

Lake Keowee Shoreline Management Plan Final Modifications

Since submittal of the original Shoreline Management Plan several minor changes have been made.

These changes can also be found on our website (http://www.duke-energy.com/environment/water/smp/keowee_smp/) and some are in a “Redline” version. A redline version shows in red the changes that have been made to the original document.

Changes that have been made to this document since the original filing:

- SMP Website information has an additional paragraph added and redlined on page 25, paragraph 5.
- The Shoreline Management Guidelines Table of Contents page J-1 and J-2 have been updated and reflects the new page numbers within the Guidelines.
- Updated December 2006 Shoreline Management Plan Maps. These have been added to the Map section.
- Shoreline Percentages Table in the Map Appendix has been updated to show the correct Shoreline Classification Percentages.
- Website information has been added to the Consultation Appendix.
- Under Keowee SMP Consultation Materials a December 21, 2006 United States Department of the Interior Fish and Wildlife Service letter and Duke Energy Responses have been added.
- Under Keowee SMP Consultation Materials a December 19, 2006 Eastern Band of Cherokee Indians Tribal Preservation Office and Duke Energy Responses has been added.

1.0 Introduction

1.1 Project Area Description

The Keowee-Toxaway Hydroelectric Project (FERC No. 2503) consists of two reservoirs: Lake Keowee and Lake Jocassee. The Keowee dam impounds the Little River and Keowee River. The full pond contour elevation is 800 feet above mean sea level (msl) and the Project Boundaries varies from the 800 feet contour elevation up to the 810 feet contour elevation. Lake Keowee provides cooling water for the Oconee Nuclear Station and serves as the lower reservoir for the Jocassee Pumped Storage Hydro Station. The Jocassee Dam impounds the Whitewater River, Toxaway River, Horespasture River and several streams and creeks.

1.1.1 Jocassee Development

1.1.1.1 Location and Development Works

The Jocassee Development consists of a reservoir, dam, two saddle dikes, and powerhouse. The development is located on the Keowee River approximately 20 miles

north of Seneca, South Carolina. The Jocassee Development is located in Oconee and Pickens Counties, South Carolina, and Transylvania County, North Carolina.

1.1.1.2 Completion Date

Commercial operation of units 1 and 2 began in 1973. Commercial operation of units 3 and 4 began in 1975.

1.1.1.3 Reservoir

The Jocassee reservoir full pond elevation is 1,100 feet above msl with a maximum drawdown of 30 feet. At full pond, the surface area is 7,565 acres and total storage is 1,160,298 acre-feet. There are 75 miles of shoreline. The drainage area for the Jocassee Development is 147 square miles with an average inflow of 400 cfs.

1.1.1.4 Dam

The Jocassee Dam is a zoned earth and rockfill structure approximately 385 feet high and 1,800 feet in length. The dam includes two circular structures with eight openings that divert water to the generating units. The spillway is concrete ogee with 2 Tainter gates. Each Tainter gate is 38 feet wide and 33 feet in height.

1.1.1.5 Powerhouse, Turbines and Generators

The Jocassee Powerhouse is an outdoor type powerhouse located adjacent to the Jocassee Dam. Vertical reversible pump-turbines rated four Allis-Chalmers at 152,500 kilowatts per unit as a generator and 170,000 kilowatts per unit as a pump. The total hydraulic capacity (i.e. maximum flow through the turbines) is 27,720 cfs. At an operating head of 310 feet, each unit can generate 1 MW with 45 cfs and conversely as a pump, 1MW will pump 40 cfs.

1.1.2 Keowee Development

1.1.2.1 Location and Development Works

The Keowee Development consists of a reservoir, two dams, four saddle dikes, and a powerhouse. The Keowee Hydro Station is located on the Keowee River approximately eight miles north of Seneca, South Carolina. The Keowee Development is located in Oconee and Pickens Counties, South Carolina.

1.1.2.2 Completion Date

Commercial operation of the Keowee Development began in 1971.

1.1.2.3 Reservoir

The Keowee reservoir full pond elevation is 800 feet msl with a maximum drawdown of 25 feet. At full pond, the surface area is 18,372 acres and total storage is 955,586 acre-feet. There are 387 miles of shoreline. Average flow into the Keowee Development is 1,100 cfs. The Oconee Nuclear Station withdraws cooling water that is crucial for nuclear power generation from the Keowee Reservoir. For this reason, reservoir drawdowns are actually limited to 7 feet.

1.1.2.4 Dam

The Keowee Dam is a homogeneous earthfill structure 170 feet high and 3,500 feet in length. The Little River Dam is a homogeneous earthfill structure 150 feet high and 1,800 feet in length. The four saddle dikes (designated A, B, C and D) range in height from 4 to 100 feet and are located on the Little River segment of the reservoir. Oconee Nuclear Plant cooling water intake dike is a homogeneous earthfill structure approximately 80 feet high and 1200 feet in length. The spillway is concrete ogee with four Tainter gates. Each Tainter gate is 38 feet wide and 35 feet in height.

1.1.2.5 Powerhouse, Turbines and Generators

The Keowee Powerhouse is an indoor type building located adjacent to the Keowee Dam. There are two Francis-type turbines connected to a vertical generator rated at 78,750 kilowatts per unit. The total hydraulic capacity (i.e. maximum flow through turbines) is 19,574 cfs. Keowee is designed to supply emergency power for Oconee Nuclear Station and to supply power to the electric grid as needed during times of non-emergency at Oconee. At an operating head of 125 feet, each unit can generate 0.5 MW with 63 cfs.

Table 1. - Summary of Keowee-Toxaway Project Reservoir Characteristics

Reservoir	Full Pond Contour (MSL)	PBL Full Pond Shoreline Miles*	Lake Surface Area (acres)	SMP Shoreline Miles*	Island Acreage	Island Miles	County/State
Keowee	800.0	N/A	17,662	387.9	276	20.0	Oconee/Pickens South Carolina

* Estimate includes reservoir shoreline and island shoreline miles.

1.2 Goals and Content of the Shoreline Management Plan

The primary goals of the Lake Keowee Shoreline Management Plan (Keowee SMP) are to:

1. Provide for public and private access while appropriately managing the Project’s natural and cultural resources and protecting the Project’s primary function which is the production of electricity.
2. Comply with the Land Use Article (i.e., Article 49 for the Keowee-Toxaway Project) issued by the Federal Energy Regulatory Commission (FERC or Commission).
3. Ensure that the existing and future public recreational needs of the Lake Keowee Development are addressed.

To support these primary goals of the Keowee SMP, the Licensee will:

- Utilize a methodology based upon the experience gained through the development of previous Shoreline Management Plans for the Catawba-Wateree Project (FERC No. 2232), Nantahala Area Projects (FERC No. 2694, 2692, 2686, 2698, 2603, 2601, 2619, and 2602), and the Buzzard's Roost Project (FERC No. 1267).
- Build upon the foundation that was set by the implementation of the Shoreline Management Guidelines that have been in effect at the Keowee-Toxaway Project since October 1987.
- Utilize the most current data available (e.g., Shallow Water Fish Habitat Survey data, Recreation Use and Needs study results, digital aerial photography, GPS-based geo-videography, and revised Shoreline Management Guidelines) to guide decisions regarding all types of access within the Project Boundaries.
- Provide a factually based document that can and will be used by the Licensee, the resource agencies and the Commission for reviewing requests for utilization of the Project and its resources.
- Address issues identified of primary importance in the preparation of other Shoreline Management Plans and SMP updates, namely:
 - Consult with appropriate resource management agencies:
 1. regarding specific non-Project development proposals;
 2. to identify environmentally valuable aquatic and terrestrial species shoreline habitats, and protect such habitats by methods determined necessary, such as limiting development in these areas; and,
 3. to protect important cultural and tribal resources
 - Include documentation of consultation.
 - Include copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, municipalities and other stakeholders.
 - Include specific descriptions of how the agencies' and other stakeholders' comments and recommendations are accommodated by the plan and reasons based on project -specific information if a recommendation is not adopted.

To develop the SMP, the Licensee has undertaken or will undertake various resource studies and inventories to obtain current information and data. These resource studies and inventories include:

- Recreation Use and Needs (RUN) study (developed/conducted 9/06-10/07);
- Shallow Water Fish Habitat Survey (SWFHS) (2005);
- GPS-based geo-videography of the shoreline of Lake Keowee (conducted May 2006);
- Geographical Information System (GIS) for Lake Keowee; and,
- Contour elevation and Project Boundaries mapping for Lake Keowee.

The Licensee developed the SMP maps and shoreline classifications based, in part, on the information obtained from these studies, consultation with resource agencies and a representative group of stakeholders, while drawing on the experience gained in development of shoreline management plans for other FERC Projects.

1.3 Relationship of the SMP

Duke Energy Lake Services uses a 3-step review process for all lake use permit activity requests. Each request is evaluated based on review of the applicable Lake Use Policy Statements (LUPS), the Shoreline Management Plan (SMP) maps (where applicable) and associated lake use restrictions, and compliance with the Shoreline Management Guidelines (SMG).

Step One: Review the Lake Use Policy Statements (LUPS)

The first step of the lake use permit process is a review of the applicable LUPS. The LUPS delineate the types of access and activities that may be allowed on all reservoirs owned or managed by Duke Energy Lake Services based on license requirements (for all licensed hydro reservoirs); federal, state, and/or local regulations; and specific business management objectives. These policy statements apply to all reservoirs owned or managed by Duke Energy including those in the Keowee-Toxaway system. Due to the strategic business sensitivity of the LUPS, these documents remain internal to Duke Energy Lake Services. Specific license or other regulatory requirements that are also a part of these policies are publicly available.

The LUPS allow for review of four basic types of lake access: 1) Private Access; 2) Public Recreational Access; 3) Public Infrastructure Access; and 4) Business/Industrial Access on the reservoirs with existing private and business development. Public infrastructure and business/industrial access will be allowed in accordance with the FERC's standard Land Use Article included in the license for the Keowee-Toxaway Project.

Step Two: Review the Shoreline Management Plan (SMP)

If a proposed lake use activity is in compliance with the LUPS, the next step of the review process is to review the SMP to determine if the activity is allowed in the general region of the shoreline. The SMP is a set of maps showing various types and uses of the shoreline including areas protected for environmental or habitat values, areas of existing development, and areas of potential development. The SMP also includes lake use restrictions associated with important shoreline characteristics. The SMP and associated lake use restrictions were developed in consultation with state and federal resource agencies and other stakeholders.

Step Three: Review the Shoreline Management Guidelines (SMG)

The final step of the process is review of the SMG to determine if a requested use may be allowed in a specific location along the reservoirs shoreline within the Project Boundaries. The SMG are a set of detailed procedures and criteria that regulate activities within reservoirs owned or managed by Duke Energy Lake Services. The development of these guidelines for permitting activities within the Project Boundaries is required by Duke Energy's FERC license in its Standard Land Use article. Duke Energy Lake

Services reserves the right to make minor alterations to these guidelines without public notice, resource agency, or FERC review to ensure permitting flexibility in the continuous monitoring and regulation of lake use permitting activities. Duke Energy Lake Services expects to make major revisions to the SMG periodically with input from resource agencies, local governments, and other interested stakeholders using a stakeholder team. Duke Energy Lake Services will convene this stakeholder team prior to making major revisions to the SMG. Additionally, the FERC may order modifications to the guidelines as provided for in the FERC's standard Land Use Article in the FERC license.

1.4 Contents of the SMP

Section 2.0 provides a brief description of the Access Area Improvement Initiative (AAII) and the development of this initiative for both the Keowee-Toxaway Project and the Catawba-Wateree Project.

Section 3.0 provides a brief description of the Recreation Use and Needs (RUN) study for the Keowee-Toxaway Project and the proposed recreation demand and boating assessment process.

Section 4.0 describes the methodology and planning process for development of the SMP, including the:

- use of the Catawba-Wateree SMP as a model for shoreline management planning
- shoreline classification and Shallow Water Fish Habitat Survey (SWFHS) mapping process, contour and Project Boundaries mapping process
- aerial photography and GPS-based geo-videography
- Shoreline Stabilization Technique Selection Process (SSTSP), riparian management information, Shoreline Stabilization and Horticulture Guide, and Fish-Friendly Pier information.

Section 5.0 provides a brief discussion of the history and consultation process associated with development of the Shoreline Management Guidelines (SMG) and SMP for Lake Keowee.

Section 6.0 provides a description of the Keowee SMP distribution process.

Section 7.0 includes a summary of the implementation process and future updates to the Keowee SMP.

Section 8.0 is a brief description of additional management activities that have been initiated on Lake Keowee or will be initiated as part of the implementation of the SMP and revised SMG.

2.0 Access Area Improvement Initiative

Duke Energy initiated the Access Area Improvement Initiative (AAII) in 1998 based on recommendations from development of a new Recreation Management System (RMS) for Duke Energy reservoir access areas. The RMS evaluated existing access area development and leasing practices and provided an organized and focused approach for promoting and enhancing cooperative access area partnerships. The RMS identified state and local government entities, private sector individuals, and non-government organizations as potential partners for enhanced development and long-term operation and maintenance of public recreation facilities at existing access areas and islands.

Based on recommendations from the RMS, Duke Energy notified local governments located adjacent to the reservoirs' Project Boundaries, and state recreation and resource management agencies, of the new AAII opportunity to lease one or more of the access areas and/or islands in their jurisdiction at no cost. Duke staff met with representatives of the following state and local agencies and municipalities to provide detailed information on the AAII:

- SC Department of Parks, Recreation and Tourism
- SC Department of Natural Resources
- Chester County, SC
- Fairfield County, SC
- Kershaw County, SC
- Lancaster County, SC
- Oconee County, SC
- Pickens County, SC
- York County, SC

- NC Wildlife Resources Commission
- NC Department of Environment and Natural Resources, Division of Parks and Recreation
- Alexander County, NC
- Burke County, NC
- Caldwell County, NC
- Catawba County, NC
- Gaston County, NC
- Iredell County, NC
- Lincoln County, NC
- Mecklenburg County, NC
- McDowell County, NC

- City of Belmont, NC
- Great Falls Hometown Association
- City of Mount Holley, NC
- Town of Sawmills, NC

- Lake Norman Marine Commission, NC
- Mountain Island Lake Marine Commission, NC
- Lake Wylie Marine Commission, NC and SC

Duke asked these potential partners, if appropriate, to provide a letter of interest to help Duke assess the level of partnership interests in leasing, developing, and managing existing public access areas. By the end of 1998, throughout the Duke Energy system, 1 state agency, 12 out of 16 counties, and 3 municipalities responded with letters of interest. Duke also received 12 letters of interest from the private sector and non-government organizations.

Duke requested that these potential partners prepare and submit initial conceptual site plans and development schedules for the sites. One state agency (for all of the North Carolina islands), 4 counties (for 6 sites and some islands), and 2 cities (for 2 sites) submitted plans and development schedules.

Prior to implementation of the AAI, no-cost public recreation leases had already been executed with state and local partners for four Keowee-Toxaway Project access areas, including:

- High Falls County Park (Keowee), 46 acres – leased to Oconee County, February, 1971
- South Cove County Park (Keowee) 76 acres – leased to Oconee County, April, 1973
- Mile Creek County Park (Keowee) 130 acres – leased to Pickens County, February, 1981
- Devil's Fork State Park, including Double Springs Campground (Jocassee) 572 acres – leased to the South Carolina Department of Parks, Recreation, and Tourism (SCDPT), State Park Service, August, 1989

These four pre-AAI access area partnerships have been successful in helping to meet Project public recreation needs by providing the land base for lakefront parks at no cost to these state and local agencies. Duke's partners continue to improve existing facilities, provide additional facilities, and enhance opportunities at these public recreation venues.

Since the Oconee County and Pickens County leases were executed, Duke and the County administrations have periodically discussed opportunities for leasing additional Lake Keowee access areas. Over time, county interests have peaked and subsided with changing administrations. However, consistent with the direction of the AAI and Duke's FERC License, Duke has continued the AAI commitment to work with these local partners to consider additional AAI lease opportunities.

In addition to existing governmental partnerships, the private sector has expressed significant interest over the last several years in partnering with Duke to develop and manage larger scale, commercially operated, public recreation complexes at selected access areas on Lake Keowee. The conceptual plans for these commercial facilities

typically include amenity development which is often beyond the normal scope of state or local parks. Facilities may include public marinas, large scale RV and tent campgrounds, rental cabins, and waterfront restaurants. Duke is currently working with one private-sector partner on a FERC-approved development concept for Warpath Access Area, consistent with Exhibit R of the existing FERC Project License.

Consideration of future governmental and private sector AAI partnership opportunities for the Keowee-Toxaway Project will be informed by the results of the Recreation Use and Needs study described in Section 3.0 of this report. Representatives from Oconee County, Pickens County, the SCDNR and the SCDPT are active members of the Study Team which will participate in the study. The results of the study will provide up-to-date guidance for future development of additional AAI partnerships and Project-related public recreation opportunities.

3.0 Recreation Use and Needs Study

Duke Energy initiated a Recreation Use and Needs (RUN) study for the Keowee-Toxaway Project (Keowee and Jocassee Reservoirs) in 2006 with a target completion date of 2007. The last comprehensive assessment of Project-related public recreation needs was conducted as a part of the original Federal Energy Regulatory Commission (FERC) license in the mid-1960s. The current FERC license expires in 2016, and Duke Energy will re-evaluate public recreation use and needs as part of the formal relicensing process. However, existing and proposed shoreline development and demand for enhanced public recreation opportunities, especially on Lake Keowee, indicate that a comprehensive reassessment is needed sooner to help Duke Energy manage project recreation resources.

The study area will include Lake Keowee, Lake Jocassee reservoirs and lands and waters affected by the operation of the Project. Specifically, the study area includes the Project reservoirs (including Duke Energy-owned islands) within the FERC Project Boundaries, existing developed and undeveloped Duke Energy access areas, and related governmental and commercial recreation facilities located adjacent to the project.

Data collection for the study will begin in December, 2006 and continue through November, 2007. The objectives of the study, as identified in the Draft Study Plan (see Appendix A) are:

1. To provide data and analysis sufficient to characterize present public recreation use and experience levels on project reservoirs.
2. To provide data and analysis sufficient to estimate future demand for public recreation on project reservoirs.
3. To provide data and analysis sufficient to estimate present and future boating density and capacity at project reservoirs to support present and future boating demand.

4. To provide data and analysis sufficient to determine present and future public recreation facility needs for project reservoirs.
5. To provide data and analysis sufficient to characterize the economic value of recreation at the project.

4.0 Methodology and Planning Process

4.1 Catawba-Wateree as a Model

The development of classification maps for Lake Keowee was modeled upon the development of the Catawba-Wateree and other Project's Shoreline Management Plans. The Report Regarding Strategy and Schedule for Implementation of the Catawba-Wateree Project Shoreline Management Plan submitted to the Commission on February 3, 1997, stated that Duke Energy and the state wildlife agencies would develop a classification system of significant shallow water fisheries habitats. Duke Energy would also conduct a survey of all undeveloped shorelines to identify areas of key importance for fish spawning and rearing and would establish appropriate lake use restrictions for those areas. This was the basis for development of the Keowee SMP shoreline classifications and lake use restrictions that are a part of any comprehensive plan.

The set of symbols and colors for identifying the Existing Use classifications in the Catawba-Wateree 2001 SMP (CW SMP) maps was utilized to develop the eight Existing Use classifications for the Keowee SMP. The SWFHS classification definitions were incorporated into the nomenclature previously utilized in the CW SMP to ensure a consistent classification system for those familiar with utilizing the CW SMP maps for permitting activity review. The same numbering system and symbols from the CW SMP were also used for the five Future Use classifications in the Keowee SMP.

The Future Use classifications in the Keowee SMP are based on the suitability of the shoreline to support access to the reservoir from the associated upland development. Actual facilities must also occur in accordance with the existing Shoreline Management Guidelines (see Appendix B).

There is a hierarchy associated with the future use classifications that must be understood to correctly interpret the Keowee SMP maps. The following matrix shows this suitability hierarchy:

Classification Matrix

SUITABLE FUTURE USES								
Future Use Classification (Symbol)	Commercial Marina	Residential Marina	IMZ	Residential	Bus/Ind	Proj. Ops	Public Rec.	Pubinfra
Future Commercial Marina (1-1-1-1)	●	●	●	●	●	●	●	●
Future Residential Marina (2-2-2-2)		●	●	●	●	●	●	●
IMZ* (F F F F)	●	●	●	●	●	●	●	●
Future Residential (3-3-3-3)			●	●	●	●	●	●
Future Public Recreation (4-4-4-4)					●	●	●	●

*Impact minimization zone (IMZ) is a combination of the SWFHS Classifications: Stable Sand and Gravel/Cobble. The IMZ classification provides The means to track development that occurs in areas that should be avoided unless there is no practicable alternative.

For areas identified in the SWFHS as having stable sand, gravel or cobble substrates (i.e., Impact Minimization Zones (IMZ)) on Lake Keowee:

LAKE USE RESTRICTIONS - No boat ramps except those required for Public Recreation and no excavation. Construction within these areas may have specific mitigation requirements imposed by the federal, state or local resource agencies. Shoreline stabilization within the Project Boundaries must adhere to the Shoreline Stabilization Technique Selection Process.

Roads, hydrography, political boundaries, transmission line corridors, etc. were incorporated into the GIS from several sources for general information. Also, the precise limits of classifications and other areas were determined by a combination of field-located GPS, surveys and visual observation.

Minor data fluctuations are to be expected in any version of the Keowee SMP maps as a result of technological advancements such as the use of digital aerial photography, satellite imagery, GPS and GIS. These maps are valuable planning tools. They do not, however, have the accuracy of a physical metes and bounds-type land survey and should not be treated as such.

The shoreline classification definitions and lake use restrictions have been determined in consultation with the appropriate resource agencies. Both the Existing and Future Use classifications of the shoreline included in the Keowee SMP maps are taken from data at a specific point in time and therefore, can not be expected to represent nor anticipate all uses within the Project as those uses actually occur.

The shoreline classification (IMZ-Developed) was developed to identify construction or shoreline stabilization activity in areas classified as IMZ. The Keowee SMP maps only delineate that development has occurred in these areas. The GIS must be queried to differentiate the specific type of development that has occurred. The Commercial Marina classification was modified in the Keowee SMP to allow exceptions to specific permitting criteria to accommodate possible expansions of facilities considered to be True Public Marinas (TPM) (see Appendix C).

The stakeholder teams reviewed the Classifications and Lake Use Restrictions document developed as part of the CW SMP and Keowee SMP and made several revisions. These included: 1) modifications to the lake use restrictions for the Natural classification; 2) adding criteria to both the Natural and Environmental classifications; and 3) development of a diagram representing the criteria used to designate an area of the shoreline as Environmental (see Appendix D).

4.2 Shoreline Classification and Mapping

Duke Energy classified the entire reservoir shoreline within the Project Boundaries of Lake Keowee to more accurately reflect current development of the shoreline, to include the results of the SWFHS, and to provide guidance for consideration of future lake use requests. The following section describes the shoreline classifications and associated lake use restrictions, and the SWFHS.

4.2.1 Shoreline Classification

Duke Energy enlisted the services of its own fisheries scientists and Lake Services personnel to complete the Shallow Water Fisheries Habitat Survey (SWFHS) field data collection. The field data collection team surveyed the entire shoreline by boat utilizing a handheld GPS unit and data logger.

Duke Energy and the state and federal wildlife agencies cooperatively developed the shoreline habitat classifications: Vegetated Areas/Coves with Stream Confluence, Stable Sand/Gravel/Cobble, Clay, etc. Final negotiations with the wildlife resource agencies and a representative group of interested lake stakeholders were not completed until November 15, 2005. A total of four meetings were held with these agencies to finalize the lake use restrictions, including two meetings with the wider interested stakeholder team.

Prior to review of the preliminary SWFHS mapping data, staff in each county was contacted and where available, digital tax parcel data was obtained for the waterfront parcels that border Lake Keowee. Digital parcel data was, however, only available from Pickens County.

The aerial photography and contour data and other data layers were analyzed by Lake Service personnel and the GIS contractor to identify and delineate all shoreline development within the Project Boundaries by:

- a. Identifying the type and extent of the development along the shoreline;
- b. Delineating Duke Energy hydro properties within the Project Boundaries;
- c. Delineating adjoining properties that are in public ownership or otherwise preserved

The mapping effort lasted from July through December in 2006, and primarily consisted of eight-hour sessions for multiple days each month to review and populate the GIS database. During these sessions, multiple data layers including the aerial photography, county parcel data, multiple contour elevations, geo-videography, etc. were available to the review team. During the review sessions, preliminary edits were made to GIS layers and detailed notes were kept to document all modifications including correcting any mapping errors that were noted. Final edits to the database were done by the contractor off-site.

The following outlines the process Duke Energy used to classify the reservoir's shoreline in the Keowee SMP:

- The SWFHS GPS point location data was used as the base information for developing the Keowee SMP maps. All shoreline, including all island shoreline, was surveyed to delineate the environmentally valuable shallow water fish habitats, areas with significant characteristics that limit the ability to allow access, undeveloped shoreline with no critical habitat, and shoreline with existing development. The environmentally valuable shallow water fish habitat areas were designated as Environmental or IMZ. Areas with characteristics that make most types of development inside the Project Boundaries undesirable from an overall lake management standpoint (e.g., significant shallow water) were classified as Natural Areas on the Keowee SMP maps.
- Existing Use shoreline areas (identified previously as Developed in the SWFHS) were added to the SMP after the habitat data were included. Areas of the shoreline with an Existing Use classification in the Keowee SMP are those areas with some type of lakeward construction or structure (e.g., shoreline stabilization, pier).
- All Duke Energy-owned islands and peninsulas falling within the Project envelope, as identified in the Exhibit K, were then classified for Future Recreation, except for those shoreline areas designated in one of the shallow water fish habitat classifications or that had other unique features worthy of protection.

Duke Energy-owned land acreage to provide for future public recreational opportunities throughout the planning horizon was then classified as Future Recreation. In siting and sizing these areas, emphasis was placed on:

- Expanding existing access areas
- Long range usability of boat launching facilities
- Distribution of opportunities around the lake
- Physical characteristics (e.g., topography, vehicle access, shoreline)
- Proposed public access to privately-owned and publicly-owned land

Non-Duke Energy-owned, non-Project shoreline adjacent to lands currently managed for public recreation was also classified as Future Recreation. At the completion of this step, the property boundaries for the privately and publicly owned non-Project recreational land were delineated from a variety of sources including park boundary surveys, site plan maps, access area boundary surveys, etc. Lands for Future Recreation that are non-Duke Energy-owned are distinguished from Project lands on the Keowee SMP maps by various color shading.

The remaining unclassified shoreline areas are not needed to ensure that future public recreational needs will be satisfied and were therefore considered for other future uses. Shoreline Management policies and specific lake constraints were applied to this remaining unclassified shoreline to ensure that future development could occur without destruction of important natural or cultural resources, infringement on the aesthetic or recreational values of the Project, or power production operational flexibility. Some of the specific considerations included:

- No new Commercial Marinas are allowed within a ½ mile radius of existing Commercial Marinas or shoreline areas where more than 50% of the shoreline within a ½ mile radius is residentially developed.
- Shoreline narrow cove areas less than 300 feet wide had the shoreline from the head of the cove to the 300 feet width location classified to preclude future Commercial Marina and Residential Marina development.
- Areas subject to quickly changing and significant flow rates below operating hydro stations were classified as Project Operations and more specifically designated as Downstream Clear Zones limiting development to maintenance and rebuilds of existing structures.
- Shoreline areas that were cut off from direct boating access to the majority of the Project were delineated as Natural or Environmental unless there was significant shoreline and surface acreage to support development (e.g., piers) and recreational boating within the cutoff area.

To ensure consistency throughout the modification/review process, a Rules Document (see Appendix E) was developed that identified typical modification scenarios and the basis for the modification. These rules or standards were applied during the entire mapping process to ensure all areas were evaluated and classified consistently over the entire shoreline of Lake Keowee.

All GIS work was done using Environmental System Research Institute, Inc. (ESRI) Arc/Info or ArcView software. All data were created in a format and coordinate system that is compatible with Duke Energy's existing GIS database structure and computing platform. The standard map format remains the Shoreline Management Plan (SMP) map sheets. Standard data modifications over time are expected and these typically include

any modification or change to the GIS database that involves changes to the existing databases. Examples of these types of edits include shoreline boundary changes, changes to shoreline classifications, base data changes, changes to map annotation, and changes to other existing data layers.

4.2.2 Shallow Water Fish Habitat Survey (SWFHS)

The SWFHS inventoried the entire shoreline including both the developed and undeveloped portions of the shoreline. Development of the SWFHS information therefore required the shoreline to be classified as Developed only if there was some type of lakeward construction or structure (e.g., stabilization, pier). During development of the Keowee SMP maps, lakeward construction was a prerequisite to identifying a portion of the shoreline as having an existing use. Designation was not based on activities outside the Project Boundaries (e.g., proposed residential subdivision development or residential home construction) and the lakeward construction activities were not anticipated. Duke Energy evaluated all the shoreline under the SWFHS classification criteria that did not have some type of lakeward construction or structure.

The SWFHS identified various habitat and management classifications- Vegetated areas/coves with stream confluence, Natural (including isolated berm), Stable Sand, Gravel/Cobble and Clay. All other areas were inventoried as Developed without any specific differentiation between development types. The Developed shoreline areas identified during the SWFHS were re-examined during the development of the SMP maps to determine the specific type of shoreline development (i.e., Commercial Marina, Residential Marina, Residential, etc.). This evaluation process utilized aerial photographs, geo-videography, transmission line data, state and county road maps, FERC Exhibit K maps, Lake Services permitting databases and in-field surveillance.

The classification system designations for the SWFHS were revised slightly to more appropriately mimic the designations used in other SMPs developed in the past by the Licensee (e.g., the Vegetated with Stream Confluence designation was assigned the Environmental designation, the Stable Sand, Gravel/Cobble designation was assigned the Impact Minimization Zone (IMZ) designation). Although these designation changes were deemed necessary to provide a degree of consistency for those accustomed to using other SMPs developed by the Licensee, the actual habitats identified and the criteria utilized to determine these habitats remained the same in the Keowee SMP maps as inventoried in the SWFHS. The Keowee SMP maps include not only the important habitat area data from the SWFHS (e.g., Vegetated area/cove with stream confluence, Stable Sand, and Gravel/cobble) but also the other Existing Use (Commercial Marina, Residential Marina, Residential, Business/Industrial, Project Operations, Public Recreation, and Public Infrastructure IMZ Developed) and Future Use (Future Commercial Marina, Future Residential Marina, Future Residential, and Future Public Recreation) classifications (see Appendix D). The Commercial Marina classification includes a special marina designation known as a True Public Marina facility. A facility and its operation must meet special requirements (see Appendix C) to be considered this type marina facility.

The entire Lake Keowee project shoreline is included on individual maps at a scale of 1 inch equal to 1000 feet. The accuracy of the SMP Maps, the revised classification system developed with input from the Catawba-Wateree relicensing process in combination with input from local resource agencies and a stakeholder team for Lake Keowee, and the revised lake use restrictions, help ensure that valuable aquatic environmental habitats are protected while facilitating improved permitting consistency. Each Keowee SMP map includes a classification key with a tabular summary of each classification based on shoreline miles and as a percentage of the total shoreline. Each map is numbered and a location key of map numbers and their coverage is provided to assist in map orientation on Lake Keowee.

4.2.3 Contours and Parcel Boundary Information

4.2.3.1 Development of 2 Foot Contours between Elevation 800 Feet and 810 Feet

Because the aerial photography data gathering process only provided a digital terrain data set suitable for the generation of the digital orthophotos, it was therefore necessary to supplement the data with additional vertical control points. In addition to the vertical control points the digital terrain model (DTM) data was enhanced through photogrammetric stereo compilation by adding masspoints and breaklines. Softcopy stereocompilation was used to compile these masspoints and breaklines. These graphic elements were used to form a DTM for the generation of the contours at two foot intervals to meet or exceed National Map Accuracy Standards (NMAS) for the 1"=200' map scale and contour interval. Every fifth contour was labeled as an index contour. Additional one foot contours were interpolated between the 2 ft contours to provide continuous contours between the 800 ft and 810 ft elevations. The contour data will be delivered in ESRI shapefile format. Each contour line has the correct elevation attached as an attribute or as an actual elevation value.

4.2.3.2 Data Conversion of Parcel Boundaries Owners

The property boundaries for parcels adjoining the PBL were used to develop a digital property base map. The Exhibit K drawing was geo-referenced by using the "best-fit" method. The "best-fit" method can be described as follows: Rotate, scale and modify the existing tax map drawings to match visible boundaries and features such as roads and hydrography in the digital Ortho-photo. In the areas where parcel boundaries have measurements (distance or angles), they were used to anchor the parcels to the digital ortho-photos. The existing digital ortho-photos with a 0.5 foot pixel resolution were used as the base for the "best-fit" method.

Below is an example of the Exhibit K which was used for PBL reference and to create an Original Ownership layer that links to the Licensee's existing property files.

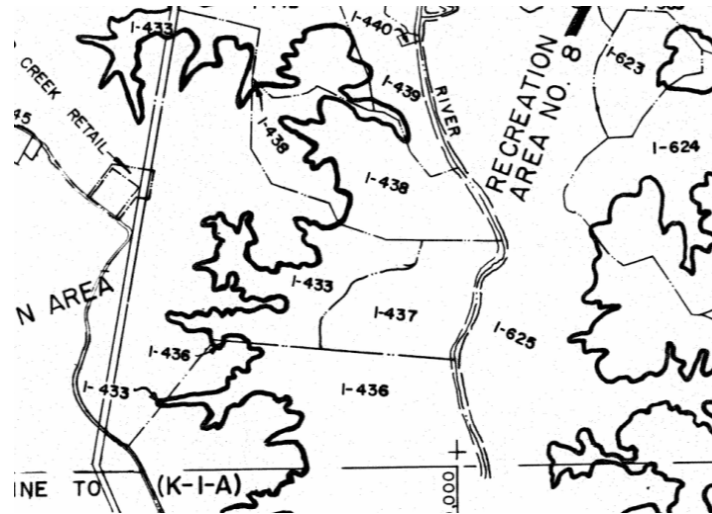


Figure 1: Example of the Exhibit K drawing.

The “best-fit” method was applied to geo-reference the parcel data to the digital ortho-photos. The following methods were utilized when making graphic element adjustments: rotation and/or linear movement of a subdivision, rotation and/or movement of a group of parcels, adjustment of individual parcel lines based on observation of physical features indicating ownership on the digital ortho-photos. The contract GIS service provider has experience with the judgmental aspects of tax parcel compilation and is accustomed to utilizing all available information sources for properly locating parcels that have incomplete documentation.

After each parcel was properly located and geo-referenced, a node was placed near the center of the parcel. This node was attributed with the data supplied and listed in the Licensee’s property files.

All parcel data was incorporated in either graphic elements or a tabular data form. The tabular data was included as part of the ArcGIS file as a table for queries and sorting and in an ESRI personal geo-database format. It was essential that all parcels for this project match for the final conversion. This was accomplished by the GIS service provider that is familiar with, and has an understanding of, the importance of having all tax records coordinated exactly between the PIN and the tabular database.

4.3 Aerial Photography and Geo-videography

4.3.1 Aerial Photography

In the early spring of 2005, the Licensee contracted to have a qualified vendor collect digital aerial ortho-photography for the entire Keowee-Toxaway Project. The digital aerial photography of the Keowee-Toxaway Project utilized a series of individual photographs taken from multiple flight lines of each lake to produce a wide area ortho-mosaic that appears as a seamless image. A wide area ortho-mosaic comprises imagery from multiple image frames that have been ortho-rectified to a digital elevation model

(DEM), geo-registered, combined to eliminate overlap, and radiometrically corrected. The imagery is collected in sets of multiple, parallel flight lines running either north-south or east-west. The final mosaic is a finely gridded (3-foot) 24-bit color image map constructed directly from digital aerial imagery. The color image and brightness of each mosaic pixel is determined by geometrically mapping that pixel to an image frame from the digital camera, with geometric corrections and radiometric corrections applied.

The aerial photography data was incorporated into the GIS system as a backdrop to allow the Keowee SMP shoreline classification data to be edited to match the photography and the Project Boundaries. Other base level data was edited as necessary to establish the proper geographical relationships. The process for modifying the SWFHS data to match the digital aerial photography involved realigning the SWFHS data to match the approximate full pond contour for easily discernable shoreline areas.

The digital ortho-photos of the Project area around Lake Keowee and Jocassee were then scanned to produce color digital ortho-photos with a resolution of 0.5 foot per pixel. Airborne GPS and ground control was collected to support the digital aerial triangulation (DAT) and the Ortho-photo generation. The digital ortho-photos were produced to meet NMAS for 1"=200' mapping. The standard projection is South Carolina SPCS NAD 83 U.S. survey foot; the vertical datum is NAVD88. Each individual tile measures 7,500 feet (E-W) and 6,250 feet (N-S) direction. Each tile is completely covered with color digital ortho-imagery.

The basic file format for each ortho-photo tile is GeoTIFF file format with world file. Compressed MrSID images by tile are derived from the original GeoTIFF file format.

The Digital Terrain Model (DTM) was developed for the generation of the digital ortho-photos as masspoints and breaklines and were incorporated into the GIS as Arc 3D shape files.

The digital aerial photography of the Keowee-Toxaway Project is available to the resource agencies and municipalities via the Licensee's Data Release Process. The aerial photography is only viewable using ESRI Arcview software. A viewable version of the aerial photography will be available on-line in early 2007. The Licensee has included the aerial photography on CD in the final version of the Keowee SMP filed with the FERC. The aerial photography on CD is available to the public for purchase by contacting Duke Energy Lake Services at 1-800-443-5193.

4.3.2 Geo-videography

GPS-referenced digital video shoreline imagery was collected of the entire shoreline, including island shoreline, of Lake Keowee in May 2006. The estimated 389 miles of collected geo-video imagery will be utilized as an inventory tool to assess the shoreline and near shore environment. The resulting geo-video provides a geospatial baseline of critical features like shoreline modifications, shoreline conditions, over-water structures, and in water structures, and undisturbed habitat areas for a highly variable landscape.

The collection team collected geo-referenced video of the area between the waterline and the top of the riparian zone, an area ranging from 10 to 50 meters perpendicular to the shoreline. Date, time, latitude, and longitude positions were recorded and associated with each video image. The final geo-video data is in MPEG2 format and ESRI geo-database format to help with data compression and distribution. The resulting video is viewable by using video software. ArcGIS users can also view it from a geo-referenced standpoint using the ArcGIS Video Extension. A detailed description of the geo-video collection process and supporting documentation is included in Appendix G.

Because the GPS-based geo-videography of the Lake Keowee shoreline requires huge data storage capability (approximately 232 gigabytes) and an Arcview video extension, the videography is not readily available to the public. The geo-videography is available, via the Licensee's Data Release Process, to the resource agencies, the Executive Director of the FOLKS, and the municipalities provided a suitable hard drive is provided to allow transfer and storage of the data. The Licensee will include the geo-videography on a series of hard drives in the final version of the Keowee SMP filed with the FERC.

4.4 Shoreline Stabilization

Shoreline stabilization is encouraged to control soil erosion; however, stabilization may not be necessary or allowed in certain areas. The Licensee requires all applicants desiring to stabilize shoreline or plant shoreline or aquatic vegetation to contact Lake Services and obtain written authorization prior to beginning any activity/construction inside the Project Boundaries or on the Licensee's non-Project property.

4.4.1 Shoreline Stabilization Technique Selection Process (SSTSP)

The Licensee uses the Shoreline Stabilization Technique Selection Process (SSTSP) to evaluate shoreline stabilization requests. The Licensee developed the SSTSP as an alternative to a set of engineering criteria, to provide an easier process for an applicant to understand, and to enable more consistent field implementation when considering the need for shoreline stabilization. The SSTSP encourages applicant to consider utilization of bioengineering techniques or landscape plantings first. If neither of these options is sufficient to control the erosion, applicants may then consider the use of rip-rap with a seawall as the option of last resort. The Licensee may, depending upon the characteristics of the site proposed for stabilization, require an engineering justification for the use of seawalls. Utilization of less-hardening stabilization techniques (e.g., *bioengineering*, *landscape plantings*, *rip rap*, etc.) may be a requirement instead of the use of seawalls.

SHORELINE STABILIZATION TECHNIQUE SELECTION PROCESS

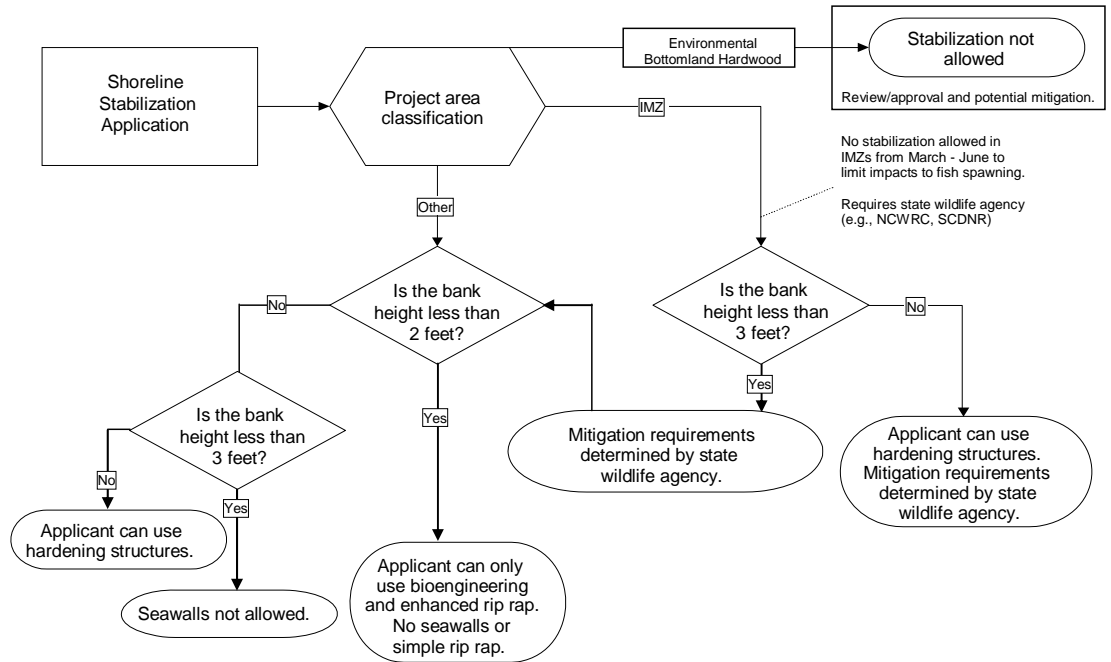


Figure 5A-1

4.4.2 General Conditions for Shoreline Stabilization

1. All seawalls must have Class B or larger rip-rap extending 6 feet lakeward from the base.
2. Considering current lake level operating targets and variability and the desire to prevent unnecessary impacts, rip-rap must be confined to the area between 6 feet below full pond elevation and no more than one foot above full pond elevation to the maximum practicable extent. Potential exceptions include areas where entire placement is above the FERC Project Boundaries, where banks are already eroded above the full pond elevation or where severely eroded banks must be sloped back or terraced to provide minimum bank stability.
3. Seawalls are not allowed in areas with an average eroded bank height of less than 3 feet.

4. Proposals for stabilization where bank height is less than 2 feet can use approved bioengineering techniques, a stabilization approach that uses natural and living material, and enhanced rip-rap techniques only.
5. The bank height is the average height of the eroded shoreline (measured from the original lake bed to the top of the eroded bank) in the area to be stabilized.
6. Bio-Bioengineering techniques may include use of rip-rap with live stakes, rock filled gabions, live staked crib walls, biologs, and numerous other approaches.
7. Applicants can use bioengineering, rip-rap, seawalls or any combination of stabilization techniques where use of hardening structures are allowed.
8. Stabilization in an IMZ requires review/approval by the applicable state wildlife agency and reasonable mitigation requirements as determined through consultation with the state wildlife agencies.
9. Stabilization is not allowed from March 1 through June 30 in areas identified as IMZs in the SMP.
10. New or expanded stabilization activities (excluding bioengineering) may not be undertaken within the 50-foot Environmental Offset associated with an Environmental classification in the SMP.
11. Stabilization of eroded banks that are 3 feet in height or higher may be considered for bank reshaping by either cut or fill techniques provided:
 - a. The stabilized bank uses a combination of rip-rap (not installed any higher than one foot above full pond) and bioengineering techniques;
 - b. The cut or filled area, above the height of the rip-rap, is stabilized using vegetation in density and composition similar to other naturally vegetated areas in the vicinity of the stabilized shoreline;
 - c. The toe of the rip-rap is vegetated if the lower limit of the rock provides a stable beach-shelf at an elevation 2-4 feet below full pond;
 - d. The work can be conducted in accordance with all applicable buffer regulations; and
 - e. The amount of cut or fill does not substantially alter the full pond contour, is strictly limited to only that necessary to provide a stable angle for rip-rap and revegetation, and is specifically quantified in the written authorization from Duke Energy Lake Services for the project.
12. Stabilization in areas classified as Natural due to the presence of significant cultural resources may not involve ground-disturbing activities.
13. Applicants are encouraged to avoid activities (including stabilization) that could have an adverse impact upon existing water willow beds. Rip-rap installed below the normal lake level elevation and associated with water willow beds must be limited to one layer deep to allow spaces between the stone for water willow recruitment.

4.5 Riparian Management Information

The Licensee provides a range of information about bioengineering techniques, material sources, information sources, and the value of riparian zones on its website. This information is available at:

www.cinergy.com/lakes_recreation/lake_management/shoreline_stabilization_guide/.

The Licensee also provides a condensed version of this information in a pamphlet titled “Stabilizing Your Shoreline,” included in Appendix H. The “Stabilizing Your Shoreline” pamphlet is also included in all lake use permit application packages.

For those wanting to enhance fish habitat, the Licensee provides an informational piece promoting fish-friendly pier design as a fish habitat enhancement technique. The Fish-Friendly Pier pamphlet (see Appendix I) is also currently included in all lake use permit application packages for private facility and shoreline stabilization applicants.

5.0 History and Consultation

The development of the Shoreline Management Plan for Lake Keowee was greatly influenced by the experience of the Licensee in developing and implementing the Catawba-Wateree SMP (C-W SMP) over many years. In particular, the Keowee SMP uses the shoreline classifications and lake use restrictions originally developed for the C-W SMP.

The C-W SMP was originally developed in 1994 with major modifications to the shoreline classifications in 2001. In conjunction with the relicensing of the C-W Project in 2006, the lake use restrictions and shoreline classifications were modified yet again utilizing a robust stakeholder interest-based negotiation process. Given the amount of resource agency and public participation in the development of the C-W SMP over a number of years, the state resource agencies and the larger Lake Keowee stakeholder group participating in the development of the Keowee SMP agreed by consensus to use the C-W SMP as the foundation for the Keowee SMP shoreline classifications and lake use restrictions.

The Shoreline Management Guidelines - an integral part of any shoreline management program - were developed initially in the mid-1980s and have been consistently applied to both the Keowee-Toxaway Project and the Catawba-Wateree Project. The last major revision of the SMG was implemented on June 1, 1996, for both Projects. During the time since implementation of this revision, there have been modifications to the programs and specific criteria within the permitting programs to better protect and enhance the values associated with these two Projects. Soon after implementation of the revised guidelines in 1996, Duke solicited input from stakeholders by conducting a series of Focus Group meetings and workshops in an effort to better understand the impact of the 1996 SMG revisions and to begin to assemble comments and input into future revisions of the criteria within the permitting guidelines. These Focus Groups and workshops included stakeholders and agencies with interests in both Projects. Information regarding

these meetings has been included in other Duke-sponsored SMP updates and is included in the Keowee SMP (see Appendix J) to provide additional background and history for those not familiar with these previous opportunities for input into the SMP.

Specifically for development of the Shoreline Management Plan for Lake Keowee, Duke conducted a series of informational meetings with the state and federal resource agencies and an array of other interested stakeholders to discuss the methodology and criteria associated with the Keowee SMP shoreline classifications and lake use restrictions, and the SMG. Additionally, Duke has provided copies of the Keowee SMP on CD to the US Army Corps of Engineers, US Fish and Wildlife Service, South Carolina Department of Health & Environmental Control, South Carolina Department of Natural Resources, South Carolina Department of Archives and History, South Carolina Institute of Anthropology and Archaeology, Eastern Band of Cherokee Indians, Pickens County, Oconee County, the surrounding municipalities, and the Executive Director of the Friends of Lake Keowee Society for a 30-day review and comment period. The SMP is also included on the Licensee's website located at:

http://www.duke-energy.com/environment/water/smp/keowee_smp/. Comments regarding the plan can be submitted via the website. Comments on the Keowee SMP and the Licensee's response to comments received will be included in the Keowee SMP to be filed with the FERC on or before December 31, 2006.

Duke Energy Lake Services made the Keowee SMP available to the appropriate resource agencies, the Executive Director of FOLKS(Friends of Lake Keowee Society), and municipalities on CD and also via the internet to facilitate distribution of the document. The Keowee SMP has been available since November 1, 2006, at the Duke Energy website for viewing and providing comments.

The intent of utilizing the website and CDs is to use the latest technology available to assist in the distribution of the Keowee SMP to a variety of resource management agencies and other interested stakeholders. The availability of having the document on the website and the ability to print copies of the whole document including maps or a portion of the document should be seen as an improvement over conventional means of distribution.

The SMP Website is designed as a data distribution tool available to the internet public. The SMP distribution website will provide dynamic mapping of SMP information, allow users to spatially identify SMP information and in time find locations by entering valid street addresses as well as download related hard copy documents. This website utilizes the Google Map interface to provide aerial images and maps as well as address location services; this is coupled with Duke Energy Lake Services' Geographic Information System data to provide the public with access to vast amounts of Shoreline Management Plan data while delivering the information via a user friendly interface.

The Recreation Use and Needs (RUN) study findings will be incorporated into the Keowee SMP as the RUN study is conducted in 2006 and 2007.

5.1 Background & History: SWFHS, SMP Mapping, and 2001 C-W SMP Update

Fall 1996-Spring 1997: The Licensee met with representatives from the NCWRC and SCDNR to cooperatively develop the shallow water fish habitat classifications and to observe these habitats in the field.

Spring - Early Summer 1998: Evaluated shallow water fish habitat classifications that were surveyed by the Licensee's consultant with input in the field from NCWRC and SCDNR.

Early Spring – Fall 1998: A total of six meetings were held with representatives from the Licensee, USFWS, NCWRC and SCDNR to finalize the Lake Use Restrictions associated with the SMP habitat classifications.

On August 26, 1998, the Licensee provided revised SMP maps to 44 agencies for review and comments. An additional 6 municipalities and the NC Clearinghouse, inadvertently omitted from the original filing, were also provided the SMP mapping information for review and comments. The Licensee filed the two separate Catawba-Wateree mapping projects (SWFHS and SMP revisions) with the FERC as one filing. The SMP mapping revisions were provided to 48 agencies for review and comment.

Winter 1998: An additional meeting between the Licensee, NCWRC, USFWS and SCDNR was conducted to finalize the Lake Use Restrictions associated with the Impact Minimization Zone (IMZ) SMP classification.

Spring 1999: The Licensee provided information regarding an amendment to the original and supplemental filings of the SMP mapping revisions to the 51 identified SMP resource agencies. The Licensee submitted the amendment to the Commission on May 27, 1999.

Early Summer 2000: To facilitate the involvement of stakeholders in the development of the SMP Update for the Catawba-Wateree Project, the Licensee formed a focus group. The goals of focus group sessions were twofold: (1) to provide an opportunity for the Licensee to share information on how the SMP Update is being developed; and (2) to provide a mechanism for the focus group participants to provide input into the SMP Update. The Licensee developed a comprehensive list of potential stakeholders representing fish and wildlife, recreation and safety, economic development, water quality, and preservation and land use issues. Over fifty representatives of these entities (see Appendix J for a list of participants) were invited to the Focus Group session on May 30, 2000. Those attending included representatives of the U.S. Fish and Wildlife Service (NC), the NC Wildlife Resources Commission, the SC Parks Recreation and Tourism, Burke County Planning Director, the Catawba River Foundation, the Lake Wateree Homeowners' Association (WHOA), the Catawba-Wateree Water Users Association, Mecklenburg County Environmental Protection, Charlotte-Mecklenburg Utilities Department, NC Department of Parks and Recreation, the Western Piedmont Council of

Governments, Crescent Resources, and others. The focus group session was recorded and copies of the presentation materials were provided to those who were invited but were not able to attend.

Fall 2000: A second Focus Group to receive input and comments on the draft C-W SMP was conducted, using the previously identified lake stakeholders, on October 6, 2000, (see Appendix J for a complete list of all participants of the October 6th meeting.)

2004 – Spring 2006: Study teams comprised of resource agencies and other interested stakeholders reviewed and modified the Catawba-Wateree 2001 SMP Update map classifications and lake use restrictions and the Shoreline Management Guidelines as part of the process for relicensing the Catawba-Wateree Project. These meetings included agencies and stakeholders representing both North Carolina and South Carolina. There were a total of 30 meetings specifically related to the C-W SMP and SMG conducted over this timeframe (see Appendix J for a list of meeting dates and team participants.)

Fall 2005: A series of meetings with resource agencies and interested lake stakeholders specifically related to Lake Keowee were held for the purpose of providing input into revisions of the classifications and lake use restrictions that had been developed as part of the relicensing process for the Catawba-Wateree Project and used as the foundation for the Shoreline Management Plan mapping work for Lake Keowee. These meetings occurred on September 16, 2005; October 6, 2005; and October 19, 2005 and November 15, 2005.

During each of these meetings, the Licensee made presentations to the stakeholder teams to introduce the concept of shoreline management planning and the important components of a plan, especially the development of mapping to identify the important habitat types, and existing and future uses along the shoreline of Lake Keowee. The Licensee also explained the usefulness of utilizing the existing classifications and use restrictions developed as part of previous SMPs and their applicability to the shoreline of Lake Keowee. Explanation and refinement of the classification criteria were also accomplished in field site visits with the resource agencies, specifically, SC Department of Natural Resources (SCDNR) on September 7, 2005, and biologists from both the SCDNR and US Fish and Wildlife Service on October 11, 2005. In order to develop the Keowee SMP as efficiently and in as timely a manner as possible, the Licensee proposed utilizing the existing information developed as part of the C-W SMP as the foundation for mapping on Lake Keowee to allow field inventory to begin in early Spring 2006. This issue was presented at each of the stakeholder meetings; the stakeholders agreed in consensus with this approach.

5.2 Background & History: Keowee Shoreline Management Guidelines

Fall 1987: The Licensee conducted an initial inventory of all existing Private Facilities (e.g., piers, slips, boathouses, etc.) on Lake Keowee and Lake Jocassee. There were approximately 800 facilities on Lake Keowee and approximately 20 facilities on Lake Jocassee. The Licensee developed and distributed a brochure, “Living with Our Lakes,”

describing the policies and requirements for facility construction, shoreline stabilization and excavation. This information was provided to all those requesting lake construction/stabilization/excavation activities within the Project Boundaries of the Keowee-Toxaway Project and Catawba-Wateree Project.

1988: The Licensee entered into two separate regional General Permits with the US Army Corps of Engineers (Charleston District) and the SC Budget and Control Board (implemented by the SC Water Resources Commission and later issued and implemented by SC Department of Health and Environmental Control.) These general permits provide a consistent set of criteria for review and approval of lake use construction/stabilization/excavation activities and apply to Lake Keowee, the Catawba-Wateree Project lakes and other Project lakes in South Carolina. Typically, these general permits are renewed on a 3-5 year basis.

circa 1990: The Licensee revised the initial permitting criteria based upon changing development patterns, regulatory requirements, business needs and lessons-learned since implementation of the initial permitting programs in 1987. The revised policies and requirements were described in a brochure, “Safe and Attractive Lakes Are Everyone’s Job.” This information was provided to all those requesting lake construction/stabilization/excavation activities within the Project Boundaries of the Keowee-Toxaway Project and Catawba-Wateree Project lakes.

1994: The Licensee revised the existing policies and requirements on January 31, 1994, and again on October 1, 1994.

Summer 1996: The Licensee revised the existing policies and requirements and included this information in a more comprehensive document referred to as the Shoreline Management Guidelines. Shoreline Management Guidelines were revised and implemented on June 1, 1996, and were in place with only minor modifications until replaced with the current revised guidelines on September 1, 2006. These guidelines included application procedures, criteria, caution statements and consequences for violations for each of the six lake use permitting programs (i.e., Commercial Facilities, Private Facilities, Shoreline Stabilization, Excavation, Conveyance, and Miscellaneous Reservoir Uses.)

2004 – Spring 2006: Study teams comprised of resource agencies and other interested stakeholders reviewed and modified the Catawba-Wateree 2001 SMP Update map classifications and lake use restrictions and the Shoreline Management Guidelines as part of the process for relicensing the Catawba-Wateree Project. These meetings included agencies and stakeholders representing both North Carolina and South Carolina. There were a total of 30 meetings specifically related to the SMP and SMG conducted over this timeframe (see Appendix J for a list of meeting dates and team participants.)

Fall 2005: A series of meetings with resource agencies and interested lake stakeholders specifically related to Lake Keowee were held for the purpose of providing input into revisions of the Shoreline Management Guidelines that had been developed as part of the

relicensing process for the Catawba-Wateree Project. These meetings occurred on September 16, 2005; October 6, 2005; and November 15, 2005 (see Appendix J for a list of meetings and participants.)

Spring 2006: The Licensee, along with representatives from the SC Department of Natural Resources and the SC Department of Health and Environmental Control, participated in a forum on March 2, 2006, sponsored by the Friends of Lake Keowee Society. This forum allowed each of the organizations represented to provide information of particular importance to Lake Keowee and also allowed those in attendance to develop questions that were posed to the participants by a moderator (see Appendix J for a scanned version of the forum sign in sheet.)

Summer 2006: The Licensee sponsored a series of meetings for lake construction contractors and Open House-type forums specifically targeted to Lake Keowee and the other lake regions on the Catawba-Wateree Project. These contractors meetings and Open Houses occurred during May and June, respectively. A total of six of these events were conducted with two of those six specifically dedicated to Lake Keowee. These events occurred on May 23, 2006, and June 6, 2006 (see Appendix J for a list of attendees for all six of these events.)

November 2006: The Licensee will sponsor an additional Open House-type forum at the Oconee Nuclear Station's World of Energy on November 2, 2006. The public is invited to learn more about development of the SMP and its components, have the opportunity to discuss issues with individual members of the Lake Services team and its consultants, and provide comments on the overall plan or any component of the plan.

6.0 SMP Distribution

The primary means of distributing the Keowee SMP will be via the Internet. The Licensee will provide written notification to the municipalities in the vicinity of the Project or whose boundaries or extra-territorial jurisdictions adjoin the Project Boundaries, the Executive Director of the Friends of Lake Keowee Society (FOLKS), and the resource agencies that the SMP is available for review via the Internet at: http://www.duke-energy.com/environment/water/smp/keowee_smp/. Other interested stakeholders will be notified of the availability of the Keowee SMP by releases to local media outlets and the Licensee's website.

The Licensee will distribute copies of the SMP in a CD-ROM format to resource agencies, the Executive Director of the FOLKS, and municipalities. Others may request a copy of the SMP on CD for a nominal fee. Requests for hard copies of the complete SMP will be handled by providing a CD copy from which copies can be printed. The Licensee will provide hard copies of the SMP Classification Maps to the resource agencies upon request. Hard copies of the maps are available to others, for a nominal fee, through the Licensee's GIS consultant. Those interested in hard copies should contact the Licensee at 1-800-443-5193 for information regarding map availability.

The Keowee SMP will be finalized in a two-step process. The first step will involve distribution and notification of the availability of the current Keowee SMP for review and comment. This will be accomplished by making the current Keowee SMP available to resource agencies, municipalities, and other interested stakeholders on CD and/or the Internet for a 30-day review and comment period. The second step will involve the consideration by the Licensee of comments submitted and revision of the SMP as appropriate. The Licensee will then file the SMP with the FERC on or before December 31, 2006. In the final Keowee SMP that is filed with the Commission, the Licensee will address the comments provided during the 30-day review period including addressing comments that were not incorporated into the Keowee SMP filed with the FERC.

7.0 SMP Implementation Process

The Licensee began utilizing the SMP classification maps and lake use restrictions as the preliminary mapping data became available. This was necessary to ensure that the Licensee was fulfilling its obligations under the License to protect and enhance the Project's scenic, recreational, and other environmental values. Complete lake use permit applications mailed to the Licensee and postmarked before September 1, 2006, will be processed under the Land Use Article (Article 49) standard in the Project license, and the revised Shoreline Management Guidelines (SMG) implemented September 1, 2006.

8.0 Additional Management Activities

The Licensee has undertaken numerous management activities since implementation of the lake use permitting guidelines in 1987. These activities include but are not limited to:

- Submittal of the Excavation Programmatic Agreement (November 15, 1998) to ensure compliance with the license for activities not covered under the Land Use Article (Article 49). The agreement was developed in consultation with the resource agencies and assured the Licensee's excavation permitting process complied with all applicable Federal, State, and local regulations. This PA was the basis for the criteria included in the current Shoreline Management Guidelines for the Excavation Program.
- Conducting a series of Focus Group meetings (July 28, 1997, August 26, 1997, September 30, 1997, and October 14, 1997) to receive input into revisions of the Shoreline Management Guidelines from a representative group of lake stakeholders on both the Keowee-Toxaway Project and the Catawba-Wateree Project. (see Appendix J).
- Co-sponsorship with the NC Marine Trades Services, two workshops on pumpouts and proper disposal of marine wastes (March 18, 1998 and October 22, 1998). The first of these two, one-day workshops brought together pumpout vendors, NC and SC

state and local agency permitting personnel involved in regulating pumpout and waste disposal and distribution of grant funding, and 27 operators of public and private marinas (see Appendix J) on Duke Energy lakes including Lake Keowee. Attendees exchanged information and identified any obstacles for proper marine waste disposal. The second workshop included key agency personnel and consisted primarily of a review of the results of Duke Energy's draft Pumpout Study findings.

- Conducting a Pumpout Study (see Appendix K) on Duke Energy lakes in North Carolina and South Carolina (December 21, 1998). The study consisted of a compilation of general pumpout information, benchmark data, and grant funding sources, identification of obstacles to pumpout installation and action items delegated to workshop participants.
- Co-sponsorship with the NC Marine Trades Services a workshop (see Appendix J) for commercial marina operators (March 30, 1999).
- Ensuring permitted structures are maintained in good repair and do not pose a hazard to public safety and navigation through implementation of the Structure Renovation Program (1995-Present) (see Appendix L).
- Utilizing surveillance contract vendor to inspect the shoreline of Lake Keowee by boat for the purpose of identifying violations of the Duke Energy Shoreline Management Plan and Shoreline Management Guidelines (see Appendix M).
- Conducting annual marina inspections for marina facilities (1999-Present).
- Procedure for Addressing Challenges to Shoreline Management Plan Mapping Accuracy (see Appendix N).
- Applicant prepared environmental assessment information (see Appendix O).
- Development of a comprehensive website (www.duke-energy.com) to provide readily available information on the SMP and SMG for the Nantahala, Catawba-Wateree, and Keowee-Toxaway projects.
- Coordination with the SC Department of Health and Environmental Control (SCDHEC) in the development, revision and implementation of the SCDHEC Regional General Permit (see Appendix P).
- Coordination with the Charleston District of the US Army Corps of Engineers (USACOE) in the development, revision and implementation of the USACOE Regional General Permit (see Appendix Q).
- Publication and distribution of the Access Book (Lake Facts and Maps) which provides lake access information of all access areas and maps of each lake (see Appendix I).

- Distribution in the Private Facilities permit application package miscellaneous safe boating and water safety information available through Duke's membership in the National Safe Boating Council.
- Development of Project Boundaries Elevation Line in support of filing Exhibit G Drawings based on parcel information included in Duke Energy's property files and contour elevation data obtained in the development of the Keowee SMP GIS Database.