GRAND RIVER DAM AUTHORITY *Public Power for Oklahoma*

PENSACOLA PROJECT

FERC No. 1494

SHORELINE MANAGEMENT PLAN

As Approved by
the Board of Directors on
June 11, 2008

GRAND RIVER DAM AUTHORITY
VINITA, OKLAHOMA

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Executive Summary

The Pensacola Project (FERC No. 1494) (Project) is an existing, federally licensed hydroelectric project located in northeastern Oklahoma that is owned and operated by the Grand River Dam Authority (GRDA), an agency of the State of Oklahoma. Completed in 1940, the Project's Pensacola Dam is the longest multi-arched dam in the world. The Pensacola Dam impounds the waters of the Grand River to form the Grand Lake O' The Cherokees (Grand Lake). Grand Lake encompasses approximately 46,500 surface acres of water and 1,300 miles of shoreline. The Project boundary is located in close proximity to the shoreline and privately owned land is generally found mere feet from the water's edge.

Since its creation, Grand Lake has been a popular recreational and residential destination. During its history, Grand Lake has hosted the National Governor's Conference and several nationally recognized fishing tournaments. It is the home of the nation's oldest long distance regatta on an inland lake and the oldest yacht club in Oklahoma. Current uses of the shoreline include residential and commercial development, agriculture, and wildlife management areas.

Grand Lake also has considerable value as an environmental resource. It contains significant aquatic and terrestrial habitat for a host of species. Additionally, the shoreline serves an important function in the local ecology.

Increasing development and competing uses for resources around the lake point to the need for a clearly defined, comprehensive and consistent management strategy for the Project's shoreline. This Shoreline Management Plan (SMP or Plan) provides a comprehensive plan for Grand Lake that considers GRDA's enabling legislation, the FERC license, historical and current

public use, and the need to accommodate future growth and changing use patterns; all while maintaining stewardship for the environmental and socioeconomic resources entrusted to GRDA. This document draws the resulting management strategies, policies, and practices from GRDA's existing practices, FERC directives and guidance, and information gained from interested stakeholders, resource agencies, and other public comments.

The management vision for Grand Lake is defined by the Plan's distinct Shoreline Management Classifications (SMC) and Allowable Use Categories (AUC). The multi-tiered SMC system, which includes Responsible Growth Areas, Stewardship Areas, and Wildlife Management Areas, identifies clear management objectives for Project land. The Allowable Use Categories define the use types that will be permitted in those areas. To implement these goals, objective standards and procedures are detailed in other parts of the Plan. Taken as a whole, the SMP protects Grand Lake's valued resources by providing clear guidance for determining whether a proposed use is appropriate in an area.

This SMP is the product of extensive consultation with stakeholders, including the public and resource agencies. No less than twenty-seven meetings, open to the public, have been held during the plan's development and thousands of written comments have been received. Additionally, resource agencies have had the opportunity to be actively involved during all stages of the plan's development.

In 2005, GRDA began the process of developing an SMP by having discussions with the Federal Energy Regulatory Commission (FERC or Commission), state and federal resource agencies, and interested stakeholders. To aid in the development of the SMP, GRDA hired Kleinschmidt Associates, an energy and water resource consulting firm.

Three public meetings held in October of 2005, led to the development of the Stakeholder Working Group (SWG), an advisory committee comprised of interested individuals, representatives of non-governmental organizations, informal citizen groups, commercial interests, as well as state and federal agencies. The Stakeholder Working Group provided advice and opinions regarding key components of the SMP including the designation of land use

classifications for shoreline property, definitions of allowable uses within these areas, and suggestions for permitting policies.

In December 2006, Kleinschmidt Associates prepared a working draft of the SMP (December 2006 Working Draft), taking into account input from the Stakeholder Working Group, the public, and state and federal resource agencies. In February and March 2007, GRDA held five public hearings to provide stakeholders throughout Oklahoma with the opportunity to comment on the December 2006 Working Draft. Approximately 724 people attended these sessions, which were held in several communities around Grand Lake, and in Tulsa and Oklahoma City, the state's major population centers. The hearings were moderated by Mr. John D. Rothman, an experienced mediator and attorney, who was hired by GRDA to conduct the hearings and to prepare an independent report summarizing the public's opinions. In addition to the comments made at hearings, GRDA received 345 written comments, and petitions with a total of 2,713 signatures.

In his summary, Mr. Rothman stated that the public was overwhelmingly opposed to the December 2006 Working Draft, with the Vegetation Management Plan (VMP) and the Shoreline Management Classifications (SMC) being the two greatest areas of concern. The VMP was criticized for its extensive permitting requirements, especially for routine maintenance and debris removal, while the SMC were seen as leaving too little shoreline available for future commercial development.

On September 12, 2007, GRDA staff presented a revised draft of the SMP (Revised Draft) to the GRDA Board of Directors for review. Stakeholders were given an opportunity to submit written comments on the SMP and to voice their opinions at public hearings held in October, 2007. Public support for the Revised Draft was widespread.

As part of this consultation process, GRDA solicited comments from twenty-seven resource agencies. Further, it delayed final approval of the SMP to engage in a meaningful dialog with the U.S. Fish and Wildlife Service and the Oklahoma Department of Wildlife Conservation.

GRDA made several changes to the SMP as a result of discussions with the resource agencies. These changes include:

- Creation of a distinct SMC for wildlife management;
- Consolidation and relocation of areas designated as Stewardship Areas to maximize the benefits of resource management efforts;
- Clear identification of factors to be considered prior to permitting new uses; and,
- Requirements for pubic hearings prior to permitting new uses.

GRAND RIVER DAM AUTHORITY
VINITA, OKLAHOMA

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ACRONYMS AND ABBREVIATIONS LIST

AUC	Allowable Use Categories
BMP	Best Management Practice
Commission or FERC	Federal Energy Regulatory Commission
DBH	Diameter at Breast Height (4.5 feet)
EA	Environmental Assessment
EIS	Environmental Impact Statement
GIS	Geographic information system
GRDA or Licensee	Grand River Dam Authority
HP	Horsepower
MW	Megawatt
NPS	Nonpoint source
OAC	Oklahoma Administrative Code
OAS	Oklahoma Archeological Survey
OCC	Oklahoma Conservation Commission
ODEQ	Oklahoma Department of Environmental Quality
ODWC	Oklahoma Department of Wildlife Conservation
OTRD	Oklahoma Tourism and Recreation Department
OWRB	Oklahoma Water Resources Board
PD	Pensacola Datum
RM	River mile, numbered from mouth to source
RMP	Recreation Management Plan
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SHPO	State Historic Preservation Office
SMC	Shoreline Management Classifications
SMP	Shoreline Management Plan
SWG	Stakeholder Working Group
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VMP	Vegetation Management Plan
WMA	Wildlife Management Area

STANDARD TERMS LIST

Confluence	The flowing together of two or more streams; the place where a tributary joins the main stream.
Drawdown	The act of discharging of water to lower reservoir storage levels.
Flood plain	The relatively level area of land bordering a stream channel and inundated during moderate to severe floods.
FERC Form 80	FERC mechanism and form for filing periodic reviews of recreation use.
Grand Lake	Grand Lake O' the Cherokees.
Nonpoint source	A pollution source that cannot be defined as originating from discrete points such as pipe discharge. Areas of fertilizer and pesticide applications, atmospheric deposition, manure, and natural inputs from plants and trees are types of nonpoint source pollution.
Department of Ecosystems Management	Specific department within GRDA, established to aid in the development of goals and objectives designed to maintain the integrity of the entire lake ecosystem.
Pensacola Datum	Pensacola Datum (PD) is 1.07 feet lower than National Geodetic Vertical Datum, which is a national standard for measuring elevations above sea level.
Project	Pensacola Hydroelectric Project (FERC No. 1494).
Project area	All land within the FERC Project boundary and under the jurisdiction of the FERC Project license.
Project boundary	The boundary defined in the license issued by FERC for the Project as needed for Project operations. For the Pensacola Project, the boundary is identified by a metes and bounds description.
Project lands	Lands contained within the Project boundary.
Project vicinity	The area extending to about five miles from the Project boundary.
Project works	All of the infrastructure associated with the Project.
Relicensing	The process of acquiring a new FERC license for an existing hydroelectric project upon expiration of the existing FERC license.

Stakeholders	The public (both resident and non-resident), federal and state resource agencies, non-governmental organizations, and other interested parties.
Tailrace	Channel through which water is discharged from the powerhouse turbines.

GRAND RIVER DAM AUTHORITY
SHORELINE MANAGEMENT PLAN

1.0 *INTRODUCTION*

The Federal Energy Regulatory Commission (FERC or Commission) issued a new license for the 125-megawatt (MW) Pensacola Hydroelectric Project (FERC No. 1494) (Project) to the Grand River Dam Authority (GRDA) on April 24, 1992. The Project is located on the Grand River in northeastern Oklahoma. The Grand River begins in Kansas as the Neosho River and flows southeasterly, then southerly, into Oklahoma where it joins the Spring River to form the Grand River. The Pensacola Project is located between river miles (RM) 77 and 143 on the Grand River in northeastern Oklahoma and lies within Craig, Delaware, Mayes, and Ottawa counties. Pensacola Dam, which forms the Grand Lake O' The Cherokees (Grand Lake), is located between the towns of Langley and Disney. From the Project, the Grand River flows south through Oklahoma, to its confluence with the Arkansas River near Muskogee, Oklahoma.

The Pensacola Project was the first hydroelectric project constructed in Oklahoma. Construction of the Project began in 1938. Closing of the spillway gates in March 1940 created Grand Lake. GRDA has operated and maintained the Pensacola Project since August 1946. In addition to Grand Lake, the Project works consist of a dam, two auxiliary spillways, an intake structure, a powerhouse containing six turbine generator units, and appurtenant equipment and facilities.

GRDA is an agency of the State of Oklahoma, created by the Oklahoma Legislature in 1935 to be a "conservation and reclamation district for the waters of the Grand River." GRDA manages Grand Lake pursuant to the terms of the license granted by FERC and the relevant provisions of the Oklahoma Statutes. GRDA owns lands within the Project boundary, as well as some areas outside of the Project boundary and has authority to prescribe and enforce rules and regulations for commercial and recreational use of the lake. GRDA currently manages the shoreline through a permitting system and uses GRDA law enforcement personnel to enforce regulations. GRDA shares water storage and release operations with the U.S. Army Corps of Engineers (USACE) as part of a basin wide system of flood control and navigation projects. The

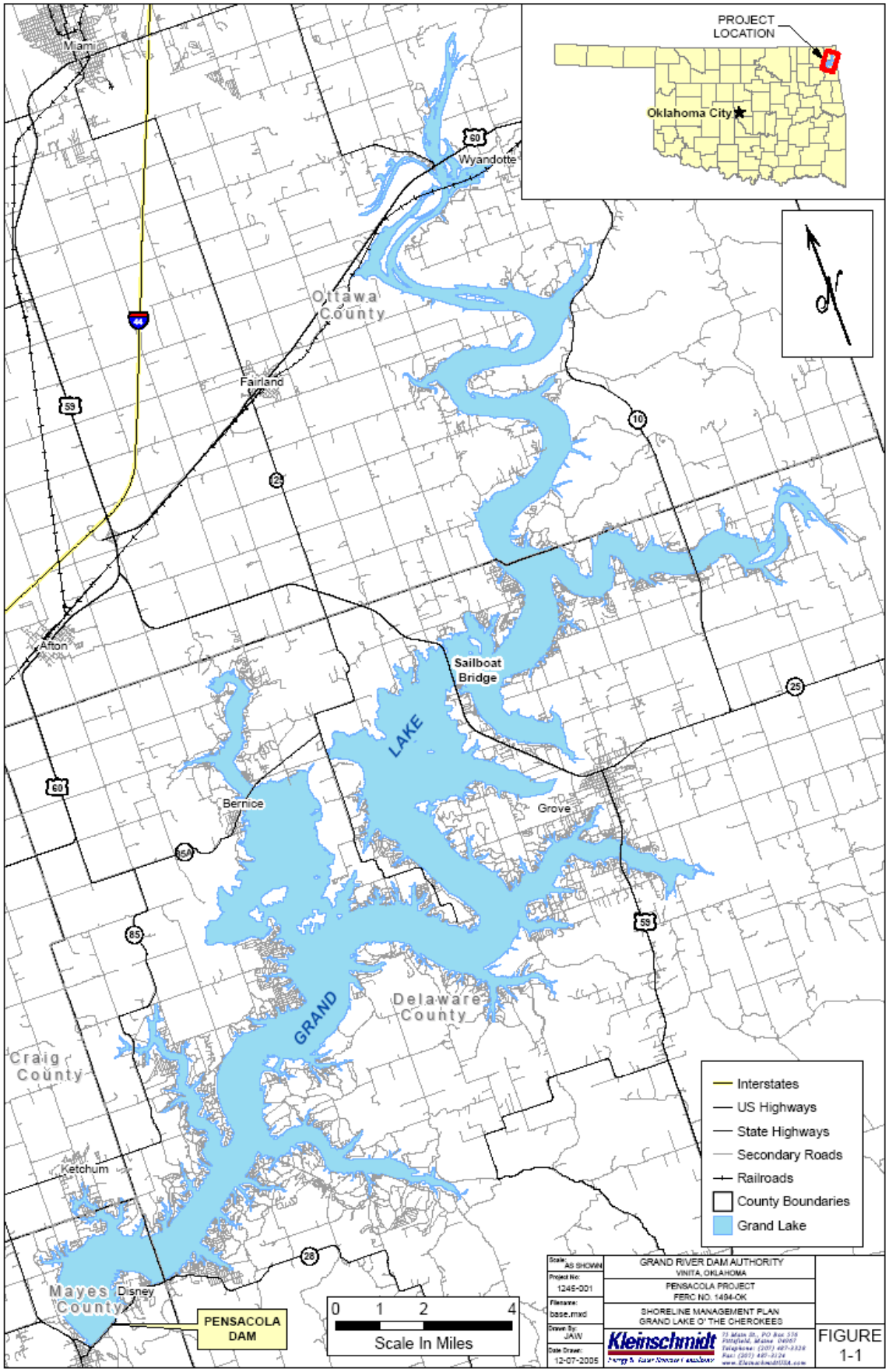
Project provides flood storage between elevations 745 and 755 feet PD.

The towns of Langley, Disney, Grand Lake Towne, Ketchum, Cleora, Bernice, Afton, Zena, Grove, Dotyville, Wyandotte, Peoria, and Miami lie within the Project vicinity. In the early years of Project operation, shoreline development primarily consisted of agricultural and small, seasonal, private developments. Over the past 20 years, the lake has become a focal point of residential and commercial development in northeast Oklahoma. The majority of development to date has occurred on the central and southern portions of the reservoir, with both residential and commercial uses interspersed adjacent to and within the Project boundary.

This Shoreline Management Plan (SMP) for the Pensacola Project includes:

1) purpose and scope of the SMP;
2) shoreline management goals and objectives;
3) a description of the agency and stakeholder consultation process;
4) an inventory of existing Project resources;
5) a summary of the Project Recreation Plan;
6) shoreline management guidelines for Project lands;
7) adaptive management strategies for assessment of future shoreline development;
8) a process for the evaluation of new shoreline uses under the classification and permitting system;
9) a description of GRDA's permitting standards and system;
10) a description of GRDA's SMP enforcement strategies; and,
11) a monitoring and amendment process for the SMP.

Figure 1.0-1. Location of the Pensacola Project (FERC No. 1494)



2.0 *PURPOSE AND SCOPE OF THE SHORELINE MANAGEMENT PLAN*

2.1 Introduction

FERC guidelines recommend that an SMP use existing resource information to designate Shoreline Management Classifications (SMC) and to develop guidelines that provide a framework for determining appropriate proposed shoreline use in relation to existing uses and environmental resources. An SMP may identify areas afforded additional protection or that may require additional scrutiny before permitting new uses. Similarly, an SMP may also identify shoreline segments that are suitable for future use and that may not require as much scrutiny before development. Most importantly, an SMP provides a management linkage between the Project's license and FERC's obligations under the Federal Power Act.

This SMP is designed to guide GRDA's management actions in conformance with the Project's license. This document includes strategies to manage and enhance the environmental and socioeconomic values of the Project. These strategies include protecting environmental resources while providing public access, and maintaining consistency with other jurisdictional policies and plans relevant to the area.

This SMP was developed considering all of the existing and reasonably foreseeable future uses of the Project, resources currently protected by law (*e.g.*, rare, threatened and endangered species, and wetland sites), public interests, and FERC regulations and guidelines. Interested stakeholders, including adjacent property owners, commercial representatives, local realtors, and resource agency staff, provided valuable assistance in developing the SMP through their involvement in the Stakeholder Working Group (SWG) and the public hearings, by submitting written comments, and through direct consultation. Stakeholders provided valuable insight to daily life on the lake, local knowledge of specific environmental resources, expectations of recreational users, adjacent property owners and business owners, as well as individual perspectives on potential management strategies and actions.

2.2 Territorial Jurisdiction

The provisions of the SMP apply only to real property owned by GRDA within the Project boundary and do not control the use of privately owned land. The Project boundary is defined by the metes and bounds descriptions of property obtained by GRDA through the exercise of the power of eminent domain, and is not determined by reference to any particular contour elevation. Thus, questions about whether a particular piece of land is subject to the SMP can only be answered after review of a survey conducted by a licensed surveyor.

2.3 Structure of the SMP

The SMP has discrete sections to provide convenience and "usability". Section 1.0 provides introductory materials and a brief overview of the Project. (Please contact GRDA's headquarters in Vinita, Oklahoma for more detailed information about the Project, or visit http://www.grda.com). Section 2.0 provides the purpose and scope of the SMP and provides context for the remainder of the document. Section 3.0 summarizes GRDA's management goals and objectives, while Section 4.0 outlines participation by the public, agencies and other interested stakeholders in the development of the SMP.

Section 5.0 provides an inventory of existing environmental, cultural and socioeconomic resources and uses in and around Grand Lake. Information regarding the area's recreational resources and GRDA's recreation management plan is found in Section 6.0. In 1997, GRDA developed a stand alone Recreation Management Plan (RMP) specifically related to recreation goals, objectives, and policies at the Project. This section incorporates general RMP components into the SMP to help guide recreation facility management within the Project boundary and ensure consistency between the documents.

The assessment of existing shoreline resources and development, as well as identification of areas that may be suitable for future development served as the basis for

establishing the classifications and guidelines for future shoreline management within the Project as discussed in Section 7.0. Section 7.1 defines the Shoreline Management Classifications and identifies resource management goals. Section 7.2 also defines allowable uses and their compatibility with those classifications and identifies allowable (or prohibited) uses within each SMC. Overall, these classifications, definitions, and guidelines seek to protect sensitive shoreline resources while permitting appropriate use and reasonable access to shoreline areas within the Project.

Section 8.0 describes Adaptive Management strategies to monitor ongoing shoreline development. Section 9.0 identifies the process used to determine what activities require a specific permit. Section 10.0 discusses permitting standards and requirements for said activities. Section 11.0 outlines shoreline enforcement policies as they relate to the overall SMP. Section 12.0 addresses the triggers and milestones that will be used to assess and, when necessary, update the SMP. The SMP bibliography identifies sources for more detailed Project related information in Section 13.0.

Appendix A of this SMP contains documentation of agency consultation and public participation in the development of the SMP, as well as comments received by GRDA on the SMP drafts, and responses to these comments.

Appendix B provides Shoreline Management Classification mapping. These maps are part of a Project resource database (Geographic Information System or GIS) that provides a visual summary of this information and serves as a tool for analysis and management of environmental resources. The maps and cross references to other Project related studies allow users to reference more detailed Project-related information. They also help to integrate other Project related management plans and studies, thus limiting the potential of conflicting management objectives for the Project's shoreline resources.

Appendix C provides suggested best management practices for non-Project lands. As GRDA has no jurisdiction over private lands, these best management practices are for informational purposes only.

Appendix D contains FERC license articles that pertain directly to the SMP and management of Grand Lake, including FERC's standard land use article.

3.0 *GOALS AND OBJECTIVES*

The SMP for Grand Lake is a comprehensive plan designed to guide management of the multiple resources and uses of the Project's shoreline in a manner consistent with the FERC license and Project purposes. It is important to note that the SMP applies only to GRDA owned land and does not control the use of privately owned land. The SMP formalizes many of the processes and criteria that GRDA currently uses to manage and balance the private and public uses of the Project's shoreline with environmental resources and hydroelectric generation. The SMP provides support and rationale for consistent land management policies and permitting decisions, both in the short term and over the life of the Project license. This document serves as a planning tool to guide GRDA in the protection and enhancement of the Project's environmental, recreational and other values over the term of the license. It also provides the background to support permitting decisions and other activities undertaken by GRDA within the Project.

Objectives:

- Establish Shoreline Management Classifications and Allowable Use Categories to guide the management of non-Project uses of GRDA's Project lands;
- Establish an equitable and reasonable balance between private/public uses, overall maintenance of existing natural and cultural resources, and hydroelectric generation;
- Provide a reference and/or linkage to other Project-related studies, management plans, and permitting regulations;
- Provide a summary of the types and locations of existing recreational opportunities and future recreational enhancements;
- Provide support and rationale for permitting processes and regulations within the Project boundary; and
- Describe the SMP amendment and monitoring process.

4.0 *PUBLIC PARTICIPATION AND CONSULTATION*

4.1 Kleinschmidt Associates

In June 2005, GRDA hired Kleinschmidt Associates, an energy and water resource consulting firm, to assist in the development of the SMP. Kleinschmidt was responsible for organizing the initial public meetings, forming and directing the Stakeholder Working Group, conducting surveys and studies, and authoring the initial draft of the SMP.

4.2 Public Information Sessions

Consultation for development of the SMP was initiated by holding a series of three public listening sessions in Grove, Vinita, and "The Coves", all in the Grand Lake vicinity. These sessions were an opportunity for stakeholders to voice their comments, concerns, and questions regarding management of Project lands and for Kleinschmidt to solicit volunteers to serve on the Stakeholder Working Group.

4.3 Stakeholder Working Group Meetings

The initial meeting of the Stakeholder Working Group was held at the GRDA offices in Vinita on December 7, 2005. The Stakeholder Working Group was designed as a volunteer advisory committee to provide opinion, advice and their personal or group experiences at Grand Lake, so that local insight and information could be considered and used in the development of the SMP as appropriate. An effort was made to assure representation of a wide range of private and commercial interests as well as a regionally diverse group. Because of the number of individuals interested in participating, and to assure spaces for local, state and federal agency staff, working group participation was informally capped at approximately 30 individuals. Individuals who indicated interest after the initial meeting were advised of this cap, but encouraged to forward their concerns to group members or to attend the meetings as public participants. They were also directed to GRDA's website where meeting minutes and draft documents are posted, and encouraged to contact GRDA directly with questions or comments.

The Stakeholder Working Group was comprised of three committees with distinct tasks and objectives. These committees were Land Use Classification, Allowable Use Determination, and Permitting Policy Development. Working in an advisory role, the Permitting committee met four times and the Land Use Classification and Allowable Use committees met five times through October, 2006. Final Shoreline Working Group meetings were held on May 1 and 2, 2007.

4.4 Agency Consultation

An initial meeting with state and federal regulatory, wildlife, and environmental agencies was held on December 6, 2005. Attendees at this meeting, held at the U.S. Fish & Wildlife Services (USFWS) headquarters in Tulsa, Oklahoma, included the USACE, USFWS, Oklahoma Department of Wildlife Conservation (ODWC), the Oklahoma Conservation Commission (OCC), GRDA, and Kleinschmidt Associates. GRDA expressed their intent to develop an SMP and requested ongoing participation in the process from these entities.

Of the approximately ten federal, state, county, tribal, and local municipal agencies invited to participate in the Stakeholder Working Group, a representative from the ODWC and the Ottawa County Commission attended the initial meeting. As the meetings progressed, Ottawa County staff did not continue to participate; however, representatives of the Oklahoma Department of Environmental Quality (ODEQ), ODWC, and USFWS participated when their schedule allowed.

A second meeting with the agencies was held on August 9, 2006. A draft of the SMP was provided to the agencies at that time and their continued participation in the process was requested. On December 20, 2006, the agencies were given a copy of the Working Draft.

On September 12, 2007, twenty-seven resource agencies were provided a draft copy of the SMP for review and comment prior to GRDA's filing a license amendment

for the SMP. Initially, the agencies were given 30 days to prepare and submit their comments on the draft SMP. While many of the agencies either had no comment or no opposition to the plan, U.S. Fish and Wildlife Service and the Oklahoma Department of Wildlife Conservation expressed the need for an extended comment period. (Appendix A includes a matrix of comments received and GRDA's responses to those comments.) GRDA honored this request and delayed a final vote by the Board of Directors to allow for additional consultation and comment.

In November 2007, representatives of USFWS, ODWC, and GRDA met to discuss the agencies concerns and recommendations regarding the Revised SMP and to explore possible alternatives and solutions. GRDA staff considered this meeting to be a positive and productive experience. Following the meeting, USFWS submitted initial written comments to GRDA outlining the agencies' concerns and recommendations.

The following is a brief summary of the major concerns and recommendations of USFWS and ODWC and GRDA's response to the same. A complete discussion of the comments can be found in Appendix A.

In their comments, the agencies expressed concern with the structure and implementation of the shoreline management classification system found in the Revised Draft. The agencies opined that the revised classifications do not provide adequate resource protection and fail to account for areas they believe cannot support additional uses. The agencies were concerned with the areas designated for protection. They thought the areas designated under the Stewardship classification were too fragmented to provide meaningful protection of natural resources.

The agencies favored a shoreline management classification system that included a limited/residential classification and a distinct classification for wildlife management. In the proposed limited/residential area, new commercial uses would be prohibited generally while residential uses would be allowed. The wildlife management classification proposed by the agencies would afford greater protection than the current Stewardship classification and no development would be allowed without adequate

mitigation and the consent of ODWC. The agencies favored allowing development in wetlands located in areas that are already used and focusing preservation efforts on the north end of the lake. Additionally, the agencies suggested that protection should be focused on fish and wildlife habitat.

Both resource agencies recommended that submission of the SMP be delayed one year to allow time for additional studies. Specifically, the agencies recommended that GRDA conduct more extensive surveys to determine fish and wildlife habitat values for project lands and shoreline. They also recommended that the existing recreation plan and carrying capacity study be revised and expanded.

GRDA believes the revised Shoreline Management Classifications provide significant resource protection, especially when viewed in light of the clear standards and procedures detailed in other parts of the Plan. Furthermore, the SMP's adaptive management policy, monitoring plans, and amendment provisions allow GRDA to recognize and respond to emerging management demands.

GRDA opposes the creation of a limited/residential classification because restricting areas to only residential uses and excluding commercial uses *per se* does not rationally advance the protection or enhancement of the Lake's recreational, scenic, or environmental resources. Residential uses tend to be less efficient and, in the aggregate, occupy more space while providing minimized access. Furthermore, residential uses are by their very nature private and thus, do not promote public access. Commercial uses tend to be more efficient by concentrating uses and maximizing available space. Additionally, commercial uses generally provide greater public access and can enhance the recreational value of the lake.

GRDA supports the creation of a new classification for wildlife management areas. The Wildlife Management classification will provide greater protection than that found in the Stewardship classification. These areas will be maintained exclusively for habitat protection and enhancement and uses inconsistent with these purposes will be prohibited. GRDA will consult with the resource agencies on management efforts on an

advisory basis.

GRDA agrees that the benefits of resource management can often be better realized through focusing efforts on larger contiguous tracts located in areas where the external pressures of competing uses are minimized. Similarly, GRDA agrees that efforts to manage habitat in areas that are impacted by competing uses or that are of limited size can have a diminished potential for benefit. Therefore, GRDA intends to consolidate protected areas (Stewardship and WMA) in the northern portion of the lake.

GRDA decided not to seek a delay for the purpose of conducting additional surveys. GRDA based this decision on a letter from FERC dated February 12, 2008, advising that GRDA efforts in this regard are sufficient and additional studies are not needed at this time.

4.5 Public Comment on the SMP Drafts

Between February 8 and March 6, 2007, GRDA sponsored five public hearings to provide stakeholders with an opportunity to comment on the Working Draft. These hearings were held in the Grand Lake communities of Cleora, Grove, and Vinita, and in Oklahoma City and Tulsa. The hearings were moderated by Mr. John D. Rothman, an experienced mediator and attorney, who was hired by GRDA to conduct the hearings and to prepare an independent report summarizing the public's opinions. GRDA publicized the events through press releases, newspaper advertisements, its website, and emails to stakeholders. Approximately 724 people attended the hearings.

In addition to receiving comments at the hearings, GRDA also received considerable input from the public through written correspondence and petitions. The public submitted approximately 345 letters and emails, and petitions containing approximately 2,713 signatures.

In his summary, Rothman indicated that there was very little public support for the December 2006 Working Draft. He identified the draft SMP's Vegetation

Management Plan (VMP) and the Shoreline Management Classifications (SMC) as greatest areas of concern for the public. He stated, "the overwhelming tenor of the comments was critical and negative."

According to Rothman, the public's "most persistent and passionate objections were to the allegedly permit-heavy, micro-managing Vegetation Management Plan." Many of the commenters opined that a permit should not be required for "routine property cleaning and restoration functions" or for the use of heavy equipment to remove the large amount of debris that accumulates on the shoreline following flooding. Critics of the VMP, including approximately 1,300 petitioners, argued a "more common sense" approach needed to be taken.

The public comments on the shoreline management classifications centered mainly on whether the limited/residential classification should be eliminated. The majority of commenters argued that the limited/residential classification unnecessarily restricted the potential for future commercial development around the lake. They contended that by incorporating the limited/residential category into the multipurpose designation, the GRDA Board would have more flexibility and control in dealing with future development issues. Supporters of the limited/residential classification argued that restricting commercial growth would protect existing residential areas and would benefit the environment.

On September 12, 2007, GRDA staff made available to the public its revised draft of the SMP (Revised Draft). Two additional public hearings were held on October 2 and 4, 2007, in Cleora and Grove, OK, to allow the public to comment on the Revised Draft. The public was also given thirty days to submit written comments.

The public's comments were largely supportive of the changes made to the SMP. Many commenters favored the newly created Responsible Growth and Stewardship classifications over the classifications found in the Working Draft. Changes made to the VMP also received considerable support from the commenters.

5.0 *INVENTORY OF EXISTING RESOURCES AND USES*

5.1 Grand River Basin

The Pensacola Project is located on the Grand River, a tributary of the Arkansas River, and begins as the Neosho River in the Flint Hills of east central Kansas, just north of the city of Council Grove in Morris County. The Neosho River flows generally southeast through Kansas for a distance of approximately 300 miles into Oklahoma. At the Neosho's confluence with the Spring River at River Mile (RM) 131.0 southeast of Miami, Oklahoma, it becomes the Grand River. RM "0" is the confluence of the Grand and Arkansas Rivers. Pensacola Dam, located at RM 77, backs Grand Lake to the confluence of the Neosho River and Spring Creek. At flood pool (under USACE control), the pooled water extends further up the tributaries. Principal tributaries of the Grand River are the Neosho, Spring, Cottonwood, and Elk rivers and Labette, Big Cabin, Spavinaw, and Lightning creeks. The Project occupies portions of Craig, Delaware, Mayes and Ottawa Counties in northeastern Oklahoma (FERC 1991). Downstream of the Project is the FERC licensed Markham Ferry Project (FERC No. 2183), also owned and operated by GRDA.

After passing Pensacola Dam, the river flows south to its confluence with the Arkansas River near Muskogee, Oklahoma. The river basin has a total area of 12,520 square miles of which approximately 6,220 square miles are in Kansas, 2,960 are in Missouri, 2,930 are in Oklahoma, and 410 are in Arkansas. The River basin ranges from approximately 1,500 feet mean sea level (msl) in the upper basin in Kansas to about 500 feet msl in the lower basin in Oklahoma (FERC 1991).

Normal daily temperatures in the Project Vicinity average approximately 57°F and range from 21°F in January to 91°F in July and August. Total annual rainfall in the Project Vicinity is approximately 44 inches with an average snowfall of approximately six inches at the Project (NWS, 2007).

Land use in the Grand River basin is devoted primarily to agriculture and mining. Corn, small grains, sorghum, alfalfa, fruits, and vegetables are the principal crops produced while coal, clay, lead, zinc, lime, petroleum, and natural gas are mined in the basin (FERC, 1991).

5.2 Pensacola Project

The existing Pensacola Project consists of:

1) A main dam, which has a maximum height of 147 feet, and is comprised of (a) a 53.5 foot long non-overflow abutment section on the west end, (b) a 4,284 foot long multiple-arch section with a crest elevation of 757 feet PD, (c) an 861 foot long main spillway section, which has a crest elevation of 730 feet PD and is controlled by 21 Taintor gates each 36 feet long by 25 feet high, (d) a 451 foot long non-overflow gravity section on the east end, and (e) a 300 foot long non-overflow abutment section consisting of a concrete core wall;
2) Two auxiliary spillways with approximate lengths of 464 feet and 422 feet about 1.0 mile east of the main dam, which consist of concrete gravity overflow type spillways with crest elevations of 740 feet PD controlled by a total of 21 Taintor gates each 37 feet long by 15 feet high;
3) Grand Lake, which has a surface area of 46,500 acres and a storage volume of 1,680,000 acre-feet at the maximum power pool of 745 feet PD;
4) A 27-foot by 246 foot intake structure;
5) A powerhouse with dimensions of 87.75 feet by 279.0 feet, located immediately downstream of the western end of the dam, which contains seven turbine generator units with a total nameplate capacity of 86,900 kilowatts (kW); and,
6) Appurtenant equipment and facilities.

GRDA operates the Project according to its existing operating rule curve, approved by a December 3, 1996, FERC Order Amending the Project License, Article 401. The existing rule curve for hydro generation and flood control is as follows:

Period	Reservoir Elevation
May 1 –	Spring fill - Raise elevation from 742 to 744 feet PD
Jun 1 –	Elevation 744 feet PD
Aug 1 –	First summer drawdown - Lower elevation from 744 to 743 feet
Aug 16 –	Second summer drawdown - Lower elevation from 743 to 741
Sep 1 –	Elevation at 741 feet PD
Oct 16 –	Fall fill - Raise elevation from 741 to 742 feet PD
Nov 1 –	Elevation at 742 feet PD

GRDA shares operations with the USACE as part of a basin wide system of flood control and navigation projects. Flood storage at the Project is provided between elevations 745 and 755 feet PD.

5.3 Geology and Soils

The Project is bordered on the east by the Ozark Plateau and on the west by the Prairie Plains. Bedrock in the Project Vicinity includes limestone, chert, sandstone, and shale. The Project dam is constructed on chert (FERC, 1991).

The southern and eastern portions of the Project Vicinity (the lower portion of the reservoir) contain deep ravines and narrow valleys separated by broad, gently rolling uplands. The shorelines of the lower portions of the reservoir are mostly limestone bluffs and steep rocky beaches (FERC, 1991; GRDA, 2004).

The northern and western portions of the Project Vicinity lie in the Prairie Plains, which are typified by gently rolling plains with occasional hills and ridges. The shorelines in these portions of the reservoir generally have gentler slopes. Wetlands are confined to inlets and coves along the numerous small tributaries that enter the reservoir, and are more abundant along the upper, shallower reaches of the reservoir. Extensive

cave systems occur in some of the limestone formations along the reservoir (FERC, 1991; GRDA, 2004).

The shores of Grand Lake are primarily stony, silty-loam soils on 5- to 20-percent slopes. This soil composition also occupies timbered upland ridges in cherty limestone areas. The soil surface layer is dark grayish brown in the upper 2 inches and pale brown in the lower horizon. The subsoil, which is a brown, stony, silty, and clay loam, is about 60 percent chert by volume (GRDA 2002).

Substantial shoreline erosion has occurred in certain areas of the Lake as a result of fluctuating water levels and natural weather conditions. Wake-generated waves of powerboats and personal watercraft (PWC) have also contributed to this erosion (FERC 2002).

5.4 Water Quality

Grand Lake is the third largest reservoir in Oklahoma and provides power generation, flood control, recreation, and public and private water supply. In a federally-funded Clean Lakes Phase I Study in 1995, the primary environmental concerns were related to heavy metal contamination in the upstream portion of the reservoir, and eutrophication which is accelerated by high phosphorus inputs (OWRB and OSU, 1995).

Grand Lake is an alkaline lake that stratifies in the summer with respect to temperature, dissolved oxygen, and pH. Grand Lake shows indications that eutrophication is occurring faster than a natural rate, partially due to high nutrient levels, especially phosphorus. Additional concerns stem from heavy metals released from abandoned mines that enter the water column or are bound to sediments in the upper portion of the reservoir. The designated beneficial uses for Grand Lake include public and private water supply, fish and wildlife propagation as a warm water aquatic community, Class I irrigation, and primary body contact recreation (OWRB, 2001).

The Grand Lake watershed is comprised of approximately 10,000 square miles of

land spread across Oklahoma, Kansas, Missouri, and Arkansas. The majority of Grand Lake's water is supplied by tributaries originating outside Oklahoma's border in Kansas, while the majority of people residing in Grand Lake's watershed live in Missouri. Oklahoma's border only encompasses approximately nine percent of the Grand Lake watershed. Point sources of pollution into the Grand Lake watershed include nutrient input from residential development around the Lake, from 22 wastewater treatment plants located in the Oklahoma's portion of the watershed, plus portions of the watershed located in Arkansas, Kansas, and Missouri, and acidic mine drainage with associated heavy metal contaminants from several sources in the Neosho and Spring River watersheds. Much of the nonpoint source pollution in the watershed comes from agricultural activities, lakeside recreation, and possible trace metal contamination in the surface runoff from mining operations (OWRB and OSU, 1995; OK Office of the Secretary of the Environment, 2004).

Various portions of the Grand Lake watershed are listed on the state 303(d) lists as impaired waters. Grand Lake has been listed on the 303(d) State Impaired Waters list for organic enrichment/low dissolved oxygen and color (ODEQ, 2006). Eighty segments of the watershed are listed on the Kansas 1998 303(d) list as impaired by low dissolved oxygen, eutrophication, pH, siltation, fecal coliform, cadmium, hydro, zinc, ammonia, selenium, chlordane, sulfate, lead, metals, copper, and organic enrichment. Twenty segments are listed on the Missouri 1998 303(d) list as being impaired by zinc, nutrients, BOD, fecal coliform, algae, sediment, ammonia, and suspended solids. One segment is on the Arkansas 1998 303(d) list for heavy metals. Multiple segments are listed as impaired in Oklahoma's 2006 Integrated Report for low dissolved oxygen, chloride, lead, pathogens, pH, sulfates, TDS, and turbidity (ODEQ, 2006).

5.4.1 Temperature and Dissolved Oxygen

Surface temperatures at Grand Lake typically range between 4 and 28 degrees C on an annual basis. Grand Lake begins exhibiting thermal stratification in May and anoxic conditions begin to develop in the hypolimnion several weeks later (OWRB, 2001). As algae from the warmer surface waters die and fall to

deeper water, they are degraded by bacteria in a process that consumes much of the oxygen in the hypolimnion. The anoxic condition in the hypolimnion is exacerbated by high levels of phosphorus, which "fertilize" the Lake and encourage greater algal productivity (OWRB and OSU, 1995).

Locations in the downstream portions of the Lake display stronger stratification than locations in the upstream portions of the Lake in terms of the stratification period and extent of anoxia in the hypolimnion. The stronger stratification in the lower section of Grand Lake is likely due to increased water depth.

From November 2003 through August 2004, the Beneficial Use Monitoring Program (OWRB, 2004) sampled Grand Lake once per quarter. Vertical profiles showed the strongest stratification in the Lake during the summer sample, taken on August 23, 2004, with approximately 38 percent of the water column having DO concentrations below 2.0 mg/L in the lower portion of the reservoir. During the fall and winter samples, the Lake was mixed and DO concentrations were above 4.0 mg/L throughout the water column. The Lake showed weak stratification during the spring sample, taken May 17, 2004, with 6-10 percent of the water column having DO concentrations of less than 2.0 mg/L (OWRB, 2004).

5.4.2 pH

Grand Lake is an alkaline lake with pH ranging from 6.8 to 8.8. This is within state water quality criteria for the fish and wildlife propagation beneficial use which require pH to fall between 6.5 and 9.0. During the summer stratification period, the deeper, hypolimnetic water generally has pH values near the lower end of the range while the surface waters remain more alkaline. While lower pH values have been shown to be associated with anoxic hypolimnetic conditions, the lower pH in these waters encourages phosphate resolubilization, thus accelerating eutrophication (OWRB and OSU, 1995).

5.4.3 Phosphorus

Grand Lake has been shown to have excessive quantities of phosphorus. Phosphorus enters the system from several locations, with 72 percent of it coming from non-point sources and 28 percent of it coming from point sources. Early residential development paid little attention to sewage and septic systems (OWRB and OSU, 1995). The over 8,000 homes found within 500 feet of the Lake perimeter and the additional over 1,000 homes built between 500 feet and ¼ mile from the shoreline contribute an estimated range of phosphorus between 1,396 to 4,656 kg/year to the Lake (OWRB and OSU, 1995). Concentrated development around the Lake, including resorts, has exacerbated phosphorus inputs. Upstream in the watershed, a series of wastewater treatment plants and agricultural practices release phosphorus and other nutrients in the system. Historically, agricultural activities have been relatively low-impact, concentrating on cattle grazing and corn and hay production; however, within the last several decades large-scale poultry production have also been established. These facilities produce large amounts of poultry manure in a small period of time, and despite efforts to use the manure for beneficial purposes, a large amount of phosphorus and nitrogen is lost to surface runoff (OWRB and OSU, 1995).

5.4.4 Sediments and Heavy Metals Contamination

Another result from agricultural practices in the watershed is increased sedimentation with storm water runoff. Runoff containing high concentrations of sediments also results from construction sites and paved or unpaved roads. Sediments present in the upstream portion of the reservoir additionally contain heavy metals including lead, zinc and cadmium.

A primary source of heavy metals in the upstream part of the reservoir is abandoned mines. Mining operations in the watershed ceased in the 1970s and mines were abandoned. Over time, the mines filled with water resulting in low

pH water with associated heavy metals flowing into tributaries of Grand Lake. Acid mine drainage was a serious problem in Tar Creek, a tributary to the Neosho River. Tar Creek was considered to be one of the nation's most polluted streams in 1981 and became a Superfund site (OWRB and OSU, 1995). The cleanup efforts relating to the Superfund program lasted six years and included efforts to plug and cap abandoned water wells, and diversion of flows around sinkholes and mine cave-ins (OWRB and OSU, 1995).

5.4.5 Bacteria

In a study conducted during the recreational season of May through September of 2004, five locations in Grand Lake were sampled for E.coli, fecal coliform, and enterococci. Sample results were within state standards for Primary Contact Beneficial Use in reference to E.coli and fecal coliform. However, three out of ten samples analyzed for enterococci resulted in values greater than the limit of 61/100 mL for discrete samples for Primary Contact Beneficial Use. The limit for the monthly geometric mean of the samples, 33/100mL, was not exceeded (OWRB, 2004).

5.5 Aquatic Species

The fish community in Grand Lake is similar to other reservoirs within the region. The primary sportfish in the Lake is largemouth bass, and Grand Lake is considered one of the top bass tournament reservoirs during the past several years (GRDA, 2004). The Lake also has a sport fishery for smallmouth bass, hybrid striped bass, white bass, black and white crappie, and panfish. The panfish in Grand Lake include species such as the warmouth, longear sunfish, bluegill, and green sunfish. A healthy forage fish population of threadfin and gizzard shad maintains the sport fishery. Other species of recreational interest include flathead, blue, and channel catfish. Other species within the Lake include longnose gar, carp, river carpsucker, smallmouth buffalo, logperch, emerald shiner, river shiner, red shiner, ghost shiner, silverband shiner, bullhead minnow, blue sucker, river redhorse, and river darter (FERC, 1991). The federally threatened Ozark cavefish and

Neosho madtom, found near Grand Lake, are discussed in Section 5.10.

Another species of particular interest is the paddlefish, a pelagic, filter-feeding, planktivore that makes spawning migrations up river to find gravel bars to deposit eggs (ODWC, 2005*b*). The numbers of paddlefish migrating up the Grand/Neosho River in the springtime make this river system one of the top five paddlefish fisheries in the nation (ODWC, 2005*a*). Special regulations in Oklahoma now limit a person to one paddlefish per day, but ongoing research indicates fishing pressure is still depressing this population. The paddlefish population of Grand Lake was estimated to be 80,808 and 55,404 in 2003 and 2004, respectively. The estimates were dominated by juvenile paddlefish, showing strong recruitment potential in this Lake (ODWC, 2005*b*).

Current management of this fishery is limited to creating juvenile habitat by flooding mudflats seeded with Japanese millet, stocking/regulation of fishery, and lake level manipulation (GRDA 2003*c*). The millet-seeding program has low annual success and only seasonal benefits (OWRB, 2005). On going research into the feasibility of establishing aquatic plants in the littoral zone of Grand Lake will determine the methods for future habitat mitigation initiatives. The goal of the new management plan is to replace the millet-seeding program with an initiative to provide a more diverse native plant community, while still creating fish habitat and waterfowl forage (OWRB, 2005). Other attempts to create fish refuge include the construction of 13 brush shelters from cedar trees sunk in various parts of the Lake (ODWC, 2005*a*). Additionally in 2007, GRDA initiated its “Rush for Brush” program, which resulted in the placement of over 500 artificial fish habitats throughout the Lake.

Current fishing regulations are designed to increase the total abundance and quality size of crappie and bass. ODWC has never stocked crappie in the Lake, but stocked largemouth bass most recently in 1995 with 30,280 juveniles. Striped bass and hybrids are the primary species stocked into Grand Lake. In April 2005, a total of 690,000 hybrid striped bass fry were released into the Lake.

Currently, GRDA is engaged in an aggressive public education campaign to

contain and manage the risk of zebra mussel. Zebra mussels can reproduce and colonize new areas very quickly. A population of zebra mussels would likely compete with filter feeding fish (*i.e*. paddlefish and shad) and disrupt the natural food chain.

5.6 Avian Species

Raptors, such as barred owl, red-tailed hawk, and red-shouldered hawk occur in both upland and bottomland forests. Song birds of the wooded lots include tanagers, nuthatches, warblers, and woodpeckers typical of the eastern deciduous forests. Grassland birds present in the prairie habitat include horned lark, grasshopper sparrow, meadowlark, dickcissel, and bobolink. Predatory birds in the grasslands consisted of short-eared owl, northern harrier, and rough-legged hawk. Bald eagles over-winter at Grand Lake, and benefit from the fish passed through the hydro plant (Lish, 1987). Game birds found at Grand Lake include bobwhite quail, wild turkey, mourning dove, and waterfowl.

Grand Lake is also important as an over-wintering and migratory stop for shorebirds and waterfowl; however, the over-wintering habitat is limited by the lack of submerged aquatic vegetation. Cormorants, pelicans, egrets, and herons are among the non-game birds that show up on Grand Lake annually. A diverse array of game waterfowl such as geese and dabbling, diving, perching, sea, and stiff-tailed ducks also occur on Grand Lake during migration (Stancill *et al.*, 1988). Mallards are the only dabbling duck that over-winter on Grand Lake. Mallards are the most abundant duck seen on the Lake with a peak number in December. Canada geese and wood ducks live on the Lake throughout the year.

5.7 Mammals

White-tailed deer, striped skunk, raccoon, fox squirrel, Virginia opossum, eastern cottontail, armadillo, and red fox inhabit the upland deciduous forest in the Project Vicinity. The bottomland forests contain all of these species, plus muskrat and beaver. Common species associated with the grassland/savannah are the least shrew, deer mouse,

black-tailed jack rabbit, and badger. Bats are of ecological concern in the area and the endangered gray bat is particularly notable (see Section 5.10.3.)

5.8 Reptiles and Amphibians

A variety of frogs, toads, salamanders, lizards, turtles, and snakes comprise the local herpetofauna. The amphibians include species such as the American toad, spadefoot toad, tree frogs, narrow-mouthed. The turtle community includes snapping turtles, mud turtles, softshell turtles, and a diversity of slider, map, and box turtles. With the exception of the box turtles, most of the turtle community is highly aquatic. Representative lizard species include the western slender glass lizard, collard lizard, Texas horned lizard, and diversity of skinks. Common snakes include species such as rat snakes, water snakes, bullsnakes, and venomous snakes such as copperheads, western cottonmouths, timber rattlesnakes, and western pygmy rattlesnakes. (Erickson and Leslie, 1988)

5.9 Current Management

Article 411 of the Project license currently provides a plan to annually seed 1,000 acres of mudflats along Grand Lake's shoreline with Japanese millet. A new aquatic plant program is currently being studied to replace the millet seeding program. This new habitat enhancement strategy would use native plants planted in the littoral zone to provide forage and shelter to migrating waterfowl and aquatic species such as fish and turtles (OWRB, 2005). In addition, GRDA has designated approximately 1,630 acres of Project lands adjacent to Grand Lake as wildlife management areas and management of these lands is covered by Article 406 of the license.

5.10 Threatened and Endangered Species

The Ozark cavefish (*Amblyosis rosae*) and Neosho madtom (*Noturus placidus*) are documented as occurring in the Project Vicinity and are listed as threatened under the Endangered Species Act and by the State of Oklahoma. The gray bat (*Myotis*

grisescens), which is state- and federally-listed as endangered, also occurs in the Project Vicinity. According to the Oklahoma Biological Inventory (2006), no other state-listed species are documented as occurring in the Project Vicinity or within the Project area.

5.10.1 Ozark Cavefish

The Ozark cavefish is a sightless cave obligate that requires clean-flowing, permanently dark cave streams, often with rubble bottom (Masters, 1993). A commensal association exists between this species and the federally-endangered gray bat, as there is some evidence that Ozark cavefish feed directly on gray bat guano (USFWS, 1989). The Ozark cavefish is found in pools in two caves located near the Project (GRDA, 2004). One of these caves is located outside of the Project drainage basin and, thus, is not influenced by the Project (GRDA, 1986). The land above and adjacent to the other is owned and managed by The Nature Conservancy (TNC) for the protection of the cave and its cave-dwelling species (*i.e.*, Ozark cavefish and gray bat). (FERC, 1991).

5.10.2 Neosho Madtom

The Neosho madtom is endemic to the Neosho (Grand) River system in Oklahoma, Missouri, and Kansas. It occurs in riffle areas of moderate sized, clear-flowing streams with a substratum of loosely packed gravel pebbles less than one inch in diameter (Masters, 1993). Neosho madtoms are known to occur at an upstream site on the Grand River that is periodically inundated by the USACE's flood pool (FERC, 1991). Because of their intolerance of impounded conditions (Masters, 1993), the Neosho madtom is not expected to occur in Grand Lake with any frequency.

5.10.3 Gray Bat

Gray bats inhabit limestone karst areas of the southeastern United States. This species migrates seasonally between winter (hibernating) and summer

(maternity) caves (USFWS, 1982). Gray bats forage almost exclusively over water along river or reservoir edges bordered by forest (LaVal *et al.*, 1977), and as such, maternity colonies are typically located is close proximity to such features (Tuttle, 1976). Gray bats utilizing the Grand Lake area are summer residents that hibernate in caves in northern Arkansas and Missouri (GRDA, 1986). Two gray bat caves have been documented in the Project Vicinity and are utilized to varying degrees as maternity caves (GRDA, 2004; FERC, 1991). As previously noted, land adjacent to and above one of caves is owned and managed by TNC for the protection of the cave and its cave-dwelling species (*i.e.*, Ozark cavefish and gray bat). The other cave is located on private property (FERC, 1991).

5.10.4 Bald Eagle

Though no longer considered an endangered species, bald eagles are still protected by federal law. Bald eagles are found throughout North America, typically near open waterbodies such as lakes and large rivers. Most eagles consume a diet consisting primarily of fish, with lesser quantities of waterfowl, carrion, and small mammals (muskrats, squirrels, rabbits) (Gough, *et al.*, 1998). Availability of large trees and snags for perching and open flight paths to feeding areas are important in habitat selection (Polite and Pratt, 2002; BOR, 1994). Grand Lake is an important wintering area for bald eagles (GRDA, 1986). Most of the wintering eagles use a large communal roost located on a small island near Twin Bridges State Park at the north end of the reservoir. Blackbirds represent a large part of the diet for eagles wintering on Grand Lake due to presence of a large blackbird roost near Twin Bridges State Park. The bald eagle can be expected to forage throughout the Project area.

5.10.5 American Burying Beetle

American burying beetles, the largest of North America's 32 bury beetles, historically occurred in 35 states, but are currently found in only seven states,

including Oklahoma. They rely on carrion for both sustenance and reproduction. No confirmed sightings of American burying beetles have occurred in the Project Vicinity.

5.11 Botanical

Grand Lake is located in a transitional zone between the Ozark Highlands and Central Irregular Plain ecoregions of northeast Oklahoma (Woods *et al.*, 2005). In the Ozark Highlands ecoregion, which characterizes most of the Project Vicinity, oak-hickory and oak-hickory-pine are the primary forested cover type associations (Woods *et al.*, 2005). Typical canopy species on dry uplands and ridgetops include black oak, white oak, blackjack oak, post oak, winged elm, and numerous hickories. Shortleaf pine also occurs in oak-hickory-pine stands. Mesic forests containing sugar maple, white oak and northern red oak are typical of north-facing slopes and ravines of more rugged, deeply dissected sites. Willows, bottomland oaks, maples, hickories, birch, American elm, and sycamore are typical on floodplains and low terraces. Most level sites in the region have been converted to haylands or pasturelands (Woods *et al.*, 2005).

In the extreme northern portion of Project, primarily the Neosho River arm of Grand Lake, the oak hickory forests of the Ozark Highlands give way to the tall grass prairies of the Central Irregular Plains (Woods *et al.*, 2005). Typical dominants of tall grass prairie sites include big bluestem, little bluestem, switchgrass, and indiangrass. Dry upland forests, similar to the oak-hickory forests of the Ozark Highlands to the south and east, are common on the low rocky hills of the region. Riparian corridors typically are forested, with canopy dominants that include American elm, oaks, hackberry, black walnut, sycamore, and pecan. Much of this region has been converted for agriculture, with rangeland occupying steeper slopes and croplands on nearly level plains. Common crops include sorghum, alfalfa hay, wheat, and soybeans (Woods *et al.*, 2005).

5.12 Wetlands

Grand Lake and the surrounding areas contain numerous wetlands. Wetlands are most abundant along the upper, shallow reaches of the reservoir. In the reservoir's lower reaches, shoreline areas consist primarily of limestone bluffs, with wetlands restricted to coves and backwaters of inundated tributaries. Acreages of the various wetland types occurring in the vicinity of the Project are summarized in Table 5.12-1.

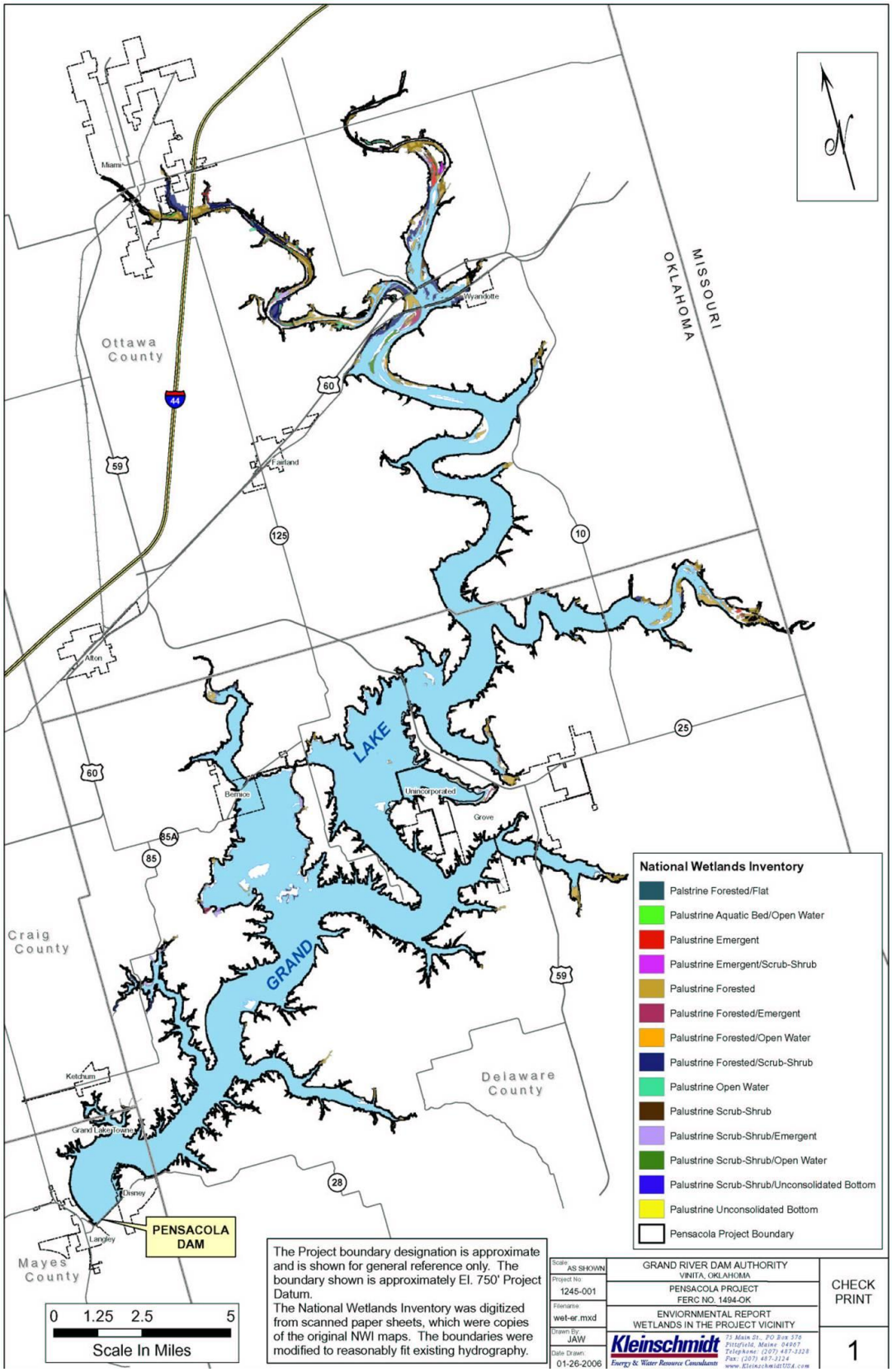
Table 5.12-1: Wetland Cover Types (in acres) by Elevation Zone at Grand Lake

Wetland Cover Types	Elevation Zones			Totals
	735-742[a]	742-755	755+[b]	
Palustrine Forested Wetlands[c]	1,720	5,555	4,374	11,649
Emergent Wetlands	34	145	55	234
Scrub/Shrub Wetlands	194	268	64	526
Mudflats	4,994	645	23	5,662
Ponded Water	89	70	88	247
Totals	7,031	6,683	4,604	18,318

(Source: Adapted from Erickson and Leslie, 1988)

a Elevations 735 to 742 are included because the study was conducted under the pre-1992 rule curve when these elevations were occasionally exposed. Since then, many of these areas have become permanently inundated.
b To 1/4 mile from 755 foot PD elevation.
c Referred to as Bottomland or Floodplain Forests in Erickson and Leslie, 1988.

Figure 5.12-1:Wetlands Mapping for Grand Lake O' the Cherokees



5.13 Land Uses

Development along the shoreline of Grand Lake primarily consists of residential, light commercial and business, and limited agricultural lands. Grand Lake is a popular location for recreation and residential development, particularly summer homes. The scenic quality of the reservoir and surrounding landscape, good recreational fishing, and its proximity to major population centers in Oklahoma, Kansas, Missouri, and Arkansas contribute to the popularity of the Lake. The historic availability of land adjacent to the Project boundary for private ownership has also contributed to this popularity. The majority of the shoreline above the 750 foot contour elevation is privately owned. As a result, numerous residences and businesses have been constructed around the reservoir, adjacent to the Project boundary (Figure 5.13-1).

Within 500 feet of the shoreline of Grand Lake, an estimated 4,400 private residences have been constructed as of 2004. Approximately 50 to 70 percent of these homes are seasonal (summer) residences (GRDA, 2004*a*). Likewise, general leisure and retirement community development has expanded on Grand Lake. Housing density in Ottawa and Delaware counties is approximately 30 housing units per mi^2, compared to 25/mi^2 for Mayes County and 8/mi^2 for Craig County. Housing construction in the area has increased significantly in the last decade with Delaware County growing by approximately 33 percent from 1990 to 2000. Housing growth from 1990 to 2000 for the remaining counties, by comparison, ranges from 6 to 13 percent (US Census, 2005*a-d* and 1990*a-d*).

The popularity of water-based recreation has resulted in significant economic development around Grand Lake, particularly in real estate, goods, and services. There are marinas, resorts, and other commercial operations such as campgrounds and restaurants located around the shoreline of Grand Lake. Although manufacturing and health care are the dominant industries for Mayes, Delaware, Ottawa, and Craig counties; retail trade, lodging and food establishments contribute significantly to the employment base, particularly for Delaware and Ottawa counties (see Section 5.9, *Socioeconomic Resources*, for more information). There are approximately 1,200 lodging and food

establishments in Craig and Mayes counties in comparison with almost 1,700 in Delaware and Ottawa Counties (ODOC, 2005*a*).

Construction of private and commercial boat docks by adjacent landowners is allowed within the GRDA Project boundary by application through GRDA's existing permit program. Approximately 4,611 private and 355 commercial boat docks have been permitted by GRDA, primarily on the lower section of the Lake below Sailboat Bridge. More information regarding Grand Lake boat docks are provided in Section 7.0.

Approximately 50 percent of land within the Project boundary is deciduous forest lands. Residential, commercial, and other development accounts for approximately 11 percent of total land area within the Project boundary. Land uses within the Project boundary are shown on Figure 5.13-1 and Table 5.13-1.

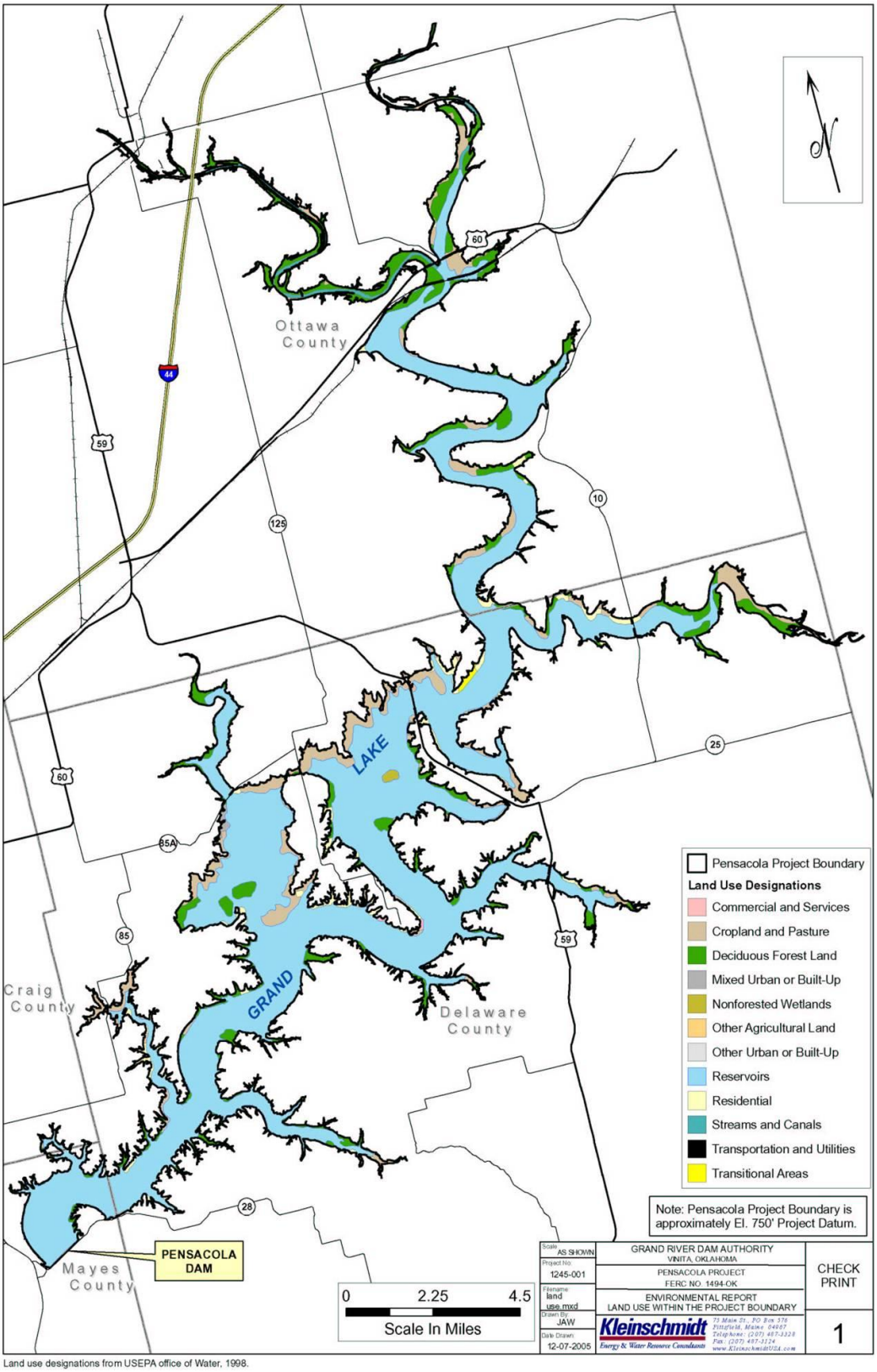
Approximately 53 percent of lands adjacent to the Project boundary are undeveloped forestlands. In addition, approximately 31 percent of lands adjacent to the Pensacola Project shoreline is designated as agricultural/crop lands. The majority of the agricultural areas are found in Ottawa County, where over 35 percent of the total land area was used to plant field crops in 2001 (NASS, 2001*b*). In Delaware County, less than three percent of the total land area was used for field crops in 2001 (NASS, 2001*a*).

Table 5.13-1: Land Uses within the Project Boundary[a]

Land Use	Percent of Total Land Use
Commercial and Services	0.3%
Cropland and Pasture	35.0%
Deciduous Forest Land	49.1%
Mixed Urban or Developed	0.7%
Non-forested Wetland	0.4%
Other Agricultural Land	0.0%
Other Urban or Developed	0.1%
Residential	9.3%
Streams and Canals	4.4%
Transportation, Commercial, and Utilities	0.2%
Transitional Areas	0.5%

(Source: Kleinschmidt Associates)

Figure 5.13-1:Land Use within the Project Boundary



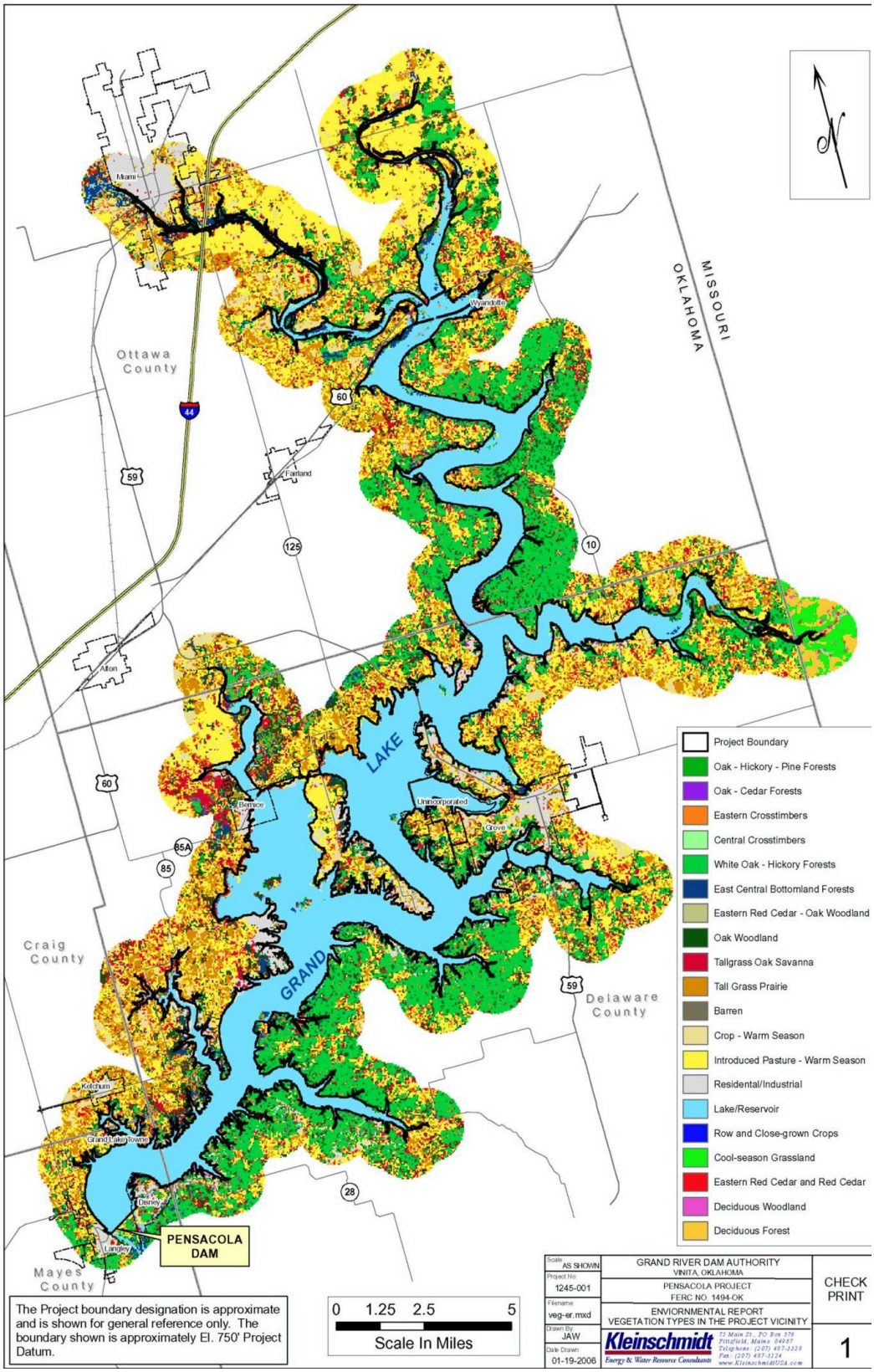
Land use designations from USEPA office of Water, 1998.

5.14 Aesthetics

The lands adjacent to the northern and western shores of the Project are characterized by rolling plains with occasional hills and ridges. The shoreline of Grand Lake in these areas has generally gentle slopes. The lands adjacent to the southern and eastern shores are characterized by deep ravines and narrow valleys separated by broad, gently rolling uplands. Shorelines in these areas are primarily steep rocky beaches and bluffs. The shoreline of Grand Lake ranges from forested areas (with a mixture of vegetative cover types) to contiguous manicured lawns, residential housing and commercial development. The river basin in the Project Vicinity is dominated by deciduous forests (Figure 5.14-1).

The Lake varies considerably in the extent of development along the shoreline between the upper and lower sections of the Lake. The majority of the shoreline of the lower section of the Lake is highly developed. The upper section of Grand Lake presents some continuous sections of undeveloped shoreline, exhibiting a relatively natural aesthetic.

Figure 5.14-1: Vegetation Patterns around Grand Lake O' the Cherokees



5.15 Cultural Resources

Prehistoric peoples, Native Americans in the historic period, and Euro-American settlers in the modern period leading up to Oklahoma's statehood have made extensive use of the Grand River Valley area as a place of both settlement and transportation. This pattern of use creates a high probability within the Project area for intact cultural resources dating from prehistoric eras, as well as the periods of early European contact, the nineteenth century, and the Civil War.

In addition to the historical evidence for the likelihood of intact archaeological deposits, the topography of the region lends itself to the preservation of archaeological resources. While much of the land in the downstream portion of the Project near the dam rises in steep bluffs from the shoreline, the upriver portions of Grand Lake features a shallower, more riverine topography that has the potential to contain intact archaeological resources. In addition, there are a number of tributaries that feed into Grand Lake that have a high potential for intact resources (Gibson, 1984).

5.15.1 Known Cultural Properties

GRDA maintains data supplied by the State Historic Preservation Office (SHPO) and the Oklahoma Archeological Survey (OAS) that identifies potential and significant cultural resource sites. Approximately 50 cultural sites are known to exist within the Project area. Because of the sensitive nature of cultural or historic resources, their locations and significance is not public information.

5.15.2 Lands of Tribal Significance

No tribal lands are located within the Project boundary. No cultural resources have been specifically identified as sites of traditional cultural or religious significance to any tribe. However, the Grand River valley has been occupied more or less continuously since the Paleo-Indian era, as many as 15,000 years ago. Native Americans have had a presence in the Grand River valley and

in northeastern Oklahoma in general, into the nineteenth and twentieth centuries. Known federally recognized tribes that have expressed an interest in the Project include the Wyandotte Nation, the Peoria Tribe of Indians of Oklahoma, the Wichita & Affiliated Tribes, the Cherokee Nation, the Caddo Tribe of Oklahoma, the Eastern Shawnee Tribe of Oklahoma, the Muskogee (Creek) Nation, the United Keetowah Band of Cherokee Indians of Oklahoma, the Cherokee Tribe, the Ottawa Tribe of Oklahoma, the Osage Tribe, the Quapaw Tribe of Oklahoma, the Seneca-Cayuga Tribe of Oklahoma, and the Modoc Tribe of Oklahoma.

5.16 Socioeconomics

The Project is located in Craig, Delaware, Mayes and Ottawa Counties in northeastern Oklahoma. The primary contributing factors to the socioeconomic environment described below for these counties are: population, income, tourism, development and employment. Table 5.16-1 provides a summary of the major socioeconomic characteristics of the counties around Grand Lake.

Table 5.16-1: Selected Demographic and Economic Characteristics for Craig, Delaware, Mayes and Ottawa Counties, Oklahoma

	Population (2000)[a]	Population Projection (2030)[a]	Per Capita Income (2000)[b]	Labor Force (06/2007)[c]	Unemployment Rate (07/2007)[c]
Craig	14,950	20,000	$16,593	6,670	5.9%
Delaware	37,077	56,200	$15,424	17,350	5.7%
Mayes	38,369	50,300	$15,350	17,380	5.7%
Ottawa	33,194	39,600	$14,478	16,630	6.2%

[a] Oklahoma Department of Commerce, 2002
[b] U.S. Census, 2000 *a-d*
[c] LAUS Oklahoma, 2007

5.16.1 Demographics

The 2000 population of the four county region was approximately 123,590 (Table 5.16-2). Delaware and Mayes Counties have the highest populations and

are roughly equal in estimated population. The largest communities in these counties are Grove and Pryor, respectively. The Grove Chamber of Commerce (2006) reports that the community was recently rated one of the top retirement areas in the nation by Rand McNally, the Wall Street Journal, and Retirement Places. From 2000 to 2006, Grove's population grew an estimated 17 percent.

Ottawa ranks third in population among the four counties, and Craig County ranks last with the lowest 2000 population. The largest communities in Ottawa and Craig Counties are Miami and Vinita, respectively. Population projections through the year 2030 show an anticipated increase in the population of all four counties (Table 5.16-1).

More recent annual population estimates suggest that the populations of Craig and Ottawa are stagnant or decreasing (Table 5.16-2). Regardless of the conflicting data, it seems clear that the regional population will continue to grow, on balance, in the near future. All four counties around Grand Lake likely experience some seasonal changes in population due to the influx of summer residents and tourists during the popular summer months from Memorial Day through Labor Day. Per capita incomes in the four counties ranged from $14,478 to $16,593 in 2000 (Table 5.16-1).

Table 5.16-2: Annual Population Estimates for Craig, Delaware, Mayes and Ottawa Counties, Oklahoma, 2000 through 2006

	Census	Projections						Percent Change
County	2000	2001	2002	2003	2004	2005	2006	2000-2006
Craig	14,950	14,800	14,800	14,900	14,900	15,000	15,000	0.64
Delaware	37,077	37,700	38,000	38,600	39,100	39,200	40,100	8.05
Mayes	38,369	38,500	38,800	39,000	39,300	39,400	39,800	3.66
Ottawa	33,194	33,200	32,900	32,800	32,700	32,800	33,000	- 0.51
	123,590						127,900	2.59

5.16.2 Economy

Construction of Grand Lake resulted in the development of a significant recreational resource in the region. The Lake supports numerous marinas and state recreation sites, all providing water-based access and attracting tourism dollars to the local economy. Local communities capitalize on this by promoting their individual attractions. In fact, the Oklahoma Department of Tourism and Recreation estimated that Grand Lake generated in excess of $28 million in tourism-related revenue to the area in 1987 (Oklahoma Office of the Secretary of the Environment, 2005). It is likely that tourism related revenue has increased since 1987.

Vinita is hailed as the second oldest town in Oklahoma and plays a significant role in the state's history. It is also located along historic Route 66. Miami, Oklahoma – sometimes claimed to be the birthplace of Route 66 – also uses the historic road to attract visitors. Miami also draws in tourism dollars through several popular gaming facilities. The community of Grove claims to offer the largest concentration of tourism services and recreation attractions in the area (Grove Area Chamber of Commerce, 2006).

Many seasonal businesses are established to capitalize on the tourism industry and support the interests and needs of the visitors and permanent and seasonal residents alike. These businesses include fast food establishments, gas stations, waterfront shops, marinas, retail, etc., all providing employment opportunities and contribute to economic stability of the area.

It is generally acknowledged that property values are, in part, a function of location, and that includes proximity to water bodies. In Oklahoma, the availability of waterfront property is relatively limited when compared to land locked parcels. Thus, one would expect land values near Grand Lake would be different from land values that are distant from water bodies. Although detailed

information specific to Grand Lake is not available, there is information available that suggests that land values in the vicinity of Grand Lake are greater than those values elsewhere. Land values in Mayes, Delaware, Ottawa and Craig Counties have increased 75 to 150 percent between the periods 1973-1975 and 1998-2000 (Kletke, 2003). In terms of dollars per acre, land values in Mayes, Delaware and Ottawa Counties have consistently exceeded land values in the rest of the state during the period 1972 to 1999. During the same period, land values in Craig County have generally remained equal to or slightly greater than the statewide values.

The primary industries contributing to employment in the region are educational, health and social services, and manufacturing (Table 5.16-3). Recreation and tourism industry plays an important role, ranking among the top three industries in terms of employment in Ottawa County. These establishments employ approximately 4,100 people in the four counties (US Census, 2000*e*). The community of Miami, in Ottawa County, supports Northeastern A&M College, which is reflected in the fact that the education, health and social services industry is one of the largest employers in the County.

Table 5.16-3:Employment by Industry in Craig, Delaware, Mayes and Ottawa Counties, 2000[a]

	Craig County	Delaware County	Mayes County	Ottawa County
Employed Population	6,366	14,745	16,520	14,172
	Percent of Employed Workers by County			
Educational, health and social services	23.5	17.2	17.4	23.9
Manufacturing	14.9	21.3	25.1	17.7
Retail trade	11.3	12	11	10.3
Transportation and warehousing, and utilities	9.2	5.2	7.2	5
Arts, entertainment, recreation, accommodation and food services	6.3	8.1	6	10.5
Agriculture, forestry, fishing and hunting, mining	6.2	5	3.9	4.9
Construction	5.9	9.8	8.5	6.3
Public administration	5.1	3.4	3.4	4.3
Professional, scientific, management, administrative, and waste management services	4.4	4.1	4.5	3.4
Other services	3.9	4.9	4.5	6.2
Wholesale trade	3.9	2.4	3.4	2.7
Finance, insurance, real estate, and rental and leasing	3.5	4.9	3.5	3.9
Information	1.8	1.5	1.7	0.9

[a] U.S. Census, 2000*e*.

6.0 *SUMMARY OF RECREATION MANAGEMENT PLAN*

GRDA has an approved Recreation Management Plan on file with FERC. [1] The RMP is a stand-alone document available for review from GRDA on GRDA's website (www.grda.com), or by calling 918-782-9594 or 918-256-5545 during normal business hours. The following sections summarize the RMP.

6.1 Recreation Management at Grand Lake

GRDA shares responsibility and authority for recreation management on Grand Lake with the ODWC, the Oklahoma Tourism and Recreation Department (OTRD), and several local communities. Each entity has differing responsibilities and management authorities.

GRDA manages recreation at the lake in accordance with state and federal regulatory requirements and the goals and objectives established by its Board of Directors. Pursuant to the Oklahoma Statutes, GRDA is charged with the management of public recreation on the lake, and oversight and permitting of boating activity and dock structures. Article 407 of the FERC license for the Project provides authority to GRDA for ensuring adequate and appropriate public access to Project resources and requires that GRDA manage and monitor that access and use as appropriate, providing periodic reports to FERC documenting the level of recreation use at the Project every six years.

GRDA's management goals include:

1. Provision of adequate, barrier-free public recreational access to Project lands and waters;
2. Support of recreation patterns that reflect the established recreation environment; and

[1] On August 14, 1997, FERC approved and modified a Recreation Plan submitted in compliance with Article 407 of the project license (84 ¶ 62,144).

3. Management of public, private and commercial access to and use of Project lands and waters in a safe and responsible manner.

GRDA has established policies and implementing regulations to facilitate achieving these goals. The following is a summary of GRDA's activities that support recreational management at Grand Lake:

- Lake Patrol – The Lake Patrol is responsible for enforcement of rules and regulations on the water and on GRDA owned lands, promoting safety, permitting docks, and boat inspections;
- Recreation Sites – GRDA provided lands and access for the establishment of state parks at Grand Lake. GRDA continues to cooperate with the state and with local communities to develop and maintain public recreation sites;
- Public Outreach and Education – GRDA maintains a public education program to inform citizens and tourists of the locations of public access sites, boating regulations, etc. As part of this, GRDA provides guided tours of the Pensacola Dam Powerhouse during the summer;
- Navigation Aides – GRDA maintains navigation aids on Grand Lake;
- Boating Management – GRDA establishes and enforces boating regulations for Grand Lake;
- Recreation Monitoring – GRDA selected social and environmental indicators to monitor as a tool for managing recreational boating and monitoring the recreational carrying capacity of Project waters (see Section 5.6 for additional detail);
- Improvement of fish nursery habitat – GRDA supports the improvement of fish nursery habitat through its Aquatic Vegetation Program, and placement of submerged brush piles and artificial habitat to provide fish habitat; and
- Support of Waterfowl Hunting – A millet-planting program instituted by GRDA supplements natural habitat in the northern parts of the lake.

In carrying out the above activities, GRDA addressed, and continues to address, all of the implementation actions identified in the 1997 Recreation Plan that are specific to recreational use of Grand Lake.

6.2 Oklahoma Department of Wildlife Conservation

The ODWC manages fisheries, establishes hunting and fishing regulations for state waters, including Grand Lake, and may assist other state agencies or other entities in the establishment, maintenance and operation of educational facilities, recreational facilities and hunting and fishing facilities.

Specific fish and wildlife management goals and activities related to recreation at the Pensacola Project include management of the recreational fishery (hybrid striped bass, crappie, bass, and paddlefish) through stocking, and fishing regulations.

6.3 Oklahoma Tourism and Recreation Department

The State of Oklahoma has prepared a Statewide Comprehensive Outdoor Recreation Plan (SCORP) that provides updated information on the state of Oklahoma's parks, the quantity and quality of recreation opportunities, and an assessment of management topics to address in the future. Oklahoma's SCORP, written in 2001 and revised in 2002, identifies its goals for state parks, including those on Grand Lake.

Specific to Grand Lake, the SCORP identifies the following:

- At Grand Lake, visitors have developed expectations and have adjusted their behavior to cope with recreational conflict. The number of incidents handled by the lake patrol is minimal;
- Education of park visitors would increase the recreation and social carrying capacity of the lake; and
- Education is an alternative to enforcement.

6.4 Recreation Sites

There are public, commercial and private entities that provide access to Grand Lake. GRDA, the Oklahoma Tourism and Recreation Department (OTRD) and local municipalities provide public access. Commercial businesses, such as marinas provide both fee and non-fee services to the public. Private access is available from individual shorefront properties, neighborhood associations and private clubs.

6.4.1 Public Recreation Sites

The maps in Appendix B include public recreation sites. There are four access areas provided by GRDA, five state parks, and approximately 14 municipal parks providing access to Grand Lake. There are approximately 22 public boat ramps providing access to Grand Lake in the area south of Sailboat Bridge.

GRDA maintains the boat launches it provides. OTRD operates the state parks; municipalities manage the local parks. Numerous other "volunteer" public access points correspond with rights-of-way and old roadbeds scattered throughout the area. Such locations are undocumented, usually not maintained at any specified level of care, and used primarily by local residents and those knowledgeable of the region.

6.4.2 GRDA Boat Ramps

There are four boat ramps provided by GRDA that provide access to Grand Lake. Use of these launches is free to the public. These include:

- Duck Creek Bridge Public Access
- Seaplane Base Public Access
- Monkey Island Public Boat Ramp
- Big Hollow

6.4.3 State Parks

GRDA transferred ownership of land for several state parks to the OTRD. These include:

- Bernice State Park
- Cherokee State Park (Areas 1, 2 and 3)
- Disney/Little Blue State Park
- Honey Creek State Park
- Twin Bridges State Park

6.4.4 Other Public Access

Various municipalities and organizations maintain or manage the following community parks, access areas, and launches:

- Willow Park, Town of Ketchum
- Port Ketchum Public Access
- Low Water Dam, City of Miami
- City Boat Ramp, City of Miami
- Wyandotte Public Access, Town of Wyandotte
- Council Cove Public Access
- Cowskin Public Access
- City Boat Ramp, City of Grove
- Carey Bay Public Access
- Sweetwater Hollow Public Access
- Public Boat Dock, Town of Langley
- Drowning Creek Moonlight Cove
- Gray's Hollow (back of cove)
- Cayuga

- Lakemont Shores (Drowning Creek)
- Raper Hollow (back of cove)
- Hanger Point
- West Bay
- Shangri-La

6.4.5 Private Recreation Access

GRDA completed a shoreline development inventory in 2006. This inventory included documentation of private facilities such as boat docks and ramps. Currently, there are approximately 4,476 private docks and 437 private boat ramps on Grand Lake. These docks and ramps are the primary access to the Lake for most of the residents.

Residential boat ramps generally provide lake access for individual households or small groups of households. They typically consist of an access roadway and boat ramp, with no parking area or other supporting facilities.

Private residential docks vary greatly in architecture and appearance. A majority of the private docks are in the southern two-thirds of the lake due to the nature of the lake and early development patterns. The availability of deeper and wider reaches of Grand Lake at the southern end and the proximity to population centers has resulted in a high concentration of private docks.

6.4.6 Commercial Development

Currently, there are numerous commercial facilities on Grand Lake that provide roughly 3,863 slips for boats of various sizes. In addition, records show approximately 53 commercial boat ramps.

6.5 Estimates of Recreational Use

6.5.1 Current Recreational Use

Grand Lake is an extremely popular recreation spot for locals and tourists alike. In 2002, GRDA estimated that the Project supported 4 million recreation days annually, and another 1.5 million recreation nights (GRDA, 2003). Grand Lake is known for its boating and the many other recreational opportunities that are available. Boating at Grand Lake occurs year round, though the primary recreation season extends from mid to late May through early September.

Grand Lake is home to several sailing clubs. Sailboats range in size from 16 to 45 feet. Rafting involves the tying together of two or more anchored boats so that the boaters may visit with one another. On Grand Lake, rafting is popular in selected areas which are out of the way of boat traffic and in locations where swimming or cliff diving are popular. Pleasure boating includes many different individual activities, such as tubing, power boating, water skiing, house-boating, etc. Oklahoma was among the top 20 states in boating registrations in 2003, when boat registrations reached nearly 230,000 (NMMA, 2004).

Fishing is a year round activity on Grand Lake. Secluded coves, boat docks, fish shelters, and heated docks provide fishing opportunity to all segments of the lake. Grand Lake supports a high quality fishery for largemouth bass, hybrid striped bass, white bass, crappie, catfish and paddlefish.

GRDA manages at least 1,630 acres of Project lands as a wildlife management area and allow public hunting (FERC, 1991). The 1,630 acres are comprised of many individual parcels ranging in size from approximately 30 acres to 300 acres. These lands are located either adjacent to streams entering the reservoir or as islands within the reservoir. Waterfowl hunting occurs primarily in the riverine sections of the Lake between Twin Bridges and Sailboat Bridge

and to a lesser extent, in the mudflat areas of Horse Creek, south and west of the Town of Bernice.

6.5.2 Boating Density

Aerial boat counts conducted by GRDA in 2005 identified the locations on the lake where people boat, and the activities in which they participate. Flights occurred during times of the day when boating activity was highest.

Fishing predominates on the upper lake, north of Sailboat Bridge, on both weekends and holidays. Researchers estimated at least three-quarters of all boats observed were fishing. The survey identified all of the boats in the northernmost part of the lake, as engaged in fishing. The northernmost part of the lake averages roughly six to seven boats over 6,747 acres of surface water at any given period, while the area closer to Sailboat Bridge averages 16 to 17 boats over 6,363 acres at any given period on both weekends and holidays.

Boating activity south of Sailboat Bridge is markedly different from the upper lake. On normal use weekends, fishing still accounts for a substantial amount of boating activity – roughly half of all boating activity recorded; however, researchers identified large percentages of boaters engaging in pleasure boating, rafting, and using personal watercraft. Sailing, water tubing and waterskiing accounted for only small percentages of identified boats. On holidays, boating use changes substantially to pursuits that are more active. The increased use of pleasure boats and personal watercraft essentially suspends fishing activity. At the southernmost part of the lake, rafting activity (boats tying up to each other) was observed to triple.

6.5.3 Future Recreational Use

Participation in recreational activities at Grand Lake has generally grown over time to reach today's high levels reported on GRDA's most recent FERC

Form 80. Many factors contribute to people's participation in recreational activities. Population growth may be a primary factor in recreation growth. The population of the four counties around Grand Lake has grown approximately ten percent, from 112,000 in 1986 to 123,590 in 2000. Population projections through the year 2030 show an anticipated population increase in the four counties of approximately 26 percent. If participation in recreation increases at the same rate and follows a similar pattern, one can expect to see increased demand for access in the future.

6.6 Planning for the Future

GRDA believes that the current public access provides adequate access to the lake. GRDA will continue to provide public recreational access at the sites it maintains. GRDA will also continue to provide and maintain 1,630 acres of designated wildlife habitat open to public hunting and fishing.

GRDA does not monitor the need for additional commercial services; market forces define the supply and demand of commercial services. Market forces also guide private residential development, while the SMP guides development within the Project.

GRDA will monitor recreational use and management needs as they pertain to the Pensacola Project. Particular items of interest to be monitored include:

- Water quality in coves where recreational boating use is heavy;
- Boat density by activity over time to identify changing use patterns;
- Available facilities and public access;
- The location and cause of boat accidents;
- The number of annual fishing tournaments and the number of boats participating;
- The number of annual regattas and the number of boats participating; and
- Opinions and preferences of Grand Lake boaters.

Should monitoring demonstrate a need for additional recreational access, GRDA will hold public meetings to describe the issue and solicit input from the public. GRDA will then review the potential solutions and develop a plan to implement access. Any additional development on the part of GRDA will follow the guidelines found in GRDA's SMP for the Project.

In the event that GRDA determines the need for additional public access, the ODWC and GRDA Lake Patrol have identified four prospective launch sites. Those sites are on Drowning Creek, Bee Creek, Honey Creek and Horse Creek. Individuals with small fishing boats using the gravel and rock surface as a launch ramp at the Drowning, Bee, and Honey Creek sites. The Horse Creek site is adjacent to the Bernice Bridge and, if developed, requires access from the highway right-of-way and extensive timber clearing to accommodate parking and launch facilities. GRDA is continuing to explore the development of that site with Delaware County, the ODWC and the Oklahoma Department of Transportation.

7.0 *SHORELINE MANAGEMENT GUIDELINES FOR PROJECT LANDS*

Enjoyment and use of Grand Lake by residents and visitors alike relies, in part, on facilities, structures, and other developments that permit access to the shoreline and the lake and which provide necessary or requested services for visitors and residents. As development pressure and general use of the Project increases, the potential for conflict regarding the types, sizes, and general acceptability of particular uses also increases. Overcrowding, restricted shorefront/waterway access, and loss of aesthetic values are all potential outcomes of unrestricted development of shorefront uses. Additionally, the potential for environmental degradation increases if unrestricted or unregulated development occurs without clear guidelines and standards.

This section of the SMP provides a comprehensive framework for determining the types of shoreline facilities and activities that are appropriate within specific areas of the Project boundary in relation to existing uses and environmental resources. This system was developed to protect and enhance the Project's land and water resources while providing for hydropower operations, future recreational enhancements, and lake access by the general public and adjacent landowners. The two components of this system are the Shoreline Management Classifications (SMC) and the Allowable Use Categories (AUC). Shoreline Management Classifications are designations applied to Project lands that define GRDA's management goals for the area and identify generally permitted uses through reference to the Allowable Use Categories. The Allowable Use Categories define common use types and identify additional considerations for determining site specific appropriateness.

GRDA made qualitative evaluations of existing shoreline uses and environmental resources immediately adjacent to and/or within the Project. The basis of the evaluation was a series of maps produced using existing GIS databases that included palustrine wetlands, contour and bathymetric data, and aquatic and terrestrial habitats considered significant by state and federal wildlife agencies. GRDA compared these resources with existing shoreline development data obtained by GRDA staff through a lake-wide global positioning system effort, review of aerial photography, and the personal and corporate knowledge of GRDA staff and stakeholders. This analysis, made in light of environmental, aesthetic, and social values and shoreline access

expectations, led to the identification of the following SMC and AUC.

7.1 Shoreline Management Classifications for Grand Lake

7.1.1 Project Operations Areas

Project Operations Areas are reserved for current and potential future Project operation and related functions. This category includes all Project lands used for hydroelectric generation, dams, spillways, switchyards, transmission facilities, right-of-way areas, security lands, and other operational areas. While sometimes occurring within or adjacent to other use areas, these specific shoreline uses require a degree of separation from other activities to ensure public safety or to assure the security of the Project infrastructure.

7.1.2 Municipal / Public Use Areas

Municipal/Public Use Areas are for uses that serve a public purpose or governmental function such as state parks, public beaches, municipal water intake/outflow, transmission/utility line crossing, roads, bridges, and gas/oil pipelines. Typically, public agencies, governmental bodies, or utility providers manage the areas. GRDA will not permit new uses, outside the scope of the existing management objective of the managing entity at these locations. GRDA does not permit private residential or commercial activities at these locations unless they are consistent with the management policies of the area and the operating body requests the new use.

7.1.3 Stewardship Areas

Stewardship Areas contain important or sensitive resources that require special attention, consideration and protection in order that their significant environmental, cultural, or aesthetic contributions not be threatened, diminished, or lost. Stewardship areas include certain resources protected by state and/or

federal law, natural or cultural features considered important to the area or natural environment, and areas maintained for habitat, water quality protection and general aesthetics. These areas may include palustrine wetlands[2] and sensitive aquatic or terrestrial habitat. All currently undeveloped islands owned by GRDA are also included in the Stewardship Area classification.

While not specifically identified within the Stewardship classification, GRDA provides protection to historic and culturally sensitive areas within the Project (Section 9.10). Because of the sensitive nature of cultural or historic resources, their locations may not be public information. GRDA maintains data supplied by the State Historic Preservation Office (SHPO) and the Oklahoma Archeological Survey (OAS) that identifies potential and significant cultural resource sites. GRDA will review all ground-disturbing activities to determine if there is a possible adverse effect on these resources. Potential effects to cultural or historic resources may result in the denial of a permit or require compliance with protection and mitigation measures suggested by the SHPO or the OAS.

It is unlikely that GRDA will permit new uses in Stewardship areas, as it intends to manage these lands exclusively for the benefit of these unique resources. GRDA may permit temporary activities that do not require any form of construction, long-term use, or that may result in any adverse effect on the protected resource. Examples of temporary activities may include bird-dog trials, one-time outdoor athletic events, and educational projects or programs such as those associated with schools, universities, service clubs or youth organizations. These temporary permits will be highly restrictive to avoid negative effects to these resources.

Any new "permanent" uses proposed for a designated Stewardship Area will be considered only if the proponent of the activity:

[2] For the purpose of the SMP, GRDA uses UFSWS National Wetland Inventory data to identify wetland areas. This identification does not preclude the right or responsibility of adjacent property owners to further delineate wetlands in support of permit applications for facilities or uses within the Project boundary.

1. provides compelling evidence of hardship or establishes that a considerable public interest exists for allowing the use that substantially outweighs the interest in preservation;
2. justifies the Project location as the only feasible alternative; and
3. provides specific protection, mitigation and/or environmental enhancements as may be prescribed by GRDA or through any consultation with jurisdictional agencies.

All proposed uses in Stewardship Areas are subject to a consultation process involving state and federal resource agencies and may involve development of an Environmental Assessment or Environmental Impact Statement by Project proponents.

Uses in Stewardship Areas in existence at the time of the enactment of the SMP shall be allowed to continue, subject to the following conditions:

1. The use was properly permitted at the time of the SMP's enactment,
2. The use is maintained in accordance with guidelines provided by GRDA,
3. The continuation of the use does not pose irreparable harm to the area.

7.1.4 Wildlife Management Areas

Wildlife Management Areas (WMA) are lands managed exclusively for the preservation and enhancement of aquatic and terrestrial habitat. Areas within this designation include all WMA identified in the FERC license as well as lands acquired for the purpose of being developed as additional WMA. These areas are generally characterized as larger tracts of land, removed from pressures of competing uses, where the benefits of habitat protection can be best realized.

Wildlife Management Areas are afforded the highest degree of protection under this SMP. Allowed uses in WMA shall be limited to those related to the preservation and enhancement of habitat. Uses inconsistent with this purpose

shall not be allowed except with a waiver granted by the Board of Directors and approved by FERC. Any such use shall require mitigation.

The WMA are created with the intent of providing mitigation for the uses allowed in the Responsible Growth Areas including those uses allowed by the Vegetation Management Plan.

7.1.5 Responsible Growth Areas

Responsible Growth Areas are Project lands GRDA intends to manage to accommodate reasonable demands for public and private uses that are conducive to the protection and enhancement of Grand Lake's environmental, recreational, and socioeconomic resources. Designation of Project land as a Responsible Growth Area does not imply approval of a particular use or exempt an applicant from permitting requirements.

Responsible Growth Areas contain existing residential and/or commercial uses and areas of limited or no development not otherwise classified in this SMP. Generally, Responsible Growth Areas do not contain sensitive or important resources that require the degree of protection afforded by the Stewardship or Wildlife Management SMC.

However, some Responsible Growth Areas contain palustrine wetlands not included in the Stewardship SMC due to diminished resource management potential. These locations have been clearly identified on the SMC maps found in Appendix B. GRDA has sought to provide mitigation through the Stewardship and WMA classifications for uses in these areas and in the Responsible Growth SMC generally. Nonetheless, new uses in areas containing wetlands may be subject to greater scrutiny and may require specific protection, mitigation and/or environmental enhancements. No vegetation management activities may be undertaken in these wetland areas without prior consultation with GRDA.

Generally, Responsible Growth Areas are available for the uses detailed in the Commercial and Residential Allowable Use Categories (Sect. 7.2). However, certain allowable uses may not be appropriate in some Responsible Growth Areas, given the location's characteristics and prevailing use patterns.

Prior to allowing new uses in these areas, GRDA will consider the following:

- Characteristics of existing permitted uses and recreational uses within a half-mile radius;
- Shoreline topography and geometry;
- Impact on safety and navigation;
- Environmental effects;
- Recreational use effects; and
- Potential economic development and tourism benefits.

7.2 Allowable Use Categories

The following Allowable Use Categories and definitions capture the majority of allowed uses within the Project. GRDA recognizes other current or potential future uses may fall outside these definitions. In some instances, GRDA may permit a use determined to have such a limited impact as to have little or no effect on resources and existing uses in any management classification. Other more intensive uses may have more significance/effect on a management area and may require more scrutiny and justification through GRDA's permitting process or be denied altogether.

7.2.1 Commercial Uses

Commercial uses of the Project generally do not occur distinct from other uses on Grand Lake. They are scattered along the shoreline and often are adjacent to other uses. Commercial uses typically have more intensive use patterns than residential or municipal/public uses. Additionally, commercial facilities,

particularly those with multiple docks, slips, and moorings, are generally significantly larger than residential uses. Commercial uses may have a greater potential for affecting navigation on the lake, particularly if they are located in narrower coves and inlets. Therefore, these uses are best located in areas with adequate shoreline and water depth to allow construction and operation with minimal effect on environmental resources. Thus, development of new commercial uses should focus on areas that currently support similar uses, in areas that could support future high/intensive uses, and in locations separated from distinctly residential uses.

Existing and potential Commercial Uses include:

- Full Service Marinas
- Commercial docks >10 slips
- Commercial docks ≤ 10 slips
- Courtesy docks
- Boat ramps
- Marine railways and trams
- Breakwaters
- Shoreline stabilization
- Dredging/Channeling
- Commercial water withdrawal (*e.g.* golf courses)
- Vegetation Management
- Agricultural uses

7.2.2 Residential Uses

GRDA will continue to permit uses associated with private residential or residential associations' uses. However, certain cove areas, shoreline locations with shallow water, areas considered congested or which support important or sensitive resources may be inappropriate for new uses related to residential development. For new developments, GRDA will place particular emphasis on

consolidating uses to minimize shoreline effects for both single and multi-family shoreline uses.

Existing and potential Residential uses include:

- Private Docks
- Community Docks
- Multi-boat slips ≤ 10
- Multi-boat slips >10
- Boat ramps
- Marine railways & trams
- Breakwaters
- Shoreline Stabilization
- Vegetation Management
- Dredging/Channeling
- Residential Water Withdrawal

7.2.3 Municipal/Public Uses

In general, municipal and/or public uses as identified in Section 7.2 are site-specific uses that occur distinct from other uses. GRDA developed definitions and identified specific areas within or adjacent to the Project boundary where known municipal/public uses occur. In doing so, GRDA acknowledges that a degree of separation from other uses may be necessary for the safe operation and/or delivery of service associated with these types of uses. Any proposed municipal or public use area proposed outside an existing designated area must be able to demonstrate that the use is in the public interest.

Municipal/Public Uses include:

- Public/municipal water withdrawal/discharge
- Water treatment systems
- Parks

- Boat Ramps
- Docks
- Wildlife management areas

7.3 Shoreline Management Classification Mapping

GRDA's GIS, local knowledge of both GRDA staff and stakeholders, and site-specific verification served as the basis for determining the most appropriate and pertinent locations to apply the Shoreline Management Classifications within the Project. Not all shoreline areas that generally meet the SMC definitions necessarily fall into that particular classification. As an example, an area may have one or more environmental characteristics that fall into the Stewardship definition; however, *existing* commercial or residential use within that particular area precludes application of the Stewardship classification to that area. Appendix B contains the SMC maps.

While GRDA developed the mapping of Shoreline Management Classifications as comprehensively as possible, in some cases, the level of information available may not allow completely accurate identification of property boundaries or pinpoint Stewardship areas. Therefore, property owners who believe GRDA applied a particular SMC erroneously to the shoreline adjacent to their properties may contact GRDA for a site-specific review and verification of that classification, should they wish to propose a project or use that does not qualify as an allowable use within the existing SMC.

GRDA will maintain a current, updated database showing the Shoreline Management Classifications at Grand Lake. These maps will be available from GRDA's Department of Ecosystems Management. As discussed in Section 11.0, minor updates to the mapping that supports the SMC will occur periodically, with a lake-wide review of all SMC every six years.

8.0 *ADAPTIVE MANAGEMENT FOR AREAS OF CONCERN*

Some shoreline areas along the lake have or will experience greater development pressures and heavier use. No current data suggests that any shoreline areas along the lake are completely "built out" (with no additional shoreline available for development). However, given current/anticipated levels of new development, GRDA expects that private property adjacent to the Project boundary will continue to have additional growth that may require specific and distinct management attention. Not all areas of the shoreline develop in the same manner, or have identical growth issues. Not all potential growth is negative or unwelcome by adjacent property owners, however GRDA strives to maintain a balance among acceptable growth, access to and enjoyment of the Project by the public, and protection of environmental resources. As such, GRDA, proposes the use of adaptive management strategies to, where appropriate, monitor, analyze, and subsequently manage growth and development in a flexible, yet locally relevant manner.

Available data do not support listing any area of the lake as requiring special management because of negative environmental or social effects resulting from over-development or over-use. Neither does GRDA support the assertion that any shoreline area has reached its maximum development potential; however, public comment indicates that the potential for continued growth and heavy use of the lake shoreline is a concern. After examining several potential strategies for managing and controlling growth on the lake, GRDA concluded that development of a lake-wide policy to contain growth or set limits on development beyond the existing SMC was not equitable to a majority of adjacent property owners or non-resident users of the lake.

Adaptive management is a dynamic monitoring and policy implementation process that allows GRDA to respond specifically and effectively to changing conditions in a proactive, yet data supported manner. Using this type of strategy allows GRDA to assess environmental and social conditions and implement additional management conditions where and when necessary, while acknowledging that these conditions may be temporary and changeable. Resource management professionals often define adaptive management as "… a systematic process for continually improving management policies and practices by learning from the outcomes of

operational programs". Implementation of an adaptive management policy allows GRDA to continue to assess environmental and social conditions, analyze and respond directly to specific site conditions, and build upon these efforts to continue to manage areas of concern. The key characteristics of GRDA's adaptive management include:

a) Acknowledgement of uncertainty about what policy/management strategy is "best;"
b) Selection of appropriate policies or management practices;
c) Development and implementation of a site-specific plan;
d) Monitoring of the key response indicators identified in the plan;
e) Analysis of the outcome in consideration of the original objectives; and
f) Incorporation of the results into future decisions."[3]

GRDA will identify areas of concern with the assistance of public input. Should communities believe their particular cove or shoreline warrants monitoring, GRDA will consider such proposals. The onus to petition GRDA is on local citizenry. Prior to implementing any additional monitoring, GRDA will hold a public hearing, at which a majority of local residents must support the inclusion of that particular location. The objectives of these discussions will be to identify the specific concerns of adjacent property owners and develop site-specific parameters GRDA can employ to monitor and analyze the area of concern. At the conclusion of particular monitoring efforts, GRDA will meet again with residents, discuss its findings, and develop appropriate new management strategies. GRDA stresses that inclusion in the monitoring program may not result in immediate modification of management strategies, nor does it guarantee implementation of new management policies at the conclusion of the monitoring.

[3] Modified from Nyberg, J.B. and B. Taylor. 1995. Applying adaptive management in British Columbia's forests. In Proc. FAO/ECE/ILO International Forestry Seminar, Prince George, B.C. pp 239-45 Can For Serv., Prince George, B.C.) http://www.adaptivemanagement.net/probe.doc 10/17/06

9.0 *NEW SHORELINE USES EVALUATION PROCESS*

By using the SMC maps (Appendix B), adjacent property owners and potential shoreline developers can identify their property in relation to the Project boundary and determine which management classifications occur within the Project adjacent to their property and the corresponding allowable uses. Section 10.0 describes general permitting standards that are applicable to the allowed use of their proposed project and summarizes applicable permit application procedures. Some proposed uses will receive more scrutiny, require more supporting documentation, or may require evaluation by GRDA on a case-by-case basis depending on the type of proposed use and the SMC for the area.

GRDA will review permit applications for new uses on a case-by-case basis under these guidelines and GRDA's most current permitting program at the time of the application. In its review of permit applications, GRDA will call upon ecosystems management staff and/or other relevant resource agency specialists to provide input on projects located within management classifications with resource specific restrictions. In addition to evaluating uses under this scenario, GRDA may also assist permit applicants in identifying other local, state, regional, and federal permits that may be required for proposed new uses; however, the onus remains on the applicant to follow through with application for other relevant permits and agency correspondence.

Regardless of the proposed uses by an adjacent property owner, GRDA strongly encourages all property owners to contact GRDA permitting staff at least six months prior to submittal of any permit application. General permitting standards (Section 10.0) are subject to change outside the scope of this SMP and any permit applicant should contact GRDA directly to verify what the most current standards and specific requirements are for their particular application. Additionally, GRDA encourages project proponents to schedule an onsite visit with GRDA staff to discuss their proposed projects during the project-planning phase. While GRDA is not responsible for enforcing regulations under other agencies jurisdictions, GRDA will not issue permits until a Project applicant provides proof of receipt of all applicable local, state, and federal permits.

9.1 Evaluation Process

Both proponents of new uses and GRDA have a responsibility to follow correct procedures related to project planning, review, and construction. General guidelines follow.

9.1.1 Project Proponent

Applying for a Permit

1) Identify type of project(s) and activities within the Project boundary;

2) Determine the SMC (Section 7.1);

3) Determine the Allowable Uses within this Management Classification (Section 7.2);

4) Determine which permitting standards and requirements pertain to the proposed new facility or use (Section 10.0);

5) Contact GRDA for verification and permit application information;

6) Phase I - Prepare and submit a complete application to GRDA with the necessary information provided and any required attachments; and

7) Phase II - Provide follow up information, public, notice and any other additional information/documentation to support the GRDA permit application.

An applicant may NOT begin ANY work on project or GRDA lands until they receive all of the necessary permits and receive final approval of the permit application from GRDA.

Upon Receipt of Permit

1) Review all permit requirements and conditions;

2) Contact GRDA with any implementation questions;

3) Post permit in clearly viewable location during construction;

4) Undertake any follow up as mandated by GRDA permit; and

5) Contact GRDA if project scope, location or specifications change. (This contact should be made before any work commences)

9.1.2 GRDA

Upon receiving an application

1) Review and confirm proposed project location, management classifications, and allowable use designations;

2) Conduct a site visit;

3) Provide timely input on resource, design, permit requirements, and site specific issues to project proponent;

4) Provide an approximate timetable for application review based upon scope of proposal and regulatory requirements, including notification to applicant of FERC review (if required) and approximate timeline for such;

5) Provide opportunity for public meetings/forums as necessary;

6) Maintain public log/documentation of permit review as part of project file;

7) Review application for completeness and contact applicant as necessary for additional information requirements;

8) Process application; and

9) Approve/deny with written explanation of determination.

Upon Permit Issuance

1) Conduct site visit during construction;

2) Inspect and verify post construction and certify permit.

If a proposed use, in the sole opinion of GRDA, does not meet requirements and guidelines established in the SMP, the project proponent may reassess the proposed facility or activity, finding ways to either comply with GRDA's requirements or withdraw the project from consideration. Section 10.8 details the waiver process.

10.0 ***PERMITTING AND INSPECTION***

As the recipient of a federal license and under its enabling legislation, GRDA is responsible for supervision and control of the uses and occupancies for which it grants permission. Additionally, FERC requires GRDA to monitor compliance with any permits or conveyances they issue. Appendix D contains FERC license articles that pertain to shoreline management. Article 410, FERC's "Standard Land Use Article" details the uses a licensee may permit on Project lands and defines those uses that require additional FERC approval.

10.1 Article 410 "Standard Land Use Article"

The following discussion is only a summary and paraphrase of Article 410 designed to provide an overview of FERC's requirements. Appendix D contains the actual license article.

FERC has delegated GRDA the authority to permit the following non-Project use of Project lands without prior FERC notification or approval. GRDA may only allow these if they are consistent with the Project purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project:

- Landscape plantings;
- Non-commercial piers, landings, boat docks or similar structures and facilities than can accommodate no more than ten watercraft at a time and are intended to serve single-family type dwellings; and
- Embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. Before granting permission for the preceding, FERC requires GRDA to:
    - Inspect the site of the proposed construction;
    - Consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and

- Determine that the proposed construction is necessary and would not change the basic contour of the reservoir shoreline.

GRDA may convey easements, rights of way across, or leases of Project lands for the following, but must provide FERC with an annual report describing these conveyances.

1) Replacement, expansion realignment, or maintenance of bridges and road for which all necessary state and federal approvals have been obtained;

2) Storm drains and water mains;

3) Sewers that do not discharge into the Project waters;

4) Minor access road;

5) Telephone, gas and electric utility distribution lines;

6) Non-project overhead electric transmission lines (that do no require erection of support structures within the Project boundary;

7) Submarine, overhead, or underground major telephone distribution cables or major electric distribution lines; and

8) Water intake or pumping facilities that do not extract more than one million gallons per day from a Project reservoir.

For the following conveyances and permits, GRDA must provide FERC with 45 days notice of the proposed conveyance, in which time FERC may request GRDA file an application for formal approval of the conveyance by FERC.

1) Construction of new transportation infrastructure;

2) Sewers or effluent lines that discharge into Project water;

3) Pipelines which cross Project lands;

4) Non Project transmission lines that require support structures within the Project boundary;

5) Private or public marinas that can accommodate no more than ten watercraft at a time and are located at least one-half mile from any other private or public marinas;

6) Recreational developments consistent with GRDA's Recreation Plan; and

7) Other uses if a) Land conveyances of five acres or less, b) if all land conveyed is located at least 75 feet from the Project's normal maximum surface elevation and c) the conveyance is no more than 50 total acres for each project development in one year.

All other uses of Project lands require formal FERC approval in addition to GRDA permits.

10.2 GRDA Permitting and Approval

Both GRDA and FERC must review and approve any activities not addressed by Article 410. For most uses, project proponents must submit a written application to GRDA with drawings providing location, design and dimensions, and a description of materials and type of construction. All uses must conform to GRDA's general requirements and minimum design standards. Separate GRDA permitting standards and protocols detail specific information that relates to these permitting requirements. A current copy of GRDA's permitting procedures and standards are available on GRDA's website (www.grda.com), at the GRDA Ecosystem Management Department located near the west end of Pensacola dam in Langley, by mail at P.O. Box 70, Langley, Oklahoma 74350, or by calling 918-782-9594. GRDA may update permitting standards periodically, as needed, independently of SMP updates and amendments.

The permitting procedures and standards documents provide information on requirements for docks and piers, bank stabilization measures, vegetation management and dredging, as well as information on facility construction and maintenance

requirements. They also establish the criteria used in evaluating proposed new uses for both commercial and residential activities as well as facility construction standards for each activity.

GRDA will evaluate proposed new uses, and modifications to existing uses based on:

- Characteristics, zoning, intensity, and prevailing permitted uses within a half-mile radius of the proposed activities, (including SMC and allowable use determinations);
- Shoreline topography and geometry;
- Safety, navigation and flood control requirements;
- Environmental effects;
- Potential economic development and tourism benefits;
- Recreational use effects;
- Any other criteria which may affect the proposed project;
- The practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed facility or activity;
- The extent and permanence of the beneficial and/or detrimental effects which the proposed facility or activity is likely to have on the uses which the area is suited; and
- Existing jurisdictional regulations.

Agency consultation initiated by project proponents or GRDA regarding other governmental regulations may include (but is not restricted to) contact with:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service

- Oklahoma Department of Wildlife Conservation
- Oklahoma Department of Environmental Quality
- Oklahoma Water Resource Board
- Oklahoma Historical Society
- Oklahoma Archaeological Survey
- County Bureau of Environmental Quality
- Bureau of Indian Affairs
- Oklahoma Native American Tribes
- County Floodplain Administrators
- Oklahoma Corporation Commission
- Oklahoma State Fire Marshal
- FERC

No person, firm, partnership, corporation or other entity may perform any activity that requires a permit prior to the receipt of such permit from GRDA. For example, a homeowner may not place a dock in Project waters until the applicant receives written notice that GRDA approves such an activity.

The following sections highlight and summarize current permit applications and standards. GRDA reserves the right to make changes in permitting standards and requirements independently of the SMP.

10.3 Commercial Permit Application Standards

As detailed in GRDA's Commercial Project Permitting Process, commercial projects are:

- Construction or modification of facilities designed to accommodate more than ten watercraft at a time;
- Construction or modification of facilities intended to serve non-residential enterprises operated directly or indirectly for profit or gain including courtesy

docks; and

- Dredging operations requiring removal of fill materials exceeding the amount of two thousand cubic yards.

Section 7.2 defines commercial uses that fall under the commercial permitting process. In general, permit applications for commercial uses within the Project boundary involve larger, more expansive and potentially more significant effects to lake resources. As such, GRDA permitting staff may require supplemental information to adequately review and assess such permit applications. In some instances, GRDA may require completion and submittal of an Environmental Assessment (EA) to support permit applications. If GRDA requires an EA, the applicant must retain an entity listed on GRDA's Environmental and Wetlands Consultants list, available from GRDA's Department of Ecosystem Management. Specific standards for applications are included within GRDA's permitting program documentation and website. GRDA will reject applications failing to meet standards and guidelines. A public hearing shall be held prior to approval of a commercial permit. GRDA shall maintain an electronic database of individuals or organizations wishing to receive electronic notification of such hearings and shall comply with any applicable notice requirements imposed by law.

Under the current permitting standards, GRDA requires commercial applicants to provide the following:

- Contact information for the project proponent, and current landowners of the adjacent property;
- A statement of the proposed use of Project lands listing all activities proposed (if a phased approach is proposed by an applicant, the final build out must be presented at the onset of the permitting process) including all components of the project, materials proposed for use and the layout or design of the project;
- Site location maps clearly showing the location and type of facility (maps must clearly show the location of GRDA's Project boundary and applicable flowage easement lines in relation to the proposed project);

- Technical drawings of proposed facilities, certified by a registered engineer;
- Full survey (metes & bounds), prepared by a registered Oklahoma land surveyor, of the entire shoreline area within the boundaries of the proposed development, clearly indicating property lines in relation to the Project boundary and location of all existing or planned facilities within the Project boundary;
- A discussion of the proposed project's environmental effects including those on common fish and wildlife species, rare, threatened, and endangered species, vegetation, cultural resources, water quality and existing recreation uses; additionally, applicants must provide a statement supporting how the proposed project is consistent with approved recreation, dredging, cultural resource and wildlife protection plans, statutory mandates or project management requirements;
- A statement describing why the project is in the public interest including a description of proposed measures to ensure boating safety near the project area during and after construction, as well as a statement of measures proposed to protect adjacent property owners' access to the shoreline and lake;
- A discussion of the "purpose" and "need" for expansion or new uses including a description of any adverse environmental effects that cannot be avoided and how the applicant proposes to minimize or mitigate for these adverse effects and, as necessary, an alternative analysis that documents why the proposed work or preferred location is the preferred action;
- Sufficient detail of the proposed projects components to identify their locations;
- Proof of fulfilling all other state and federal requirements and codes through inclusion in the GRDA permit application package of other permits received for the work; and
- Proof of liability insurance.

Should commercial applications substantially not meet the standards for permitting as established by GRDA because of size, location, or other environmental concerns, and if the applicant wishes to pursue further review through a waiver, the applicant may be required to develop an EA or Environmental Impact Statement (EIS) (if not previously included in the initial application package) in support of the waiver request. This description only generally describes and summarizes GRDA's permitting standards. GRDA may periodically update them. Commercial applicants should contact GRDA for the most recent permit standards and application requirements. Detailed information on applications for commercial use permits is included in GRDA's permitting procedures and standards available on GRDA's website (www.grda.com), at the Department of Ecosystem Management in Langley, by mail at P.O. Box 70, Langley, Oklahoma 74350, or by calling 918-782-9594.

10.4 Residential Dock Application Standards

While multi-family residential shoreline uses sometimes resemble commercial facilities in size and scope, generally residential uses of Project lands tend to have a smaller footprint with less potential for major environmental impacts. To preserve public access and to reduce environmental effects, GRDA places particular emphasis on consolidating shoreline uses. GRDA encourages the development of multi-owner facilities to reduce shoreline congestion.

GRDA reviews some residential shoreline facilities (with ten or greater slips) as an allowable residential use only if they are developed specifically without intent for commercial uses or monetary gain. Any proposed facility with ten or greater slips, requires FERC review and approval.

Residential applicants should contact GRDA for the most recent standards and permit application requirements. Detailed information on application for new or existing residential docks is included in GRDA's permitting procedures and standards available on GRDA's website (www.grda.com), at the Department of Ecosystems Management in Langley, by mail at P.O. Box 70, Langley, Oklahoma 74350, or by calling 918-782-9594.

Should Residential applications not meet the standards for permitting as established by GRDA because of size, location, or other environmental concerns, the applicant may pursue further review through a waiver process. If the applicant wishes to pursue further review through a waiver process. The applicant must provide public notice of the proposed application.

10.5 Vegetation Management

During the development of this SMP, the issue of vegetation management emerged as the most contentious subject to be addressed. As the Rothman Summary notes, the "most persistent and passionate objections were to the allegedly permit-heavy, micro-managing Vegetation Management Plan."

GRDA believes the proper stewardship of shoreline vegetation is critical to the protection and enhancement of Grand Lake's environmental resources and socioeconomic value. Shoreline vegetation acts as a buffer to stabilize shorelines, prevent erosion and protect water quality by filtering and trapping organic and chemical pollutants, and can provide valuable habitat for fish and wildlife. Additionally, shoreline vegetation can have significant recreational and aesthetic value.

As shown by the SMC, resource characteristics and vulnerability vary widely around Grand Lake. In certain areas, proper stewardship dictates that shoreline vegetation should remain undisturbed in order that these valuable resources are not jeopardized. However, strict preservation is not always required to provide sufficient protection and avoid adverse consequences. In fact, certain management practices are often necessary or appropriate and can improve resource quality.

Similarly, the extent of GRDA oversight and involvement necessary to ensure proper stewardship also varies depending on the proposed activity and the resources involved. Certain proposed activities will require GRDA to spend considerable resources critically examining all aspects of a plan and its implementation, while other activities can be summarily approved, given the routine nature of the management practice and the resource involved. Therefore, GRDA is committed to a vegetation management plan that

is both responsible and reasonable.

10.5.1 Vegetation Management in Responsible Growth SMC

The guidelines in this subsection apply to Project lands classified as Responsible Growth Areas. However, if the SMC Maps indicate the presence of wetlands in a Responsible Growth Area, the provisions of Section 10.5.2 are controlling.

Authorized Management Practices:

Adjacent land owners have the permission of GRDA to engage in the following vegetation management activities on Project land classified as a Responsible Growth Area, provided the area has not been identified as containing wetlands.

- Mowing and maintenance of lawns established and existing before July 1, 2005. A lawn is defined as an area cleared of native understory vegetation and replaced with turf grass. No fertilizers shall be used on these lawns.
- Removal of floating debris, driftwood, litter, and trash provided the removal does not disturb the shoreline through the significant movement of soil, rocks, or existing live vegetation.
- Removal of hazardous trees only in cases where the trees are dead and dangerous, damaged and dangerous, diseased and dangerous, or otherwise present a public safety or property hazard.
- Pruning of limbs from living trees and shrubs greater than 3 inches dbh and up to one-third of the plant height of shrubs and non-woody vegetation to enhance the view of the lake. Pruning does not permit removal of trees greater than 3 inches dbh or complete clearing of any area.
- Removal of woody vegetation less than or equal to 3 inches dbh.
- Trimming of non-woody vegetation to a height of 2 inches.
- Removal of certain understory and exotic noxious plants identified in

Appendix C, regardless of size.

- Landscape plantings which are consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. A landscape planting is defined as flowering plants, grasses, trees or shrubs, provided the species introduced is not an invasive plant species identified in Appendix C. Adjacent landowners are strongly encouraged to use native vegetation when conducting landscape plantings. This provision does not permit the planting of turf grasses, whether native or non-native. A list of suggested native plant species is available from the Department of Ecosystems Management.

Management Practices Requiring Site Specific Permitting:

Land owners adjacent to GRDA shoreline designated as a Responsible Growth area may only engage in the following vegetation management activities after obtaining a permit from the Department of Ecosystems Management.

- Establishment of a new lawn. A lawn is defined as an area cleared of native understory vegetation and replaced with turf grass.
- Removal of vegetation greater than three inches dbh.
- Any vegetation management activity, including the removal of floating debris, driftwood, litter, and trash, which disturbs the shoreline through the significant movement of soil, rocks, or existing live vegetation.
- Clearing vegetation to create and maintain access corridors between GRDA land and adjacent property. The corridor may not exceed 20 feet in width. Corridors must consist of natural materials such as native grass, wood chips, or gravel/crushed rock. Placement of such must not involve earth moving or soil disturbance and must minimize ground disturbance and vegetation removal. The path may extend from the common boundary between GRDA and the adjacent landowner to the waters edge.

- Clearing and planting of vegetation to prevent the deterioration of retaining walls and for shoreline stabilization. Such activity must be done in conformance with GRDA regulations and guidelines.

10.5.2 Vegetation Management in Stewardship SMC and Wetlands

Site Specific VMP Requirements:

Before conducting any vegetation management activities, including trimming trees and removing brush, on Project lands designated as a Stewardship Area or a Responsible Growth Area with wetlands, a site specific vegetation management plan (VMP) must be submitted to and approved by the Department of Ecosystems Management and the proper permits must be obtained.

Generally, no vegetation management activity is permitted in a Stewardship Area and GRDA will not permit the removal of vegetation in wetlands located in Stewardship areas. Vegetation management activities are permissible in Responsible Growth Areas containing wetlands. However, such VMPs may be subject to greater scrutiny and may result in a requirement for on- or off-site mitigation and/or an alternative vegetation management plan.

Exception for Debris Removal:

In Stewardship Areas and Responsible Growth Areas containing wetlands, no permit is required for the removal of floating debris, driftwood, litter, and trash provided the removal does not disturb the shoreline through the significant movement of soil, rocks, or existing live vegetation.

10.5.3 Vegetation Management in WMA

Vegetation management activities shall not be allowed in WMA except

when necessary for the purpose of preserving and enhancing habitat. Any such activity that is allowed shall only be conducted under the supervision of the Department of Ecosystems Management. Debris removal in WMA shall be allowable only with the express permission of the Department of Ecosystems Management.

10.5.4 General Provisions

A VMP may require written approval from FERC, the USACE, and other state and local agencies. Permittee shall perform all activities in strict accordance with the specifications approved by GRDA.

Adjacent property owners must initiate any activity allowed by the VMP permit within one year of issuance of the permit. Failure to do so will result in the expiration of the permit.

Any person that violates the provisions of the VMP or who fails to obtain a permit when one is required may be required to pay all costs related to the repair, restoration and reclamation of GRDA lands and waters associated with the violation and may be subject to civil and criminal penalties.

If archeological or historical properties or items are discovered in the course of performing vegetation management activities, all land clearing and land disturbing activities shall cease immediately and GRDA shall be notified.

A utility company possessing an easement on project land may perform all vegetation management activities necessary to exercise its rights pursuant to that easement and shall not be required to acquire a permit.

10.5.4.1 Use of Herbicides and Pesticides

Use of herbicides and pesticides on Project lands is expressly

prohibited except by a state licensed applicator with prior approval of the Department of Ecosystems Management.

10.5.4.2 Use of Heavy Machinery

While all machinery has the potential to disturb the shoreline if used irresponsibly, GRDA recognizes that its use is often preferred and sometimes necessary to accomplish certain allowed vegetation management practices. Therefore, GRDA will permit the use of machinery with a maximum power output not greater than 30 horsepower (hp) without prior approval for allowed management practices, provided the use does not result in the unauthorized movement of soil, rocks, or existing live vegetation. The use of machinery with a maximum power output greater than 30 hp may be allowed with prior approval from GRDA.

10.5.4.3 General Permits for Natural Disasters and other Emergencies

In the event a natural disaster or other emergency situation causes significant vegetation damage or debris accumulation within the Project boundary to the extent that site specific permitting is impractical or would result in undue delay, the General Manager of GRDA may issue a general vegetation management permit governing all management activities within an affected area in lieu of requiring site specific permits. A general permit shall clearly identify the scope of allowed activities, the areas in which the permit is applicable, and the period of time for which the permit is valid.

10.6 Other Uses Requiring Review and Permitting by GRDA

10.6.1 Habitable Structures

"Habitable structures" or "dock-o-miniums" refer to living quarters constructed in conjunction with new or existing docks, piers, and floats. These structures generally resemble cabins and/or homes, placed on floating structures such as covered or enclosed docks, over boathouses and other similar structures where a building is or may be occupied by people overnight or for extended periods. Generally, these structures may contain water supply and/or waste disposal facilities such as sinks, showers, toilets, kitchen facilities, food preparation areas, *etc*.

Habitable structures currently exist on Grand Lake. As no permitting category or definitions for these structures existed previously, most existing habitable structures were permitted as commercial or residential docks under GRDA's procedures existing at the time of construction. Additional construction, not under GRDA's regulatory authority at the time, resulted in enclosed docks with living quarters, toilets, cooking facilities, *etc*.

The issue of habitable structures on Grand Lake has become a focus of concern for many shoreline residents. While some citizens believe the structures are inappropriate, others strongly support allowing them for both private residential structures or for commercial use. GRDA believes that, while public sentiment is an important factor in developing a position on habitable structures, other factors such as the environmental effects of these structures is equally important to making a well-informed, unbiased decision.

At the time this SMP was approved by the GRDA Board of Directors, GRDA staff was in the process of gathering and reviewing relevant studies and information related to the desirability of habitable structures on Grand Lake. GRDA intends to file an amendment to this SMP addressing habitable structures

within 90 days of submission of the SMP to FERC for approval.

10.6.2 Dredging and Excavation Policy

All excavation and dredging activities on GRDA-owned property require a permit from GRDA. The USACE may also require a permit for excavation and dredging activities. Additionally, FERC must approve all dredging activities on GRDA waters requiring the removal of more than 2,000 cubic yards of material. If other regulatory agencies require permit application submittal and review, GRDA requires proof that the project proponent has received all other permits, prior to issuing a GRDA permit.

Dredging generally is not permitted in Stewardship Areas or within vegetated wetlands. In an effort to protect Project resources and adequately review all dredging applications, currently GRDA requires a wetland delineation study conducted by a GRDA approved wetland delineation specialist using the Army Corps of Engineers wetland delineation guidelines in any locations other than open water dredging.

Any new dredging will require sediment testing to determine if dredging may displace contaminants. Specifically, sediment samples shall be tested for the presence of heavy metals including Zinc, Lead, and Cadmium. Detection of hazardous materials during testing may lead to a requirement that the project either be abandoned or the project proponent provide a dredging management plan to GRDA identifying how materials will be removed in compliance with the ODEQ Standards. Maintenance dredging of previously authorized facilities and structures under 250 cubic feet do not require soils testing.

GRDA will require dredging applicants to contract with GRDA approved personnel to collect sediment samples according to industry best practices. Four sediment cores per 2000 cubic yards of dredged material will be required and

should be evenly distributed across the proposed dredging site. Depth of each core will be recorded and reasonable efforts should be made to core a depth of 5-foot. Each core will be homogenized separately and a composite of the homogenized cores will be submitted as an individual sample for metals and particle size analysis. Sediment samples will be submitted to the Oklahoma Department of Environmental Quality's laboratory for metals analysis, and to a United States Fish and Wildlife Service approved lab for particle size analysis prior to issuing a permit.

Test results will be provided to the resource agencies for a 30- day comment period and GRDA will review agency comments and compare the results with published assessment guidelines from MacDonald et al. (2000). Test results exceeding the Threshold Effect Concentration's (TEC; i.e. concentrations predicted to be not toxic if concentration were lower than the corresponding TEC) will be submitted to FERC for final approval.

GRDA will approve excavation of a boat channel or embayment only when it determines there is no other practicable alternative to achieving sufficient navigable water depth, the action would not substantially influence protected resources, and the applicant can provide proof that they purchased their property prior to the development of these SMP policies. Applicants must be prepared to provide adequate documentation of the necessity of the project as part of any application. Dredging for new or previously authorized uses is seasonally restricted. To avoid potential impact to fish spawning areas applicants must receive approval of timing from GRDA for this activity.

GRDA currently requires notification of project commencement, post-dredging site review, and sign-off by GRDA enforcement staff at the completion of the action; Contractors are required to post their permit on site during activity.

Spoil material from channel excavations must be placed in accordance with any applicable local, state, and federal regulations at an upland site above the applicable flood plain and off Project lands.

10.6.3 Placement of Buoys

Adjacent property owners may request GRDA to place a "no wake" buoy in front of or adjacent to their property. No wake buoys designate a 150 feet corridor off the shoreline within which boats and other watercraft must travel at idle speed. Individuals applying for a buoy permit must agree to abide by the Rules and Regulations governing the Use of Shorelands and Waters of GRDA, which are Incorporated and made apart of the agreement, and that a buoy placement issued upon the application may be revoked at any time by GRDA. Any buoy not maintained in its proper location shall be subject to removal by GRDA, without applicants consent. All buoys are not covered by any warranty, express or implied, and replacement of a buoy will require an additional application fee. All buoys will be installed and maintained by GRDA, and are primarily warning devices for the convenience of the public, and should not be relied upon solely as navigational aids. GRDA assumes no liability or responsibility for loss or damages to life or property arising out of the public's reliance upon said devices.

GRDA requires applicants petitioning for a no wake buoy provide information and documentation showing the proximity of a proposed buoy to an existing buoy. Should applicants feel that a buoy is warranted adjacent to their property due to boat and/or dock damage, GRDA requires proof of ongoing or existing damage, through the presentation of repair bills, photo documentation of damage and/or boat traffic that is operating in hazardous manner within the 150 feet corridor, and/or repair bills for reputed damage.

10.6.4 Shoreline Stabilization

GRDA may issue permits allowing adjacent residential landowners to stabilize eroding shorelines on Project lands. GRDA recommends biostabilization of eroded shorelines, where feasible. Biostabilization generally involves use of natural plants, minimal bank contouring to providing a planting surface, or placement of natural fiber mats, logs, or other materials to deflect wave action and stabilize eroding shorelines. In some instances, GRDA may allow the placement of riprap along the base of the eroded areas to prevent further undercutting of the banks.

GRDA also permits the placement of engineered structures such as gabions or retaining walls for shoreline stabilization. However, GRDA will approve these methods only in shoreline locations where the erosion process is severe and GRDA determines that a retaining wall is the most effective erosion control option or where the proposed wall would connect to an existing GRDA-approved wall on the lot or to an adjacent owner's GRDA-approved wall. GRDA inspects the site of the proposed construction and considers whether the planting of vegetation or the use of riprap would be adequate to control erosion. GRDA does not permit the reclamation of GRDA land that has been lost to erosion.

GRDA will determine if shoreline erosion is sufficient to approve the proposed stabilization treatment. No shoreline stabilization may be conducted until GRDA issues a permit.

10.6.5 Railways, Tram Systems, Fences, Ramps and Retaining Walls

Construction of private or commercial railways, tram systems, fences, ramps or retaining walls constructed within the Project boundary requires permit application to and approval by GRDA. Project proponent must submit complete and detailed maps, plans and specifications for the proposed construction and its location, including a statement of the purpose(s) for which the work is to be done. The applicant must also be required to furnish a survey prepared by a licensed surveyor or engineer showing the location of GRDA's taking (property) line in the

Project area and shall have such line staked on the ground. Permittees must maintain railways, tram systems, fences and retaining walls in a manner such that all electrical systems are to code, meet environmental guidelines, and that the structures are safe and pose no risk or threat to the public or otherwise unduly restrict the public from access and use of the Project. GRDA will not permit residential boat ramps unless the ramp serves at least 25 homeowners or the public at large.

10.6.6 Grazing

Responsible grazing on Project lands is only allowed with the permission of GRDA, and will only be allowed in certain areas where the use is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project. Therefore, grazing leases are issued on a case by case basis.

10.6.7 Licenses to Encroach

Certain structures built on project property prior to June 1, 2005, may be allowed to remain in GRDA's discretion pursuant to Okla. stat. tit. 82, § 874.2. Structures must be consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. Owners of such structures may obtain a license to encroach for a maximum of 30 years, subject to approval by FERC.

10.6.8 Lease of Project Lands for Public Purposes

GRDA leases land to municipalities, civic organizations and other entities for recreational areas such as public parks, picnic areas, and sporting and cultural events. Such uses must be consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the Project and must be approved by GRDA and FERC.

10.7 General Property Inspections

GRDA reserves the right at all times to inspect any permitted or unpermitted use of the Project during and after construction or implementation. Should inspection of particular uses reveal inconsistencies or violations of established management policies and/or permitting standards, facility owners/users will be notified of such violation and advised by GRDA regarding the violation, suggested means to correct the violation, and actions to be taken by GRDA should the violation persist.

10.8 Permit Waivers

10.8.1 General Procedures

Upon written application and hearing, the Board of Directors of GRDA (Board) may grant a waiver, exception or modification to the requirements imposed on private and/or commercial permit applicants by GRDA. Additionally, the Board may impose additional requirements upon any such applicant. GRDA bases such waivers, exceptions, modifications, or additional requirements upon the totality of the circumstances, in consideration of public and environmental concerns. Any such waivers may also require prior FERC approval before becoming final.

In considering waivers of these rules, Board considers the potential positive and negative effects of the proposed facility or use on:

- Characteristics, zoning and prevailing permitted uses within a half-mile radius of the proposed activity;
- Shoreline topography and geometry;
- Safety, navigation and flood control requirements;
- Environmental resources;
- Potential economic development and tourism benefits;
- Recreational use; and
- Statutory mandates.

Any applicant for a waiver will give notice of application to the Board. Public notice of the waiver request shall be in accordance with guidelines established by GRDA. Current guidelines are available from GRDA's Department of Ecosystem Management.

10.9 Grandfathered Improvements

Existing uses that were properly permitted and which met current GRDA standards at the time of permitting but which may no longer be compatible with this SMP, may remain in place, as long as they comply with the size, location and type requirements set forth in GRDA's requirements in effect at the time the structure was built. Grandfathered uses are not transferable to other locations. Uses, for which GRDA has not issued a permit, are not eligible for grandfathering. All existing and new uses must comply with all current regulations pertaining to maintenance, safety and environmental protection.

10.10 Best Management Practices and Educational Outreach

Best Management Practices (BMPs) are on-site actions implemented by an individual or group to lessen the potential effects of an action on a particular resource. For example, a property owner chooses to cut vegetation from ***their*** property to improve access or their viewshed rather than wholesale clearing. The landowner may choose to conduct selective clearings and replant low-lying vegetation to help maintain bank stabilization. The selective clearing and replanting of vegetation is a best management practice because it is an on-site action that reduces the potential effects of the specific use. (*Cutting vegetation on GRDA property or within the Project is subject to other guidelines and permitting requirements (see Section 10.5.2- Vegetation Management.)*). GRDA actively promotes BMPs for preserving and protecting natural resources on all of its lands as well as throughout the State. The goal of promoting shoreline BMPs is to assist in the conservation and protection of valuable shoreline resources, and to help reduce potential impacts to shoreline resources and water quality. GRDA recommends

the BMPs provided in Appendix C for actions that occur on private property NOT on Project lands, and therefore the BMPs are not part of the SMP.

GRDA is dedicated to employing similar standards to their properties, both within and outside the Project boundary. Understanding that these shoreline BMPs are not regulations, GRDA, with assistance from stakeholders and other interested parties, supports public education efforts to encourage adjacent property owners to adopt these shoreline BMPs, as well as any other BMPs promoted by state and/or regulatory authorities. Adjacent landowners may obtain additional information on BMPs from GRDA's Department of Ecosystems Management.

10.11 Agency Regulatory Review and Permitting

10.11.1 Army Corps of Engineers

The USACE, under Section 404 of the Clean Water Act, regulates the discharge of dredged and fill materials into waters of the United States, including adjacent wetlands. Any work at or below elevation 750PD on Grand Lake (typically the ordinary high water mark where a debris line is visible) may require consultation, project review and permitting by Corps staff as will any work in an upland wetland. If a project proponent completes a project deemed jurisdictional by the Corps without prior approval, penalties range from removal of the structure/fill to fines and imprisonment. Anyone proposing a project involving dredging or filling wetland should contact the USACE Tulsa District office.

10.11.2 State of Oklahoma, Regional, and Local Agencies

Oklahoma Department of Environmental Quality

Under Title 252, Chapter 611, the ODEQ issues 401 Water Quality Certifications for construction activities. In accordance with the provisions of Section 401 of the federal Clean Water Act and the Environmental Quality Code,

any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, dredge or fill, or other activities, which may result in any discharge into, or pollution or alteration of the waters of the State of Oklahoma, must first obtain a water quality certification from the ODEQ The ODEQ issues, renews and modifies water quality certifications including, but not limited to, Permits issued by the USACE under the Section 404 permit program for the discharge of dredged or fill materials. Additionally, ODEQ enforces water quality standards on the lake, and may be called upon to take regulatory action for activities such as improper disposal of septic wastes in the waters of Oklahoma.

Local/Regional Floodplain Management

The Oklahoma Floodplain Management Act, passed in 1980, authorizes communities (*i.e.*, cities, towns and counties) to develop floodplain regulations, designate flood hazard areas and establish floodplain boards. An amendment in 2004 calls for accreditation of community floodplain administrators through the Oklahoma Water Resources Board (OWRB), ensuring that these officials are properly trained to effectively administer local floodplain regulations.

Consistent with protecting the natural functions of the floodplain and reducing flood losses, the OWRB values the No Adverse Impact floodplain management approach. No Adverse Impact strategies promote responsible floodplain development through community-based decision-making[4].

Project proponents are strongly encouraged to coordinate with the floodplain manager in their town or county to ascertain if additional permitting requirements apply to their project.

GRDA

The provisions of the Oklahoma Statutes governing the Grand River Dam Authority prescribe how GRDA property may be used and authorize GRDA to promulgate and enforce rules and regulations for recreational and commercial uses of its lakes and shoreline[5]. GRDA has created a law enforcement division for enforcing these rules on the waters and land of GRDA.

The members of GRDA's law enforcement division are recognized as the enforcement officers for GRDA. The enforcement officers for GRDA may enforce GRDA rules and regulations, those rules and regulations as may be issued pursuant to the provisions of Section 4200 *et seq*. of Title 63 of the Oklahoma Statutes, the provisions of Sections 861 *et seq*. of Title 82 of the Oklahoma Statutes, and all violations of criminal laws occurring within the boundaries of the counties where real property owned or leased by GRDA is located. The enforcement officers have the power of peace officers during the performance of their duties, except in the serving and execution of civil process.

The officers are charged with the duty of examining and inspecting proposed locations for wharves, docks, dikes, anchorages, boathouses or any proposed structures or improvements to be made upon the waters or lands of GRDA, and issuing certificates of inspection. GRDA's law enforcement officers may cooperate with federal, state and local enforcement officers in the enforcement of all federal and state laws upon the waters, lands and properties of GRDA.

State Historic Preservation Office and Oklahoma Archaeological Survey

Shoreline ground disturbing activities may require review and comment from the SHPO and the OAS. The OAS provided GRDA with the known locations of culturally sensitive and potentially sensitive locations within and adjacent to the Project boundary. GRDA incorporated this information into non-public available resource mapping which they maintain. Using this information,

[4] http://www.owrb.state.ok.us/hazard/fp/floodplain.php; October 23, 2006

GRDA staff will review all proposed new uses to identify potential impacts to known or potentially sensitive archaeological and historical properties. Early identification of proposed activities, as well as identification of activities requiring authorization and those that do not, will be key to minimizing permit delays or rejection for project proponents. GRDA will review the permit application and supporting information to ensure that the property owner or new user provides the appropriate information. GRDA will assist landowners in determining whether the proposed action requires consultation with the SHPO or the OAS.

GRDA, as a requirement or condition of its permits, requires any entity that is proposing ground-disturbing activities within the Project to undertake the appropriate level of investigation, monitoring, and any subsequent mitigation found to be required for reasonable protection of cultural or historic resources within the Project.

[5] Rules and Regulations Governing the Use of Shorelands and Waters of the Grand River Dam Authority, 2006

11.0 *ENFORCEMENT OF THE SHORELINE MANAGEMENT PLAN*

11.1 Existing Tools for Enforcement

11.1.1 Enforcement Staff

As discussed in Section 9.10, GRDA's law enforcement staff enforces all GRDA policies and regulations. These duties include periodic inspection of permitted structures, general patrol of Grand Lake to identify new construction of uses, review upon demand of permits approving repairs or new construction of facilities, water quality sampling, buoy review and relocation, and issuance of violation notices to adjacent property owners who are in violation of permit standards and conditions. GRDA also undertakes periodic fly-overs by patrol officers and other GRDA Ecosystem Management staff, to assess the development and/or discovery of new uses within the Project boundary or potential violations of existing permits.

All GRDA enforcement staff are trained and familiar with the new and existing standards, rules, regulations and policies included in the SMP, and are charged with not only with their enforcement, but also public outreach regarding them.

11.1.2 Actions Available for Enforcement

GRDA law enforcement personnel may order any person or entity that is violating any provision found in Title 63 or Title 21 of the Oklahoma Statutes or in any GRDA rules to leave the waters and/or lands of GRDA. Failure to obey may result in GRDA enforcing the provisions of 63 O.S.2001, § 4221 that provides that such failure to comply will constitute a misdemeanor punishable by a fine not to exceed $250.00. Additionally, any such person or entity, after notice and an opportunity for hearing as provided in GRDA's enabling legislation, may be banned from the waters and/or lands of GRDA for a period of time up to, and including, 90 days.

Currently, if a dock, wharf, boat house, breakwater, buoy or any other structure, private or commercial, is not constructed with generally-accepted building materials and pursuant to generally-accepted construction practices, or installed in accordance with the plans and specifications approved by GRDA, or if such works are not kept in good state of repair and in a good, safe and substantial condition, are not inspected by a licensed electrical contractor as detailed in GRDA's permitting standards, or upon failure of payment of any fee when due, GRDA, after notice and opportunity to be heard in accordance with Subchapter 21 of its enabling legislation, has the right to remove or cause to be removed from GRDA's waters and lands such structure at the owners expense and/or cancel any license or permit in the event the owner fails to repair or remove these uses after being notified by GRDA to repair or remove the same.

GRDA's current policy is that any loose or abandoned dock will be impounded by GRDA and the owner is responsible for any expense incurred by GRDA. GRDA will notify the Oklahoma State Department of Health and the utility company furnishing electricity of any dock reported to be in an unsafe electrical condition.

In the event GRDA removes a dock, wharf, boat house, breakwater, buoy, fence, retaining wall, railway or any other structure, private or commercial, the owner of the structure will be required to pay all costs of such removal and may be required to pay all costs related to the repair and reclamation of GRDA lands and waters associated with the removal.

Please note that GRDA's rules and/or statutes are periodically subject to change. For further information and the most current information, interested parties should contact GRDA or visit its website at www.GRDA.com. GRDA reserves the right to waive, modify, amend or repeal any of these provisions in accordance with Oklahoma law.

12.0 *SMP AMENDMENT PROCESS*

In developing this SMP, GRDA has recommitted to the long-term stewardship of the Project's lands, water and environmental, recreational and socioeconomic values of Grand Lake. GRDA formulated this SMP in anticipation of continued growth and new uses on and adjacent to Project lands. GRDA recognizes that the region is a popular tourist destination and residential area and that non-project uses change over time. While these changes in use may occur slowly, they may result in patterns that necessitate reassessment of the SMP. To assure the SMP continues to remain relevant, GRDA has prescribed processes to review and, if necessary, to amend the SMP.

12.1 Tracking Non-Project Use

GRDA will institute permit and non-project use tracking using the existing GIS. GRDA will enter new permit applications into the GIS, so GRDA may track development and use patterns, as well as have easy access to data related to permitted activities. GRDA will use the GIS database as one of the tools for assessing permit applications as well as for assessing the need for future changes in permitting or land use classifications.

GRDA will update Project and resource databases as needed to assure they are reflective of field conditions. As long as resource and use criteria as established by this SMP do not change, GRDA will not seek additional review by FERC.

12.2 Shoreline Management Classification Monitoring

As demographics and user groups change within the Project Vicinity and development of areas around the Project proceeds, the SMC may require revision. Some shoreline areas may no longer support additional development while other areas may experience shifts in demographics that require adjustment of allowable uses. As patterns of development change, some areas may require the reevaluation of their designation or the creation of new SMC.

To maintain the continued relevance of the SMP, GRDA intends to review the Land Use Classification mapping, the SMP and the associated permitting programs every six years. The six-year review timeframe allows GRDA to assess issues that may arise because of development around the reservoir. A longer period may not react to shifts in use while a shorter period may not permit meaningful analyses of cumulative affects. This review process provides a means for GRDA to adopt or replace policies in the SMP. At least six months prior to preparing a report on the SMP review, GRDA will publicly notice the process and request comment from the public. Changes in the tracking of SMP activities as described in Section 11.1 or that simply require changes in the mapping, or other minor changes such as new development within existing subdivisions adjacent to the Lake, or changes in recreational uses and access will be noted but are unlikely to warrant amendments to the SMP. Major changes in land use patterns or new uses of the Project may require further evaluation for new management strategies or may even require amendment of the SMP. GRDA will provide FERC a report on the evaluation of the SMP no later than the six-year anniversary following approval of the SMP and every six years thereafter.

12.3 SMP Amendment Process

Major changes in development patterns, land uses, demographics, socioeconomics or other factors within the Project Vicinity may, over time, change assumptions presented in this SMP. GRDA has established the following criteria that may indicate the need to address amendment of the plan.

Major Commercial Additions or New Commercial Uses: GRDA will continue to monitor growth and development patterns around the lake and compile data that may be useful in the event an SMP amendment becomes necessary during the review period. While the northern and eastern shorelines of the lake currently do not present the level of heavy development found in the southern region, or support major commercial uses, GRDA recognizes the potential for growth and changes in overall development patterns and expectation. These areas may warrant special attention in the future.

Large Parcel Land Sales/Major Changes in Land Ownership: In the event that major parcels of previously undeveloped land change ownership, with an identifiable purchaser and new intent for use, GRDA may review both the SMC designation, as well as the allowable uses within the area to determine if amendments to the SMP are warranted.

Changes within the Management Classifications: GRDA based the current SMC on existing environmental, social and aesthetic resources. Some of these classifications are dynamic by nature. It is possible that during the review period new concerns such as wetland habitat may change, thereby necessitating the re-evaluation and possible amendment of SMC as well as the associated allowable uses.

In the event that one or more of the above conditions occurs, or cumulative effects of activities within the Project appear to affect the effectiveness of the SMP, GRDA will begin internal review of the existing plan. Should GRDA determine that major changes to the land use classification mapping (through definition and assignment of new SMC or reassignment of existing SMC) are necessary, GRDA will petition FERC to amend the SMP.

Upon determination of the necessity to amend the SMP, GRDA will publicly notice its intent, and provide a public forum for public comment, either through public meetings or through Board meeting discussions (which are open to the public). Because a revision or modification of the SMP requires FERC approval, any proposed amendment will follow FERC procedures.

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APPENDIX A

CONSULTATION DOCUMENTATION:
COMMENTS; RESPONSE TO COMMENTS

§ 1.0 Public Comments

§ 1.1 Summary of Written Public Comments	
Total Written Public Comments	**385**
Support for Final SMP Draft	63 % (243 commenters)
Opposition to Final SMP Draft	37% (142 commenters)

Stated Reason for Opposition	
Too Restrictive (e.g. objections to Stewardship areas around Grove)	93%
Too Relaxed (e.g. objections to revised land classifications, lack of residential only areas)	7%

§ 1.2 Stakeholder Working Group Committee Assignments		
Land Use Classification	**Allowable Use Committee**	**Permitting Committee**
Wayne Blair	John Ballard	Wayne Blair
Mike Brady	Mike Brady	Mike Brady
Doss Briggs	Doss Briggs	Kent Carson
Lea Carson	Joe Chouteau	Alan Doty
Russell Earls	Stan Jones	Debbie Doty
Rudy Herrmann	Jack Lenhart	Bob Green
Jerry Kropff	Joseph McCormick	Gene Hale
Mark Osborn	Carol Owens	Terry Hallauer
Cliff Sager	Cliff Sager	Flint Kyler
Virginia Starr	Matt Starcevich	Jack Lenhart
Sherry Whiteley	Mike Williams	Ron Miller

§ 1.3 Comments of SWG Members Mark Osborn, Jack Lenhart, Doss Briggs, Kevin Stubbs, Mike Brady, Joseph McCormick, and Joe Chouteau	
Comments	**GRDA Response/Pertinent Section of SMP**
Issue: Shoreline Classifications **Comment:** The working committees strongly supported the use of a "Limited Use/Residential" and "Multi-Purpose/Commercial" shoreline classifications as suggested in the "Guidelines for Development of a Shoreline Management Plan" published by FERC. In addition, it was obvious to a majority of the committee members that several areas of the lake were at the point of being fully developed and we supported a "Fully Developed" category as well. These categories were changed to a single	The SWG was an advisory group designed to assist in development of the SMP by providing personal and collective experiences and input. While the SWG and its individual members made valuable contributions, their individual and collective opinions and recommendations were advisory only and were not binding. It is also important to note that there was considerable disagreement among the SWG members on many issues.

"Responsible Growth" category without the knowledge or support of the committees. Few, if any, of the FERC-approved comparative SMP's from other projects reviewed by the applicable committees failed to recognize distinct classifications along the lines of our recommendations. Many reserved a "Responsible Growth", or equivalent term for areas where extensive development and congestion was already present. A plan without clear zoning classifications invites controversy and, by definition, is arbitrary and capricious. In addition, the consultants from Kleinschmidt advised us that FERC was unlikely to approve a plan without a "Limited Use/Residential category."	
However, in the final version of the SMP, the comments made at the public meeting are given credence over the eighteen-month long work of the committees. For example, the GRDA accepts the comments on page 12 at face value: "the majority of commentators argued that the limited/residential classification unnecessarily restricted the potential for future commercial development around the lake".	In drafting the final SMP, GRDA considered the input and recommendations of all interested stakeholders, including all members of the SWG, the public, and resource agencies.
It is important to put these comments into proper perspective. The GRDA is anxious to point out the number of people (734) and the nature of their comments made at the public meetings. Notification of these meetings was provided only to those with dock permits and in free weekly newspapers around the lake area. Notification was not provided to the Resource Agencies, even those that were a part of the Working Committees or the various fish and wildlife federations and it was not posted in the Tulsa World or Daily Oklahoman (Oklahoma City) newspapers for either of the meetings held in those respective cities. It is of little surprise that the comments generated were pro-development or NIMBY-driven and were critical of the draft SMP. Rusty Fleming and the G.L.U.E. organization	GRDA publicized the public hearings extensively through a variety of media. It ran newspaper advertisements in several lake area publications including the Miami *News-Record*, the Grove *Sun*, and the *Chronicle of Grand Lake*. The hearings also received news coverage by these publications. GRDA posted notices about the hearings on its website and sent email notifications to over 1,000 stakeholders who signed up to receive news and announcements regarding lake management issues.

generated additional rhetoric primarily around the issues of the Vegetation Management Plan and limitation of development. As it turns out, Mr. Fleming is a paid employee of the G.L.U.E. organization whose major contributors are marina owners and commercial developers on the lake. His mailing list includes most of the GRDA executive staff, although he was unwilling to divulge the individuals who were paying members of his organization. The SMP, even in light of the above, contains contradictions. The introductory section of the revised version of the SMP says that "the majority of the shoreline of the lower section of the Lake is highly developed" and refers to "a high concentration of private docks". Yet the SMP contradicts itself by saying "no shoreline areas are completely built out." In the executive summary the SMP states that there is "Too little shoreline for future commercial development." However, the allocation chart depicting current use (page 31) shows that only 0.3% (3.6 miles) of the 1200 mile shoreline is now in commercial development. The Working Committees classified 15% (180 miles), or a 5000% increase as a potential area for commercial development. Apparently, this was felt to be too restrictive by the GRDA staff. In respect to residential areas, 9.3% of the shoreline is currently classified as residential. Is it really necessary or appropriate to expand that potential to 70%, while ignoring the rights and needs of non property-owning lake enthusiasts? As for the concept of "Fully Developed", in the Adaptive Management section on page 59, one finds the following statement: "Available data do not support listing any area of the lake as requiring special management because of negative environmental or social effects resulting from over-development or over-use." Yet there are special rules in place on, for example, Duck Creek and Gray's Hollow	As discussed in greater detail below, the commenters apparently do not understand the purpose and function of the Adaptive Management provisions found in SMP § 8.0. When read in context, the quoted statement is properly understood to mean that special management is not necessary beyond that which is currently in place or that is otherwise provided for in the SMP.

because of the over-use of those popular locations on Grand Lake. In response to the Working Committees preference for a "Fully Developed" shoreline classification, the staff completely removed this classification, stating that the new Carrying Capacity Study indicates that there are no areas of Grand Lake which are at greater than 11% of capacity on holiday weekends. While we will discuss the integrity of the Carrying Capacity Study in section 4 of these comments, this is obviously inconsistent with the experience of most of our committee members. **Recommendation:** Utilize the Shoreline Classifications as developed by the Working Committees in the SMP process. Add the classification of "Responsible Growth" for those areas already known to be in need of special monitoring including mitigation if new development is approved. Expand newspaper advertisement for all official GRDA notices to include the Tulsa and Oklahoma City major newspapers. Send specific notice to all Resource Agencies as well as the applicable wildlife and fishing NGO's. Limit commercial development to a reasonable percentage increase compared to current levels realizing that these developments take up a disproportionate amount of recreational water space which will then no longer be available to other stakeholders.	GRDA will maintain a list of persons and organizations interested in receiving electronic notification of meetings/hearings. It will send press releases to media in Tulsa and Oklahoma City.
Issue: Habitable Structures **Comment:** Few elements of the SMP garnered more discussion from the Working Committees than "Habitable Structures". The experience of other lakes, FERC policy, USACOE SMP's, Oklahoma Water Resources Board comment, enforcement and oversight, as well as policy for existing unpermitted habitable structures were discussed extensively. Consistently and decidedly, the Committees recommended against permitting habitable structures and	See generally SMP § 10.6.1 At the time the comments were submitted, no decision had been made on habitable structures, as GRDA was awaiting the results of an environmental assessment on the potential impacts. Since then, GRDA received this report which concluded that Grand Lake can accommodate current and future structures.

recommended permitting only those which had been legally permitted as such. According to GRDA staff, none of the existent structures on the lake had been permitted as habitable structures. It was also felt that these structures are aesthetically unpleasing and they detract from the ability of sportsmen to use the lake, especially for night fishing, which is extremely popular on Grand Lake. The implication that they were "strongly supported" in the public meetings is misleading, as this statement is based upon a separate survey completed by twenty-eight people of whom only 12 out of 28 were supportive. The majority of support for these structures comes from those who currently own them without proper permits or commercial developers who see the advantage of a lake home sale without a land purchase. **Recommendation:** Provide clear language that "Habitable Structures" are not permissible on Grand Lake. Those now existing may be grandfathered in if they were previously permitted specifically as a habitable structure. If only permitted as a dock, they may remain as a dock and be given 24 months to remove umpermitted elements and be inspected by the GRDA. At the end of this period, the GRDA should have a complete list of where any legally grandfathered structures are located and should require annual inspections of these units thereafter.	The SMP states: "While some citizens believe the structures are inappropriate, others strongly support allowing them for both private residential structures or for commercial use." GRDA does not believe this statement gives rise to an implication that habitable structures were strongly supported in public meetings. Rather, it is a description of the degree of passion expressed on the issue.
Issue: Resource Inventories **Comment:** The ODWC and USFWS conducted a very preliminary study of sensitive resources at no cost to the GRDA. The GRDA refused to fund more appropriate and thorough surveys. Kleinschmidt staff repeatedly told the committees that "this is not a science project" and insisted on using the limited and dated existing information. For example, the GRDA refused to fund an update of the National Wetlands Inventory maps, which are nearly 30 years old, in spite of the offer by the USFWS	Since 2004, GRDA has dedicated significant financial and human resources to ecosystems management generally and development of the SMP specifically. It has funded numerous studies and has created the Dept. of Ecosystems Management.

to do this for their cost of $2000. The lack of reliable information was a consistent problem throughout the process. **Recommendation:** Authorize and direct the Resource Agencies to provide a proper survey and update of environmentally sensitive project resources at a fee to be negotiated between the parties.	
Issue: Carrying Capacity Study **Comment:** Although contracted to professional firm, Kleinschmidt, at $41,000 plus expenses of $2,800, the area delineations, sampling times and data collection all appeared to be designed to create the impression of a lower level of lake use. In particular, the avoidance of methodology used in the 1996 Study prevented any comparative analysis of the trends identified and slated for careful monitoring in the 1996 Study. The Carrying Capacity Study also did not meet the GRDA contract conditions that clearly stated the Resource Agencies would approve the sampling method in advance. The USFWS and ODWC were never contacted. The calculation of usable acres for pleasure boating was incorrect, and did not delete: 1) No wake zones, 2) stationary structures, and 3) proper 150' Coast Guard buffer requirements plus the 1/3 cove rule before calculating usable water for power boating capacity calculations. These factors lead to an underestimation of current use. The sampling did not begin until much of the summer was past and the number of samples (or flights) was far too low to support any meaningful statistical analysis or decisions. The data collected did not meet contract conditions of holiday over flights, using times in the morning or early afternoon, as well as using the Columbus Day weekend as a holiday weekend. In addition the data is numerically inconsistent in multiple areas. Finally, the effect of boat size was not factored in to density of use calculations. It is our opinion and that of Oklahoma State Professor, Dr. Lowell Caneday, who authored	In a letter dated February 15, 2008, FERC advised that the carrying capacity study was sufficient and does not need to be repeated or expanded.

the Recreation Plan now in effect since 1996, that the recent Carrying Capacity Study underlying this SMP is so fatally flawed as to be unusable as a management tool. **Recommendation:** Repeat the Carrying Capacity Study under the terms of the original contract with Kleinschmidt with the proper input from the Resource Agencies and provide the opportunity for the Working Committees to review the results.	
Issue: Permitting Issues **Comment:** This topic was never given to the Working Committees for discussion or input. The committees would have preferred to provide input on permitting as this is where the SMP transitions from intent to reality and confusion is possible if terminology and intent are not consistent. **Recommendation:** Provide existing Commercial Dock Permits, Residential Dock Permits, Dredging/Excavation Permits and Vegetation Management Permits to the Working Committees for review and reconciliation of the terms and policies of the Permits to the terms and policies of the SMP.	Upon approval of the SMP by FERC, GRDA intends to review, revise, and make additions to its permitting rules and procedures for the purpose of implementing the SMP. The commenters, as members of the public, will have ample opportunity to provide comments on these issues at that time.
Issue: Vegetation Management Plan **Comment:** While the source of much of the controversy surrounding the SMP, the VMP was conceived and implemented entirely by the GRDA staff. We were only asked for input after it had been instituted, prior to it being placed in the SMP. We are empathetic to the problems of instituting such a plan on an existing lake, but adamant in our support for a rational plan to protect the project boundary. It is of note that the focus of such plans is for the preservation of the appeal of the lake for those who look at the lake from the water in (sportsmen and recreational users), and not necessarily from the shoreline out (adjacent property owners).	See generally SMP § 10.6

However, what was most interesting about the interchange between the committees and the GRDA executive staff, was their defense to the crowd that such a plan had only been put in place because someone had reported them as failing to properly oversee shoreline VMP issues on the lake and the penalties and consequences had become too significant for them to ignore. This responsibility, no matter how unpopular, cannot be abdicated to the adjacent landowner without firm, appropriate and enforceable guidelines which protect all other stakeholders on the lake. **Recommendation:** Submit the VMP to the Resource Agencies (USFWS, ODWC, USACOE, and OWRB) for comment and revision, including shoreline classification-specific criteria.	The Vegetation Management Plan has been submitted to the agencies for comment. GRDA's response to those comments is included in this appendix.
Issue: Adaptive Management Techniques **Comment:** The document states, the "SMP provides support and rationale for consistent land management policies and permitting decisions." Yet the "adaptive management" approach advocated in Section 8 provides absolutely no consistent land management policies. Other than to identify certain environmentally sensitive areas, which the GRDA must do under Federal law, the SMP provides virtually no rationale to guide future development. GRDA makes the case for a need, but does not follow up that need with a plan. "Adaptive management" is a suitable approach when goals and objectives are clearly established. Regrettably, this SMP does not establish those goals and thereby becomes merely a vehicle for establishing the status quo. Along these lines the committees were not willing to simply "discard" all data and all trends identified since the 1996 Recreation Managment Plan was written. The Committee pressed for review of VERP- type monitoring data obtained from '96 to '07. Kleinschmidt refused to include an analysis of the last 11 years (even in areas specifically identified for more careful monitoring in Recreation Plan filed in 1996). Kleinschmidt was only willing	See generally SMP § 8.0 Apparently, the commenters are confused as to the purpose of SMP § 8.0 and its function in the context of the SMP as a whole. The "Adaptive Management" provisions are not intended to be the standard operating procedure for all management decisions. Rather, § 8.0 is intended to provide GRDA a mechanism for supplemental monitoring and management in response to extraordinary situations where existing SMP provisions do not provide adequate guidance or protection. Further, it enables GRDA to take corrective action without having to amend the existing SMP.

to include policy for monitoring the next six years, and a review in 2013 (which would make a total of seventeen years between the last review and next scheduled policy adjustment in lake management). If you don't know where you are going, any road will take you there. **Recommendation:** Clearly define goals and methods of measurement which are easy to understand and easy to oversee. Include clear enforcement language for policy violations and a clearly stated appeal process.	
Issue: Water Quality/Heavy Metals Testing **Comment:** The SMP draft makes a compelling case for action on a variety of serious water quality concerns impacting Grand Lake. Yet, other than some guidelines under the Vegetation Management section, GRDA regrettably does not aggressively deal with those concerns, nor make the connection that the degree of development on Grand Lake contributes to those water quality problems. These are not simply potential future problems. Today, many portions of Grand Lake do not meet their beneficial uses, including those of "primary body contact." Recent assessments by the OWRB, USFWS, and USGS provide ample justification for stronger measures involving phosphorus inputs, dredging, heavy metals testing, whole fish testing, and sedimentation due to shoreline clearing, dredging etc. The results of these tests and recommendations were reported to FERC in separate letters from these agencies in July of '06. This is echoed in the SMP: Specifically, "concentrated development around the Lake, including resorts, has exacerbated phosphorous inputs." Similar concerns are raised about sedimentation. The plan does not provide definitive language about the requirement for such testing, nor does it specify who shall pay for, direct, and interpret the results of any such tests. By not taking action decisive action	See generally SMP § 10.6.2 GRDA shares the commenters' concern for water quality issues and their commitment to action on the same. However, GRDA does not believe the SMP is the proper venue for establishing detailed guidelines and requirements for the variety tests mentioned. Rather, these issues are better addressed in other plans such as the proposed Grand Lake Watershed Conservation and Restoration Plan, and GRDA's administrative rules. That being said, the SMP requires all dredging applicants to provide sediments samples to the ODEQ laboratory for metal analysis and to a USFWS approved lab for particle analysis. Resource agencies will be provided results and the opportunity to comment. The SMP also identifies sample requirements and toxicity guidelines.

today, these problems will only become worse. **Recommendation:** Identify sampling intervals, methods, and agencies responsible for each type of testing through consultation with the Resource Agencies. Do not allow applicants to provide their own testing when required for permits.	
Issue: Density Model Calculations **Comment:** A numerical model using available G.I.S. data to calculate percentage of shoreline obstruction criteria (trigger points) for each Classification was suggested and preferred by the Working Committees. The use of such a model would avoid the arbitrary and capricious use of permitting and allow GRDA unbiased justification for its decisions within each shoreline classification. Kleinschmidt informed the committees that the GRDA staff would not consider density modeling for the stated reason that they felt it would be too hard to implement. We feel that the because the data required for density modeling is GIS-based, and already exists, the objection to cost of implementation is unfounded. The cost of density modeling is negligible and carries the benefit of providing a fair and equitable solution to the current arbitrary and capricious permitting by replacing personal influence and financial gain with visual, non-biased and reprouducible data in the application process. **Recommendation:** Incorporate the use of density model criteria for each land use classification and use these criteria in the permitting process as a fair and non-capricious method for qualifying new permit applications.	See generally SMP §§ 7.2 & 10.2 While the SMP does not identify specific density model criteria, it does require review and consideration of current use concentration and the effect of a proposed use on the immediate area.
Issue: Removal of Stewardship Areas **Comment:** Areas of a known sensitive nature were removed from the current Land Use Classification maps without knowledge of the committees or Resource Agencies most capable of their proper identification. In	GRDA sought to eliminate the opportunity for 'arbitrary and capricious' decisions by basing Stewardship Areas largely on land identified by USFWS as sensitive in its National Wetland Inventory.

addition, the SMP contains an obvious misstatement of fact when it refers to the 1630 acres of hardwood forest presently under management by the GRDA as a wildlife management area. The GRDA to date has been unable to locate, much less manage, such an area. **Recommendation:** Replace areas designated by the Resource Agencies as "Sensitive" and subsequently removed by GRDA staff back into the "Stewardship" classification until new surveys and maps can be drawn incorporating the recommended updated information from the Resource Agencies.	

§ 1.4	**Comments of SWG Member Rudolf Herrmann**
Comments	**Response/Pertinent SMP Provision**
Various comments in the introductory section of the Shoreline Management Plan suggest that the GRDA understands the issues on Grand Lake and therefore should feel compelled to provide responsible leadership in dealing with these issues. Yet other statements in the introductory section and throughout the document suggest that the GRDA is favoring commercial development at the expense of other shoreline uses. For example: . . . "Too little shoreline for future commercial development." This statement is contradicted by data provided in the SMP that only 0.3% of the available shoreline is utilized for "commercial and services". Certainly, tripling or even quadrupling the amount of shoreline available for "commercial and services" would accommodate future growth. This would amount to 0.9% to 1.2% of the shoreline being devoted to that land use. The much-criticized SMP draft that was based on input from the stakeholder working groups allowed 16.5% for multi-purpose and commercial use. This	

provides substantial amounts of shoreline for future commercial growth. The GRDA accepted the comments on page 12 at face value: "the majority of commenters argued that the limited/residential classification unnecessarily restricted the potential for future commercial development around the lake". Why would anyone other than commercial users "really" make those comments? The GRDA needs to understand the legitimacy and background of those comments before taking action. And once again, does dedicating 16.5% of the shoreline to multi-purpose and commercial use unnecessarily restrict future commercial development when 0.9% to 1.2% allows for a tripling or quadrupling from current levels? By categorizing some 70% of the lake as "responsible growth" opens up 70% of Grand Lake shoreline to commercial development. Is that REALLY what Grand Lake constituents want?	
"SMP provides support and rationale for consistent land management policies and permitting decisions." Yet the "adaptive management" approach advocated in Section 8 provides absolutely no consistent land management policies. Other than to identify certain environmentally sensitive areas, which GRDA must do under federal law, the SMP provides virtually no rationale to guide future development. So GRDA makes the case for a need, but does not follow that up with a plan. "Adaptive management" is a suitable approach when goals and objectives are clearly established. Regrettably this SMP does not establish those goals so that the SMP is a rationale for maintaining the status quo. To quote an oft quoted saying, "Any road will take you there if you don't care where you end up."	See generally SMP § 8.0 The "Adaptive Management Strategies" of § 8.0 are not intended to be the standard operating procedure for all management decisions. Rather, § 8.0 is intended to provide GRDA a mechanism for supplemental monitoring and management in response to extraordinary situations where existing SMP provisions do not provide adequate guidance or protection to a given area. Further, it enables GRDA to take corrective action without having to amend the existing SMP.
The SMP draft makes a compelling case for action on a variety of serious water quality problems impacting Grand Lake. Yet, other than some guidelines under the Vegetation	See generally SMP § 10.6.2 GRDA shares the commenter's concern for water quality issues and their commitment to

Management section, GRDA regrettably does not aggressively deal with those concerns, nor make the connection that the degree of development on Grand Lake contributes to those water quality problems. These are not potential future problems. Today, many portions of Grand Lake do not meet their beneficial uses, including those of "primary body contact." By not taking action decisive action today, these problems will only become worse.	action on the same. However, GRDA does not believe the SMP is the appropriate venue for establishing detailed guidelines and requirements related to water quality issues. Rather, these issues are better addressed in other plans such as the proposed Grand Lake Watershed Conservation and Restoration Plan, and GRDA's administrative rules. The SMP requires all dredging applicants to provide sediments samples to the ODEQ laboratory for metal analysis and to a USFWS approved lab for particle analysis. Resource agencies will be provided results and the opportunity to comment. The SMP also identifies sample requirements and toxicity guidelines.
The introductory section says that "the majority of the shoreline of the lower section of the Lake is highly developed" and refers to "a high concentration of private docks". Yet the SMP contradicts itself by saying "no shoreline areas are completely built out." Which is it?	
In the Adaptive Management section on page 59, one finds the following statement: "Available data do not support listing any area of the lake as requiring special management because of negative environmental or social effects resulting from over-development or over-use." Yet there are special rules in place on Duck Creek because of the over-use on that major arm of Grand Lake. From a water quality perspective, many portions of Grand Lake do not meet their beneficial uses and are listed as impaired. This statement on page 59 is not consistent with reality.	When read in context, the quoted statement is properly understood to mean that special management is not necessary beyond that which is currently in place or that is otherwise provided for in the SMP.
While all of the above is problematic, the bigger issue is the public policy decision making framework going forward. To be effective, public policy and corresponding regulations must be predictable, consistent and fair to all. Yet the "adaptive management strategy" is inherently flexible and, as described in the SMP, is not predictable to lake	

users. This amounts to a "case by case" approach in evaluating future uses with the following major shortcomings: 1.)Is not predictable. 2.)Provides no real guidelines. 3.)Is inherently subjective and arbitrary. 4.)Leads to undue influence by a select few, private dealings, and potentially corrupt decision-making. Certainly GRDA has a greater obligation to its Oklahoma constituents than is reflected in the current version of the Shoreline Management Plan.	
Recommendation #1 Utilize the framework of Land Use Classifications as developed by the Stakeholder Working Groups.	
Recommendation #2 Apply Adaptive Management Strategies to those classifications, realizing that there is room for much fine-tuning.	See response above regarding Adaptive Management Strategies.
Recommendation #3 Implement those Land Use Classifications on a "temporary basis, with the understanding that the next six years can be devoted to working out the details in a manner that is consistent, predictable, open, and fair to all.	The SMP is an amendment to GRDA's hydroelectric license and is intended to last for the life of that 30 year license. Any changes to the SMP must be approved by FERC. This is a complicated, difficult process that renders temporary enactment unadvisable.
Recommendation #4 Develop clear strategies and action plans to deal with the water quality problems on Grand Lake.	See response regarding water quality above.

§ 1.5	**Comments of SWG Members Kent & Lea Carson**
Comments	**GRDA Response/Pertinent Section of SMP**
In regard to the Final Draft SMP, I'd like to say that the VMP is very neighbor/adjacent property owner friendly. The tree trimming regulations are right on. The new lawn	See generally SMP § 10.6

regulation is right on. The 20 foot clearing, plus trimming is great. The driftwood clean-up with 30hp heavy equipment is right on. The only thing you could do to make the VMP better is, to send GRDA staff out to do the work!	
In regard to the Land Classification, I believe it is better to start with the lesser regulation as written, than to over regulate prematurely. As time passes, the SMP allows for more restrictive classification through neighborhood request, which is very neighborly. I would encourage registered mail notification of commercial development to all adjoining land owners when commercial entities apply for permits to GRDA. Other than that, it's a document your neighbors can and will support, if my neighbors are any indication.	See generally SMP § 7.0 GRDA has incorporated the suggestion that notification be required for commercial use applicants.
In Oklahoma everyone wears a black or a white Stetson hat. I'm so glad to see that GRDA has buried all their black hats and are now wearing white hats. The last two public meetings on the final SMP, GRDA demonstrated a very pleasant change from adversary to neighbor. Answering all the questions that came up, staying after the program to answer personal land issues, GRDA was very neighbor friendly.	
In Oklahoma everyone wears a black or white Stetson hat. I'm so glad to see GRDA staff has hung-up their black hats and is donning the neighborly white Stetson!	

§ 1.5	**Comments of SWG Member Mike Williams**
Comment	**GRDA Response/Pertinent Section of SMP**
After such a long and oftentimes contentious and lake-threatening process, I cannot adequately express how pleased I am at the final Grand Lake Shoreline Management Plan Draft presented to the Grand River Dam Authority Board of Directors on September 12, 2007. As a member of the Stakeholders Working Group, I admit to much frustration at	

the fact that a small group of people seemed to control the direction of SWG recommendations. I am so pleased that the numerous public hearings and town hall meetings were held, allowing the general public to provide input – and express their displeasure at the earlier drafts. Mostly, however, I am grateful to the GRDA staff for listening to the comments made by stakeholders from throughout the Grand Lake area, and amending the draft to more effectively represent the wishes of those who have lived and loved the Grand Lake life for so many years. The Land Use Classification categories and the related maps are far, far more representative of Grand Lakers' opinions – and responsible growth in the future of the lake. The Vegetation Management is far more user-friendly. It allows necessary maintenance without undue restrictive burdens, while requiring plans – even permitting – for larger projects which need the eye of an environmental expert before unnecessary damage is inflicted. GREAT JOB by those GRDA staff members who worked so hard to hear what the public had to say – and put those wishes in a workable form!	

§ 1.7	**Comments of SWG Member Sherry Whiteley**
Comment	**GRDA Response/Pertinent Section of SMP**
I have read the draft SMP and find it to be adequate to control the undesirable activities, yet lenient enough for property owners and lake users to enjoy a measure of independence. It has been rewritten in the area of shoreline cleanup and property access to be especially useful to keep the shoreline free of trash and debris while preserving the natural beauty of the lake. Knowing that the dynamics are constantly changing and having the ability to adjust with	

these changes is both smart and prudent. My congratulations on a job well done.	

§ 1.8	Comments of SWG Members Alan & Debbie Doty
Comment	**GRDA Response/Pertinent Section of SMP**
Signed petitions in support of Final SMP Land Classifications & Vegetation Management Plan	

§ 1.9	Comments of SWG Member Bob Green
Comment	**GRDA Response/Pertinent Section of SMP**
Signed petitions in support of Final SMP Land Classifications & Vegetation Management Plan	

§ 1.10	Comments of Karl Blade, Shoreline Resident
Comment	**Response/Pertinent Section of SMP**
Issue: Vegetation Management Plan **Comment:** I support the provisions of the current draft SMP that appear to allow adjacent property owners reasonable latitude in landscaping and maintaining the GRDA property between their private property and the lake. It doesn't seem to make sense that shoreline in front of residences must remain "natural," as opposed to neat and landscaped in a manner consistent with an adjacent residence.	See generally SMP § 10.6
Issue: Shoreline Classifications **Comment:** I believe the draft falls short of the public's needs in two areas. The most serious is the lack of designated residential areas, as opposed to the proposed mixed commercial	See generally SMP § 7.0 It is important to remember that the SMP only governs the use of GRDA property and GRDA has no authority to regulate the use of private property. Thus, the SMP could not prohibit

and residential land use classification. Allowing business use next to residences on a case-by-case basis to be decided by the GRDA board or some other GRDA-appointed authority without strict, well-understood rules is an invitation to capricious and arbitrary results. I do not want the GRDA, or any other body, to have the authority to allow some kind of business (a strip club, or even a bar and grill?) to locate next to my Grand Lake home. In fact, I would expect that if this specific question was put to the residents of Grand Lake, which it has not, overwhelming support would be found for protecting the residential nature of residential areas through a land use classification.	businesses from locating next to a home. The SMP provides protection for residential areas including the Allowable Use guidelines of § 7.2, the site specific analysis identified in § 10.2, and the requirement that surrounding land owners and the public at large be provided notice of proposed new commercial uses.
Issue: Habitable Structures The second deficiency in my view is the lack of a prohibition of further development of habitable structures over the water. I realize that the GRDA chose to take this issue out of the SMP process. This is in fact an important issue, and deserves to be addressed within the SMP in an unambiguous manner.	See generally SMP § 10.6.1 No decision has been made on habitable structures, as GRDA is awaiting the results of lake wide environmental assessment of the potential impacts. GRDA does not believe it would be prudent to make a decision prior to review of this study.

§ 1.11	**Petition #1 in Support of SMP Final Draft**
We, the undersigned stakeholders, do strongly urge the GRDA Board of Directors and FERC, to support and implement the Final SMP Draft as it is written.	
We support the SMP Final Draft "Land Use Classifications" and "associated GRDA Maps", finding them both acceptable and enforceable.	We support the SMP Vegetation Management Plan for responsible Growth Areas" and "Stewardship Areas" in the Final Draft, finding them both acceptable and enforceable.
142 Total Signatures	**137 Total Signatures**
144 unique commenters	

§ 1.12	**Petition #2 in Support of SMP Final Draft**
I support the following SMP Final Draft Land Use Classifications & accompanying maps, and do strongly urge the GRDA Board of Directors and FERC to accept and implement the following:	I support the following SMP Vegetation Management Plan for Responsible Growth, and do strongly urge the GRDA Board of Directors and FERC to accept and implement the following:

A. Use of the term "Stewardship Areas", which include palustrine wetlands, islands, sensitive habitat, state & federally protected wildlife areas, cultural & aesthetic features. Stewardship Areas now account for 26.27% of Grand Lake on the Final SMP Maps. B. The term "Responsible Growth" which constitutes 71.98% of the Final Draft SMP Maps, contains existing residential and/or commercial use, and limited or undeveloped areas. These areas are available for uses detailed in the Commercial & Residential Allowable Uses Categories of the new Final draft. There are guidelines. This will allow for more responsible growth in the future, and allow the GRDA Board of Directors to supervise such growth without locking out future uses with a broad stroke of the pen today.	A. Some pruning of live growth will be allowed in the "Responsible Growth Areas", by adjacent property owners without seeking a permit for up to 3" in diameter, this follows the rule that has been in place for many years. Removal of woody vegetation less than or equal to 3" in diameter. Trimming of non-woody vegetation to a height of 2". B. The use of "Heavy Machinery" will be allowed by adjacent property owners in Responsible Growth Areas, with a maximum horsepower of without prior approval for driftwood and debris removal. The use of machinery with a horsepower of over 30 hp may be allowed with PRIOR approval from GRDA. C. The section that covers "Natural Disasters and Other Emergencies". This would allow GRDA to issue a general vegetation management permi governing all management activities within a specific area, for a specified period of time, in lieu of requiring individual sit specific permits.
92 Total Signatures	**93 Total Signatures**
94 unique commenters	

§ 1.13	**Petition from Concerned Citizens of Grove***
We the undersigned have serious concerns related to the SMP designation of the Wolf Creek and Carey Bay areas adjacent to the city of Grove. To ensure the future development of the City of Grove we strongly urge GRDA to designate the Wolf Creek and Carey Bay areas as multipurpose.	
129 Total Signatures	
*This petition was originally collected and submitted in response to concerns with the classification of land pursuant to the Dec. 2006 SMP Draft. It has been resubmitted in response to the Final SMP Draft because the same concerns are still present.	

§ 1.14	**Summary of Public Meeting Attendance**	
Cleora	Grove	Total
40	88	128

§ 2.0 Comments of Resource Agencies

§ 2.1 Table of Agencies Requested to Submit Comments	
Resource Agency:	**Comments:**
US Army Corps of Engineers, Tulsa District 1645 S 101 East Ave. Tulsa, Oklahoma 74128-4609	No comments received.
U.S. Fish and Wildlife Service 9014 E. 21st Street Tulsa, Oklahoma 74129-1428	See § 2.2. See also § 1.2.
Oklahoma Dept. of Wildlife 9097 N. 34th St. W. Porter, Oklahoma 74454-2743	See § 2.2.
Oklahoma Dept. of Environmental Quality P. O. Box 1677 Oklahoma City, Ok 73101-1677	The agency responded stating an updated 303(d) list of impaired waters is available.
State Historic Preservation Officer Oklahoma Historical Society 2401 N. Laird Avenue Oklahoma City, Oklahoma 73105-7914	The agency responded stating it had no objection to the plan.
Oklahoma Archeological Survey 111 East Chesapeake - Bldg 134 Norman, Oklahoma 73019-0575	No comments received.
Oklahoma Tourism & Recreation Dept. 120 N. Robinson, 6th Floor Oklahoma City, OK 73102	The agency responded stating it have no objection to the proposed plan.
Bureau of Indian Affairs Cherokee Nation P. O. Box 948 Tahlequah, Ok 74465	No comments received.
Ms. Marion Sizemore Bureau of Indian Affairs Miami Field Office P O Box 1283 Miami Ok 74355	No comments received.
Mr. John Dalgarn Environmental Protection Specialist P O Box 391 Miami, OK 74355	No comments received.
Delaware Co. Dept. of Environmental Quality 2096 South Main Street Grove, OK 74344	No comments received.
Wyandotte Tribe of OK 64700 E. Hwy 60 Wyandotte OK 74370	No comments received.
City of Grove 104 W. 3rd Grove, OK 74344	The City Council passed a resolution requesting reclassification of surrounding land as Responsible Growth.

Oklahoma Water Resources Board 3800 North Classen Boulevard Oklahoma City, OK 73118	No comments received.
Eastern Shawnee Tribe of OK P O Box 350 Seneca MO 64865	No comments received.
Miami Tribe of OK P O Box 1326 Miami OK 74355	The Miami Tribe responded saying it had no objection to the plan.
Modoc Tribe of OK 505 G Southeast Miami OK 74354	No comments received.
Peoria Tribe of OK P O Box 1527 Miami OK 74355	No comments received.
Ottawa Tribe of OK P O Box 110 Miami OK 74355	No comments received.
Quapaw Tribe of OK P O Box 765 Quapaw OK 74363	No comments received.
Shawnee Tribe of OK P O Box 189 Miami OK 74355	No comments received.
United Keetoowah Band of Cherokees P O Box 746 Tahlequah OK 74665	No comments received.
Seneca-Cayuga Tribe of Oklahoma P O Box 1283 Miami OK 74355	No comments received.
Delaware Co. Floodplain Administrator 429 South 9th Street Jay, OK 74346	No comments received.
Office of State Fire Marshal 2401 NW 23rd Street Suite 4 Oklahoma City OK 73107	No comments received.
Mayes County Flood Plain Manager P O Box 95 Pryor OK 74362	No comments received.
Oklahoma Corporation Commission 2101 North Lincoln Boulevard Oklahoma City, OK 73105	No comments received.

§ 2.2	Comments of the U.S. Fish & Wildlife Service and the Oklahoma Department of Wildlife Conservation
Comment:	**Response/Pertinent SMP Provision**
Issue: Shoreline Management Classifications (SMC) **Comments:** The agencies expressed concern with the structure and implementation of the SMC system found in the Revised Draft. The agencies opined that the revised SMC do not provide adequate resource protection and fail to account for areas they believe cannot support additional uses. The agencies were concerned with the areas designated for protection. They thought the Stewardship Areas were too fragmented to provide meaningful protection. **Recommendations:** The agencies recommend a limited/residential classification be included in the SMC. In the proposed limited/residential area, new commercial uses would be prohibited generally while residential uses would be allowed. The agencies recommend that a unique classification for wildlife management areas be created. The proposed classification for wildlife management areas would afford greater protection than the current Stewardship SMC and no development would be allowed	See § 7.0 generally. GRDA believes the revised SMC provides significant resource protection, especially when viewed in light of the clear standards and procedures detailed in other parts of the Plan. See §§ 9.0 and 10.0 generally. Furthermore, the Plan provides for adaptive management practices, monitoring, and amendment to identify and address any shortcomings. GRDA opposes the creation of a limited/residential SMC because restricting areas to only residential uses and excluding commercial uses *per se* does not rationally advance the protection or enhancement of the Lake's recreational, scenic, or environmental resources. Residential uses tend to be less efficient and in the aggregate occupy more space while providing minimized access. Furthermore, residential uses are by their very nature private and thus, do not promote public access. Commercial uses tend to be more efficient by concentrating uses and maximizing available space. Additionally, commercial uses generally provide greater public access and can enhance the recreational value of the lake. GRDA supports the creation of a new SMC for wildlife management areas. The WMA SMC will provide greater protection than that found in the Stewardship SMC. These areas will be maintained exclusively for habitat protection and enhancement and uses inconsistent with

without adequate mitigation and the consent of ODWC.	these purposes will be prohibited. While GRDA will consult with the resource agencies on management efforts, it will not grant decisional control to ODWC as was suggested by the agencies.
Instead of the piecemeal protection of all wetlands, the agencies favored allowing development in wetlands located in areas that are already used and focusing preservation efforts on the north end of the lake. Additionally, the agencies suggested that protection should be focused on fish and wildlife habitat.	GRDA agrees that the benefits of resource management can often be better realized through focusing efforts on larger contiguous tracts located in areas where the external pressures of competing uses are minimized. Similarly, GRDA agrees that efforts to manage habitat in areas that are impacted by competing uses or that are of limited size can have a diminished potential for benefit. Therefore, GRDA intends to consolidate protected areas (Stewardship and WMA) in the northern portion of the lake.
The agencies recommended the use of density model calculations to determine appropriateness of new uses. Under a density modeling system, the amount of obstruction a use causes is the dispositive factor in whether it will be allowed or prohibited.	While the SMP does not identify specific density model criteria, it does require review and consideration of current use concentration and the effect of a proposed use on the immediate area. GRDA believes that a density modeling system is inadequate because it fails to consider other relevant factors such as those identified in §§ 7.0 and 10.0.
Issue: Vegetation Management Plan (VMP) The agencies were concerned that the VMP did not provide adequate resource protection. Specifically, they were concerned that the practices allowed in the Responsible Growth SMC were too extensive for such a large area. Furthermore, They thought the Stewardship Areas were too fragmented to provide meaningful protection.	
The agencies recommended consolidation of Stewardship areas to provide more meaningful protection and creation of an off-site habitat to serve as mitigation.	GRDA has adopted these recommendations.
Issue: Existing Habitat and Carrying Capacity Study The agencies recommended that GRDA conduct more extensive surveys to determine fish and wildlife habitat values for project	GRDA decided not to seek a delay for the purpose of conducting additional surveys. GRDA based this decision on a letter from

lands and shoreline. They also recommended that the existing recreation plan and carrying capacity study be revised and expanded. The agencies recommended that submission of the SMP be delayed one year to allow time for additional studies.	FERC dated February 12, 2008, advising that GRDA efforts in this regard are sufficient and additional studies are not needed at this time.
Issue: Public Hearings **Comments:** The agencies argue that GRDA failed to adequately notify the public and interested stakeholders of the public hearings on the SMP. Specifically, they were concerned that notices of the Oklahoma City and Tulsa meetings were not advertised in the Oklahoma City and Tulsa media markets. Therefore, they claim the public responses do not accurately reflect the opinions of all interested parties. **Recommendation:** The agencies suggest GRDA advertise notice of hearings in the media markets in which the hearing is to take place.	GRDA went to great lengths to gather input on the SMP from the public at large and specific interest groups. GRDA held approximately 27 meetings on the SMP that were open to the public. This includes the SWG meetings, and the larger public hearings. GRDA publicized the public hearings extensively through a variety of media. It ran newspaper advertisements in several lake area publications including the Miami *News-Record*, the Grove *Sun*, and the *Chronicle of Grand Lake*. The hearings also received news coverage by these publications. GRDA posted notices about the hearings on its website and sent email notifications to over 1,000 stakeholders who signed up to receive news and announcements regarding lake management issues. GRDA will maintain a list of persons and organizations interested in receiving electronic notification of meetings/hearings. It will send press releases to media in the appropriate markets.
Issue: Sediment Testing Comments and Recommendations: USFWS's primary concerns related to uniformity, accuracy, and reliability in sediment testing. The agency also wanted more specificity in the SMP's description of the testing protocol. USFWS expressed concern about how samples would be gathered to avoid contamination and whether proper procedures would be followed in collecting samples.	See SMP § 10.6.2 GRDA has revised SMP § 10.6.2 to provide for more uniformity, accuracy, and reliability in sediment testing. Specific provisions include: - Allowing only GRDA approved personnel to gather samples and requiring those samples be gathered according to industry best practices. - Identifying the specific heavy metals for which tests will be conducted. - Limiting testing labs to OWRB and those labs

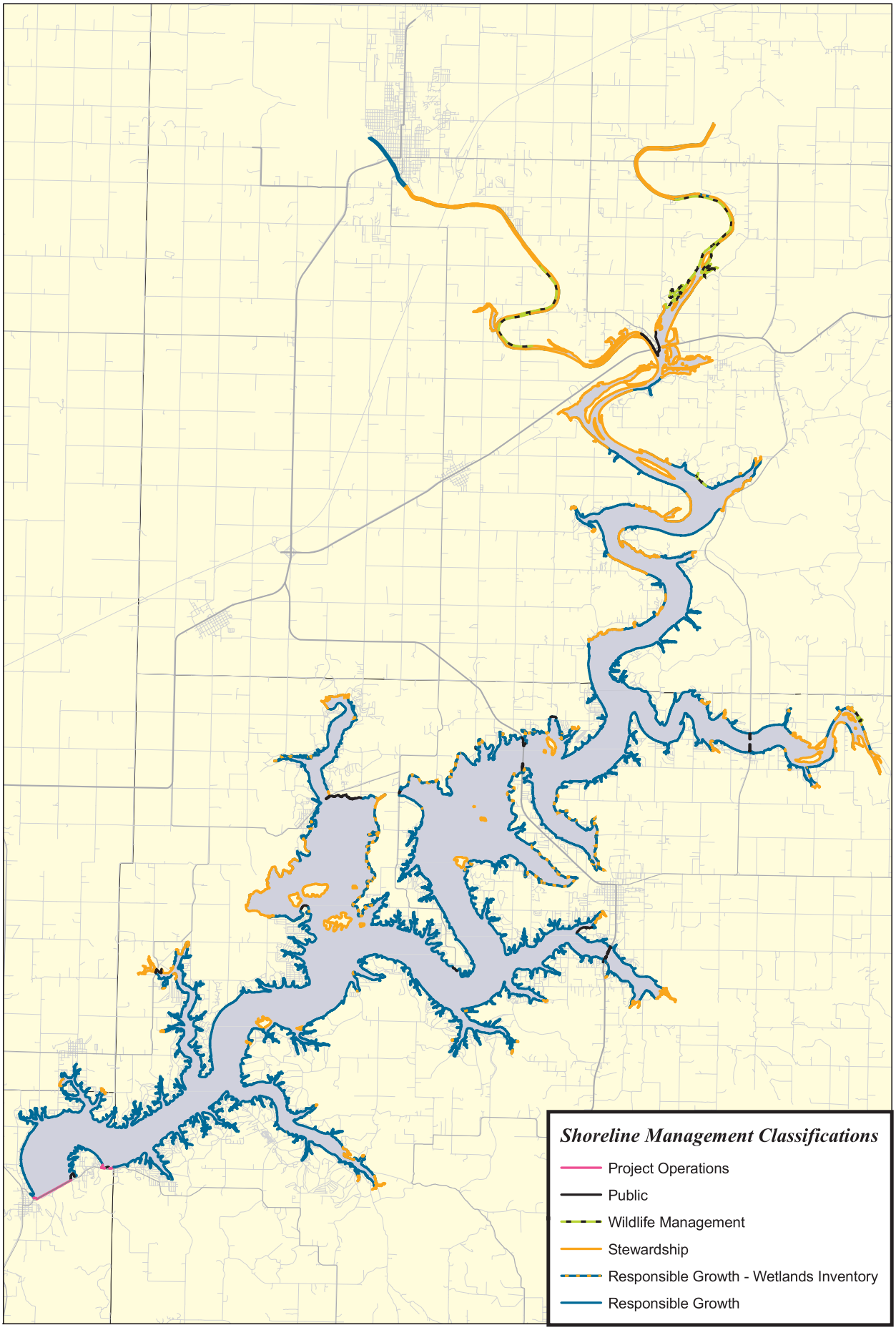
	approved by USFWS.
The agency wanted greater assurance that labs conducting the testing would be qualified and would use the same procedures.	
The agency opposed the homogenization of core samples, and instead wanted cores to tested in such a way that the location of a contaminant in a core could be identified.	The purpose of sediment testing is to determine whether dredging will cause the release of contaminants. Dredging results in the disturbance and mixing of multiple layers of sediment. The testing of non-homogenized cores serves no useful purpose.
The agency recommended that GRDA contract with USGS to conduct a comprehensive, lakewide assessment for heavy metals as opposed to testing specific areas to be dredged.	GRDA believes the most effective testing plan is to test the sites where dredging is to occur as opposed to expending significant resources on conducting the assessment suggested by the agency.

§2.3	**Comments of Grove City Council**
Comment:	**Response/Pertinent SMP Provision**
Resolution #07-009 of the Grove City Council requesting the GRDA declare the shoreline abutting Grove's corporate limits be classified as "Responsible Growth" within GRDA's Shoreline Management Plan.	See generally SMP § 7.0 and Appendix B Maps entitled "Honey Creek" & "Shoal Islands"

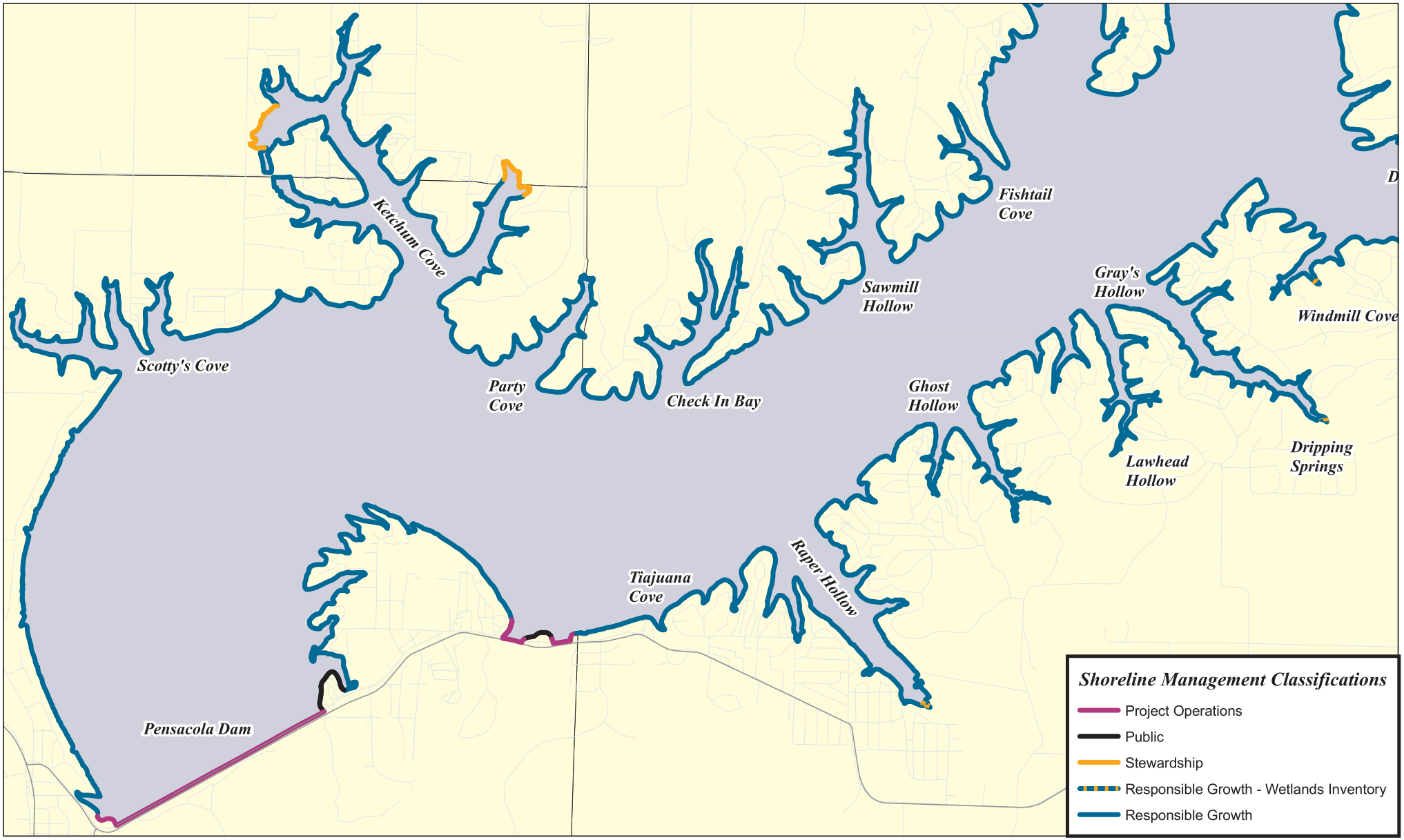
APPENDIX B

SHORELINE MANAGEMENT CLASSIFICATION MAPS

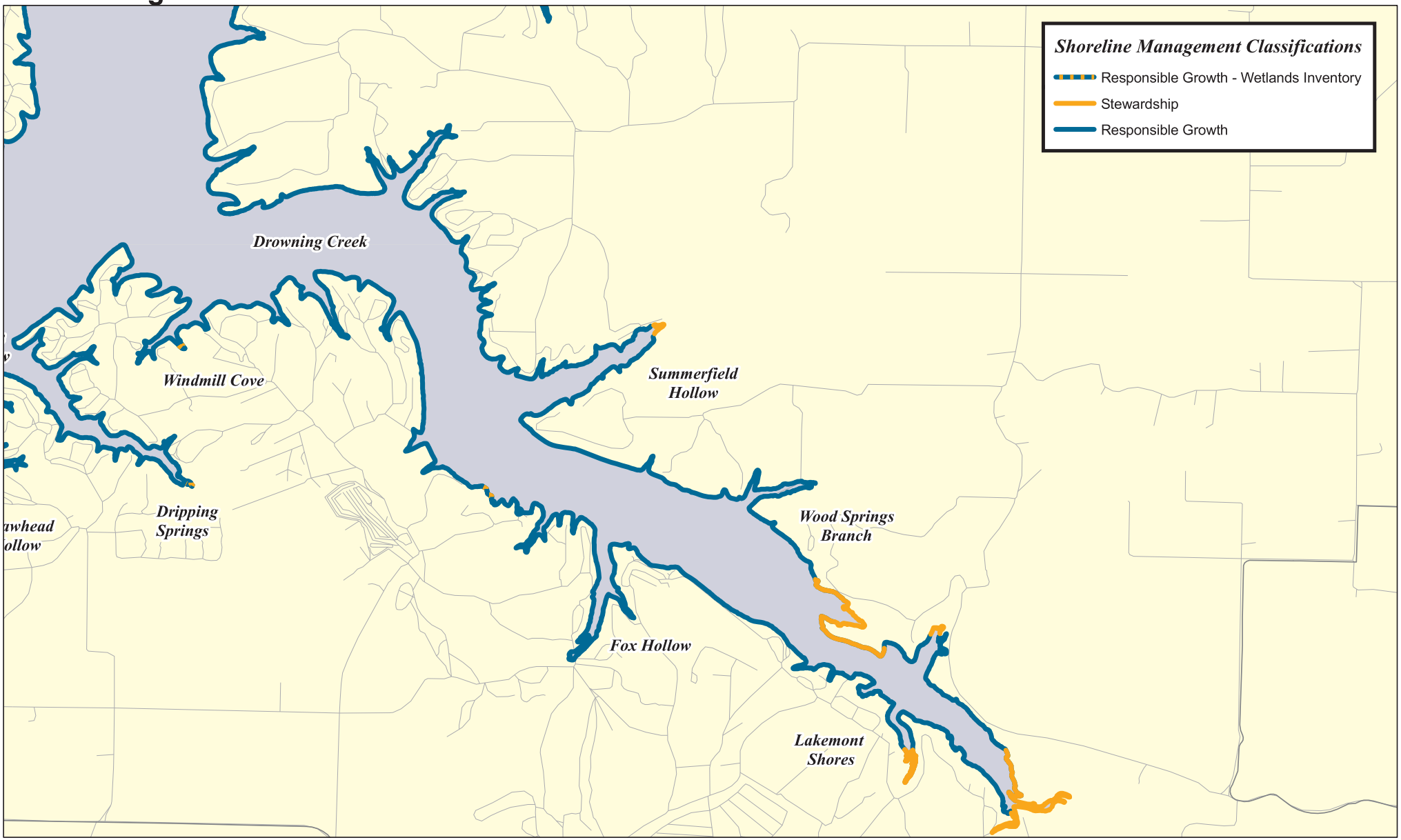
Grand Lake O' The Cherokees



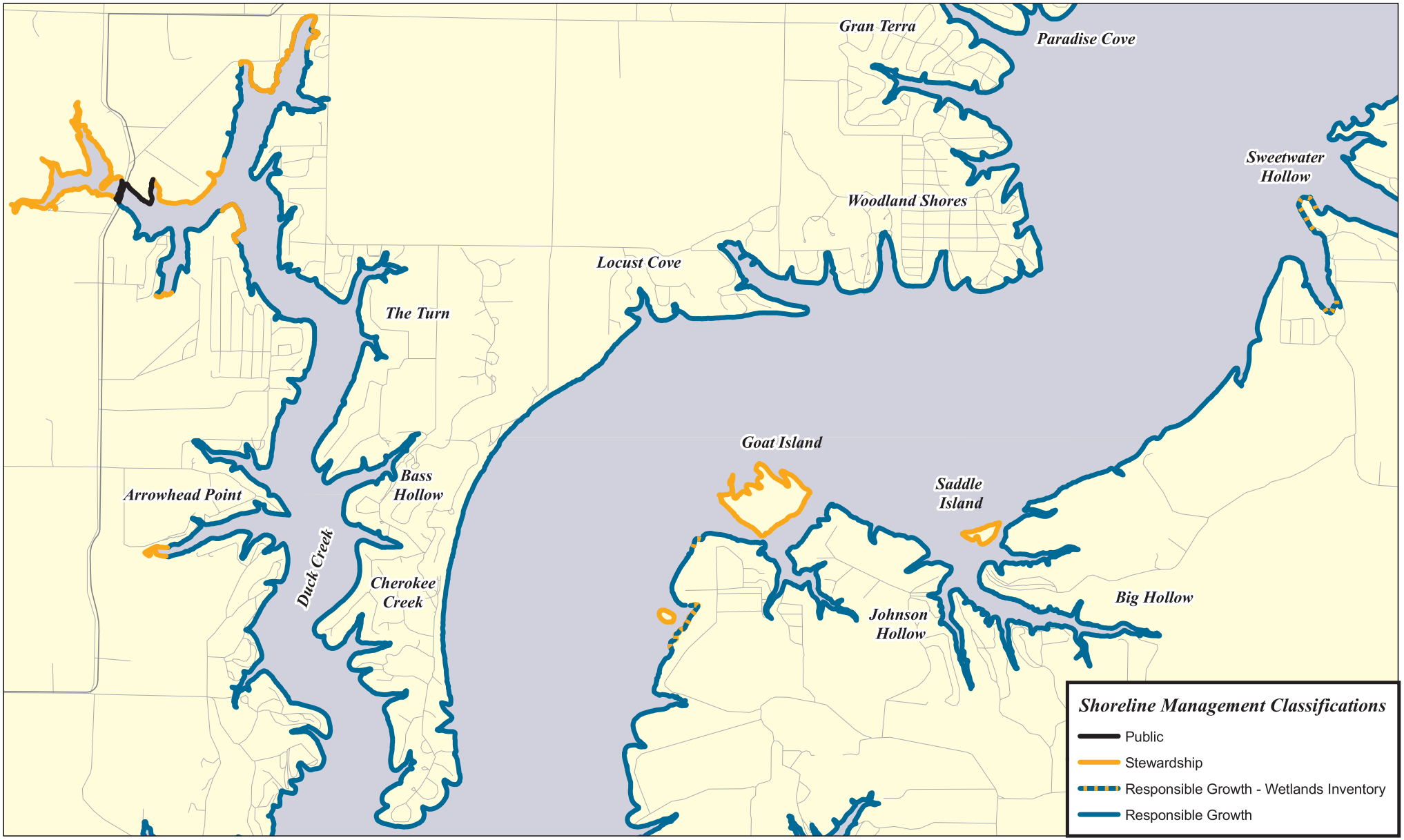
Pensacola Dam



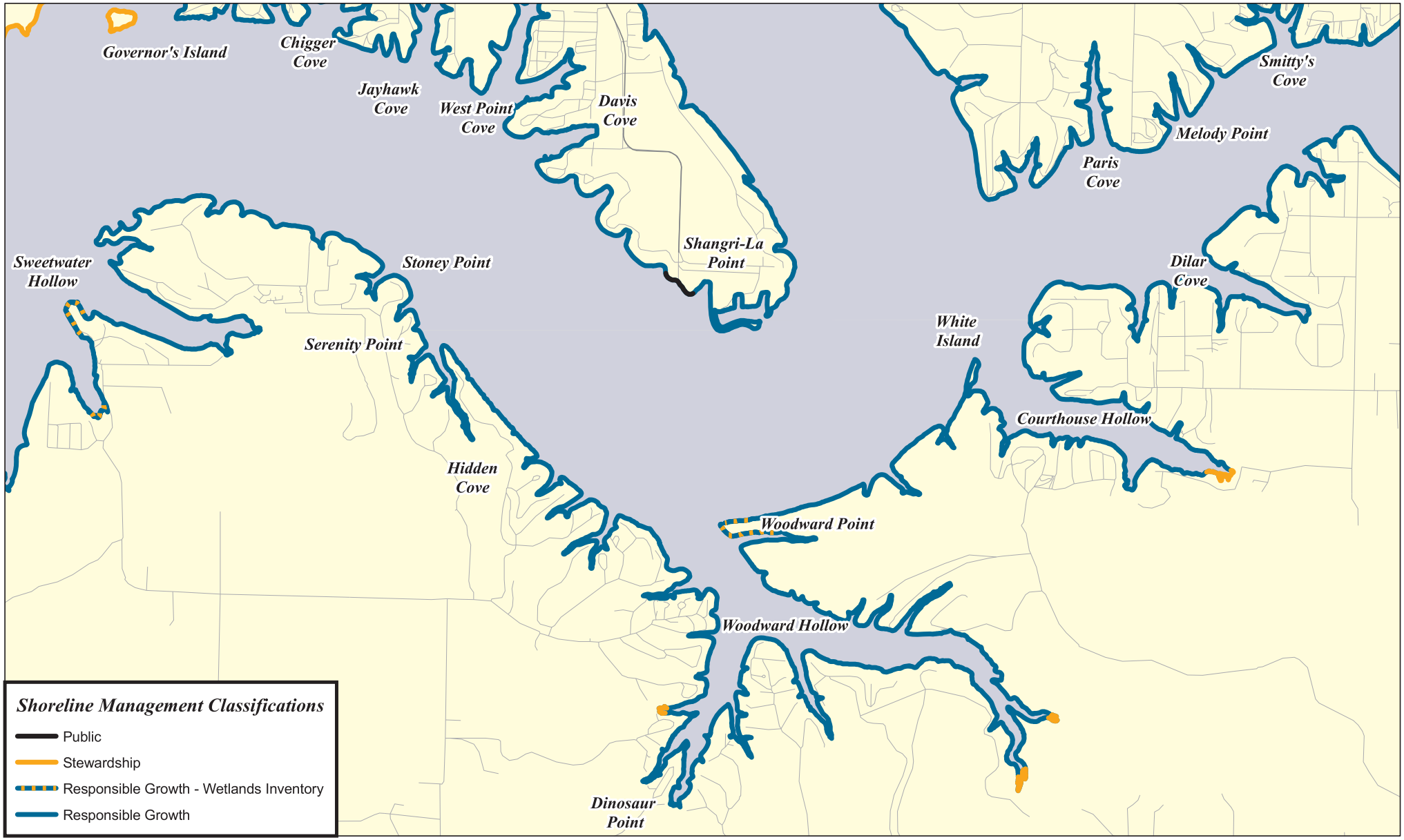
Drowning Creek



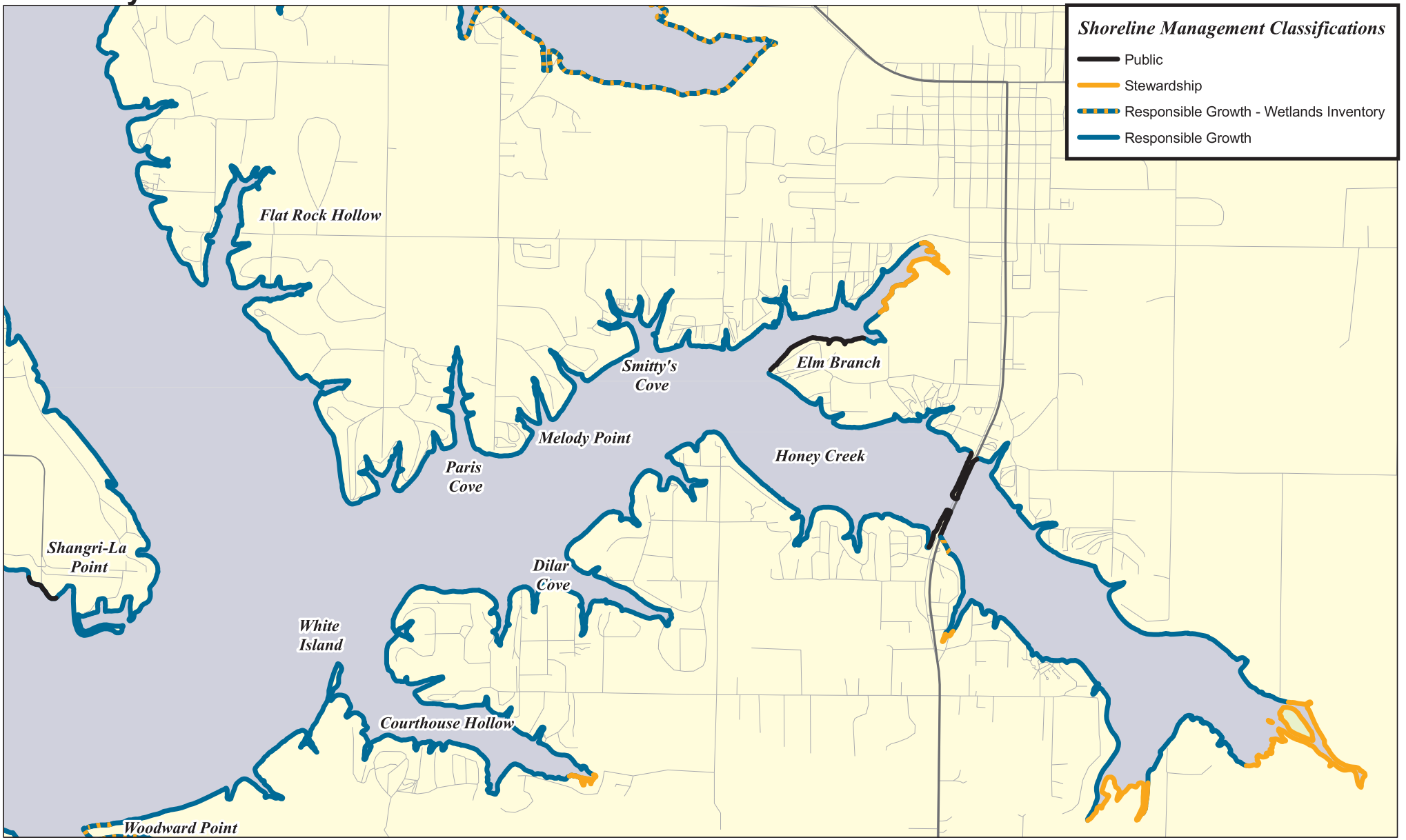
Duck Creek


Gran Terra
Paradise Cove
Sweetwater Hollow
Woodland Shores
Locust Cove
The Turn
Goat Island
Saddle Island
Bass Hollow
Arrowhead Point
Duck Creek
Cherokee Creek
Johnson Hollow
Big Hollow
Shoreline Management Classifications
Public
Stewardship
Responsible Growth - Wetlands Inventory
Responsible Growth

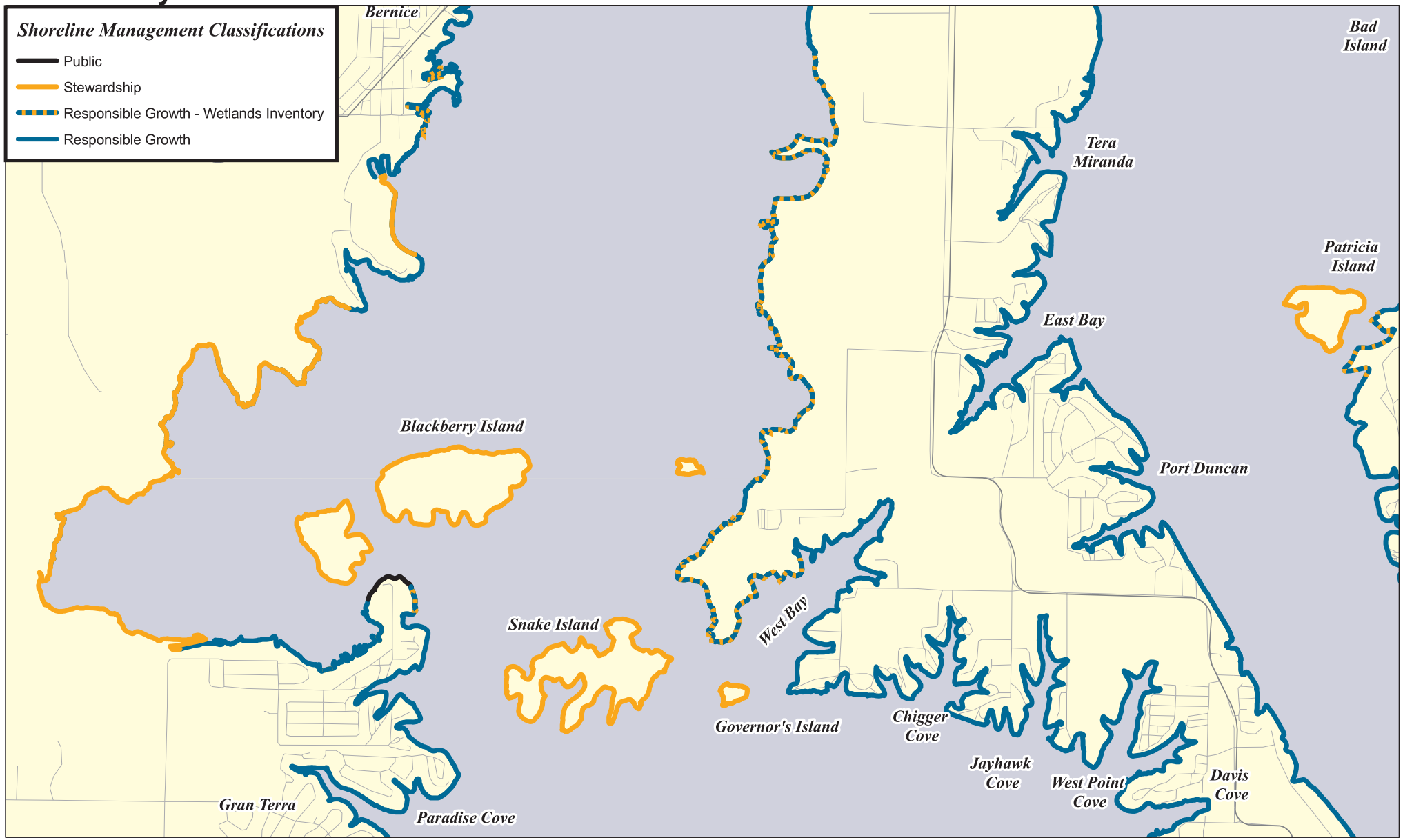
Woodward Hollow



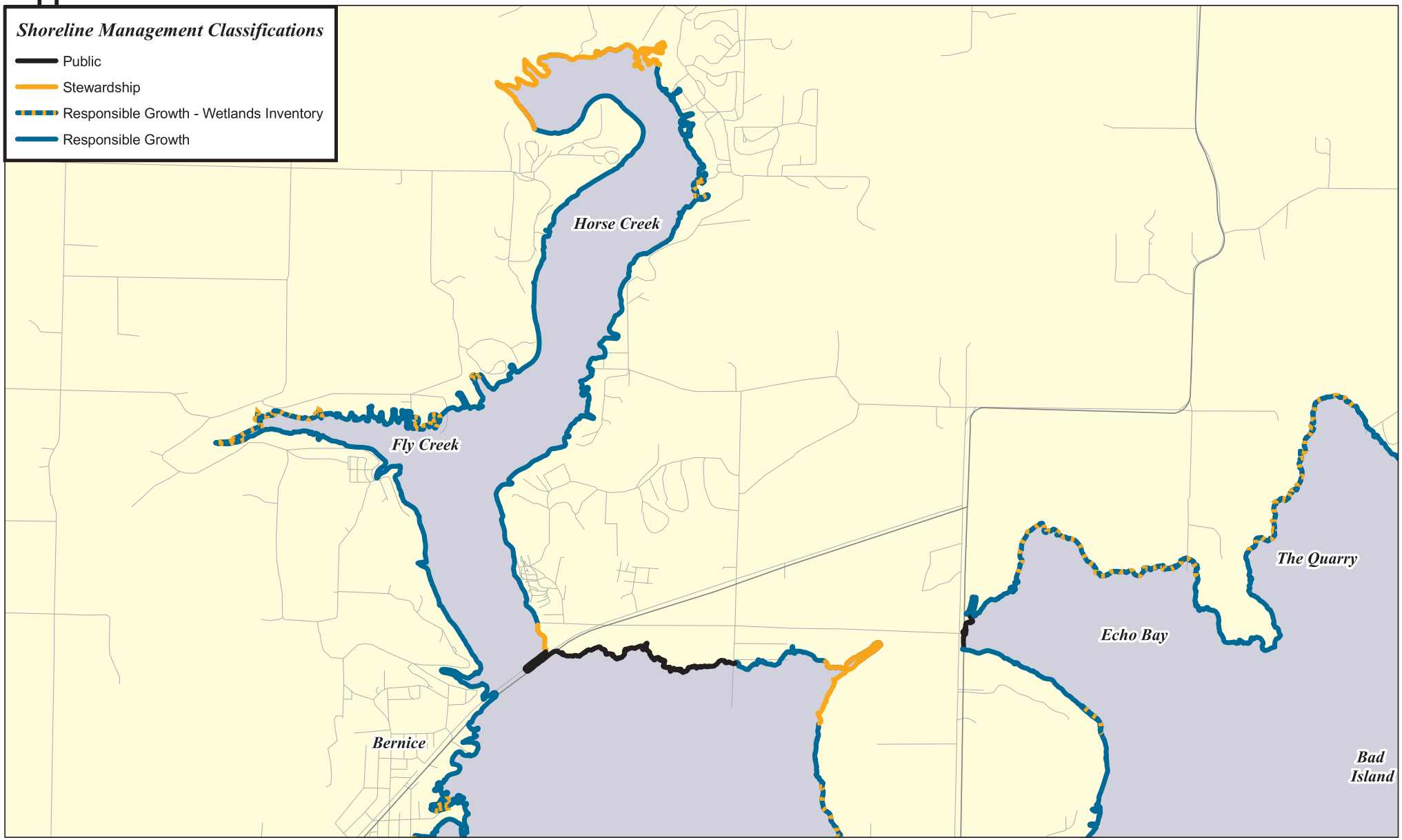
Honey Creek


Shoreline Management Classifications
Public
Stewardship
Responsible Growth - Wetlands Inventory
Responsible Growth
Flat Rock Hollow
Smitty's Cove
Elm Branch
Melody Point
Honey Creek
Paris Cove
Shangri-La Point
Dilar Cove
White Island
Courthouse Hollow
Woodward Point

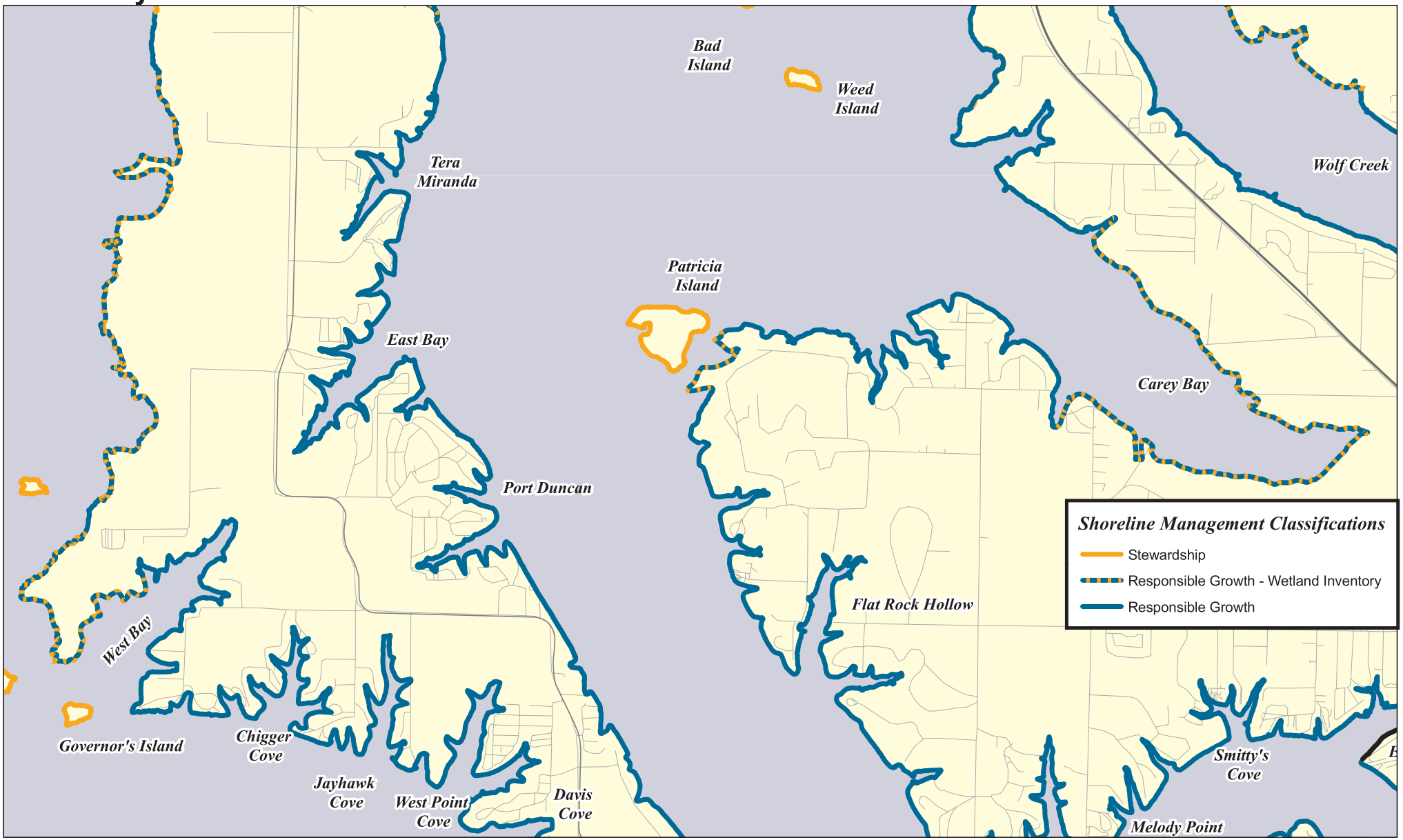
Blackberry Island



Upper Horse Creek

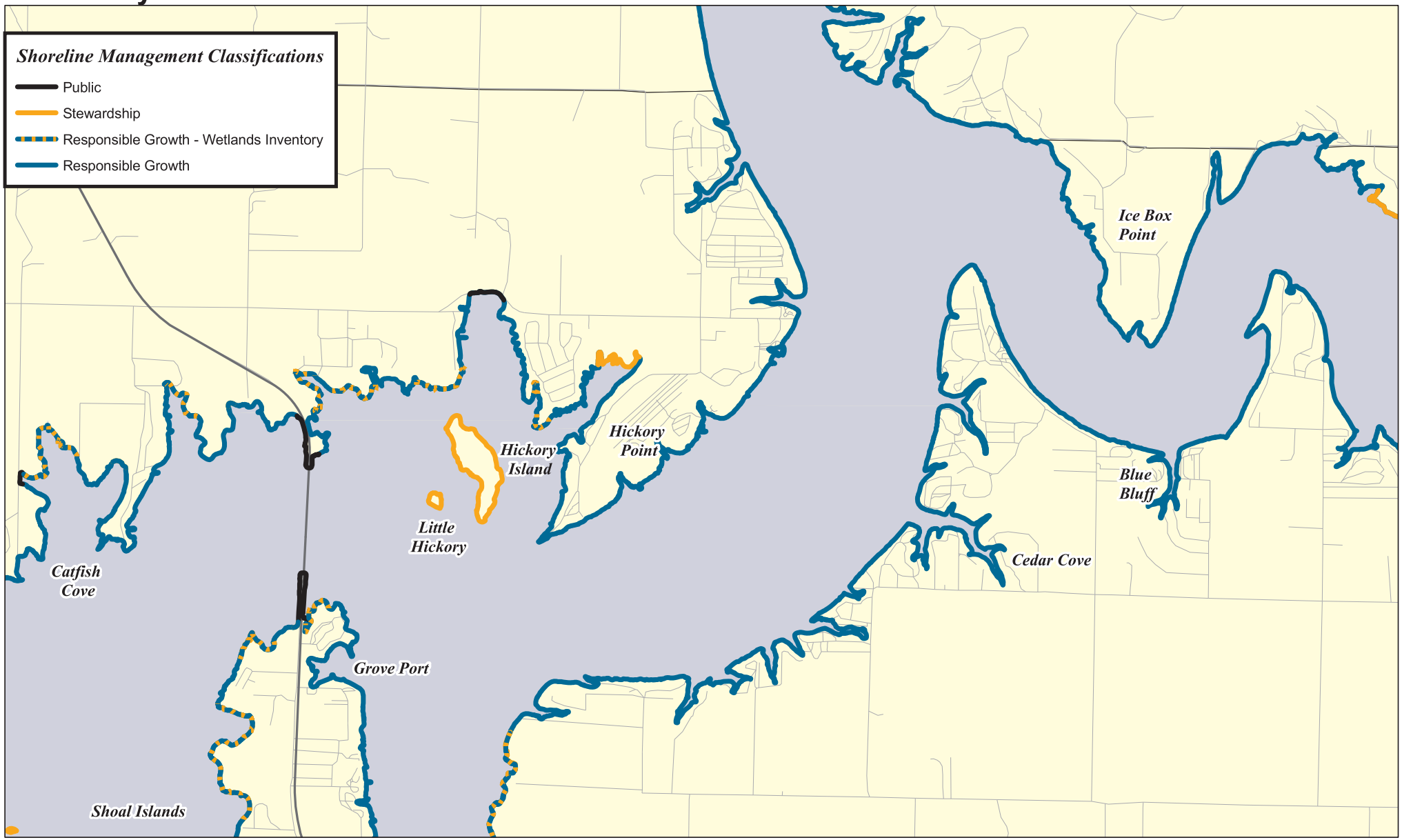


Monkey Island

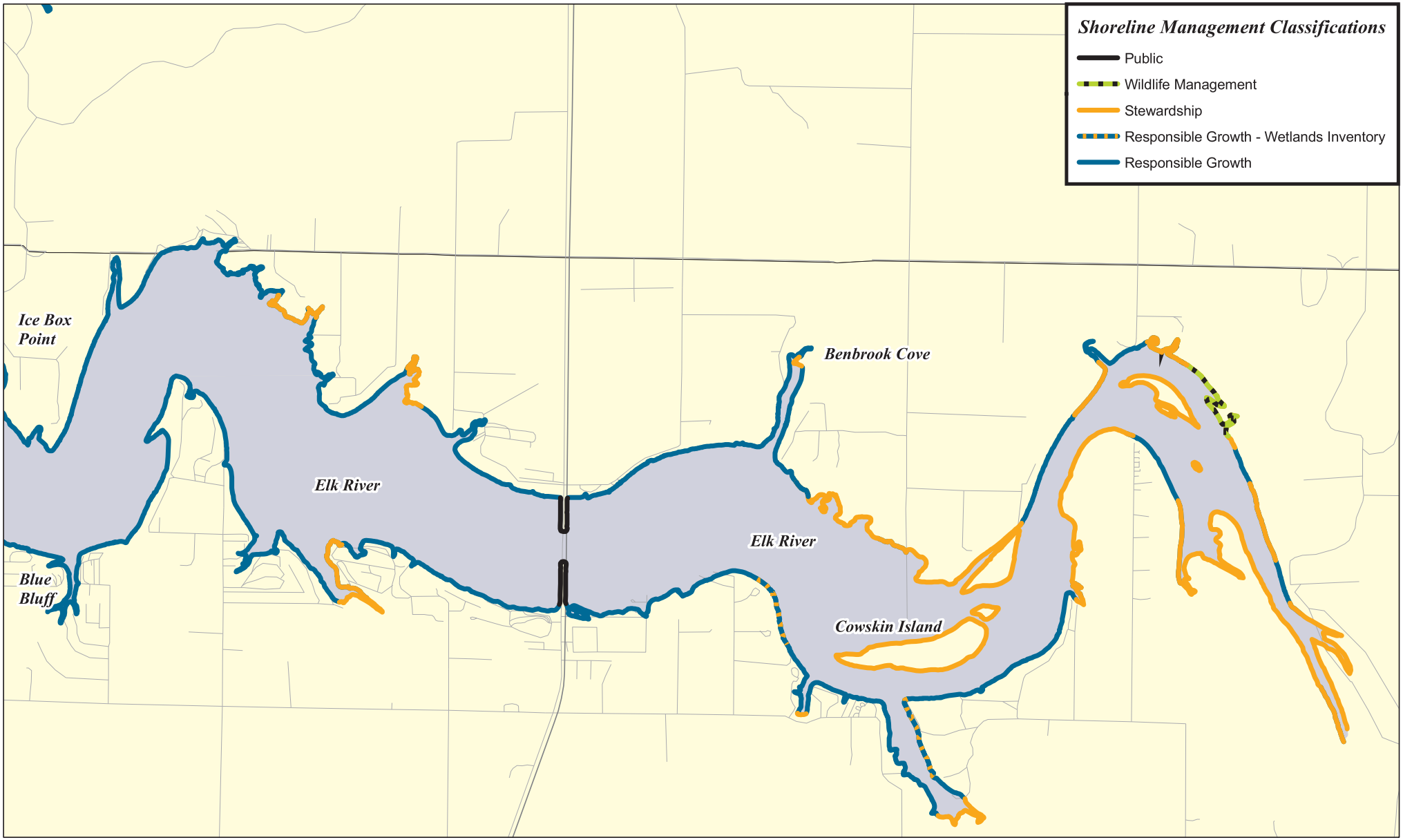


Shoal Islands

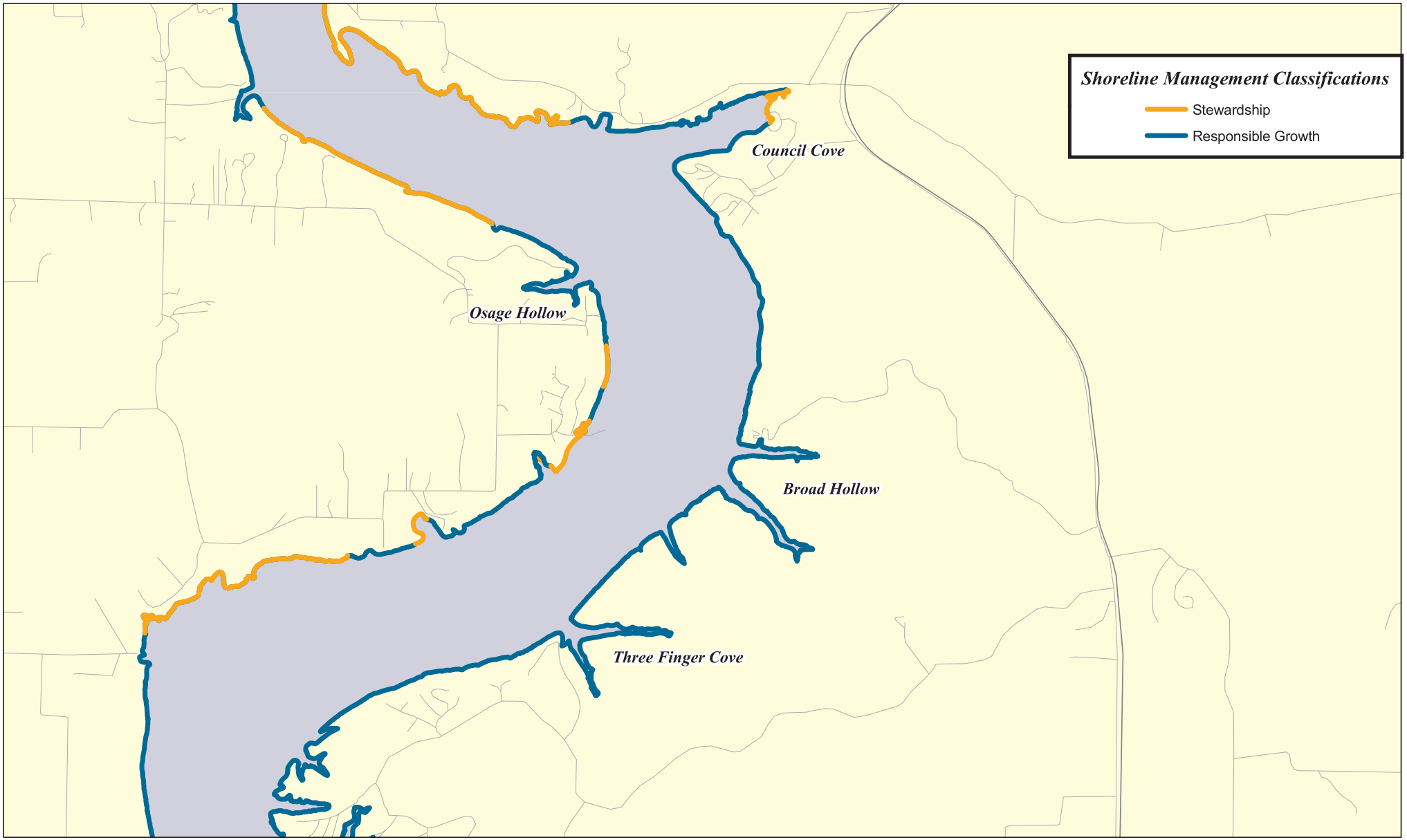
Hickory Creek



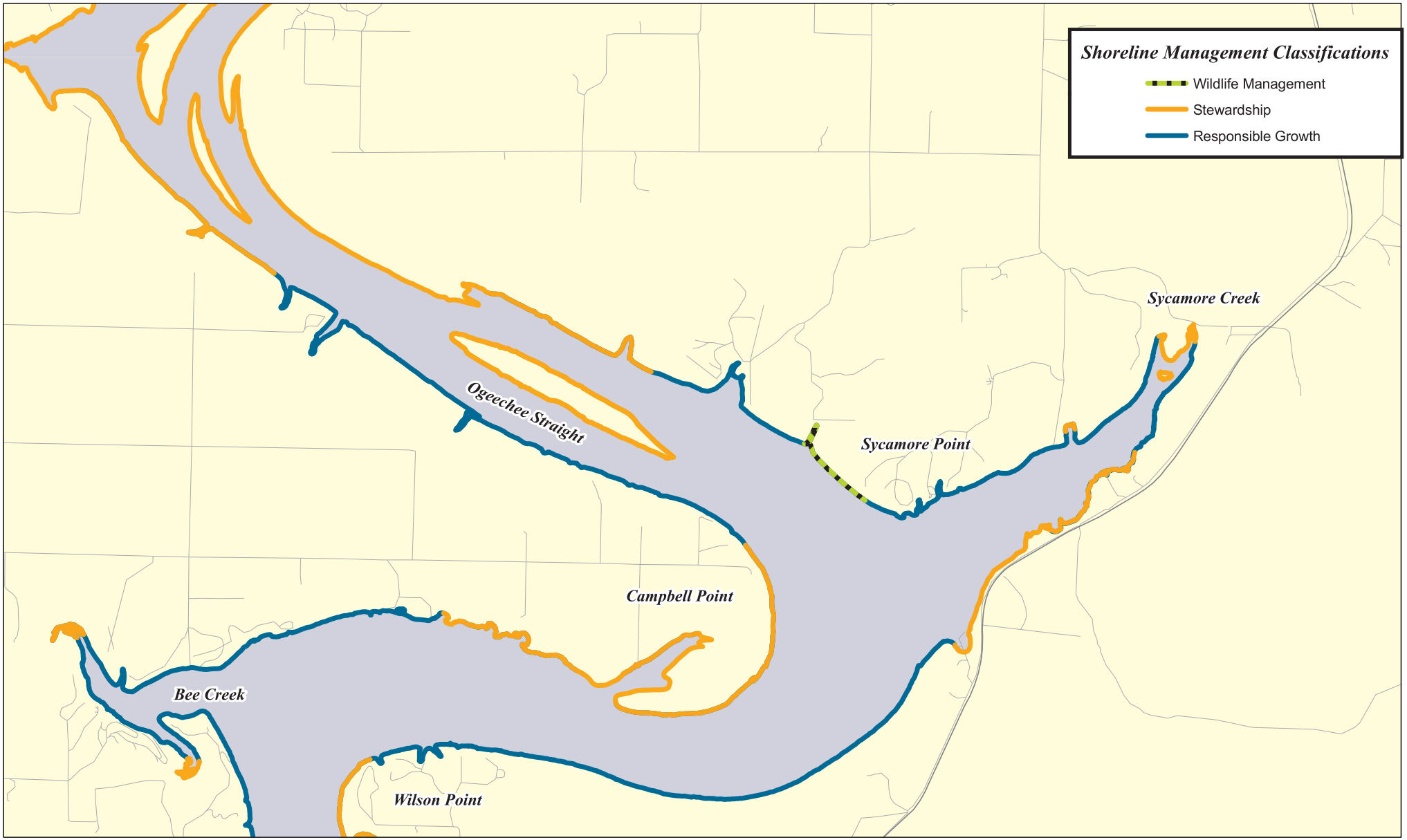
Elk River


Shoreline Management Classifications
Public
Wildlife Management
Stewardship
Responsible Growth - Wetlands Inventory
Responsible Growth
Ice Box Point
Elk River
Blue Bluff
Benbrook Cove
Elk River
Cowskin Island

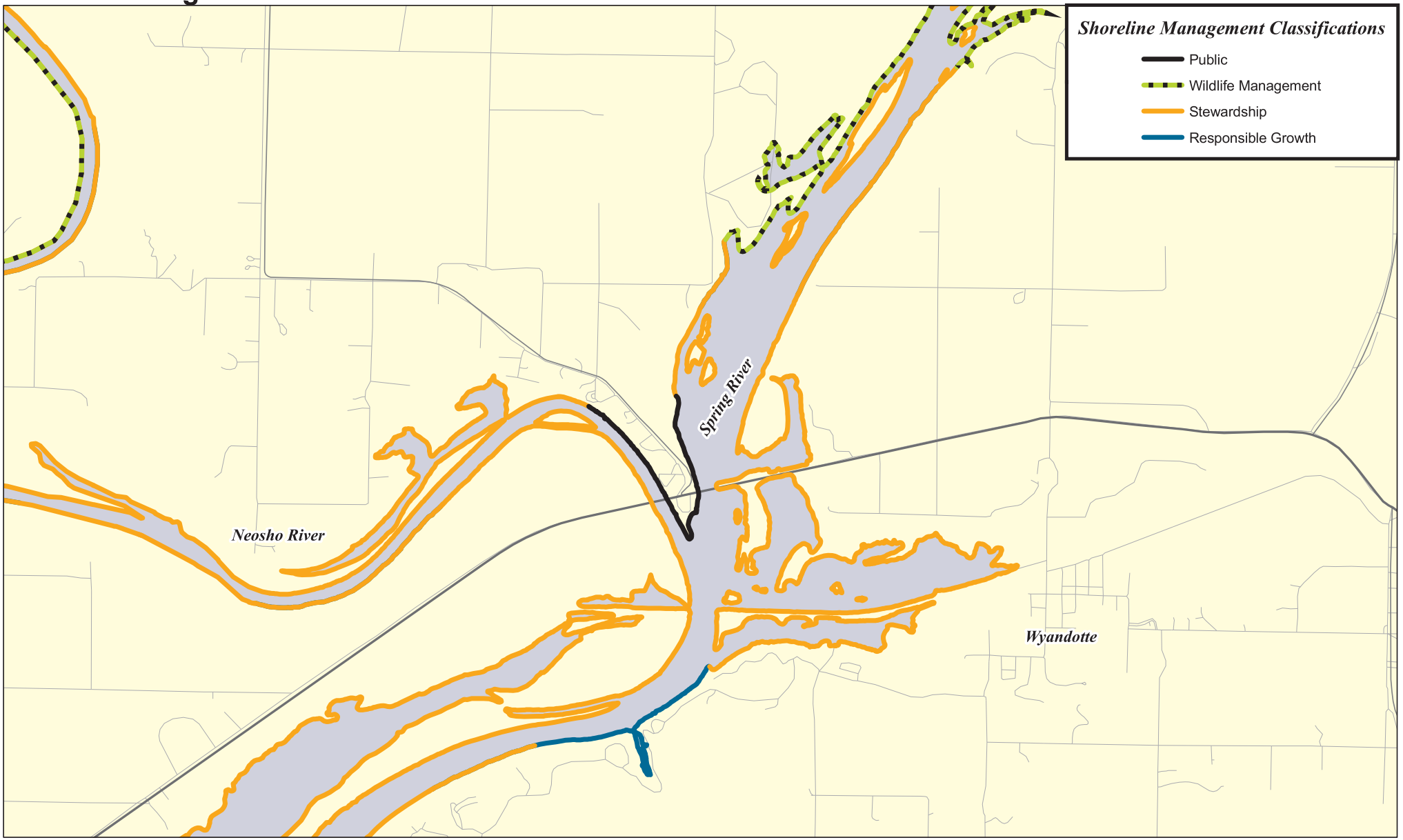
Council Cove



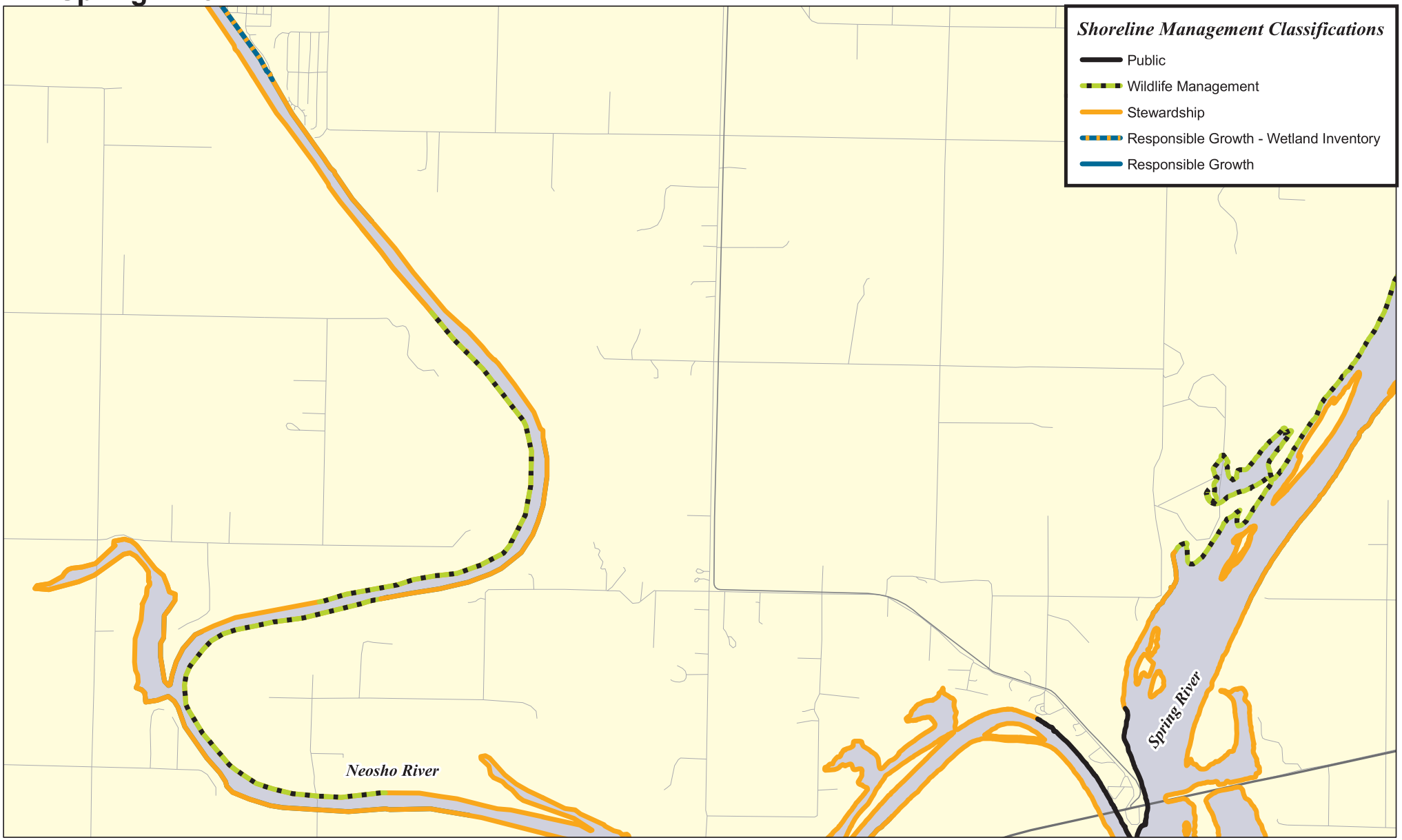
Bee Creek


Shoreline Management Classifications
Wildlife Management
Stewardship
Responsible Growth
Sycamore Creek
Ogeechee Straight
Sycamore Point
Campbell Point
Bee Creek
Wilson Point

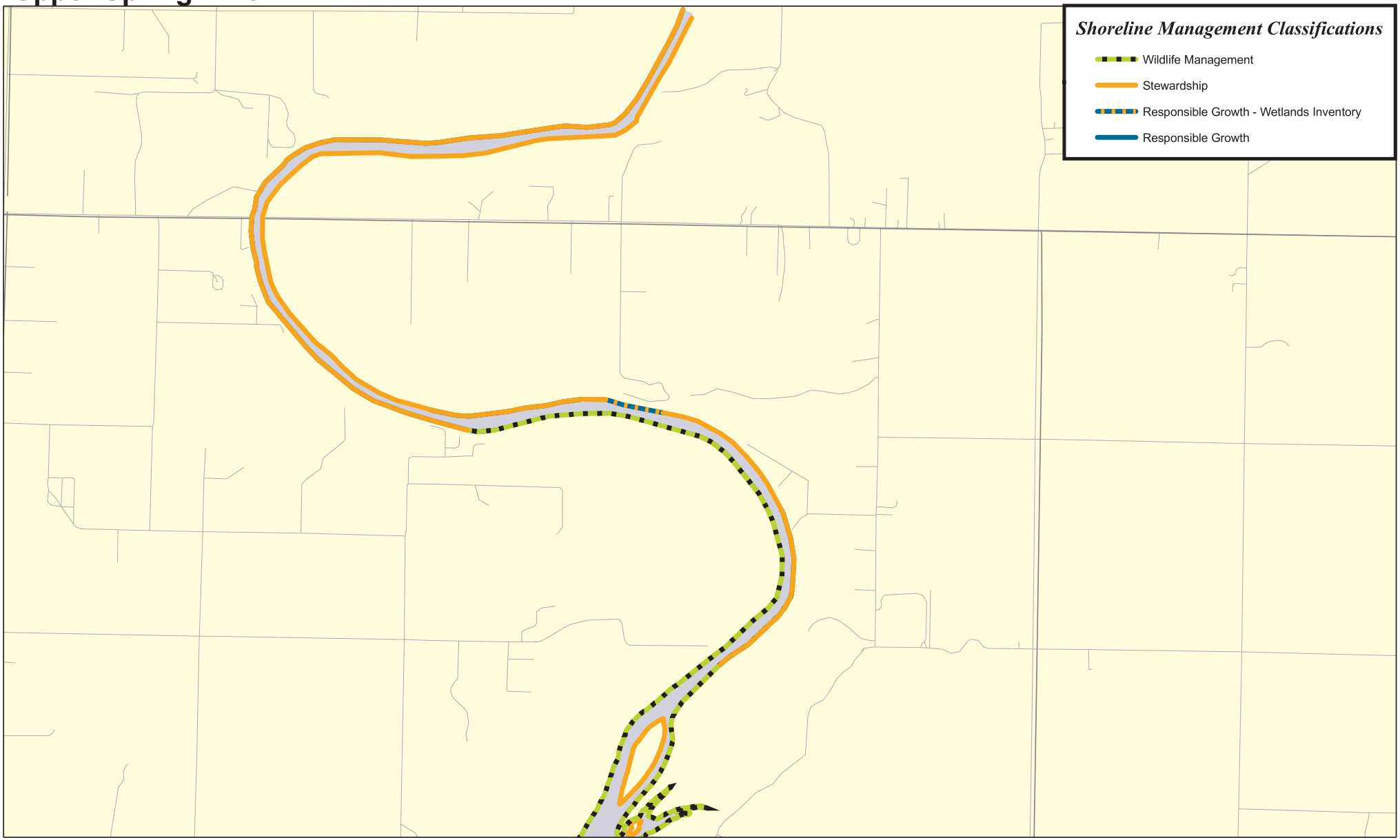
Twin Bridges



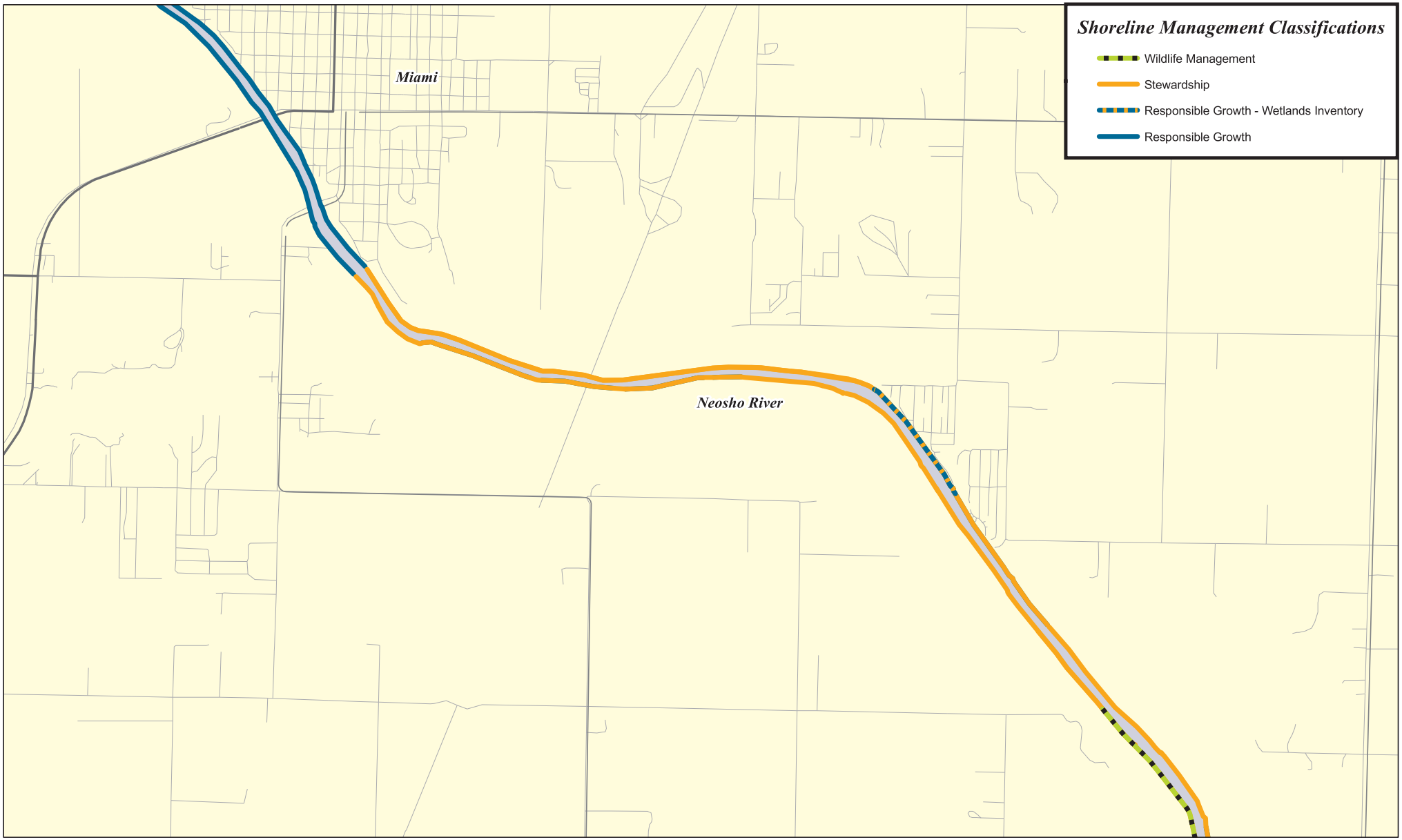
Spring River



Upper Spring River



Neosho River



APPENDIX C

SUGGESTED BEST MANAGEMENT PRACTICES FOR NON-PROJECT LANDS

Buffer Zones and Vegetation Management

Vegetated shorelines are an important component of a healthy reservoir ecosystem. These natural buffers act as filters, facilitating the absorption and processing of runoff pollutants. This filtering reduces the amount of potentially harmful contaminants that enter the lake and contribute to water quality degradation. In addition to filtering pollutants, vegetation (preferably native species) works to preserve the physical integrity of the shoreline, preventing excessive erosion that can lower water quality and degrade aquatic habitat. Naturally, vegetated shorelines improve the aesthetic integrity of the reservoir and provide habitat for aquatic and terrestrial species. The following practices are an integral part of GRDA's efforts to maintain and improve lands, water quality protection, shoreline stabilization, aesthetics, and wildlife habitat within the Project boundary. As such, GRDA recommends these practices to property owners outside the Project boundary as well.

1. Plant native trees, shrubs, and flowers for landscaping and gardens to reduce watering as well as chemical and pesticide use.

2. Preserve or establish an unmanaged filter strip of natural vegetation along the shoreline and keep clearing of native trees and vegetation to a minimum. GRDA recommends a buffer measuring a minimum of xx feet horizontally from the top of the normal pool elevation.

3. Plant a low maintenance, slow growing grass recommended for soil conditions and climate.

4. Maintain the grass as high as possible to shade out weeds and improve rooting so less fertilizing and watering are required.

5. Avoid dumping leaves or yard debris on or near the shoreline.

The introduction or planting of invasive plant species is prohibited on GRDA lands and waters. In addition to any species designated by the Oklahoma Department of Wildlife Conservation, a list of such species includes:

(1) Invasive or pest plants: Russian Olive; Sumac; Paper Mulberry; Saltcedar or Tamarisk; Siberian Elm; Eastern Redcedar; Poison Ivy; Poison Oak; Poison Sumac.

(2) Noxious aquatic plants:

Azolla pinnata – Mosquito Fern (aka – Water Velvet, Water Fern); *Caulerpa taxifolia* – Caulerpa (aka – Mediterranean Clone of Caulerpa); *Eichhornia azure* – Anchored Water Hyacinth (aka – Rooted Water Hyacinth, Blue Water Hyacinth, Saw-petal Water Hyacinth); *Hydrilla verticillata* – Hydrilla (aka – Florida Elodea, Star Vine, Oxygen Plant, Oxygen Weed); *Hygrophila polysperma* – Hygro (aka – Miramar Weed, Green Hygro, Oriental Ludwigia, East Indian Hygrophila); *Ipomoea aquatica* – Water Spinach (aka - Swamp Morning Glory, Chinese Water Spinach, Water Bindweed, Aquatic Morning Glory); *Lagarosiphon major* – African Elodea (aka – Oxygen Weed); Limnophila species – Ambulia (aka – Asian Marshweed, Limno, Red Ambulia, Indian Ambulia); *Lythrum salicaria* – Purple Loosestrife (aka – Loosestrife); *Marsilea quadrifolia* – Marsilea (aka – European Waterclover, Four-leaf Clover Fern, Water Fern, Water Clover, Hairy Pepperwort); *Marsilea mutica* – Australian Waterclover (aka – Varigated Water-clover, Mardoo); *Marsilea minuta* – Waterclover; Melaleuca quinquenervia – Paperbark Tree (aka – melaleuca, Cajeput, Punk); Monochoria hastate – Cat's Claw (aka – Monochoria); *Ottellia alismoides* – Duck Lettuce; *Sagittaria sagittifolia* – Japanese Arrowhead (aka – Hawaiian Arrowhead, Common Arrowhead, Chinese Arrowhead); *Salvinia auriculata* – Gian Salvinia (aka – Butterfly, Fern, Water Fern, Water Moss); *Salvinia biloba* – Gioan Salvinia (aka – Salvinia); Salvinia herzogii – Gian Salvinia (aka – Salvinia); *Salvinia molesta* – Gian Salvinia (aka – Salvinia, Water Velvet, Karibaweed, Koi Kandy); *Solanum tampicense* – Wetland Nightshade; *Sparganium erectum* – Exotic Bur-reed; *Glossostigma diandrum* – Mud Mat.

(3) Noxious non-aquatic plants: Musk Thistle; Canada Thistle; Scotch Thistle.

Water Quality

Water quality is an important indicator of the overall health of Grand Lake. Water quality not only affects aquatic and terrestrial wildlife, but also the health and well-being of individuals and communities that surround the Project. Water quality can be impaired in several ways, one of which is through the introduction of pollutants from nonpoint sources (NPS). Water run-off introduces NPS pollution into these reservoirs. Agriculture, forestry, construction, and various other land use activities contribute to non-point pollution. As water runs off surrounding lands, it picks up sediment, bacteria, oil, grease, and other pollutants as well as nutrients such as nitrogen and phosphorus. Excessive levels of NPS pollution can overwhelm a reservoir's natural filtering abilities and can lead to a decrease in water quality levels. For a complete technical reference concerning water quality on Grand Lake, please see the water quality reports on the Oklahoma Office of the Secretary of the Environment website.

APPENDIX D

LICENSE ARTICLES RELEVANT TO THE PENSACOLA PROJECT'S SHORELINE MANAGEMENT

Article 401.

The Licensee shall operate the Pensacola Project to control fluctuations of the reservoir surface elevation for the protection of fish, wildlife, and recreational resources associated with the Grand Lake O' the Cherokees (Grand Lake) reservoir. The Licensee shall act, to the extent practicable (except as necessary for the Department of the Army, Tulsa District, Corps of Engineers to provide flood protection in the Grand (Neosho) River), to maintain the reservoir surface elevations, as measured immediately upstream of the project dam. These target reservoir surface elevations are as follows:

(1) From October 16 through October 31, each year - raise the reservoir surface elevation from elevation 741 feet to about elevation 742 feet Pensacola Datum (PD) to inundate the seeded mudflat areas supporting mature Japanese millet (seed heads) on which waterfowl feed and to provide habitat for invertebrates that are consumed by waterfowl.

(2) From November 1 through April 15, each year - target the reservoir surface elevation at about elevation 742 feet PD to: (a) provide for maturation of Japanese millet (seed heads) on which waterfowl feed; (b) protect and enhance the fisheries habitat; and (c) minimize potential flooding of Beaver Dam Cave, which is used as a maternity site by the federally listed endangered gray bat (*Myotis grisescens*).

(3) From April 16 through May 31, each year - raise the reservoir surface elevation from about elevation 742 feet to about elevation 745 feet PD to inundate approximately 3,000 acres of naturally revegetated mudflats and to provide maximum fishery benefits. From June 1 through July 5, each year - maintain the reservoir surface elevation at about elevation 745 feet PD.

(4) From July 6 through July 15, each year - lower the reservoir surface elevation from elevation 745 feet to about elevation 743 feet PD to expose mudflats for natural revegetation (such as, sedges, smartweed, and native grasses). From July 16 through July 31, each year - maintain the reservoir surface elevation at about elevation 743 feet PD.

(5) From August 1 through August 14, each year - lower the reservoir surface elevation from about elevation 743 feet to about elevation 741 feet PD to provide bare, moist mudflat acreage (500 to 1,000 acres) for Japanese millet seeding.

(6) From August 15 through October 15, each year maintain the reservoir surface elevation at about elevation 741 feet PD to provide for maturation of Japanese millet.

Article 402.

Within 6 months from the date of issuance of this license, the Licensee shall consult with the Oklahoma Department of Wildlife Conservation (ODWC) to determine if the ODWC wishes to conduct an assessment of the impacts of water surface elevation fluctuation on fisheries recruitment, and if so, to provide water surface elevation data for Grand Lake O' the Cherokees (Grand Lake) reservoir to the ODWC for use in a fisheries-water surface elevation fluctuation assessment. Documentation that the ODWC does or does not wish to conduct such fisheries studies, shall be filed with the Commission within six months from the date of issuance of this license.

If the results of the water surface elevation monitoring and the fisheries studies (conducted by the ODWC) indicate that alternative measures need to be implemented at the project to enhance spawning and recruitment in Grand Lake, then ODWC may file a final report, for Commission consideration, including recommendations on the measures to enhance the fish populations, including a schedule and associated costs for implementing the recommended measures. The ODWC will also include the comments of the Licensee and the U.S. Fish and Wildlife Service on the report.

Article 403.

Within 6 months from the date of issuance of this license, the Licensee shall file with the Commission for approval, a plan to monitor dissolved oxygen (DO) concentrations in the Grand (Neosho) River downstream of the project tailrace during the critical summer period of June 1 through September 30, annually. The exact sampling locations shall be determined in consultation with the Oklahoma Water Resources Board (OWRB), the U.S. Fish and Wildlife Service (FWS), and the Oklahoma Department of Wildlife Conservation (ODWC).

The Licensee shall prepare the plan after consultation with the OWRB, the FWS, and the ODWC. The Licensee shall include with the plan documentation of consultation with the agencies, copies of agency comments or recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of

30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The plan shall include, but not be limited to, the following: (a) a description of the method for monitoring DO concentrations and the location at which DO will be monitored; and (b) a schedule for submitting the monitoring results with the Commission and the consulted agencies. The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

The results of the water quality monitoring shall be filed with the Commission as a final report according to the approved schedule, along with comments from the consulted agencies. The Licensee shall include in the final report, for Commission approval, recommendation(s) on measures to improve DO concentrations. Any recommendation(s) provided in the report shall also include a schedule for implementing the measure(s) at the project.

The recommended measure(s) to improve downstream DO concentrations shall be developed in consultation with the OWRB, FWS, and ODWC. The licensee shall allow a minimum of 30 days for the consulted agencies to comment and to make their own recommendations, based on the results of the water quality monitoring, on measure(s) to improve DO concentrations in the project tailrace, prior to filing the report with the Commission. Upon approval by the Commission, the Licensee shall implement the measure(s) to improve DO concentrations. The Commission reserves the right to require modifications to the recommendations included in the final report.

Article 404.

Within 6 months from the date of issuance of this license, the Licensee shall file with the Commission for approval a plan to annually seed a maximum of 1,000 acres of mudflats, located between reservoir surface elevations 741 feet and 742 feet Pensacola Datum, with Japanese millet and/or other appropriate vegetation in concert with the implementation of the reservoir level management plan as stipulated in article 401. The mudflat seeding plan, developed for the enhancement of wildlife resources associated with the Grand Lake O' the Cherokees (Grand Lake) and in consultation with the U.S. Fish and Wildlife Service (FWS), the Oklahoma Department of Wildlife Conservation (ODWC), and the University of Oklahoma or other qualified entity, shall, at a minimum, include the following: (1) a map of sufficient scale identifying the location and acreage of the mudflats to be seeded; (2) a description of the plant species used and planting densities; (3) a monitoring program to evaluate the effectiveness of the mudflat seeding; (4) an implementation schedule; and (5) provisions for the filing of annual monitoring reports with the consulted agencies and the Commission.

If the results of the monitoring indicate that the Japanese millet and/or other applicable vegetation has not germinated by the fifth year, the mudflat seeding shall be terminated by mutual agreement among the FWS, ODWC, GRDA, and University of Oklahoma or other qualified entity, and after notification to the Commission of the agreed-upon termination.

The Licensee shall include with the plan documentation of consultation with the agencies before preparing the plan, copies of agency comments or recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how all the agency comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons based on project specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 405.

Within 6 months from the date of issuance of this license, the Licensee, after consultation with The Nature Conservancy, Oklahoma Chapter (TNC) and the U.S. Fish and Wildlife Service, (FWS), shall implement the following measures to protect the federally listed endangered gray bat (*Myotis grisescens*).

(1) The Licensee shall provide the funds, equipment, and/or personnel necessary to construct, maintain, repair, and

replace when necessary cave gates, fences, fence gates, signs, and vehicle barriers at one of the following historical gray bat caves in the Grand Lake area: DL-38 (the preferred site), OT-4, or OT-13.

(2) The Licensee shall provide assistance to TNC in maintaining, repairing, and replacing when necessary gates, fences, fence gates, signs, alarm system, and vehicle barriers at Twin Cave.

(3) The Licensee shall improve cave security at the cave protected under no. 1 above and Twin Cave through intermittent checks by the Grand River Dam Authority lake patrol.

(4) The Licensee shall evaluate the effectiveness of cave management features described above and once every five years submit a progress report to the FWS, Tulsa Field Office. The report shall provide the status of gray bats in Beaver Dam Cave (numbers of bats, frequency and magnitude of flooding during the five-year period) and the status of gray bat use in Twin Cave and the other managed cave.

(5) The Licensee shall develop and implement an educational program on the gray bat and cave conservation, which shall be included in the Licensee's public relations programs. The educational program shall include, but not be limited to, the following: (a) identification, life history, and beneficial qualities of the gray bat; (b) the need for protecting the gray bat; and (c) cave conservation. The educational program shall be available, upon request, to the local schools and organizations.

Article 406.

Use of 1,630 acres of project lands as a wildlife management area, described on page 7 and identified in table 1 of the Supplemental Information to New License Application for Major Project - Existing Dam, filed with the Commission on August 31, 1990, is approved and made a part of this license and shall be implemented upon issuance of this license.

Article 407.

Within 2 years from the date of issuance of this license, the Licensee shall file with the Commission, for approval, a long-term recreation plan for the Pensacola Project. Besides providing for recreation at the project, the plan shall provide for protection of the federally listed endangered bald eagle (*Haliaeetus leucocephalus*) by restricting shoreline development in bald eagle high use areas.

The recreation plan, at a minimum, shall include:

(1) a lake-use report that consists of: (a) estimates of existing and potential future use of Grand Lake by activity (such as, powerboating, sailing, fishing, waterskiing, waterfowl hunting); (b) the level of use (carrying capacity) that would begin to detract from a safe or enjoyable recreation experience; (c) recommended measures for managing lake use if it exceeds the carrying capacity determined in item (b); (d) a plan for providing public access to accommodate projected increases in lake use over the term of the license within the identified carrying capacity; and (e) a description of the methodologies used to satisfy the requirements of items (a) and (b);

(2) a list of maintenance standards for public recreation areas, including the entities that are responsible for maintaining each public recreation facility at Grand Lake;

(3) continued provision of a lake patrol and information center, including additional signs or brochures warning boaters of any hazardous areas created by reservoir drawdown to surface elevation 741 feet Pensacola Datum for mudflat seeding required in article 404;

(4) continued management of lakeshore development via the current permitting system; and

(5) a plan for managing fishing tournaments.

If any new recreation facilities are proposed for construction during the term of the license, the plan shall also include the following: (a) detailed descriptions of the facilities and a map of sufficient scale showing the type and location of each facility; (b) cost estimates and a schedule for completing the facilities; and (c) a description of how the recreational facilities shall be operated and maintained during the term of the license and the entity responsible for operation and maintenance. The needs of the disabled shall be considered in the design and construction of all recreational facilities.

The Licensee shall prepare the lake use report and final recreation plan after consultation with the Oklahoma Tourism and Recreation Department, the U.S. Fish and Wildlife Service, the Oklahoma Department of Wildlife

Conservation, and the National Park Service. The Licensee shall include with the final plan documentation of consultation and copies of comments and recommendations on the lake use report and final plan after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the final plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 408.

Within 1 year from the date of issuance of this license, the Licensee shall upgrade or arrange for the upgrading of the Duck Creek boat launch facilities at the Ketchum Recreation Area. Specifically, the Licensee shall: (1) elevate, to at least reservoir surface elevation 746 feet Pensacola Datum, and gravel the parking area; (2) widen the access road to accommodate two vehicles; (3) trim the brush along the access road; and (4) place a sign at the entrance of the access road to designate the area.

The Licensee shall upgrade these facilities after consultation with the Oklahoma Tourism and Recreation Department, the Oklahoma Department of Wildlife Conservation, and the Department of the Army, Tulsa District, Corps of Engineers. The Licensee shall, within 90 days of completion of construction of the recreation facilities, as improved, file as-built drawings of those recreation facilities.

The Licensee shall file a statement with the as-built drawings, indicating the entity responsible for operation and maintenance of the facilities.

Article 409.

The Licensee, before starting any land-clearing or ground-disturbing activities within the project boundaries, other than those specifically authorized in this license, including recreation developments at the project, shall consult with the State Historic Preservation Officer (SHPO).

If the Licensee discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities (including recreation developments) at the project, the Licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the properties and consult with the SHPO.

In either instance, the Licensee shall file for Commission approval a cultural resource management plan prepared by a qualified cultural resource specialist after having consulted with the SHPO. The management plan shall include the following items: (1) a description of each discovered property indicating whether it is listed on or eligible to be listed on the *National Register of Historic Places;* (2) a description of the potential effect on each discovered property; (3) proposed measures for avoiding or mitigating effects; (4) documentation of the nature and extent of consultation; and (5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

The Licensee shall not begin land-clearing or ground-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a property, discovered during construction or operation, until informed that the requirements of this article have been fulfilled.

Article 410.

(a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values (especially federally listed species) of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of

conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any noncomplying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the Licensee may grant permission without prior Commission approval are: (1) landscape plantings; (2) noncommercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings; and (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline. To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall: (1) inspect the site of the proposed construction, (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site, and (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline. To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for: (1) replacement, expansion, realignment, or maintenance of bridges and roads for which all necessary state and federal approvals have been obtained; (2) storm drains and water mains; (3) sewers that do not discharge into project waters; (4) minor access roads; (5) telephone, gas, and electric utility distribution lines; (6) nonproject overhead electric transmission lines that do not require erection of support structures within the project boundary; (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69 kV or less); and (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir. No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for: (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained; (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained; (3) other pipelines that cross project lands or waters but do not discharge into project waters; (4) nonproject overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained; (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile from any other private or public marina; (6) recreational development consistent with an approved exhibit R or approved report on recreational resources of an exhibit E; and (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from the edge of the project reservoir at normal maximum surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year. At least 45 days before conveying any interest in project lands under this paragraph (d), the Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with federal and state fish and wildlife or recreation

agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include covenants running with the land adequate to ensure that: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; and (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the Licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.