ALABAMA POWER COMPANY

BIRMINGHAM, ALABAMA

MARTIN HYDROELECTRIC PROJECT

FERC NO. 349

STUDY PLAN 12 (G) – EFFECTS OF RAISING WINTER POOL LEVEL AND INCREASING THE DURATION OF SUMMER POOL ON LAKE MARTIN RECREATION USE AND ECONOMIC INDICATORS

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Prepared by:

ALABAMA POWER
A SOUTHERN COMPANY

ALABAMA POWER COMPANY
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STUDY PLAN 12 (G) – EFFECTS OF RAISING WINTER POOL LEVEL AND INCREASING THE DURATION OF SUMMER POOL ON LAKE MARTIN RECREATION USE AND ECONOMIC INDICATORS

1.0 GOALS AND OBJECTIVES OF STUDY

Many stakeholder groups have requested that the Alabama Power Company (Alabama Power) investigate the feasibility of raising the winter rule curve at Martin. In Study Plan 12 (a), Alabama Power proposes to conduct a study that will model an increase in the winter pool elevation in increments of 1 foot from el. 481 ft. msl[1] to el. 486 ft. msl. as well as to examine extending the summer pool level in the shoulder seasons (later winter/early spring and early fall). As a result of this modeling study, Alabama Power has agreed to examine the effects on recreation use, property values, and lake-related business sales if these rule curve changes are implemented.

There are multiple objectives associated with each component of the study. The objectives regarding recreation use are to:

1. estimate total recreational use of the lake, by month and by day type (weekday, weekend, holiday);
2. estimate recreational user characteristics (county of residence, activity participated in, shoreline property owner, etc.);
3. estimate trip cost by various categories (e.g., fuel, food, bait, lodging, etc.);
4. estimate economic impacts (direct, indirect, induced, number of jobs) of recreational use; and
5. estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on recreational use.

The objectives regarding property values are to:

1. estimate characteristics of shoreline property owners and their property (e.g., shoreline footage, residence status [full or part time], recreational activities participated in from property);
2. estimate usability of shoreline structures (i.e., boat houses, docks) at various water levels;
3. estimate total value (current market value) of shoreline property;
4. estimate costs associated with construction and/or maintenance of house and any shoreline structures (i.e., boathouse, docks, seawall);
5. estimate economic impact (direct, indirect, induced, number of jobs) of construction and/or maintenance costs; and
6. estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on shoreline property values.

[1] Elevation 481 ft msl is equivalent to el. 480 Martin Datum (MD).

Finally, the objectives regarding lake-related businesses are to:

1. estimate characteristics of business and business activity (e.g., on lake or off lake, type of business, length of time in business, months of operation, gross annual sales, etc.); and
2. estimate effects of increasing the duration of the summer pool and increasing the elevation of winter pool on business activity.

2.0 RELEVANT RESOURCE MANAGEMENT GOALS

Fluctuating water levels at hydropower projects may affect resources associated with a hydroelectric project. Not only could fluctuating water levels affect the environmental resources (*i.e.,* fisheries, erosion, aquatic plants, etc.), they also affect social and economic resources (recreation use, property values, etc.). Many Lake Martin stakeholders have requested an examination of how a rule curve change at Lake Martin could potentially affect recreation visitation, property values, and reservoir related businesses. This information will provide the Federal Energy Regulatory Commission (FERC) with necessary information regarding the social and economic impacts of the Project.

3.0 BACKGROUND AND EXISTING INFORMATION

Fishery Information Management Systems, Inc. (FIMS) conducted a study in the 1990s that estimated recreation visitation, trip expenses, distribution of recreation use, property values, and recreation-related business activity. Much of the information provided in the report (FIMS, 1997) is relevant to possible rule curve changes associated with the relicensing of Lake Martin. The FIMS report will provide the basis for this study and will be used as a template for providing current effects of a possible rule curve change.

Furthermore, Alabama Power conducted a recreational use study in 2007 (Kleinschmidt, 2008) that provides recreational use patterns as well as an up-to-date inventory of on-the-water businesses at Lake Martin. However, this study was conducted during the drought of 2007, when the elevation of Lake Martin peaked at 487 ft msl (3 feet below the normal operating curve) and reached 481 ft msl (normal winter pool) by September 1, 2007 (when winter pool is normally reached on December 31). Nevertheless, this study could provide valuable information on the effects of reduced summer pool levels on recreation at the Project.

4.0 PROJECT NEXUS

The nexus to the Project is the FERC project boundary and general project vicinity.

5.0 STUDY AREA AND STUDY SITES

The study area differs between the three components of this study. For the recreation use component, the study area is Lake Martin, from the dam to Irwin Shoals, including land-based recreation activity within 10 feet of summer pool level (491 ft msl). For the shoreline property

value component, the study area is all shoreline property, defined as property that abuts Lake Martin at summer pool level (491 ft msl), from the dam to Irwin Shoals. For the lake-related business component, the study area will be limited to the three counties surrounding the Project (Coosa, Elmore, and Tallapoosa Counties).

6.0 PROPOSED METHODOLOGY

Alabama Power proposes to examine the effects a rule curve change on recreation use, property values, and lake-related business sales. This study will be performed by Southwick Associates. The methodology proposed by Southwick Associates is detailed in Attachment A.

7.0 CONSISTENCY WITH GENERALLY ACCEPTED SCIENTIFIC PRACTICE

The methodologies outlined in Attachment A is consistent with generally accepted survey techniques and economic modeling.

8.0 PRODUCTS

A draft report will be distributed to the MIG 3 for review and comment. A final report will be provided as part of the license application that will include a PDF copy of the literature/citations used in the report.

9.0 SCHEDULE

This schedule corresponds to Alabama Power's Process Plan and Schedule filed with FERC on February 16, 2009. Actual consultation meeting dates will be determined with MIG 3 members upon FERC approval of the study plan.

Alabama Power files Final Study Plan ..... March 2009
Alabama Power request proposals for
completion of study..... November 2008
FERC Approval ..... April 2009
MIG 3 Meetings..... May 2009 – Fall 2010
Initial Study Report..... November 2009
Initial Study Report Meeting ..... December 2009
Data Collection ..... May 2009 – May 2010
Draft Report ..... Summer 2010
Final Report ..... Fall 2010
FERC Updated Study Report..... September 2010
Updated Study Report Meeting ..... September 2010

10.0 LEVEL OF EFFORT AND COST

Alabama Power estimates the cost of conducting the study, including consultation with the MIG 3, will be approximately $500,000.

11.0 REFERENCES

Fishery Information Management Systems. 1997. Potential Impacts of Water Diversion on Recreational Use and Economic Values Associated with Six Alabama Reservoir Systems, Volume 6: The Martin Reservoir System. ADECA-OWR-97-07. Alabama Department of Economic and Community Affairs, Montgomery, AL.

Kleinschmidt. 2008. Martin Hydroelectric Project (FERC No. 349): Recreation Use Report. Kleinschmidt Associates, Pittsfield, ME.

ATTACHMENT A

DRAFT SCOPE OF WORK

Alabama Power Company
Martin Project Relicensing

Attachment A

Technical Scope of Work

Effects of Increasing Duration of Summer Pool and Level of Winter Pool on Recreation Use and Selected Economic Indicators at Lake Martin Alabama

This document provides the scope of work for estimating the effects of increasing duration of summer pool and level of winter pool on recreation use and selected economic indicators at Lake Martin, on the Tallapoosa River in the State of Alabama. The goal of this effort is to understand the potential impacts associated with current reservoir operations and proposed alternatives on recreation use and associated economic impacts.

1.0 SCOPE

Kleinschmidt Associates (Kleinschmidt) seeks the services of a sub-consultant to meet the following objectives. These objectives are grouped according to three major tasks associated with the project goal.

1.1 Meetings

The subcontractor will attend two meetings in either Birmingham, AL or Alexander City, AL.

1.1.1 Kickoff Meeting

The subcontractor will attend an on-site kickoff meeting shortly after award of the contract.

1.1.2 Report Review Meeting

The subcontractor will attend a report review meeting after submitting the Preliminary Draft Report (see Sections 2.2 and 3.0).

1.2 Task I: Recreation Use and Economic Impact

The objectives of this task are to:

1. estimate total recreational use of the lake, by month and by day type (weekday, weekend, holiday);
2. estimate recreational user characteristics (county of residence, activity participated in, shoreline property owner, etc.);
3. estimate trip cost by various categories (e.g., fuel, food, bait, lodging, etc.);
4. estimate economic impacts (direct, indirect, induced, number of jobs) of recreational use; and
5. estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on recreational use.

1.2.1 Data Collection

Survey sampling will be used for conducting user counts and on-site (contact) surveys of recreation users on Lake Martin, from the Martin Dam to Irwin Shoals (Figure 1-1), including land-based activity within 10 feet of full summer pool (491 ft MSL).

The user counts and contact surveys will be conducted targeting a starting date of May 29, 2009 and continue through May 28, 2010.

The sub-consultant will provide a detailed draft sampling plan for the recreation user counts and interviews. This sampling plan should follow as closely as possible the sampling plan outlined in Chapter 2 of Volume 1 of the Fishery Information Systems, Inc. (FIMS) (1997) study. Table 1 summarizes the number of data collection days using this approach. A more detailed draft sampling plan will be provided to Kleinschmidt and Alabama Power for review before the kick-off meeting and before actual field work will begin.

Table 1. Summary of Number of Sampled Days

Time Block	Months	Sampled Days Per Month	Total Sampled Days in Time Block for Reservoir	Total Sampled Days in Time Block for Tailwater
1	August- November	6	24	24
2	December-January	6	12	12
3	February-July	8	48	48
TOTAL			84	84

During daylight savings time (March-October), data collection will occur over a 7-hour period. For the remainder of the months, data collection will occur over a 5-hour period. Sampled days will be randomly assigned a morning or early afternoon start. The reservoir will be divided into four main sampling areas, which will be further divided into sampling sections. Each main sampling area will be sampled at least once a month in

timeblocks 1 and 2, and twice a month in time block 3. Within a main area sampled for a given day, two smaller sampling sections will be chosen for user counts and user intercept interviews.

For the reservoir, user counts and user intercept interviews will be made from a boat (a licensed boat operator and a survey clerk). For the Tailwater, the counts and user intercept surveys will be made by a survey clerk walking along the river. User counts (and user activities) will include anyone visible on the water or within 10 feet of shoreline.

Two trained local survey clerks will be assigned to each sampled data collection day at the specified data collection times to conduct the counts and interviews. Beyond Hello will be contracted to provide trained field surveyors

As noted in the 1997 FIMS study, the methodology that was used undersampled certain types of recreational users for the intercept survey (e.g., sailboats). Therefore, we are also recommending that in addition to the FIMS methodology, we use the reservoir team (boat operator and survey clerk) to visit different public launch sites on up to 30 sampled days to intercept users as they prepare to leave the site. The sole objective of this data collection effort is to ensure that a sufficient number of intercept surveys are collected from users engaged in different types of recreational activities.

Quality checks will be implemented to ensure that interviewers are following proper procedures, working the scheduled days, and to answer any questions that interviewers may have. Depending on the anticipated use level during each season, interviewers will be instructed to use a sample selection rule of every n^{th} visitor they encounter to complete the contact survey in order to ensure that they cover the full area of their route during the predetermined time slots. In addition to conducting counts and completing surveys with recreators, interviewers will record the number of refusals, language problems, and recreators who should have been sampled, but were missed so that an accurate count of recreational users can be established on each data collection day. Interviewers will carry identification as well as a letter from Alabama Power that explains the purpose of the study and asks for their cooperation.

The survey instruments will build upon and be modified from those used in the FIMS (1997) study, the 2002 TVA Reservoir Operations Study, and any instruments developed, tested, and successfully used for previous recreation use and needs studies and previous economic impact studies of outdoor recreation (Bergstrom et al., 1996; Bergstrom et al., 1993; Bergstrom et al., 1990a; Bergstrom et al., 1990b; Cordell et al., 1990; Cordell et al., 1992). The resulting data will be used in the modeling process described in Section 1.2.2.

Comments and suggestions from Alabama Power, Kleinschmidt, and other reviewers on draft survey instruments will be collected and synthesized. The sub-contractor will meet with Kleinschmidt and Alabama Power to discuss comments, resolve any conflicting suggestions or recommendations and determine the revisions required to the draft survey

instruments. Upon completion of final draft survey instruments, the surveys will be pre-tested to insure their adequacy and usability.

During the data collection period, an 800 number for questions, problems, or comments about the data collection activities that arise from on-site interviewers will be maintained by the subcontractor.

1.2.2 Data Analysis

For completed questionnaires obtained during the interviews, on-site interviewers will enter the completed survey forms after each data collection shift. The database with responses will be monitored by the subcontractor, ensuring a good count on each sampling day's activity.

In order to estimate economic impacts (direct, indirect, induced, number of jobs) of recreational use, recreation expenditure information for use with IMPLAN will be collected in the on-site survey for recreation users. The general methodology for estimating changes in regional economic impacts of recreation resulting from changes in reservoir levels and river flows are documented in a number of previous studies (Cordell et al., 1990a; English et al., 1995; English and Bowker, 1996; Cordell and Bergstrom, 1993; Roach et al., 1999) and includes the following basic steps or tasks: 1) define impact region; 2) estimate current or baseline recreational use; 3) estimate current recreational expenditures per user per visit or day; 4) estimate current or baseline regional economic impacts; 5) estimate changes in recreation use under operating alternatives; 6) estimate changes in regional economic impacts under operating alternatives. Estimating changes in impact resulting from changes in reservoir levels will be conducted per the references mentioned above. The impact regions will be finalized during the kick-off meeting with Kleinschmidt and Alabama Power as well as the various operating alternatives before proceeding with any analyses or data collection.

In order to estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on recreational use, contingent behavior or trip response questions and models[1] will be used to estimate how much recreational use and economic impacts for lake recreation will change with water levels.

For recreation users their actual and intended visits to Lake Martin will be examined where a "visit" is defined as a person "entering" and "exiting" Lake Martin to engage in outdoor recreation (e.g., driving to the lake on a Saturday from a home 30 miles away to go fishing or water skiing). Visits by recreation users may be a day trip meaning that the visit represents a day of use, or an overnight trip meaning that the visit represents multiple days of use.

[1] For example, see Bergstrom, J.C., J. H. Dorfman and J. B. Loomis. "Estuary Management and Recreational Fishing Benefits". Coastal Management, 32 (2004): 417-432.

To estimate empirical trip response models, actual visitation data and also "intended" visitation data will be used. These econometric models will relate recreational use to reservoir water levels as well as the other factors that influence the number of visits. These other factors may differ by type of recreational activity and may include weather-related information (precipitation and temperature), measures of site amenities and site quality, distance from the respondent's home to the intercept site and potential substitute sites, and day use vs. overnight use.

The data to be collected include users' actual and intended visitation based on alternative reservoir water-levels. Thus, for any given respondent, visitation information under "actual" reservoir water-level conditions and potential recreational activity under alternative water-level scenarios (intended data) will be collected. The combination of actual and intended visitation data introduce the variation required for regression analysis, allowing development of an empirical model explaining how site users will change visitation at that site,

$$USE^i = f(COST^i, WATERL, WEATHER, QUAL, SUBS, H) \qquad (1)$$

where,

USE^i = recreation use of Lake Martin by recreator *i* measured in recreation days
$COST^i$ = cost to recreator *i* of a recreation visit and (or) day at Lake Martin
WATERL = Lake Martin water-levels measured in terms of number of feet below normal "full pool"
WEATHER = a measure of Lake Martin area weather
QUAL = a measure of measures of the quality of Lake Martin recreation other than water-levels and weather (e.g., boat ramps, parks, other facilities)
SUBS = a measure of recreation sites which serve as substitutes to Lake Martin
H = measures of individual or household economic and demographic characteristics (e.g., income, age, etc.)

In the above model, the estimated coefficient on the WATERL variable measures how visits are predicted to change, all else equal, for a given foot of reservoir water-level below the normal "full pool" level. Different user groups (swimmers, picnickers, campers, anglers, boaters, etc.) may respond differently to reservoir water-levels, so separate trip-response models for different groups (each yielding a different estimated coefficient on the WATERL variable) may be estimated depending on data availability. Subsequent analysis may suggest that some groups share a similar response (say, swimmers, campers and picnickers) so that group models may be combined.

Low numbers of annual visits by shoreline property owners and renters of shoreline property may preclude estimation of the response of these users to water levels using the econometric trip response model. Econometric trip response models are typically estimated for non-shoreline property owner and property renter users who show more variation in numbers of annual visits. However, answers shoreline property owners and property renters provide to survey questions about how they would respond to water

levels will at least provide data for non-parametric estimation of the relationship between their use and Lake Martin and water levels.

Accounting for Site Substitution

In the above approach, the effects of potential substitution of recreation at one site for recreation at another site need to be considered. For example, lower reservoir water-levels at Lake Martin may result in users shifting recreational use to other reservoirs, or they may simply cease recreation altogether.[2] In order to account for substitution effects, the data collection effort will also elicit information about how Lake Martin users change recreation at other sites, as well as the site at which they were intercepted. Using these data, we will estimate a single-site model version of Equation (1) incorporating a substitute site variable. We will also attempt to estimate a multi-site or RUM (random utility model) version of Equation (1) that accounts for site substitution which provides for a greater degree of flexibility in analyzing a variety of alternative reservoir water-level scenarios. Because of data constraints, it may only be possible to estimate this RUM model for non-shoreline property owner and non-property renter users.

1.3 Task II: Shoreline Property Owners and Property Values

The objectives of this task are to:

1. estimate characteristics of shoreline property owners and their property (e.g., shoreline footage, residence status [full or part time], recreational activities participated in from property);
2. estimate usability of shoreline structures (i.e., boat houses, docks) at various water levels;
3. estimate total value (current market value) of shoreline property;
4. estimate costs associated with construction and/or maintenance of house and any shoreline structures (i.e., boathouse, docks, seawall);
5. estimate economic impact (direct, indirect, induced, number of jobs) of construction and/or maintenance costs; and
6. estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on shoreline property values.

1.3.1 Data Collection

A mail/web survey will be implemented in August 2009 with a random sample of shoreline property owners. The sample will be selected from the Alabama Power list of shoreline property owners, supplemented with homeowner group membership lists (if available). An estimated 300 completed surveys will be obtained from a random sample

[2] Lower water-levels at Lake Martin may even induce some shoreline property owners to recreate at other lakes – for example, a Lake Martin shoreline property owner may trailer his or her boat to another lake to go fishing or water skiing. This type of substitution may be minor, but may be incorporated into the modeling approach upon final consultation with Alabama Power and Kleinschmidt.

of shoreline property owners. While this number of surveys is greater than what is needed to obtain the specified confidence interval (± 10% at 90% CI), it will allow an analysis of the results by meaningful subgroups.

High response rates are critical to minimize the potential for non-response bias. Therefore, the shoreline property owner survey will consist of a number of follow-ups:

Advance Postcard: The first step will consist of an advance postcard informing sampled property owners about the upcoming mail survey and the study objectives. This advance postcard will also contain a link and unique password that property owners can use to complete the survey on the web. Past experience has shown that people prefer having different options for responding, and the web option is a very cost effective means for collecting the information since it eliminates printing, postage, and data entry costs. Typically, between 15-25% of sampled respondents select the web option for responding.

Survey Mailing: Approximately two weeks after the postcard mailing, nonrespondents to the web based survey option will be sent a survey package. This package will consist of a letter on Alabama Power letterhead that explains the purpose of the study and asks for their cooperation in completing the survey. This letter will also contain our toll-free number that respondents can use if they need assistance completing the survey. The survey package will also contain a survey booklet and a self-addressed and postage stamped return envelope.

Thank you/Reminder Postcard: This postcard is typically mailed 1 week after the survey mailing. The objective of this postcard is to thank those who have responded and remind those who haven't to please do so.

Using these procedures, an estimated 40-50% of sampled households will complete the survey.

For property owners the surveys will be mailed during the prime recreation season (August 2009) and when the majority of seasonal residents should be within their residence within the study area. First class postage will be used in survey mailings, and mailings will be forwarded (in cases where the seasonal resident has applied to have their mail forwarded). In cases where the survey is undeliverable, the survey will be sent to the alternate address.

Prior to implementation, all draft survey instruments and communications (i.e., survey letters or letters of introduction) will be distributed to Alabama Power and Kleinschmidt staff for comments and input. Upon completion of final draft survey instruments, the surveys will be pre-tested to insure their adequacy and usability.

During the data collection period, an 800 number for questions, problems, or comments about the data collection activities that arise from shoreline property owners will be maintained.

1.3.2 Data Analysis

For the mail surveys a staff of trained survey editors and data processors will be used to prepare the data set. Data processing procedures will use SPSS Data Entry software (or equivalent), data verification procedures, and computerized data cleaning routines to identify and correct out-of-range codes, incorrect skip patterns, and internal inconsistencies within a data record. All of the electronic data sets will have complete documentation and a User's Guide. Electronic data will be provided to Kleinschmidt and Alabama Power in SPSS or other formats, as requested.

In order to estimate the effects of increasing the duration of the summer pool and increasing the elevation of winter pool on shoreline property values, shoreline property owners will be asked to estimate changes in property values with changes in water levels using contingent valuation questions similar to those asked in a previous study of water levels and property values in Alabama.[3]

Please note that, in the shoreline property owners survey, respondents will also be asked to estimate how changes in reservoir water-levels affect shoreline property characteristics and structures. The survey will also collect data on shoreline property owner expenditures related to construction and property maintenance for use with IMPLAN.

All IMPLAN modeling will assess economic impacts for the three counties that contain Lake Martin: Elmore, Tallapoosa, and Coosa. The modeling effort will also quantify impacts at the statewide level.

Ground-Truthing the Results

To provide a validity check, an expert panel of local realtors, private land appraisers, and county tax assessors (if we can secure their participation) will be convened to gain their opinion about estimated percent changes in property values and changes in property characteristics and structures resulting from decreases in water-levels below full-pool.

1.4 Task III: Lake-Related Business Activity

The objectives of this task are to:

1. estimate characteristics of business and business activity (e.g., on lake or off lake, type of business, length of time in business, months of operation, gross annual sales, etc.); and
2. estimate effects of increasing the duration of the summer pool and increasing the elevation of winter pool on business activity.

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[3]Hanson , T.R., L. U. Hatch and H. C. Clonts . 2002. "Reservoir Water Level Impacts on Recreation, Property and Nonuser Values". Journal of the American Water Resources Association. 38(4): 1007-1018

1.4.1 Data Collection

County and state tax offices indicated sales tax collection data are available by county for specific business sectors (per NAICS codes) including sporting goods & boat sales and other fishing, boating and outdoor businesses. Therefore, the approach outlined in Section 1.3.2 is feasible at this time.[4] By not relying on potentially biased survey feedback from businesses, this approach would generate statistically-based results and have greater accuracy.

1.4.2 Data Analysis

To estimate effects of increasing the duration of the summer pool and increasing the elevation of winter pool on business activity, a sales-tax indicator model will be used. This econometric technique uses historical sales tax collection records and data regarding variables that affect the county economies to identify which variables impact sales tax collections and by how much. Basically, this approach uses sales tax receipts as a measure of economic activity. Matched with variables including historic pool levels and other economic variables, it is possible to estimate the impacts on county business associated with various pool levels.

How the Sales-Tax Indictor Model Works

Many previous studies provide anecdotal evidence of the effects of reservoir water-levels on customer expenditures at lake-dependent businesses. For example, marina operators may report that at low reservoir water-levels fewer customers are visiting their establishments and making purchases; hence, "business is down". It is difficult to quantitatively measure how much "business is down" since business owners are reluctant to release private revenue and financial statements. Some previous studies have surveyed business owners and asked them to directly state their percentage drop in business (e.g., revenues) as a result of lower water-levels. Since lake-dependent business owners have a direct monetary vested interest in maintaining higher reservoir water-levels, the accuracy and reliability of such subjective business-response questions is questioned. Business surveys also often achieve extremely low response rates, sometimes in the single digits. Results from such surveys may contain significant non-response bias. Therefore, a more indirect method of assessing the effects of reservoir water-levels on customer expenditures is proposed: the sales-tax indicator model.

The general specification of the model is as follows:

$$SALESTAXREV_j = \delta * REVENUE_j \qquad (2)$$

[4] If sales tax data are not secured, a survey will be conducted of businesses in the three counties. An additional scope of work will be agreed upon in case of this scenario.

$$REVENUE_j = \frac{1}{\delta} SALESTAXREV_j \quad (3)$$

$$REVENUE_j = f(SGDP, SEMPLOY, Z, WATERL) \quad (4)$$

$$SALESTAXREV_j = \delta * f(SGDP, SEMPLOY, Z, WATERL) \quad (5)$$

where,

$SALESTAXREV_j$ = sales tax revenue for lake-dependent county j
$REVENUE_j$ = total business revenue for lake-dependent county j
δ = sales tax rate in lake-dependent county j
SGDP = State of Alabama Gross Domestic Product
SEMPLOY = State of Alabama Employment Rate
Z = Other potential measures of state or national economic activity
WATERL = Lake Martin water-levels measured in terms of number of feet below normal "full pool"

Assuming that Equation (4) is linear in parameters:

$$REVENUE_j = \alpha + \beta_1 SGDP + \beta_2 SEMPLOY + \beta_3 Z + \beta_4 WATERL \quad (6)$$

Substituting Equation (6) in Equation (5) gives:

$$SALESTAXREV_j = (\delta * \alpha) + (\delta * \beta_1) SGDP + (\delta * \beta_2) SEMPLOY + (\delta * \beta_3) Z + \beta_4 WATERL \quad (7)$$

or,

$$SALESTAXRE\ V_j = \gamma + \theta_1 * SGDP + \theta_2 * SEMPLOY\ + \theta_3 * Z + \theta_4 WATERL \quad (8)$$

where, $\gamma = \delta * \alpha$, $\theta_1 = \delta * \beta_1$, $\theta_2 = \delta * \beta_2$, $\theta_3 = \delta * \beta_3$, $\theta_4 = \delta * \beta_4$

Equation (8) can be estimated using sales tax revenue data for the three lake-dependent counties: Coosa County, Elmore County and Tallapoosa County. For each county, the estimated coefficient on the WATERL variable shows the effect of reservoir water-levels on county sales tax revenues holding the general state of the economy constant (as indicated by SGDP, SEMPLOY, and Z). Once estimated, Equation (8) can be used to predict county sales tax revenues under alternative reservoir water-level scenarios. Total business revenue in a county can then be estimated by Equation (3) using the sales tax rate for the county.

Ground-Truthing the Results

To provide a validity check, an expert panel of local business owners and county officials familiar with sales tax revenues will be convened to gain their opinion about estimated changes in sales tax revenues resulting from changes in reservoir water-levels. These expert panel results will be used to ground-truth the results of the sales tax response model described above. Should the tax record approach ultimately not prove possible, for example if the requisite data are not provided, then a survey of local businesses will be considered and discussed with project managers (KA and APC).

2.0 PROJECT DELIVERABLES

2.1 Monthly Reports

Monthly reports will be provided explaining tasks completed, schedule and budget updates, problems encountered and solutions implemented, and upcoming tasks for the next month. The format specified in Attachment B shall be followed.

2.2 Study Report

Work Plan / Project Schedule: Based on results of the kick-off meeting, a work plan and project schedule will be developed. Alabama Power will be providing stakeholders an opportunity to comment on the Scope of Work. Every effort should be made to address stakeholder comments/concerns prior to finalizing a scope of work. This will become a 'living document' used by all team members to track progress, identify in advance who is responsible for specific deliverables and tasks, plan all necessary steps and assign budget and other resources. This document may be modified via regular team review meetings (in which participation by Alabama Power and/or Kleinschmidt may occur).

Preliminay Draft Report: Once all surveys and analyses are complete, a preliminary draft report will be delivered according to the project schedule. The report will describe all data collection and analytical procedures undertaken and all incorporated assumptions. For the recreation users portion of the report, the following will be presented:

- total recreational use by month and day type (weekday, weekend & holiday)
- recreational user characteristics (activity, county of residence, shoreline property owner, etc.)
- trip cost, by specific expense
- effects on recreation use and economic impacts of increasing the duration of summer and winter pool levels; and
- all other data as identified in the kick-off meeting.

For the shoreline owner's portion of the report, the following will be presented:

- characteristics of the owner and their property

- usability of shoreline structures at various water levels
- costs of construction and maintenance of shoreline structure and associated economic impacts
- effects of water-levels on property values
- baseline property values (obtained indirectly from property sales and tax assessment records); and
- all other data as identified in the kick-off meeting.

For the business modeling effort, the report will describe:

- effects of pool duration changes on business activity,
- If a survey of businesses is ultimately used to collect data, then the characteristics of the businesses and their activity associated with lake recreation will be reported. Such characteristics will include: is the business on or off-lake, type of business, length of time in business, months of operation, gross annual sales, etc.; and
- all other data as identified in the kick-off meeting.

3.0 SCHEDULE

The following is a general milestone schedule. The specific milestones, including the field work schedule, will be identified in the kickoff meeting and will be listed in the project workplan/project schedule.

- Kick-off Meeting – by March 27, 2009
- Stakeholder Review of Scope of Work – by April 18, 2009
- Final Scope of Work – April 30, 2009
- Develop survey instruments, including pretests – by May 15th, 2009
- Initiate field intercept surveys – by May 29th, 2009
- Initiate shoreline property surveys – by October 2009
- Submit draft preliminary report – by August 27, 2010
- Submit draft report – within three weeks of receiving comments from Kleinschmidt and Alabama Power
- Submit final report – within two weeks of receiving comments from the Martin Issue Group.