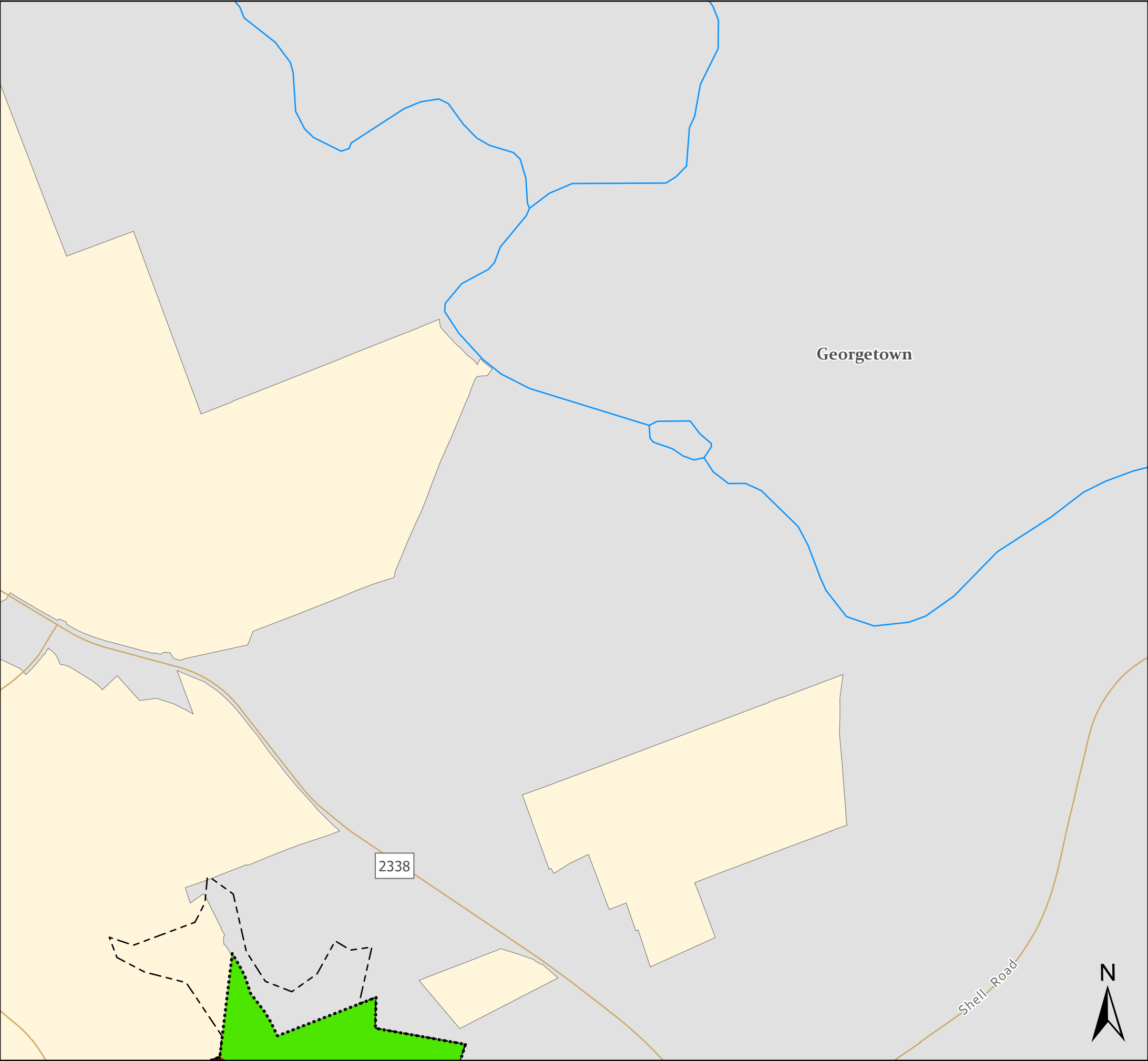
LAND CLASSIFICATION (SHEET 5)

1,000 0 2,000

Feet


DATE: JULY 2019

MAP NO. LG19MP-OC-05



LEGEND

- | | |
|--------------------------------|----------------------------|
| FEE PROPERTY | WATER SURFACE |
| FLOWAGE EASEMENT | RESTRICTED |
| FLOOD CONTROL STRUCTURE | DESIGNATED NO-WAKE |
| WATER INTAKE | OPEN RECREATION |
| BOAT RAMP | UNCLEARED WATER SURFACE |
| SWIM BEACH | LAND ALLOCATION |
| | SEPARABLE RECREATION LANDS |
| LAND CLASSIFICATION | |
| PROJECT OPERATIONS | |
| HIGH DENSITY RECREATION | |
| ENVIRONMENTALLY SENSITIVE AREA | |
| LOW DENSITY RECREATION | |
| WILDLIFE MANAGEMENT AREA | |



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

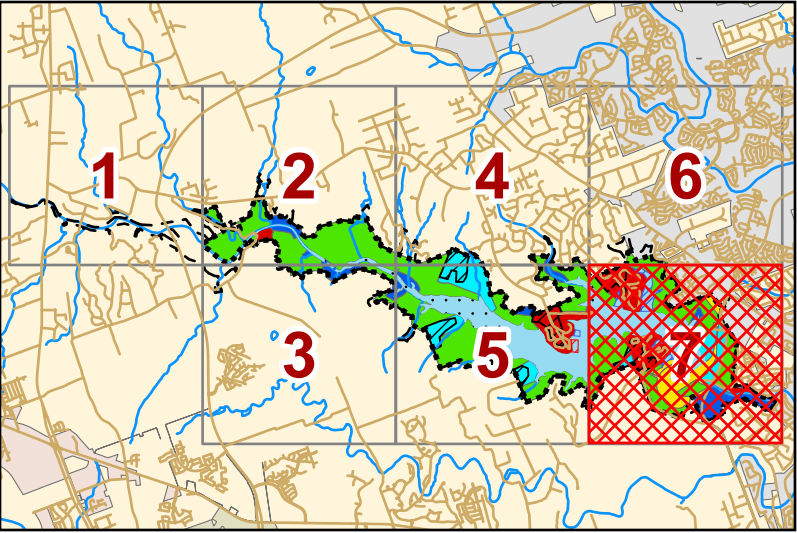
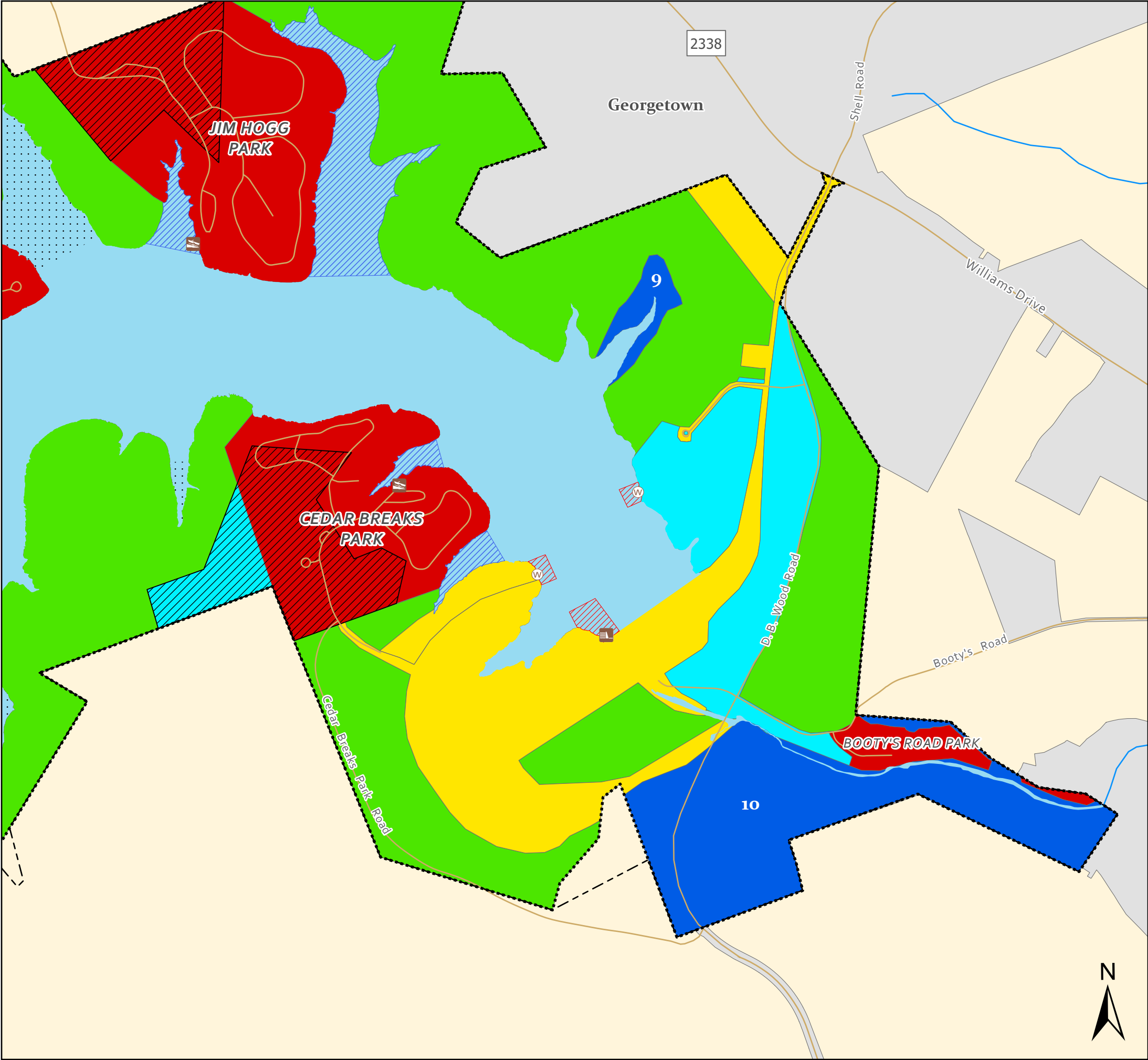
LAND CLASSIFICATION (SHEET 6)

1,000 0 2,000

Feet

DATE: JULY 2019

MAP NO. LG19MP-OC-06



LEGEND

- FEE PROPERTY
- FLOWAGE EASEMENT
- FLOOD CONTROL STRUCTURE
- WATER INTAKE
- BOAT RAMP
- SWIM BEACH

WATER SURFACE


- RESTRICTED
- DESIGNATED NO-WAKE
- OPEN RECREATION
- UNCLEARED WATER SURFACE

LAND ALLOCATION

- SEPARABLE RECREATION LANDS

LAND CLASSIFICATION

- PROJECT OPERATIONS
- HIGH DENSITY RECREATION
- ENVIRONMENTALLY SENSITIVE AREA
- LOW DENSITY RECREATION
- WILDLIFE MANAGEMENT AREA


US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN GEORGETOWN, TEXAS

LAKE GEORGETOWN

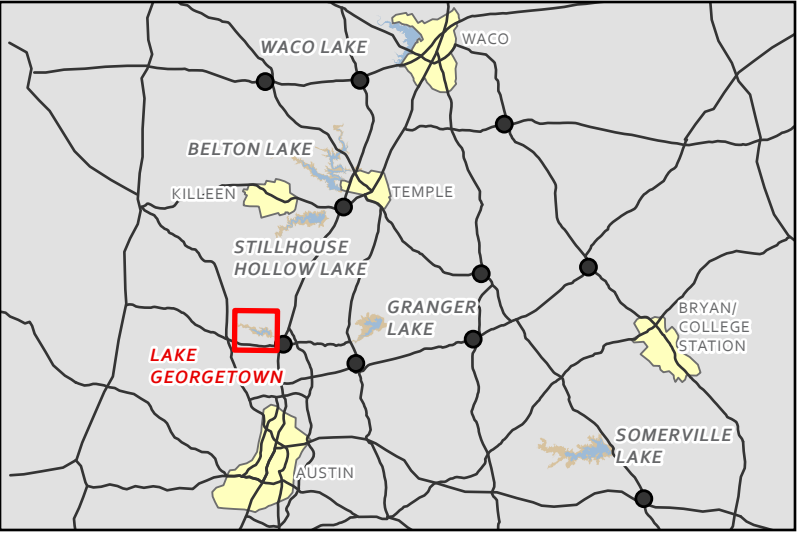
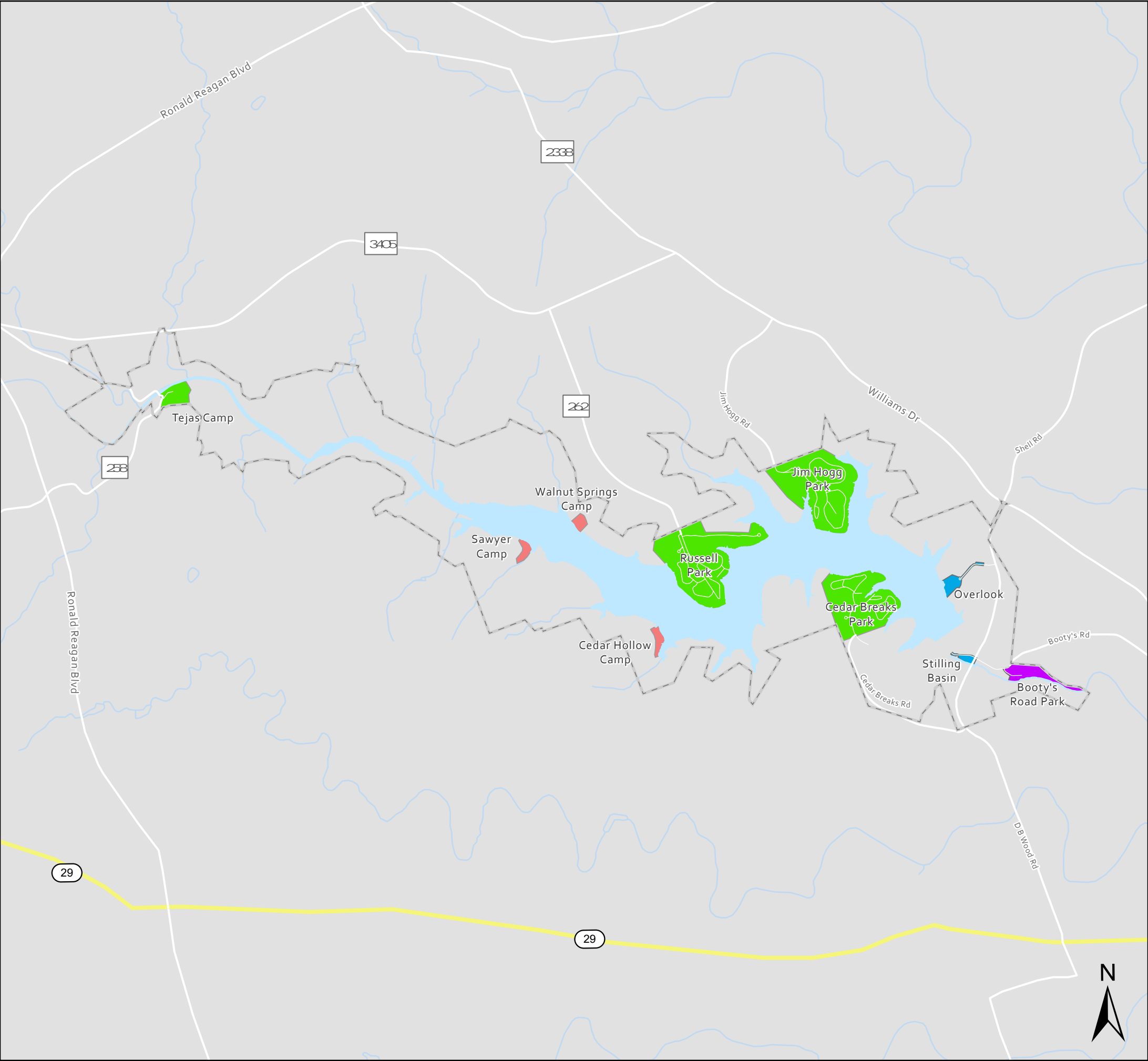
LAKE GEORGETOWN MASTER PLAN

LAND CLASSIFICATION (SHEET 7)

1,000 0 2,000
Feet

DATE: MAP NO.

JULY 2019 LG19MP-OC-07




LEGEND

- FEE PROPERTY
- WATER SURFACE AREA
- TRIBUTARY

RECREATIONAL AREAS

- DEVELOPED
- UNDEVELOPED
- ACCESS POINT
- LEASED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

RECREATIONAL DEVELOPMENT MAP

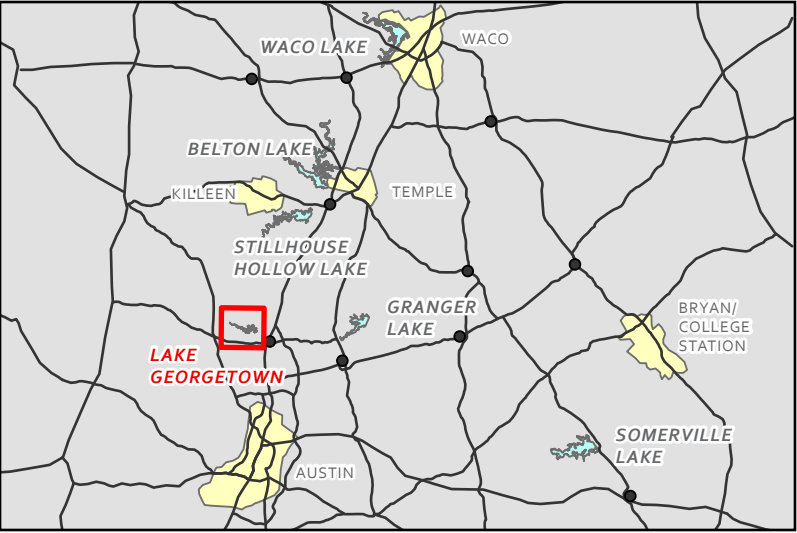
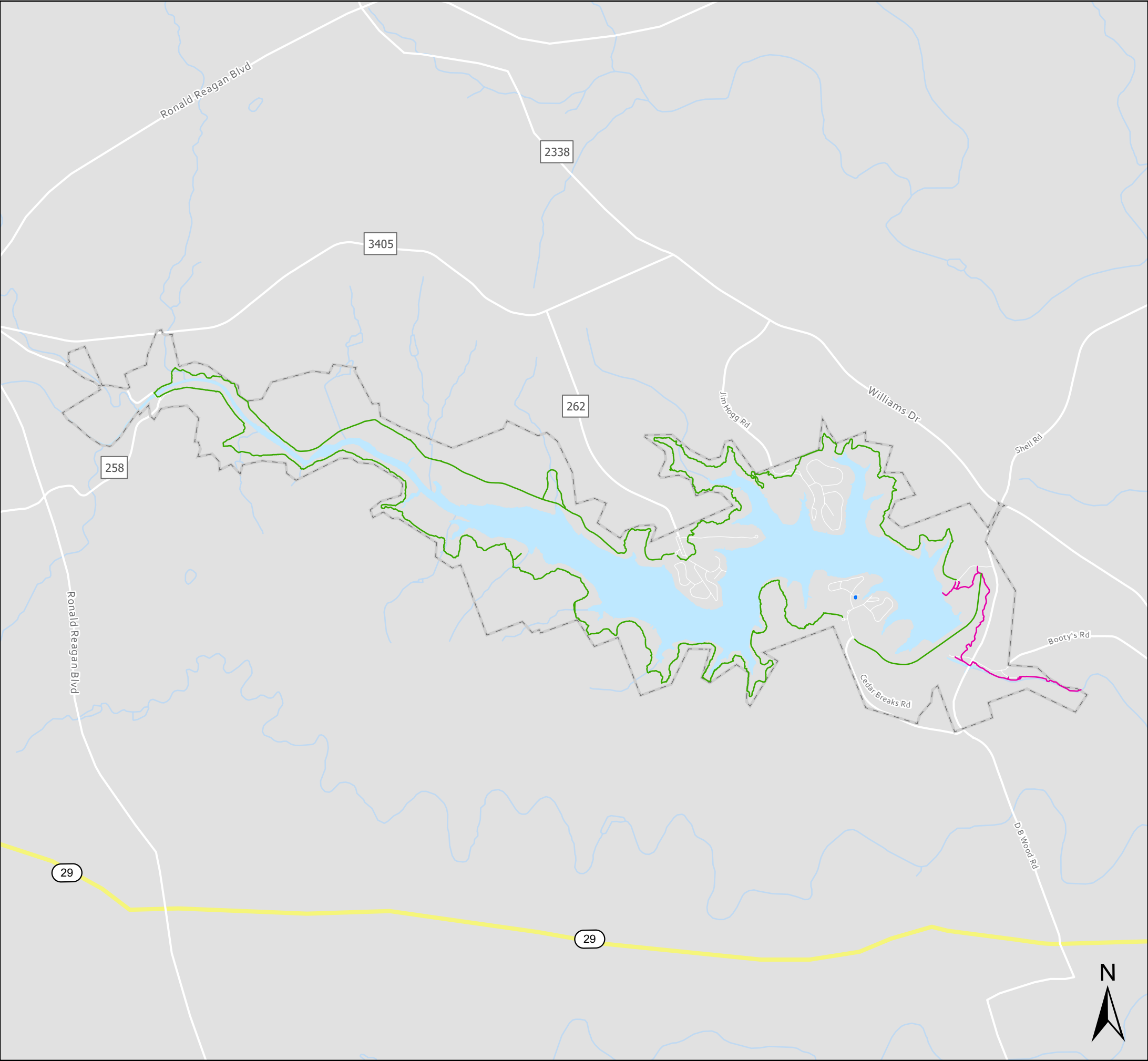
1

0

2

Miles

DATE:	MAP NO:
JULY 2019	LG19MP-OR-0A




LEGEND

- FEE PROPERTY
- WATER SURFACE AREA
- TRIBUTARY

TRAILWAYS

- GOOD WATER LOOP
- SAN GABRIEL RIVER TRAIL
- INTERPRETIVE TRAIL



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

TRAILS MAP

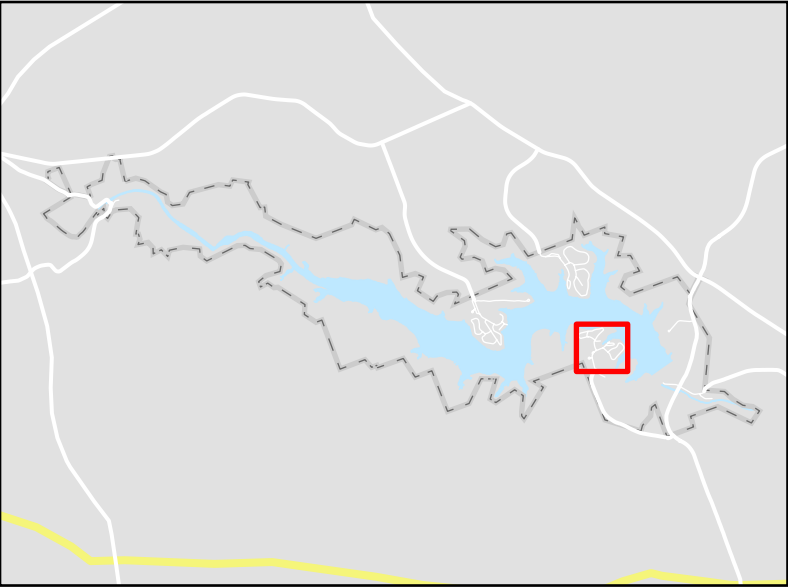
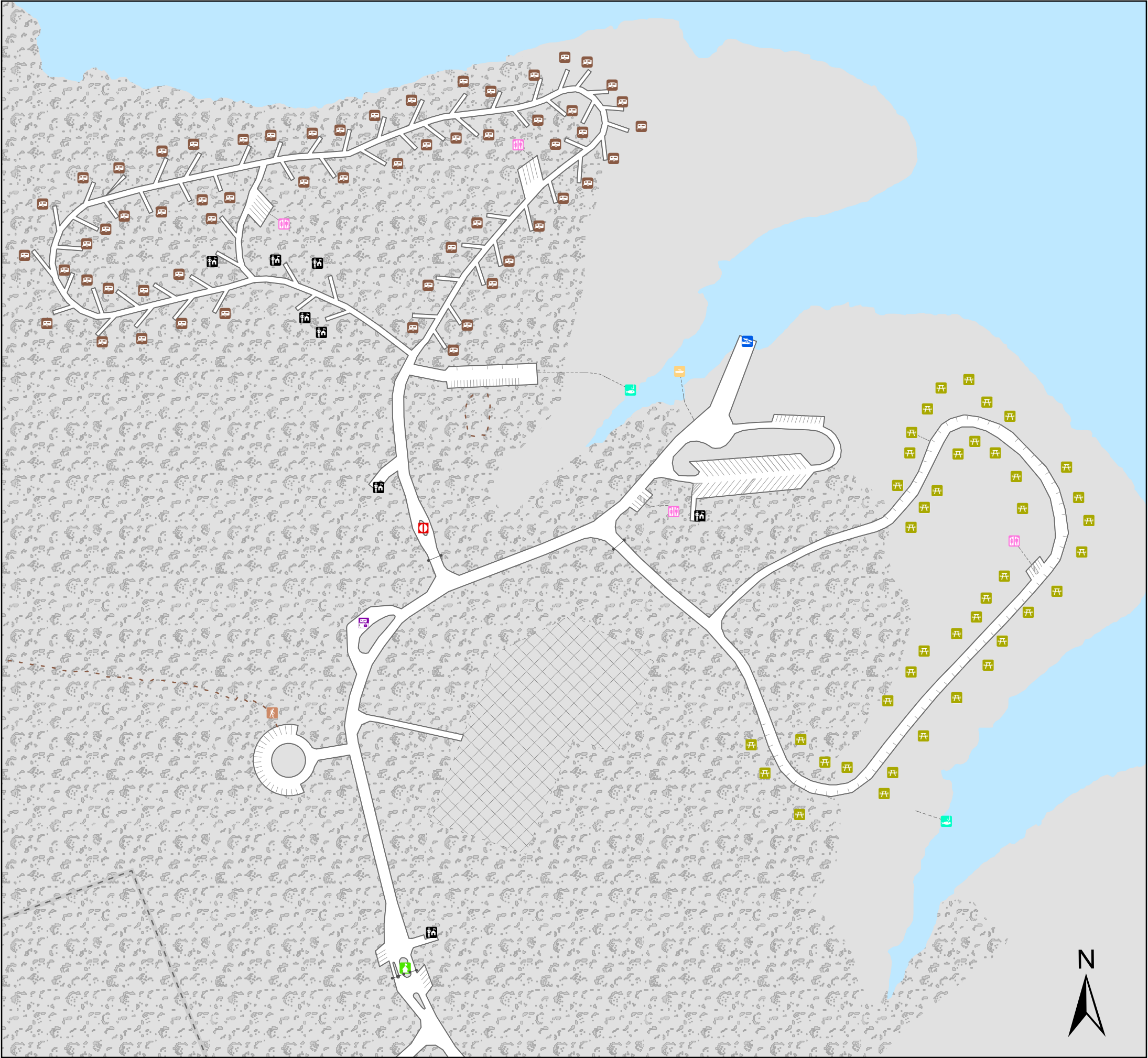
1

0

2


Miles

DATE:	MAP NO.
JULY 2019	LG19MP-OR-0B



LEGEND

- | | |
|--------------------|------------------|
| FEE PROPERTY | TRAILHEAD |
| WATER SURFACE AREA | RESTROOM |
| PAVED ROAD | GATEHOUSE |
| SIDEWALK | FISHING DOCK |
| CAMPSITE | COURTESY DOCK |
| PICNIC SITE | EVAPORATION POND |
| HOST SITE | TRAIL |
| AUTOMATIC GATE | FENCE |
| DUMPSTATION | GATE |
| BOATRAMP | WOODED AREA |



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

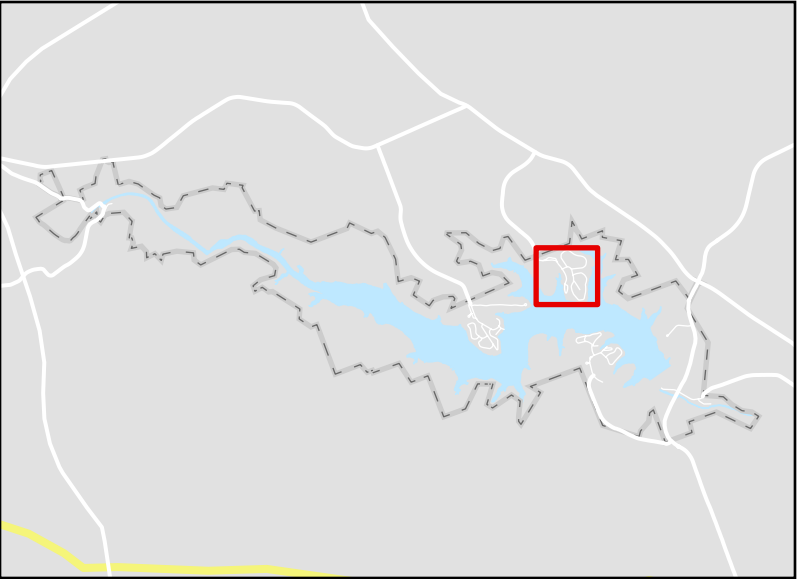
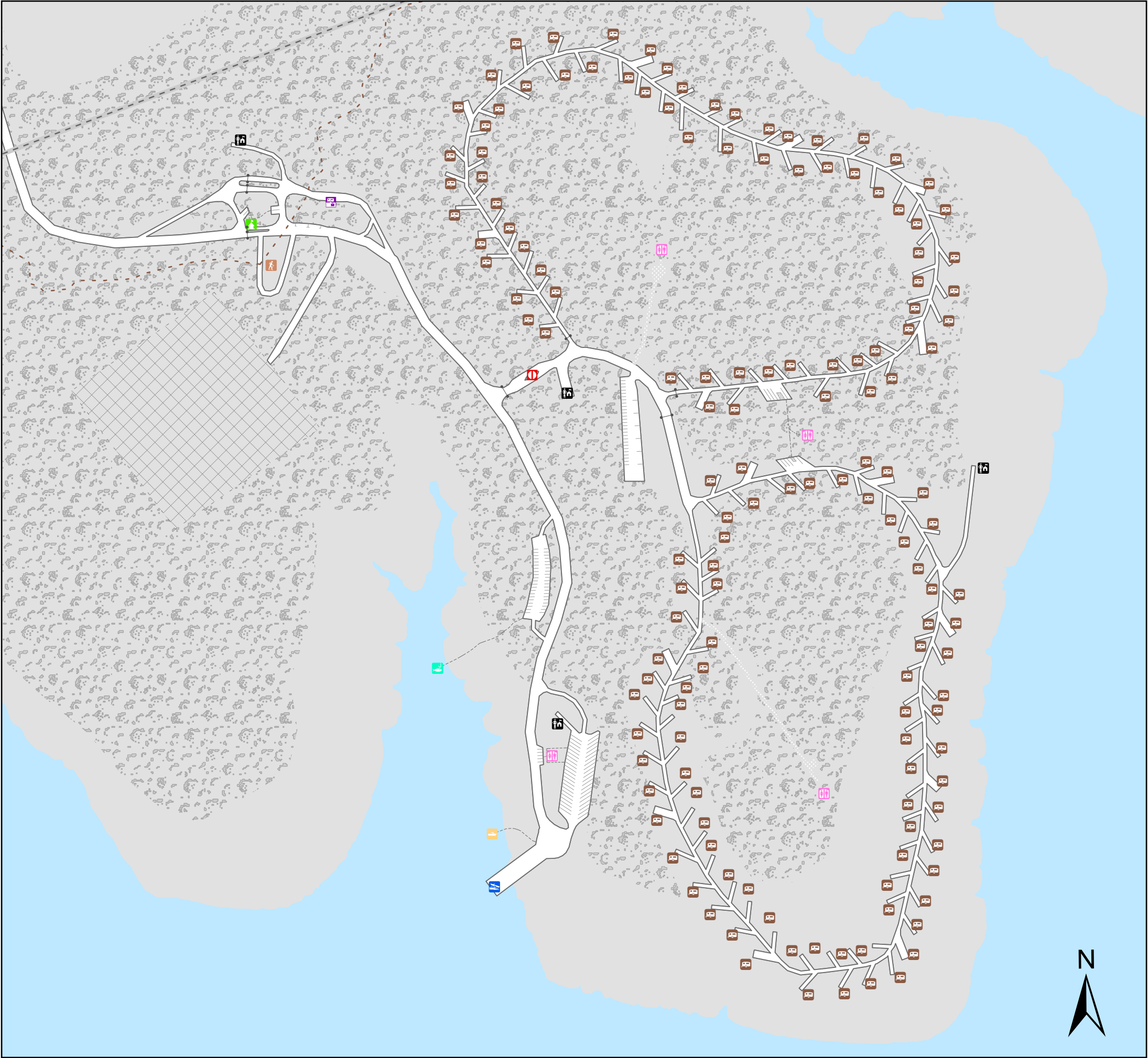
LAKE GEORGETOWN MASTER PLAN

CEDAR BREAKS PARK PLATE

250 0 500


Feet

DATE	MPNO
JULY 2019	LG19MP-OR-01



LEGEND

- | | |
|--------------------|------------------|
| FEE PROPERTY | TRAILHEAD |
| WATER SURFACE AREA | RESTROOM |
| PAVED ROAD | GATEHOUSE |
| UNPAVED ROAD | FISHING DOCK |
| SIDEWALK | COURTESY DOCK |
| CAMPSITE | EVAPORATION POND |
| HOST SITE | TRAIL |
| AUTOMATIC GATE | GATE |
| DUMPSTATION | WOODED AREA |
| BOATRAMP | |



US Army Corps
of Engineers
Fort Worth District

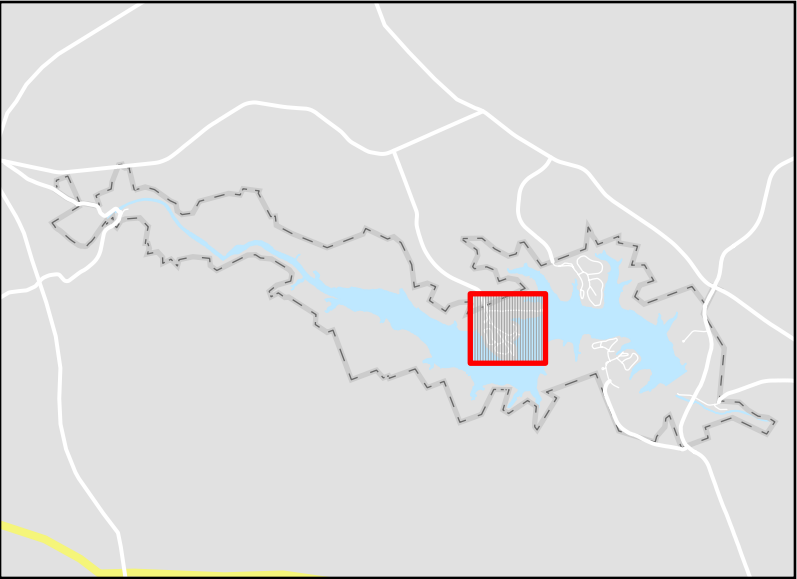
LAKE GEORGETOWNGEORGETOWN, TEXAS

LAKE GEORGETOWN
LAKE GEORGETOWN MASTER PLAN
JIM HOGG PARK PLATE

2500500

Feet

DATE: <p style="text-align: center;">JULY 2019</p>	MPNO: <p style="text-align: center;">LG19MP-OR-02</p>
---	--



LEGEND

- | | | | |
|--|--------------------|--|------------------|
| | FEE PROPERTY | | TRAILHEAD |
| | WATER SURFACE AREA | | RESTROOM |
| | PAVED ROAD | | GATEHOUSE |
| | UNPAVED ROAD | | COURTESY DOCK |
| | SIDEWALK | | BEACH LINE |
| | CAMPSITE | | EVAPORATION POND |
| | PICNIC SITE | | TRAIL |
| | GROUP SITE | | GATE |
| | HOST SITE | | WOODED AREA |
| | BOATRAMP | | |

US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

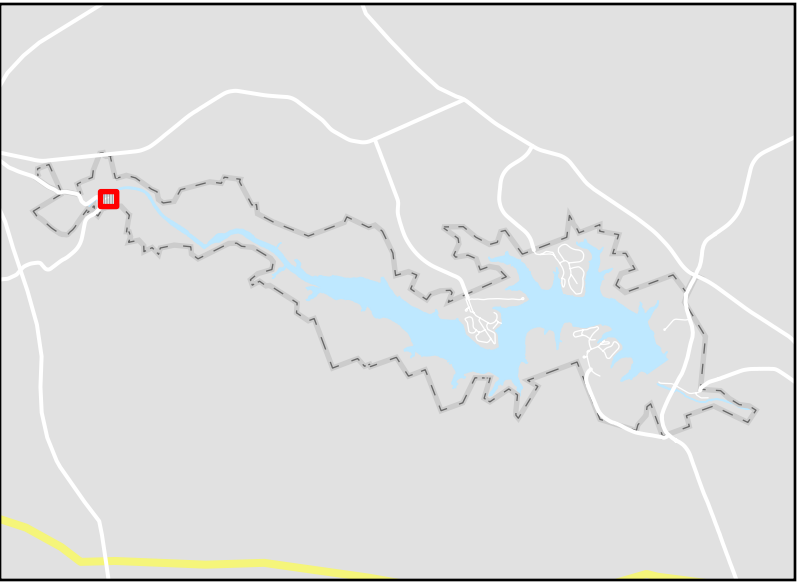
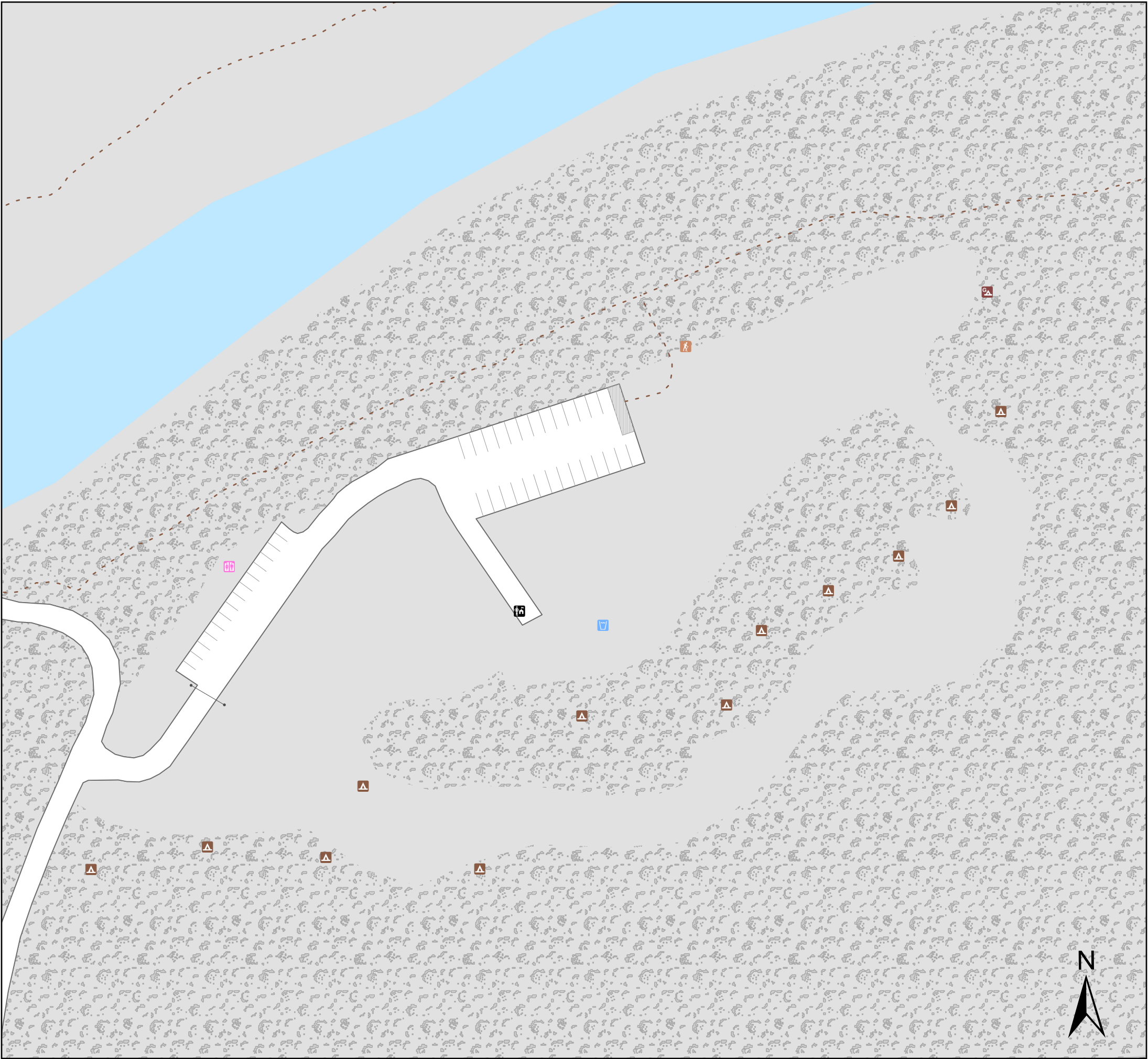
LAKE GEORGETOWN MASTER PLAN

RUSSELLPARK PLATE

250 0 500


Feet

DATE	MPNO
JULY 2019	LG19MP-OR-03



LEGEND

- FEE PROPERTY
- WATER SURFACE AREA
- PAVED ROAD
- CAMPSITE
- GROUP SITE
- HOST SITE
- TRAILHEAD
- RESTROOM
- WATER FOUNTAIN
- TRAIL
- GATE
- WOODED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWNGEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

TEJAS CAMP PLATE

500100

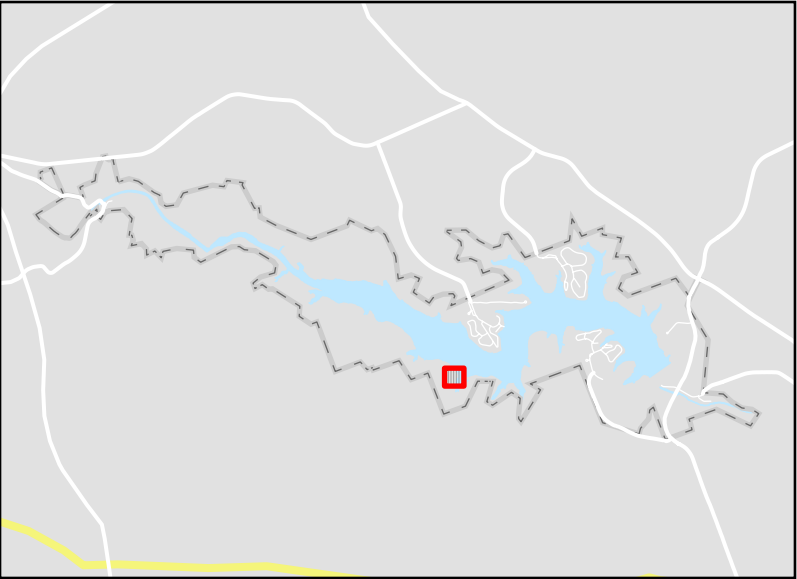
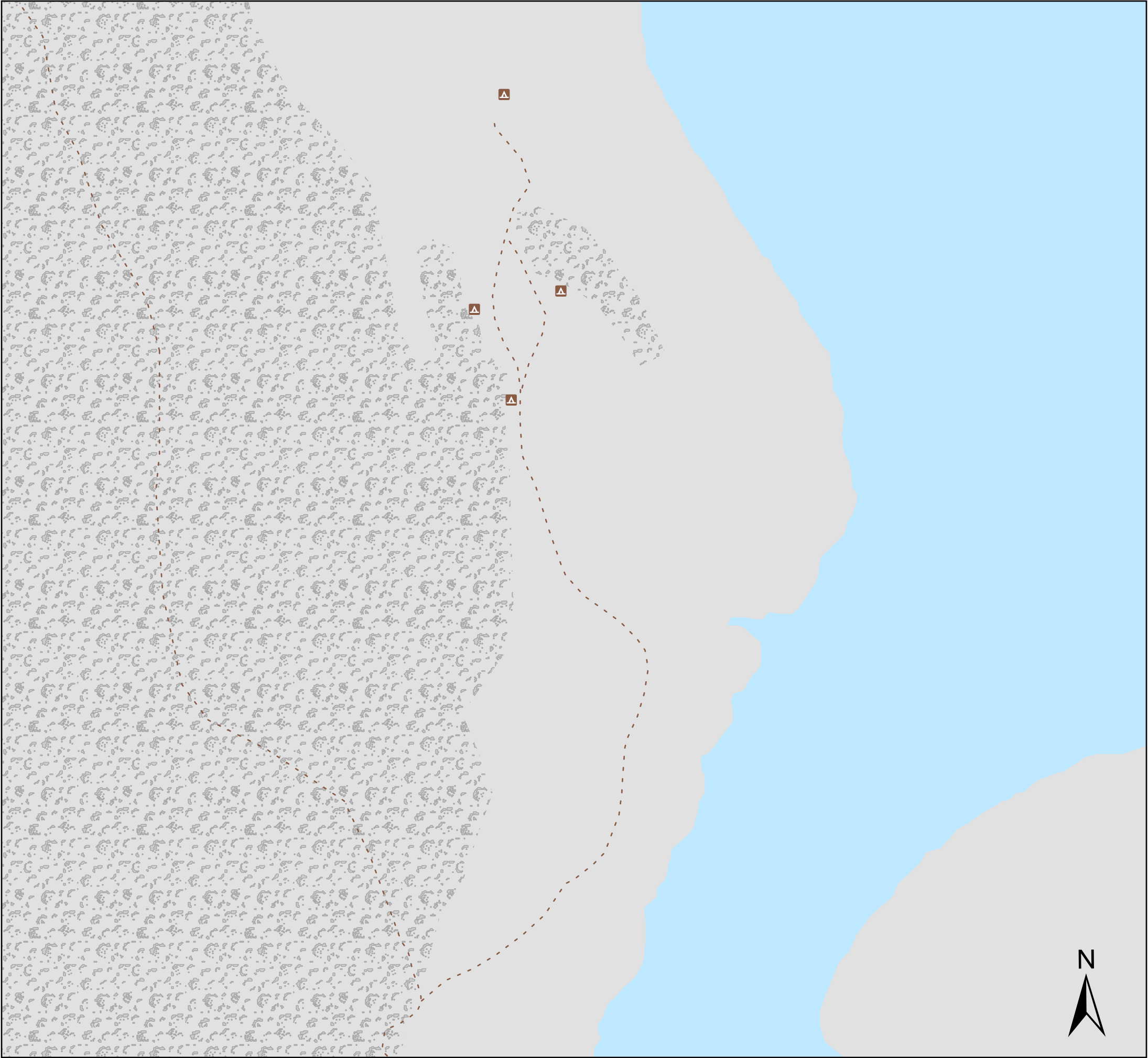
Feet

DATE

JULY 2019


MPNO

LG19MP-OR-04



LEGEND

- TRAIL
- WATER SURFACE AREA
- CAMPSITE
- WOODED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

CEDAR HOLLOW CAMP PLATE

500100

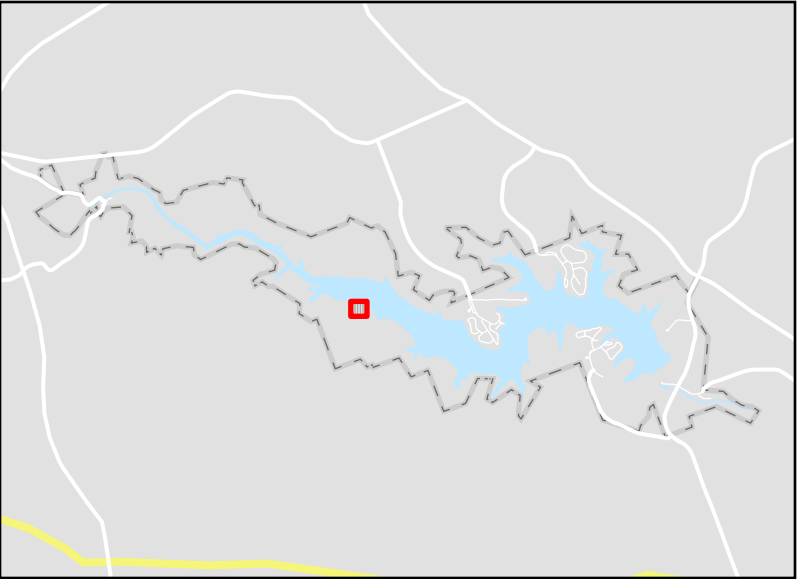
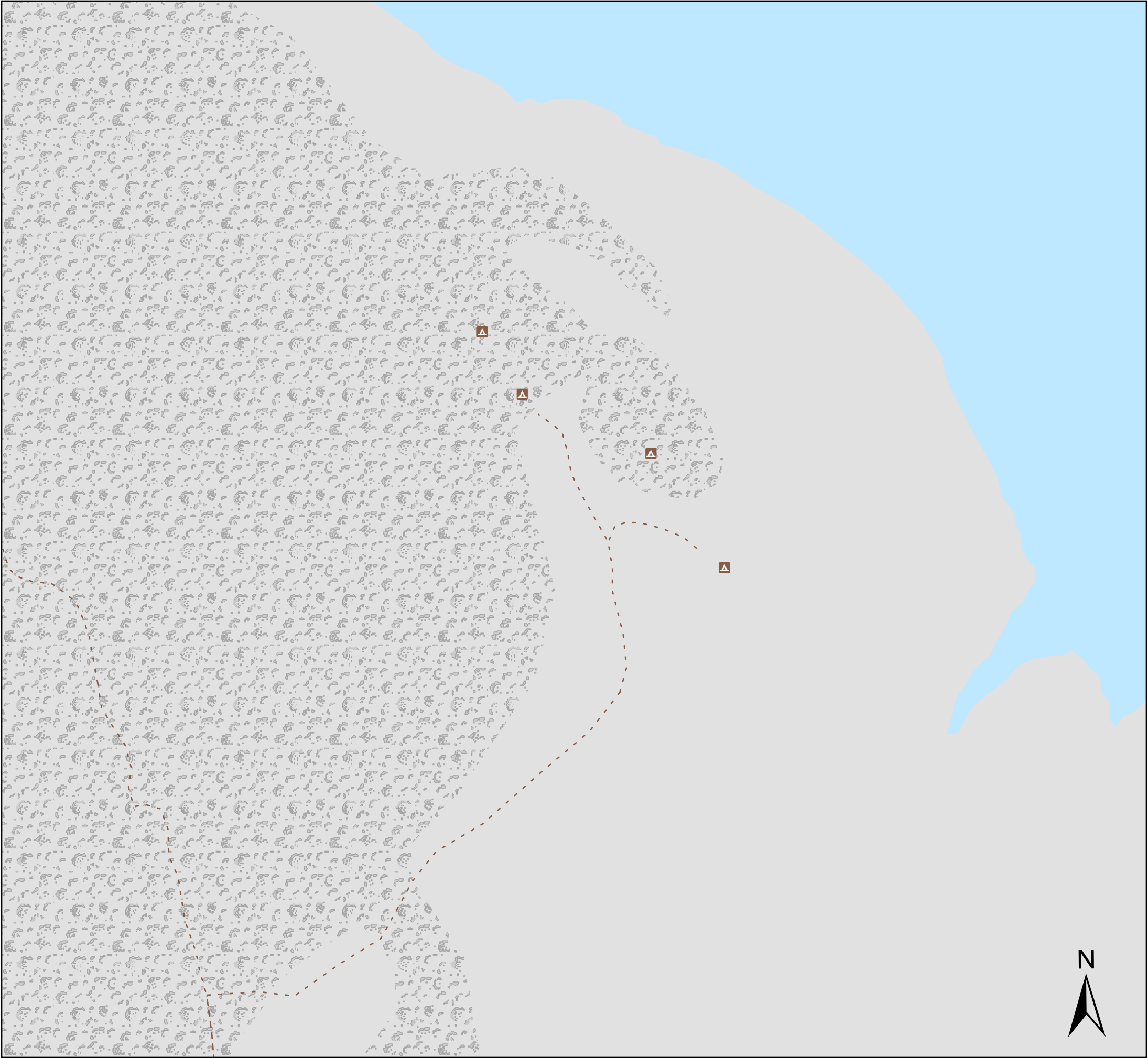
Feet

DATE

JULY 2019


MPNO

LG19MP-OR-05



LEGEND

- TRAIL
- WATER SURFACE AREA
- CAMPSITE
- WOODED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWNGEORGETOWN, TEXAS

LAKE GEORGETOWN

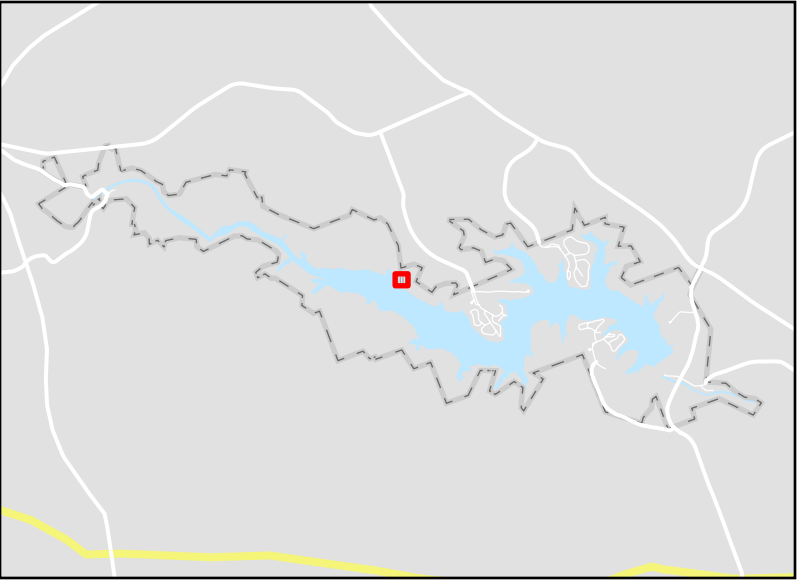
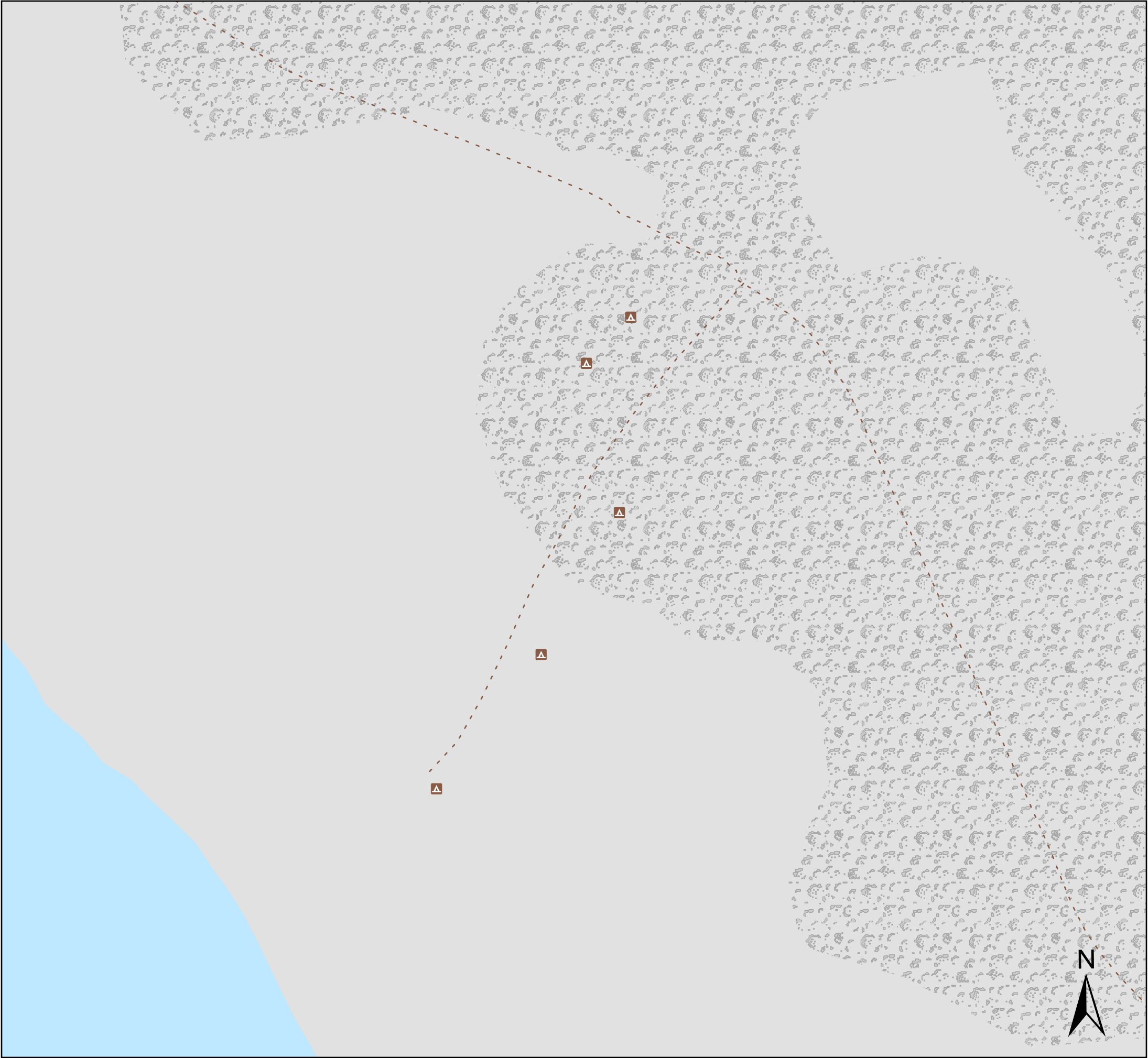
LAKE GEORGETOWN MASTER PLAN

SAWYER CAMP PLATE

500100


Feet

DATE	MPNO
JULY 2019	LG19MP-OR-06



LEGEND

-  TRAIL
-  WATER SURFACE AREA
-  CAMPSITE
-  WOODED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

WALNUT SPRINGS CAMP PLATE

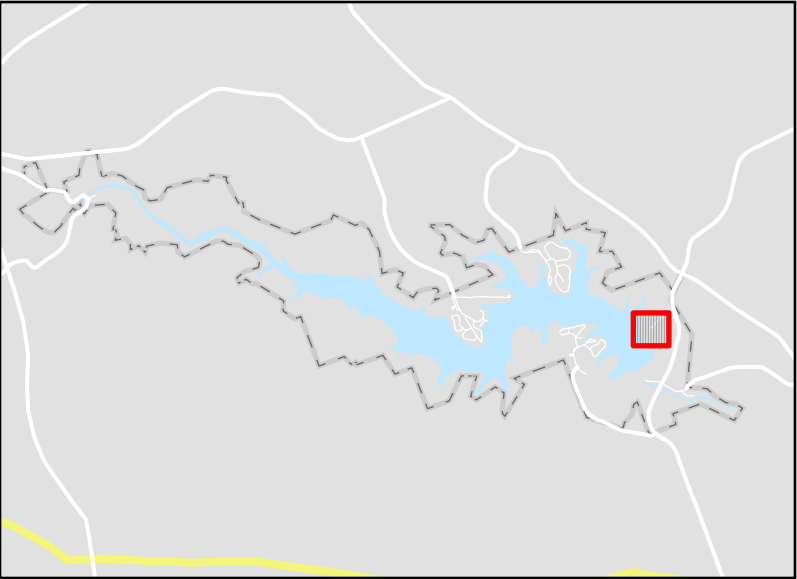
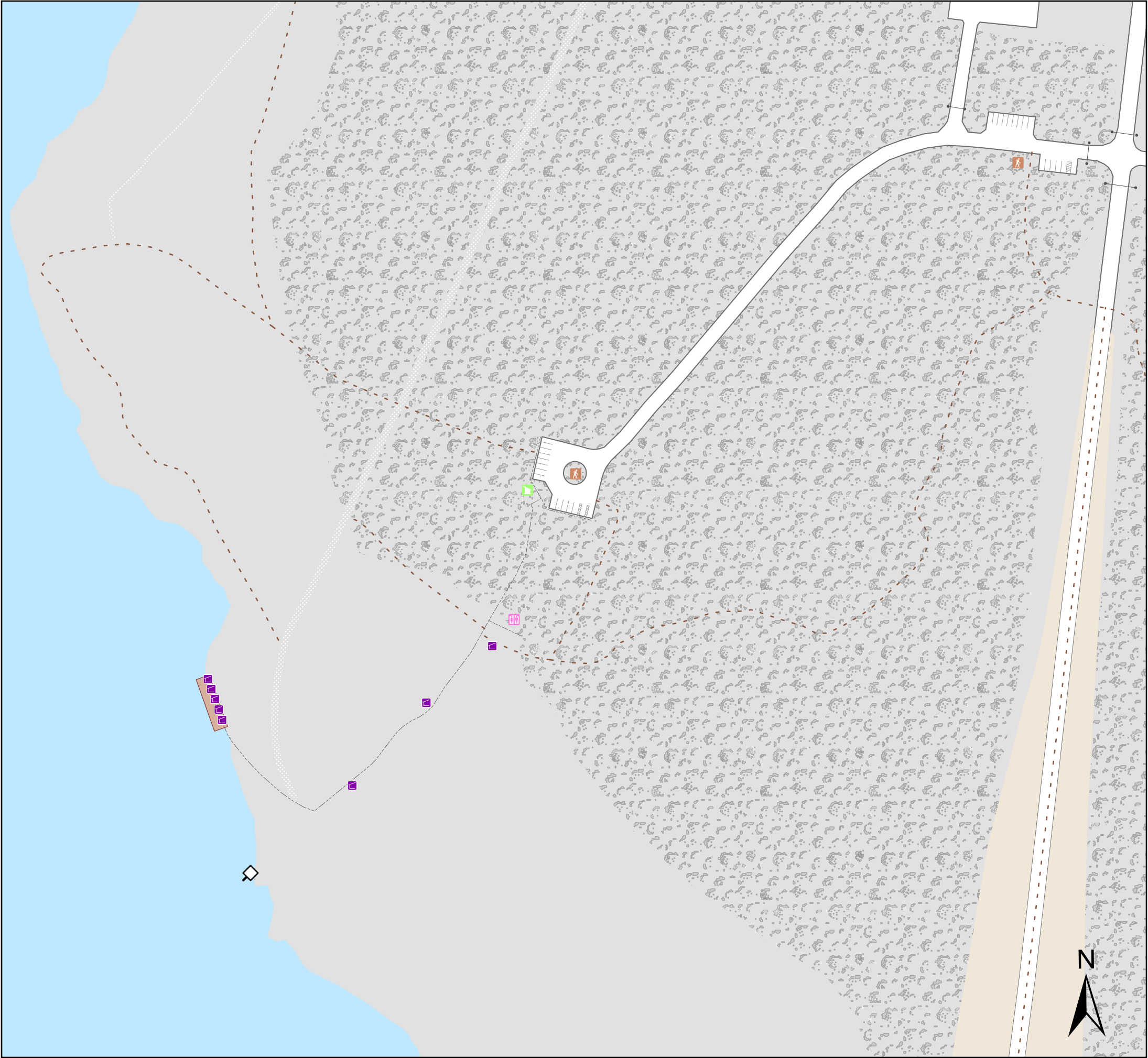
50

0

100

Feet

DATE	MPNO
JULY 2019	LG19MP-OR-07



LEGEND

WATER SURFACE AREA

PAVED ROAD

SIDEWALK

FISHING PIER

KIOSK

RESTROOM

BENCH

TRAILHEAD

TRAIL

GATE

RAW WATER INTAKE

FLOOD CONTROL STRUCTURE

WOODED AREA

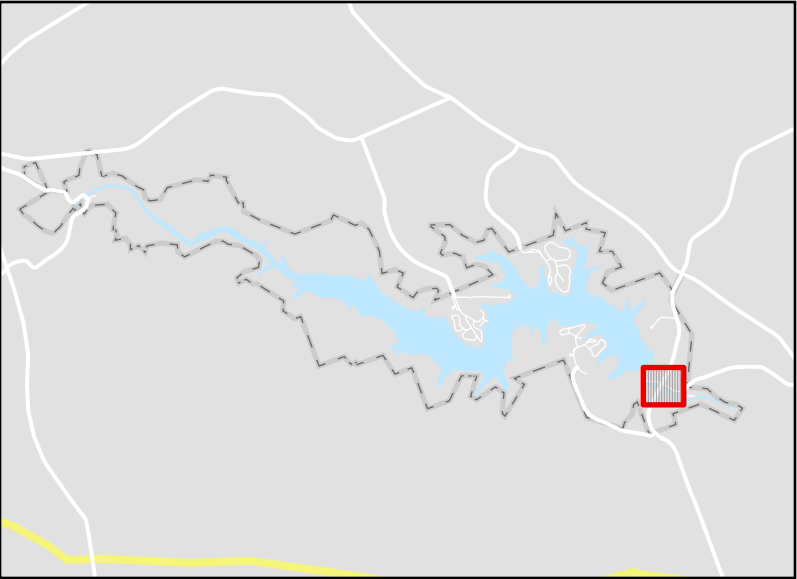
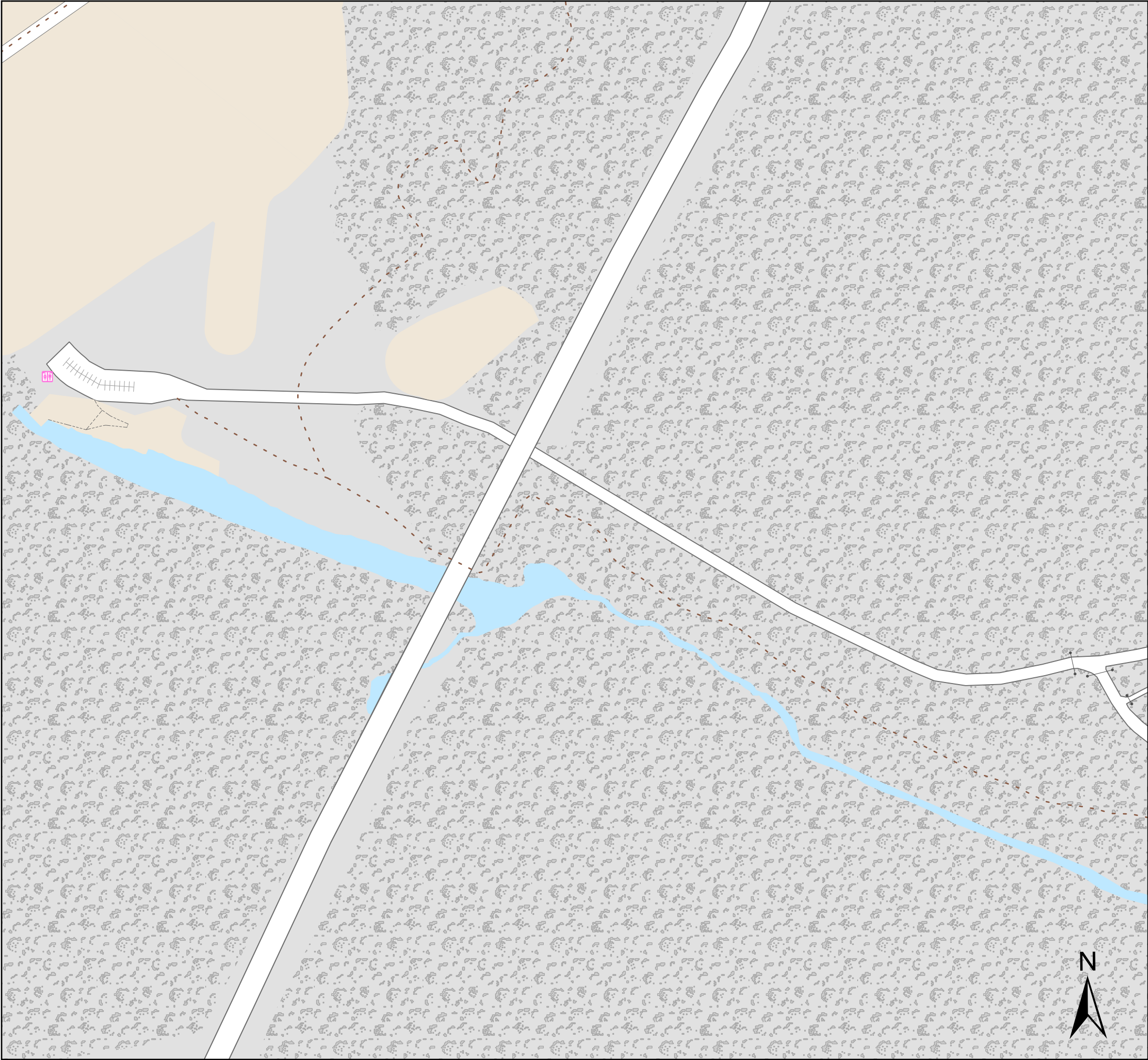
US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWNGEORGETOWN, TEXAS






LAKE GEORGETOWN
LAKE GEORGETOWN MASTER PLAN
OVERLOOK PLATE


1000200
Feet

DATE: JULY 2019MPNO: LG19MP-OR-08



LEGEND

-  WATER SURFACE AREA
-  PAVED ROAD
-  SIDEWALK
-  RESTROOM
-  TRAIL
-  GATE
-  FLOOD CONTROL STRUCTURE
-  WOODED AREA



US Army Corps
of Engineers
Fort Worth District

LAKE GEORGETOWN

GEORGETOWN, TEXAS

LAKE GEORGETOWN

LAKE GEORGETOWN MASTER PLAN

STILLING BASIN ACCESS POINT

10000200

Feet

DATE	MPNO
JULY 2019	LG19MP-OR-09

APPENDIX B - NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

Page intentionally left blank

Environmental Assessment for the Lake Georgetown 2020 Master Plan

Brazos River Basin
Williamson County, TX



April 2020



**US Army Corps
of Engineers** ®
Fort Worth District

This page intentionally left blank

**FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT FOR THE
LAKE GEORGETOWN MASTER PLAN REVISION
WILLIAMSON COUNTY, TEXAS**

The U.S. Army Corps of Engineers, Fort Worth District (Corps) and the Regional Planning and Environmental Center (RPEC) have conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969 as amended. The final Master Plan dated 30 July 2020, addresses the need for an updated comprehensive land management document for Lake Georgetown in Williamson County, Texas. The final recommendation is contained in Master Plan dated 30 July 2020.

The Final Environmental Assessment for the Master Plan, incorporated herein by reference, evaluated various alternatives that would revise the 1973 Lake Georgetown Master Plan to meet current policy.

- The revision of the *Lake Georgetown Master Plan* (hereafter Plan or Master Plan) is a framework built collaboratively to serve as a guide toward appropriate stewardship of U.S. Army Corps of Engineers (USACE) administered resources at Lake Georgetown over the next 25 years.

In addition to a “no action” plan, one alternative that fully met the project purpose was evaluated (recommended plan). Section 2.0 of the Lake Georgetown EA discusses alternative formulation and selection. The recommended plan includes coordination with the public, updates to comply with the USACE regulations and guidance, and reflects changes in land management and land uses that have occurred since 1973. Land classifications were refined to meet authorized project purposes and current resource objectives that address a mix of natural resources and recreation management objectives that are compatible with regional goals, recognize outdoor recreation trends, and are responsive to public comments. Table 1 lists the land classification updates in Master Plan.

Table 1: Land Classification Updates

Land Classification	Proposed Action Description	Justification
Project Operations (PO)	A total of 86 acres of fee lands were reclassified from the prior classification of Operations: Recreation Low Density to PO,	The Project Operations land classification was expanded to take in the spillway, staging area, and operations by other entities for the supply mission. The conversion of these lands will

	bringing the total of PO acres from 148 to 234.	have no effect on current of projected public use.
High Density Recreation (HDR)	Lands under the prior classification of Operations: Recreation Intensive Use were converted to the new and similar classification of High Density Recreation but were reduced from 675 to 566 acres.	Changes to the HDR land classification were the result of a slight increase for the City of Georgetown Booty Road Park, Overlook Park, and Tejas Park. Decreases in HDR were the result of reclassifying to MRML-WM along an existing creek, an area west of Jim Hogg Park, and Russell Park, and changing Cedar Hollow separable lands to LDR. These changes were done to reflect current and projected uses. The conversion of these lands will have no effect on current or projected public use.
Environmentally Sensitive Areas (ESAs)	The classification of ESAs was added to lands at this lake, with the classification of 376 acres. Acres were converted from LDR and MML-WM.	These classification changes were necessary to recognize those areas at Georgetown Lake having the highest ecological value, including areas of high value for protection of important habitat for the endangered GCWA as designated by the USFWS, and to protect unique views and cultural and archeological sites. The conversion of lands will have little to no effect on current or projected public use. Lands classified as ESA are given the highest order of protection among possible land classifications.
Multiple Resource Management Lands – Low Density Recreation (MRML - LDR)	The reclassification of 1,508 acres to MRML-LDR resulted from converting some lands under the previous classification of Operations: Recreation Low Density to HDR, ESA, and PO, and classifying the Walnut Springs Point separable lands as MRML-LDR, reducing the acres to 483.	The land in the former classification of Operations: Recreation Low Density were converted to other land uses due to the areas having historic land use patterns supporting the change. The conversion of these lands will have no effect on current or projected public use.
Multiple Resource Management Lands – Wildlife Management (MRML - WM)	Land classification changes resulted in an increase of MRML-WM acres from 1,272 acres to the proposed 2,514 acres as a result of several parcels of land under the prior classifications Operations: Recreation Intensive Use, and Operation: Recreation	The land in the former classification Operations: Recreation Intensive Use, Operations; Recreation Low Density Use; and PO were converted to MRML-WM to more appropriately align with historic land use patterns supporting the

	Low Density Use, and moving some lands into ESA.	change, as well as lands converted to ESA to protect important cultural and habitat areas. The conversion of these lands will have no effect on current or projected public use.
Water Surface	<p>The classification of 1,287 acres of water surface of the lake at the conservation pool elevation is as follows:</p> <ul style="list-style-type: none"> • 7 acres of Restricted water surface at Lake Georgetown include the water surface in front of Lake Georgetown Dam and designated swimming areas in the parks around Lake Georgetown. Buoys mark the line in front of the dam. Keep-out buoys and floating barrier pipes mark the designated swimming areas in each park. • 70 acres of Designated No-Wake areas are in place near the boat ramps at Belton Lake. • There are 1,210 acres of Open Recreation water surface at Lake Georgetown. 	<p>Previous Master Plans for Lake Georgetown did not specify different classifications on the water surface, though these classifications were recognized in practice. This Master Plan revision recognizes and specifies these uses. The classification of water surfaces will have no effect on current or projected public use.</p>

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 2:

Table 2: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Air quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aquatic resources/wetlands	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fish and wildlife habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Threatened/Endangered species/critical habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. While the recommended plan does not entail ground disturbance activities, all other activities occurring on Corps owned and operated lands would be subject to all necessary environmental evaluations and compliance regulations.

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft Master Plan, Environmental Assessment, and FONSI was completed on 11 April 2020. All comments submitted during the public review period were responded to in the final Master Plan and Environmental Assessment.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

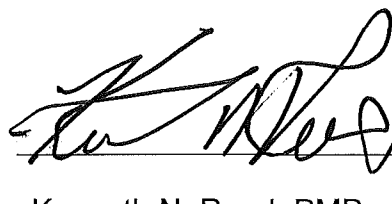
Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no effect on historic properties.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State, and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse impacts on the quality of the human environment, therefore, preparation of an Environmental Impact Statement is not required.

03 AUG 2020

Date

A handwritten signature in black ink, appearing to read 'Ken Reed', written over a horizontal line.

Kenneth N. Reed, PMP
Colonel, U.S. Army
District Commander

This page intentionally left blank

ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the Master Plan of Lake Georgetown. This EA will facilitate the decision process regarding the Proposed Action and alternatives.

- 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* *CUMULATIVE IMPACTS* describes the impact on the environment that may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions.
- SECTION 5* *COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements.
- SECTION 6* *IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES* identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented.
- SECTION 7* *PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
- SECTION 8* *REFERENCES* provides bibliographical information for cited sources.
- SECTION 9* *ACRONYMS/ABBREVIATIONS*

SECTION 10 *LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.

APPENDICES *A* NEPA Coordination and Scoping

TABLE OF CONTENTS

SECTION 1: INTRODUCTION	6
1.1 PROJECT LOCATION AND SETTING	6
1.2 PURPOSE OF AND NEED FOR THE ACTION	6
1.3 SCOPE OF THE ACTION	7
SECTION 2: PROPOSED ACTION AND ALTERNATIVES	10
2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE	11
2.2 ALTERNATIVE 2: PROPOSED ACTION	12
2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION	16
SECTION 3: AFFECTED ENVIRONMENT AND CONSEQUENCES	16
3.1 LAND USE	17
3.1.1 Alternative 1: No Action Alternative	17
3.1.2 Alternative 2: Proposed Action	17
3.2 WATER RESOURCES	18
3.2.1 Alternative 1: No Action Alternative	21
3.2.2 Alternative 2: Proposed Action	22
3.3 CLIMATE	22
3.3.1 Alternative 1: No Action Alternative	22
3.3.2 Alternative 2: Proposed Action	22
3.4 CLIMATE CHANGE AND GHG	23
3.4.1 Alternative 1: No Action Alternative	23
3.4.2 Alternative 2: Proposed Action	24
3.5 AIR QUALITY	24
3.5.1 Alternative 1: No Action Alternative	24
3.5.2 Alternative 2: Proposed Action	24
3.6 TOPOGRAPHY, GEOLOGY, AND SOILS	24
3.6.1 Alternative 1: No Action Alternative	27
3.6.2 Alternative 2: Proposed Action	27
3.7 NATURAL RESOURCES	27
3.7.2 Alternative 2: Proposed Action	29
3.8 THREATENED AND ENDANGERED SPECIES	29
3.8.1 Texas Natural Diversity Database	32
3.8.2 Alternative 1: No Action Alternative	32
3.8.3 Alternative 2: Proposed Action	32
3.9 INVASIVE SPECIES	33
3.9.1 Alternative 1: No Action Alternative	33
3.9.2 Alternative 2: Proposed Action	34
3.10 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES	34
3.10.1 Alternative 1: No Action Alternative	35
3.10.2 Alternative 2: Proposed Action	35
3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE	35

3.11.1	Alternative 1: No Action Alternative	36
3.11.2	Alternative 2: Proposed Action	37
3.12	RECREATION	37
3.12.1	Alternative 1: No Action Alternative	37
3.12.2	Alternative 2: Proposed Action	37
3.13	AESTHETIC RESOURCES	38
3.13.1	Alternative 1: No Action Alternative	38
3.13.2	Alternative 2: Proposed Action	38
3.14	HAZARDOUS MATERIALS AND SOLID WASTE	38
3.14.1	Alternative 1: No Action Alternative	38
3.14.2	Alternative 2: Proposed Action	39
3.15	HEALTH AND SAFETY	39
3.15.1	Alternative 1: No Action Alternative	39
3.15.2	Alternative 2: Proposed Action	39
3.16	SUMMARY OF CONSEQUENCES AND BENEFITS	39
SECTION 4: CUMULATIVE IMPACTS.....		44
4.1	PAST IMPACTS WITHIN THE ZONE OF INTEREST	44
4.2	CURRENT AND REASONABLY FORESEEABLE PROJECTS WITHIN AND NEAR THE ZONE OF INTEREST	44
4.3	ANALYSIS OF CUMULATIVE IMPACTS	45
4.3.1	Land Use	46
4.3.2	Water Resources.....	46
4.3.3	Climate	46
4.3.4	Climate Change and GHG.....	46
4.3.5	Air Quality	46
4.3.6	Topography, Geology, and Soils	47
4.3.7	Natural Resources.....	47
4.3.8	Threatened and Endangered Species	47
4.3.9	Invasive Species	48
4.3.10	Cultural, Historical, and Archaeological Resources.....	48
4.3.11	Socioeconomics and Environmental Justice	48
4.3.12	Recreation	48
4.3.13	Aesthetic Resources.....	49
4.3.14	Hazardous Materials and Solid Waste	49
4.3.15	Health and Safety.....	49
SECTION 5: COMPLIANCE WITH ENVIRONMENTAL LAWS		51
SECTION 6: IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES		54
SECTION 7: PUBLIC AND AGENCY COORDINATION		56
SECTION 8: REFERENCES.....		58
SECTION 9: ACRONYMS/ABBREVIATIONS.....		60
SECTION 10: LIST OF PREPARERS		62

This page intentionally left blank

LIST OF FIGURES

	Page
Figure 3.2.1 Recent Water Level Data for Lake Georgetown	22
Figure 3.2.2 Map of Wetlands within USACE Lake Georgetown Federal Fee-Owned Property.....	24
Figure 3.6 Map of Soils within USACE Lake Georgetown Federal Fee-Owned Property.....	30

LIST OF TABLES

	Page
Table 2.2.1...Proposed Lake Georgetown Land Classifications.....	13
Table 2.2.2...Proposed Lake Georgetown Water Surface Classifications.....	13
Table 2.2.3...Justification for the Proposed Reclassification.....	13
Table 3.2.2...Wetland Resources.....	23
Table 3.8.1.....Federally Listed Endangered and Threatened Species with Potential to Occur at Lake Georgetown.....	36
Table 3.9.1.....Invasive Species Found at Lake Georgetown.....	39
Table 3.16....Summary of Consequences and Benefits.....	45

This page intentionally left blank

ENVIRONMENTAL ASSESSMENT

Lake Georgetown Master Plan Revision

WILLIAMSON COUNTY, TEXAS

SECTION 1: INTRODUCTION

The United States Army Corps of Engineers (USACE) is proposing to adopt and implement the 2020 Lake Georgetown Master Plan as a revision of the 1973 Master Plan. The 2020 Master 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 Lake Georgetown project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources, as well as the provision of outdoor recreation facilities and opportunities on federal land associated with Lake Georgetown for the benefit of present and future generations.

Adoption and implementation of the 2020 Master Plan (Proposed Action) would create potential impacts on the natural and human environments, and as such, this Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, (Public Law 91-190), and 33 Code of Federal Regulations (CFR) Part 230.

1.1 PROJECT LOCATION AND SETTING

Lake Georgetown is located in central Texas approximately 3.5 miles west of the city of Georgetown, and located at mile 4.3 on the North Fork of the San Gabriel River. The lake area extends throughout portions of Williamson County. The lake is formed by the Georgetown Dam, which was constructed and designated in 1980 for the purpose of flood risk management, water supply, recreation, and fish and wildlife. An additional benefit accruing from Lake Georgetown is the utilization of water impounded therein to provide municipal and industrial water supplies to the Brazos River Authority. The Northeast Texas Municipal Water District (NETMWD) is the state agency created by the Texas legislature to administer the water supply features of the project.

Table 1.2 in the 2020 Master Plan outlines information regarding existing reservoir storage capacity at Lake Georgetown. Detailed descriptions are incorporated herein by reference (USACE, 2020).

1.2 PURPOSE OF AND NEED FOR THE ACTION

The purpose of the Proposed Action is to ensure that the conservation and sustainability of the land, water, and recreational resources on Lake Georgetown are in

1 compliance with applicable environmental laws and regulations and to maintain quality
2 lands for future public use. The 2020 Master Plan is intended to serve as a
3 comprehensive land and recreation management plan with an effective life of
4 approximately 25 years.

5
6 The need for the Proposed Action is to bring the 1973 Master Plan up to date
7 and to reflect ecological, socio-political, and socio-demographic changes that are
8 currently impacting Lake Georgetown, as well as those changes anticipated to occur
9 through 2045. In particular, changes in outdoor recreation trends, regional land use,
10 population, current legislative requirements, and USACE management policy, have all
11 indicated the need to revise the plan. Additionally, increasing fragmentation of wildlife
12 habitat, national policies related to climate change, growing demand for recreational
13 access, and protection of natural resources are all factors affecting Lake Georgetown.
14 In response to these continually evolving trends, the USACE determined that a full
15 revision of the 1973 plan would be required.

16
17 The following factors may influence reevaluation of management practices and
18 land uses:

- 19
- 20 • Changes in national policies or public law mandates
- 21 • Operations and maintenance budget allocations
- 22 • Recreation area closures
- 23 • Facility and infrastructure improvements
- 24 • Cooperative agreements with stakeholder agencies (such as Texas Parks
25 and Wildlife Department [TPWD] and the U.S. Fish and Wildlife Service
26 [USFWS]) to operate and maintain public lands
- 27 • Outdoor recreation trends identified in the Texas Outdoor Recreation Plan
28 (TORP)
- 29 • Ecoregion priorities identified in the Texas Conservation Action Plan
30 (TCAP)
- 31 • Evolving public concerns
- 32

33 As part of the master planning process, the project delivery team evaluated
34 public comments and current land uses, determined any necessary changes to land
35 classifications, and formulated proposed alternatives. As a result of public coordination
36 and a public information meeting, alternatives were developed, and this EA was
37 initiated.

38 **1.3 SCOPE OF THE ACTION**

39 This EA was prepared to evaluate existing conditions and potential impacts of
40 proposed alternatives associated with the implementation of the 2020 Master Plan. The
41 alternative considerations were formulated with special attention given to revised land
42 classifications, new resource management objectives, and a conceptual resource plan
43 for each land classification category. This EA was prepared pursuant to NEPA, Council
44 on Environmental Quality (CEQ) regulations (40 CFR 1500–1517), and the USACE

- 1 implementing regulations, Policy and Procedures for Implementing NEPA, ER 200-2-2
- 2 (USACE, 1988).

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

This page intentionally left blank

SECTION 2: PROPOSED ACTION AND ALTERNATIVES

The project need is to revise the 1973 Master Plan so that it is compliant with current USACE regulations and guidance, incorporates public needs, and recognizes surrounding land use and recreational trends. As part of this process, which includes public outreach and comment, two alternatives were developed for evaluation including a No Action Alternative. The alternatives were developed using land classifications that indicate the primary use for which project lands would be managed. USACE regulations specify five possible categories of land classification: Project Operations (PO), High Density Recreation (HDR), Mitigation, Environmentally Sensitive Areas (ESA), and Multiple Resource Managed Lands (MRML). The MRML classification is divided into four subcategories: Low Density Recreation (MRML-LDR), Wildlife Management (MRML-WM), Vegetative Management (MRML-VM), and Future/Inactive Recreation (MRML-IFR) Areas.

The USACE guidance recommends the establishment of resource goals and objectives for purposes of development, conservation, and management of natural, cultural, and man-made resources at a project. Goals describe the desired end state of overall management efforts, whereas resource objectives are specific task-oriented actions necessary to achieve the overall 2020 Master Plan goals. Goals and objectives are guidelines for obtaining maximum public benefits while minimizing adverse impacts on the environment and are developed in accordance with 1) authorized project purposes, 2) applicable laws and regulations, 3) resource capabilities and suitabilities, 4) regional needs, 5) other governmental plans and programs, and 6) expressed public desires. The five project-wide management goals established for Lake Georgetown that were used in determining the Proposed Action, as well as the nationwide USACE Environmental Operating Principles, are discussed in detail “Chapter 3: Resource Goals and Objectives of the 2020 Master Plan”, and are incorporated herein by reference (USACE, 2020).

The goals for Lake Georgetown Master Plan include the following:

- Goal A: Provide the best management practices (BMPs) to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.
- Goal B: Protect and manage project natural and cultural resources through sustainable environmental stewardship programs.
- Goal C: Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining project natural resources.
- Goal D: Recognize the unique qualities, characteristics, and potentials of the project.
- Goal E: Provide consistency and compatibility with natural objectives and other state and regional goals and programs.

1 In addition to the above goals, USACE management activities are also guided
2 by USACE-wide Environmental Operating Principles as follows:
3

- 4 • Strive to achieve environmental sustainability. An environment maintained
5 in a healthy, diverse and sustainable condition is necessary to support life.
- 6 • Recognize the interdependence of life and the physical environment.
7 Proactively consider environmental consequences of USACE programs
8 and act accordingly in all appropriate circumstances.
- 9 • Seek balance and synergy among human development activities and
10 natural systems by designing economic and environmental solutions that
11 support and reinforce one another.
- 12 • Continue to accept corporate responsibility and accountability under the
13 law for activities and decisions under our control that impact human health
14 and welfare and the continued viability of natural systems.
- 15 • Seek ways and means to assess and mitigate cumulative impacts on the
16 environment; bring systems approaches to the full life cycle of our
17 processes and work.
- 18 • Build and share an integrated scientific, economic, and social knowledge
19 base that supports a greater understanding of the environment and
20 impacts of our work.
- 21 • Respect the views of individuals and groups interested in USACE
22 activities; listen to them actively, and learn from their perspective in the
23 search to find innovative win-win solutions to the nation's problems that
24 also protect and enhance the environment.

25
26 Specific resource objectives to accomplish these goals can be found in Chapter
27 3.3 of the 2020 Master Plan.

28 **2.1 ALTERNATIVE 1: NO ACTION ALTERNATIVE**

29 The No Action Alternative serves as a basis for comparison to the anticipated
30 effects of the other action alternatives, and its inclusion in this EA is required by NEPA
31 and CEQ regulations (40 CFR § 1502.14(d)). Under the No Action Alternative, the
32 USACE would not approve the adoption or implementation of the 2020 Master Plan.
33 Instead the USACE would continue to manage Lake Georgetown's natural resources as
34 set forth in the 1973 Master Plan. The 1973 Master Plan would continue to provide the
35 only source of comprehensive management guidelines and philosophy. However, the
36 1973 Master Plan is out of date and does not reflect the current ecological, socio-
37 political, or socio-demographic conditions of Lake Georgetown. The No Action
38 Alternative, while it does not meet the purpose of, or need for, the Proposed Action,
39 serves as a benchmark of existing conditions against which federal actions can be
40 evaluated, and as such, the No Action Alternative is included in this EA, as prescribed
41 by CEQ regulations.

2.2 ALTERNATIVE 2: PROPOSED ACTION

Under the Proposed Action, the 2020 Master Plan would be reviewed, coordinated with the public, revised to comply with USACE regulations and guidance, and revised to reflect changes in the land management and land uses that have occurred over time or are desired in the near future. The keys to this alternative would be the revision of land classifications to USACE standards and the preparation of the resource objectives that would reflect current and projected needs and would be compatible with regional goals while sustaining Lake Georgetown's natural resources and providing recreational experiences for the next 25 years.

The proposed land classification categories are defined as follows:

- Project Operations (PO): Lands required for the dam, spillway, switchyard, levees, dikes, offices, maintenance facilities, and other areas used solely for the operation of Lake Georgetown.
- High Density Recreation (HDR): Lands developed for the intensive recreational activities for the visiting public including day use 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.
- 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.
 - MRML Low Density Recreation (MRML-LDR): Lands with minimal development or infrastructure that support passive recreational use (primitive camping, fishing, hunting, trails, wildlife viewing, etc.).
 - MRML Wildlife Management (MRML-WM): Lands designated for stewardship of fish and wildlife resources.
 - Future/Inactive Recreation (MRML-IFR): Lands that are set aside for future High Density Recreation development and use.
 - Vegetative Management (MRML-VM): Lands designated for stewardship of forest, prairie, and other native Vegetative cover.
- Water Surface: Allows for surface water zones.
 - Restricted: Water areas restricted for Lake Georgetown operations, safety, and security.
 - Designated No-Wake: Water areas to protect environmentally sensitive shoreline areas, 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.
 - Fish and Wildlife Sanctuary: Water areas that have either annual or seasonal restrictions to protect fish and wildlife within a designated area.

Table 2.2.1 shows the proposed classifications and acres contained in each classification, Table 2.2.2 shows the water surface classifications, and Table 2.2.3 provides the justification for the proposed reclassification.

Table 2.2.1 Proposed Lake Georgetown Land Classifications

1989 Land Classifications	Acres	Proposed New Land Classifications	Acres
Project Operations	148	PO	234
Operations: Recreation (Intensive Use)	675	HDR	566
		ESA	376
Operations Recreation (Low Density) Recreational Lands	1,616 375	MRML-LDR	483
Wildlife Management Hunt Hollow Wildlife Area	1,272	MRML-WM	2,514
Permanent pool	1,310	Permanent pool	1287
Total Fee	5,396	Total Fee	5,460
Flow Easment	514.62		514.62

* Land classification acreages were derived using geographic information system technology and do not reflect the official land acquisition records.

* Source: USACE 2020

Table 2.2.2 Proposed Lake Georgetown Water Surface Classifications

Classification	Acres
Water Surface: Restricted	7
Water Surface: Designated No-Wake	70
Water Surface: Open Recreation	1,210
Water Surface: Fish and Wildlife Sanctuary	None

Source: USACE 2020

Table 2.2.3 Justification for the Proposed Reclassification

Land Classification	Proposed Action Description	Justification
Project Operations (PO)	Project Operations (PO) Lands were increased from 148 acres to 234 acres from the prior classification. <ul style="list-style-type: none"> 86 acres from MRML-LDR 	The Project Operations land classification was expanded to take in the spillway, staging area, and operations by other entities for the supply mission. The conversion of these lands will have no effect on current of projected public use.
High Density Recreation (HDR)	Lands under the prior classification of Operations: Recreation Intensive Use were converted to the new and similar classification of High Density	Changes to the HDR land classification were the result of a slight increase for the City of Georgetown "Booty Road Park, Overlook Park, and Tejas Park.

	Recreation but were reduced from 675 to 566 acres.	Decreases in HDR were the result of reclassifying to MRML-WM along an existing creek, an area west of Jim Hogg Park, and Russell Park, and changing Cedar Hollow separable lands to LDR. These changes were done to reflect current and projected uses. The conversion of these lands will have no effect on current or projected public use.
Environmentally Sensitive Areas (ESAs)	The classification of ESAs was added to lands at this lake, with the classification of 376 acres. Acres were converted from LDR and MML-WM.	These classification changes were necessary to recognize those areas at Georgetown Lake having the highest ecological value, including areas of high value for protection of important habitat for the endangered GCWA as designated by the USFWS, and to protect unique views and cultural and archeological sites. The conversion of lands will have little to no effect on current or projected public use. Lands classified as ESA are given the highest order of protection among possible land classifications.
Multiple Resource Management Lands – Low Density Recreation (MRML - LDR)	The reclassification of 1,508 acres to MRML-LDR resulted from converting some lands under the previous classification of Operations: Recreation Low Density to HDR, ESA, and PO, and classifying the Walnut Springs Point separable lands as MRML-LDR, reducing the acres to 483.	The land in the former classification of Operations: Recreation Low Density were converted to other land uses due to the areas having historic land use patterns supporting the change. The conversion of these lands will have no effect on current or projected public use.
Multiple Resource Management Lands – Wildlife Management (MRML - WM)	Land classification changes resulted in a increase of MRML-WM acres from 1,272 acres to the proposed 2,514 acres as a result of several parcels of land under the prior classifications Operations: Recreation Intensive Use and Operation: Recreation Low Density Use, and moving some lands into ESA.	The land in the former classification Operations: Recreation Intensive Use and Operations; Recreation Low Density Use were converted to MRML-WM to more appropriately align with historic land use patterns supporting the change, as well as lands converted to ESA to protect important cultural and habitat areas. The conversion of these lands will have no effect on current or projected public use.
Water Surface	The classification of 1,287 acres of water surface of the lake at the	Previous Master Plans for Lake Georgetown did not specify different classifications on the

	<p>conservation pool elevation is as follows:</p> <ul style="list-style-type: none"> • 7 acres of Restricted water surface at Lake Georgetown include the water surface in front of Lake Georgetown Dam and designated swimming areas in the parks around Lake Georgetown. Buoys mark the line in front of the dam. Keep-out buoys and floating barrier pipes mark the designated swimming areas in each park. • 70 acres of Designated No-Wake areas are in place near the boat ramps at Belton Lake. • There are 1,210 acres of Open Recreation water surface at Lake Georgetown. 	<p>water surface, though these classifications were recognized in practice. This Master Plan revision recognizes and specifies these uses. The classification of water surfaces will have no effect on current or projected public use.</p>
--	--	---

* The land classification changes described in this table are the result of changes to several individual parcels of land ranging from a few acres to several hundred acres. Acreages were measured using geographic information system (GIS) technology. The acreage numbers provided are approximate.

*Source: USACE 2020

Recent USACE guidance in ER-1130-2-550, Chapter 17, encourages the establishment of designated utility corridors with defined boundaries on project lands as a means to consolidate the placement of utility lines in locations resulting in the least possible environmental impact. The Proposed Action establishes three corridors at Lake Georgetown. Future use of this shared corridors may require prior approval of those entities with previously secured legal rights to said corridor easement(s). Best Management Practices (BMPs) specify that future use of each corridor shall occur, where feasible, within existing, previously disturbed easements and secondarily within a narrow strip of land varying from 50 feet to 75 feet lying parallel to existing easements. Future underground utilities within each corridor shall be installed, where possible, by subsurface boring. The future use of any corridor will require mitigation for the loss of any natural resources in accordance with USACE stipulations. Chapter 6.7 in the Master Plan provides a summary of the corridor location, length, and the acreage of project lands.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

Other alternatives to the Proposed Action were initially considered as part of the scoping process for this EA. However, none met the purpose of, and need for, the Proposed Action or the current USACE regulations and guidance. Furthermore, no other alternatives addressed public concerns. Therefore, no other alternatives are being carried forward for analysis in this EA.

SECTION 3: AFFECTED ENVIRONMENT AND CONSEQUENCES

This section of the EA describes the natural and human environments that exist at the project and the potential impacts of the No Action Alternative (Alternative 1) and Proposed Action (Alternative 2), outlined in Section 2.0 of this document. Only those issues that have the potential to be affected by these alternatives are described, per CEQ guidance (40 CFR § 1501.7 [3]). Some topics are limited in scope due to the lack of direct effect from the Proposed Action on the resource, or because that particular resource is not located within the project area. For example, no body of water in the Lake Georgetown watershed is designated as a Federal Wild or Scenic River, so this resource will not be discussed.

Impacts (consequence or effect) can be either beneficial or adverse and can be either directly related to the action or indirectly caused by the action. Direct effects are caused by the action and occur at the same time and place (40 CFR § 1508.8 [a]). Indirect effects are caused by the action and are later in time or further removed in distance but are still reasonably foreseeable (40 CFR § 1508.8 [b]). As discussed in this section, the alternatives may create temporary (less than one year), short-term (up to three years), long-term (three to ten10 years), or permanent effects, following implementation of the master plan revision.

Whether an impact is significant depends on the context in which the impact occurs and the intensity of the impact (40 CFR § 1508.27). The context refers to the setting in which the impact occurs and may include society as a whole, the affected region, the affected interests, and the locality. Impacts on each resource can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis, the intensity of impacts would be classified as negligible, minor, moderate, or major. The intensity thresholds are defined as follows:

- Negligible: A resource would not be affected or the effects would be at or below the level of detection, and changes would not be of any measurable or perceptible consequence.
- Minor: Effects on a resource would be detectable, although the effects would be localized, small, and of little consequence to the sustainability of the resource. Mitigation measures, if needed to offset adverse effects, would be simple and achievable.

- Moderate: Effects on a resource would be readily detectable, long-term, localized, and measurable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely achievable.
- Major: Effects on a resource would be obvious and long-term, and would have substantial consequences on a regional scale. Mitigation measures to offset the adverse effects would be required and extensive, and success of the mitigation measures would not be guaranteed.

3.1 LAND USE

Georgetown Dam was constructed for the purpose flood risk management, water supply, recreation and fish and wildlife. Congressional authority for the construction of the North Lake Dam and Lake, now Lake Georgetown, as a unit of the plan for improvement for the Brazos River Basin, Texas, is contained in Public Law 87-874, (87th Congress, 2d Session) approved October 23, 1962. This is in accordance with plan outlined in House Document No. 591 (87th Congress, 2d session.)

The USACE lands presently associated with Lake Georgetown are listed in the 1973 Master Plan as follows:

- 148 acres of Project Operations
- 675 acres of Recreation Intensive Use
- 1,616 acres of Recreation Low-Density Use
- 1,272 acres of Wildlife Management
- 375 acres of Recreation Lands
- 514.62 acres Flowage Easement

The USACE operates and manages numerous areas designated as High Density Recreation (HDR) including Overlook Park, Cedar Breaks Park, Russel Park, and Jim Hogg Park.

Section 5.3 of the 2020 Master Plan further describes recreation areas at Lake Georgetown.

3.1.1 Alternative 1: No Action Alternative

The No Action Alternative for Lake Georgetown is defined as the USACE taking no action, which means the operation and maintenance of USACE lands at Lake Georgetown would continue as outlined in the existing 1973 Master Plan. No new resource analysis, resources management objectives, or land-use classifications would occur. Although this alternative does not result in a Master Plan that meets current regulations and guidance, there would be no significant negative long-term impacts on land uses on Lake Georgetown lands.

3.1.2 Alternative 2: Proposed Action

1 The objectives for revising the Lake Georgetown 2020 Master Plan were to
2 describe current and foreseeable land uses, taking into account expressed public
3 opinion and USACE policies that have evolved to meet day-to-day operational needs.
4

5 The USACE intends to continue to operate the campgrounds, day use areas, and
6 access points, by maintaining and improving existing facilities with no plans for
7 expansion. Emphasis will be placed on improvements such as upgrading aging water
8 and electrical infrastructure, improving energy efficiency and sustainability of facilities,
9 and repairing or replacing outdated restrooms.
10

11 The changes required for the Proposed Action were developed to help fulfill
12 regional goals associated with good stewardship of land and water resources that would
13 allow for continued use and development of project lands. Therefore, implementation of
14 the Proposed Action would not result in significant negative long-term adverse impacts
15 on land uses on project lands. For example, 376 acres would be reclassified as ESA
16 compared to the No Action Alternative which contains 0 acres (see Table 2.2.1). The
17 ESA reclassifications would afford protection to and potentially benefit wildlife, wildlife
18 habitats, sensitive species habitat, and cultural resources. The protection and
19 appropriate management of these areas aligns with Resource Goals B, C, D, and E as
20 described in Section 3.2 of the revised Master Plan, as well as numerous natural
21 resource objectives listed in Table 3.2 of the revised Master Plan. The reduction of HDR
22 by 109 acres and MRM-LDR by 1,508 acres occur in areas of parks with little to no
23 recreational development. No decrease in recreational opportunities are expected.
24 Maintaining the HDR and MRML-LDR areas allows for continued outdoor recreation
25 opportunities at Lake Georgetown. New resource goals A, C, and E and several
26 recreational objectives are supported by these reclassifications as described in Section
27 3.3 and Table 3.1 of the revised Master Plan. The new resources objectives will provide
28 a level of consistency in beneficial management practices that would not occur with the
29 No Action Alternative. ESA classification would allow for appropriate active
30 management and protection for these sites. The designation of three utility corridors, as
31 described in Section 6.7 of the 2020 Master Plan, will serve to avoid and minimize
32 impacts of fragmentation on the proposed land uses. Utility corridors provide areas for
33 existing and future infrastructure while minimizing the extent of reoccurring maintenance
34 activities and additional habitat fragmentation.
35

36 No changes in land use are expected with 2020 Master Plan as recreation and
37 project maintenance areas and operation areas will largely remain the same. As such,
38 no short or long-term, adverse impacts are expected to occur as a result of the 2020
39 Master Plan.

40 **3.2 WATER RESOURCES**

41 Surface Water

42 Lake Georgetown is located on the North Fork of the San Gabriel River. Its
43 watershed drains approximately 246 square miles above the dam and is located in
44 Williamson County in Central Texas. The top of conservation pool capacity is 36,904

acre-ft., and covers the area of 1,287 acres. Fluctuation within the conservation pool depends upon the rate of withdrawals for water supply by the water district, as well as inflows and evaporation.

Hydrology and Groundwater

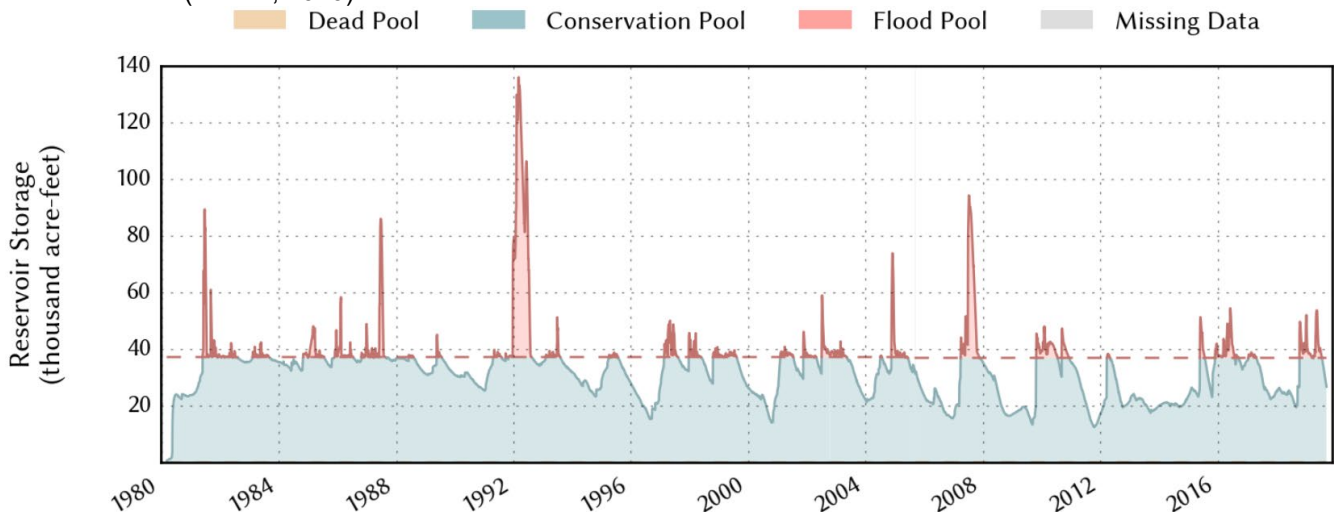
An additional benefit from Lake Georgetown is the utilization of water impounded to provide municipal and industrial water supplies to the cities of Georgetown and Round Rock. The Northeast Texas Municipal Water District is the state agency created by the legislature to administer the water supply features of the project.

The dam has an uncontrolled concrete spillway that is 30-ft-wide, located on the east end of the dam. Intake structures are on the north east side of the lake. The dam has two discharge gates/conduits that are 5 ft. by 11 ft.

The recent water levels of Lake Georgetown are displayed in Figure 3.2.1.

Figure 3.2.1 Recent Water Level Data for Lake Georgetown

*Source: (TWDB, 2020).



The two primary sources of groundwater in the Lake Georgetown area are the Edwards Balcones Fault Zone (BFZ) Aquifer and the Trinity Aquifer (TWDB, 2015).

The Lake Georgetown area is administratively under the Groundwater Management Area (GMA) 8 as designated by TWDB. In 1993, the Edwards Aquifer Authority (EAA) was created by the legislature to regulate aquifer pumpage to benefit all users. Texas Water Code (TWC) Section 36.0015 states that groundwater conservation districts (GCDs) are the state's preferred method of groundwater management and establishes that GCDs will manage groundwater resources through rules developed and implemented in accordance with TWC Chapter 36. Chapter 36 gives directives to GCDs and the statutory authority to carry out such directives, so that GCDs are provided the proper tools to protect and manage the groundwater resources within their boundaries.

The ground water in and around Lake Georgetown is primarily managed by the Clearwater Underground Water Conservation District.

Water Quality

Texas Commission on Environmental Quality (TCEQ) sets and implements standards for surface water quality to improve and maintain the quality of water in the state based on various beneficial use categories for the water body. The draft 2016 Texas Integrated Report-Index of Water Quality Impairments, pursuant to the Clean Water Act Sections 305(b) and 303(d), evaluates the quality of surface waters in Texas and identifies those that do not meet uses and criteria defined in the Texas Surface Water Quality Standards. Impaired waters are then identified, along with impairment descriptions, on the 303(d) list.

Lake Georgetown (Segment ID: 1249) has identified no water quality impairments. Below Lake Georgetown, North Fork San Gabriel River (Segment ID 1251) has no areas of concern. Upstream of Lake Georgetown, North Fork San Gabriel River/San Gabriel River (Segment ID 1248) also has no water quality concerns. (Texas Commission on Environmental Quality (TCEQ) 2020).

For more information regarding water quality at Lake Georgetown, please refer to Section 2.2.8 of the 2020 Master Plan.

Wetlands

Waters of the United States are defined within the Clean Water Act (CWA), and jurisdiction is addressed by the USACE and United States Environmental Protection Agency (USEPA). Wetlands are a subset of the waters of the United States that may be subject to regulation under Section 404 of the CWA (40 CFR 230.3). Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

As a result of the topography of the region for Lake Georgetown, wetlands generally occur near the rivers and within areas with low topographic relief. Table 3.2.1 lists the acreages of various types of wetlands present at Lake Georgetown. Wetland classifications presented are derived from the USFWS Trust Resource List generated using the Information, Planning, and Conservation System decision support system (USFWS, 2020D).

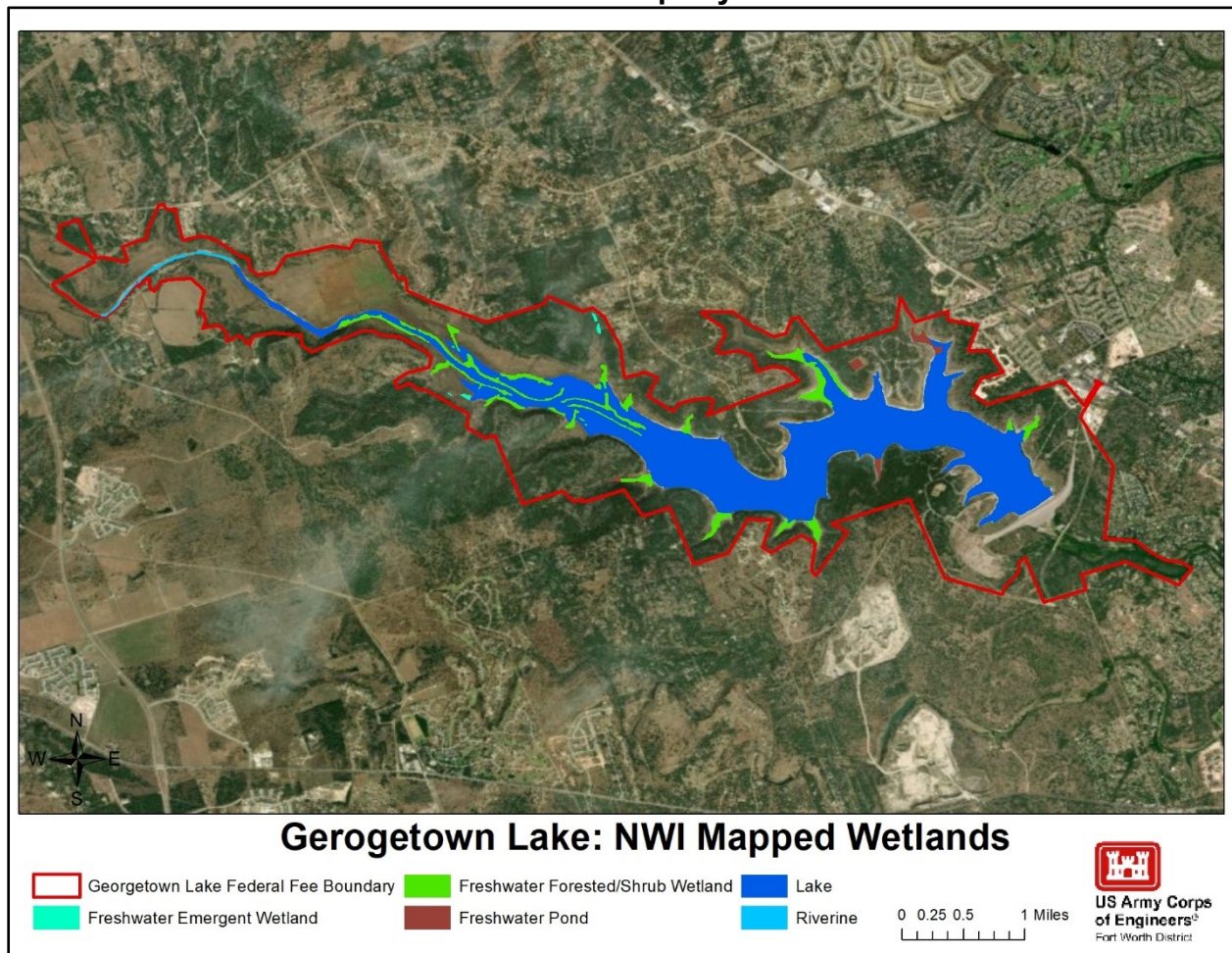
Table 3.2.1 Wetland Resources

Wetland Types	Total Acres
Emergent Wetland	3
Pond	17

Wetland Types	Total Acres
Forested Wetland	150
Lake	1,141
Riverine	13

Note: Acreages from the USFWS website do not match exactly with the USACE digitized acreages.

Figure 3.2.2. Map of Wetlands within USACE Lake Georgetown Federal Fee-Owned Property.



3.2.1 Alternative 1: No Action Alternative

1 There would be no negative significant permanent impacts on water resources as
2 a result of implementing the No Action Alternative, since there would be no change to
3 the existing Master Plan.

4 **3.2.2 Alternative 2: Proposed Action**

5 The reclassifications included in the Proposed Action would allow land
6 management and land uses to be compatible with the goals of good stewardship of
7 water resources. Land reclassifications and new resource objectives proposed as part
8 of the Proposed Action would have a potential for minor long-term beneficial impacts on
9 water quality. For example, 376 acres would be reclassified as ESA compared to the No
10 Action Alternative which allocates 0 acres to strictly ESA (see Table 2.2.1). This directly
11 supports resource goals B, D, and E and several natural resource management
12 objectives including minimizing activities that disturb the aesthetic value and protect
13 natural habitat, all of which are further described in Chapter 3 of the revised Master
14 Plan. The net reduction of HDR lands from 675 acres to 566 acres will limit future
15 intensive development, thus reducing the potential for erosion and sedimentation.
16 Natural vegetation communities act as buffers to trap runoff, thus potentially reducing
17 sedimentation. Furthermore, the utility corridors were designated to avoid and minimize
18 impacts on water resources by future actions by requiring future actions to bore under
19 streams and wetlands. The new resources objectives will provide a level of consistency
20 in beneficial management practices that would not occur with the No Action Alternative.

21 **3.3 CLIMATE**

22 Lake Georgetown lies in a moderately humid region of the southwest United
23 States where the temperature is generally mild. Summer temperatures are generally hot
24 during the day and warm at night, while winter temperatures are generally mild, with
25 occasional cold periods, including some freezing temperatures of short duration. Sub-
26 zero temperatures are very rare. While the mean annual temperature is about 68
27 degrees Fahrenheit (°F), the maximum recorded temperature was 112 °F in August
28 2011, and the minimum recorded temperature was -2 °F in January 1949. The growing
29 season between killing frosts is normally from mid-March to late-November. For more
30 detailed information see Section 2.1.2 of the 2020 Master Plan.

31 **3.3.1 Alternative 1: No Action Alternative**

32 The No Action Alternative does not involve any activities that would contribute to
33 changes in existing conditions. There would be no impacts on climate as a result of
34 implementing the No Action Alternative.

35 **3.3.2 Alternative 2: Proposed Action**

36 Revision of the Lake Georgetown Master Plan would have no impact on the
37 climate of the study area. There would be no impacts on climate as a result of
38 implementing the Proposed Action Alternative.

3.4 CLIMATE CHANGE AND GHG

CEQ drafted guidelines for determining meaningful GHG decision-making analyses. The CEQ guidance states that if a project would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon dioxide (CO₂)-equivalent (CO₂e) GHG emissions per year, the project should be considered in a qualitative and quantitative manner in NEPA reporting (CEQ, 2015). CEQ proposes this as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHG (CEQ, 2015).

EPA records show that there are two GHG contributors within Williamson County, Austin White Lime Company McNeil Plant and Quarry in Austin, Texas and Williamson County Landfill in Hutto, Texas. The total reported emission is 288,004 metric tons carbon dioxide equivalent (CO₂e). The general operations and recreation facilities associated with Lake Georgetown does not approach the proposed reportable limits. Lake Georgetown Project Office does have management plans in place such as vegetation management plans, natural resources management plans, and public education and outreach programs, to protect regional natural resources. In addition, the Lake O' Georgetown Project Office will continue monitoring programs as required to meet applicable laws and policies.

Two Executive Orders (EOs), EO 13693 and EO 13653, as well as the President's Climate Action Plan (CAP), set forth requirements to be met by federal agencies. These requirements range from preparing general preparedness plans to meeting specific goals to conserve energy and reduce GHG emissions. The USACE has prepared an Adaptation Plan in response to the EOs and the CAP. The Adaptation Plan includes the following USACE policy statement:

It is the policy of USACE to integrate climate change preparedness and resilience planning and actions in all activities for the purpose of enhancing the resilience of our built and natural water-resource infrastructure and the effectiveness of our military support mission, and to reduce the potential vulnerabilities of that infrastructure and those missions to the effects of climate change and variability.

The USACE manages project lands and recreational programs to advance broad national climate change mitigation goals including, but not limited to, climate change resilience and carbon sequestration, as set forth in EO 13783, EO 13693, and related USACE policy.

3.4.1 Alternative 1: No Action Alternative

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions. There would be no impacts on climate change or contributions to GHG emissions and climate change as a result of implementing the No Action Alternative.

3.4.2 Alternative 2: Proposed Action

Under the Proposed Action, current Lake Georgetown project management plans and monitoring programs would not be changed. There would be no impacts on climate change or contributions to GHG emissions as a result of implementing the 2020 Master Plan. In the event that GHG emission issues become significant enough to impact the current operations at Lake Georgetown, the 2020 Master Plan and all associated documents would be reviewed and revised as necessary.

3.5 AIR QUALITY

The overall air quality condition for Lake Georgetown is generally of good quality. For further information please refer to Section 2.2.9 of the 2020 Master Plan.

In conducting routine operations and maintenance activities at Lake Georgetown, the USACE will comply with all Federal, state, and local laws governing air quality and will implement best management practices to protect air quality.

3.5.1 Alternative 1: No Action Alternative

There would be no impacts on air quality as a result of implementing the No Action Alternative, since there would be no change to the existing 1973 Master Plan.

3.5.2 Alternative 2: Proposed Action

Existing operation and management of Lake Georgetown is compliant with the Clean Air Act and would not change with implementation of the 2020 Master Plan. Land reclassifications and new resource objectives proposed as part of the Proposed Action would have a potential for negligible long-term beneficial impacts on air quality. The new resources goals, primarily B and C, along with several recreational and natural resource management objectives regarding sustainability and the conservation of natural areas are supported by the proposed land classifications and are further described in Chapter 3 of the revised Master Plan. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative.

3.6 TOPOGRAPHY, GEOLOGY, AND SOILS

Topography and Geology

Lake Georgetown is located in the Limestone Cut Plain of the Edwards Plateau Ecoregion which is underlain by Lower Cretaceous limestone, including the Glen Rose Formation and Walnut Clay. The Glen Rose Formation has alternating layers of limestone, chert, and marl that erode differentially and generally more easily than the Edwards Limestone. The effects of increased precipitation and runoff are also apparent in the increased erosion and dissolution of the limestone layer.

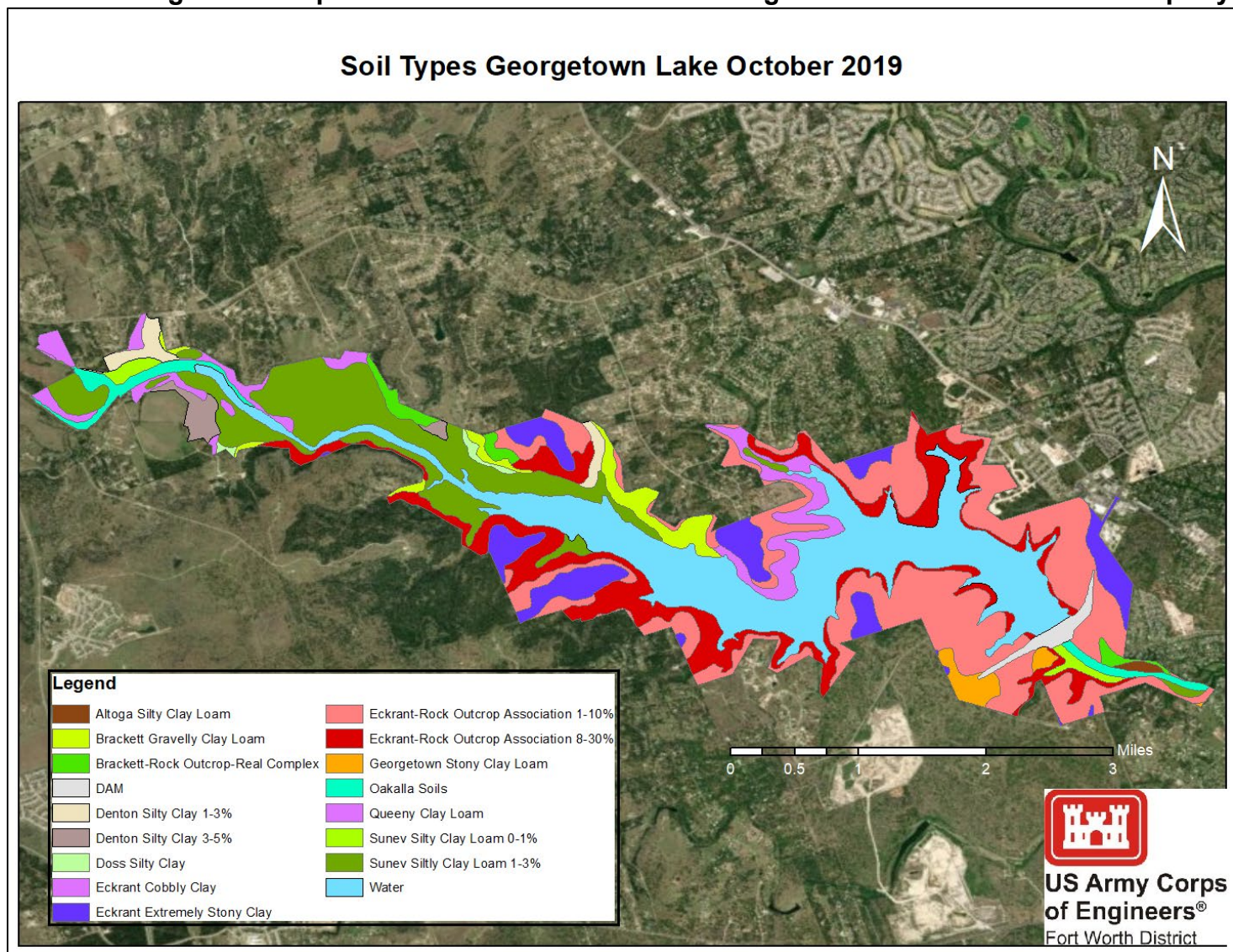
Soils

The Lake Georgetown area has thin limestone soils in the hilly portion, which are timbered with oak, elm, mesquite, juniper, and ash. Alluvial soils along the streams

support pecan, willow, and hackberry trees. For a visual representation of where these soils can be found please see the below Figure 3.6 and for a more detailed discussion see Section 2.1.5 in the 2020 Master Plan.

1

Figure 3.6 Map of Soils within USACE Lake Georgetown Federal Fee-Owned Property.



2

3.6.1 Alternative 1: No Action Alternative

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions, so there would be no impacts on topography, geology, soils, sedimentation, or shoreline erosion as a result of implementing the No Action Alternative.

3.6.2 Alternative 2: Proposed Action

Topography, geology, and soils were considered during the refining process of land reclassifications for the 2020 Master Plan. Total acreage for HDR was reduced from 675 acres to 566 acres. This net reduction is based on the realization that the amount of acreage originally planned for intensive recreation use per the 1973 Master Plan significantly exceeded the amount necessary to meet public needs and therefore were not being fully utilized. Areas currently developed as park would continue to operate as parks and no change would occur. However, some of the lands designated as Recreation – Intensive Use would be reclassified to various other land use classifications to better reflect historic use patterns and current land management efforts. As such, no additional intensive use facilities would be constructed outside of existing intensive use areas, limiting future impacts to soils and Prime Farmlands.

Land reclassifications and new resource objectives proposed as part of the Proposed Action would have a potential long-term beneficial impact on soil conservation and Prime Farmlands at Lake Georgetown. The reduction of Recreation Areas will limit future intensive development, thus reducing the potential impacts of soil erosion and development of Prime Farmland. The new resources objectives will provide a level of consistency in beneficial management practices that would not occur with the No Action Alternative. As described in Chapter 3 of the revised Master Plan, resource goals B, C, D, and E and several natural resource management objectives, particularly those that concern addressing unauthorized uses of public land and evaluating erosion control and addressing sedimentation issues, are supported by the proposed land classifications. Therefore, under the Proposed Action, there would be no long-term, major adverse impacts on topography, geology, soils or Prime Farmland as a result of implementing the 2020 Master Plan.

3.7 NATURAL RESOURCES

Operational civil works projects administered by USACE are required, with few exceptions, to prepare an inventory of natural resources. The basic inventory required is referred to within USACE regulations (ER and EP 1130-2-540) as a Level One Inventory. This inventory includes the following: vegetation in accordance with the National Vegetation Classification System through the sub-class level; assessment of the potential presence of special status species including but not limited to federal and state listed endangered and threatened species, migratory species, and birds of conservation concern listed by the USFWS; land (soils) capability classes in accordance with Natural Resources Conservation Service (NRCS) soil surveys; and wetlands in accordance with the USFWS Classification of Wetlands and Deepwater Habitats of the United States, which are previously discussed in Section 3.2.

1
2 In the summer of 2019, USACE biologist, rangers, and foresters conducted
3 habitat assessments at Lake Georgetown to inform land classifications. Methodology,
4 habitat quality, and vegetation species encountered at Lake Georgetown is available in
5 Appendix E of the 2020 Master Plan.

6 The Wildlife Habitat Appraisal Procedures (WHAP) data collected was used to
7 identify unique and/or high quality habitats for targeted conservation through the
8 designation of appropriate land classes such as ESA, MRLM-WM, or MRLM-VM. These
9 land classes allow for the continued conservation and management of natural, high
10 quality habitat.

11 Fisheries and Wildlife Resources

12
13 Lake Georgetown provides habitat for an abundance of fish and wildlife species.
14 The lake provides a quality fishery, as well as quality wildlife habitat on public land
15 associated with the project. Common sport fish species present in Lake Georgetown
16 include striped bass (*Morone saxatilis*), white bass (*Morone chrysops*), largemouth bass
17 (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), white crappie
18 (*Pomoxis annularis*), channel catfish (*Ictalurus punctatus*), and blue catfish (*Ictalurus*
19 *furcatus*). Other species include a variety of sunfish (*Lepomis* spp.), including bluegill
20 (*Lepomis macrochirus*), and warmouth (*Lepomis gulosus*). Stocking of Lake
21 Georgetown is conducted by Texas Parks and Wildlife Department (TPWD) annually.
22

23 While Lake Georgetown is operated by USACE, the TPWD remains the primary
24 agency in charge of managing the fisheries resources. The fish stocking history shows
25 that the lake has been stocked with Palmetto Bass (*Morone chrysops* x *saxatilis*) since
26 2003. All fish species except crappie are currently managed under statewide harvest
27 regulations. For crappie, from December until the last day of February, anglers keep the
28 first 25 crappie they catch each day, regardless of size, to minimize excess mortality
29 due to fish being caught in deep water. Please refer to Section 2.2.3 of the 2020 Master
30 Plan for more detailed information.

31 32 Terrestrial Wildlife Resources

33
34 Lake Georgetown provides habitat for an abundance of wildlife species, including
35 game and non-game species, migratory waterfowl, resident and migratory song birds,
36 wading birds, reptiles, amphibians, and insects. The area offers a mixture of geologic
37 features, riparian forest, grasslands, springs, and river habitats, which support white-
38 tailed deer (*Odocoileus virginianus*), gray foxes (*Urocyon cinereoargenteus*), red foxes
39 (*Vulpes vulpes*), coyotes (*Canis latrans*), fox squirrels (*Sciurus niger*), owls (Order
40 *Strigiformes*), and over a hundred other species of birds (Class Aves). Please refer to
41 Section 2.2.3 of the 2020 Master Plan for more detailed information.

3.7.1 Alternative 1: No Action Alternative

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions; therefore, no major long-term adverse impacts on natural resources would be anticipated as a result of implementing the No Action Alternative.

3.7.2 Alternative 2: Proposed Action

The proposed net increase of ESA by 376 acres and MMRL-WM by 1,242 acres would cause major long-term beneficial impacts to natural resources within these areas. The reclassification of MRML-WM was deemed necessary because these areas are and have been managed for recreation and vegetation management purposes. The ESA classification provides the highest form of protection for natural resources. The increase of MRML-VM acres was deemed necessary so as to promote healthy forests and a beautiful shoreline. These proposed changes would then protect natural resources from various types of adverse impacts such as habitat fragmentation. Furthermore, the utility corridors were designated to avoid and minimize impacts on current natural resources by future actions by selecting corridors with lesser quality habitats and that would avoid continued fragmentation of habitats.

The reclassifications, resource management objectives, and resource plan required for the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of natural resources. The Proposed Action would allow project lands to continue supporting the USFWS and the TPWD missions associated with wildlife conservation and implementation of operational practices that would protect and enhance wildlife and fishery populations and habitat. In addition, the Proposed Action would be compatible with conservation principles and measures to protect migratory birds as mandated by EO 13186.

3.8 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. All federal agencies are required to implement protective measures for designated species and to use their authorities to further the purposes of the Endangered Species Act. The Secretary of the Interior and the Secretary of Commerce (marine species) are responsible for the identification of threatened or endangered species and development of any potential recovery plan.

USFWS is the primary agency responsible for implementing the Endangered Species Act, and is responsible for birds and other terrestrial and freshwater species. USFWS responsibilities under the Endangered Species Act include (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species officially recognized by USFWS as being 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. USFWS also identifies species that are candidates for listing as a result of identified threats to their continued existence. The Candidate designation includes those species for which USFWS has sufficient information to support proposals to list as endangered or threatened under the Endangered Species Act; however, proposed rules have not yet been issued because such actions are precluded at present by other listing activity. Proposed species are those candidate species that are found to warrant listing as either threatened or endangered, after completion of a scientific review including biology, ecology, abundance and population trends, and threats. Official listing occurs after considering public comments and any new data that may become available, and publication of a Final Rule in the Federal Register. Although not afforded protection by the Endangered Species Act, candidate and proposed species may be protected under other federal or state laws. Species may be considered eligible for listing as endangered or threatened when any of the five following criteria occur: (1) current/imminent destruction, modification, or curtailment of their habitat or range; (2) overuse of the species for commercial, recreational, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; and (5) other natural or human-induced factors affecting their continued existence.

In addition, USFWS has identified species that are candidates for listing as a result of identified threats to their continued existence

There are 16 federally listed species that could be found within USACE Lake Georgetown federal fee-owned property as identified in the U.S Fish and Wildlife (USFWS) Information, Planning, and Conservation (IPAC) Report Official Species List (USFWS, 2020 C). A list of these species is presented in Table 3.8.1 No Critical Habitat has yet to be designated within or near Lake Georgetown. There is proposed critical habitat for the Georgetown Salamander on the Southwest side of the lake. The species identified as Threatened, Endangered or Candidate Species by TPWD that are not federally listed are included in Appendix D of the 2020 Master Plan.

Table 3.8.1 Federally Listed Endangered and Threatened Species with Potential to Occur at Lake Georgetown

Common Name	Scientific Name	Federal Status
Golden-Cheeked Warbler	<i>Dendroica chrysoparia</i>	Endangered
Least Tern	<i>Sterna antillarum</i>	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened
Red Knot	<i>Calidris cantus rufa</i>	Threatened
Whooping Crane	<i>Grus americana</i>	Endangered
Georgetown Salamander	<i>Eurycea naufragia</i>	Threatened
Jollyville Plateau Salamander	<i>Eurycea tonkawae</i>	Threatened
Salado Salamander	<i>Eurycea chisholmensis</i>	Threatened
Smooth Pimpleback	<i>Cyclonaias houstonensis</i>	Candidate
Texas Fawnsfoot	<i>Truncilla macrodon</i>	Candidate

Texas Pimpleback	<i>Quadrula petrina</i>	Candidate
Coffin Cave Mold Beetle	<i>Batrisodes texanus</i>	Endangered
Tooth Cave Ground Beetle	<i>Rhadine persephone</i>	Endangered
Bone Cave Harvestman	<i>Texella reyesi</i>	Endangered
Tooth Cave Spider	<i>Neoleptoneta myopica</i>	Endangered
Bracted Twistflower	<i>Steptanthus bracteatus</i>	Candidate

Source: USFWS 2020

The 2020 Master Plan revision does not entail wind energy aspects, therefore the Red Knot (*Calidris canutus rufa*), Piping plover (*Charadrius melodus*), and Least Tern (*Sterna antillarum*), will not be affected. As such, the Red Knot, Piping Plover and Least Turn will not be addressed any further concerning possible impacts to the species.

The Golden-Cheeked Warbler (*Dendroica chrysoparia*) is a small, neo-tropical songbird. They nest in mature stands of Ashe juniper mixed forest and prefer moist areas but can be found in drier, upland juniper-oak forest. The occurrence within USACE Lake Georgetown federal fee-owned property of preferred habitat is rare.

The Whooping Crane (*Grus americana*) is a large white bird, with males approaching 1.5 m tall. They only occur in North America with one self-sustaining wild population the Aransas-Wood Buffalo National Park. Whooping Cranes are not likely to occur in the project area of Lake Georgetown during their migration to Canada.

Georgetown Salamander (*Eurycea naufragia*) is a small brown salamander with a very small amount of habitat surrounding the USACE Lake Georgetown federal fee-owned property. Due to the limited habitat, Lake Georgetown is very important in this species protection and existence.

Jollyville Plateau Salamander (*Eurycea tonkawae*) is a neotenic salamander. They occur only in the Jollyville Plateau and Brushy Creek areas of the Edwards Plateau in Travis and Williamson Counties. They are found in spring-fed habitat characterized by a depth of less than one foot of cool, well oxygenated water.

Salado Salamander (*Eurycea chisholmensis*) is a salamander with small patches of habitat across Karst features in the region. The species is thought to live in a small patch on the southern portion of the USACE Lake Georgetown federal fee-owned land.

Smooth Pimpleback (*Cyclonaias houstonensis*), Texas Fawnsfoot (*Truncilla macrodon*), and Texas Pimpleback (*Quadrula petrina*) are all candidate clams species under consideration for official listing for which there is sufficient information to support the listing.

Coffin Cave Mold Beetle (*Batrisodes texanus*) and the Tooth Caved Mold Beetle (*Rhadine Persephone*) are both small cave beetle species that are found along karst features in Central Texas. Bone Cave Harvestman (*Neoleptoneta myopica*) and Tooth Cave Spider (*Steptanthus bracteatus*) are both small cave spider species that are found in karst features in Central Texas. The karst features found on the USACE federal fee-owned property are important for the continued existence of these species.

1 Bracted Twistflower (*Stephanthus bracteatus*) is a plant in the mustard family. It is
2 endemic to Texas and can be up to 1.2 m tall. This species is a candidate for official
3 listing on the threatened and endangered species list.

4 5 **3.8.1 Texas Natural Diversity Database**

6 The Texas Natural Diversity Database (TXNDD), administered by TPWD,
7 manages and disseminates occurrence of information on rare species, native plant
8 communities, and animal aggregations in Texas to help guide project planning efforts.
9 An official request via email was made requesting this information for the federally
10 owned fee property around the lake. The next few paragraphs summarize the
11 information received.

12
13 Within the Lake Georgetown federal fee-owned property, TXNDD identified one
14 unique plant community: Plateau loosestrife (*Lythrum ovalifolium*). In 1972, the last
15 official recording was published. The species is a blue or violet flowering perennial that
16 prefers to live near waters of rivers and streams. Because of this information and lack of
17 recent sightings, the occurrence of this species within Lake Georgetown federal fee-
18 owned property is considered rare.

19
20 The TXDD identified three unique animal communities. The Georgetown
21 Salamander (*Eurycea naufragia*), the Golden-Cheeked Warbler (*Setophaga*
22 *chrysoparia*), and the Guadalupe Bass (*Micropterus treculii*). The Golden-Cheeked
23 Warbler and Georgetown Salamander are described above, as they are federally listed.
24 The Guadalupe Bass is endemic to several rivers of the Eastern Edwards Plateau. It
25 was last recorded in 1985.

26 27 **3.8.2 Alternative 1: No Action Alternative**

28 The No Action Alternative does not involve any activities that would contribute to
29 changes in existing conditions; therefore, no major, long-term adverse impacts on
30 threatened and endangered species would be anticipated as a result of implementing
31 the No Action Alternative.

32 **3.8.3 Alternative 2: Proposed Action**

33 Under the Proposed Action, the USACE would continue cooperative
34 management plans with the USFWS and TPWD to preserve, enhance, and protect
35 wildlife habitat resources. To further management opportunities and beneficially impact
36 habitat diversity, the reclassifications proposed in the 2020 Master Plan include 376
37 acres as ESA, and 1,242 additional acres MRML-WM.

38
39 The ESA reclassification recognizes those areas having the highest ecological
40 value and ensures they are given the highest order of protection among possible land
41 classifications. The high degree of protection for ESA means that any threatened or
42 endangered species, and rare/unique communities as identified in the TXNDD
43 Database found in these areas, will benefit from higher quality habitats and less

disturbances. Under the proposed reclassification, areas considered bottomland hardwoods, and areas with steep, aesthetic bluffs and ravines would be classified as ESAs.

MRML-WM areas are managed to maintain and improve habitat for fish and wildlife resources. Even though they are not afforded as much protection as areas classed as ESA, they still provide valuable habitats for threatened, endangered, and rare/unique communities as identified in the TXNDD Database.

The reclassification of these lands was supported by recommendations from the USFWS and TPWD. In addition, the establishment of strategically located utility corridors will serve to reduce future loss of natural resources that could potentially occur from placement of utility lines on project lands. The reclassification will have no effect on current or projected public use. While the occurrence of special status species are limited at Lake Georgetown, minor to moderate, long-term beneficial impacts on endangered, threatened and rare/unique communities, as identified in the TXNDD Database, would occur as a result of implementing the reclassifications outlined in the 2020 Master Plan. Habitat in ESA and MRLM-WM classified lands would provide valuable resting, stopover, and/or foraging grounds for special status species.

Based on the above information describing habitat benefits for state and federal listed species, it is the USACE determination that implementation of the 2020 Master Plan will have No Effect on any federally threatened or endangered species. Any future activities that could potentially result in impacts on federally listed species will be coordinated with USFWS, consistent with requirements found in Section 7 of the Endangered Species Act.

3.9 INVASIVE SPECIES

Invasive species are any kind of living organism which, if uncontrolled, causes harm to the environment, economy, or human health. Invasive species generally grow and reproduce quickly and spread aggressively. Non-native, or exotic, species have been introduced, either intentionally or unintentionally, and can out-compete native species for resources or otherwise alter the ecosystem. Native invasive species are those species that spread aggressively due to an alteration in the ecosystem, such as lack of fire or the removal of a predator from the food chain.

Both USACE and TPWD monitor and enforce aquatic nuisance species regulations in an effort to prevent the expansion/colonization of invasive species at Lake Georgetown. Section 2.2.5 of the 2020 Master Plan further describe invasive species at Lake Georgetown.

3.9.1 Alternative 1: No Action Alternative

The No Action Alternative does not involve any activities that would contribute to changes in existing conditions, so Lake Georgetown would continue to be managed according to the existing invasive species management practices. There would be no long-term major adverse impacts from invasive species as a result of implementing the No Action Alternative.

3.9.2 Alternative 2: Proposed Action

The land reclassifications, resource objectives, and resource plan required to revise the Lake Georgetown Master Plan are compatible with the lake's invasive species management practices. The addition of 376 acres classified as ESA may provide long-term benefits as these areas may receive additional invasive species management. The objectives developed under the proposed action as explained in detail in Chapter 3 of the revised Master Plan will result in minor, long-term beneficial impacts by reducing and preventing the spread of invasive species. In summary, these objectives are: monitoring for invasive species presence; addressing unauthorized uses of public lands which may spread invasive species; and evaluating erosion control as eroding lands provide colonization opportunities for invasive plant species. All of these would include a public outreach and education emphasis.

3.10 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural History Sequence

The earliest well-documented evidence of human occupation in the San Gabriel River valley dates to about 12,000 years before present (B.P.). Prehistory is divided generally into three broad time periods: Paleo-Indian (12,000-8,500 B.P.), Archaic (8,500-1,250 B.P.), and Late Prehistoric (1,250-300 B.P.). Evidence for Paleo-Indian period occupation is relatively rare in the Lake Georgetown area, and is known primarily from distinctive projectile point styles dating to this time period found in surface collections or in mixed multi-component sites. It is likely that intact Paleo-Indian camp sites may be buried deeply beneath Holocene floodplain alluvium. Evidence suggests that the region was occupied by small groups of highly mobile hunter-gatherers that traveled over very large territories. Traditionally thought of as big-game hunters of mammoth and bison, more recent evidence indicates Paleo-Indians exploited a much broader range of animal and plant resources. For more detailed information please see Section 2.3 of the Revised Master Plan.

Cultural Resources Management at Lake Georgetown

Cultural resources preservation and management is an equal and integral part of all resource management at Civil Works operating projects. The term "cultural resources" is a broad term meant to include anything that is of cultural significance to humans and that has some historical value, and generally includes, but is not limited to, the following categories of resources: archaeological sites (historic and prehistoric), historic standing structures, traditional cultural properties, and sacred sites. To date, 128 archeological sites have been recorded at Lake Georgetown. None have been formally listed on the National Register of Historic Places (NRHP) and none have received the designation of "eligible" for NRHP inclusion. In some cases, this is due to the fact that the site might be inundated by the reservoir at its conservation pool level. In other cases, it is a result of the fact that limited NRHP eligibility testing has been performed at Lake Georgetown. The cultural, historical, and archaeological resources are described in detail in Section 2.3 of the 2020 Master Plan and are incorporated herein by reference (USACE 2020).

Numerous cultural resources laws establish the importance of cultural resources to our Nation's heritage. With the passage of these laws, the historical intent of Congress has been to ensure that the Federal government protects cultural resources. Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall Federal responsibility.

3.10.1 Alternative 1: No Action Alternative

There would be no major adverse impacts on cultural resources as a result of implementing the No Action Alternative, as there would be no changes to the existing 1973 Master Plan. However, maintaining existing land classifications would not recognize the presence or importance of cultural resources, which could lead to long-term negative moderate or major impacts as a result of implementing the No Action Alternative.

3.10.2 Alternative 2: Proposed Action

Impacts on cultural, historical, and archaeological resources were considered during the refinement processes of land reclassifications. Based on previous surveys at Lake Georgetown, the required reclassifications, proposed utility corridors, resource management objectives, and resource plan would not change current cultural resource management plans or alter areas where these resources exist. The Proposed Action would potentially result in long-term and moderate beneficial impacts with the reclassification of additional 376 acres to ESA as those lands afford more protection against development and ground disturbing activities. Therefore, no significant adverse impacts on cultural, historical, and archaeological resources would occur as a result of implementing revisions to Lake Georgetown Master Plan. Any future ground-disturbing activities would take into account Section 106 of the NHPA and other applicable cultural resource statutes to insure that cultural resources are protected. Also, several cultural resources management objectives were developed to promote the protection of Lake Georgetown cultural resources and are described in Chapter 3 of the revised Master Plan.

3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The zone of interest for this socioeconomic analysis includes Williamson County with additional economic influence extending up to a 30 mile radius of Lake Georgetown. This Central Texas-county region, where the most impacts would be expected, has been utilized as the basis in summarizing the population characteristics of Lake Georgetown. The population, education level, employment rates, income, and household characteristics of the area are discussed in detail in Section 2.4 of the 2020 Master Plan and are incorporated herein by reference (USACE, 2020).

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued by President Clinton on February 11, 1994. It was intended to ensure that proposed federal actions do not have disproportionately high and adverse human health and environmental effects on minority and low-income populations and to ensure greater public participation by minority and low-income populations. It required each agency to develop an agency-

1 wide environmental justice strategy. A Presidential Transmittal Memorandum issued
2 with the EO states that “each federal agency shall analyze the environmental effects,
3 including human health, economic and social effects, of federal actions, including
4 effects on minority communities and low-income communities, when such analysis is
5 required by the NEPA 42 U.S.C. Section 4321, et seq.”
6

7 EO 12898 does not provide guidelines as to how to determine concentrations of
8 minority or low-income populations. However, analysis of demographic data on race
9 and ethnicity and poverty provides information on minority and low-income populations
10 that could be affected by the Proposed Actions. The U.S. Census American Community
11 Survey provides the most recent estimates available for race, ethnicity, and poverty.
12 Minority populations are those persons who identify themselves as Black, Hispanic,
13 Asian American, American Indian/Alaskan Native, Pacific Islander, or Other (Section
14 2.4.2 of the 2020 Master Plan). Poverty status is used to define low-income. Poverty is
15 defined as the number of people with income below poverty level, which was \$24,588
16 for a family of four in 2017 with two children under 18 (US Census Bureau, 2020). A
17 potential disproportionate impact may occur when the minority in the study area
18 exceeds 50 percent or when the percent minority and/or low-income in the study area
19 are meaningfully greater than those in the region.

20 Protection of Children

21 EO 13045 requires each federal agency “to identify and assess environmental
22 health risks and safety risks that may disproportionately affect children” and “ensure that
23 its policies, programs, activities, and standards address disproportionate risks to
24 children that result from environmental health risks or safety risks.” This EO was
25 prompted by the recognition that children, still undergoing physiological growth and
26 development, are more sensitive to adverse environmental health and safety risks than
27 adults. The potential for impacts on the health and safety of children is greater where
28 projects are located near residential areas. Please refer to Figure 2.9 in Section 2.4.2
29 of the 2020 Master Plan for a graphical representation for the percentage of total
30 population that are children in the study area.

31 **3.11.1 Alternative 1: No Action Alternative**

32 Under the No Action Alternative, there would be no changes to the existing
33 Master Plan, with the USACE continuing to manage Lake Georgetown natural
34 resources as set forth in the 1973 Master Plan. There would be no major adverse long-
35 term impacts on socioeconomic resources. Beneficial socioeconomic impacts existing
36 as a result of the implementation of the 1973 Master Plan would continue, as visitors
37 would continue to come to the lake from surrounding areas. In addition to camping in
38 USACE-operated campgrounds, many visitors purchase goods such as groceries, fuel,
39 and camping supplies locally, eat in local restaurants, stay in local hotels and resorts,
40 play golf at local golf courses, and shop in local retail establishments. These activities
41 would continue to bring revenues to local companies, provide jobs for local residents,
42 and generate local and state tax revenues. There would be no disproportionately high or
43 adverse impacts on minority or low-income populations or children with the
44 implementation of the No Action Alternative.

3.11.2 Alternative 2: Proposed Action

Lake Georgetown is beneficial to the local economy through indirect job creation and local spending by visitors, and also offers a variety of recreation opportunities and uses innovative maintenance and planning programs to minimize usage fees. The 566 acres of HDR and 483 acres of MRML-LDR will continue to provide recreation opportunities. The 376 acres of ESA land will also allow minimally invasive recreation activities such as wildlife viewing and hiking.

Since recreational opportunities remain abundant, and the revised Master Plan recognizes and reinforces projected recreational trends there would be negligible, long-term beneficial impacts on area economic stability and environmental justice populations resulting from the revision of the 1973 Master Plan.

3.12 RECREATION

The majority of visitors to Lake Georgetown come from a 100-mile radius of the reservoir. These visitors are a diverse group of people with a wide variety of interests. Examples of visitors include campers who utilize the federally operated campgrounds around the reservoir; adjacent residents; hunters and anglers who utilize public hunting areas and participate in recreational fishing as well as tournaments; and day users who picnic, hike, bird watch, bicycle, and ride horses. Recreational facilities, activities, and needs are discussed in detail in Section 2.5 of the 2020 Master Plan.

3.12.1 Alternative 1: No Action Alternative

Under the No Action Alternative, there would be no major adverse long-term impacts on recreational resources, as there would be no changes to the existing Master Plan.

3.12.2 Alternative 2: Proposed Action

The primary objective for revising the Lake Georgetown 1973 Master Plan is to capture current land use and management that has evolved to meet day-to-day operational needs. Under the Proposed Action, the required revisions to the Lake Georgetown Master Plan would be compatible with current recreation management plans and recognizes regional and national outdoor recreation trends. The reclassification changes required for the Proposed Action were developed to enhance regional goals associated with good stewardship of land and water resources that would allow for continued recreational use and development of project lands. The 566 acres of HDR and 483 acres of MRML-LDR will continue to provide recreation opportunities. The 376 acres of ESA land will also allow minimally invasive recreation activities such as wildlife viewing and hiking. Since recreational opportunities remain abundant, and the revised Master Plan recognizes and reinforces projected recreational trends there would be negligible, long-term beneficial impacts on recreation resulting from the revision of the Master Plan from the Proposed Action.

3.13 AESTHETIC RESOURCES

Lake Georgetown is best known for the mature juniper forests and karst features that surround the lake, as well as the excellent hunting, fishing, biking, and camping opportunities. Lake Georgetown proper and surrounding federal lands also offers public, open space value and scenic vistas that are unique in the region.

3.13.1 Alternative 1: No Action Alternative

There would be no major adverse impacts on visual resources as a result of implementing the No Action Alternative, as there would be no changes to the existing 1989 Master Plan.

3.13.2 Alternative 2: Proposed Action

Lake Georgetown currently plays a pivotal role in availability of parks and open space in Williamson County. Even though the amount of acreage available for HDR reduces from 675 acres to 566 acres and MRML-LDR reduces from 1,991 acres to 483 with implementation of the 2020 Master Plan, these land reclassifications reflect changes in land management and land uses that have occurred since 1973 at Lake Georgetown. The conversion of these lands would have no effect on current or projected public use or visual aesthetics.

Furthermore, the addition in the acreage of land classified as ESAs to 376 acres and the net increase of MRML-WM by 1,242 acres would protect lands that are aesthetically pleasing at Lake Georgetown and limit future development. Natural Resources Management Objectives for the lake will continue to minimize activities which will disturb the scenic beauty and aesthetics of the lake.

The establishment of three utility corridors would further limit habitat fragmentation and potential impacts to aesthetics areas at Lake Georgetown. Long-term, minor benefits to aesthetics resources would occur as a result of the 2020 Master Plan.

Therefore, the Proposed Action would result in minor, long-term beneficial impacts to the aesthetic resources of Lake Georgetown.

3.14 HAZARDOUS MATERIALS AND SOLID WASTE

This section describes existing condition with the Project area with regard to potential environmental contamination and the sources of releases to the environment. Contaminants could enter the lake environment via air or water pathways. The highways and roads, railroads, and oil and gas pipelines in the vicinity could also provide sources of contaminants to the project area.

3.14.1 Alternative 1: No Action Alternative

There would be no major adverse long-term impacts on hazardous, toxic, radioactive, or solid wastes as a result of implementing the No Action Alternative, as there would be no changes to the existing Master Plan.

3.14.2 Alternative 2: Proposed Action

The land reclassifications required to revise the Master Plan would be compatible with Lake Georgetown hazardous and toxic waste and solid waste management practices. Therefore, no major, adverse, long-term impacts due to hazardous, toxic, radioactive, or solid wastes would occur as a result of implementing the 2020 Master Plan.

3.15 HEALTH AND SAFETY

As mentioned earlier in this document, Lake Georgetown authorized purposes include flood risk management, water supply, recreation and fish and wildlife. Compatible uses incorporated in project operation management plans include programs that establish recreation management practices to protect the public, such as water safety education, safe boating and swimming regulations, safe hunting regulations, and speed limit and pedestrian signs for park roads. The staff of Lake Georgetown are in place to enforce these policies, rules, and regulations during normal park hours.

3.15.1 Alternative 1: No Action Alternative

Under the No Action Alternative, the 2020 Master Plan would not be revised. No major, adverse, long-term impacts on human health or safety would be anticipated.

3.15.2 Alternative 2: Proposed Action

Under the Proposed Action, the required revisions to the Lake Georgetown 1973 Master Plan would be compatible with project safety management plans. The project would continue to have reporting guidelines in place should water quality become a threat to public health. Existing regulations and safety programs throughout the Lake Georgetown area would continue to be enforced to ensure public safety. Therefore, there would be no major, adverse, long-term impacts on public health and safety as a result of implementing the Proposed Action.

3.16 SUMMARY OF CONSEQUENCES AND BENEFITS

Table 3.16 provides a tabular summary of the consequences and benefits for the No Action and Proposed Action alternatives for each of the 15 assessed resource categories.

Table 3.16. Summary of Consequences and Benefits

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Land Use	No effect on private lands. Minor to moderate benefit from placing emphasis on protection of wildlife and environmental values on USACE land and maintaining current level of developed recreation facilities.	Fails to recognize recreation trends and regional natural resource priorities.	Recognizes recreation trends and regional natural resource priorities identified by TPWD, and public comment.	Land classification changes and new resource objectives fully recognize passive use recreation trends and regional environmental values.
Water Resources Including Groundwater, Wetlands, and Water Quality	Minor change with benefits to recognize value of wetlands.	Fails to recognize the water quality benefits of good land stewardship and need to protect wetlands.	Promotes restoration and protection of wetlands and good land stewardship.	Specific resource objective promotes restoration and protection of wetlands.
Climate	Minor change to recognize need for sustainable, energy efficient design.	Fails to promote sustainable, energy efficient design.	Promotes land management practices and design standards that promote sustainability.	Specific resource objectives promote national climate change mitigation goal. Leadership in Energy and Environmental Design (LEED) standards for green design, construction, and operation activities will be employed to the extent practicable.
Climate Change and Greenhouse Gases	Same as for Climate.	Same as for Climate.	Same as for Climate.	Same as for Climate.
Air Quality	Negligible change to help reduce air emissions.	No effect.	Promotes activities and goals that will help to reduce emissions.	Reduces HDR and MRML-LDR acres, which in turn reduces the motor vehicle exhaust that is produced. New resource objectives also help to reduce emissions.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Topography, Geology and Soils	Beneficial change to place emphasis on good stewardship of land and water resources.	Fails to specifically recognize known and potential soil erosion problems.	Encourages good stewardship that would reduce existing and potential erosion.	Specific resource objectives call for stopping erosion from overuse and land disturbing activities.
Natural Resources	Major benefits through land reclassification and resource objectives.	Fails to recognize ESAs, and regional priorities calling for protection of wildlife habitat.	Gives full recognition of sensitive resources and regional trends and priorities related to natural resources.	Reclassification of lands included 376 acres of ESA and a net increase in lands emphasizing wildlife management.
Threatened & Endangered Species and rare/unique communities as identified in the TXNDD Database	Moderate benefits from land reclassifications and utility corridors for recognizing both federal and state-listed species.	Fails to recognize current federal and state-listed species.	Fully recognizes federal and state-listed species as well as the TXNDD Database listed by TPWD.	The master plan sets forth the most recent listing of federal and state-listed species and addresses on-going commitments associated with USFWS Biological Opinions.
Invasive Species	Minor change to recognize several recent and potentially aggressive invasive species.	Fails to recognize current invasive species and associated problems.	Fully recognizes current species and the need to be vigilant as new species may occur.	Specific resource objectives specify that invasive species shall be monitored and controlled as needed.
Cultural, Historical and Archaeological Resources	Minor change to recognize current status of cultural resource.	Included cursory information about cultural resources that is inadequate for future management and protection.	Recognizes the presence of cultural resources and places emphasis on protection and management.	Reclassification of lands and specific resource objectives were included for protection of cultural resources.
Socioeconomics and Environmental Justice	No change.	No effect.	No effect.	No added benefit.
Recreation	Negligible benefits to outdoor recreation programs.	Fails to recognize current outdoor recreation trends.	Fully recognizes current outdoor recreation trends and places special emphasis on trails.	Specific management objectives focused on outdoor recreation opportunities and trends are included.

Resource	Change Resulting from Revised Master Plan	Environmental Consequences		Benefits Summary
		No Action Alternative	Proposed Action	
Aesthetic Resources	Minor benefits through land reclassification, utility corridors, and resource objectives.	Fails to minimize activities that disturb the scenic beauty and aesthetics of the lake.	Promotes activities that limit disturbance to the scenic beauty and aesthetics of the lake.	Specific management objectives to minimize activities that disturb the scenic beauty and aesthetics of the lake.
Hazardous Materials and Solid Waste	No change.	No effect.	No effect.	No added benefit.
Health and Safety	Minor change to promote public safety awareness.	Fails to emphasize public safety programs.	Recognizes the need for public safety programs.	Includes specific management objectives to increase water safety outreach efforts. Also, classifies 104 acres of water surface as restricted and designated no-wake for public safety purposes.

This page intentionally left blank

SECTION 4: CUMULATIVE IMPACTS

The most severe environmental degradation may not result from the direct effects of any particular action, but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 (CEQ Regulations), a cumulative effect is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

By Memorandum dated June 24, 2005, from the Chairman of the CEQ to the Heads of Federal Agencies, entitled "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis", CEQ made clear its interpretation that "...generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions..." and that the "...CEQ regulations do not require agencies to catalogue or exhaustively list and analyze all individual past actions." This cumulative impacts analysis summarizes expected environmental impacts from the combined impacts of past, current, and reasonably foreseeable future activities affecting any part of the human or natural environments impacted by the Proposed Action.

4.1 Past Impacts within the Zone of Interest.

Congressional authority for the construction of the North Lake Dam and Lake, now Lake Georgetown, as a unit of the plan for improvement for the Brazos River Basin, Texas, is contained in Public Law 874, (87th Congress, 2d Session) approved October 23, 1962. This is in accordance with plan outlined in House Document No. 591 (87th Congress, 2d session.) Construction of Lake Georgetown Dam was completed in October 1980. Lake Georgetown encompasses 4,173 acres of land and 1,287 acres of surface water.

4.2 Current and Reasonably Foreseeable Projects Within and Near the Zone Of Interest

Future management of the 514.62 acres of Flowage Easement Lands at Lake Georgetown includes routine inspection of these areas to ensure that the Government's rights specified in the easement deeds are protected. In almost all cases, the Government acquired the right to prevent placement of fill material or habitable structures on the easement area. Placement of any structure that may interfere with the USACE flood risk management and water conservation missions may also be prohibited.

Regional and county mobility plans call for general roadway improvements of some existing roadways within the surrounding vicinity of USACE lands. No local road expansion or construction projects planned or anticipated to take place within the zone of interest during the planning horizon of the 2020 Master Plan.

USACE policy encourages the establishment of designated corridors on project lands, where feasible, to serve as the preferred location for future out grants 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 three utility corridors would be designated at Lake Georgetown. Because USACE policy in EP 1130-2-550, Chapter 17, states that project lands will generally be available only for roads that are considered regional arteries or freeways, and all current regional and county mobility plans include no proposals for regional arterials crossing USACE land, there is no need for designation of roadway corridors. Future use of this corridor, where the corridor is limited to an existing easement, would in most cases require prior approval of those entities that have legal rights to the easement.

Private mineral owners are anticipated to continue exploration and production activities within their respective mineral deposits that underlie the majority of USACE lands. The rate at which exploration and production activity may occur is unpredictable as it is governed by numerous factors such as the value of the deposits in relation to national and international markets. Through the use of mineral subordination rights acquired by USACE on private minerals, basic resource protection measures can be required when mineral exploration and production activities are proposed, to the extent that private mineral owners cannot be denied reasonable access to their minerals. Federal ownership of minerals underlying USACE lands is very limited, but such minerals could be proposed for lease to private entities, provided USACE determines that the leasing would not interfere with operation of the project for its intended purposes, there is no threat to public health and safety, and natural resources are not harmed. If leasing of federal minerals would occur in the future, BLM would execute the lease and seek public input prior to the lease. It is anticipated that USACE would require BLM to stipulate “No Surface Occupancy” of federal land as a condition of the lease. Coordination with BLM during Plan preparation indicated there are currently no active or proposed leases of federally-owned minerals underlying USACE lands.

The Resource Plan in Chapter 5 of the 2020 Master Plan does not list any specific actions that may occur in the future.

4.3 Analysis Of Cumulative Impacts

Impacts on each resource were analyzed according to how other actions and projects within the zone of interest might be affected by the No Action Alternative and Proposed Action. Impacts can vary in degree or magnitude from a slightly noticeable change to a total change in the environment. For the purpose of this analysis the intensity of impacts will be classified as negligible, minor, moderate, or major. These intensity thresholds were previously defined in Section 3.0. Moderate growth and development are expected to continue in the vicinity of Lake Georgetown and cumulative adverse impacts on resources would not be expected when added to the impacts of activities associated with the Proposed Action or No Action Alternative. A summary of the anticipated cumulative impacts on each resource is presented below.

4.3.1 Land Use

A major impact would occur if any action is inconsistent with adopted land use plans or if an action would substantially alter those resources required for, supporting, or benefiting the current use. Under the No Action Alternative, land use would not change. Although the Proposed Action would result in the reclassification of project lands, the reclassifications were developed to enhance regional goals associated with good stewardship of land and water resources that would allow for continued use and development of project lands. Therefore, cumulative impacts on land use within the area surrounding Lake Georgetown, when combined with past and proposed actions in the region, are anticipated to be minimal.

4.3.2 Water Resources

Lake Georgetown was developed for flood risk management, water supply, recreation and fish and wildlife. A major impact would occur if any action is inconsistent with adopted surface water classifications or water use plans, or if an action would substantially alter those resources required for, supporting, or benefiting the current use. The reclassifications required for the Proposed Action would allow land management and land uses to be compatible with the goals of good stewardship of water resources.

Other activities surrounding Lake Georgetown, such as the addition of future utility lines in corridors, which would require boring beneath streams in most cases to avoid impacts, have been identified as having the potential to contribute directly to the cumulative impacts on water quality; however, water quality monitoring will continue to be used to assess any changes in these conditions. The cumulative impacts on water quality from the Proposed Action at Lake Georgetown are anticipated to be negligible when combined with past and proposed actions in the area.

4.3.3 Climate

The implementation of the revised land use classifications in the 2020 Master Plan, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on the climate.

4.3.4 Climate Change and GHG

Under the Proposed Action, current Lake Georgetown project management plans and monitoring programs would not be changed. In the event that GHG emission issues become significant enough to impact the current operations at Lake Georgetown, the 2020 Master Plan and all associated documents would be reviewed and revised as necessary. Therefore, implementation of the 2020 Master Plan, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on climate change and GHG emissions.

4.3.5 Air Quality

For the area surrounding Lake Georgetown, activities that could add to air emissions are likely few and minor in nature. Vehicle traffic along park and area roadways and routine daily activities in nearby communities contribute to current and future emission sources. Minor improvements to the communities in the Lake Georgetown area, such as construction of new business buildings, could also contribute to minor future emissions. Implementation of the 2020 Master Plan will not contribute to major cumulative impacts in the region.

4.3.6 Topography, Geology, and Soils

A major impact would occur if the action exacerbates or promotes long-term erosion, if the soils are inappropriate for the proposed construction and would create a risk to life or property, or if there would be a substantial reduction in agricultural production or loss of Prime Farmland soils. Cumulative adverse impacts on topography, geology, and soils within the area surrounding Lake Georgetown, when combined with past and proposed actions in the region, are anticipated to be negligible on the long-term basis.

Land use around Lake Georgetown has changed in the past several years. Given the projected population growth and vast acreage of Prime Farmland in the area, there could be cumulative impacts on Prime Farmland in the Project area. However, the cumulative impacts on Prime Farmland from the Proposed Action at Lake Georgetown are anticipated to be negligible when combined with past and proposed actions in the area.

4.3.7 Natural Resources

The significance threshold for natural resources would include a substantial reduction in ecological processes, communities, or populations that would threaten the long-term viability of a species or result in the substantial loss of a sensitive community that could not be offset or otherwise compensated. Past, present, and future projects are not anticipated to impact the viability of any plant species or community, rare or sensitive habitats, or wildlife. The establishment of ESA and MRML-WM areas, as well as resource objectives that favor protection and restoration of valuable natural resources, will have beneficial cumulative impacts. No identified projects would threaten the viability of natural resources. Therefore, there would be long-term beneficial impacts to natural resources resulting from the revision of the 2020 Lake Georgetown Master Plan, when combined with past and proposed actions in the area.

4.3.8 Threatened and Endangered Species

The Proposed Action and No Action Alternative would not adversely impact threatened, endangered and special status species within the area, as they will be coordinated with the appropriate resource agencies. Should federally listed species change in the future (e.g., delisting of the Least Tern or other species or listing of new species), associated requirements will be reflected in revised land management practices in coordination with the USFWS. The USACE would continue cooperative

management plans with the USFWS and TPWD to preserve, enhance, and protect critical wildlife habitat resources.

The land reclassifications explained in detail in Section 3.8.3 will allow for further protection of state listed threatened, endangered, and unique species, and unique/rare communities found within the TXNDD database. The reclassifications will also allow future land management practices that would maintain and enhance habitats for these species. The proposed utility corridors would limit further fragmentation of habitat and confine ongoing maintenance disturbances. Therefore, there would be major long-term beneficial impacts on threatened and endangered species resulting from the revision of the Lake Georgetown 1973 Master Plan when combined with past and proposed actions in the area.

4.3.9 Invasive Species

Invasive species control has and will continue to be conducted on various areas across the project lands. Implementing Best Management Practices (BMP) will help reduce the introduction and distribution of invasive species, ensuring that proposed actions in the region will not contribute to the overall cumulative impacts related to invasive species. The land reclassifications required to revise the 1973 Master Plan are compatible with Lake Georgetown invasive species management practices. Therefore, there would be minor long-term beneficial impacts on reducing and preventing invasive species within the area surrounding Lake Georgetown.

4.3.10 Cultural, Historical, and Archaeological Resources

The Proposed Action would not affect cultural resources or historic properties. Therefore, this action, when combined with other existing and proposed projects in the region, would not result in major cumulative impacts on cultural resources or historic properties.

4.3.11 Socioeconomics and Environmental Justice

The Proposed Action would not result in the displacement of persons (minority, low-income, children, or otherwise) or decrease numbers of people recreating at Lake Georgetown as a result of implementing the revised land classifications. The creation of jobs, increase of visitor spending, and relative decrease of usage fees, results in a positive impact to the local economy. Therefore, the effects of the Proposed Action on environmental justice and the protection of children, when combined with other ongoing and proposed projects in the Lake Georgetown area, are anticipated to have negligible long-term beneficial impacts.

4.3.12 Recreation

Lake Georgetown is beneficial to the local visitors and also offers a variety of free recreation opportunities. Some of the popular recreation activities at Lake Georgetown are, on a national basis, either static or declining in participation. For example, developed camping activity, power boating, hunting, and fishing have experienced small to moderate declines in recent years. In contrast to these declines,

significant increases in hiking, walking, sightseeing, wildlife viewing and canoeing/kayaking have occurred in recent years. Even though the amount of acreage available for HDR and MRML-LDR would decrease with implementation of the 2020 Master Plan, these land reclassifications reflect changes in land management and land uses that have occurred since 1973 at Lake Georgetown. The lands that remain in the HDR classification include undeveloped acreage that could be used for future outdoor recreation development, and all MRML lands are available for passive recreation uses characteristic of MRML-LDR lands. The conversion of these lands would have no adverse effect on current or projected public use. Therefore, the effects of the Proposed Action, when combined with other existing and proposed projects in the region, would result in negligible long-term beneficial impacts on the area recreation.

4.3.13 Aesthetic Resources

Lake Georgetown proper and surrounding federal lands offer public, open space values and scenic vistas that are unique in the region. Natural Resources Management Objectives for the lake will continue to minimize activities which disturb the scenic beauty and aesthetics of the lake. Therefore, the Proposed Action would result in minor long-term beneficial impacts to the aesthetic resources of Lake Georgetown.

4.3.14 Hazardous Materials and Solid Waste

No hazardous material or solid waste concerns would be expected with implementation of the 2020 Master Plan; therefore, when combined with other ongoing and proposed projects in Lake Georgetown, there would be no major long-term adverse impacts on hazardous materials and solid waste.

4.3.15 Health and Safety

No health or safety risks would be created by the Proposed Action. The effects of implementing the 2020 Master Plan, when combined with other ongoing and proposed projects in the Lake Georgetown area, would result in no major long-term adverse impacts on health and safety for the area.

This page intentionally left blank

SECTION 5: COMPLIANCE WITH ENVIRONMENTAL LAWS

This EA has been prepared to satisfy the requirements of all applicable environmental laws and regulations, and has been prepared in accordance with the CEQ's implementing regulations for NEPA, 40 CFR Parts 1500 – 1508, and the USACE ER 200-2-2, *Environmental Quality: Procedures for Implementing NEPA*. The revision of the 2020 Master Plan is consistent with the USACE's Environmental Operating Principles. 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:

Fish and Wildlife Coordination Act of 1958, as amended

The USACE initiated public involvement and agency scoping activities to solicit input on the 2020 Master Plan revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. Information provided by USFWS and TPWD on fish and wildlife resources has been utilized in the development of the 2020 Master Plan.

Endangered Species Act of 1973, as amended

Current lists of threatened and endangered species were compiled for the revision of the 2020 Master Plan. There would be no adverse long-term impacts on threatened or endangered species resulting from the revision of the 2020 Master Plan. However, major long-term beneficial impacts, such as habitat protection, could occur as a result of the revision of the 2020 Master Plan.

Executive Order 13186 (Migratory Bird Habitat Protection)

Sections 3a and 3e of EO 13186 directs federal agencies to evaluate the impacts of their actions on migratory birds, with emphasis on species of concern, and inform the USFWS of potential negative impacts on migratory birds. The 2020 Master Plan revision will not result in adverse impacts on migratory birds or their habitat. Beneficial impacts could occur through protection of habitat as a result of the 2020 Master Plan revision.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 extends federal protection to migratory bird species. The nonregulated "take" of migratory birds is prohibited under this Act in a manner similar to the prohibition of "take" of threatened and endangered species under the Endangered Species Act. The timing of resource management activities would be coordinated to avoid impacts on migratory and nesting birds.

Clean Water Act (CWA) of 1977

The Proposed Action is in compliance with all state and federal CWA regulations and requirements and water quality is regularly monitored by the USACE and TCEQ. A state water quality certification pursuant to Section 401 of the CWA is not required for

the 2020 Master Plan revision. However, any future utilities occupying the proposed utility corridors would be required to comply with all Clean Water Act requirements. There will be no change in management of the reservoir that would impact water quality.

National Historic Preservation Act (NHPA) of 1966, as amended

Compliance with the NHPA of 1966, as amended, requires identification of all properties in the project area listed in, or eligible for listing in, the NRHP. All previous surveys and site salvages were coordinated with the Texas State Historic Preservation Officer. Known sites are mapped and avoided by maintenance activities. Areas that have not undergone cultural resources surveys or evaluations will need surveys prior to any earthmoving or other potentially impacting activities.

Clean Air Act of 1977

The US EPA established nationwide air quality standards to protect public health and welfare. Existing operation and management of the reservoir is compliant with the Clean Air Act and will not change with the 2020 Master Plan revision.

Farmland Protection Policy Act (FPPA) of 1980 and 1995

The FPPA's purpose is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. Prime Farmland is present within and adjacent to Lake Georgetown. The 2020 Master Plan would not impact Prime Farmland present on Lake Georgetown.

Executive Order 11990, Protection of Wetlands

EO 11990 requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in executing federal projects. The 2020 Master Plan complies with EO 11990.

Executive Order 11988, Floodplain Management

This EO directs federal agencies to evaluate the potential impacts of proposed actions in floodplains. The operation and management of the existing project complies with EO 11988.

CEQ Memorandum dated August 11, 1980, Prime or Unique Farmlands

Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The Proposed Action would not impact Prime Farmland present on Lake Georgetown project lands.

Executive Order 12898, Environmental Justice

This EO directs federal agencies to achieve environmental justice to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review. Agencies are required to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The revision of the 2020 Master Plan will not result in a disproportionate adverse impact on minority or low-income population groups.

SECTION 6: IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

NEPA requires that federal agencies identify “any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action should it be implemented” (42 U.S.C. § 4332). An irreversible commitment of resources occurs when the primary or secondary impacts of an action result in the loss of future options for a resource. Usually, this is when the action affects the use of a nonrenewable resource or it affects a renewable resource that takes a long time to renew. The impacts of reclassification of land would not be considered an irreversible commitment because subsequent Master Plan revisions could result in some lands being reclassified to a prior, similar land classification. An irretrievable commitment of resources is typically associated with the loss of productivity or use of a natural resource (e.g., loss of production or harvest). No irreversible or irretrievable impacts on federally protected species or their habitat is anticipated from implementing revisions to the Lake Georgetown 2020 Master Plan.

This page intentionally left blank

SECTION 7: PUBLIC AND AGENCY COORDINATION

In accordance with 40 CFR §§1501.7, 1503, and 1506.6, the USACE initiated public involvement and agency scoping activities to solicit input on the 2020 Master Plan revision process, as well as identify reclassification proposals, and identify significant issues related to the Proposed Action. The USACE began its public involvement process with a public scoping meeting to provide an avenue for public and agency stakeholders to ask questions and provide comments. The public scoping meeting was held on February 12, 2019 in Georgetown, Texas. This meeting introduced the public to the 1973 Master Plan and began a 30-day public comment period. A second public meeting was held on 11 March 2020. This meeting introduced the public to the Draft Master Plan and EA and to begin the 30-day public review period of the Draft Master Plan and EA. The USACE, Fort Worth District, placed advertisements on the USACE webpage, social media, and print publications prior to these meetings. The EA was coordinated with agencies having legislative and administrative responsibilities for environmental protection. Please refer to Section 7 of the 2020 Master Plan for a summary of comments received at the public meetings.

This page intentionally left blank

SECTION 8: REFERENCES

- Environmental Protection Agency (EPA). 2020. Outdoor Air Quality Index Report: 2017, Marshall, TX. <https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report>
- Federal Emergency Management Agency (FEMA). 2004. Federal Guidelines for Dam Safety. <https://www.fema.gov/media-library-data/20130726-1502-20490-5785/fema-93.pdf>
- Kathy, Judy., Ledger, E.B., and Barker, C.A.,. 2004. Natural Source of Arsenic in East Texas Lake Sediments. Published by Texas Academy of Science.
<http://www.freepatentsonline.com/article/Texas-Journal-Science/123164147.html>
- NatureServe. 2017A. Geocarpon Minimum
<http://explorer.natureserve.org/servlet/NatureServe?searchName=Geocarpon+minimum>
- NatureServe. 2017B. Goldenwave Tickseed
<http://explorer.natureserve.org/servlet/NatureServe?searchName=Coreopsis+intermedia>
- NatureServe. 2017C. Neches River Rosemallow
<http://explorer.natureserve.org/servlet/NatureServe?searchName=Hibiscus+dasycalyx>
- NatureServe. 2017D. Panicked Indigobush.
<http://explorer.natureserve.org/servlet/NatureServe?searchName=Amorpha+paniculata>
- Texas Commission on Environmental Quality (TCEQ). 2017. Northeast Texas and the State Implementation Plan <https://www.tceq.texas.gov/airquality/sip/net>
- Texas Commission on Environmental Quality (TCEQ). 2020. Draft 2016 Texas Integrated Report - Texas 303(d) List (Category 5)
https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016_303d.pdf
- Texas Water Development Board (TWDB). January 2009. Water Quality in the Carrizo-Wilcox Aquifer, 1990 – 2006. Report 372. Radu Boghici. TWDB Report 372.
- TWDB. 2020. Water Data, Lake O the Pines, February 2016-May 2017
<https://waterdatafortexas.org/reservoirs/individual/lake-o-the-pines>

US Army Corps of Engineers (USACE). 2020. Lake Georgetown 2020 Master Plan.

US Census. 2020. Poverty Thresholds, 2017. <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>

US Fish & Wildlife Service (USFWS). 2020A. Least Tern (Interior Population), *Sterna antillarum*, Fact Sheet.
<https://www.fws.gov/midwest/Endangered/birds/leasttern/IntLeastTernFactSheet.html>

USFWS. 2020 B. Piping Plover Fact Sheet
2017A.<https://www.fws.gov/midwest/Endangered/pipingplover/pipingpl.html>

USFWS. 2020 C. IPaC for Information and Planning Conservation, USFWS Trust Resources. Internet URL: <https://ecos.fws.gov/ipac/>

SECTION 9: ACRONYMS/ABBREVIATIONS

%	Percent
°	Degrees
BMP	Best Management Practice
BP	Before Present
CAP	Climate Action Plan
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ e	CO ₂ -equivalent
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineer Pamphlet
ER	Engineer Regulation
ERS	Environmental Radiation Surveillance
ESA	Environmentally Sensitive Area
ESA-IFR	Inactive/Future Recreation
F	Fahrenheit
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GCWA	Golden-cheeked Warbler
HDR	High Density Recreation
IFR	Inactive/Future Recreation
LEED	Leadership in Energy & Environmental Design
MRML-IFR	Future/Inactive Recreation
MRML	Multiple Resource Management Lands
MRML-LDR	Low Density Recreation
MRML-WM	Wildlife Management
MRML-VM	Vegetative Management
msl	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NO	Nitrogen Oxide
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRRS	National Recreation Reservation Service
O ₃	Ozone
OAQPS	Office of Air Quality Planning and Standards

Pb	Lead
PCB	Polychlorinated Biphenyls
PCPI	Per Capita Personal Incomes
PM _{2.5}	Particulate Matter Less than 2.5 Microns
PM ₁₀	Particulate Matter Less than 10 Microns
PO	Project Operations
REC	Recreational Areas
ROD	Record of Decision
RPEC	Regional Planning and Environmental Center
SGCN	Species of Greatest Conservation Need
SO ₂	Sulfur Dioxide
SUPER	USACE Suite of Computer Programs
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TCLP	Toxicity Characteristic Leaching Procedure
TORP	Texas Outdoor Recreation Plan
TPWD	Texas Parks and Wildlife Department
U.S.	United States
U.S.C.	U.S. Code
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WHAP	Wildlife Habitat Appraisal Procedures
WM	Wildlife Management
VM	Vegetative Management

SECTION 10: LIST OF PREPARERS

Brandon Wadlington – Biologist, Regional Planning and Environmental Center, 4 year of USACE experience.

David Hilburn – Biologist, Regional Planning and Environmental Center, 5 years of USACE experience

Shelby Scego – Biologist, Regional Planning and Environmental Center, 2 years of USACE experience.

Blake Westmoreland – Biologist, Regional Planning and Environmental Center, 2 years of USACE experience.

Christopher Ford – Biologist, Regional Planning and Environmental Center, 2 years of USACE experience.

APPENDIX C - TRUST RESOURCES REPORT – USFWS & SGCN- TPWD

Page intentionally left blank



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Austin Ecological Services Field Office

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

Phone: (512) 490-0057 Fax: (512) 490-0974

<http://www.fws.gov/southwest/es/AustinTexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>



In Reply Refer To:

February 03, 2020

Consultation Code: 02ETAU00-2020-SLI-0713

Event Code: 02ETAU00-2020-E-01508

Project Name: Georgetown Lake

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

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 county 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.).

Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Also 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. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

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. Under sections 7(a)(1) and 7(a)(2) 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 federally listed as threatened

or endangered species and to determine whether projects may affect these species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

While a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal Agency must notify the Service in writing of any such designation. The Federal agency shall also independently review and evaluate the scope and content of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by a federally funded, permitted or authorized activity, the agency is required to consult with the Service pursuant to 50 CFR 402. The following definitions are provided to assist you in reaching a determination:

- *No effect* - the proposed action will not affect federally listed species or critical habitat. A “no effect” determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.
 - *May affect, but is not likely to adversely affect* - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effect. The Federal agency or the designated non-Federal representative should consult with the Service to seek written concurrence that adverse effects are not likely. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.
 - *Is likely to adversely affect* - adverse effects to listed species may occur as a direct or indirect result of the proposed action. For this determination, the effect of the action is neither discountable nor insignificant. If the overall effect of the proposed action is beneficial to the listed species but the action is also likely to cause some adverse effects to individuals of that species, then the proposed action “is likely to adversely affect” the listed species. The analysis should consider all interrelated and interdependent actions. An “is likely to adversely affect” determination requires the Federal action agency to initiate formal section 7 consultation with our office.
-

Regardless of the determination, the Service recommends that the Federal agency maintain a complete record of the evaluation, including steps leading to the determination of effect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information. 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: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>.

Migratory Birds

For projects that may affect migratory birds, the Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the Service recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

For additional information concerning the MBTA and recommendations to reduce impacts to migratory birds please contact the U.S. Fish and Wildlife Service Migratory Birds Office, 500 Gold Ave. SW, Albuquerque, NM 87102. A list of migratory birds may be viewed at <https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php>. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at: <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/communication-towers.php>. Additionally, wind energy projects should follow the wind energy guidelines

<https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php>) for minimizing impacts to migratory birds and bats.

Finally, please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/eagles.php>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

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:

Austin Ecological Services Field Office

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

(512) 490-0057

Project Summary

Consultation Code: 02ETAU00-2020-SLI-0713

Event Code: 02ETAU00-2020-E-01508

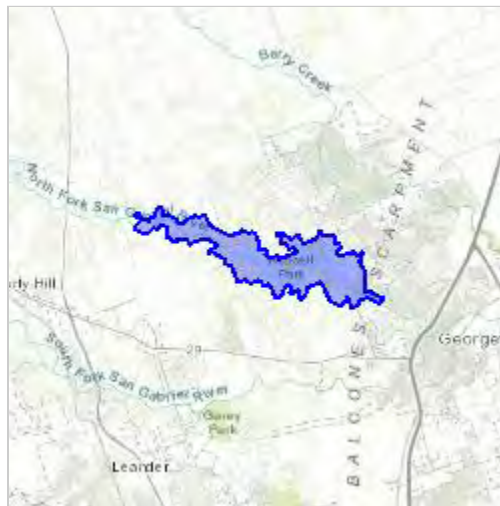
Project Name: Georgetown Lake

Project Type: LAND - MANAGEMENT PLANS

Project Description: Georgetown Lake
Master Plan

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/30.680213005298963N97.7396691356252W>



Counties: Williamson, TX

Endangered Species Act Species

There is a total of 15 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. Note that 3 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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.
-

Birds

NAME	STATUS
<p>Golden-cheeked Warbler (=wood) <i>Dendroica chrysoparia</i></p> <p>No critical habitat has been designated for this species.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/33</p>	Endangered
<p>Least Tern <i>Sterna antillarum</i></p> <p>Population: interior pop.</p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind Energy Projects <p>Species profile: https://ecos.fws.gov/ecp/species/8505</p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.</p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind Energy Projects <p>Species profile: https://ecos.fws.gov/ecp/species/6039</p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>No critical habitat has been designated for this species.</p> <p>This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind Energy Projects <p>Species profile: https://ecos.fws.gov/ecp/species/1864</p>	Threatened
<p>Whooping Crane <i>Grus americana</i></p> <p>Population: Wherever found, except where listed as an experimental population</p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/758</p>	Endangered

Amphibians

NAME	STATUS
<p>Georgetown Salamander <i>Eurycea naufragia</i></p> <p>There is proposed critical habitat for this species. Your location overlaps the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/7278</p>	Threatened
<p>Jollyville Plateau Salamander <i>Eurycea tonkawae</i></p> <p>There is final critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3116</p>	Threatened
<p>Salado Salamander <i>Eurycea chisholmensis</i></p> <p>There is proposed critical habitat for this species. Your location is outside the critical habitat.</p> <p>Species profile: https://ecos.fws.gov/ecp/species/3411</p>	Threatened

Clams

NAME	STATUS
Texas Fawnsfoot <i>Truncilla macrodon</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8965	Candidate
Texas Pimpleback <i>Quadrula petrina</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8966	Candidate

Insects

NAME	STATUS
Coffin Cave Mold Beetle <i>Batrisodes texanus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6234	Endangered
Tooth Cave Ground Beetle <i>Rhadine persephone</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5625	Endangered

Arachnids

NAME	STATUS
Bone Cave Harvestman <i>Texella reyesi</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5306	Endangered
Tooth Cave Spider <i>Neoleptoneta myopica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2360	Endangered

Flowering Plants

NAME	STATUS
Bracted Twistflower <i>Streptanthus bracteatus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2856	Candidate

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Georgetown Salamander <i>Eurycea naufragia</i> https://ecos.fws.gov/ecp/species/7278#crithab	Proposed

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.

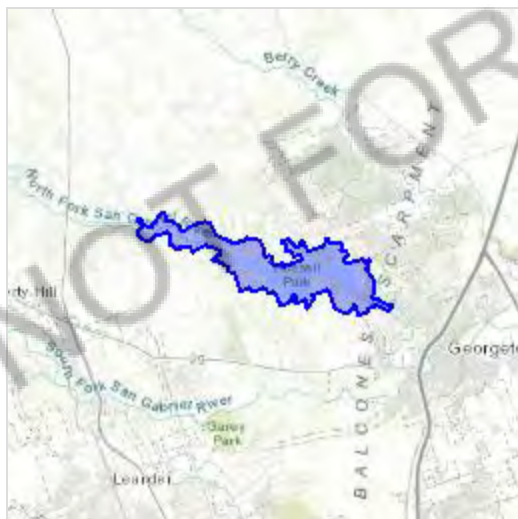
Project information

NAME

Georgetown Lake

LOCATION

Williamson County, Texas



DESCRIPTION

Georgetown Lake
Master Plan

Local office

Austin Ecological Services Field Office

☎ (512) 490-0057

☎ (512) 490-0974

10711 Burnet Road, Suite 200
Austin, TX 78758-4460

<http://www.fws.gov/southwest/es/AustinTexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>

NOT FOR CONSULTATION

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. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ 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 Fisheries²).

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.
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:

Birds

NAME	STATUS
------	--------

Golden-cheeked Warbler (=wood) *Dendroica chrysoparia* Endangered
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/33>

Least Tern *Sterna antillarum* Endangered
This species only needs to be considered if the following condition applies:
• Wind Energy Projects
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/8505>

Piping Plover *Charadrius melodus* Threatened
This species only needs to be considered if the following condition applies:
• Wind Energy Projects
There is **final** critical habitat for this species. Your location is outside the critical habitat.
<https://ecos.fws.gov/ecp/species/6039>

Red Knot *Calidris canutus rufa* Threatened
This species only needs to be considered if the following condition applies:
• Wind Energy Projects
No critical habitat has been designated for this species.
<https://ecos.fws.gov/ecp/species/1864>

Whooping Crane *Grus americana* Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
<https://ecos.fws.gov/ecp/species/758>

Amphibians

NAME	STATUS
------	--------

Georgetown Salamander <i>Eurycea naufragia</i> There is proposed critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/7278	Threatened
---	------------

Jollyville Plateau Salamander <i>Eurycea tonkawae</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/3116	Threatened
---	------------

Salado Salamander	<i>Eurycea chisholmensis</i>	Threatened
There is proposed critical habitat for this species. Your location is outside the critical habitat.		
https://ecos.fws.gov/ecp/species/3411		

Clams

NAME	STATUS
Texas Fawnsfoot <i>Truncilla macrodon</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8965	Candidate
Texas Pimpleback <i>Quadrula petrina</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8966	Candidate

Insects

NAME	STATUS
Coffin Cave Mold Beetle <i>Batrisodes texanus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6234	Endangered
Tooth Cave Ground Beetle <i>Rhadine persephone</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5625	Endangered

Arachnids

NAME	STATUS
Bone Cave Harvestman <i>Texella reyesi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5306	Endangered
Tooth Cave Spider <i>Neoleptoneta myopica</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2360	Endangered

Flowering Plants

NAME	STATUS
Bracted Twistflower <i>Streptanthus bracteatus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2856	Candidate

Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
Georgetown Salamander <i>Eurycea naufragia</i> https://ecos.fws.gov/ecp/species/7278#crithab	Proposed

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

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:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds
<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

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, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
------	--

<p>Bald Eagle <i>Haliaeetus leucocephalus</i></p> <p>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.</p> <p>https://ecos.fws.gov/ecp/species/1626</p>	Breeds Oct 15 to Jul 31
<p>Harris's Sparrow <i>Zonotrichia querula</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds elsewhere
<p>Lesser Yellowlegs <i>Tringa flavipes</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9679</p>	Breeds elsewhere
<p>Long-billed Curlew <i>Numenius americanus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/5511</p>	Breeds elsewhere
<p>Orchard Oriole <i>Icterus spurius</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Jun 10 to Aug 15

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 and understand the FAQ “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.

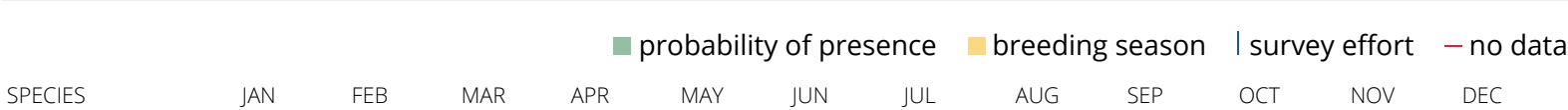
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

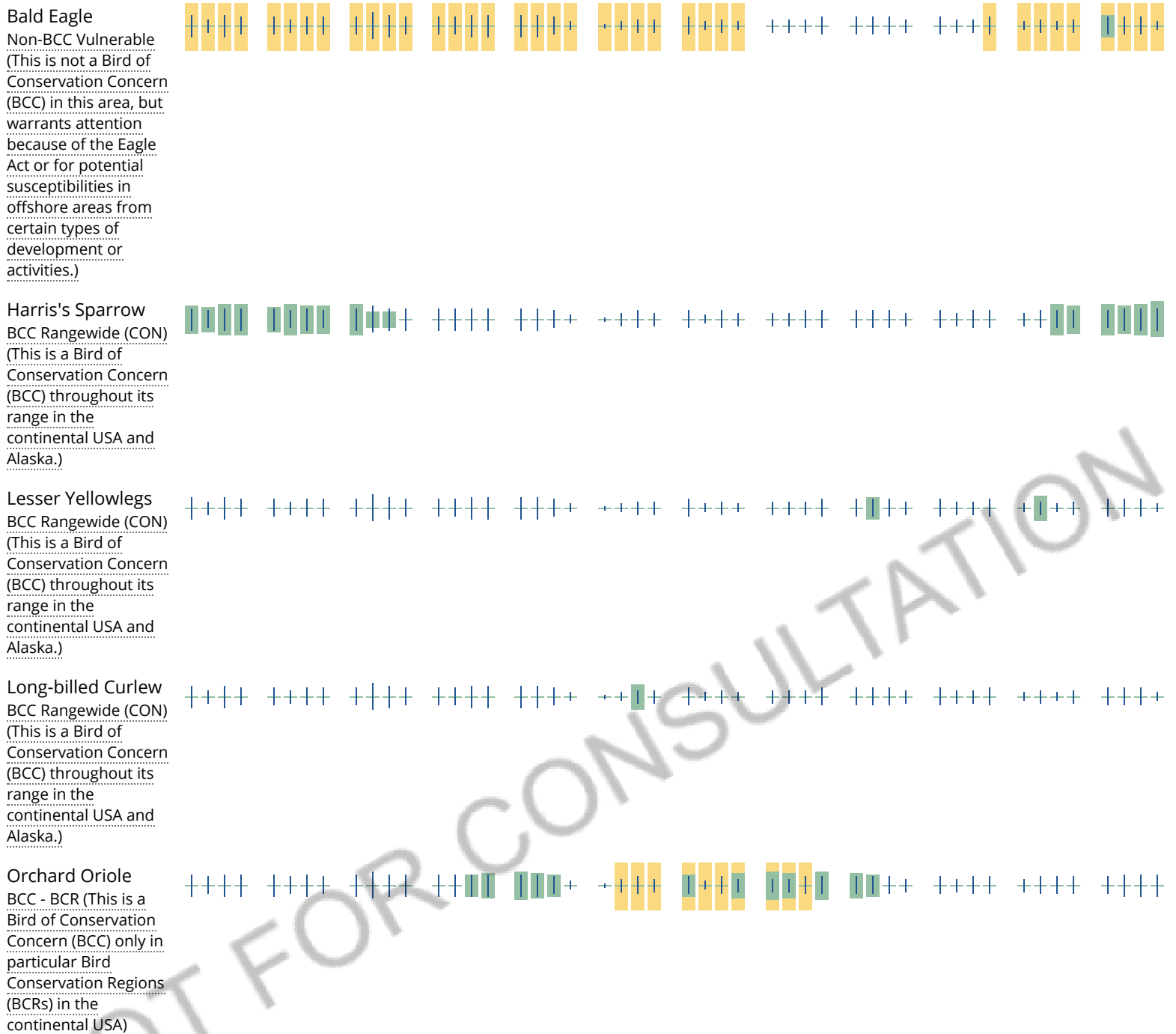
No Data (—)

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](#) and/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 migratory birds potentially occurring 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 [AKN Phenology 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 to 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, migrating or present year-round in my project 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 refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). 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

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

[PEM1A](#)

[PEM1Ch](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFO5/UBHh](#)

[PFO1A](#)

[PFO1Ah](#)

FRESHWATER POND

[PUB/FO5Hh](#)

[PUBHh](#)

[PUSCh](#)

LAKE

[L1UBHh](#)

[L2UBH](#)

[L2USC](#)

RIVERINE

[R4SBC](#)

[R2UBH](#)

[R2USA](#)

[R5UBH](#)

[R2USC](#)

[R5UBFx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

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 tubercid 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.

NOT FOR CONSULTATION

**APPENDIX D – OFFICIAL T&E SPECIES LIST – USFWS & STATE
LISTED SPECIES - TPWD**

Page intentionally left blank

Last Update: 7/17/2019

WILLIAMSON COUNTY

AMPHIBIANS

Barton Springs salamander *Eurycea sosorum*

Dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Georgetown salamander *Eurycea naufragia*

Known from springs and waters in and around town of Georgetown in Williamson County

Federal Status: LT	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Houston toad *Anaxyrus houstonensis*

Primary habitat is sandy soil which supports populations of *Pinus taeda*, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil of adjacent uplands when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

Jollyville Plateau salamander *Eurycea tonkawae*

Known from springs and waters of some caves north of the Colorado River

Federal Status: LT	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S2

Salado Springs salamander *Eurycea chisholmensis*

Surface springs and subterranean waters of the Salado Springs system along Salado Creek

Federal Status: LT	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1	State Rank: S1

southern crawfish frog *Lithobates areolatus areolatus*

The Southern Crawfish Frog can be found in abandoned crawfish holes and small mammal burrows. This species inhabits moist meadows, pasturelands, pine scrub, and river flood plains. This species spends nearly all of its time in burrows and only leaves the burrow area to breed. Although this species can be difficult to detect due to its reclusive nature, the call of breeding males can be heard over great distances. Eggs are laid and larvae develop in temporary water such as flooded fields, ditches, farm ponds and small lakes. Habitat: Shallow water, Herbaceous Wetland, Riparian, Temporary Pool, Cropland/hedgerow, Grassland/herbaceous, Suburban/orchard, Woodland- Conifer.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

AMPHIBIANS

Strecker's chorus frog

Pseudacris streckeri

Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: S3

Texas salamander

Eurycea neotenes

Troglobitic; springs, seeps, cave streams, and creek headwaters; often hides under rocks and leaves in water; restricted to Helotes and Leon Creek drainages

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G1

State Rank: S1S2

Woodhouse's toad

Anaxyrus woodhousii

Extremely catholic up to 5000 feet, does very well (except for traffic) in association with man.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: SU

ARACHNIDS

Bone Cave harvestman

Texella reyesi

Small, blind, cave-adapted harvestman endemic to several caves in Travis and Williamson counties; weakly differentiated from *Texella reddelli*

Federal Status: LE

State Status:

SGCN: Y

Endemic: Y

Global Rank: G2G3

State Rank: S2

No accepted common name

Cicurina vibora

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G1G2

State Rank: S1

No accepted common name

Cicurina trivisiae

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G1G2Q

State Rank: S1

No accepted common name

Tartarocreagris infernalis

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G2G3

State Rank: S2?

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

ARACHNIDS

No accepted common name *Cicurina browni*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

No accepted common name *Eidmannella reclusa*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

Reddell harvestman *Texella reddelli*

Small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

black rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: PT	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

black-capped vireo *Vireo atricapilla*

Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer

Federal Status:	State Status: E	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2B

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

BIRDS

Franklin's gull *Leucophaeus pipixcan*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S2N

golden-cheeked warbler *Setophaga chrysoparia*

Ashe juniper in mixed stands with various oaks (*Quercus* spp.). Edges of cedar brakes. Dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G2	State Rank: S2B

interior least tern *Sternula antillarum athalassos*

Sand beaches, flats, bays, inlets, lagoons, islands. Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T2Q	State Rank: S1B

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

red knot *Calidris canutus rufa*

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

BIRDS

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (*Donax* spp.) on beaches and dwarf surf clam (*Mulinia lateralis*) in bays, at least in the Laguna Madre. Wintering Range includes-Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: SNRN

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

BIRDS

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (*Taxodium distichum*) or red mangrove (*Rhizophora mangle*); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

zone-tailed hawk *Buteo albonotatus*

Arid open country, including open deciduous or pine-oak woodland, mesa or mountain country, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3B

FISH

Guadalupe bass *Micropterus treculii*

Endemic to the streams of the northern and eastern Edwards Plateau including portions of the Brazos, Colorado, Guadalupe, and San Antonio basins; species also found outside of the Edwards Plateau streams in decreased abundance, primarily in the lower Colorado River; two introduced populations have been established in the Nueces River system. A pure population was re-established in a portion of the Blanco River in 2014. Species prefers lentic environments but commonly taken in flowing water; numerous smaller fish occur in rapids, many times near eddies; large individuals found mainly in riffle tail races; usually found in spring-fed streams having clear water and relatively consistent temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Texas shiner *Notropis amabilis*

In Texas, it is found primarily in Edwards Plateau streams from the San Gabriel River in the east to the Pecos River in the west. Typical habitat includes rocky or sandy runs, as well as pools.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

INSECTS

a mayfly *Procloeon distinctum*

Mayflies distinguished by aquatic larval stage; adult stage generally found in shoreline vegetation

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G3Q	State Rank: S2?

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

INSECTS

a mayfly

Pseudocentropiloides morihari

Mayflies distinguished by aquatic larval stage; adult stage generally found in shoreline vegetation

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2?

American bumblebee

Bombus pensylvanicus

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

Coffin Cave mold beetle

Batrisodes texanus

Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

Coffin Cave mold beetle

Batrisodes cryptotexanus

Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G2	State Rank: SNR

Kretschmarr Cave mold beetle

Texamaurops reddelli

Small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau

Federal Status: LE	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1

No accepted common name

Bombus variabilis

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GU	State Rank: SNR

No accepted common name

Lymantes nadineae

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR

No accepted common name

Oncopodura fenestra

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
-----------------	---------------	---------

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

INSECTS

Endemic: Y Global Rank: G2G3 State Rank: S2?

No accepted common name *Rhadine noctivaga*

Habitat description is not available at this time.

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

No accepted common name *Rhadine russelli*

Habitat description is not available at this time.

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

No accepted common name *Rhadine subterranea*

Habitat description is not available at this time.

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2 State Rank: S2

Tooth Cave ground beetle *Rhadine persephone*

Resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties

Federal Status: LE State Status: SGCN: Y
Endemic: Y Global Rank: G1G2 State Rank: S1

MAMMALS

American badger *Taxidea taxus*

Habitat description is not available at this time.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

MAMMALS

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4

eastern red bat *Lasiurus borealis*

Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Catholic; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. *S.p. ssp. interrupta* found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

hoary bat *Lasiurus cinereus*

Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Mexican free-tailed bat *Tadarida brasiliensis*

Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

MAMMALS

mink	<i>Neovison vison</i>	
Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4
mountain lion	<i>Puma concolor</i>	
Rugged mountains & riparian zones.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3
plains spotted skunk	<i>Spilogale putorius interrupta</i>	
Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie		
Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G4T4	State Rank: S1S3
southern short-tailed shrew	<i>Blarina carolinensis</i>	
Habitat description is not available at this time.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4
swamp rabbit	<i>Sylvilagus aquaticus</i>	
Habitat description is not available at this time.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
thirteen-lined ground squirrel	<i>Ictidomys tridecemlineatus</i>	
Habitat description is not available at this time.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
tricolored bat	<i>Perimyotis subflavus</i>	
Forest, woodland and riparian areas are important. Caves are very important to this species.		
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S3S4

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

MAMMALS

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. *telmalestes*

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

woodland vole *Microtus pinetorum*

Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

MOLLUSKS

false spike mussel *Fusconaia mitchelli*

Possibly extirpated in Texas; probably medium to large rivers; substrates varying from mud through mixtures of sand, gravel and cobble; one study indicated water lilies were present at the site; Rio Grande, Brazos, Colorado, and Guadalupe (historic) river basins

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1

smooth pimpleback *Quadrula houstonensis*

Small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins

Federal Status: C	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S1S2

Texas fawnsfoot *Truncilla macrodon*

Little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins

Federal Status: C	State Status: T	SGCN: Y
Endemic: Y	Global Rank: G2Q	State Rank: S1

REPTILES

American alligator *Alligator mississippiensis*

Coastal marshes; inland natural rivers, swamps and marshes; manmade impoundments.

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G5	State Rank: S4

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

REPTILES

common garter snake *Thamnophis sirtalis*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes.

Federal Status:	State Status:	SGCN: N
Endemic:	Global Rank: G5	State Rank: S2

eastern box turtle *Terrapene carolina*

Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures. In Maryland bottomland forest, some hibernated in pits or depressions in forest floor (usually about 30 cm deep) usually within summer range; individuals tended to hibernate in same area in different years (Stickel 1989). Also attracted to farms, old fields and cut-over woodlands, as well as creek bottoms and dense woodlands. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest. In Maryland, females used the same nesting area in different years (Stickel 1989).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

slender glass lizard *Ophisaurus attenuatus*

Prefers relatively dry microhabitats, usually associated with grassy areas. Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil. This species often appears on roads in spring. During inactivity, it occurs in underground burrows. In Kansas, slender glass lizards were scarce in heavily grazed pastures, increased as grass increased with removal of grazing, and declined as brush and trees replaced grass (Fitch 1989). Eggs are laid underground, under cover, or under grass clumps (Ashton and Ashton 1985); in cavities beneath flat rocks or in abandoned tunnels of small mammals (Scalopus, Microtus) (Fitch 1989).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas garter snake *Thamnophis sirtalis annectens*

Irrigation canals and riparian-corridor farmlands in west; marshy, flooded pastureland, grassy or brushy borders of permanent bodies of water; coastal salt marshes. Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

Texas horned lizard *Phrynosoma cornutum*

Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area. Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

timber (canebrake) rattlesnake *Crotalus horridus*

Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

REPTILES

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Ornate or western box turtles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species; winter burrow depth was 0.5-1.8 meters in Wisconsin (Doroff and Keith 1990), 7-120 cm (average depth 54 cm) in Nebraska (Converse et al. 2002). Eggs are laid in nests dug in soft well-drained soil in open area (Legler 1960, Converse et al. 2002). Very partial to sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

PLANTS

bigflower cornsalad *Valerianella stenocarpa*

Usually along creekbeds or in vernal moist grassy open areas (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Elmendorf's onion *Allium elmendorfii*

Grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

gravelbar brickellbush *Brickellia dentata*

Essentially restricted to frequently-scoured gravelly alluvial beds in creek and river bottoms; Perennial; Flowering June-Nov; Fruiting June-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3G4	State Rank: S3S4

Heller's marbleseed *Onosmodium helleri*

Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons; Perennial; Flowering March-May

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILLIAMSON COUNTY

PLANTS

Plateau loosestrife

Lythrum ovalifolium

Banks and gravelly beds of perennial (or strong intermittent) streams on the Edwards Plateau, Llano Uplift and Lampasas Cutplain; Perennial; Flowering/Fruiting April-Nov

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G3G4

State Rank: S3S4

plateau milkvine

Matelea edwardsensis

Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3

State Rank: S3

Texas almond

Prunus minutiflora

Wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite; Perennial; Flowering Feb-May and Oct; Fruiting Feb-Sept

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3G4

State Rank: S3S4

Texas claret-cup cactus

Echinocereus coccineus var. *paucispinus*

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5T3

State Rank: S3

Wright's milkvetch

Astragalus wrightii

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3

State Rank: S3

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

APPENDIX E – WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP) REPORT

Page intentionally left blank

WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP) SUMMARY
REPORT LAKE GEORGETOWN MASTER PLAN
WILLIAMSON COUNTY, TEXAS



**US Army Corps
of Engineers®**
Fort Worth District

May 2019

This page intentionally left blank

Table of Contents

Introduction	4
Study Area	4
Methodology	4
Habitat	6
Results and Discussion	7
Recommendations	9
References	10
Lake Georgetown WHAP Summary Result Figures	11
Attachment A: Lake Georgetown WHAP Results Summary	16

Introduction

Habitat assessments were conducted at Lake Georgetown on April 22-24th, 2019 using Texas Parks and Wildlife Department's (TPWD) Wildlife Habitat Appraisal Procedure ([WHAP] TPWD 1995). WHAP survey point locations were haphazardly preselected based on aerial imagery from existing Geographical Information Systems (GIS) data. A total of 67 WHAP points were surveyed, all within U.S. Army Corps of Engineers (USACE) fee boundary.

The purpose of this report is to describe wildlife habitat quality within the USACE Lake Georgetown fee-owned property in Williamson County, Texas. This report is being prepared by the USACE Regional Planning and Environmental Center to provide habitat quality information and inform land classifications as part of the Lake Georgetown Master Plan revision process.

Study Area

USACE fee owned property at Lake Georgetown, approximately 6,627 acres, is located North of the Austin metroplex in central Texas. More specifically, the lake sits primarily between the cities of Georgetown and Killeen, Texas within the Edwards Plateau ecoregion. The North Fork of the San Gabriel River is the major contributing source to Lake Georgetown.

Methodology

An interagency team of biologists, foresters, and USACE park rangers conducted the habitat surveys on April 22-24th, 2019. TPWD's WHAP protocol was used to analyze and describe existing habitats.

The WHAP requires evaluating representative sites of each cover type present within an area of interest. For this project, a search area of 0.1 acre (circle with radius of 37.2 feet) was used at each WHAP site to compile a list of plant species occurring at each site and to complete the Biological Components Field Evaluation Form (https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_w7000_0145.pdf). Field data collected on the form at each WHAP site included the following components:

1. Site Potential
2. Temporal Development of Existing Successional Stage
3. Uniqueness and Relative Abundance
4. Vegetation Species Diversity
5. Vertical Vegetation Stratification
6. Additional Structural Diversity
7. Condition of Existing Vegetation

At each site, a 1/10th acre plot was evaluated and points were assigned to all applicable components based on field conditions. A habitat quality score, where values range from 0.0 (low quality) to 1.0 (high quality), was then calculated for each site by adding together all points and multiplying by 0.01. Habitat quality was then determined for all sites within the same habitat type.

Photographs were taken at each site and are included as Attachment B.

The TPWD developed the WHAP to allow a qualitative, holistic evaluation of wildlife habitat for particular tracts of land statewide without imposing significant time requirements in regard to field work and compilation of data (TPWD 1995). The WHAP was not designed to evaluate habitat quality in relation to specific wildlife species.

The WHAP is based on the following assumptions:

1. Vegetation structure including species composition and physiognomy is itself sufficient to define the habitat suitability for wildlife;
2. A positive relationship exists between vegetation diversity and wildlife species diversity;
3. Vegetation composition and primary productivity directly influence population densities of wildlife species.

As designed, the WHAP is intended to be used for the following applications:

1. Evaluating impacts upon wildlife populations from specific development project alternatives.
2. Establishing baseline data prior to anticipated or proposed changes in habitat conditions for specific areas.
3. Comparing tracts of land that are candidates for land acquisition or mitigation.
4. Evaluating general habitat quality and wildlife management potential for tracts of land over large geographical areas, including wildlife planning units.

The WHAP protocol can be used to assess a wide range of habitats, however it was originally developed to assess and develop mitigation requirements for loss of bottomland hardwoods and other aquatic habitats. Scores can skew higher for these habitats based on how the scoring is allotted to each WHAP habitat component. Upland forest and grassland habitat types cannot reach a score indicative of high quality habitat although they may exhibit high quality features. Subsequently, high quality upland habitat may not be identified or can be overlooked.

Grasslands, in particular, fall into this category. Consider the Site Potential component with a maximum score of 0.25 points, it allocates more points based on higher hydrologic connectivity. In order to receive the highest score for this component, the area must exhibit at least one of the following: at least periodically support predominately hydrophytic vegetation, is predominately undrained hydric soil and supports or is capable of supporting hydrophytic vegetation, and/or is saturated with water or covered by shallow water during 1-2 months during the growing season of each year. In a grassland setting, when conditions become conducive to hydrophytic plant growth, a successional shift from a grassland to herbaceous wetlands, swamps, or riparian forest is likely to occur. Therefore, grasslands would almost always be limited to a maximum score of 0.12 points (uplands with thick surface layer).

Similarly, grasslands would be limited to a maximum of 0.12 points for the Temporal Development of Existing Successional Stage component, whereas other forested habitats could receive the full 0.25 points.

These two components alone regularly exclude grassland habitat from receiving 0.26 points on the WHAP scale. In order to identify the maximum score each habitat type can receive, USACE environmental staff scored each criteria given ideal conditions for riparian/bottomland hardwood forest (BHF), upland forest (includes all non-riparian/BHF forests), grassland, swamp, and marsh habitats. The maximum values scores, shown in Table 1, were then used to normalize

scores for habitats that are prevented from reaching the maximum WHAP score primarily due to arbitrary low scores in the two WHAP components described above. Normalizing habitat scores will identify high quality habitat that would otherwise not be detected.

Table 1. Maximum Total Score per Habitat Type

Cover Type	Component Number								Maximum Total Score
	1	2	3	4	5	6	7	7B	
Swamp	20	20	20	20	5	5	5	5	1.00
Marsh	25	20	20	20	NA	5	10	NA	1.00
Riparian/BHF	25	20	20	15	5	5	5	5	1.00
Upland Forest	12	20	20	15	5	5	5	5	0.87
Grassland	12	12	20	6	3	5	5	5	0.68

Swamp, marsh, and riparian/BHF habitats can all achieve the maximum score, therefore, no normalization of scores were made for these habitat types. Upland forests and grasslands, however, can only reach within 0.13 and 0.32 points of the maximum WHAP score, even in ideal conditions.

To evaluate all habitat types on an even scoring basis, upland forest and grassland scores were normalized by dividing their original scores by the maximum possible score for their respective habitat types. For example, if a grassland site received an initial score of 0.42, it would be divided by the maximum total points a grassland site can receive, 0.68. The normalized total score used for further analysis for the grassland site would be 0.61.

This adjustment allows habitat type scores to be analyzed and compared to their corresponding habitat type maximum total score. Rather than, for instance, a grassland being evaluated on a bottomland hardwood scoring scale.

All WHAP scores analyzed and discussed from here forward reflect the normalized total scores. As mentioned above, swamp, marsh, and riparian/BHF habitats were not normalized as they can already achieve maximum scores. Grassland scores were normalized by dividing initial scores by 0.68, while all upland forest scores were normalized by dividing the initial score by 0.87.

Habitat

Using TPWD's Texas Ecological Mapping Systems (<https://tpwd.texas.gov/landwater/land/programs/landscape-ecology/ems/>), Lake Georgetown lies within the Edward's Plateau Level IV Ecoregion. The most common habitat types include Grasslands, Juniper Oak Woodlands, Plateau Live Oak or Mesquite Savannah (Elliot, 2014). Table 2 displays all habitats surveyed and the number of points surveyed within each respective habitat type.

Table 2. Survey Points per Habitat Type	
Habitat Type	Points Surveyed
Riparian Forest	11
Grassland	18
Upland Forest	35
Shrubland	4
Total Points Surveyed	67

Elliot (2014) provided general habitat type descriptions and associated vegetation communities for the Ecological Systems Classification and Mapping Project in support of the Comprehensive Wildlife Conservation Strategy for the Texas Parks and Wildlife Department. These descriptions were meant to be broad and depict typical vegetative assemblages across vast areas as the observable vegetation communities can vary based on local conditions.

Best known as the Hill Country, the Edwards Plateau is wholly contained within the Texas borders, at a crossroads of arid grasslands, woodlands, and brushlands, its habitats are supported by unique geohydrology. Geology and hydrology are two of the greatest influences in this region on wildlife and fish distribution, rarity and endemism. Many geologic features such as karst or pseudokarst are each their own little microcosms even though many are conduits to large freshwater aquifers, hosting rare salamanders, invertebrates, fishes and plants. Underlain by the Edwards, Edwards-Trinity, and Trinity aquifers, artesian expressions punctuate this ecoregion. The aquifers which underlie the region contribute significantly to environmental water flows, water quality, and aquatic habitats from streams throughout the region and downstream to the estuaries which feed the Gulf of Mexico. (TPWD, 2012).

Figure 3 displays the distribution of habitat types within the USACE boundary at Lake Georgetown. For analysis purposes, habitat types were pooled into one of four categories: riparian forest, grassland, upland forest, and shrubland.

Results and Discussion

The total habitat score for each point surveyed is a representation of multiple habitat attributes including vegetative diversity and structure, site soil potential, successional stage, and uniqueness of that habitat across the landscape. Data analysis highlights are discussed below, while detailed data for each point surveyed can be found in Attachment A: Lake Georgetown WHAP Summary Results of this report.

Grassland (N = 18) and upland forest (N = 35) were the most abundant habitat types surveyed. Grassland scores ranged from 0.28 to 0.67 while Upland Forest scores fell between 0.33 and 0.77. The average, maximum, and minimum total score observed for each habitat type surveyed is shown in Table 3.

Table 3. Average, Maximum, and Minimum Total Scores per Habitat Type

Habitat Type	Average Total Score	Maximum Total Score	Minimum Total Score
Riparian Forest	0.68	0.91	0.50
Grassland	0.46	0.67	0.28
Upland	0.51	0.77	0.33
Shrubland	0.42	0.32	0.50

Figure 1 show the range of total scores for all points surveyed (N = 67) as well as the three additional points that were skipped due to inaccessibility or multiple points occurring in the same area. Overall, riparian forest and upland forest habitats exhibited the highest average total score (0.68 and 0.51).

Beyond vegetative diversity, the three major metrics within the WHAP scoring criteria that allocate points are the site potential, successional stage, and uniqueness and relative abundance. Table 4 shows these metrics' average score per habitat type.

Table 4. Average Site Potential, Successional Stage, and Uniqueness and Relative Abundance Scores per Habitat Type

Habitat Type	\bar{x} Site Potential	\bar{x} Successional Stage	\bar{x} Uniqueness and Relative Abundance
Riparian Forest	16.64	10.82	13.81
Grassland	10.94	7.17	8.61
Upland Forest	8.51	9.09	9.43
Shrubland	5.67	6.00	8.33

Site potential allocates more points based on soil substrates characteristics and hydrologic connectivity that can support hydrophytic habitats, such as marshes, swamps, and bottomland hardwood forests that are often considered to be higher quality, more diverse habitat. This allows areas to score higher even though a recent disturbance, such as fire or flood, may have removed most of the vegetation. Areas scoring high in site potential but low in other metrics can be targeted for management efforts as these areas' vegetation community response should be favorable, thus increasing habitat value.

Successional stage refers to the age of the vegetative community. Older, mature forests, as do climax prairies, score higher than younger pole stands or disturbed grasslands as they provide more diverse forage, cover, and niche habitats. These scores are expected to increase across the board except in areas around the lake that may not have the soil types to support hydrophytic vegetation and are flooded frequently enough to limit upland forest or grassland growth and development. Points #36 and #67 had the highest successional stage showing mature forests.

Uniqueness and Relative Abundance takes into consideration the rarity of a habitat or vegetative community and its abundance in the region. Lake Georgetown is North of the City of Austin., and much of this region has undergone urban expansion and will continue into the future. Figure 4 depicts the five points that scored the maximum of 20 points possible. These points are unique and will be considered.

The Lake Georgetown property is an important region for many species including the endangered Golden Cheeked Warbler. Golden Checked Warbler are known for their use of Juniper Forest, Figure 5 shows all points that had presence of the juniper forest and high maturity. Due to the high density of points the team will take into consideration the use of other warbler focused surveys in the area when making land classification decisions.

During the survey two unique features that should be considered for additional protection outside of the ones listed above for their WHAP Features are point #46, an area known as Crocket Gardens, and a zone between points #69 and #70. The Crocket Gardens area can be seen on the Cover Page of the report. This area is known for its cave-like mineral deposits and waterfall feature. The area between points #69 and #70 has large Karst features Figure 1.



Figure 1. The Karst Feature located between point 69 and 70.

Recommendations

Even with planned and unplanned disturbances, there are numerous areas of valuable wildlife habitat remaining on USACE fee property at Lake Georgetown.

Based on the results of the WHAP survey efforts, areas to consider for Wildlife Management or Environmentally Sensitive Areas land classifications include those areas having the highest scores as well as areas that have potential habitat for the golden cheeked warbler and unique features to Lake Georgetown. The planning team for the Lake Georgetown Master Plan revision will take into account the WHAP scores when making land classification decisions.

References

Elliott, Lee F. 2014. Texas Ecological Mapping Systems Descriptions 2016. Texas Parks & Wildlife Department, Austin, Texas.

Texas Parks and Wildlife Department (TPWD). 2012. Texas Conservation Action Plan 2012-2016: Edwards Plateau Handbook. Editor, Wendy Connally, Texas Conservation Action Plan Coordinator. Austin, Texas.

Texas Parks and Wildlife Department (TPWD). 1995. Wildlife Habitat Appraisal Procedure (WHAP). Last revised January 12, 1995.

Lake Georgetown WHAP Summary Result Figures

Georgetown Lake WHAP Point Total Score Distribution

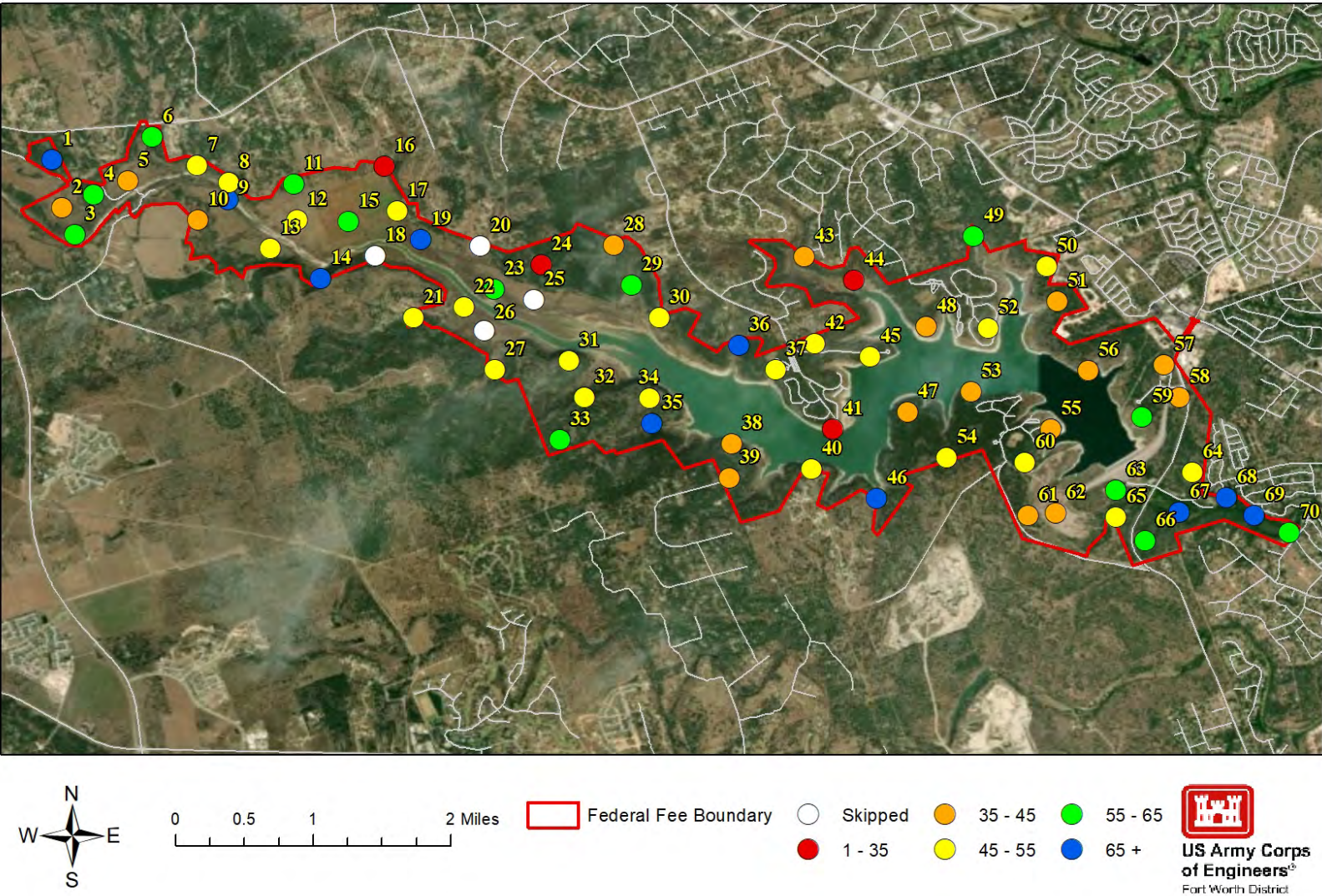


Figure 2. WHAP Point Total Score Distribution.

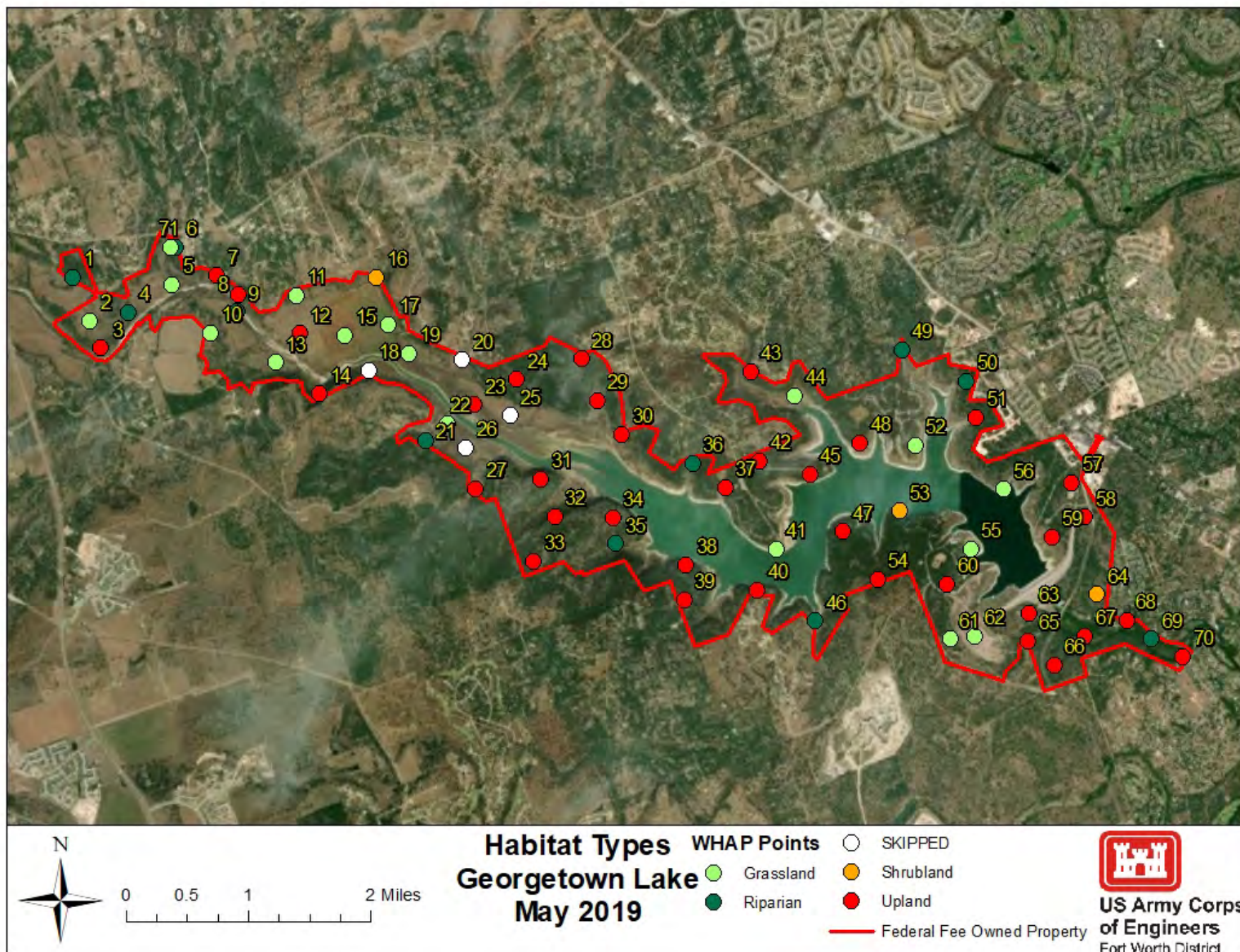
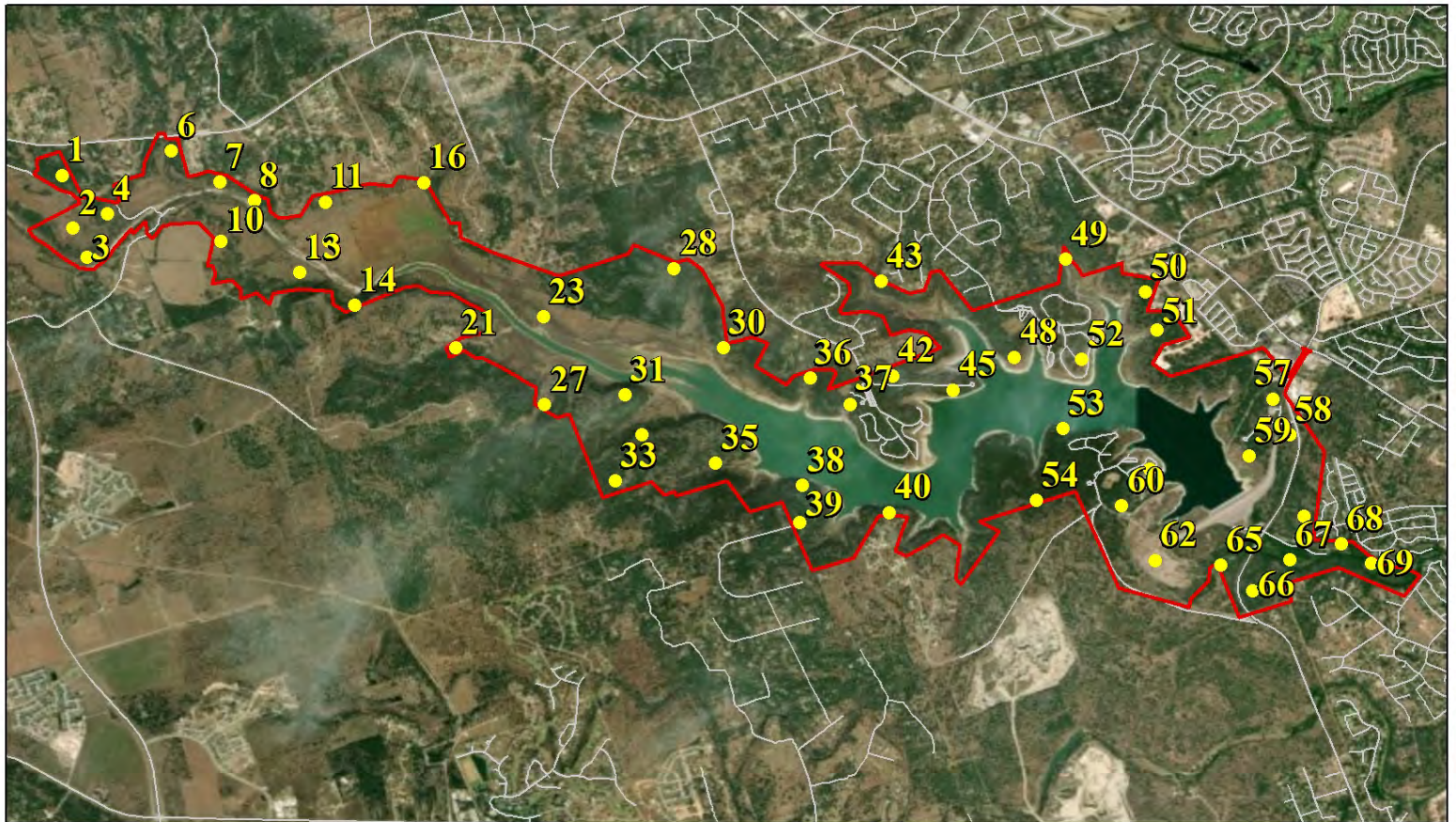


Figure 3. Points Surveyed Classified by their Habitat Type

Georgetown Lake WHAP Points w/ Mature Ashe Juniper Forest



0 0.5 1 2 Miles



 Federal Fee Boundary  WHAP Points



Figure 4. Points with mature juniper forest and a maturity score of 12 or higher.

Georgetown Lake WHAP Points w/ Maximum Uniqueness and Relative Abundance Score



0 0.5 1 2 Miles

 Federal Fee Boundary  WHAP Points



Figure 5. Points that received the maximum score of 20 for Unique and Relative Abundance Score.

Attachment A: Lake Georgetown WHAP Results Summary

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
1	Riparian	0.68	Poison Ivy, Green Briar, Privet, Hackberry, Mustang Grape, Poison Sumac	None	Live Oak, Red Oak	None	Cedar Elm	Ashe Juniper	None	None	Hedge Parsley, Buffalo Grass, Dandelion	None
2	Grassland	0.41	None	Hairy Vetch, Honey Mesquite	None	None	None	Ashe Juniper	None	Prickly Pear	Prairie Verbena, Engelmann's Daisy, Little Bluestem, Texas Star, Johnson Grass, Texas Winter grass, Plantain, Morning Primrose, False Dandelion, Texas Prairie Parsley	None
3	Upland Forest	0.58	Hackberry, Elbow Bush, Texas Persimmon, Flameleaf Sumac	None	None	Pecan	Cedar Elm, Texas Ashe	Ashe Juniper	None	Prickly Pear	Engelmann's Daisy, Vervain, Johnson Grass, Morning Primrose, Geranium, Plantain, Bedstraw, Wood Sorrel, Parsley, Pennsylvania Pellitory	None
4	Riparian	0.64	Privet, Hackberry, Mustang Grape, Chinaberry, Poison Ivy, Elbow Bush, Dewberry, Greenbrier	None	Live Oak	None	Cedar Elm	Ashe Juniper	None	Prickly Pear	Plantain, Aven, Cirsium Spp., Hedge Parsley, False Dandelion, False Dayflower, Buffalo Grass, Indian Blanket, Sonchus Spp.	None
5	Grassland	0.43	Caroline Snailseed	Honey Mequite	None	Pecan	Cedar Elm	None	None	None	Camphorweed, Texas Paintbrush, Verbena, Cranesbill, Spear Grass, Tiny Vetch, Texas Thistle, Melley Blue sage, Cedar Sedge	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
6	Riparian	0.62	Texas Persimmon, Gum Bemelia, Elbow Bush, Flameleaf Sumac, Greenbrier	None	White Oak, Red Oak	None	Texas Ashe, Cedar Elm	Ashe Juniper	None	Prickly Pear	Buffalo Grass, Sedge Parsley, Texas Wood Clover, Sensitive Briar	None
7	Upland Forest	0.49	Texas Persimmon, Mustang Grape, Poison Ivy, Mistletoe, Carolina Sanilseed	None	Live Oak, Pin Oak	None	Cedar Elm	Ashe Juniper	None	Yucca	Ground Hemlock, Sedge Spp.	None
8	Upland Forest	0.51	Texas Persimmon, Mustang Grape, Poison Ivy, Mistletoe, Carolina Snailseed	None	Live Oak, Pin Oak	None	None	Ashe Juniper	Cedar Elm, Ulmus Spp.	Yucca	Hemlock, Carex Spp.	None
9	Riparian	0.69	Carolina Snail Seed, Chinaberry, Greenbrier, Mulberry, Sugar Berry, False Gum, Black Gum	Hairy Vetch	None	Pecan	American Elm, Cedar Elm	None	None	None	Spiny Thistle, Spider Wart, Blood Weed, Sticky Willy, False Parsley, Rye, False Nettle, Bindweed, Moonbeam, Large Flower Baby Blue Eyes, Baby's Breath, Wood Sorel, Blue Grass, Vervain, Bald Brome, Marsh Cord Grass, Marsh Hedge Nettle	Riparian
10	Grassland	0.43	Texas Persimmons	Bluebonnet	None	None	Cedar Elm	Ashe Juniper, Cypress	None	Prickly Pear	Parsley, Yellow Grass, Dove Weed, Old Greespan, Purple Skull Cap	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
11	Grassland	0.56	Agarita, Gum Bumelia, Carolina Sailseed	None	None	None	American Elm, Cedar Elm	Ashe Juniper	None	Prickly Pear	Bluebonnet, Common Beggars Tick, Evening Primrose, Prairie Verbena, Tiny Vetch, Needle Grass Spp., Texas Thistle, Ten Petal Anemone, Drummond's Skullcap	None
12	Upland Forest	0.51	Sugarberry, Flameleaf Sumac, Texas Persimmons, Chinaberry, Carolina Snailseed	Hairy Vetch	Live Oak	None	Cedar Elm, Winged Elm	Ashe Juniper	None	Prickly Pear, Yucca	Texas Thistle, Spanish Needle, Beggar's Lice, Bedstraw, Bald Brome, Spreading Hedge Parsley, Common Velvet Grass	Huge Live Oak
13	Grassland	0.48	Chinaberry, Muscadine Grape	Hairy Vetch	None	None	None	Ashe Juniper	Salt Bush	Prickly Pear	Silver Night Shade, Vervain, Rattlesnake Flower, Pig Weed, Wood Sorel, Sow Thistle, Oregano, Switch Grass, Corn Flower, Johnson Grass, False Nettle, Nose Burn, Needle Grass, Marsh Hedge Nettle, Mexican Hat, Englenis Daisy, Fair Dandelion, Upright Prairie, Spear Grass, Mallo	None
14	Upland Forest	0.66	Agarito, Poison Ivy, Muscadine Grape, American Beauty Berry, Greenbrier, Texas Persimmons, Common Hopbush, Hackberry	Yes	Southern Red oak, Shumard Oak	Mexican Bekege, Pecan	Green Ashe, Cedar Elm, American Elm	Ashe Juniper	None	Yucca, Prickly Pear	Sticky Willy, False Parsley, Spider Wart, Mexican Buckeye, Thistle, False Day Flower, Baby's Breath, Ragweed, Buch Grass, Agarea, Oregano, Basil, Penselanio Pelitori, Speedweed, Texas Bush Clover, Cedar Sedge	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
15	Grassland	0.60	Caroline Snailseed	None	None	None	Cedar Elm	None	None	None	Tiny Vetch, Drummond's Skullcap, Evening Primrose, Chilean Needle Grass, Vetch Spp., Ten Petal Anemone, Verbena, Cranesbill	None
16	Shrubland	0.32	Texas Persimmon, Gum Bemelia	None	None	None	None	Ashe Juniper	None	Horse Crippler Cactus, Yucca, Prickly Pear	Lanceleaf Thickseed, Woolly Blue Curl, Blackfoot Daisy, Drummond's Skullcap, Ground Hemlock, Blue Grama, Sensitive Briar	None
17	Grassland	0.48	None	None	None	None	None	None	None	None	Monoculture of Unknown Grass	None
18	Skipped	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	Grassland	0.67	Dueberry, English Ivy, Tallow, Mimosa	None	None	None	Elm	None	None	Prickly Pear	Guara, Texas Thistle, Woodland Lettuce, Skullcap, Sparse Hedge Parsley, Texas Bluebonet, Texas Storkbill, Carex, Greenthread, White Milkwort, Indian Paintbrush, Vetch, Indian Blanket, Purple Nightshade	None
20	Skipped	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21	Riparian	0.54	Muscadine Grape, Greenbrier, Texas Persimmons, Dewberry, Gum Bemelia	None	Live Oak	None	Texas Ashe Juniper	None	None	None	Turk's Cap, Chervil, Bedstraw, Johnson Grass, Woodland Lettuce, Moss, Carex	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
22	Grassland	0.47	None	None	None	None	None	None	None	Prickly Pear	Clasping Bell Flower, Texas Thistle, Penny Royal, Slender Vetch, Needle Grass, Wood Sorrel, Texas Vervain, Pepperweed, Beggar's Lice, Camphornweed, Barley, Ragweed, Prairie Vervain, Goldenrod	None
23	Upland Forest	0.60	Greenbrier, Carolina Snialseed, Elbowbush, English Ivy, Persimmons, Hackberry	None	Oak Spp., Oak Spp.	None	Cedar Elm	Juniper	None	Prickly Pear	Beggar's Lice, Sparse Hedge Parsley, Carex, Englepod, Johnson Grass	None
24	Upland Forest	0.60	Gum Bemila, Persimmons	None	None	None	None	Juniper	None	Yucca	Carex, Mimosa, Sparse Hedge Parsley, Pimpernel, 3 Unknowns	None
25	Skipped	Skipped	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26	Skipped	Skipped	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
27	Upland Forest	0.50	Greenbrier	None	Red Oak	None	None	Juniper	None	Prickly Pear	Sow Thistle, False Dandelion, Sparse Hedge Parsley, Moss, Pimpernel, Carex, Penny Royal, Chervil, Thyme Leaf Sandwort, Camphorweed, Starwort	GCWA Habitat
28	Upland Forest	0.36	Possumhaw Holly, Poison Ivy, Greenbrier	None	Bigelow Oak, Pin Oak	Hickory Spp.	Cedar Elm	Ashe Juniper	None	Prickly Pear	Spreading Hedge Parsley, Wood Sorrel, Heller's Rosette Grass, Splittleaf, Rain Lilly, Milkweed Vine	

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
29	Upland Forest	0.57	Greenbrier, Chinaberry, Flameleaf Sumac, Gum Bumelia	None	Live Oak	Pecan	Cedar Elm	None	None	Button Bush	Vetch Spp., Verbena, Bluebonnet, Pennyroyal, Evening Primrose, Needle Grass Spp., Spreading Hedge Parsley, Bur-Clover, Texas Thistle, Beggar's Lice, Musk Mallo	None
30	Upland Forest	0.54	Hackberry, Texas Persimmon, Greenbrier, Chinese Privet, Agarita	Hairy Vetch	Live Oak	None	Cedar Elm	Ashe Juniper	None	Prickly Pear	Bedstraw, Buffalo Grass, Hedge Parsley, Minkweed Vine, Wood Sorrel, Sunflower	None
31	Upland Forest	0.53	Elbow Bush, Dewberry	None	Live Oak, Lacey Oak	None	None	Ashe Juniper	None	Yucca, Prickly Pear	Vervain, Texas Winter Grass, Oxalis Spp., False Dandelion, Prairie Verbena, Goldenrod, Heller's Rosette Grass, Little Bluestem, Buffalo Grass, Three-Awn, Bedstraw, Crow Poison, Russian Thistle, Death Camas	None
32	Upland Forest	0.46	Chinese Privet	Briar Spp.	Live Oak	None	None	Ashe Juniper	None	Prickly Pear	Oxalis Spp., Buffalo Grass, Common Daisy, Rabbit Cabbage, White Stone Sedge, Texas Bush Clover, Thyme-Leaved Sandwort, White Rock Lettuce	Steep Rocky Cliff

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
33	Upland Forest	0.57	Gum Bumelia, Dewberry, Common Hop Tree, Buckeye, Greenbrier, Carolina Snailseed	None	Red Oak	None	Cedar Elm, Ashe	Juniper	None	Yucca, Prickly Pear	Englepod, Skullcap, Ball Moss, Woodland Lettuce, Bedstraw, Beggar's Lice, Wood Sorrel, 2 Unknown	None
34	Upland Forest	0.51	Persimmon, Gum Bumelia	None	Red Oak	None	Cedar Elm	Juniper	None	Christmas Cholla, Prickly Pear	Dwarf Plantain, Vetch, Laced Hedgehog, Pennyroyal, Johnson Grass, Needle Grass, Skullcap, Milkweed, Prairie Verbania, Moss, Engelpod, Side Oats Grama, Rain Lilly, Carex, Wood Sorrel, Pimpernel, Spiderwort, Beggar's Lice	None
35	Riparian	0.78	Greenbrier, Dewberry	None	None	Pecan	Cedar Elm	Juniper	None	Buttonbush	Penny Royal, Texas Thistle, Johnson Grass, Vetch, Mint, Verbena, Bald Brome, Wood Sorrel, Germaine, Barely	None
36	Riparian	0.91	Dewberry, Muscadine Grape, Virginia Creeper, Greenbrier, Smilax, Fragrat Sumac, Hackberry, Gum Bumelia	None	Live Oak	Pecan	Elm, Box Elder	Juniper	None	Willow Baccharis	Johnson Grass, Dwarf Plantain, Dandelion, Barely, Texas Thistle, Wood Sage, Woodland Lettuce, Beggar's Lice, Bedstraw, Cutgrass, Dropseed, Sandbur, Penroyal, Wood Sorrel, Carex Spp., Moss, Sparse Hedge Parsley, Pimpernel	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
37	Upland Forest	0.51	Texas Persimmon	Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Prickly Pear, Yucca	Four-Nerve Daisy, Prairie Verbena, Wood Sorrel, Bur Clover, Drummond's Skullcap, Great Burnet, Redseed Plantain, Switch Grass, Heller's Rosette Grass, Little Bluestem, Texas Bush-Clover, Dwarf White Aster	None
38	Upland Forest	0.41	Texas Persimmon, Poison Ivy, Greenbrier, Mustang Grape, Gum Bumelia	None	Bigelow Oak, Northern Red Oak, Live Oak	None	None	Ashe Juniper	None	Prickly Pear	Cedar Sedge, Spreading Hedge Parsley, Tiny Vetch, Bur-Clover, Heller's Penny Royal, Texas Bush Clover, Heller's Rosette Grass	None
39	Upland Forest	0.42	Texas Persimmon, Greenbrier, Hackberry, American Beautyberry, Dewberry, Poison Ivy, Agarita	None	Live Oak, Northern Red Oak	None	None	Ashe Juniper	One	Prickly Pear	Cedar Sedge, False Dandelion, Vetch, Spreading Hedge Parsley, Wood Sorrel, Climbing Milkweed, Southern White Aster, Heller's Rosette Grass	None
40	Upland Forest	0.49	Mustang Grape, Texas Persimmon, Hackberry	Hairy Vetch	Quercus Spp.	None	Cedar Elm	Ashe Juniper	None	Cholla Cactus, Prickly Pear	Geranium, Hedge Parsley, Buffalo Grass, Russian Thistle, Heller's Rosette Grass, Prairie Verbena, Scorpion Weed, Peppergrass, Plantain, Purple Three-Awn, Oxalis Spp., Indian Mallow	Mixed Forest

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
41	Grassland	0.32	None	Hairy Vetch	None	None	None	None	None	Buttonbush, Willow Baccharis	Mouse Barley, Dakota Mock Vervain, Tickseed, Texas Vervain, Bald Brome, Costal Bermuda Grass, Mustard Spp., Buffalo Grass, Ryegrass	None
42	Upland Forest	0.46	Texas Persimmon, Greenbrier	Hairy Vetch	Pin Oak, Northern Red Oak, Live Oak	None	None	Ashe Juniper	None	Prickly Pear, Simpson's Apple Cactus	Heller's Rosette Grass	None
43	Upland Forest	0.44	Poison Ivy, Yaupon, Greenbrier	Hairy Vetch, Briar Spp.	None	Walnut	None	Ashe Juniper	None	Twisted-Leaf Yucca, Prickly Pear	Buffalo Grass, Wood Sorrel, Hedge Parsley, Texas Bush Clover, White Stone Crop, False Dandelion, Hemp Dogbane	None
44	Grassland	0.28	Dewberry, Greenbrier, Mustang Grape	None	None	None	None	None	None	Prickly Pear, Buttonbush	Sow Thistle, Hedge Parsley, Nightshade, Texas Winter Grass, Bristle Grass, Prairie Verbena, Dropseed, Mexican Hat, Sonchus Spp., White Horehound, Thyme-Leaved Sandwort, Mallow Spp., Wild Oats, False Hawksbeard	Next to Floodplain, Filled with Bristle Grass
45	Upland Forest	0.46	Texas Persimmon, Greenbrier	Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Prickly Pear, Yucca, Lace Cactus	Dakota Mock Vervain, Rain Lily, Prairie Verbena, Bar Clover, Texas Thistle, Heller's Rosette Grass, Branched Nose Burn, Pennyroyal, Slender Hedeoma, Texas Bush Clover	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut	Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
46	Riparian	0.78	Virginia Creeper, Dewberry, Greenbrier, Mustang Grape, Privet	None	None	None	None	None	Bald Cypress	American Sycamore	None	False Dayflower, Japanese Honeysuckle, San Augustine Grass, Canadian Goldenrod, Day Lily, Hedge Parsley, Bedstraw, Dandelion, Elephant Ear, Maidenhair Fern	Very Unique on Georgetown. Natural spring, but has a lot of non-native species.
47	Upland Forest	0.39	Dewberry, Gum Bumelia, Agarita, Ground Ivy	None	Red Oak, Oak	None	None	None	Juniper	None	Yucca, Prickly Pear	Spreading Pelatori, Beggar's Lice, Common Mullien, Woodland Lettuce, Cedar Sage, Ball Moss, Wood Vervain, Heller's Roseate Grass, Wood Sorrel, Pimpernel, Carex, Pennyroyal, 1 Unknown	None
48	Upland Forest	0.41	Poison Ivy, Greenbrier, Texas Persimmons, Muscadine Grape	Hairy Vetch	Live Oak	None	None	None	Ashe Juniper	None	Prickly Pear, Yucca	Wood Sorrel, Queen Ann's Lace, Nut Sedge, Spiny Sow Thistle, Rattlesnake Flower, Common Switch Grass, Bindweed, False Nettle, Plantain, Paper White Narcissus, Milkweed, Corn Daisy, Hairy Cats Ear, Morning Glory, Birds Eye Speedwell Rye, Quacking Grass, Poverty Rush, Nose Burn, Small Skullcap, Little Bur Clover, Cudweed, Common Selfeal	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
49	Riparian	0.63	Dewberry, Greenbrier, Muscadine Grape, Hackberry, Chinaberry, Flatten Bush, Blackberry, Poison Ivy, Dewberry, Mustang Grape, Pepper Berry	Hairy Vetch	Live Oak	None	Cedar Elm	Ashe Juniper	None	Willow, Weeping Willow	Bull Thistle, Wild Rye, Sticky Willy, Pink Lady, Texas Aster, False Nettle, Vervain, Side Oats Grama, Blue Stem, Carex Spp., Johnson Grass, Blue Field Madder, False Parsley, Water Primrose, Woodland Bitterness, Wood Sorrel, Clasp Grass, Renus Looking Grass, Plaintaine, Penny Worst, European Speedwell, Pannicum Spp., Cora Bea, Yellow Broom Grass, Lambs Ear, Croton	None
50	Riparian	0.50	Greenbrier, Dewberry, Poison Ivy, Mustang Grape, Yaupon	Hairy Vetch	Like Oak, Red Oak	None	Cedar Elm	Ashe Juniper	None	Prickly Pear	Buffalo Grass, Yellow Wood Sorrel, Corn Salad, Dandelion, Johnson Grass, Prairie Lily, Hedge Parsley	None
51	Upland Forest	0.41	Elbow Bush, Greenbrier	Hairy Vetch	Live Oak	None	Cedar Elm	Ashe Juniper	None	Prickly Pear	Buffalo Grass, Rabbit Cabbage, Oxalis Spp., Texas Bush Clover	None
52	Grassland	0.52	Dewberry, Hackberry, Texas Persimmons, Greenbrier, Blackberry	Hairy Vetch	Shumard Oak, Live Oak	None	None	Ashe Juniper	Salt Bush	Prickly Pear	Little Burr Clover, Corn Daisy, Cercain, Queen Ann's Lace, Rattlesnake Flower, Four Nerve Daisy, Slender Root, Fieabean, Rye Grass, Golden Star, Narsssisus, Creeping Wood Sorrel, Moose Barrels, Bluestem, Bell Flower, Spiny Sow Thistle, Antelope Horn, Mire Weed, Sage, Pony's Foot, Sticky Willy, Cud Weed, Bind Weed, Lambs Ear	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
53	Shrubland	0.44	Elbow Bush, Greenbrier	None	Live Oak	None	None	Ashe Juniper	None	Prickly Pear, Opuntia Spp.	Yellow Wood Sorrel, Skullcap, Cirsium Spp., Rabbit Cabbage, Sour Clover, Hedge Parsley, Slender Hedoma, Buffalo Grass	None
54	Upland Forest	0.54	Poison Ivy, Greenbrier, Elbow Bush, Mustang Grape, Blackhaw, Possumhaw	None	Red Oak, Shumard Oak	None	Cedar Elm	Ashe Juniper	None	Prickly Pear	Hedge Parsley	None
55	Grassland	0.39	Elbow Bush, Greenbrier	Hairy Vetch	None	None	Cedar Elm	Ashe Juniper	Roosevelt Bush	None	Indian Blanket, Castilleja Spp., Prairie Verbena, Four-Nerve Daisy, Rain Lily, Dropseed, Hedge Parsley, Sleder Hedeoma, Yellow Stone Crop, Texas Winter Grass, Wild Oats, Skullcap, Green Brittlegrass, Water Lily, Pepper Grass, Johnson Grass, Love Grass	None
56	Grassland	0.37	Mustang Grape, Blackberry, Greenbrier, Yaupon	Hairy Vetch	Live Oak	None	None	None	None	None	Bristle Grass, Cirsium Spp., Wild Oats, Mexican Hat, Prairie Verbena, Texas Winter Grass, Corn Salad, Milkweed Vine, Morning Primrose, Hedge Parsley, Little Bluestem, Plantain, Texas Bush Clover, Speedwell, False Dandelion, Storksbill	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
57	Upland Forest	0.42	Agarite, Gum Bumelia	Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Prickly Pear	Sow Thistle, Wood Sorrel, Wild Garlic, Churbil, Hedge Parsley, Verbena, Greenthread, Bull Nettle, Heller's Rosette Grass, Plantain	None
58	Upland Forest	0.41	Gum Bumelia, Blackberry, American Beautyberry	Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Prickly Pear	Bull Nettle, Coriopsis, Lantana, False Onion, Texas Star, Verbena, Aster, Queen Ann's Lace, Buffalo Grass, Blue-Eyed Grass, Silver Dwarf, Morning Glory	None
59	Upland Forest	0.62	Greenbrier, Mustang Grape, Soapberry, Blackhaw, Youpon Holly, American Beautyberry, Muscadine Grape, Sugarberry	Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Prickly Pear	Bull Nettle, Wood Sorrel, Queen Ann's Lace, Daffodil, Dwarf Sunflower, Paper White Narcissus, Spiny Sow Thistle, Vervain, Panicum, Rattlesnake Flower	None
60	Upland Forest	0.47	Greenbrier, Poison Ivy, Mustang Grape, Elbow Bush	None	Live oak	None	None	Ashe Juniper	None	Prickly Pear	Hedge Parsley, Heller's Rosette Grass, Dandelion, Cedar Sage, Carex Spp., Flebane, Buffalo Grass, Wood Sorrel, Rabbit Cabbage, Antelope Horn Cirsium Spp., Parietaria Spp.	None
61	Grassland	0.39	None	Hairy Vetch	None	None	None	None	None	Prickly Pear	Blue-eyed Grass, Maximillian Sunflower, Wild Garlic, Greenthread, Prairie Verbena, Johnson Grass, Skullcap, Oxalis Spp., Four-Nerve Daisy, Geranium Spp., Slender Hedeoma, Wild Oats, Thistle, Antelope Horn, Wild Onion, Rabbit Cabbage, Primrose	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
62	Grassland	0.45	None	None	None	None	None	Juniper	None	None	Drummond's Skullcap, Texas Storkbill, Greenthread, Cloth of Gold, Antelope horn, Verbenia, Milkweed, Little Bluestem, Dropseed, Three Awn, Engelmann's Daisy, Buttercup, Wheat, Common Hedge Parsley, Common Valarian, Pennyroyal	None
63	Upland Forest	0.56	Muscadine Grape, Dewberry, Hackberry	None	Red Oak	None	Winged Elm	Juniper	None	Salt Cedar, Willow, Baccharis, Prickly Pear	Texas Cranebill, Pennyroyal, Verbena, Milkweed, Rye, Buttercup, Nettle, Burr, Skullcap, Texas Thistle, Plantain, Ragweed, Vetch, Beebalm	None
64	Shrubland	0.50	Texas Persimmon, Soapberry, Notted Milkvine, Lizard Tail Vine, Greenbrier, Mustang Grape	Partridge Pea, Hairy Vetch	Live Oak	None	None	Ashe Juniper	None	Lace Cactus, Prickly Pear	Little Bluestem, Coriopsus, Vervain, Marigold, Antelope Horn, Stone Crop, Rattlesnake Flower, Spanish Needle, Blue-Eye Grass, Sow Thistle, False Nettle, Parsley, Branched Nose burn, Texas Sage, Eastern Grama Grass, Pony's Foot, Hedge Parsley, Tall Tumble Mustard	None
65	Upland Forest	0.54	Greenbrier, Carolina Snailseed, Muscadine Grape	None	Lice Oak, Bur Oak	None	Cedar Elm	Juniper	None	Prickly Pear	Drummond's Skullcap, Wood Sorrel, Carex, False Day Flower, Frostweed	None
66	Upland Forest	0.59	Persimmons, Greenbrier, Dewberry	None	Live Oak, Bur Oak	None	Cedar Elm	Juniper	None	Prickly Pear	Carex, Switch Grass, Wood sorrel, Pennyroyal, Texas Thistle, Nettle, Chervil, Fleabane	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
67	Upland Forest	0.77	Muscadine Grape, Persimmons, Glossy Privet, Dewberry, Greenbrier, Carolina Snailseed, Agarita	None	Oak	None	Cedar Elm, Texas Ashe, Box Elder	Juniper	None	Prickly Pear	Carex, Bedstraw, Turck's Cap, Chervil, Wood Sorrel, Common Sow Thistle, Dwarf Plantain, Sparse Hedge Parsley, Texas Thistle	Old Juniper Growth
68	Upland Forest	0.67	Mullberry, Hackberry, Waxleaf Legustrum, Muscadine Grape, Blackberry, Soapberry, Greenbrier, Chinaberry, Texas Persimmons, Carolina Snailseed	Hairy Vetch	Shumard Oak	Pecan	Elm Spp.	Ashe Juniper	None	None	Whitemouth Dayflower, Wood Sorrel, Straggler Daisy, Stick Willy, Yellow Sedge, Johnson Grass, Grama Spp., Bull Nettle, Canadian Rye, Plantain, Goldenrod	None
69	Riparian	0.68	Poison Ivy, Chinaberry, Tallow, Dewberry, Trumpet Creeper, Blackberry, Dogwood, Gum Bemelia, Greenbrier	False Indigo	Live Oak	None	Box Elder, Green Ashe, Slippery Elm	Ashe Juniper	Sycamore	Salt Cedar	Texas Daisy, Pony's Foot, Lizards Tail, Smart Weed, False Indigo, Garlic, Nut Sedge, Goldenrod, Blue Stem Day Flower, False Nettle, Hedge Parsley, Honey Suckle, Queen Ann's Lace, Wood Sorrel	Maybe and Old Homestead on Property
70	Grassland	0.65	Greenbrier, Pokeberry, Chinese Pivot, Mulberry, Wax Leaf Ligustrum, Muscidine Grape, Paw Paw, Dewberry, Honey Suckle, Poison Ivy, Sugarberry, Possum Haw, Beautyberry, Sacred Bamboo, Glossy Privet, Devils Walking Stick, Dogwood	None	Bur Oak, Southern Red Oak, Live Oak	Pecan	Cedar Elm	Cedar Longleaf	None	Prickly Pear	Aster, False Nettle, Persimmon, False Parsley, Panicum, Honey Suckle, Net Sedge, Sticky Willy, Marigold, False Onion	None

Point Number	Habitat Group	Total Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Remarks
71	Grassland	0.30	Elbow Bush, Greenbrier	None	None	None	Cedar Elm	None	None	Prickly Per	Corn Salad, Plantain, Slender Hedoma, Sour Clover, Hedge Parsley, Bermuda Grass, Catch weed Bedstraw, Wild Lettuce, Engelmann's Daisy, Cirsium Spp., Oxalis Spp., Mexican Hat	Disturbed site. Bermuda Grass monoculture

APPENDIX F – SEAPLANE POLICY

Page intentionally left blank

CESWF-OD-R

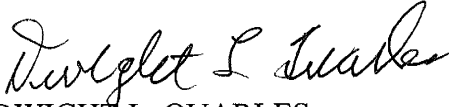
17 Mar 00
Wiese/bw/2707

MEMORANDUM FOR O&M Distribution #2
Number (POL: 00-06)

SUBJECT: Notice to Seaplane Pilots

1. The enclosed Notice to Seaplane Pilots has been updated to correct a few omissions (Waco Lake had been omitted from the last update in Feb 1998) and to include the District's Web Site address.
2. The Notice includes a reference to our Lake Recreation Visitor's Guide pamphlet for additional information. When the Notice is given to a member of the public, the Guide pamphlet should be attached.
3. When printing a copy of the Notice, it should be printed on a Corps of Engineers letterhead.

Encl


DWIGHT L. QUARLES
Chief, Operations Division

NOTICE TO SEAPLANE PILOTS
U.S. Army Corps of Engineers, Fort Worth District
Prohibitions and Restrictions Governing the Use of Seaplanes

POLICY

In accordance with Title 36, Chapter III, Part 328 of the Code of Federal Regulations, it is the objective of the Corps of Engineers natural resources management mission to maximize public enjoyment and use of Corps lakes, consistent with their aesthetic and biological values. Within that context, the following restrictions governing the use of seaplanes have been developed.

DISTRICT-WIDE PROHIBITIONS AND RESTRICTIONS

1. Pilots are responsible for knowing the rules and regulations pertaining to aircraft as set forth in Title 36, Chapter III, Part 327.4 of the Code of Federal Regulations. Copies are available from any Corps of Engineers Lake Office.
2. Seaplanes may not be operated between sunset and sunrise. Where not specifically restricted or prohibited, recreational seaplane operations are allowed seven days a week.
3. Aircraft larger than 5,000 pounds gross weight are prohibited from landing without special permission from the District Engineer.
4. Commercial seaplane operations are prohibited unless authorized by the District Engineer. Commercial operations, if authorized, will be limited to the hours of 10 a.m. to 5 p.m., Monday through Friday, from November 1 to April 1.
5. Individual letter permits may be issued for seaplanes to operate in prohibited areas on a one-time-only basis.
6. The operation of a seaplane at Corps of Engineers lakes is at the risk of the plane's owner, operator, and passenger(s). All lakes in the Fort Worth District are operated as flood control reservoirs with widely fluctuating pool elevations. Pilots are encouraged to contact each lake project office for current pool elevation information. Addresses and phone numbers of each lake are listed in the attached Visitor's Guide. Information may also be obtained from the Corps of Engineers web site at www.swf.usace.army.mil
7. Where landings and takeoffs are not totally prohibited at a given lake, a minimum distance of 500 feet from shore or structures must be maintained during landing and takeoffs.
8. The attached information lists specific restrictions and prohibitions for each lake in the Fort Worth District.

SEAPLANE OPERATIONS ARE PROHIBITED ON THE FOLLOWING LAKES

Lake Georgetown
Grapevine Lake
Hords Creek Lake
O.C. Fisher Lake
B.A. Steinhagen Lake
Waco Lake

SPECIFIC RESTRICTIONS ON SEAPLANE OPERATION

<p>AQUILLA LAKE</p> <p>Seaplane operations are prohibited in all areas except on 'open water' areas of the lake from the dam northeast to the mouth of Hackberry Creek Branch and from the dam northwest to an East-West line extending from the north bank of the Old School branch.</p>	<p>JIM CHAPMAN LAKE - COOPER DAM</p> <p>Landings and takeoffs are prohibited in the uncleared portion of the lake west of a line running from the west end of South Sulphur State Park to the peninsula at the mouth of Doctors Creek and in the cove formed Doctors Creek.</p>
<p>BARDWELL LAKE</p> <p>Landings and takeoffs are prohibited north of Highway 34 and in all coves off the main body of the lake.</p>	<p>GRANGER LAKE</p> <p>Landings and takeoffs are prohibited in both major arms of the lake formed by Willis Creek and the San Gabriel River and in the large, shallow lake area north of a line from the outlet structure to the east tip of the San Gabriel Wildlife Area.</p>
<p>BELTON LAKE</p> <p>Landings and takeoffs are prohibited north of Highway 36, in the coves formed by Owl Creek and Cedar Creek, and in the arm of the lake formed by Cowhouse Creek upstream from the northwest end of the Fort Hood Recreation Area.</p>	<p>JOE POOL LAKE</p> <p>Landings and takeoffs are prohibited in all lake areas west of the Lakeridge Parkway bridges.</p>
<p>BENBROOK LAKE</p> <p>Landings and takeoffs are prohibited in the lake area south of the abandoned pump station on the east shore and in the coves formed by East and West Dutch Branch Creeks.</p>	<p>LAKE O THE PINES</p> <p>Landings and takeoffs are prohibited in all coves and bays off the main body of the lake and in uncleared and shallow areas of the lake.</p>
<p>CANYON LAKE</p> <p>Landings and takeoffs are prohibited upstream from Cranes Mill Park and in all coves and major bay areas off of the main body of the lake. (Including the large lake area east and west of Canyon Park.)</p>	<p>LAVON LAKE</p> <p>Landings and takeoffs are prohibited in lake areas north of Collin Park, north of Tickey Creek Park, and in all coves and bays off the main body of the lake.</p>

SPECIFIC RESTRICTIONS ON SEAPLANE OPERATION	
<p>LEWISVILLE LAKE</p> <p>Landings and takeoffs are prohibited in uncleared areas north of Crescent Oaks Park, the entire area west of IH 35 and north of Highway 720, and in large uncleared portions of the entire eastern half of the lake.</p>	<p>SOMERVILLE LAKE</p> <p>Landings and takeoffs are prohibited west of the west end of Birch Creek Unit of Somerville Lake State Park and in all coves and bays off the main body of the lake.</p>
<p>NAVARRO MILLS LAKE</p> <p>Landings and takeoffs are prohibited west of Wolf Creek Park 1.</p>	<p>STILLHOUSE HOLLOW LAKE</p> <p>Landings and takeoffs are prohibited west and south of Cedar Knob Road and in large shallow areas surrounding unnamed islands in the main body of the lake.</p>
<p>PROCTOR LAKE</p> <p>Landings and takeoffs are prohibited in all areas north and west of the eastern tip of Promontory Park and all areas west of the southwest tip of Promontory Park.</p>	<p>WHITNEY LAKE</p> <p>Seaplane operations are prohibited in areas downstream from a line drawn from the northern tip of Walling Bend park to the mouth of Frazier Creek and upstream from a line drawn from the mouth of Cedar Creek southwest to the opposite undeveloped shoreline. The coves formed by King Creek and Cedron Creek are also prohibited</p>
<p>RAY ROBERTS LAKE</p> <p>Landings and takeoffs are prohibited north of Highway 3002 and in areas north and east of a line from the northeast tip of Johnson Park to the southwest tip of Jordan Park.</p>	<p>WRIGHT PATMAN LAKE</p> <p>Landings and takeoffs are prohibited in all coves and bays off main body of lake and in uncleared and shallow areas of the lake.</p>
<p>SAM RAYBURN RESERVOIR</p> <p>Landings and takeoffs are prohibited west of Highway 147, north of Highway 83, and in scattered uncleared areas of the reservoir.</p>	

NOTE: The latest revision to this Notice to Seaplane Pilots was completed in March of 2000.

APPENDIX G – PERTINENT PUBLIC LAWS

Page intentionally left blank

- Public Law 59-209, Antiquities Act of 1906. The first Federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.
- Public Law 74-292, Historic Sites Act of 1935. Declares it to be a national policy to preserve for (in contrast to protecting from) the public, historic (including prehistoric) sites, buildings, and objects of national significance. This act provides both authorization and a directive for the Secretary of the Interior, through the National Park Service, to assume a position of national leadership in the area of protecting, recovering, and interpreting national archeological historic resources. It also establishes an "Advisory Board on National Parks; Historic Sites, Buildings, and Monuments, a committee of eleven experts appointed by the Secretary to recommend policies to the Department of the Interior".
- Public Law 75-761, Flood Control Act of 1938. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Title 16 U.S. Code §§ 668-668a-d, 54 Stat. 250, Bald Eagle Protection Act of 1940, as amended. 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.
- Public Law 78-534, Flood Control Act of 1944. - 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.
- Public Law 79-525, River and Harbor Act of 1946. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Public Law 83-780, Flood Control Act of 1954. 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.
- Public Law 85-624, Fish and Wildlife Coordination Act 1958. - This act as amended in 1965 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.

- Public Law 86-717, Forest Conservation. - 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.
- Public Law 87-874, Rivers and Harbors Act of 1962. This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Public Law 88-578, Land and Water Conservation Fund Act of 1965. This act established a fund from which Congress can make –appropriations for outdoor recreation. Section 2(2) makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act as amended.
- Public Law 88-29, 28 May 1963, 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.
- Public Law 89-72, Federal Water Project Recreation Act of 1965. - This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.
- Public Law 89-90, Water Resources Planning Act (1965). This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.
- Public Law 89-272, Solid Waste Disposal Act, as amended by PL 94-580, dated October 21, 1976. This act authorized a research and development program with respect to solid-waste disposal. It proposes (1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid-waste disposal, including studies directed toward the conservation of national resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid waste; and (2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, and conduct of solid-waste disposal programs.

- Public Law 89-665, Historic Preservation Act of 1966. - This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President's Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.
- Public Law 90-483, River and Harbor and Flood Control Act of 1968, Mitigation of Shore Damages. Section 210 restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- Public Law 91-190, National Environmental Policy Act of 1969 (NEPA). – NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a “continuing policy of the Federal Government... to use all practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.” Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act. 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 the National Environmental Policy Act 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: and
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

- Public Law 91-611, River and Harbors and Flood Control Act of 1970. – Section 122e. Establishes the requirement for evaluating the economic, social, and environmental impacts of projects.
- Public Law 92-347, Golden Eagle Passbook and Special Recreation User Fees. This act revises Public Law 88-578, the Public Land and Water Conservation 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.
- Public Law 92-500, Federal Water Pollution Control Act Amendments of 1972. The Federal Water Pollution Control Act of 1948 (PL 845, 80th Congress), as amended in 1956, 1961, 1965 and 1970 (PL 91- 224), established the basic tenet of uniform State standards for water quality. 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."
- Public Law 92-516, Federal Environmental Pesticide Control Act of 1972. This act completely revises the Federal Insecticide, Fungicide and Rodenticide Act. It provides for complete regulation of pesticides to include regulation, restrictions on use, actions within a single State, and strengthened enforcement.
- Public Law 93-81, Collection of Fees for Use of Certain Outdoor Recreation Facilities. This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended to require each Federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at Federal expense.
- Public Law 93-205, Conservation, Protection, and Propagation of Endangered Species Act of 1973, as amended. 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. This Act was amended by Public Law 96-159.
- Public Law 93-251, Water Resources Development Act of 1974. Section 107 of this law establishes a broad Federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plant installations.
- Public Law 93-291, Archeological Conservation Act of 1974. The Secretary of the Interior shall coordinate all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs.
- Public Law 93-303, Recreation Use Fees. This act amends Section 4 of the Land and Water Conservation Act of 1965, as amended, to establish less restricted

criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.

- Public Law 93-523, Safe Drinking Water Act. The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish Federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint Federal-State system for assuring compliance with these standards and for protecting underground sources of drinking water.
- Public Law 94-422, Amendment of the Land and Water Conservation Fund Act of 1965. Expands the role of the Advisory Council. Title 2 - Section 102a amends Section 106 of the Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.
- Public Law 95-217, Clean Water Act of 1977, as amended. This Act amends the Federal Water Pollution Control Act of 1970 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.
- Public Law 95-341, American Indian Religious Freedom Act of 1978. 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.
- Public Law 95-632, Endangered Species Act Amendments of 1978. This law amends the Endangered Species Act Amendments 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.
- Public Law 96-95, Archeological Resources Protection Act of 1979. This Act protects archeological resources and sites that are on public and tribal lands, and 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.
- Public Law 98-63, Supplemental Appropriations Act of 1983. 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.

- Public Law 99-662, The Water Resources Development Act 1986. Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.
- Public Law 101-601, Native American Graves Protection and Repatriation Act (16 November 1990), requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.

APPENDIX H – ACRONYMS

Page intentionally left blank

ac-ft	Acre Feet
BFZ	Balcones Fault Zone
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CRMP	Cultural Resources Management Plan
CWA	Clean Water Act
DC	District Commander
DM	Design Memorandum
DoD	Department of Defense
EA	Environmental Assessment
EAA	Edwards Aquifer Authority
EO	Executive Order
EOP	Environmental Operating Principles
EP	Engineering Pamphlet
EPA	United States Environmental Protection Agency
ER	Engineering Regulation
ESA	Environmentally Sensitive Areas
F	Fahrenheit
FONSI	Finding of No Significant Impact
FS	Fully Supported
GAM	Groundwater Availability Models

GCD	Groundwater Conservation District
GCWA	Golden Cheeked Warbler
GIS	Geographical Information Systems
GMA	Groundwater Management Area
HDR	High Density Recreation
IPaC	USFWS Information for Planning and Conservation
LDR	Low Density Recreation
LEED	Leadership in Energy and Environmental Design
MP	Master Plan or Master Planning
MRML	Multiple Resource Management Lands
NAAQS	National Ambient Air Quality Standard
NEPA	National Environmental Policy Act, 1970
NGVD29/88	National Geodetic Vertical Datum (1929 or 1988)
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRRS	National Recreation Reservation System
NSRE	National Survey on Recreation and the Environment
NVCS	National Vegetation Classification System
NWI	National Wetland Inventory
O&M	Operations and Maintenance

OMB	Office of Management and Budget
OMBIL	Operations and Maintenance Business Information Link
OMP	Operations Management Plan for a specific lake Project
OPM	Operations Project Manager
PDT	Project Delivery Team
PL	Public Law
PM	Project Management or Project Manager
PMBP	Project Management Business Processes
PO	Project Operations
RPEC	Regional Planning and Environmental Center
RV	Recreational Vehicle
SH	State Highway
SHPO	State Historical Preservation Office
SMPS	Shoreline Management Policy Statement
SWF	U. S. Army Corps of Engineer's Fort Worth District Office
SWF-OD	Operations Division, U. S. Army Corps of Engineers, Fort Worth
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TORP	Texas Outdoor Recreation Plan
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TX	Texas

TXDOT	Texas Department of Transportation
TWC	Texas Water Code
VM	Vegetative Management
USACE	United States Army Corps of Engineers
USFWS	U. S. Fish and Wildlife Service
USGS	United States Geological Survey
WDA	Workforce Development Area
WHAP	Wildlife Habitat Appraisal Procedure
WMA	Wildlife Management Area