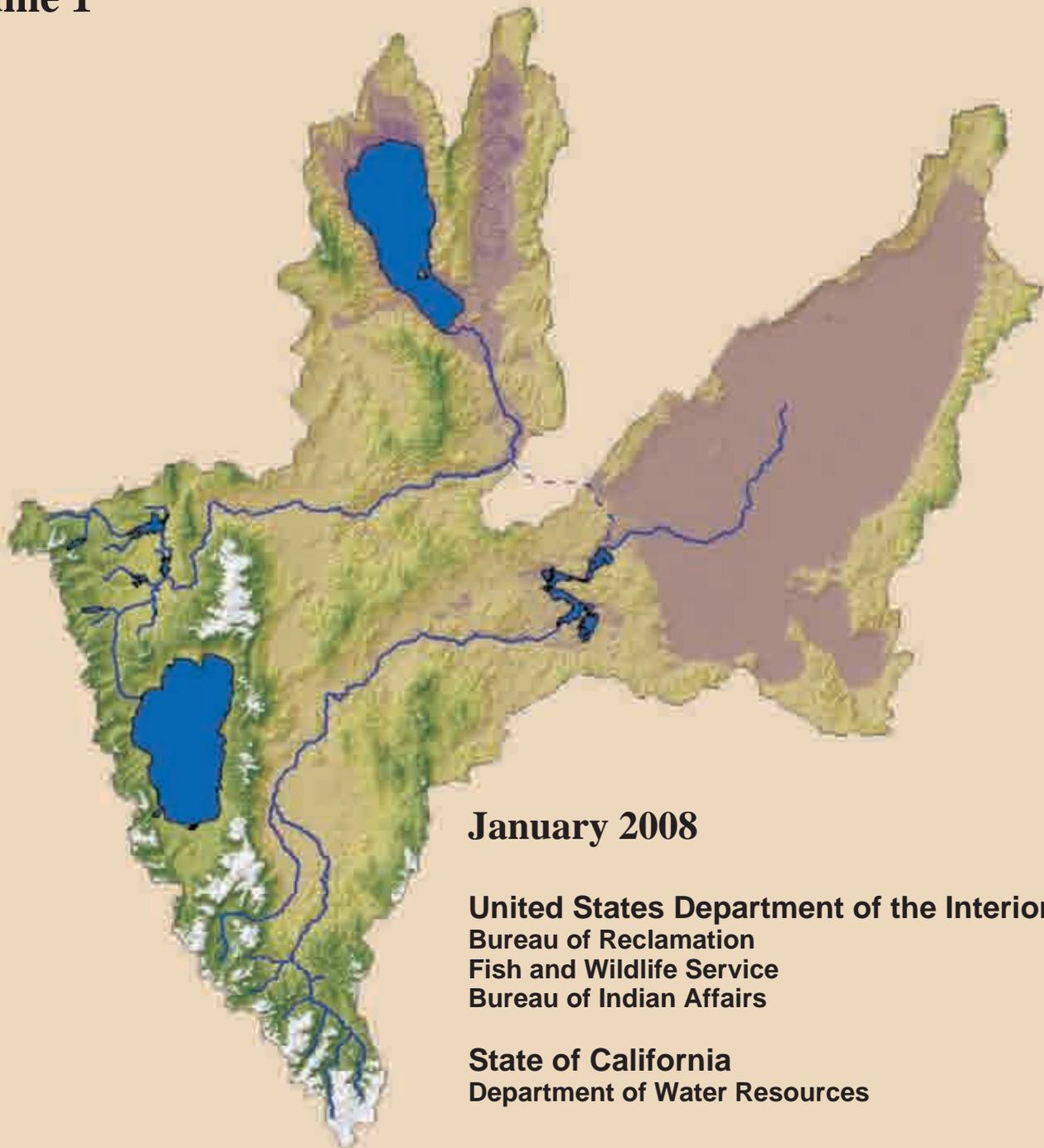


Truckee River Operating Agreement

Economics and Recreation Appendix Volume 1



January 2008

**United States Department of the Interior
Bureau of Reclamation
Fish and Wildlife Service
Bureau of Indian Affairs**

**State of California
Department of Water Resources**

Final Environmental Impact Statement/Environmental Impact Report

Truckee River Operating Agreement

Economics and Recreation Appendix Volume 1

January 2008

**United States Department of the Interior
Bureau of Reclamation
Fish and Wildlife Service
Bureau of Indian Affairs**

**State of California
Department of Water Resources**

This Economics and Recreation Appendix contains several individual reports prepared under contract. These reports document the development of the models used in the recreation and economic analyses of the EIS/EIR.

The Economics portion of this appendix is made up of two reports prepared by the University of Nevada, Reno, and Colorado State University. The first report, which includes two parts, is the “Truckee River Basin Regional Economic Impact Model,” Technical Report UCED 94-18. This first report initially was prepared for the 1998 draft environmental impact statement/environmental impact report (EIS/EIR) and still applies to the analyses in this final EIS/EIS. The second report (see volume 2 of this appendix) is entitled, “Economic Impact Model for Analyses Associated with the Truckee River Operating Agreement and the Water Quality Settlement Agreement Study Areas,” Technical Report UCED 98/99-04. This report was prepared for the revised draft EIS/EIR, as well as for the EIS for the Truckee River Water Quality Settlement Agreement, Federal Water Rights Acquisition Program, for Washoe, Storey, and Lyon Counties, Nevada. This report updates and expands information contained in Technical Report UCED 94-18.

The Regional Economic Impact model was updated again under a report entitled, “Update of Truckee River Operating Agreement (TROA) Interindustry Model: Background and User’s Manual,” Technical Report UCED 2005/06-07 (see volume 2 of this appendix).

The Recreation portion of this appendix (volume 2) is also made up of two reports: “Instream Flows and Recreation on the Truckee River and Selected Tributaries” and “Recreation Model Results for the Truckee River Water Quality Settlement Agreement Environmental Impact Statement.” The first report was prepared for this study by Colorado State University to be used in evaluating river-related recreation. The second report, prepared by the University of Nevada, Reno, includes recreation model results and analyses based on more recent survey data from the California Department of Water Resources that were used for this study as well as for the EIS for the Truckee River Water Quality Settlement Agreement, Federal Water Rights Acquisition Program, for Washoe, Storey, and Lyon Counties, Nevada

**Economics and Recreation Appendix
Volume 1**

Truckee River Basin Regional Economic Impact Model – Parts 1 and 2, Technical Report
UCED 94-18, July 1995

TRUCKEE RIVER BASIN
REGIONAL ECONOMIC IMPACT MODEL

PART 1 OF 2



**Truckee River Basin
Regional Economic Impact Model**

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July 1995

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This publication, *Truckee River Regional Economic Impact Model*, was published by the University Center for Economic Development in the Department of Agricultural Economics at the University of Nevada, Reno. Funds for this publication were provided by the United States Department of the Interior, Bureau of Reclamation. This publication's statements, conclusions, recommendations, and/or data represent solely the findings and views of the authors and do not necessarily represent the views of the United States Department of the Interior, the Bureau of Reclamation, University of Nevada, Reno, or any reference sources used or quoted by this study. Reference to research projects, programs, books, magazines, or newspaper articles does not imply an endorsement or recommendation by the authors unless otherwise stated. Correspondence regarding this document should be sent to:

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Executive Summary

The U.S. Bureau of Reclamation is preparing an *Environmental Impact Statement (EIS)* for the *Truckee River Operating Agreement (TROA)*. As part of their *EIS*, the Bureau is looking at the potential economic impacts of *TROA* on the Truckee River Basin economy. The potential impacts include economic impacts on recreation from changes in reservoir storage levels at Donner Lake, and at, Prosser, Stampede, and Boca Reservoirs as well as economic impacts of reallocations of water between agriculture, commercial, and residential uses. To estimate these economic impacts, the Department of Agricultural Economics at the University of Nevada has been under contract with the Bureau to develop a regional economic impact model of the Truckee River Basin.

The research by the Department of Agricultural Economics to develop this regional economic impact model is complete. This regional model encompasses the Truckee River Basin. Portions of Sierra, Nevada, Placer, El Dorado, and Alpine counties in eastern California and portions of Pershing, Washoe, Lyon, and Douglas counties and Carson City, an independent city, in western Nevada make-up the basin. Besides estimation of economic impacts, the modeling effort involved a survey of visitation and recreation use at Donner Lake, and at, Prosser, Stampede, and Boca Reservoirs and an accounting of economic activity in the region by economic sector. Features of the model include relationships between visitation and reservoir storage levels, annual patterns of visitation, and expenditures. These features allow for estimation of the number of visitors and their expenditures in the region relative to reservoir storage levels. Given reservoir storage levels for the year 1993, the model estimates 800,000 visitors at the four sites with expenditures in the region of \$7 million. Additional model features include economic relationships between measures of economic activity and economic linkages between economic sectors. Economic activity in the region is output of \$18 billion, employment of 188,000 jobs, personal income of \$7 billion, population of 308,000 persons, housing of 122,000 dwellings, agriculture water use of 74,000 acre-feet, commercial water use of 12,000 acre-feet, and residential water use of 72,000 acre-feet. These features allow for estimation of economic impacts relative to reservoir storage levels. With expenditures of \$7 million, the model estimates an overall economic impact on the region of \$10 million. This level of impact supports employment of 80 jobs and creates \$1.5 million in personal income. These same model features also allow for estimation of economic impacts of reallocations of water. Expected future growth in the region requires a 40,000 acre-foot transfer from agriculture use to commercial and residential uses. For this reallocation, the model estimates a positive overall economic impact on the region of \$9 billion in 1990 dollars. This level of impact supports employment of an additional 101,000 jobs and creates an additional \$2 billion in personal income over this period. Growth in population is 164,000 persons and new housing is 65,000 dwellings. Commercial water use increases by 11,000 acre-feet and residential water use increases by 29,000 acre-feet. Research to further develop this regional model may possibly continue with respect to economic impacts of river flows.

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1. Introduction

The Bureau of Reclamation is preparing an *Environmental Impact Statement (EIS)* for the *Truckee River Operating Agreement (TROA)*. This is required by the *National Environmental Policy Act*. In preparing this *EIS*, the Bureau must look at the potential economic impacts of the *Truckee River Operating Agreement* on the Truckee River Basin economy. A regional economic impact model of the Truckee River Basin has been developed for this purpose. A description of the study area, justification for the model, and specification of the objectives are presented here.

1.1. Description of the Study Area

The Truckee River Basin covers five counties in California (Sierra, Nevada, Placer, El Dorado and Alpine) and five counties (Washoe, Pershing, Storey, Lyon and Douglas) and Carson City in Nevada. The location of the Truckee River Basin is shown in Figure 1.1-1.

The Truckee River, approximately 110 miles in length, begins in California at the outlet from Lake Tahoe near the town of Tahoe City. The river flows north pass the town of Truckee to the California-Nevada state line, then east into Nevada and through the Truckee Meadows. Within the Truckee Meadows are the cities of Reno and Sparks. The river then continues east towards the town of Wadsworth and then turns north, to end in Nevada at Pyramid Lake on the Pyramid Lake Indian Reservation.

Three natural lakes with regulated outlets and four man-made reservoirs, all located in California, permit control of Truckee River flows and provide storage for watershed runoff. These are Lake Tahoe, Donner Lake, Independence Lake, Martis Creek Reservoir, Prosser Creek Reservoir, Stampede Reservoir, and Boca Reservoir. Operation and management of the water levels in these lakes and reservoirs is under the control of the Bureau of Reclamation. These lakes and reservoirs provide storage and allow for regulation of Truckee River flows. The hydrologic features of the Truckee River Basin are shown in Figure 1.1-2.

Tourism is the single most important economic segment of the California communities. The towns of Tahoe City and Truckee rely on both summer and winter recreation attractions to draw thousands of visitors to the area. Summer recreation attractions include Lake Tahoe, the Truckee River and the lakes and reservoirs. The beauty of Lake Tahoe is known internationally. Winter recreation attractions include several ski areas. Winter activities also provide an important economic boost to the area. Most of the future development within California is expected to be related to recreation and the development of second or vacation homes.

With the exception of Boca Reservoir, most of the visitors to the lakes and reservoirs are from out of the area. Any operation or management change affecting lake and reservoir levels as well as river flows will have an impact on the number of visitors to the area. In an initial study by Loomis (OCAP DEIS May 1986) found "that visitation change is most sensitive to water levels; a one percent change in water level results in a 1.36 percent change in visitation, holding all other factors constant". The recreation season for the area is short (Memorial Day through Labor Day) and includes primarily camping, picnicking, fishing, boating, swimming, and water skiing activities.

The Little Truckee River, which flows into Stampede and Boca Reservoirs, provides irrigation water for the Sierra Valley. About 25 ranches having an irrigated acreage of approximately 9,700 acres rely partly on this water. Most of the acreage is either meadows or pastures that produce forage for cattle. The irrigation water rights held by these ranches are dictated in the *Middle Fork of the Feather River Decree*.

Major tributaries draining the hills surrounding the Truckee Meadows provide additional water flow to the Truckee River. These tributaries are Hunter, Evans, Thomas, and Whites Creeks. Additional water flow to the Truckee River is also from Steamboat Creek and its tributaries near the eastern edge of the Truckee Meadows. Washoe Lake and Little Washoe Lake provide regulation of Steamboat Creek.

Truckee Meadows, including the cities of Reno and Sparks, has a diversified economy including gaming, warehousing, and some light manufacturing industries. Although the Truckee Meadows relies significantly on the Truckee River for its municipal and industrial water, there is an increasing recognition over the importance of having a clean and scenic river to enhance the quality of life in the Truckee Meadows. The Washoe County Regional Planning Board has initiated a Truckee River Corridor effort to protect and enhance the river. Also the Reno Redevelopment Commission has initiated a number of downtown projects associated with the river to encourage both local residents and tourists to visit local parks and walkways along the river.

The Truckee River provides irrigation water to the Truckee Meadows. The irrigated acreage is either meadows, pastures or alfalfa fields. Cattle graze on the meadows and pastures and are fed hay from the alfalfa fields. The irrigation water is water diverted from the river into ditches, water from creeks and drainage water. These irrigation water rights are dictated in the *Orr Ditch Decree*.

Over-time, the irrigation water rights are being purchased for municipal and industrial (M&I) uses. Truckee Meadows population is expected to grow 2 to 2.5 percent annually. On account of this growth, commercial and residential water use will increase. As transfers of water from agriculture to M&I use continues, income and employment in the agricultural sector can be expected to diminish with concomitant increases in other sectors purchasing water from agriculture.

East of the Truckee Meadows and near the town of Wadsworth, part of the Truckee River water is diverted at Derby Dam. The diverted water continues east through the Truckee Canal for irrigation in the Newlands Reclamation Project operated by the Truckee-Carson Irrigation District (TCID). The Newlands Project consists of two divisions. The Truckee Division surrounds the town of Fernley and the Carson Division surrounds the town of Fallon. Within the Newlands Project approximately 60,000 acres are irrigated with water from both the Truckee and Carson Rivers. Irrigation water from

both rivers is stored in Lahontan Reservoir and released on demand to farms in the Carson Division and also to farms on the Fallon Indian Reservation. Outflows from the Carson Division and Fallon Indian Reservation go to the Stillwater Wildlife Management Area (SWMA) and Carson Lake Pasture. These two areas are wetlands that provide habitat for fish, wildlife, and migratory fowl.

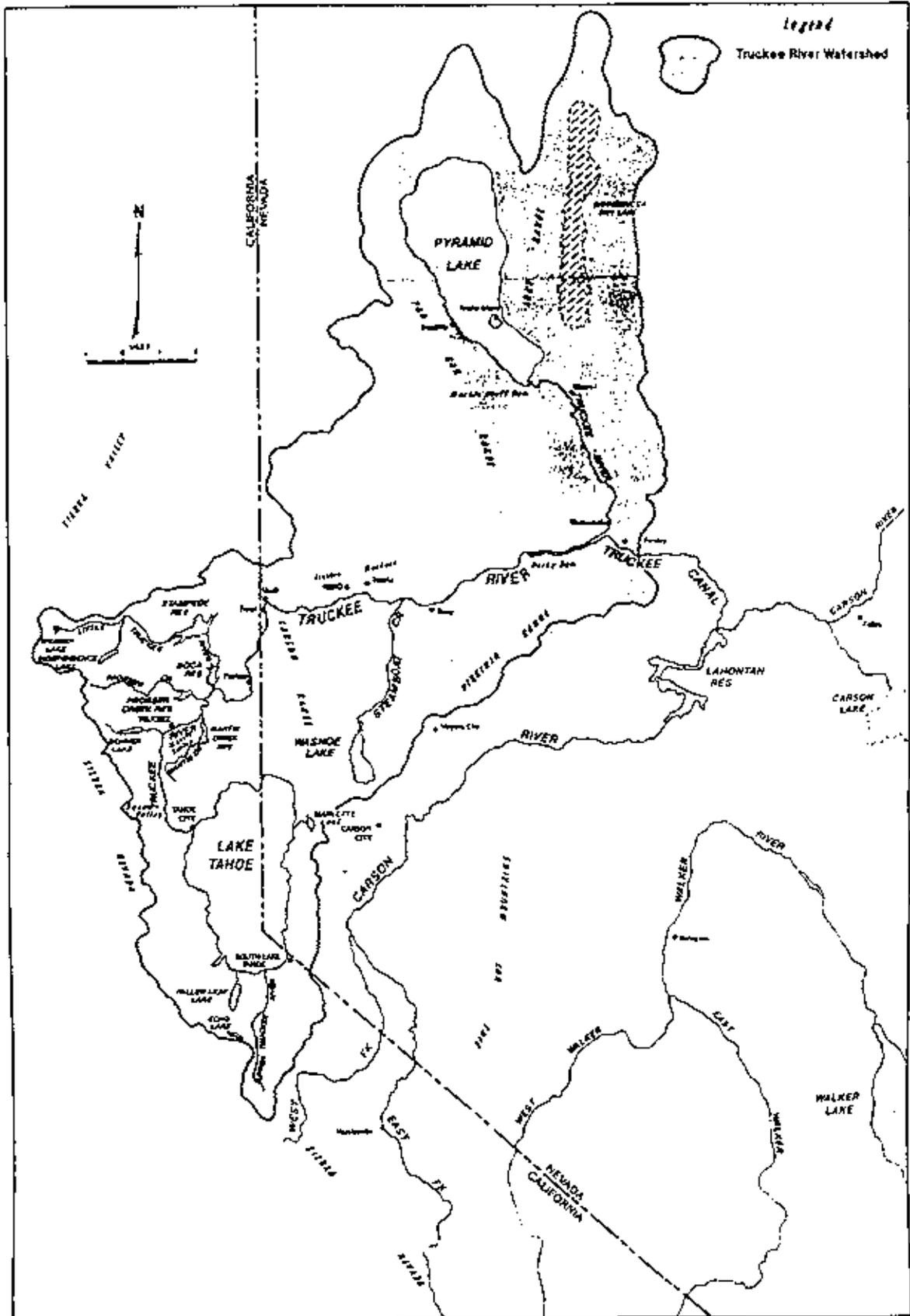
Recreation activities along the lower Carson River are primarily associated with fishing and other recreational uses on Lahontan Reservoir and hunting and bird watching associated with the wetlands at the Stillwater Wildlife Refuge.

Agriculture and the Fallon Naval Air Station are the primary industries in the Fallon area.

North of Wadsworth, the Truckee River ends at Pyramid Lake on the Pyramid Lake Indian Reservation. Aside from some irrigation en route (including the Pyramid Lake Paiute Indian farm lands), water flowing into Pyramid Lake helps sustain the Lahontan Cutthroat Trout and the Cui-ui fish, listed as an endangered species.

The Pyramid Lake Paiute Tribe has extensive plans for economic development for Pyramid Lake emphasizing the natural resources of the lake. Pyramid Lake supports a population of Lahontan Cutthroat Trout, and is popular for boating and fishing for trophy size cutthroat trout. Other activities include camping, swimming, water skiing, sightseeing and picnicking. The Tribe has recently completed construction of a new marina and campground along the west shore of the lake. Future development will be designed to enhance and utilize the lakes resources.

Figure 1.1-2. Hydrologic Features of the Truckee River Basin.



Source: State of California. *Truckee River Atlas*. Department of Water Resources. Sacramento, California, June 1991, Page 4.

1.2. Justification for the Model

The Truckee River has had a long history of legal conflicts over who gets the water, how much, and when. The river is managed by a federal water master and the operation rules are dictated in the *Truckee River Agreement of 1935* which was made part of the *Orr Ditch Decree*. The continuing conflicts in the allocation of water in the Truckee River Basin include monitoring storage levels in the upstream reservoirs and stream flows for recreation, meeting growing water demands for municipal use in the Truckee Meadows (including provisions for drought periods), providing water deliveries to the Newlands Reclamation Project, protecting fish species at Pyramid Lake and stabilizing the lake level, and maintaining and improving wetlands at the Stillwater Wildlife Management Area. Any resolution to these conflicts will entail changes in the operation of the upstream reservoirs, changes in instream flows, and changes in intersectoral water allocations.

Public Law 101-618, also referred to as the "*Negotiated Settlement*" was passed by the 101st Congress at the end of its 1990 session to settle a number of water related issues in the Truckee and Carson River Basins. *Title I* of this public law establishes a fund for \$43 million to settle the water related issues of the Fallon Paiute-Shoshone Indian Tribe. *Title II* of this law is intended to settle the water related issues associated with the Truckee River, Carson River, and Pyramid Lake.

One of the means by which the goals of *Title II* will be accomplished is through a *Truckee River Operating Agreement (TROA)*. This operating agreement is essentially modification in the operation of the upstream reservoirs to provide benefits to fish and wildlife and to municipal, industrial, agricultural and recreational users downstream of Tahoe City, and satisfy the requirements of the *Endangered Species Act* by promoting the enhancement and recovery of the Cui ui fish at Pyramid Lake. This operating agreement is to be negotiated between the Secretary of the Department of the Interior and the states of California and Nevada after consultation with affected parties. The regulations concerning this operating agreement are outlined in *Section 205 of Public Law 101-618*. Under these regulations, the Secretary and the signatures to the operating agreement shall, if necessary, develop and implement a plan to mitigate any significant adverse environmental impacts resulting from the operating agreement.

For this purpose, one potentially important impact will be the effect of the *Truckee River Operating Agreement* on the economy of the Truckee River Basin. Therefore, in describing economic impacts resulting from the operating agreement, there is a definite need for a tool to both identify and quantify economic impacts from changes in the operation of the upstream reservoirs, changes in instream flows, and changes in intersectoral water allocations.

1.3. Specification of the Objectives

The objective of this research is a regional economic impact model of the Truckee River Basin. This model will be developed by following input-output analysis and input-output modeling procedures. This model will have a recreation model component and an input-output model component. Application of this model will be estimation of the economic impacts resulting from the *Truckee River Operating Agreement* on the Truckee River Basin economy. The sub-objectives of this research are:

1. Survey of the Visitation

Personal interviews of visitors at selected river, lake and reservoirs sites will be done to collect information on recreation visitation, activities, and expenditures.

2. Estimation of the Expenditure Function

An expenditure function will be estimated to calculate recreation expenditures of visitors at selected river, lake and reservoir sites.

3. Formulation of the Model Equations

Model equations will be formulated to estimate the annual number of visitors at selected lake and reservoir sites and expenditures relative to reservoir storage levels and annual patterns of visitation.

4. Definition of the Region

The region will be defined in terms of economic area, population base, and economic sectors.

5. Collection of the Control Total Data

Control total data for the region will be collected for output, employment, income, population, housing, agriculture water use, commercial water use, and residential water use.

6. Derivation of the Model Tables

Model tables for estimation of economic impacts will be derived from a transactions matrix that reflects the economy of the region.

7. Estimation of the Economic Impacts for Alternative Reservoir Storage Levels

A program will be developed to estimate economic impacts for alternative reservoir storage levels.

8. Estimation of the Economic Impacts for Reallocations of Water

A program will be developed to estimate economic impacts for reallocations of water.

The main objective and these sub-objectives are completed through the following chapters. The second chapter is on model development. The third chapter covers the recreation model component. The fourth chapter covers the input-output model component. The fifth chapter is on model application. The sixth chapter is a conclusion. In addition to these chapters there are two supplement chapters on model improvement. References are given at the end.

2. Model Development

The regional economic impact model is developed following input-output procedures. Input-output refers to the analytical framework developed by Professor Wassily Leontief in the late 1930's. Professor Leontief later received the Nobel Prize in Economic Science in 1973 for his work in this area (Miller and Blair, 1985). These input-output procedures are input-output analysis and input-output modeling. An explanation of input-output analysis and a description of input-output modeling are presented here.

2.1. Explanation of Input-Output Analysis

Input-output analysis concerns the measurement of an economic impact, accounting of the economic activity, and estimation of an economic impact.

Measurement of an Economic Impact

The economic impact on the region is the dollar amount of economic activity, reported as output, that would occur as a result of either alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs or reallocations of water from agriculture use to commercial and residential uses. Measurement of economic impacts from both is done through direct, indirect, induced, and total effects.

The economic impact for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs is measured in the following manner. An economic impact occurs because of recreation activities at the reservoirs. At each alternative reservoir storage level there is a different level of recreation in terms of visitation to the reservoirs and expenditures in the economy. Visitation to the reservoirs is by camping and day use visitors. Expenditures in the economy are on items necessary for recreation at the reservoirs. Items such as gas, groceries, supplies, meals at restaurants, hotel rooms, and vacation-home rent. Camping and day use visitors purchase these items from businesses and cause a direct effect to occur on the economic activity in the region. In addition to this direct effect, indirect and induced effects also occur. Given that businesses in the region sell items for recreation to camping and day use visitors, these businesses also purchase products and services from other businesses in the region. Because of these purchases being made, there is then an indirect effect on other businesses and on economic activity in the region. The induced effect on economic activity in the region is household spending by employees of these affected businesses. At each alternative reservoir storage level there is a different amount of household spending by employees. Together the direct, indirect, and induced effects on economic activity make-up the total effect or economic impact on the region for alternative reservoir storage levels.

The economic impact for a reallocation of water from agriculture use to commercial use is measured in the following manner. An economic impact occurs since water is a resource requirement for agriculture production and commercial activity. A reallocation of water transfers an amount of water from agriculture use to commercial use. The direct effect on economic activity in the region is a decrease in agriculture production from farms and ranches, and an increase in commercial activity from businesses. The indirect effect on economic activity in the region is also a decrease in business activity from those businesses that sell products and services to farms and ranches for agriculture production, and also an increase in business activity of the businesses that sell products and services to businesses that have an increase in commercial activity. The induced effect on economic activity in the region is a decrease in household spending by employees on farms and ranches, and an increase in household spending by employees in commercial businesses. Together the direct, indirect, and induced effects on economic activity make-up the total effect or economic impact on the region for a reallocation of water from agriculture use to commercial use.

As a result of the total effect on economic activity there are also response effects that occur in the region. Response effects include effects on employment, income, population, housing, agriculture water use, commercial water use, and residential water use. These response effects are an additional part of an economic impact.

Accounting of the Economic Activity

There are several economic sectors in the region. An accounting of the economic activity is necessary to determine the sectors interdependence. Relationships between sectors are identified through intersector transactions. Transactions that are accounted for by sector include intermediate demand, final demand, final payments, total output, and total input.

A transactions matrix provides for the accounting of the economic activity by sector in the region. The arrangement of this matrix is shown in Figure 2.1-1. Sectors are both selling sectors and purchasing sectors. There are four quadrants in the matrix. Quadrant I contains intermediate demand transactions. Intermediate demand transactions are sales and purchases of products and services among sectors. Sales of products and services represent output and purchases of products and services represent input. Quadrant II contains final demand transactions. Final demand transactions are sales of output to personal consumption, private fixed investment, government, and exports. Quadrant III contains final payment transactions. Final payment transactions are payments for primary inputs. Primary inputs include value-added items of employee compensation, profits, interest, indirect business taxes, and depreciation. Imports are also a primary input. Quadrant IV describes transactions that are not directly linked to the other quadrants. Total output are total sales by sectors. Total input are total purchases by sectors.

The transactions matrix is a double-entry accounting system. There is a rowwise accounting of sales by sector and a columnwise accounting of purchases by sector. The rowwise accounting of sales by sector depict the sale pattern of products and services. The columnwise accounting of purchases by sector depict the purchase pattern of products and services in the production process. Total sales of products and services represent total output. Total purchases of products and services represent total input. Furthermore, the rowwise accounting sales by a sector reflect relationships known as forward linkages and the columnwise accounting of purchases by a sector reflect relationships known as backward linkages.

Rowwise, for Quadrants I and II, total output for each selling sector X_i consist of intersector sales of output to purchasing sectors of intermediate demand x_{ij} 's and sales of output to final demand Y_i . This is expressed through the following accounting equations:

$$X_i = x_{i1} + \dots + x_{ij} + \dots + x_{in} + Y_i; \quad \text{where } i = 1, n; \quad (2.1-1)$$

or,

$$X_i = \sum_j^n x_{ij} + Y_i; \quad \text{where } i = 1, n. \quad (2.1-2)$$

The summation over j reflects intersector sales for the products or services of sector i .

The final demand component of total output is disaggregated into personal consumption pc_i , private fixed investment fi_i , government g_i , and exports outside the region e_i . This is expressed through the following accounting equation:

$$Y_i = pc_i + fi_i + g_i + e_i; \quad \text{where } i = 1, n. \quad (2.1-3)$$

Again, consumption, investment, government, and exports comprise final demand. Government can be further disaggregated into federal, state, and local government.

Columnwise, for Quadrants I and III, total input for each purchasing sector X_j consists of intersector purchases of input from selling sectors of intermediate demand x_{ij} 's and purchases of input from final payments P_j . This is expressed through the following accounting equations:

$$X_j = x_{1j} + \dots + x_{ij} + x_{nj} + P_j; \quad \text{where } j = 1, n; \quad (2.1-4)$$

or,

$$X_j = \sum_i^n x_{ij} + P_j; \quad \text{where } j = 1, n. \quad (2.1-5)$$

The summation over i reflects intersector purchases for the products or services of sector j .

The final payments component of total input is disaggregated into employee compensation ec_j , profit income pr_j , interest income in_j , indirect business taxes t_j , charges against depreciation of capital equipment d_j , and imports from outside the region m_j . This is expressed through the following accounting equation:

$$P_j = ec_j + pr_j + in_j + t_j + d_j + m_j; \quad \text{where } j = 1, n. \quad (2.1-6)$$

The employee compensation, profit income, interest income, indirect business taxes, and depreciation is the value-added portion of final payments.

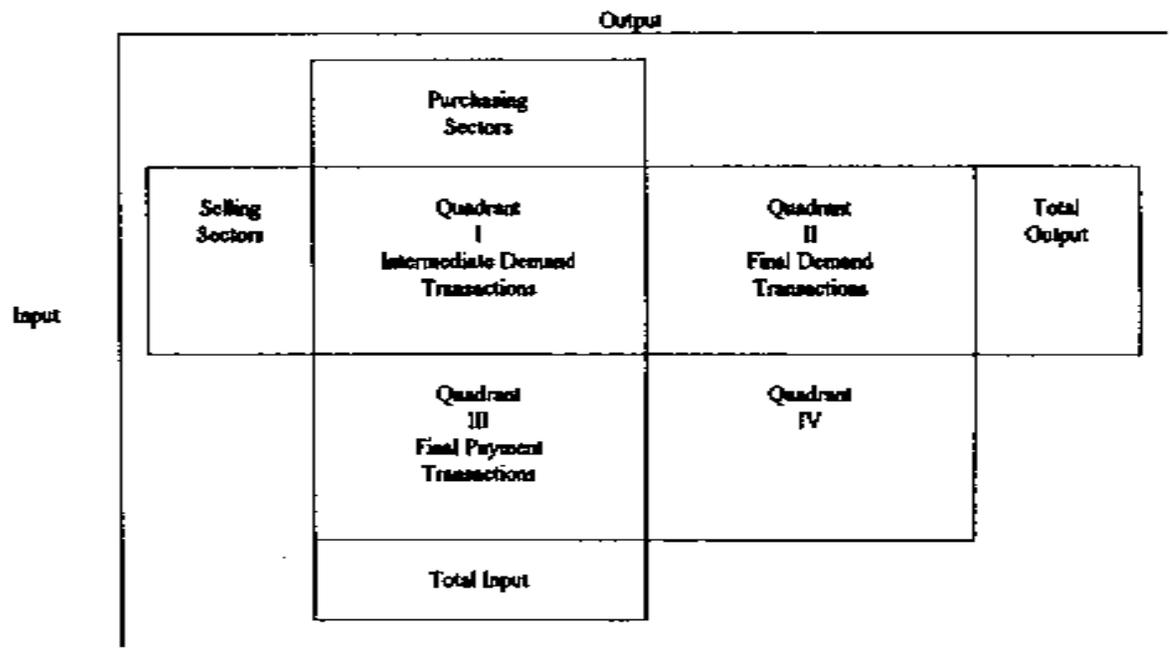
The final accounting identity of the transaction matrix is that for each sector total output X_i must equal total input X_j . This is expressed through the following accounting equation:

$$X_i = X_j; \quad \text{where } i = j. \quad (2.1-7)$$

The summation of total output for all sectors is gross output. The summation of total input for all sectors is gross outlay. Then gross output must also equal gross outlay.

The accounting of economic activity in the region is extended to also include employment, income, population, housing, agriculture water use, commercial water use, and residential water use by sector.

Figure 2.1-1. Arrangement of the Transactions Matrix.



Estimation of an Economic Impact

Estimation of an economic impact on the region is done by using the output requirements of an input-output model. The transactions matrix for the region is the basis for the input-output model. Through a sequence of calculations involving matrix algebra, the transactions matrix becomes an input-output model which provides direct requirements, final demand requirements, output requirements, employment requirements, and income requirements. Output requirements indicate the total effect on economic activity from a change in output. Output requirements also provide the distribution of the total effect over all economic sectors.

Three assumptions are made before the transactions matrix becomes an input-output model. The first assumption is that individual businesses which make-up the economy in the region can be grouped together into economic sectors. The reasoning here is that businesses in a given sector will be affected similarly by a given change. The second assumption is that all businesses in a given sector produce homogeneous products and services. The third assumption is that purchases of products and services by businesses in a sector from businesses in other sectors represent linear production functions. This last assumption is the assumption of fixed proportionality.

The transactions matrix for the region becomes an input-output model in the following manner. Purchases of products and services by businesses in a sector from businesses in other sectors are inputs into the production process. Inputs into the production process by a sector are used in direct proportion to the total output from that sector. This production relationship is expressed through the following equations:

$$a_{ij} = \frac{x_{ij}}{X_j}; \quad \text{where } i, j = 1, n; \quad (2.1-8)$$

or,

$$x_{ij} = a_{ij}X_j; \quad \text{where } i, j = 1, n. \quad (2.1-9)$$

The a_{ij} is the direct requirement of production. The direct requirements are determined for each sector by dividing the purchases of the given sector by the total output of the same sector. Each direct requirement is defined as the dollar value of input per dollar value of output. Rowwise, the direct requirements are then substituted into the

accounting equations (2.1-1):

$$X_i = a_{i1}X_1 + \dots + a_{ij}X_j + \dots + a_{in}X_n + Y_i; \quad \text{where } i = 1, n. \quad (2.1-10)$$

For n sectors, the equations are more compactly restated in matrix algebra notation by the following equation:

$$X = AX + Y. \quad (2.1-11)$$

The X is an $(n \times 1)$ matrix that includes the total output for n sectors. The A is the $(n \times n)$ matrix of direct requirements. The Y is an $(n \times 1)$ matrix of final demand. This equation is then solved for X in terms of the A matrix and Y by matrix inversion. Matrix inversion provides for the following equations:

$$X(I - A) = Y; \quad (2.1-12)$$

and,

$$X = (I - A)^{-1} Y; \quad (2.1-13)$$

or,

$$X = BY. \quad (2.1-14)$$

The I is an $(n \times n)$ identity matrix. The A matrix is subtracted from the I matrix and then through matrix inversion becomes the final demand requirements matrix or B matrix. Inversion of the $(I - A)$ matrix is represented by the superscript -1 . The final demand requirements imply that, given a vector of final demand, economic activity can be directly determined for each sector by the following equation:

$$X_i = b_{i1}Y_1 + \dots + b_{ij}Y_j + \dots + b_{in}Y_n; \quad \text{where } i = 1, n. \quad (2.1-15)$$

Then differentiating this equation with respect to final demand:

$$b_{ij} = \frac{\partial X_i}{\partial Y_j}; \quad \text{where } i, j = 1, n. \quad (2.1-16)$$

The final demand requirements, b_{ij} 's, indicate the total effect on economic activity of sector i from a change in final demand for sector j . Their columnwise summation over all sectors is the final demand total requirement B_j . This summation is expressed through

the following equation:

$$B_j = \sum_i^n b_{ij}; \quad \text{where } j = 1, n. \quad (2.1-17)$$

The B_j indicates the total effect on economic activity over all sectors from a change in final demand for sector j . Similar to final demand requirements are output requirements. Output requirements are derived through the following equation:

$$c_{ij} = \frac{b_{ij}}{b'_{ij}}; \quad \text{where } i, j = 1, n. \quad (2.1-18)$$

The c_{ij} 's are output requirements. These are placed into a C matrix. Columnwise, the output requirements are calculated by dividing the final demand requirements by the intrasector final demand requirement b'_{ij} . The intrasector final demand requirement is the final demand requirement along the main diagonal of the B matrix. Output requirements, c_{ij} 's, indicate the total effect on economic activity of sector i from a change in output for sector j . Their columnwise summation over all sectors is the output total requirement C_j . This summation is expressed through the following equation:

$$C_j = \sum_i^n c_{ij}; \quad \text{where } j = 1, n. \quad (2.1-19)$$

The C_j indicates the total effect on economic activity over all sectors from a change in output for sector j . Following this, employment and income requirements are found to complete the input-output model.

Estimating an economic impact on the region is done using the output requirements matrix because the effects on economic activity are due to changes in output as opposed to changes in final demand.

Again, response effects are an additional part of the economic impact. Response effects include effects on employment, income, population, housing, agriculture water use, commercial water use, and residential water use. These are estimated by output response coefficients. Output response coefficients are defined as the unit values of employment, income, population, housing, agriculture water use, commercial water use, and residential water use per dollar value of output for each economic sector in the region.

2.2. Description of Input-Output Modeling

Input-output modeling involves the development of the recreation model component, development of the input-output model component, and application of the model.

Development of the Recreation Model Component

The regional economic model includes a recreation model component to estimate the direct effect on the region for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. This direct effect is referred to as the direct economic impact.

The recreation model generates the annual number of camping and day use visitors, and the annual camping and day use visitor expenditures relative to end of the month storage levels at Prosser, Stampede, and Boca Reservoirs for a given year. Then annual camping and day use visitor expenditures are allocated by economic sector to become the direct economic impact.

Development of the recreation model component required three tasks. These tasks are titled: survey of the visitation, estimation of the expenditure function, and formulation of the model equations. A summary of each task is given below.

A survey of the visitation was done during the week of August 9th through the 15th, 1993. This survey involved personal interviews of both camping and day use visitors along the Upper Truckee River, at Prosser Reservoir, at Stampede Reservoir, at Boca Reservoir, along the Lower Truckee River, and at Pyramid Lake. A questionnaire was used for the personal interviews. Camping and day use respondents were asked questions on site visitation, group size, site characteristics, expenditures, activity hours, site visitation at alternative water levels, site substitution, and demographics. In all, 162 respondents participated in the survey.

An expenditure function was estimated with data taken from the survey of the visitation. An expenditure function estimates the expenditures of camping and day use visitors per day per group by site. The sites, again, include Upper Truckee River, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, Lower Truckee River, and Pyramid Lake. This expenditure function is specified in a semi-logarithmic form and then estimated using a maximum-likelihood estimation technique. The expenditures per group per day by site were found to be dependent upon activity hours of respondents at the site and group size of respondents at the site.

Model equations were formulated to calculate the annual number of camping and day use visitors at the reservoirs and the annual expenditures of the camping and day use visitors relative to end of the month storage levels at Prosser, Stampede, and Boca Reservoirs. This model has eleven separate functions. A set of equations and group of variables is given for each function. Also data is described that was used to develop each function. Data was either taken from the survey of the visitation and estimation of the expenditure function or collected from additional sources. Data from additional sources include the number of camping visitors to the campgrounds at each reservoir and end of

the month storage levels for each reservoir. The end of the month reservoir storage levels for each reservoir serve as the input into the model.

More details on the recreation model component and each of these tasks is provided in Chapter 3.

Development of the Input-Output Model Component

The regional economic model includes a input-output model component to estimate the total effect and the response effect on the region for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. The total effect and response effect are referred to as the total economic impact and the response economic impact, respectively. The input-output model is also used to estimate the direct economic impact, the total economic impact, and the response economic impact on the region for reallocations of water from agriculture use to commercial use.

The input-output model generates the total economic impact and the response economic impact on the region for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. The input-output model also generates the direct economic impact, the total economic impact, and the response economic impact for reallocations of water from agriculture use to commercial use.

Development of the input-output model component required three tasks. These tasks are titled: definition of the region, collection of the control total data, and derivation of the model tables. A summary of each task is given below.

The region was defined by an economic area, a population base, and several economic sectors. The hydrologic boundaries of the Truckee River Basin outline the region. Within the region, the economic area covers part of eastern California and part of western Nevada. Part of eastern California includes portions of Sierra, Nevada, Placer, El Dorado, and Alpine counties and the towns of Truckee, Tahoe City, and South Lake Tahoe. Part of western Nevada includes portions of Pershing, Washoe, Lyon, Carson City (an independent city), and Douglas counties and the cities of Reno and Sparks. The population base for the region is 316,381 persons. Of this amount, 16% is from the California counties and 84% is from the Nevada counties. There are also twenty aggregated economic sectors that make-up the economy in the region. These sectors are livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households.

Control total data was collected for the region. There is a control total for output, employment, income, population, housing, agriculture water use, commercial water use, and residential water use. A definition, a source, and values by economic sector for the region by state are given for each control total. The values are estimated either by using specific information, coefficients, or county level data adjusted to the region by population. For the region, output is \$17,857,271,279. Employment is 188,121 jobs.

Income is \$6,720,549,054. Population is 307,874 persons. Housing is 122,239 dwellings. Agriculture water use is 73,696 acre-feet. Commercial water use is 12,432 acre-feet. Residential water use is 72,453 acre-feet. Output response coefficients are also provided for the region. These coefficients indicate how employment, income, population, housing, agriculture water use, commercial water use and residential water use change from a one dollar change in output.

Input-output tables were derived from the transactions matrix for the region. The transactions matrix is developed for Washoe county using IMPLAN, but, rebalanced by a modified RAS technique to the output control total for each economic sector in the region. Following this, input-output tables are found by performing a sequence of calculations involving matrix algebra. The input-output tables include direct requirements, final demand requirements, output requirements, employment requirements, income requirements, and multipliers. A description is provided for each of these tables. The description includes a definition of the table, and explanation of any calculations, and representation of the table in matrix algebra notation.

More details on the input-output model component and each of these tasks is provided in Chapter 4.

Application of the Model

The regional economic model has two applications. The first application is to estimate economic impacts for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. The second application is to estimate economic impacts for reallocations of water from agriculture use to commercial use. A computer program was written to perform the calculations for each of these applications.

The operation of the computer program to calculate economic impacts for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs follows the flowchart in Figure 2.2-1. This program integrates the recreation model component with the input-output model component. A summary of the operation of this program is given below.

The program starts with input data. The input data is the alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. The program takes the alternative reservoir storage levels and performs the first process. This process calculates each of the eleven functions of the recreation model. Output from this process includes the direct economic impact by economic sector. From this, the program takes the direct economic impact by economic sector and performs the second process. This process multiplies the direct economic impact by economic sector by the output requirements of the input-output model. Output from this process is the total economic impact by economic sector. Finally, the program takes the total economic impact by economic sector and performs the third process. This process multiplies the total economic impact by economic sector by the output response coefficients of the input-output model. Output from this process is the response economic impact by economic sector. Having generated the direct economic impact, total economic impact, and response economic impact the program stops.

The operation of the computer program to calculate economic impacts for reallocations of water from agriculture use to commercial use follows the flowchart in Figure 2.2-2. This program uses only the input-output model component. A summary of the operation of this program is given below.

The program starts with input data. The input data is either an agriculture water transfer amount or a commercial water transfer amount. From this, the program takes the water transfer amount and performs the first process. This process multiplies the water transfer amount by water transfer coefficients of the input-output model. Water transfer coefficients for agriculture water use are the proportions of agriculture water use in the agriculture sectors. Water transfer coefficients for commercial water use are the proportions of commercial water use in the commercial sectors. Output from this process is the water transfer amount by economic sector for either an agriculture water transfer or

a commercial water transfer. From this, the program takes the water transfer amount by economic sector and performs the second process. This process divides the water transfer amount by economic sector by the output response coefficients for either agriculture water use or commercial water use of the input-output model. Output from this process is the direct economic impact by economic sector for either an agriculture water transfer or a commercial water transfer. From this, the program takes the direct economic impact by economic sector and performs the third process. This process multiplies the direct economic impact by economic sector by the output requirements of the input-output model. Output from this process is the total economic impact by economic sector for either an agriculture water transfer or a commercial water transfer. Finally, the program takes the total economic impact by economic sector and performs the fourth process. This process multiplies the total economic impact by economic sector by output response coefficients of the input-output model. Output from this process is the response economic impact by economic sector for either an agriculture water transfer or a commercial water transfer. Having generated the direct economic impact, total economic impact, and response economic impact the program stops.

More details on model application and each of these computer programs is provided in Chapter 5.

Figure 2.2-1. Flowchart for Estimation of the Economic Impacts for Alternative Reservoir Storage Levels.

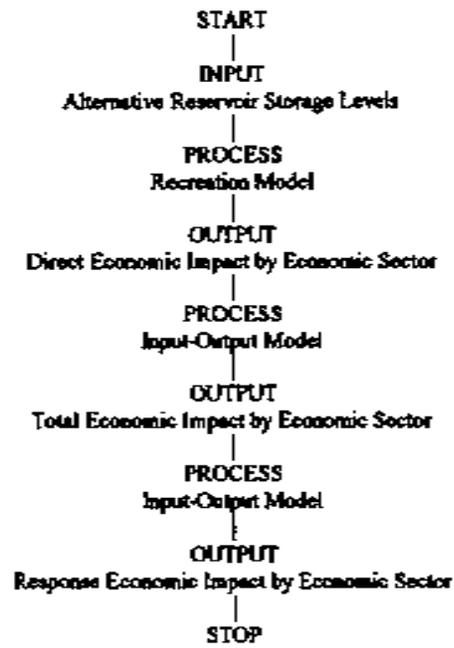


Figure 2.2-2. Flowchart for Estimation of the Economic Impacts for Reallocations of Water.



3. Recreation Model Component

The recreation model component of the regional economic impact model serves the purpose of estimating the annual number of camping and day use visitors at Prosser, Stampede, and Boca Reservoirs and their annual expenditures in the regional economy. Development of this component involved survey of the visitation, estimation of the expenditure function, and formulation of the model equations.

3.1. Survey of the Visitation

A visitation survey of the Truckee River Basin was done from August 9th through the 15th, 1993. Specific recreation sites visited included the Upper Truckee River, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, the Lower Truckee River, and Pyramid Lake. The purpose of the survey was to first obtain an overall picture of the visitation and recreation activities occurring at the sites, second, quantify the amount of expenditures that visitors at the sites make to the local economy, and third, identify how the visitation would change in relation to the level of water at the sites. To achieve this purpose, information was gathered from visitors at the site through an interview process using a questionnaire. During the interview process, observations were also made at each site. Once the interview process was completed, all the data was then compiled and analyzed to develop a set of descriptive statistics. The interview questionnaire, a list of observations, and the descriptive statistics of the data are presented below.

Interview Questionnaire

On-site interviews were done using a questionnaire. Through this questionnaire, visitors were asked general, site specific, and demographic questions. General questions were asked to identify where recreation activities were occurring, the type of recreation activities, and months during the year that a visitor came to the area. Site specific questions were asked on the site where the visitor was at the time of the interview. These questions were to identify reasons for choosing to visit the site, local expenditures made to visit the site, the number of hours spent participating in recreation activities at the site, whether or not respondents would continue to visit the site if the water level were to change, which other site would be chosen in the event that the water level did change to the point they would no longer continue to visit the site, and the willingness to pay by the visitor to keep the water level at the interview site suitable for recreation. Demographic questions were also asked on the age, education, and household income of the visitor. These questions, however, due to their sensitivity, were made optional. The questions asked are given below.

General Questions

1. How many times during the year do you visit the following recreation sites?

| | |
|---------------------|-------|
| Upper Truckee River | _____ |
| Prosser Reservoir | _____ |
| Stampede Reservoir | _____ |
| Boca Reservoir | _____ |
| Lower Truckee River | _____ |
| Pyramid Lake | _____ |

2. What recreation activities do you enjoy at these sites? (if other activity is given, just make a note)

| | |
|----------------------|-------|
| Picnicking | _____ |
| Camping | _____ |
| Fishing | _____ |
| Swimming | _____ |
| Boating | _____ |
| Boating-fishing | _____ |
| Boating-water skiing | _____ |
| Jet skiing | _____ |
| Rafting | _____ |
| Kayaking | _____ |
| Biking | _____ |
| Hiking | _____ |
| Other _____ | _____ |

3. At what months during the year do you visit these sites?

| | |
|-----------|-------|
| April | _____ |
| May | _____ |
| June | _____ |
| July | _____ |
| August | _____ |
| September | _____ |
| October | _____ |

7. How many hours per day during your visit is spent on the following activities at this site?

| | |
|-------------------------|-----------|
| Picnicking | _____ |
| Camping | _____ |
| Fishing | _____ |
| Swimming | _____ |
| Boating | _____ |
| Boating-fishing | _____ |
| Boating-water skiing | _____ |
| Jet skiing | _____ |
| Rafting | _____ |
| Kayaking | _____ |
| Biking | _____ |
| Hiking | _____ |
| Other _____ | _____ |
| Total hours per day | _____ |

8. How often would you visit this site per year if the water level at this site dropped by the following schedule? (only use the schedule for the interview site)

Upper Truckee River (Tahoe City to Boca Reservoir outlet)

| | |
|---|-------|
| 1) No reduction in river level (350 cfs; suitable for rafting) | _____ |
| 2) 1 / 3 reduction in river level (250 cfs; suitable for rafting) | _____ |
| 3) 2 / 3 reduction in river level (125 cfs; minimum level suitable for rafting) | _____ |
| 4) Over 2 / 3 reduction in river level (Below 125 cfs, not suitable for rafting) | _____ |

Prosser Reservoir

- 1) No reduction in lake level
(29,840 af; boat ramp usable) _____
- 2) Minor reduction in lake level
(28,000 af; boat ramp usable) _____
- 3) 1 / 3 reduction in lake level
(19,000 af; boat ramp usable, minimum level for recreation) _____
- 4) 2 / 3 reduction in lake level
(11,000 af; minimum level for boat ramp use) _____

Stampede Reservoir

- 1) No reduction in lake level
(226,000 af; boat ramp usable) _____
- 2) 1 / 4 reduction in lake level
(170,000 af; boat ramp usable) _____
- 3) 1 / 2 reduction in lake level
(130,000 af; boat ramp usable) _____
- 4) 2 / 3 reduction in lake level
(below 80,000 af; minimum level for boat ramp use) _____

Boca Reservoir

- 1) No reduction in lake level
(41,100 af; boat ramp usable) _____
- 2) Minor reduction in lake level
(38,000 af; boat ramp usable) _____
- 3) 1 / 3 reduction in lake level
(33,000 af; minimum level for boat ramp use) _____
- 4) 1 / 2 reduction in lake level
(22,000 af, minimum level for recreation) _____
- 5) Over half reduction in lake level
(Below 22,000 af) _____

Lower Truckee (Boca Reservoir outlet through Reno)

- 1) No reduction in river level
(1,000 cfs; suitable for rafting or kayaking) _____
- 2) 1 / 3 reduction in river level
(700 cfs; suitable for rafting or kayaking) _____
- 3) 2 / 3 reduction in river level
(400 cfs; Floriston rates; suitable for rafting, not suitable for kayaking) _____
- 4) Over 2 / 3 reduction in river level
(below 400 cfs; not suitable for rafting) _____

9. Would you choose to visit another site, given that the water level dropped and you quit visiting this site? Yes _____ No _____

If yes, which of the following recreation sites would you choose? (delete the interview site)

- Upper Truckee River _____
- Prosser Reservoir _____
- Stampede Reservoir _____
- Boca Reservoir _____
- Lower Truckee River _____
- Pyramid Lake _____

10. How much would you be willing to pay per year not to have the water level drop so you can continue to visit this site?

- \$0 _____
- \$5 _____
- \$10 _____
- \$25 _____
- \$50 _____
- \$100 _____
- \$ _____

Demographic Questions

1. Please indicate your age by marking the appropriate response?

| | |
|----------------|-------|
| under 16 years | _____ |
| 16 - 20 | _____ |
| 21 - 30 | _____ |
| 31 - 40 | _____ |
| 41 - 50 | _____ |
| 51 - 60 | _____ |
| 61 - 70 | _____ |
| over 70 | _____ |

2. Please indicate your education level by marking the appropriate response?

| | |
|-------------------------|-------|
| Elementary School | _____ |
| High School | _____ |
| Technical School | _____ |
| 2 Years of College | _____ |
| 4 Years of College | _____ |
| Over 4 Years of College | _____ |

3. Please indicate your total household income level by marking the appropriate response?

| | |
|----------------------|-------|
| below \$10,000 | _____ |
| \$10,000 - \$25,000 | _____ |
| \$26,000 - \$50,000 | _____ |
| \$51,000 - \$75,000 | _____ |
| \$76,000 - \$100,000 | _____ |
| over \$100,000 | _____ |

The total number of visitors that participated in an interview was 177. There were 23 on the Upper Truckee River, 8 at Prosser Reservoir, 50 at Stampede Reservoir, 49 at Boca Reservoir, 27 on the Lower Truckee River, and 20 at Pyramid Lake. A day was spent at each site during the week. An additional day was spent at Stampede Reservoir and Boca Reservoir on the weekend.

List of Observations

Observations were made at each site during the interview process. Key observations are listed below.

1. The water flow in the Upper Truckee River was below 125 cubic feet per second. Prosser Reservoir held 19,000 acre-feet of water in storage. Storage in Stampede Reservoir was between 130,000 acre-feet and 170,000 acre-feet. There was 33,000 acre-feet of water held in storage in Boca Reservoir. The water flow in the Lower Truckee River was below 400 cubic feet per second.
2. The highest number of day use visitors for water related recreation activities were at Boca Reservoir followed by Prosser Reservoir, the Lower Truckee River, and Pyramid Lake. The highest number of camping visitors were at Stampede Reservoir, followed by the Upper Truckee River, Boca Reservoir, and Pyramid Lake.
3. The proportionate split of day use visitors to camping visitors was approximately 80% day users to 20% campers on the Upper Truckee River, at Prosser Reservoir, and at Boca Reservoir. Stampede Reservoir had a proportionate split of 20% day users to 80% campers. The Lower Truckee River was 100% day users. Pyramid Lake had about 50% day users to 50% campers.
4. Very little water related recreation activity was seen to occur along the Upper Truckee River. Reason for this was a low level of water flow in the river. River rafting and fishing from shore would be the activities seen on the river given a sufficient level of river flow. Mountain biking was the only recreation activity seen to occur along the river. This activity was seen throughout the day along developed bike paths beside the river.
5. The highest number of water related recreation activities were observed at Boca, Stampede, and Prosser Reservoirs. At Boca Reservoir, the early morning activities seen were fishing from shore and by boat. A definite change in activities occurred at mid-morning. The fishing activities were replaced by swimming, boating, water skiing, jet skiing, and wind surfing. The level of these activities grew throughout the day and started to diminish by late afternoon. Similar activities occurred at Stampede Reservoir. However, morning fishing by boat was observed as the predominant activity at Stampede Reservoir. Also jet skiing and wind surfing weren't seen at Stampede Reservoir. Only morning fishing from shore and by boat were seen at Prosser Reservoir. There were no afternoon activities on Prosser Reservoir like there were on Boca and Stampede Reservoirs.

6. Competition among fishing, pleasure boating, water skiing, and jet skiing activities was very apparent at Boca Reservoir. Pleasure boating and water skiing were seen to interrupt the fishing and the jet skiing was seen to interrupt the boating and water skiing.
7. The water related recreation activity seen along the Lower Truckee River was fishing from shore and this was mainly seen in the morning and evenings.
8. The water related recreation activities at Pyramid Lake were observed to be swimming, water skiing, and jet skiing. These activities occurred throughout the day. Fishing was not permitted at Pyramid Lake at the time of survey.
9. July and August were popular months for both day use and camping visitors at Boca and Stampede Reservoirs for water related recreation activities other fishing. During these months, day use visitors tended to visit a site more than once while camping visitors chose to visit a site only once. Camping visitors, however, chose to stay from a couple of days to about ten days. A stay of at least a week seemed to be common at Stampede Reservoir.
10. Reasons given for visiting each recreation site were different between the sites. The Upper Truckee River was visited because of location. Boca Reservoir was visited because of the water level, the location, and the fees. Stampede Reservoir was visited because of the facilities, location, water level, and the crowd. Prosser Reservoir was visited because of location, water level, and the fees. Visitation on the Lower Truckee River was dependent on the water level. Pyramid Lake was visited because of the water level.
11. Local expenditures were primarily made in Truckee. Expenditures varied among each site and by recreation activity. Expenditures made to visit Boca Reservoir were for fishing license fees, grocery purchases, equipment and supplies, and fuel costs. Likewise, expenditures for a visit to Stampede Reservoir were on fishing license fees, user fees, restaurant, grocery purchases, equipment and supplies, and fuel costs.
12. The Upper Truckee River with a water flow below 125 cubic feet per second was limited to camping and biking activities. A water flow above 125 cubic feet per second and below 350 cubic feet per second would add fishing and rafting activities.

13. A storage level at Prosser Reservoir of above 19,000 acre-feet to capacity at 29,840 acre-feet would cause camping, fishing by boat, and fishing from shore to remain. At a reservoir level below 19,000 acre-feet to 11,000 acre-feet the boat ramp would be usable but below 11,000 acre-feet the boat ramp is unusable eliminating much of the fishing by boat activity.
14. At Stampede Reservoir, a storage level of above 130,000 acre-feet to capacity at 226,000 acre-feet and below 130,000 acre-feet to 80,000 acre-feet, recreation activity would remain with camping, fishing, pleasure boating, and water skiing. Below 80,000 acre-feet the boat ramp would become unusable eliminating virtually all boating activities. Visitors also preferred some shoreline area to support swimming, fishing, boating, water skiing, jet skiing, and other activities.
15. There was 33,000 acre-feet of water in storage in Boca Reservoir. Recreation activities observed at this level were camping, fishing, pleasure boating, water skiing, and jet skiing. These activities would still be seen at a 38,000 acre-foot storage level. Above the 38,000 acre-foot level, however, reduces the amount of shoreline eliminating much or most of the boating and jet skiing activities. Similarly below the 33,000 acre-foot water level the boat ramp would become unusable eliminating all the boating activities. Jet skiing along with fishing from shore and camping are activities that would possibly remain to a certain extent at a lower water level.
16. The water flow in the Lower Truckee River was below 400 cubic feet per second and fishing from shore was the primary recreation activity. At a flow over 400 cubic feet per second rafting could be expected to occur. A flow at 700 cubic feet per second adds kayaking. A flow over 700 cubic feet per second, however, eliminates rafting.
17. At Pyramid Lake, visitors indicated that because of its large size, the water related recreation activities would occur at any lake level.
18. Day use visitors will tend to visit Boca Reservoir if the water level is suitable for recreation activities rather than visit Stampede Reservoir. Pyramid Lake will attract day use visitors when water levels at both Boca Reservoir and Stampede Reservoir are not suitable for recreation activities. Camping visitors will tend to visit Stampede Reservoir as opposed to Boca Reservoir. Both day use and camping visitors will tend to visit Boca Reservoir and Stampede Reservoir when other recreation areas in the vicinity are filled-up.

19. The willingness to pay to maintain a water level suitable for recreation activities was different between day use and camping visitors with regards to distance of travel to the recreation site, the recreation site itself, and the recreation activity.
20. Day use visitors as well as camping visitors were of all ages, education levels, and household income levels.

Descriptive Statistics

The descriptive statistics of the data are presented below with an explanation of their interpretation. The descriptive statistics include number of respondents, site visitation of respondents, activities of respondents, annual visitation of respondents, annual visitation of respondents per site, number of visits by respondents per site, local and non-local respondents per site, group make-up of respondents per site, camping and day use respondents per site, ranking of reasons to visit by respondents per site, expenditures by respondents per site, expenditures by camping respondents per site, expenditures by day use respondents per site, activity hours per day by respondents per site, activity hours per day by camping respondents per site, activity hours per day by day use respondents per site, indicated number of visits by respondents at alternative water levels per site, site substitution of respondents per site, willingness of respondents to pay to maintain water level per site, age brackets of respondents, education levels of respondents, and household income levels of respondents.

Number of Respondents

The number of respondents successfully interviewed were 162 out of the 177 visitors.

The breakdown of the number of respondents for each site is provided in Table 3.1-1. There were 20 respondents on the Upper Truckee River, 6 respondents at Prosser Reservoir, 46 respondents at Stampede Reservoir, 46 respondents at Boca Reservoir, 25 respondents on the Lower Truckee River, and 19 respondents at Pyramid Lake. These numbers reflect the number of days spent interviewing at each site. Again, just a day was spent at each site during the week. Then an additional day was spent at Stampede Reservoir and Boca Reservoir on the weekend.

Prosser Reservoir had the fewest respondents because visitation was observed to be low. Factors that possibly attributed to this were: the water level at Prosser was lower relative to the water levels at nearby Stampede and Boca Reservoirs; only two of four campgrounds at Prosser were open; a five mile per hour speed limit is enforce on the reservoir which rules out water skiing, jet skiing, and pleasure boating; and, Prosser is essentially unknown to non-local visitors.

Table 3.1-1. Number of Respondents.

| | Study Area | Upper Truckee River | French Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|---------------------------|------------|---------------------|------------------|--------------------|----------------|---------------------|--------------|
| Number of Respondents | 162 | 20 | 6 | 46 | 46 | 25 | 19 |
| Percentage of Respondents | | 12.35% | 3.70% | 28.40% | 28.40% | 15.43% | 11.73% |

Site Visitation of Respondents

The overall greatest site visitation of respondents was at Boca Reservoir.

The site visitation of respondents is presented in Table 3.1-2. Of the 162 respondents, 32% indicated that they visited the Upper Truckee River an average of 5 visits during the year, 19% indicated that they visited Prosser Reservoir an average of 8 visits during the year, 53% indicated that they visited Stampede Reservoir an average of 4 visits during the year, 49% indicated that they visited Boca Reservoir an average of 11 visits during the year, 23% indicated that they visited the Lower Truckee River an average of 22 visits during the year, and 28% indicated that they visited Pyramid Lake an average of 8 visits during the year. The highest percentage of respondents indicated that they visited Stampede and Boca Reservoirs. These numbers are however skewed upward by the number of respondents for these sites shown in Table 3.1-1. The highest average number of visits by respondents are indicated for Boca Reservoir and the Lower Truckee River. These numbers are influenced by local day use visitors choosing to visit the sites more frequently. In contrast, the lowest number of visits by respondents are for Stampede Reservoir and the Upper Truckee River. These numbers are influenced by non-local camping visitors choosing to visit the sites less frequently.

Table 3.1-2. Site Visitation of Respondents.

| | Study Area | Upper Truckee River | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|------------|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Number of Respondents | 162 | 52 | 30 | 36 | 80 | 36 | 46 |
| Percentage of Respondents | | 32.10% | 18.52% | 22.22% | 49.38% | 22.41% | 28.46% |
| Number of Visits by Respondents | | 252 | 240 | 313 | 893 | 253 | 371 |
| Average Number of Visits by Respondents | | 4.85 | 8.00 | 8.69 | 11.16 | 7.03 | 8.07 |

Activities of Respondents

Most of the respondents participated in camping, fishing, and swimming activities.

Activities of respondents are shown in Table 3.1-3. The activities include picnicking, camping, fishing, swimming, boating, fishing from a boat, water skiing, jet skiing, rafting, kayaking, biking, hiking, and other activities. Of the 162 respondents, 31% indicated that they were picnicking, 65% indicated that they were camping, 57% indicated that they were fishing, 34% indicated that they were swimming, 19% indicated that they were boating, 33% indicated that they were fishing from a boat, 28% indicated that they were water skiing, 15% indicated that they were jet skiing, 7% indicated that they were rafting, 3% indicated that they were kayaking, 15% indicated that they were biking, and 30% indicated that they were doing other activities. The other activities mentioned by the respondents include relaxing, getting away from it all, reading, and drinking beer.

Table 3.1-3. Activities of Respondents.

| | Study Area |
|---|------------|
| Number of Respondents Picnicking | 50 |
| Number of Respondents Camping | 106 |
| Number of Respondents Fishing | 92 |
| Number of Respondents Swimming | 53 |
| Number of Respondents Boating | 30 |
| Number of Respondents Fishing from Boat | 54 |
| Number of Respondents Water Skiing | 45 |
| Number of Respondents Jet Skiing | 24 |
| Number of Respondents Rafting | 11 |
| Number of Respondents Kayaking | 4 |
| Number of Respondents Biking | 25 |
| Number of Respondents Hiking | 0 |
| Number of Respondents Other | 49 |
| Percentage of Respondents Picnicking | 30.86% |
| Percentage of Respondents Camping | 65.47% |
| Percentage of Respondents Fishing | 56.79% |
| Percentage of Respondents Swimming | 33.95% |
| Percentage of Respondents Boating | 18.52% |
| Percentage of Respondents Fishing from Boat | 33.33% |
| Percentage of Respondents Water Skiing | 27.78% |
| Percentage of Respondents Jet Skiing | 14.81% |
| Percentage of Respondents Rafting | 4.79% |
| Percentage of Respondents Kayaking | 2.47% |
| Percentage of Respondents Biking | 15.43% |
| Percentage of Respondents Hiking | 0.00% |
| Percentage of Respondents Other | 30.25% |

Annual Visitation of Respondents

Annual visitation of respondents to the study area is the highest in the summer months of June, July, and August.

Annual visitation of respondents is presented in Table 3.1-4. Of the 162 respondents, 26% indicated that they visit the study area in April, 43% indicated that they visit the study area in May, 68% indicated that they visit the study area in June, 78% indicated that they visit the study area in July, 100% indicated that they visit the study area in August, 52% indicated that they visit the study area in September, 32% indicated that they visit the study area in October, and 7% indicated that they visit the study area in Other months. Other months include November, December, January, February, and March.

Table 3.1-4. Annual Visitation of Respondents.

| | Study Area |
|---|-------------------|
| Number of Respondents that Visit during April | 42 |
| Number of Respondents that Visit during May | 70 |
| Number of Respondents that Visit during June | 110 |
| Number of Respondents that Visit during July | 126 |
| Number of Respondents that Visit during August | 162 |
| Number of Respondents that Visit during September | 85 |
| Number of Respondents that Visit during October | 52 |
| Number of Respondents that Visit during Other | 11 |
| Percentage of Visitation during April | 25.93% |
| Percentage of Visitation during May | 43.21% |
| Percentage of Visitation during June | 67.90% |
| Percentage of Visitation during July | 77.78% |
| Percentage of Visitation during August | 108.00% |
| Percentage of Visitation during September | 52.47% |
| Percentage of Visitation during October | 32.10% |
| Percentage of Visitation during Other | 6.79% |

Annual Visitation of Respondents per Site

The annual visitation of respondents per site follow a similar pattern. This pattern shows that during the year visitation at a site will begin in April and steadily increase throughout May, June, July, and August to peak in August and then decrease sharply during September and October to end at very low or even no visitation during the Other months.

The annual visitation of respondents per site are shown in Table 3.1-5. The pattern of annual visitation for a site is based on the number of respondents that indicated that they visit the study area and visit the site in a given month. To clarify this, for Boca Reservoir, 14 out of the 42 respondents indicated that they visit in April, 28 out of the 70 respondents indicated that they visit in May, 36 out of the 110 indicated that they visit in June, 42 out of the 126 respondents indicated that they visit in July, 46 out of the 162 respondents indicated that they visit in August, 31 out of the 85 indicated that they visit in September, 19 out of the 52 respondents indicated that they visit in October, and 6 out of the 11 respondents indicated that they visit in Other months.

These numbers are then divided by their summation and presented as a percentage of visitation during the given month. Of the total annual visitation at Boca Reservoir, 6% is during April, 13% is during May, 16% is during June, 19% is during July, 21% is during August, 14% is during September, 9% is during October, and 3% is during Other months.

The percentages taken together for all the months then show the pattern of annual visitation.

A similar interpretation can be made for the other sites.

Table 3.1-5. Annual Visitation of Respondents per Site.

| Study Area | Upper Truckee River | Proner Reservoir | Stumpole Reservoir | Boos Reservoir | Lower Truckee River | Pyramid Lake | |
|---|---------------------|------------------|--------------------|----------------|---------------------|--------------|-----------|
| Number of Respondents that Visit during April | 42 | 3 | 3 | 10 | 14 | 9 | |
| Number of Respondents that Visit during May | 70 | 4 | 3 | 16 | 28 | 10 | |
| Number of Respondents that Visit during June | 110 | 9 | 3 | 25 | 36 | 20 | |
| Number of Respondents that Visit during July | 126 | 13 | 4 | 26 | 42 | 23 | |
| Number of Respondents that Visit during August | 162 | 20 | 6 | 46 | 46 | 25 | |
| Number of Respondents that Visit during September | 85 | 8 | 3 | 20 | 31 | 14 | |
| Number of Respondents that Visit during October | 52 | 2 | 3 | 10 | 19 | 11 | |
| Number of Respondents that Visit during Other | 11 | 1 | 1 | 0 | 6 | 1 | |
| Total | | 60 | 26 | 133 | 222 | 113 | 84 |
| Percentage of Visitation during April | | 5.00% | 11.54% | 6.54% | 6.31% | 1.90% | 3.57% |
| Percentage of Visitation during May | | 6.67% | 11.54% | 10.46% | 12.61% | 8.85% | 10.71% |
| Percentage of Visitation during June | | 15.00% | 11.54% | 16.34% | 16.22% | 17.70% | 20.24% |
| Percentage of Visitation during July | | 21.67% | 15.38% | 16.99% | 18.92% | 20.35% | 21.43% |
| Percentage of Visitation during August | | 33.33% | 23.08% | 30.07% | 20.72% | 22.12% | 22.62% |
| Percentage of Visitation during September | | 13.33% | 11.54% | 13.07% | 13.96% | 12.39% | 10.71% |
| Percentage of Visitation during October | | 3.33% | 11.54% | 6.54% | 8.56% | 9.79% | 8.33% |
| Percentage of Visitation during Other | | 1.67% | 3.85% | 0.00% | 2.70% | 0.88% | 2.38% |

Number of Visits by Respondents per Site

The highest number of visits by respondents occur at Boca Reservoir, on the Lower Truckee River, and at Pyramid Lake. Opposite of this, the lowest number of visits by respondents occur on the Upper Truckee River, at Prosser Reservoir, and at Stampede Reservoir.

These numbers are shown in Table 3.1-6. On the Upper Truckee River, the 20 respondents indicated that they make 34 visits to the site for an average of 1.7 visits each. At Prosser Reservoir, the 6 respondents indicated that they make 34 visits to the site for an average of 5.7 visits each. At Stampede Reservoir, the 46 respondents indicated that they make 87 visits to the site for an average of 1.9 visits each. At Boca Reservoir, the 46 respondents indicated that they make 428 visits to the site for an average of 9.3 visits each. On the Lower Truckee River, the 25 respondents indicated that they make 720 visits to the site for an average of 28.8 visits each. At Pyramid Lake, the 19 respondents indicated that they make 192 visits to the site for an average of 10.1 visits each. The higher numbers for Boca Reservoir, Lower Truckee River, and Pyramid Lake reflect that a greater proportion of the respondents were local residents that frequented the site as day use visitors.

Table 3.1-6. Number of Visits by Respondents per Site.

| | Upper Truckee River | Pioneer Reservoir | Stampede Reservoir | Boas Reservoir | Lower Truckee River | Pyramid Lake |
|---|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Number of Visits by Respondents | 34 | 34 | 87 | 428 | 720 | 192 |
| Average Number of Visits by Respondents | 1.70 | 3.78 | 1.90 | 9.38 | 28.80 | 10.10 |

Local and Non-Local Respondents per Site

A higher number of respondents living within the study area were at Boca Reservoir, on the Lower Truckee, and at Pyramid Lake. Whereas, a higher number of respondents living outside the study area were on the Upper Truckee River, at Prosser Reservoir, and at Stampede Reservoir. Respondents living within the study area are considered as local respondents and respondents living outside the study area are considered as non-local respondents.

The numbers and the percentages of local and non-local respondents per site are provided in Table 3.1-7. At Boca Reservoir, 74% of the respondents were local respondents. On the Lower Truckee River, 72% of the respondents were local respondents. At Pyramid Lake, 89% of the respondents were local respondents. The higher number of local respondents at these sites is because these sites are primarily day use sites that draw visitors from Truckee and the Reno-Sparks area. In contrast, on the Upper Truckee River, 85% of the respondents were non-local respondents. At Prosser Reservoir, 67% of the respondents were non-local respondents. At Stampede Reservoir, 59% of the respondents were non-local respondents. The higher number of non-local respondents at these sites is because these sites are primarily camping sites that draw visitors from Sacramento and the San Francisco Bay area.

Table 3.1-7. Local and Non-Local Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Number of Local Respondents | 3 | 2 | 19 | 34 | 18 | 17 |
| Number of Non-Local Respondents | 17 | 4 | 27 | 12 | 7 | 2 |
| Percentage of Local Respondents | 15.00% | 33.33% | 41.30% | 73.91% | 72.00% | 89.47% |
| Percentage of Non-Local Respondents | 85.00% | 66.67% | 58.70% | 26.09% | 28.00% | 10.53% |

Group Make-Up of Respondents per Site

Average group size of respondents among all sites ranged from 2.28 persons on the Lower Truckee River to 4.78 persons at Stampede Reservoir. As per group, the number of adults were greater than the number of children at all sites. The percentage of groups that included children ranged from 24% on the Lower Truckee River to 53% at Pyramid Lake.

This group make-up information is presented in Table 3.1-8. On the Upper Truckee River, the average group size was 3.8 persons of which 2.65 persons were adults and 45% of the groups included children. At Prosser Reservoir, the average group size was 3.33 persons of which 2.16 persons were adults and 29% of the groups included children. At Stampede Reservoir, the average group size was 4.78 persons of which 3.56 persons were adults and 43% of the groups included children. At Boca Reservoir, the average group size was 4.54 persons of which 3.15 persons were adults and 41% of the groups included children. On the Lower Truckee River, the average group size was 2.28 persons of which 1.68 persons were adults and 24% of the groups included children. At Pyramid Lake, the average group size was 3.84 persons of which 2.89 persons were adults and 53% of the groups included children.

Table 3.1-8. Group Make-Up of Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Stampede Reservoir | Boos Reservoir | Lower Truckee River | Pyramid Lake |
|---|---------------------------|----------------------|-----------------------|-------------------|---------------------------|-----------------|
| <i>Average Group Size of Respondents</i> | 3.80 | 3.33 | 4.73 | 4.54 | 2.28 | 3.94 |
| <i>Average Number of Adults in Group of Respondents</i> | 2.65 | 2.16 | 3.56 | 3.15 | 1.68 | 2.89 |
| <i>Percentage of Groups that include Children</i> | 45.00% | 28.57% | 43.48% | 41.30% | 24.00% | 52.63% |

Camping and Day Use Respondents per Site

The highest percentage of camping respondents were on the Upper Truckee River and at Stampede Reservoir. The largest average group size of camping respondents was also at Stampede Reservoir. The greatest average numbers of days spent by camping respondents were at Boca Reservoir and on the Upper Truckee River.

This camping respondent information is provided in Table 3.1-9. On the Upper Truckee River, 85% of the respondents were camping respondents having a group size of 3.71 persons with 5.11 days being spent. At Stampede Reservoir, 78% of the respondents were camping respondents having a group size of 5.14 persons with 3.69 days being spent. At Boca Reservoir, 11% of the respondents were camping respondents having a group size of 3.20 persons with 6.40 days being spent. On the Lower Truckee River, 4% of the respondents were camping respondents having a group size of 2.00 persons with 2.00 days being spent. At Pyramid Lake, 63% of the respondents were camping respondents having a group size of 3.17 persons with 3.42 days being spent. At Prosser Reservoir, this information is not available because no interviews of camping visitors were made.

The highest percentage of day use respondents, except for Prosser Reservoir, were at Boca Reservoir and on the Lower Truckee River. The largest average group size of day use respondents was at Pyramid Lake. The greatest average number of hours spent by day use respondents were at Pyramid Lake and at Stampede Reservoir.

This day use respondent information is also provided in Table 3.1-9. On the Upper Truckee River, 15% of the respondents were day use respondents having a group size of 4.33 persons with 2.67 hours being spent. At Stampede Reservoir, 22% of the respondents were day use respondents having a group size of 3.50 persons with 5.50 hours being spent. At Boca Reservoir, 89% of the respondents were day use respondents having a group size of 4.71 persons with 5.10 hours being spent. On the Lower Truckee River, 96% of the respondents were day use respondents having a group size of 2.29 persons with 3.96 hours being spent. At Pyramid Lake, 37% of the respondents were day use respondents having a group size of 5.00 persons with 6.14 hours being spent. At Prosser Reservoir, 100% of the respondents were day use respondents having a group size of 3.33 persons with 3.33 hours being spent. Only interviews of day use visitors were made at Prosser Reservoir.

Table 3.1-9. Camping and Day Use Respondents per Site.

| | Upper Trachse Reser | Proner Reservoir | Stampede Reservoir | Boon Reservoir | Lower Trachse River | Pyramid Lake |
|---|---------------------------|---------------------|-----------------------|-------------------|---------------------------|-----------------|
| Number of Camping Respondents | 17 | 0 | 36 | 3 | 1 | 12 |
| Percentage of Camping Respondents | 25.00% | N.A. | 78.00% | 11.00% | 4.00% | 63.16% |
| Average Group Size of Camping Respondents | 3.71 | N.A. | 5.14 | 3.20 | 2.00 | 3.17 |
| Average Number of Days Spent by Camping Respondents | 5.11 | N.A. | 3.69 | 6.40 | 2.00 | 3.42 |
| Number of Day Use Respondents | 3 | 6 | 10 | 41 | 24 | 7 |
| Percentage of Day Use Respondents | 15.00% | 100.00% | 22.00% | 99.00% | 96.00% | 36.84% |
| Average Group Size of Day Use Respondents | 4.33 | 3.33 | 3.50 | 4.71 | 2.29 | 5.00 |
| Average Number of Hours Spent by Day Use Respondents | 2.67 | 3.33 | 5.50 | 5.10 | 3.96 | 6.14 |

Ranking of Reasons to Visit by Respondents per Site

Location was ranked the highest by respondents at all sites as being the first reason for choosing to visit a site. Following location, however, water level, facilities, fees, and crowd level were ranked differently according to their average values.

Ranking of reasons to visit by respondents per site is shown in Table 3.1-10. On the Upper Truckee River, the respondents ranked location as first with 4.65, crowd level as second with 2.50, facilities as third with 2.10, water level as fourth with 1.85, and fees as fifth with 1.80. At Prosser Reservoir, the respondents ranked location as first with 4.20, facilities as second with 2.50, water level as third with 2.30, fees as fourth with 2.20, and crowd level as fifth with 1.80. At Stampede Reservoir, the respondents ranked location as first with 3.70, facilities as second with 2.90, water level as third with 2.50, crowd level as fourth with 2.00, and fees as fifth with 1.50. At Boca Reservoir, the respondents ranked location as first with 4.40, water level as second with 2.90, fees as third with 2.30, crowd level as fourth with 1.90, and facilities as fifth with 1.30. On the Lower Truckee River, respondents ranked location as first with 4.20, water level as second with 2.20, crowd level as third with 1.32, fees as fourth with .90, and facilities as fifth with .80. At Pyramid Lake, the respondents ranked location as first, crowd level as second with 2.80, water level as third with 2.10, fees as fourth with 2.10, and facilities as fifth with 1.40.

Table 3.1-10. Ranking of Reasons to Visit by Respondents per Site.

| | Upper Trackee River | Prater Reservoir | Stampede Reservoir | Boas Reservoir | Lower Trackee River | Pyramid Lake |
|---|---------------------------|---------------------|-----------------------|-------------------|---------------------------|-----------------|
| Reason #1 | | | | | | |
| Average Value of Location by Respondents | 4.65 | 4.20 | 3.70 | 4.40 | 4.20 | 4.20 |
| Average Value of Water Level by Respondents | 1.85 | 2.30 | 2.50 | 2.90 | 2.20 | 2.10 |
| Average Value of Facilities and Services by Respondents | 2.10 | 2.50 | 2.90 | 1.30 | 0.60 | 1.40 |
| Average Value of Fees by Respondents | 1.80 | 2.20 | 1.50 | 2.30 | 0.90 | 2.10 |
| Average Value of Crowd Level by Respondents | 2.50 | 1.80 | 2.00 | 1.90 | 1.12 | 2.00 |

1. Ranking: Range Highest Value-First Reason to Lowest Value-Fifth Reason.

Expenditures by Respondents per Site

Expenditures are the highest amount for respondents at Prosser Reservoir followed by expenditures of respondents on the Upper Truckee River, at Stampede Reservoir, at Pyramid Lake, at Boca Reservoir, and on the Lower Truckee River. Main expenditures are on groceries, camping fees, restaurant, fuel, and licenses.

The expenditures by respondents are presented as average values in Table 3.1-11. On the Upper Truckee River, respondents have total expenditures of \$199.83 in which the largest portion is on groceries, camping fees, restaurant, hotel, and fuel. At Prosser Reservoir, respondents have total expenditures of \$289.90 in which the largest portion is on rental, restaurant, groceries, and licenses. At Stampede Reservoir, respondents have total expenditures of \$165.06 in which the largest portion is on groceries, camping fees, licenses, and fuel. At Boca Reservoir, respondents have total expenditures of \$117.20 in which the largest portion is on groceries, hotel, fuel, and restaurant. On the Lower Truckee River, respondents have a total expenditure of \$72.30 in which the largest portion is on hotel, licenses, fuel, and rental. At Pyramid Lake, respondents have a total expenditure of \$123.57 in which the largest portion is on groceries, fuel, licenses, and camping fees.

Table 3.1-11. Expenditures by Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Stumpede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|---|---------------------|-------------------|--------------------|-----------------|---------------------|-----------------|
| Average Expenditures on Licenses by Respondents | 9.08 | 23.73 | 21.06 | 10.27 | 16.60 | 26.21 |
| Average Expenditures on Camping Fees by Respondents | 34.25 | 0.00 | 37.93 | 6.53 | 0.00 | 18.89 |
| Average Expenditures on Hotel or Motel by Respondents | 23.15 | 1.80 | 3.88 | 29.13 | 22.20 | 0.00 |
| Average Expenditures on Restaurants by Respondents | 29.45 | 41.67 | 9.98 | 11.30 | 6.44 | 8.68 |
| Average Expenditures on Groceries by Respondents | 71.25 | 41.67 | 59.96 | 29.33 | 3.60 | 32.11 |
| Average Expenditures on Equipment and Supplies by Respondents | 9.90 | 4.50 | 9.90 | 3.17 | 2.84 | 1.58 |
| Average Expenditures on Rental by Respondents | 0.00 | 162.50 | 0.00 | 0.00 | 8.00 | 3.26 |
| Average Expenditures on Fuel by Respondents | 30.35 | 14.83 | 20.33 | 17.63 | 9.02 | 34.84 |
| Average Expenditures on Other by Respondents | 2.40 | 0.00 | 2.40 | 7.83 | 1.60 | 0.00 |
| Average Total Expenditures by Respondents | \$199.83 | \$289.90 | \$163.06 | \$117.20 | \$72.30 | \$123.57 |

Expenditures by Camping Respondents per Site

Expenditures are the highest amount for camping respondents at Stampede Reservoir followed by expenditures of camping respondents on the Upper Truckee River, at Pyramid Lake, at Boca Reservoir, and on the Lower Truckee River. Main expenditures are on groceries, camping fees, and fuel.

The expenditures for camping respondents are provided as average values in Table 3.1-12. On the Upper Truckee River, camping respondents have total expenditures of \$176.84 in which the largest portion is on groceries, camping fees, fuel, and restaurant. At Stampede Reservoir, camping respondents have total expenditures of \$199.12 in which the largest portion is on groceries, camping fees, fuel, and licenses. At Boca Reservoir, camping respondents have total expenditures of \$92.40 in which the largest portion is on groceries, licenses, and fuel. On the Lower Truckee River, camping respondents have a total expenditure of \$35.00 in which the largest portion is on groceries and restaurant. At Pyramid Lake, camping respondents have a total expenditure of \$153.74 in which the largest portion is on groceries, fuel, licenses, and camping fees. At Prosser Reservoir, this information is not available because no interviews of camping visitors were made.

Expenditures per day by camping respondents is calculated by dividing the expenditures by camping respondents by the number of days spent by camping respondents. On the Upper Truckee River, total expenditures per day are \$34.61. At Stampede Reservoir, total expenditures per day are \$53.96. At Boca Reservoir, total expenditures per day are \$14.44. On the Lower Truckee River, total expenditures per day are \$17.50. At Pyramid Lake, total expenditures per day are \$44.95.

Expenditures per day per person by camping respondents is calculated by dividing the expenditures per day by camping respondent by the average group size of camping respondents. On the Upper Truckee River, total expenditures per day per person are \$9.33. At Stampede Reservoir, total expenditures per day per person are \$10.50. At Boca Reservoir, total expenditures per day per person are \$4.51. On the Lower Truckee River, total expenditures per day per person are \$8.75. At Pyramid Lake, total expenditures per day per person are \$14.18.

Table 3.1-12. Expenditures by Camping Respondents per Site.

| | Upper Truckee River | Prince Reservoir | Sampah Reservoir | Beck Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|------------------|------------------|----------------|---------------------|-----------------|
| Average Expenditures on Licenses by Camping Respondents | 8.91 | N.A. | 16.18 | 17.40 | 0.00 | 18.25 |
| Average Expenditures on Camping Fees by Camping Respondents | 40.29 | N.A. | 48.47 | 0.00 | 0.00 | 16.33 |
| Average Expenditures on Hotel or Motel by Camping Respondents | 3.71 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Expenditures on Restaurant by Camping Respondents | 19.35 | N.A. | 8.58 | 0.00 | 10.00 | 13.33 |
| Average Expenditures on Groceries by Camping Respondents | 67.35 | N.A. | 70.39 | 46.00 | 25.00 | 70.00 |
| Average Expenditures on Equipment and Supplies by Camping Respondents | 11.65 | N.A. | 15.00 | 0.40 | 0.00 | 2.50 |
| Average Expenditures on Rental by Camping Respondents | 0.00 | N.A. | 0.00 | 0.00 | 0.00 | 2.33 |
| Average Expenditures on Fuel by Camping Respondents | 22.76 | N.A. | 40.42 | 16.60 | 0.00 | 23.00 |
| Average Expenditures on Other by Camping Respondents | 2.82 | N.A. | 0.00 | 12.00 | 0.00 | 0.00 |
| Average Total Expenditures by Camping Respondents | \$176.84 | N.A. | \$199.12 | \$92.40 | \$35.00 | \$153.14 |
| Average Expenditures per Day on Licenses by Camping Respondents | 1.74 | N.A. | 4.38 | 2.72 | 0.00 | 3.34 |
| Average Expenditures per Day on Camping Fees by Camping Respondents | 7.48 | N.A. | 13.14 | 0.00 | 0.00 | 4.77 |
| Average Expenditures per Day on Hotel or Motel by Camping Respondents | 0.73 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Expenditures per Day on Restaurant by Camping Respondents | 3.79 | N.A. | 2.33 | 0.00 | 5.00 | 3.90 |
| Average Expenditures per Day on Groceries by Camping Respondents | 13.18 | N.A. | 19.08 | 7.19 | 12.50 | 20.47 |
| Average Expenditures per Day on Equipment and Supplies by Camping Respondents | 2.20 | N.A. | 4.09 | 0.06 | 0.00 | 0.73 |
| Average Expenditures per Day on Rental by Camping Respondents | 0.00 | N.A. | 0.00 | 0.00 | 0.00 | 2.44 |
| Average Expenditures per Day on Fuel by Camping Respondents | 4.45 | N.A. | 10.95 | 2.59 | 0.00 | 7.31 |
| Average Expenditures per Day on Other by Camping Respondents | 0.55 | N.A. | 0.00 | 1.88 | 0.00 | 0.00 |
| Average Total Expenditures per Day by Camping Respondents | \$34.61 | N.A. | \$39.96 | \$14.44 | \$17.50 | \$44.95 |
| Average Expenditures per Day per Person on Licenses by Camping Respondents | 0.47 | N.A. | 0.85 | 0.65 | 0.00 | 1.68 |
| Average Expenditures per Day per Person on Camping Fees by Camping Respondents | 2.13 | N.A. | 2.56 | 0.00 | 0.00 | 1.51 |
| Average Expenditures per Day per Person on Hotel or Motel by Camping Respondents | 0.20 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Expenditures per Day per Person on Restaurant by Camping Respondents | 1.02 | N.A. | 0.45 | 0.00 | 2.50 | 1.23 |
| Average Expenditures per Day per Person on Groceries by Camping Respondents | 3.55 | N.A. | 3.71 | 2.25 | 6.25 | 6.46 |
| Average Expenditures per Day per Person on Equipment and Supplies by Camping Respondents | 0.61 | N.A. | 0.80 | 0.02 | 0.00 | 0.23 |
| Average Expenditures per Day per Person on Rental by Camping Respondents | 0.00 | N.A. | 0.00 | 0.00 | 0.00 | 0.77 |
| Average Expenditures per Day per Person on Fuel by Camping Respondents | 1.20 | N.A. | 2.13 | 0.41 | 0.00 | 2.31 |
| Average Expenditures per Day per Person on Other by Camping Respondents | 0.15 | N.A. | 0.00 | 0.39 | 0.00 | 0.00 |
| Average Total Expenditures per Day per Person by Camping Respondents | \$9.33 | N.A. | \$10.50 | \$4.51 | \$8.75 | \$14.10 |

Expenditures by Day Use Respondents per Site

Expenditures are the highest amount for day use respondents on the Upper Truckee River followed by expenditures of day use respondents at Prosser Reservoir, at Boca Reservoir, at Stampede Reservoir, on the Lower Truckee River, and at Pyramid Lake. Main expenditures are on groceries, hotel, restaurant, and fuel.

The average expenditures by day use respondents are shown in Table 3.1-13. On the Upper Truckee River, day use respondents have total expenditures of \$330.00 in which the largest portion is on hotel, groceries, and restaurant. At Prosser Reservoir, day use respondents have total expenditures of \$289.90 in which the largest portion is on rental, groceries, and restaurant. At Stampede Reservoir, day use respondents have total expenditures of \$117.46 in which the largest portion is on groceries, licenses, and fuel. At Boca Reservoir, day use respondents have total expenditures of \$120.23 in which the largest portion is on groceries, hotel, and fuel. On the Lower Truckee River, day use respondents have a total expenditure of \$73.86 in which the largest portion is on hotel and licenses. At Pyramid Lake, day use respondents have a total expenditure of \$71.85 in which the largest portion is on fuel, licenses, and groceries.

Expenditures per person by day use respondents is calculated by dividing the expenditures by day use respondents by the average group size of day use respondents. On the Upper Truckee River, total expenditures per person are \$76.21. At Prosser Reservoir, total expenditures per person are \$87.06. At Stampede Reservoir, total expenditures per person are \$33.56. At Boca Reservoir, total expenditures per person are \$25.33. On the Lower Truckee River, total expenditures per person are \$32.25. At Pyramid Lake, total expenditures per person are \$14.37.

Table 3.1-13. Expenditures by Day Use Respondents per Site.

| | Upper Truckee River | Promer Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|------------------|--------------------|-----------------|---------------------|----------------|
| Average Expenditures on Licenses by Day Use Respondents | 19.00 | 23.73 | 21.60 | 9.40 | 17.29 | 23.57 |
| Average Expenditures on Camping Fees by Day Use Respondents | 0.00 | 0.00 | 0.00 | 7.32 | 0.00 | 1.57 |
| Average Expenditures on Hotel or Motel by Day Use Respondents | 133.33 | 1.00 | 16.00 | 32.68 | 23.13 | 0.00 |
| Average Expenditures on Restaurant by Day Use Respondents | 86.67 | 41.67 | 15.00 | 12.68 | 6.29 | 0.71 |
| Average Expenditures on Groceries by Day Use Respondents | 93.33 | 41.67 | 22.40 | 27.29 | 4.79 | 21.43 |
| Average Expenditures on Equipment and Supplies by Day Use Respondents | 0.00 | 4.90 | 3.76 | 5.76 | 2.96 | 0.00 |
| Average Expenditures on Rental by Day Use Respondents | 0.00 | 162.50 | 0.00 | 0.00 | 8.33 | 0.00 |
| Average Expenditures on Fuel by Day Use Respondents | 6.67 | 14.83 | 20.20 | 17.78 | 9.40 | 24.57 |
| Average Expenditures on Other by Day Use Respondents | 0.00 | 0.00 | 1.90 | 7.32 | 1.67 | 0.00 |
| Average Total Expenditures by Day Use Respondents | \$330.00 | \$289.90 | \$117.46 | \$120.23 | \$73.85 | \$71.85 |
| Average Expenditures per Person on Licenses by Day Use Respondents | 2.31 | 7.13 | 11.03 | 1.00 | 7.53 | 4.71 |
| Average Expenditures per Person on Camping Fees by Day Use Respondents | 0.00 | 0.00 | 0.00 | 1.53 | 0.00 | 0.31 |
| Average Expenditures per Person on Hotel or Motel by Day Use Respondents | 30.79 | 0.30 | 4.57 | 6.94 | 10.10 | 0.00 |
| Average Expenditures per Person on Restaurant by Day Use Respondents | 20.02 | 12.51 | 4.29 | 2.69 | 2.71 | 0.14 |
| Average Expenditures per Person on Groceries by Day Use Respondents | 21.53 | 12.51 | 6.40 | 5.79 | 2.09 | 4.29 |
| Average Expenditures per Person on Equipment and Supplies by Day Use Respondents | 0.00 | 1.35 | 1.07 | 1.21 | 1.29 | 0.00 |
| Average Expenditures per Person on Rental by Day Use Respondents | 0.00 | 48.00 | 0.00 | 0.00 | 3.64 | 0.00 |
| Average Expenditures per Person on Fuel by Day Use Respondents | 1.54 | 4.45 | 5.77 | 3.77 | 4.10 | 4.91 |
| Average Expenditures per Person on Other by Day Use Respondents | 0.00 | 0.00 | 0.43 | 1.53 | 0.73 | 0.00 |
| Average Total Expenditures per Person by Day Use Respondents | \$76.21 | \$87.06 | \$33.36 | \$25.53 | \$32.25 | \$14.37 |

Activity Hours per Day by Respondents per Site

Hours per day spent by respondents participating in non-camping activities at all sites ranged from 3.30 hours at Prosser Reservoir to 5.75 hours at Stampede Reservoir. Activities of respondents also varied among all sites from that of fishing on the Upper Truckee River, at Prosser Reservoir, and on the Lower Truckee River to that of fishing, swimming, boating, water skiing, and jet skiing at Stampede Reservoir, at Boca Reservoir, and at Pyramid Lake.

The average activity hours per day by respondents are provided in Table 3.1-14. On the Upper Truckee River, respondents spent 4.53 hours per day participating in activities including picnicking, fishing, swimming, rafting, and biking. At Prosser Reservoir, respondents spent 3.30 hours per day fishing. At Stampede Reservoir, respondents spent 5.75 hours per day participating in activities including picnicking, fishing, swimming, boating, water skiing, rafting, and biking. At Boca Reservoir, respondents spent 5.09 hours per day participating in activities including picnicking, fishing, swimming, boating, water skiing, jet skiing, and biking. On the Lower Truckee River, respondents spent 3.92 hours per day participating in activities including fishing, swimming, boating, and rafting. At Pyramid Lake, respondents spent 5.36 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing.

Camping is not included in the activities because respondents had difficulty relating to camping as a separate activity.

Table 3.1-14. Activity Hours per Day by Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Average Activity Hours per Day spent Picnicking by Respondents | 0.35 | 0.00 | 0.20 | 0.74 | 0.00 | 0.68 |
| Average Activity Hours per Day spent Camping by Respondents | 8.30 | 0.00 | 0.98 | 1.04 | 0.00 | 1.26 |
| Average Activity Hours per Day spent Fishing by Respondents | 1.70 | 2.00 | 1.30 | 0.83 | 3.56 | 0.90 |
| Average Activity Hours per Day spent Swimming by Respondents | 0.34 | 0.00 | 0.39 | 0.28 | 0.04 | 1.00 |
| Average Activity Hours per Day spent Boating by Respondents | 0.00 | 0.00 | 0.20 | 0.20 | 0.16 | 0.68 |
| Average Activity Hours per Day spent Fishing from Boat by Respondents | 0.00 | 1.30 | 1.30 | 0.30 | 0.00 | 0.90 |
| Average Activity Hours per Day spent Water Skiing by Respondents | 0.00 | 0.00 | 0.23 | 0.27 | 0.00 | 1.25 |
| Average Activity Hours per Day spent Jet Skiing by Respondents | 0.00 | 0.00 | 0.00 | 1.11 | 0.00 | 0.50 |
| Average Activity Hours per Day spent Rafting by Respondents | 0.15 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Kayaking by Respondents | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Biking by Respondents | 0.20 | 0.00 | 0.21 | 0.04 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Hiking by Respondents | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent on Other activities by Respondents | 1.75 | 0.00 | 0.34 | 0.22 | 0.00 | 1.21 |
| Total Activity Hours per Day by Respondents | 12.83 | 3.30 | 4.73 | 6.13 | 3.92 | 6.62 |
| Total Activity Hours per Day spent on Non-Camping Activities by Respondents | 4.53 | 3.30 | 3.73 | 3.09 | 3.92 | 3.36 |

Activity Hours per Day by Camping Respondents per Site

Hours per day spent by camping respondents participating in non-camping activities at all sites ranged from 3.00 hours on the Lower Truckee River to 5.80 hours at Stampede Reservoir. Activities of camping respondents also varied among all sites from that of fishing on the Upper Truckee River and on the Lower Truckee River to that of fishing, swimming, boating, water skiing, and jet skiing at Stampede Reservoir, at Boca Reservoir, and at Pyramid Lake.

The average activity hours per day by camping respondents are presented in Table 3.1-15. On the Upper Truckee River, camping respondents spent 4.85 hours per day participating in activities including picnicking, fishing, swimming, rafting, and biking. At Stampede Reservoir, camping respondents spent 5.80 hours per day participating in activities including picnicking, fishing, swimming, boating, water skiing, rafting, and biking. At Boca Reservoir, camping respondents spent 5.00 hours per day participating in activities including fishing, water skiing, and biking. On the Lower Truckee River, camping respondents spent 3.00 hours per day fishing. At Pyramid Lake, camping respondents spent 5.67 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing. At Prosser Reservoir, this information is not available because no interviews of camping visitors were made.

Again, camping is not included in the activities because respondents had difficulty relating to camping as a separate activity.

Table 3.1-15. Activity Hours per Day by Camping Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Stampede Reservoir | Boat Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Average Activity Hours per Day spent Picnicking by Camping Respondents | 0.41 | N.A. | 0.25 | 0.00 | 0.00 | 0.25 |
| Average Activity Hours per Day spent Camping by Camping Respondents | 9.76 | N.A. | 1.25 | 9.60 | 0.00 | 2.00 |
| Average Activity Hours per Day spent Fishing by Camping Respondents | 1.74 | N.A. | 1.33 | 0.60 | 3.00 | 0.00 |
| Average Activity Hours per Day spent Swimming by Camping Respondents | 0.35 | N.A. | 0.50 | 0.00 | 0.00 | 1.17 |
| Average Activity Hours per Day spent Boating by Camping Respondents | 0.00 | N.A. | 0.25 | 0.00 | 0.00 | 0.67 |
| Average Activity Hours per Day spent Fishing from Boat by Camping Respondents | 0.00 | N.A. | 1.33 | 0.80 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Water Skiing by Camping Respondents | 0.00 | N.A. | 0.89 | 2.80 | 0.00 | 0.83 |
| Average Activity Hours per Day spent Jet Skiing by Camping Respondents | 0.00 | N.A. | 0.00 | 0.00 | 0.00 | 0.83 |
| Average Activity Hours per Day spent Rafting by Camping Respondents | 0.18 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Kayaking by Camping Respondents | 0.00 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Skiing by Camping Respondents | 0.18 | N.A. | 0.26 | 0.40 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Hiking by Camping Respondents | 0.90 | N.A. | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent on Other activities by Camping Respondents | 2.80 | N.A. | 0.74 | 0.40 | 0.00 | 1.92 |
| Total Activity Hours per Day by Camping Respondents | 14.42 | N.A. | 7.05 | 14.60 | 3.00 | 7.67 |
| Total Activity Hours per Day spent on Non-Camping Activities by Camping Respondents | 4.85 | N.A. | 3.88 | 5.00 | 3.00 | 3.67 |

Activity Hours per Day by Day Use Respondents per Site

Hours per day spent by day use respondents participating in activities at all sites ranged from 2.67 hours on the Upper Truckee River to 6.14 hours at Pyramid Lake. Activities of day use respondents also varied among all sites from that of fishing on the Upper Truckee River, at Prosser Reservoir, at Stampede Reservoir, and on the Lower Truckee River to that of fishing, swimming, boating, water skiing, and jet skiing at Boca Reservoir and at Pyramid Lake.

The average activity hours per day by day use respondents are shown in Table 3.1-16. On the Upper Truckee River, day use respondents spent 2.67 hours per day participating in activities including fishing, swimming, and biking. At Prosser Reservoir, day use respondents spent 3.33 hours per day fishing. At Stampede Reservoir, day use respondents spent 5.50 hours per day participating in activities including fishing and water skiing. At Boca Reservoir, day use respondents spent 5.10 hours per day participating in activities including picnicking, fishing, swimming, boating, water skiing, and jet skiing. On the Lower Truckee River, day use respondents spent 3.96 hours per day participating in activities including fishing, swimming, boating, and rafting. At Pyramid Lake, day use respondents spent 6.14 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing.

Table 3.1-16. Activity Hours per Day by Day Use Respondents per Site.

| | Upper Truckee River | Prosser Reservoir | Scappado Reservoir | Deer Reservoir | Lower Truckee River | Pyramid Lake |
|---|---------------------------|----------------------|-----------------------|-------------------|---------------------------|-----------------|
| Average Activity Hours per Day spent Picnicking by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.43 | 0.00 | 1.43 |
| Average Activity Hours per Day spent Camping by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Fishing by Day Use Respondents | 1.50 | 2.00 | 1.40 | 0.83 | 3.58 | 0.00 |
| Average Activity Hours per Day spent Swimming by Day Use Respondents | 0.50 | 0.00 | 0.00 | 0.32 | 0.04 | 0.71 |
| Average Activity Hours per Day spent Boating by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.22 | 0.17 | 0.71 |
| Average Activity Hours per Day spent Fishing from Boat by Day Use Respondents | 0.00 | 1.33 | 3.30 | 0.69 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Water Skiing by Day Use Respondents | 0.00 | 0.00 | 0.60 | 0.63 | 0.00 | 2.07 |
| Average Activity Hours per Day spent Jet Skiing by Day Use Respondents | 0.00 | 0.00 | 0.00 | 1.24 | 0.00 | 1.21 |
| Average Activity Hours per Day spent Rafting by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Kayaking by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Biking by Day Use Respondents | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent Hiking by Day Use Respondents | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Activity Hours per Day spent on Other activities by Day Use Respondents | 0.33 | 0.00 | 0.00 | 0.20 | 0.68 | 0.00 |
| Total Activity Hours per Day by Day Use Respondents | 2.67 | 3.33 | 5.30 | 3.10 | 3.98 | 6.14 |

Indicated Number of Visits by Respondents at Alternative Water Levels per Site

Respondents, at all sites not including Pyramid Lake, indicated more visits at higher water levels and less visits at lower water levels.

The indicated average number of visits by respondents at alternative water levels are presented in Table 3.1-17.

Alternative water levels are 1 for the highest and either 4 or 5 for the lowest. On the Upper Truckee River, water level 1 is 350 cubic feet per second and water level 4 is less than 125 cubic feet per second. At Prosser Reservoir, water level 1 is 29,840 acre-feet or maximum storage and water level 4 is 11,000 acre-feet of storage. At Stampede Reservoir, water level 1 is 226,000 acre-feet or maximum storage and water level 4 is 80,000 acre-feet of storage. At Boca Reservoir, water level 1 is 40,870 acre-feet or maximum storage and water level 5 is less than 22,000 acre-feet of storage. On the Lower Truckee River, water level 1 is 1,000 cubic feet per second and water level 4 is less than 400 cubic feet per second.

Given the alternative water levels, the number of visits by respondents vary accordingly. On the Upper Truckee River, respondents indicated 1.50 visits at water level 1 to .65 visits at water level 4. At Prosser Reservoir, respondents indicated 5.67 visits at water level 1 to .50 visits at water level 4. At Stampede Reservoir, respondents indicated 1.82 visits at water level 1 to .87 visits at water level 4. At Boca Reservoir, respondents indicated 11.09 visits at water level 1 to .37 visits at water level 5. On the Lower Truckee River, respondents indicated 8.56 visits at water level 1 to 4.56 visits at water level 4.

Assuming that there is 100% visitation at alternative water level 1, the average number of visits by respondents at other water levels are also provided in relative percentage terms. On the Upper Truckee River, visitation drops from 100% at water level 1 to 43% at water level 4. At Prosser Reservoir, visitation holds constant at 100% for water levels 1, 2 and 3 and then drops to 8% at water level 4. At Stampede Reservoir, visitation increases from 100% at water level 1 to 101% at water level 2 and then drops to 48% at water level 4. At Boca Reservoir, visitation drops from 100% at water level 1 to 3% at water level 5. On the Lower Truckee River, visitation drops from 100% at water level 1 to 53% at water level 4.

Table 3.1-17. Indicated Number of Visits by Respondents at Alternative Water Levels per Site.

| | Upper Truckee River | Promer Reservoir | Stampede Reservoir | Boas Reservoir | Lower Truckee River |
|--|---------------------|------------------|--------------------|----------------|---------------------|
| Cubic Feet per Second of Flow or Acre-Feet of Storage at Alternative Water Level 1 | 350 | 29,840 | 225,000 | 41,100 | 1,000 |
| Cubic Feet per Second of Flow or Acre-Feet of Storage at Alternative Water Level 2 | 750 | 28,800 | 170,000 | 38,000 | 700 |
| Cubic Feet per Second of Flow or Acre-Feet of Storage at Alternative Water Level 3 | 125 | 19,800 | 130,000 | 33,000 | 400 |
| Cubic Feet per Second of Flow or Acre-Feet of Storage at Alternative Water Level 4 | <125 | 11,000 | 80,000 | 22,000 | <400 |
| Cubic Feet per Second of Flow or Acre-Feet of Storage at Alternative Water Level 5 | | | | <22,000 | |
| Average Number of Visits by Respondents at Alternative Water Level 1 | 1.50 | 5.67 | 1.82 | 11.09 | 8.56 |
| Average Number of Visits by Respondents at Alternative Water Level 2 | 1.80 | 5.67 | 1.85 | 9.11 | 5.56 |
| Average Number of Visits by Respondents at Alternative Water Level 3 | 0.90 | 5.67 | 1.39 | 8.15 | 5.00 |
| Average Number of Visits by Respondents at Alternative Water Level 4 | 0.85 | 0.50 | 0.87 | 4.46 | 4.56 |
| Average Number of Visits by Respondents at Alternative Water Level 5 | | | | 0.37 | |
| Percentage of Visitation of Respondents at Alternative Water Level 1 | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% |
| Percentage of Visitation of Respondents at Alternative Water Level 2 | 66.67% | 100.00% | 101.43% | 82.16% | 64.95% |
| Percentage of Visitation of Respondents at Alternative Water Level 3 | 60.00% | 100.00% | 76.34% | 73.53% | 58.41% |
| Percentage of Visitation of Respondents at Alternative Water Level 4 | 43.33% | 8.22% | 47.69% | 40.19% | 53.27% |
| Percentage of Visitation of Respondents at Alternative Water Level 5 | | | | 3.33% | |

Site Substitution of Respondents per Site

A high number of respondents indicated that they would substitute an alternative site for their preferred site when they could no longer visit their preferred site because of water level.

Site substitution of respondents per site is shown in Table 3.1-18. The number of respondents that indicated site substitution are 13 on the Upper Truckee River, 5 at Prosser Reservoir, 34 at Stampede Reservoir, 40 at Boca Reservoir, 21 on the Lower Truckee River, and, 11 at Pyramid Lake. For respondents on the Upper Truckee River, site substitution to Donner Lake is 3%, to Prosser Reservoir is 23%, to Stampede Reservoir is 27%, to Boca Reservoir is 27%, to the Lower Truckee River is 3%, to Pyramid Lake is 3%, and, to Other Sites is 13%. For respondents at Prosser Reservoir, site substitution to the Upper Truckee River is 11%, to Stampede Reservoir is 44%, to Boca Reservoir is 33%, and, to the Lower Truckee River is 11%. For respondents at Stampede Reservoir, site substitution to Lake Tahoe is 2%, to the Upper Truckee River is 10%, to Prosser Reservoir is 16%, to Boca Reservoir is 29%, to the Lower Truckee River is 2%, to Pyramid Lake is 19%, and, to Other Sites is 23%. For respondents at Boca Reservoir, site substitution to Lake Tahoe is 4%, to the Upper Truckee River is 1%, to Donner Lake is 12%, to Prosser Reservoir is 12%, to Stampede Reservoir is 34%, to Pyramid Lake is 19%, and, to Other Sites is 18%. For respondents on the Lower Truckee River, site substitution to the Upper Truckee River is 9%, to Donner Lake is 3%, to Prosser Reservoir is 18%, to Stampede Reservoir is 24%, to Boca Reservoir is 24%, to Pyramid Lake is 3%, and, to Other Sites is 18%. For respondents at Pyramid Lake, site substitution to the Upper Truckee River is 6%, to Stampede Reservoir is 35%, to Boca Reservoir is 35%, and, to Other Sites is 24%. Other Sites are located outside the Truckee River Basin.

Table 3.1-18. Site Substitution of Respondents per Site.

| | Upper Truckee River | Prairie Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|---|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Number of Respondents indicating Site Substitution | 13 | 5 | 34 | 40 | 21 | 11 |
| Percentage of Respondents indicating Site Substitution | 65.00% | 23.33% | 73.91% | 86.96% | 84.00% | 57.89% |
| Number of Respondents indicating Site Substitution to Lake Tahoe | 0 | 0 | 1 | 3 | 0 | 0 |
| Number of Respondents indicating Site Substitution to Upper Truckee River | N.A. | 1 | 6 | 1 | 3 | 1 |
| Number of Respondents indicating Site Substitution to Donner Lake | 1 | 0 | 0 | 9 | 1 | 0 |
| Number of Respondents indicating Site Substitution to Prairie Reservoir | 7 | N.A. | 10 | 9 | 6 | 0 |
| Number of Respondents indicating Site Substitution to Stampede Reservoir | 8 | 4 | N.A. | 25 | 8 | 6 |
| Number of Respondents indicating Site Substitution to Boon Reservoir | 8 | 3 | 18 | N.A. | 8 | 6 |
| Number of Respondents indicating Site Substitution to Lower Truckee River | 1 | 1 | 1 | 0 | N.A. | 0 |
| Number of Respondents indicating Site Substitution to Pyramid Lake | 1 | 0 | 12 | 14 | 1 | N.A. |
| Number of Respondents indicating Site Substitution to Other Sites /1 | 4 | 0 | 14 | 13 | 6 | 4 |
| Percentage of Site Substitution to Lake Tahoe | 0.00% | 0.00% | 1.61% | 4.05% | 0.00% | 0.00% |
| Percentage of Site Substitution to Upper Truckee River | 0.00% | 11.11% | 9.68% | 1.35% | 9.69% | 5.88% |
| Percentage of Site Substitution to Donner Lake | 3.33% | 0.00% | 0.00% | 12.16% | 3.80% | 0.00% |
| Percentage of Site Substitution to Prairie Reservoir | 23.33% | 0.00% | 16.13% | 12.16% | 18.18% | 0.00% |
| Percentage of Site Substitution to Stampede Reservoir | 26.67% | 44.44% | 0.00% | 33.78% | 24.24% | 35.29% |
| Percentage of Site Substitution to Boon Reservoir | 26.67% | 33.33% | 29.03% | 0.00% | 24.24% | 35.29% |
| Percentage of Site Substitution to Lower Truckee River | 3.33% | 13.11% | 1.61% | 0.00% | 0.00% | 0.00% |
| Percentage of Site Substitution to Pyramid Lake | 3.33% | 0.00% | 19.35% | 18.92% | 3.03% | 0.00% |
| Percentage of Site Substitution to Other Sites /1 | 13.33% | 0.00% | 22.58% | 17.57% | 11.18% | 23.53% |

1. Other sites are located outside the Truckee River Basin.

Willingness of Respondents to Pay to Maintain Water Level per Site

Respondents at Boca Reservoir show a greater willingness to pay not to have the water level drop than do respondents at any other site.

The willingness to pay information is provided in Table 3.1-19. On the Upper Truckee River, with 60% of respondents indicating a "Zero" response, the average value for respondents is \$12.00. At Prosser Reservoir, with 29% of the respondents indicating a "Zero" response, the average value for respondents is \$12.86. At Stampede Reservoir, with 30% of the respondents indicating a "Zero" response, the average value for respondents is \$30.22. At Boca Reservoir, with 17% of the respondents indicating a "Zero" response, the average value for respondents is \$79.74. On the Lower Truckee River, with 20% of the respondents indicating a "Zero" response, the average value for respondents is \$32.80. At Pyramid Lake, with 37% of the respondents indicating a "Zero" response, the average value for respondents is \$29.47.

In addition, respondents living inside the study area show a greater willingness to pay than do respondents living outside the study area. This information is also provided in Table 3.1-19. On the Upper Truckee River, the average value for local residents is \$16.67 compared to an average value of \$11.18 for non-local residents. At Prosser Reservoir, the average value for local residents is \$25.00 compared to an average value of \$8.00 for non-local residents. At Stampede Reservoir, the average value for local residents is \$31.05 compared to an average value of \$29.63 for non-local residents. At Boca Reservoir, the average value for local residents is \$97.15 compared to an average value of \$30.42 for non-local residents. On the Lower Truckee River, the average value for local residents is \$38.06 compared to an average value of \$19.29 for non-local residents. At Pyramid Lake, the average value for local residents is \$30.00 compared to an average value of \$25.00 for non-local residents.

Table 3.1-19. Willingness of Respondents to Pay to Maintain Water Level per Site.

| | Upper Truckee River | Promer Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|------------------|--------------------|----------------|---------------------|--------------|
| Average Value for Respondents | \$12.00 | \$12.86 | \$30.22 | \$79.74 | \$32.80 | \$29.47 |
| Percentage of Respondents indicating a "Zero" Response | 60.00% | 21.57% | 38.43% | 17.39% | 20.00% | 36.64% |
| Average Value for Local Respondents | \$16.67 | \$25.00 | \$31.05 | \$97.15 | \$38.06 | \$30.00 |
| Average Value for Non-Local Respondents | \$11.18 | \$8.00 | \$29.63 | \$30.42 | \$19.29 | \$25.00 |

Age Brackets of Respondents

The greatest number of respondents were between 31 and 50 years of age.

Presented in Table 3.1-20 are the age brackets with corresponding number of respondents and percentage of respondents. Of only 97 respondents, 3% were between 16 and 20 years of age, 12% were between 21 and 30 years of age, 30% were between 31 and 40 years of age, 26% were between 41 and 50 years of age, 14% were between 51 and 60 years of age, 5% were between 61 and 70 years of age, and 9% were over 70 years of age.

Table 3.1-20. Age Brackets of Respondents.

| | Study Area |
|--|-------------------|
| Number of Respondents under 16 Years of Age | 0 |
| Number of Respondents between 16 - 20 Years of Age | 3 |
| Number of Respondents between 21 - 30 Years of Age | 12 |
| Number of Respondents between 31 - 40 Years of Age | 29 |
| Number of Respondents between 41 - 50 Years of Age | 25 |
| Number of Respondents between 51 - 60 Years of Age | 14 |
| Number of Respondents between 61 - 70 Years of Age | 5 |
| Number of Respondents over 70 Years of Age | 9 |
| Percentage of Respondents under 16 Years of Age | 0.00% |
| Percentage of Respondents between 16 - 20 Years of Age | 3.09% |
| Percentage of Respondents between 21 - 30 Years of Age | 12.37% |
| Percentage of Respondents between 31 - 40 Years of Age | 29.50% |
| Percentage of Respondents between 41 - 50 Years of Age | 25.77% |
| Percentage of Respondents between 51 - 60 Years of Age | 14.43% |
| Percentage of Respondents between 61 - 70 Years of Age | 5.15% |
| Percentage of Respondents over 70 Years of Age | 9.28% |

Education Levels of Respondents

The greatest number of respondents held a college level of education.

Provided in Table 3.1-21 are the education levels with corresponding number of respondents and percentage of respondents. Of only 97 respondents, 1% held a elementary school level of education, 18% held a high school level of education, 7% held a technical school level of education, 27% held a 2 years of college level of education, 23% held a 4 years of college level of education, and 25% held over 4 years of college level of education.

Table 3.1-21. Education Levels of Respondents.

| | Study Area |
|---|-------------------|
| Number of Respondents with a Elementary School Level of Education | 1 |
| Number of Respondents with a High School Level of Education | 17 |
| Number of Respondents with a Technical School Level of Education | 7 |
| Number of Respondents with a 2 Years of College Level of Education | 26 |
| Number of Respondents with a 4 Years of College Level of Education | 22 |
| Number of Respondents with a Over 4 Years of College Level of Education | 24 |
| Percentage of Respondents with a Elementary School Level of Education | 1.03% |
| Percentage of Respondents with a High School Level of Education | 17.53% |
| Percentage of Respondents with a Technical School Level of Education | 7.22% |
| Percentage of Respondents with a 2 Years of College Level of Education | 26.00% |
| Percentage of Respondents with a 4 Years of College Level of Education | 22.68% |
| Percentage of Respondents with a Over 4 Years of College Level of Education | 24.74% |

Household Income Levels of Respondents

The greatest number of respondents had a household income level of \$26,000 to \$75,000 per year.

Shown in Table 3.1-22 are the household income levels with corresponding number of respondents and percentage of respondents. Of only 97 respondents, 5% had a household income level below \$10,000 per year, 18% had a household income level of \$10,000 to \$25,000 per year, 29% had a household income level of \$26,000 to \$50,000 per year, 35% had a household income level of \$51,000 to \$75,000 per year, 3% had a household income level of \$76,000 to \$100,000 per year, and 10% had a household income level of over \$100,000 per year.

Table 3.1-22. Household Income Levels of Respondents.

| | Study Area |
|--|---------------|
| Number of Respondents with a Household Income Level Below \$10,000 per Year | 1 |
| Number of Respondents with a Household Income Level of \$10,000 - \$25,000 per Year | 17 |
| Number of Respondents with a Household Income Level of \$26,000 - \$50,000 per Year | 28 |
| Number of Respondents with a Household Income Level of \$51,000 - \$75,000 per Year | 34 |
| Number of Respondents with a Household Income Level of \$76,000 - \$100,000 per Year | 3 |
| Number of Respondents with a Household Income Level of Over \$100,000 per Year | 10 |
| Percentage of Respondents with a Household Income Level Below \$10,000 per Year | 5.15% |
| Percentage of Respondents with a Household Income Level of \$10,000 - \$25,000 per Year | 17.57% |
| Percentage of Respondents with a Household Income Level of \$26,000 - \$50,000 per Year | 28.37% |
| Percentage of Respondents with a Household Income Level of \$51,000 - \$75,000 per Year | 33.65% |
| Percentage of Respondents with a Household Income Level of \$76,000 - \$100,000 per Year | 3.09% |
| Percentage of Respondents with a Household Income Level of Over \$100,000 per Year | 10.31% |

3.2 Estimation of the Expenditure Function

Expenditures of camping and day use visitors at each of the sites are calculated using an expenditure function. Specification of the expenditure function and estimation of the expenditure function are as follows.

Specification of the Expenditure Function

The expenditure function is an important ingredient of the modern theory of consumer behavior. It shows the minimal expenditures necessary to achieve a given utility level for a particular set of prices. The properties of the expenditure function in the areas of theoretical and applied analysis of consumer behavior are developed in the studies by Barton and Bohm (1982), Deaton and Muelbauer (1980), Hicks (1946), Samuelson (1947), Silberberg (1978), Theil (1975), and Varian (1992). Let $E (P, U)$ be an expenditure function, where P is a vector of commodity prices and U is a given level of utility. The expenditure function is the solution to the following problem:

$$E (P, U) = \text{Min } PX \quad (3.2-1)$$

such that $U (X) \geq U$

where X is a vector of non-negative quantities of goods. The solution to this optimization problem is the expenditure function that gives the minimum cost of achieving the fixed level of utility. For the expenditure function $E (P, U)$ to be well behaved, it must have the following properties: (i) $E (P, U)$ is non decreasing in P , (ii) $E (P, U)$ is homogeneous of the degree 1 in P , (iii) $E (P, U)$ is concave in P , (iv) $E (P, U)$ is continuous in P , for $P > 0$, and (v) if $X (P, U)$ is the expenditure-minimizing bundle necessary to achieve utility level U at prices P , then $X (P, U) = \delta E (P, U) / \delta P$ assuming the derivative exists and that $P > 0$.

The application of the expenditure function in empirical studies of consumer behavior requires the availability of observed market prices on goods and the existence of a well-behaved utility function. In the area of demand for recreation activities, there are no market-based transactions to determine observed market prices. Consequently, the notion of a regular utility function has to be modified in developing the expenditure function for the recreation activities. Let F be a vector of the time spent on a series of recreational activities by an individual at a particular site. The indirect utility function V for recreational activities for this individual is:

$$V = V (F, S, I) \quad (3.2-2)$$

where S is a vector of site characteristics that captures the substitutability of visits across various sites and I is the total budget allocated by an individual to participate in all the recreational activities included in F . The expenditure function E dual to the indirect utility function in (3.2-2) is the minimum expenditure required for the individual to participate in all the recreational activities in F , given the site characteristics in S . The expenditure function E derived from (3.2-2) is:

$$E = I = V^{-1} (F, S) \quad (3.2-3)$$

The expenditure function in (3.2-3) can also be modified to include the variable of the total number of visitors to the site. Let N be the total number of visitors. Then the expenditures function is:

$$E = V^{-1} (F, S, N) \quad (3.2-4)$$

The specification of the expenditure function in (3.2-4) is an empirical issue and it could be determined upon a estimation model selection technique, e.g., the Box-Cox estimation technique. One notable feature of the expenditure function in (3.2-4) is that it can be used to estimate expenditures of recreational activities at a particular site.

The expenditure function in (3.2-4) is used to evaluate the expenditures of recreational activities at the following six sites in California and Nevada: Upper Truckee River, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, Lower Truckee River, and Pyramid Lake. The attributes of the characteristics of each site are captured by including dummy variable for each site in S. The definition of the dummy variables included in S are: UTR = 1 if the visitation site is Upper Truckee River and 0 otherwise; PR = 1 if the visitation site is Prosser Reservoir and 0 otherwise; SR = 1 if the visitation site is Stampede Reservoir and 0 otherwise; BR = 1 if the visitation site is Boca Reservoir and 0 otherwise; LTR = 1 if the visitation site is Lower Truckee River and 0 otherwise; and, PL = 1 if the visitation site is Pyramid Lake and 0 otherwise. The hours spent on each of the following eleven recreational activities are included in F. The activities were determined according to their availability and popularity at the sites. The activities are: picnicking, camping, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, rafting, kayaking, biking, hiking, and other activities. To capture the effect of the type of visitor at a given site on their expenditures, i.e., camping versus day use, a dummy variable D, defined as D = 1 if camping visitor and 0 if day use visitor, is included in the expenditure function in (3.2-4). Following the categorization of expenditures on the recreation survey, the expenditures by a visitor to a given site are identified as licenses, camping fees, hotel or motel, restaurant, groceries, equipment and supplies, rental, fuel, and other. Using the above specification of the variables, the expenditure function in (3.2-4) can now be presented as:

$$E_i = V^{-1} (UTR, PR, SR, BR, LTR, PL, D, \sum_1^{13} F_j, N); i = 1, \dots, 6 \quad (3.2-5)$$

The functional form specification of the expenditure function in (3.2-5) is an empirical issue and it will be determined using the Box-Cox flexible functional form technique. The Box-Cox specification of the expenditure function in (3.2-5) is:

$$\frac{E_i^\lambda - 1}{\lambda} = \beta_1 UTR + \beta_2 PR + \beta_3 SR + \beta_4 BR + \beta_5 LTR + \beta_6 PL + \beta_7 D \quad (3.2-6)$$

$$+ \sum_{j=1}^{20} \beta_j \left(\frac{F_j^\lambda - 1}{\lambda} \right) + \beta_{21} \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

where U is the stochastic error term, β is the slope parameter, and λ is the transformation parameter. The transformation parameter may take a wide range of values that would determine the particular functional form that the variable subject to the Box-Cox transformation will assume. For example, one gets a logarithmic transformation for a variable if λ is equal to zero. All of the coefficients of the expenditure function in (3.2-5), including λ , will be estimated using the estimation of the following log-likelihood function:

$$L(\lambda, \beta, \sigma^2; E, X) = -\frac{T}{2} \ln(2\pi\sigma^2) - \frac{1}{2\sigma^2} (E^\lambda - X^\lambda B) / (E^\lambda - X^\lambda B) \quad (3.2-7)$$

$$+ \ln(J); \text{ and } J = \det \left[\frac{\partial E^\lambda}{\partial E} \right] = \prod_{t=1}^T E_t^{\lambda-1}$$

where X is a vector of observations on all the exogenous variables, B is a vector of all the slope parameters to be estimated, and T is the number of observations.

Estimation of the Expenditure Function

The data collected through the recreation survey for the six sites is used to estimate the expenditure function in (3.2-6). A total number of 151 out of the 162 complete questionnaires are used in the estimation. The initial diagnosis of the data revealed that there are a large number of zeros on most of the recreational activities and a number of expenditure categories making the estimation of the expenditure function in its generalized form in (3.2-6) impossible. A number of alternatives to combine some of the recreational activities are tried to estimate a modified form of the expenditure function in (3.2-6). All of these attempts resulted into some difficulties in estimation of the expenditure function in (3.2-6).

The final modified form of the expenditure function in (3.2-6) that provides meaningful estimation results is:

$$\frac{E^\lambda - 1}{\lambda} = \beta_1 UTR + \beta_2 PR + \beta_3 SR + \beta_4 BR + \beta_5 LTR + \beta_6 PL + \beta_7 D \quad (3.2-8)$$
$$+ \beta_8 \left(\frac{F^\lambda - 1}{\lambda} \right) + \beta_9 \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

The expenditure function expressed in simple notation becomes:

$$\begin{aligned} \ln E = & \beta_1 UTR + \beta_2 PR + \beta_3 SR + \beta_4 BR + \beta_5 LTR + \beta_6 PL + \beta_7 D \quad (3.2-9) \\ & + \beta_8 \ln F + \beta_9 \ln N + U \end{aligned}$$

where E is the sum of the nine expenditure categories per day, F is the sum of the hours spent per day by a visitor on the thirteen categories of recreational activities, and N is the group size. The Ln is an abbreviation for natural logarithm.

Using the survey observations on the variables E, F, N, the six location dummy variables, and the type of visitor dummy variable, the expenditure function in (3.2-8) or (3.2-9) is estimated having the following results.

$$\begin{aligned} \text{LnE} = & 3.6366\text{UTR} + 4.2217\text{PR} + 3.5447\text{SR} + 2.8709\text{BR} + 2.7218\text{LTR} & (3.2-10) \\ & (7.80) \quad (8.31) \quad (8.15) \quad (8.21) \quad (8.51) \\ & + 3.3791\text{PL} - 0.6129\text{D} + 0.2188\text{LnF} + 0.45664\text{LnN} \\ & (7.56) \quad (-2.30) \quad (1.268) \quad (3.255) \end{aligned}$$

The numbers in the parentheses are the asymptotic t-ratios for 142 degrees of freedom. The adjusted R^2 is 0.1483 for the 151 observations. The 162 observations were edited down to 151. Observations that were deleted were observations having a zero for total expenditures, or a zero for total recreation activity hours, or a zero for group size. The camping and day use visitor expenditure function observations are given in Table 3.2-1.

The maximum likelihood (ML) ratio test is then used to check the validity of alternative functional specifications of the expenditure function for specific value of λ , i.e., logarithmic ($\lambda = 0$) and linear ($\lambda = 1$) functional forms. Let S denote the parameter space under the Box-Cox specification and s denote the subspace of S restricted by the null hypothesis (H^0). The ML ratio test to test for a given functional form under H^0 is a large sample test and can be conducted as follows:

$$d = -2 [L(S) - L(s)] \quad (3.2-11)$$

where $L(S)$ is the maximum of the log likelihood function under S and $L(s)$ is the maximum value of the log likelihood function under s . If H^0 is true, the statistic d has the limiting chi-squared (χ^2) with n degrees of freedom, where n is the number of restrictions imposed by H^0 .

The maximum likelihood estimation of λ in (3.2-8) is 0.07 with the maximum of the log likelihood function $L(S)$ of -803.568 . Using estimates of the maximum log likelihood function of λ , $L(s)$ for the logarithmic and linear specifications of the expenditure function, the test statistic in (3.2-11) is calculated. The test results provide evidence to accept $H^0: \lambda = 0$ and to reject $H^0: \lambda = 1$ against the alternative hypothesis that $H^0: \lambda = 0.07$. In other words, the final functional specification of the expenditure function is in logarithmic functional form.

The estimated expenditure function predicts the logarithm of the average expenditures per day at a particular site for both camping and day use visitors for given values of the logarithm of their hours of non-camping recreation activity and the logarithm of their group size. Then the average expenditures per day are determined by taking the anti-log of the logarithm of the average expenditures. This procedure is shown below by site.

Upper Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(1) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(1) + 0.2188\text{Ln}(5.50) + 0.45664\text{Ln}(3.47) \end{aligned}$$

$$\text{LnE} = 3.6366 - 0.6129 + 0.2188(1.70) + 0.45664(1.24)$$

$$\text{LnE} = 3.9619$$

$$E = \$52.56$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(1) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(0) + 0.2188\text{Ln}(3.00) + 0.45664\text{Ln}(5.50) \end{aligned}$$

$$\text{LnE} = 3.6366 + 0.2188(1.10) + 0.45664(1.70)$$

$$\text{LnE} = 4.6536$$

$$E = \$104.96$$

Prosser Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(1) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(1) + 0.2188\text{Ln}(5.25) + 0.45664\text{Ln}(3.50) \end{aligned}$$

$$\text{LnE} = 4.2217 - 0.6129 + 0.2188(1.66) + 0.45664(1.25)$$

$$\text{LnE} = 4.5427$$

$$E = \$93.95$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(1) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(0) + 0.2188\text{Ln}(3.33) + 0.45664\text{Ln}(3.33) \end{aligned}$$

$$\text{LnE} = 4.2217 + 0.2188(1.20) + 0.45664(1.20)$$

$$\text{LnE} = 5.0322$$

$$E = \$153.27$$

Camping visitor data for Prosser Reservoir was not available. The non-camping recreation activity hours and group size for camping visitors was taken from Boca Reservoir data.

Stampede Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(1) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(1) + 0.2188\text{Ln}(6.15) + 0.45664\text{Ln}(5.45) \end{aligned}$$

$$\text{LnE} = 3.5447 - 0.6129 + 0.2188(1.82) + 0.45664(1.70)$$

$$\text{LnE} = 4.1063$$

$$E = \$60.72$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(1) + 2.8709(0) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(0) + 0.2188\text{Ln}(5.67) + 0.45664\text{Ln}(3.89) \end{aligned}$$

$$\text{LnE} = 3.5447 + 0.2188(1.73) + 0.45664(1.36)$$

$$\text{LnE} = 4.5443$$

$$E = \$94.10$$

Boca Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(1) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(1) + 0.2188\text{Ln}(5.25) + 0.45664\text{Ln}(3.50) \end{aligned}$$

$$\text{LnE} = 2.8709 - 0.6129 + 0.2188(1.66) + 0.45664(1.25)$$

$$\text{LnE} = 3.1921$$

$$E = \$24.34$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(1) + 2.7218(0) + 3.3791(0) \\ &\quad - 0.6129(0) + 0.2188\text{Ln}(5.08) + 0.45664\text{Ln}(4.68) \end{aligned}$$

$$\text{LnE} = 2.8709 + 0.2188(1.62) + 0.45664(1.54)$$

$$\text{LnE} = 3.9286$$

$$E = \$50.84$$

Lower Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(1) + 3.3791(0) \\ &\quad - 0.6129(1) + 0.2188\ln(3.00) + 0.45664\ln(2.00) \end{aligned}$$

$$\ln E = 2.7218 - 0.6129 + 0.2188(1.10) + 0.45664(0.69)$$

$$\ln E = 2.6647$$

$$E = \$14.36$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(1) + 3.3791(0) \\ &\quad - 0.6129(0) + 0.2188\ln(3.96) + 0.45664\ln(2.29) \end{aligned}$$

$$\ln E = 2.7218 + 0.2188(1.38) + 0.45664(0.83)$$

$$\ln E = 3.4028$$

$$E = \$30.05$$

Pyramid Lake

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(1) \\ &\quad - 0.6129(1) + 0.2188\text{Ln}(5.90) + 0.45664\text{Ln}(3.20) \end{aligned}$$

$$\text{LnE} = 3.3791 - 0.6129 + 0.2188(1.77) + 0.45664(1.16)$$

$$\text{LnE} = 3.6831$$

$$E = \$39.77$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6366(0) + 4.2217(0) + 3.5447(0) + 2.8709(0) + 2.7218(0) + 3.3791(1) \\ &\quad - 0.6129(0) + 0.2188\text{Ln}(6.14) + 0.45664\text{Ln}(5.00) \end{aligned}$$

$$\text{LnE} = 3.3791 + 0.2188(1.82) + 0.45664(1.61)$$

$$\text{LnE} = 4.5125$$

$$E = \$91.15$$

The above camping and day use visitor expenditure function values are presented by site in Table 3.2-2. These values are not directly comparable to the survey data because of editing the observations from 162 to 151 and estimating the values with the expenditure function.

Table 3.2-1. Camping and Day Use Visitor Expenditure Function Observations.

| Observation Number | Year | Sex | Companion Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Truckee River UTR | Prosser Reservoir PR | Sagehen Reservoir SR | Boon Reservoir BR | Lower Truckee River LTR | Pymatid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|-----|------------------|--------------|-------------|----------------|---------------------|-------------------------|----------------------|----------------------|-------------------|-------------------------|-----------------|-----------------|----------------|------------|
| 1 | 1995 | UTR | 1 | Q | 167.00 | 7.0 | 23.86 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.5 | 4.0 |
| 2 | 1995 | UTR | 2 | Q | 140.00 | 10.0 | 14.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 4.0 |
| 3 | 1995 | UTR | 3 | Q | 106.00 | 2.0 | 53.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 4 | 1995 | UTR | 4 | Q | 786.00 | 2.0 | 393.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 4.0 |
| 5 | 1995 | UTR | 3 | Q | 103.50 | 3.0 | 34.50 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 6 | 1995 | UTR | 6 | Q | 33.00 | 3.0 | 11.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 7 | 1995 | UTR | 7 | Q | 30.00 | 1.0 | 30.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 8 | 1995 | UTR | 8 | Q | 31.00 | 1.0 | 31.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 9 | 1995 | UTR | 9 | Q | 36.00 | 1.0 | 36.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 10 | 1995 | UTR | 10 | Q | 190.00 | 3.0 | 63.33 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 11 | 1995 | UTR | 11 | Q | 70.00 | 2.0 | 35.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 4.0 |
| 12 | 1995 | UTR | 12 | Q | 223.00 | 4.0 | 55.75 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 13 | 1995 | UTR | 13 | Q | 295.00 | 14.0 | 21.07 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 14.0 | 2.0 |
| 14 | 1995 | UTR | 14 | Q | 75.00 | 3.0 | 25.00 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 15 | 1995 | UTR | 15 | Q | 317.00 | 10.0 | 31.70 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 16 | 1995 | UTR | 1 | DU | 450.00 | 0.0 | 450.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 7.0 |
| 17 | 1995 | PR | 2 | DU | 540.00 | 0.0 | 540.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 18 | 1995 | PR | 1 | DU | 37.90 | 0.0 | 37.90 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6.0 | 2.0 |
| 19 | 1995 | PR | 2 | DU | 54.00 | 0.0 | 54.00 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| 20 | 1995 | PR | 3 | DU | 732.00 | 0.0 | 732.00 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6.0 | 4.0 |
| 21 | 1995 | PR | 4 | DU | 260.00 | 0.0 | 260.00 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3.0 | 1.0 |
| 22 | 1995 | PR | 3 | DU | 34.50 | 0.0 | 34.50 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 23 | 1995 | PR | 4 | DU | 625.00 | 0.0 | 625.00 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| 24 | 1995 | SR | 1 | Q | 145.00 | 3.0 | 48.33 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 0.0 |
| 25 | 1995 | SR | 2 | Q | 66.00 | 3.0 | 22.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.0 | 4.0 |
| 26 | 1995 | SR | 3 | Q | 177.50 | 2.0 | 88.75 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 27 | 1995 | SR | 4 | Q | 137.00 | 2.0 | 68.50 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 28 | 1995 | SR | 3 | Q | 107.00 | 1.0 | 107.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 29 | 1995 | SR | 4 | Q | 180.00 | 1.0 | 180.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2.0 | 1.0 |
| 30 | 1995 | SR | 2 | Q | 421.00 | 2.0 | 210.50 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 9.0 | 7.0 |
| 31 | 1995 | SR | 8 | Q | 118.90 | 1.0 | 118.90 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 9.0 | 9.0 |
| 32 | 1995 | SR | 9 | Q | 580.00 | 1.0 | 580.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 33 | 1995 | SR | 10 | Q | 229.00 | 1.0 | 229.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 14.0 |
| 34 | 1995 | SR | 11 | Q | 76.00 | 1.0 | 76.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 5.0 |
| 35 | 1995 | SR | 12 | Q | 56.00 | 1.0 | 56.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 36 | 1995 | SR | 13 | Q | 91.00 | 1.0 | 91.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 37 | 1995 | SR | 14 | Q | 325.00 | 4.0 | 81.25 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 38 | 1995 | SR | 15 | Q | 315.00 | 3.0 | 105.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 39 | 1995 | SR | 16 | Q | 112.00 | 1.0 | 112.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 15.0 | 10.0 |
| 40 | 1995 | SR | 17 | Q | 167.00 | 1.0 | 167.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.0 | 3.0 |
| 41 | 1995 | SR | 18 | Q | 74.00 | 1.0 | 74.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 6.0 | 3.0 |
| 42 | 1995 | SR | 19 | Q | 80.00 | 1.0 | 80.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1.3 | 1.0 |
| 43 | 1995 | SR | 20 | Q | 722.00 | 10.0 | 72.20 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 6.0 |
| 44 | 1995 | SR | 21 | Q | 40.00 | 3.0 | 13.33 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 10.0 |
| 45 | 1995 | SR | 22 | Q | 239.00 | 3.0 | 79.67 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 46 | 1995 | SR | 23 | Q | 340.00 | 1.0 | 340.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 47 | 1995 | SR | 24 | Q | 304.00 | 7.0 | 43.43 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 48 | 1995 | SR | 25 | Q | 123.00 | 0.0 | 123.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 6.3 | 1.0 |
| 49 | 1995 | SR | 26 | Q | 160.00 | 0.0 | 160.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.0 | 4.0 |
| 50 | 1995 | SR | 27 | Q | 77.00 | 2.0 | 38.50 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1.0 | 2.0 |
| 51 | 1995 | SR | 28 | Q | 199.00 | 2.0 | 99.50 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 1.0 |
| 52 | 1995 | SR | 29 | Q | 140.00 | 3.0 | 46.67 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 12.0 |
| 53 | 1995 | SR | 30 | Q | 80.00 | 2.0 | 40.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 13.0 |
| 54 | 1995 | SR | 31 | Q | 542.00 | 3.0 | 180.67 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 55 | 1995 | SR | 32 | Q | 43.00 | 1.0 | 43.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 56 | 1995 | SR | 33 | Q | 330.00 | 3.0 | 110.00 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 57 | 1995 | SR | 1 | DU | 43.00 | 0.0 | 43.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 7.0 |
| 58 | 1995 | SR | 2 | DU | 204.00 | 0.0 | 204.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 59 | 1995 | SR | 3 | DU | 15.00 | 0.0 | 15.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 6.0 |

Table 3.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Tushare River UTR | Forest Reserve FR | Shawhide Reserve SR | Beck Reserve BR | Lower Tushare River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|----------|------|----------------------|--------------|-------------|----------------|---------------------|-------------------------|-------------------|---------------------|-----------------|-------------------------|-----------------|-----------------|----------------|------------|
| 90 | 1995 SR | | 4 DU | | 271.00 | 0.0 | 271.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 2.0 |
| 91 | 1995 SR | | 5 DU | | 150.00 | 0.0 | 150.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 2.0 |
| 92 | 1995 SR | | 6 DU | | 137.00 | 0.0 | 137.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 93 | 1995 SR | | 7 DU | | 60.00 | 0.0 | 60.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10.0 | 4.0 |
| 94 | 1995 SR | | 8 DU | | 31.00 | 0.0 | 31.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 1.0 |
| 95 | 1995 SR | | 9 DU | | 150.00 | 0.0 | 150.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2.0 | 7.0 |
| 96 | 1995 SR | | 1 CF | | 63.00 | 2.0 | 31.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 4.0 |
| 97 | 1995 SR | | 3 CF | | 175.00 | 10.0 | 17.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 2.0 |
| 98 | 1995 SR | | 3 CF | | 151.00 | 2.0 | 62.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 4.0 |
| 99 | 1995 SR | | 4 CF | | 100.00 | 14.0 | 7.14 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 4.0 |
| 100 | 1995 DR | | 1 DU | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 5.0 |
| 101 | 1995 DR | | 2 DU | | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 5.0 |
| 102 | 1995 DR | | 3 DU | | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 103 | 1995 DR | | 4 DU | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 104 | 1995 DR | | 5 DU | | 465.00 | 0.0 | 465.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 105 | 1995 DR | | 6 DU | | 180.00 | 0.0 | 180.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 11.0 |
| 106 | 1995 DR | | 7 DU | | 75.00 | 0.0 | 75.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 3.0 |
| 107 | 1995 DR | | 8 DU | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 3.0 |
| 108 | 1995 DR | | 9 DU | | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 4.0 |
| 109 | 1995 DR | | 10 DU | | 14.00 | 0.0 | 14.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 10.0 |
| 110 | 1995 DR | | 11 DU | | 13.00 | 0.0 | 13.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 2.0 |
| 111 | 1995 DR | | 12 DU | | 13.00 | 0.0 | 13.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 4.0 |
| 112 | 1995 DR | | 13 DU | | 16.00 | 0.0 | 16.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 113 | 1995 DR | | 14 DR | | 46.50 | 0.0 | 46.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 2.0 |
| 114 | 1995 DR | | 15 DR | | 129.00 | 0.0 | 129.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 3.0 |
| 115 | 1995 DR | | 16 DR | | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 3.0 |
| 116 | 1995 DR | | 17 DR | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 3.0 |
| 117 | 1995 DR | | 18 DR | | 32.00 | 0.0 | 32.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 6.0 |
| 118 | 1995 DR | | 19 DR | | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 7.0 |
| 119 | 1995 DR | | 20 DR | | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 6.0 |
| 120 | 1995 DR | | 21 DR | | 1910.00 | 4.0 | 477.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 3.0 |
| 121 | 1995 DR | | 22 DR | | 42.50 | 0.0 | 42.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 2.0 |
| 122 | 1995 DR | | 23 DR | | 230.00 | 0.0 | 230.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 10.0 |
| 123 | 1995 DR | | 24 DR | | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 4.0 |
| 124 | 1995 DR | | 25 DR | | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 3.0 |
| 125 | 1995 DR | | 26 DR | | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 2.0 |
| 126 | 1995 DR | | 27 DR | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 3.0 |
| 127 | 1995 DR | | 28 DR | | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 4.0 |
| 128 | 1995 DR | | 29 DR | | 40.00 | 0.0 | 40.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 5.0 |
| 129 | 1995 DR | | 30 DR | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 7.0 |
| 130 | 1995 DR | | 31 DR | | 223.00 | 0.0 | 223.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 9.0 | 1.0 |
| 131 | 1995 DR | | 32 DR | | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 7.0 |
| 132 | 1995 DR | | 33 DR | | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 3.0 |
| 133 | 1995 DR | | 34 DR | | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 134 | 1995 DR | | 35 DR | | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 3.0 |
| 135 | 1995 DR | | 36 DR | | 57.00 | 0.0 | 57.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 10.0 |
| 136 | 1995 DR | | 37 DR | | 0.50 | 0.0 | 0.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 1.0 |
| 137 | 1995 DR | | 38 DR | | 200.00 | 0.0 | 200.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12.0 | 5.0 |
| 138 | 1995 DR | | 39 DR | | 90.00 | 0.0 | 90.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 2.0 |
| 139 | 1995 DR | | 40 DR | | 200.00 | 0.0 | 200.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 3.0 |
| 140 | 1995 LTR | | 1 CF | | 17.50 | 2.0 | 8.75 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 141 | 1995 LTR | | 1 DR | | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 142 | 1995 LTR | | 3 DR | | 94.00 | 0.0 | 94.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 5.0 |
| 143 | 1995 LTR | | 1 DR | | 131.00 | 0.0 | 131.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 2.0 |
| 144 | 1995 LTR | | 4 DR | | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 145 | 1995 LTR | | 1 DR | | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 2.0 |
| 146 | 1995 LTR | | 4 DR | | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 4.0 |
| 147 | 1995 LTR | | 7 DR | | 15.50 | 0.0 | 15.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 148 | 1995 LTR | | 8 DR | | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 2.0 |

Table 3.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Sex | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trestles River UTR | Travis Reservoir | Stamps Reservoir | Boon Reservoir | Lower Trestles River LTR | Pyramid Lake | Camping Visits | Activity Hours | Camp Size |
|--------------------|------|-----|----------------------|--------------|-------------|----------------|---------------------|--------------------------|------------------|------------------|----------------|--------------------------|--------------|----------------|----------------|-----------|
| | | | | | | | | UTR | TR | SR | BR | LTR | PL | | | |
| 119 | 1995 | LTR | 9 | DU | 21.00 | 0.0 | 21.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 120 | 1995 | LTR | 10 | DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 4.0 |
| 121 | 1995 | LTR | 11 | DU | 775.00 | 0.0 | 775.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 1.0 |
| 122 | 1995 | LTR | 12 | DU | 44.00 | 0.0 | 44.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 123 | 1995 | LTR | 13 | DU | 12.00 | 0.0 | 12.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 1.0 |
| 124 | 1995 | LTR | 14 | DU | 8.50 | 0.0 | 8.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 1.0 |
| 125 | 1995 | LTR | 15 | DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 126 | 1995 | LTR | 16 | DU | 21.50 | 0.0 | 21.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 127 | 1995 | LTR | 17 | DU | 20.50 | 0.0 | 20.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 3.0 |
| 128 | 1995 | LTR | 18 | DU | 182.00 | 0.0 | 182.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 10.0 |
| 129 | 1995 | LTR | 19 | DU | 22.00 | 0.0 | 22.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 2.0 |
| 130 | 1995 | LTR | 20 | DU | 14.00 | 0.0 | 14.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 2.0 |
| 131 | 1995 | LTR | 21 | DU | 21.50 | 0.0 | 21.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 132 | 1995 | LTR | 22 | DU | 75.00 | 0.0 | 75.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 2.0 |
| 133 | 1995 | LTR | 23 | DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 2.0 |
| 134 | 1995 | LTR | 24 | DU | 43.00 | 0.0 | 43.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 2.0 |
| 135 | 1995 | PL | 1 | CP | 326.00 | 4.0 | 81.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 2.0 |
| 136 | 1995 | PL | 2 | CP | 75.00 | 2.0 | 37.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 2.0 |
| 137 | 1995 | PL | 3 | CP | 170.00 | 2.0 | 85.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 2.0 |
| 138 | 1995 | PL | 4 | CP | 41.00 | 1.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 2.0 |
| 139 | 1995 | PL | 5 | CP | 37.00 | 1.0 | 37.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 16.0 | 3.0 |
| 140 | 1995 | PL | 6 | CP | 162.00 | 4.0 | 40.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 3.0 |
| 141 | 1995 | PL | 7 | CP | 149.00 | 2.0 | 74.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 1.0 |
| 142 | 1995 | PL | 8 | CP | 75.00 | 2.0 | 37.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 4.0 |
| 143 | 1995 | PL | 9 | CP | 193.00 | 4.0 | 48.25 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 4.0 |
| 144 | 1995 | PL | 10 | CP | 185.00 | 4.0 | 46.25 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 4.0 |
| 145 | 1995 | PL | 1 | DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1.0 | 2.0 |
| 146 | 1995 | PL | 2 | DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7.0 | 5.0 |
| 147 | 1995 | PL | 3 | DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 2.0 |
| 148 | 1995 | PL | 4 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 3.0 |
| 149 | 1995 | PL | 5 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7.0 | 10.0 |
| 150 | 1995 | PL | 6 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 5.0 |
| 151 | 1995 | PL | 7 | DU | 220.00 | 0.0 | 220.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 7.0 |

Table 3.2-2. Camping and Day Use Visitor Expenditure Function Values.

| | Upper Truckee River | Pioneer Reservoir | Stampede Reservoir | Boce Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------|-------------------|--------------------|----------------|---------------------|--------------|
| Camping Visitor Group Expenditures per Day | \$52.56 | \$93.95 | \$60.72 | \$24.34 | \$14.26 | \$39.77 |
| Day Use Visitor Group Expenditures per Day | \$104.96 | \$133.27 | \$94.10 | \$50.64 | \$30.05 | \$91.15 |

3.3. Formulation of the Model Equations

Model formulation incorporates the above descriptive statistics and expenditure function values. The variable that drives the model is the end of the month reservoir storage levels at Prosser, Stampede, and Boca Reservoirs. Relative to the storage levels at these reservoirs, the model calculates the annual number of camping and day use visitors at the reservoirs and the annual expenditures of the camping and day use visitors.

There are eleven functions within the model. Using only end of the month reservoir storage levels as the input into the model, the functions then generate the following data.

- Visitation Relative to End of the Month Reservoir Storage Levels
- Annual Visitation Relative to End of the Month Reservoir Storage Levels
- Annual Number of Camping Visitors
- Annual Number of Day Use Visitors
- Annual Number of Camping Visitor Groups
- Annual Number of Day Use Visitor Groups
- Annual Camping Visitor Expenditures
- Annual Day Use Visitor Expenditures
- Annual Number of Camping and Day Use Visitors
- Annual Camping and Day Use Visitor Expenditures
- Annual Camping and Day Use Visitor Expenditures by Category

Each of the functions calculate data either by use of a single equation or multiple equations. Simultaneously, data is generated by one function and inputted into another function and so on. Throughout the model, there are twenty-seven equations with thirty-nine variables.

Visitation Relative to End of the Month Reservoir Storage Levels

The visitation relative to end of the month reservoir storage levels is derived by assigning a scale value to the end of the month reservoir storage level and then calculating a percentage of visitation corresponding to the assigned scale value. Each of these functions are based on data taken from the survey.

The scale values for reservoir storage levels are shown in Table 3.3-1. Scale values for Prosser Reservoir and Stampede Reservoir range from high to low or 4 to 1. These scale values correspond to reservoir storage levels at Prosser Reservoir from 29,840 acre-feet to 11,000 acre-feet and storage levels at Stampede Reservoir from 226,000 acre-feet to 80,000 acre-feet. Scale values for Boca Reservoir range from 5 to 1 and correspond to reservoir storage levels from 41,100 acre-feet to less than 22,000 acre-feet. These reservoir storage levels are stated in the survey questionnaire.

The end of the month reservoir storage level is assigned a scale value through the following equation.

$$\text{If } A_i \geq B_{it} \geq C_i \text{ storage level, then scale value } D_{it} = \alpha_i + \beta_i (B_{it}) \quad (3.3-1)$$

where:

- A_i is the high storage level for reservoir i
- B_{it} is the end of the month storage level for reservoir i in month t
- C_i is the low storage level for reservoir i
- D_{it} is the scale value for the end of the month storage level for reservoir i in month t
- α_i is the scale value constant term for reservoir i
- β_i is the scale value slope coefficient term for reservoir i

This equation is formulated to linearly interpolate a end of the month storage level for a reservoir during any month to a scale value.

Separate equations for reservoir storage levels are formulated for Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Prosser Reservoir

If $29,840 \geq B_{it} \geq 28,000$ storage level, then scale value $D_{it} = - 12.2174 + .000543 (B_{it})$
If $27,999 \geq B_{it} \geq 19,000$ storage level, then scale value $D_{it} = - .1111 + .000111 (B_{it})$
If $18,999 \geq B_{it} \geq 11,000$ storage level, then scale value $D_{it} = - .3750 + .000125 (B_{it})$

Stampede Reservoir

If $226,000 \geq B_{it} \geq 170,000$ storage level, then scale value $D_{it} = -.03571 + .000018 (B_{it})$

If $169,999 \geq B_{it} \geq 130,000$ storage level, then scale value $D_{it} = - 1.2500 + .000025 (B_{it})$

If $129,999 \geq B_{it} \geq 80,000$ storage level, then scale value $D_{it} = - .60000 + .000020 (B_{it})$

Boca Reservoir

If $41,100 \geq B_{it} \geq 38,000$ storage level, then scale value $D_{it} = - 8.258 + .00032 (B_{it})$

If $37,999 \geq B_{it} \geq 33,000$ storage level, then scale value $D_{it} = - 3.600 + .00020 (B_{it})$

If $32,999 \geq B_{it} \geq 22,000$ storage level, then scale value $D_{it} = 0 + .00009 (B_{it})$

If $21,999 \geq B_{it} \geq 0$ storage level, then scale value $D_{it} = 1.000 + .00005 (B_{it})$

End of the month reservoir storage levels for Prosser, Stampede, and Boca Reservoirs for April through October and Other Months are given in Table 3.3-2. April through October is considered to be the recreation season in a given year. Other Months are January, February, March, November, and December of the given year. The reservoir storage levels are taken in total for April through October and as an average for the Other Months. The scale values for these end of the month reservoir storage levels are calculated using the above equations and shown by reservoir in Table 3.3-3.

The percentage of visitation corresponding to the scale value of an end of the month reservoir storage level is based on the indicated number of visits per respondent for reservoir storage levels taken from the survey.

The indicated number of visits per respondent for reservoir storage levels are provided in Table 3.3-4. For Prosser Reservoir, the number of visits per respondent at levels 1 to 3 is 5.67 and at level 4 is .50. The percentages of visitation are 100% for levels 1 to 3 and 8.82% for level 4. Likewise for Stampede Reservoir, the number of visits per respondent at levels 1, 2, 3, and 4 are 1.82, 1.85, 1.39, and .87. The percentages of visitation are 100%, 101.42%, 76.34%, and 47.69%. Number of visits per respondent for Boca Reservoir at levels 1, 2, 3, 4, and 5 are 11.09, 9.11, 8.15, 4.46, and .37. The percentages of visitation are 100%, 82.16%, 73.53%, 40.19%, and 3.33%.

The percentage of visitation corresponding to the scale value is then calculated through the following equation.

$$\text{If } E_i \geq D_{it} \geq F_i \text{ scale value, then visitation } G_{it} = \alpha_i + \beta_i (D_{it}) \quad (3.3-2)$$

where:

- E_i is the high scale value for reservoir i
- D_{it} is the scale value for the end of the month storage level for reservoir i in month t
- F_i is the low scale value for reservoir i
- G_{it} is the percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t
- α_i is the percentage of visitation constant term for reservoir i
- β_i is the percentage of visitation slope coefficient term for reservoir i

This equation is formulated to linearly interpolate a scale value for an end of the month storage level for a reservoir during any month to a percentage of visitation.

Separate equations for scale value and reservoir storage levels are formulated for Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Prosser Reservoir

$$\text{If } 4 \geq D_{it} \geq 3 \text{ scale value, then visitation } G_{it} = -1.4 + .6 (D_{it})$$

$$\text{If } 3 \geq D_{it} \geq 2 \text{ scale value, then visitation } G_{it} = .4 + 0 (D_{it})$$

$$\text{If } 2 \geq D_{it} \geq 1 \text{ scale value, then visitation } G_{it} = .2 + .1 (D_{it})$$

Stampede Reservoir

$$\text{If } 4 \geq D_{it} \geq 3 \text{ scale value, then visitation } G_{it} = 1.0492 - .0123 (D_{it})$$

$$\text{If } 3 \geq D_{it} \geq 2 \text{ scale value, then visitation } G_{it} = .2716 - .2469 (D_{it})$$

$$\text{If } 2 \geq D_{it} \geq 1 \text{ scale value, then visitation } G_{it} = .0976 + .2839 (D_{it})$$

Boca Reservoir

$$\text{If } 5 \geq D_{it} \geq 4 \text{ scale value, then visitation } G_{it} = .1080 + .1784 (D_{it})$$

$$\text{If } 4 \geq D_{it} \geq 3 \text{ scale value, then visitation } G_{it} = .4764 + .0863 (D_{it})$$

$$\text{If } 3 \geq D_{it} \geq 2 \text{ scale value, then visitation } G_{it} = .2646 + .3333 (D_{it})$$

$$\text{If } 2 \geq D_{it} \geq 1 \text{ scale value, then visitation } G_{it} = - .3354 + .3687 (D_{it})$$

Visitation relative to end of the month reservoir storage levels at Prosser, Stampede, and Boca Reservoirs for April through October and Other months are given in Table 3.3-5. The percentages of visitation for the end of the month reservoir storage levels are calculated using the above equations. Again, percentages of visitation correspond to scale values which in turn correspond to end of the month reservoir storage levels.

Survey year visitation relative to end of the month reservoir storage levels are the same because of end of the month reservoir storage levels. The percentages of visitation are shown in Table 3.3-6. Visitation would differ under alternative reservoir storage levels.

Table 3.3-1. Scale Values for Reservoir Storage Levels.

| | Promer Reservoir | Shampede Reservoir | Boon Reservoir |
|---|-----------------------------|-------------------------------|---------------------------|
| Reservoir Storage Level 1 in Auto-Set | 29,840 | 225,000 | 41,100 |
| Reservoir Storage Level 2 in Auto-Set | 28,000 | 170,000 | 38,000 |
| Reservoir Storage Level 3 in Auto-Set | 19,000 | 130,000 | 33,000 |
| Reservoir Storage Level 4 in Auto-Set | 11,000 | 80,000 | 22,000 |
| Reservoir Storage Level 5 in Auto-Set | | | <12,000 |
| Scale Value for Reservoir Storage Level 1 | 4.00 | 4.00 | 3.00 |
| Scale Value for Reservoir Storage Level 2 | 3.00 | 3.00 | 4.00 |
| Scale Value for Reservoir Storage Level 3 | 2.00 | 2.00 | 3.00 |
| Scale Value for Reservoir Storage Level 4 | 1.00 | 1.00 | 2.00 |
| Scale Value for Reservoir Storage Level 5 | | | 1.00 |

Table 3.3-2. End of the Month Reservoir Storage Levels.

| | Front Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------|--------------------|----------------|
| April End of the Month Reservoir Storage Level in Acre-Feet | 9,767 | 80,186 | 26,163 |
| May End of the Month Reservoir Storage Level in Acre-Feet | 16,414 | 113,577 | 37,473 |
| June End of the Month Reservoir Storage Level in Acre-Feet | 20,953 | 166,953 | 38,537 |
| July End of the Month Reservoir Storage Level in Acre-Feet | 22,110 | 177,424 | 38,084 |
| August End of the Month Reservoir Storage Level in Acre-Feet | 21,691 | 174,288 | 34,982 |
| September End of the Month Reservoir Storage Level in Acre-Feet | 14,394 | 172,442 | 23,927 |
| October End of the Month Reservoir Storage Level in Acre-Feet | 10,050 | 170,696 | 16,419 |
| Other Months Average End of the Month Reservoir Storage Level in Acre-Feet | 9,854 | 113,243 | 9,561 |
| January End of the Month Reservoir Storage Level in Acre-Feet | 9,827 | 73,944 | 3,247 |
| February End of the Month Reservoir Storage Level in Acre-Feet | 9,723 | 75,751 | 4,796 |
| March End of the Month Reservoir Storage Level in Acre-Feet | 9,642 | 76,677 | 2,955 |
| November End of the Month Reservoir Storage Level in Acre-Feet | 9,981 | 170,433 | 17,042 |
| December End of the Month Reservoir Storage Level in Acre-Feet | 10,098 | 169,310 | 18,163 |

Table 3.3-3. Scale Values for End of the Month Reservoir Storage Levels.

| | Front Reservoir | Stampede Reservoir | Boon Reservoir |
|---|-----------------|--------------------|----------------|
| Scale Value for April End of the Month Reservoir Storage Level | 0.85 | 1.00 | 2.41 |
| Scale Value for May End of the Month Reservoir Storage Level | 1.68 | 1.67 | 3.89 |
| Scale Value for June End of the Month Reservoir Storage Level | 2.22 | 2.92 | 4.08 |
| Scale Value for July End of the Month Reservoir Storage Level | 2.34 | 3.16 | 3.93 |
| Scale Value for August End of the Month Reservoir Storage Level | 2.30 | 3.10 | 3.32 |
| Scale Value for September End of the Month Reservoir Storage Level | 1.42 | 3.07 | 2.15 |
| Scale Value for October End of the Month Reservoir Storage Level | 0.88 | 3.04 | 1.82 |
| Scale Value for Other Months End of the Month Reservoir Storage Level | 0.86 | 1.67 | 1.48 |

Table 3.3-4. Indicated Number of Visits per Respondent for Reservoir Storage Levels.

| | Proser Reservoir | Stamps Reservoir | Boon Reservoir |
|---|-----------------------------|-----------------------------|---------------------------|
| Number of Visits per Respondent for Reservoir Storage Level 1 | 5.67 | 1.92 | 11.09 |
| Number of Visits per Respondent for Reservoir Storage Level 2 | 5.67 | 1.85 | 9.11 |
| Number of Visits per Respondent for Reservoir Storage Level 3 | 5.67 | 1.39 | 8.13 |
| Number of Visits per Respondent for Reservoir Storage Level 4 | 0.50 | 0.87 | 4.46 |
| Number of Visits per Respondent for Reservoir Storage Level 5 | | | 0.31 |
| Percentage of Visitation for Reservoir Storage Level 1 | 100.00% | 100.00% | 100.00% |
| Percentage of Visitation for Reservoir Storage Level 2 | 100.00% | 101.42% | 82.16% |
| Percentage of Visitation for Reservoir Storage Level 3 | 100.00% | 76.34% | 73.53% |
| Percentage of Visitation for Reservoir Storage Level 4 | 8.82% | 41.69% | 40.19% |
| Percentage of Visitation for Reservoir Storage Level 5 | | | 3.33% |

Table 3.3-5. Visitation Relative to End of the Month Reservoir Storage Levels.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Visitation Relative to April End of the Month Reservoir Storage Level | 28.46% | 36.26% | 53.82% |
| Visitation Relative to May End of the Month Reservoir Storage Level | 36.77% | 57.22% | 81.25% |
| Visitation Relative to June End of the Month Reservoir Storage Level | 40.00% | 99.35% | 83.59% |
| Visitation Relative to July End of the Month Reservoir Storage Level | 40.00% | 101.04% | 81.55% |
| Visitation Relative to August End of the Month Reservoir Storage Level | 40.00% | 101.11% | 76.26% |
| Visitation Relative to September End of the Month Reservoir Storage Level | 34.24% | 101.15% | 45.31% |
| Visitation Relative to October End of the Month Reservoir Storage Level | 28.81% | 101.18% | 33.60% |
| Visitation Relative to Other Months End of the Month Reservoir Storage Level | 28.57% | 57.04% | 20.95% |

Table 3.3-6. Survey Year Visitation Relative to End of the Month Reservoir Storage Levels.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Visitation Relative to April End of the Month Reservoir Storage Level | 28.46% | 36.26% | 53.82% |
| Visitation Relative to May End of the Month Reservoir Storage Level | 36.77% | 57.22% | 81.25% |
| Visitation Relative to June End of the Month Reservoir Storage Level | 40.00% | 99.35% | 83.59% |
| Visitation Relative to July End of the Month Reservoir Storage Level | 40.00% | 101.04% | 81.55% |
| Visitation Relative to August End of the Month Reservoir Storage Level | 40.00% | 101.11% | 76.26% |
| Visitation Relative to September End of the Month Reservoir Storage Level | 34.24% | 101.15% | 45.31% |
| Visitation Relative to October End of the Month Reservoir Storage Level | 28.81% | 101.18% | 33.60% |
| Visitation Relative to Other Months End of the Month Reservoir Storage Level | 28.57% | 57.04% | 20.95% |

Annual Visitation Relative to End of the Month Reservoir Storage Levels

The annual visitation relative to end of the month reservoir storage levels is derived by weighting the scale values for the end of the month reservoir storage levels for the reservoir by the expected annual visitation to the reservoir for the year and then calculating a annual percentage of visitation.

The scale values are weighted by survey year annual visitation by respondents to reservoirs and expected annual visitation to the reservoirs for the year.

The survey year annual visitation by respondents to the reservoirs is shown in Table 3.3-7. The expected annual visitation is calculated through the following equation.

$$H_{it} = \frac{G_{it} (H_{it}^o)}{G_{it}^o} \quad (3.3-3)$$

where:

- H_{it} is the expected annual visitation to reservoir i in month t
- G_{it} is the percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t
- H_{it}^o is the survey year annual visitation by respondents to reservoir i in month t
- G_{it}^o is the survey year percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t

The expected annual visitation is shown in Table 3.3-8. These values are the same as the values for the survey year since the end of the month reservoir storage levels are the same. The expected annual visitation would differ under alternative reservoir storage levels.

The weights for the expected annual visitation are then calculated through the following equation.

$$I_{it} = \frac{H_{it}}{\sum H_{it}} \quad (3.3-4)$$

where: I_{it} is the weight of the expected annual visitation to reservoir i in month t
 H_{it} is the expected annual visitation to reservoir i in month t

These weights are shown in Table 3.3-9. These weights show the annual pattern of visitation to the reservoirs.

The annual scale values for the reservoirs are then calculated through the following equation.

$$D_i = \sum_t D_{it} (I_{it}) \quad (3.3-5)$$

where: D_i is the annual scale value for reservoir i
 D_{it} is the scale value for the end of the month storage level for reservoir i in month t
 I_{it} is the weight of the expected annual visitation to reservoir i in month t

The weighted scale values are shown by month and by reservoir in Table 3.3-10. The summation of these weighted scale values is the annual scale value. Corresponding to a annual scale value is a annual percentage of visitation.

The annual percentage of visitation corresponding to the annual scale value is then calculated through the following equation.

$$\text{If } E_i \geq D_i \geq F_i \text{ scale value, then visitation } G_i = \alpha_i + \beta_i (D_i) \quad (3.3-6)$$

where:

- E_i is the high scale value for reservoir i
- D_i is the annual scale value for reservoir i
- F_i is the low scale value for reservoir i
- G_i is the annual percentage of visitation corresponding to the annual scale value for reservoir i
- α_i is the annual percentage of visitation constant term for reservoir i
- β_i is the annual percentage of visitation slope coefficient term for reservoir i

This equation is formulated to linearly interpolate an annual scale value to an annual percentage of visitation.

Separate equations for annual scale value and reservoir storage levels are formulated for Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Prosser Reservoir

$$\text{If } 4 \geq D_i \geq 3 \text{ scale value, then visitation } G_i = - 1.4 + .6 (D_i)$$

$$\text{If } 3 \geq D_i \geq 2 \text{ scale value, then visitation } G_i = .4 + 0 (D_i)$$

$$\text{If } 2 \geq D_i \geq 1 \text{ scale value, then visitation } G_i = .2 + .1 (D_i)$$

Stampede Reservoir

$$\text{If } 4 \geq D_i \geq 3 \text{ scale value, then visitation } G_i = 1.0492 - .0123 (D_i)$$

$$\text{If } 3 \geq D_i \geq 2 \text{ scale value, then visitation } G_i = .2716 - .2469 (D_i)$$

$$\text{If } 2 \geq D_i \geq 1 \text{ scale value, then visitation } G_i = .0976 + .2839 (D_i)$$

Boca Reservoir

$$\text{If } 5 \geq D_i \geq 4 \text{ scale value, then visitation } G_i = .1080 + .1784 (D_i)$$

$$\text{If } 4 \geq D_i \geq 3 \text{ scale value, then visitation } G_i = .4764 + .0863 (D_i)$$

$$\text{If } 3 \geq D_i \geq 2 \text{ scale value, then visitation } G_i = .2646 + .3333 (D_i)$$

$$\text{If } 2 \geq D_i \geq 1 \text{ scale value, then visitation } G_i = - .3354 + .3687 (D_i)$$

Annual visitation relative to end of the month reservoir storage levels for Prosser, Stampede, and Boca Reservoirs are given in Table 3.3-11. An annual percentage of visitation corresponds to an annual scale value which in turn corresponds to end of the month reservoir storage levels.

Survey year annual visitation relative to end of the month reservoir storage levels are the same because of end of the month reservoir storage levels being the same. The annual percentages of visitation are shown in Table 3.3-12. Annual visitation would differ under alternative reservoir storage levels.

Table 3.3-7. Survey Year Annual Visitation by Respondents by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boes Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Number of Respondents that Visit during April | 3 | 10 | 14 |
| Number of Respondents that Visit during May | 3 | 16 | 28 |
| Number of Respondents that Visit during June | 3 | 25 | 36 |
| Number of Respondents that Visit during July | 4 | 26 | 42 |
| Number of Respondents that Visit during August | 6 | 46 | 46 |
| Number of Respondents that Visit during September | 3 | 20 | 31 |
| Number of Respondents that Visit during October | 3 | 10 | 19 |
| Number of Respondents that Visit during Other Months | 1 | 0 | 6 |
| Total | 26 | 153 | 222 |

Table 3.3-8. Expected Annual Visitation by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boes Reservoir |
|---|-----------------------------|-------------------------------|---------------------------|
| Expected Visitation during April | 3 | 10 | 14 |
| Expected Visitation during May | 3 | 16 | 28 |
| Expected Visitation during June | 3 | 25 | 36 |
| Expected Visitation during July | 4 | 26 | 42 |
| Expected Visitation during August | 6 | 46 | 46 |
| Expected Visitation during September | 3 | 20 | 31 |
| Expected Visitation during October | 3 | 10 | 19 |
| Expected Visitation during Other Months | 1 | 0 | 6 |
| Total | 26 | 153 | 222 |

Table 3.3-9. Weights for Expected Annual Visitation by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boes Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Weight for expected Visitation during April | 11.54% | 6.54% | 6.31% |
| Weight for expected Visitation during May | 11.54% | 10.46% | 12.61% |
| Weight for expected Visitation during June | 11.54% | 16.34% | 16.22% |
| Weight for expected Visitation during July | 15.38% | 16.99% | 18.92% |
| Weight for expected Visitation during August | 23.08% | 30.07% | 20.72% |
| Weight for expected Visitation during September | 11.54% | 13.07% | 13.96% |
| Weight for expected Visitation during October | 11.54% | 6.54% | 8.56% |
| Weight for expected Visitation during Other Months | 3.85% | 0.00% | 2.70% |

Table 3.3-10. Annual Scale Values by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Weighted Scale Value for April End of the Month Reservoir Storage Level | 0.10 | 0.07 | 0.13 |
| Weighted Scale Value for May End of the Month Reservoir Storage Level | 0.19 | 0.17 | 0.49 |
| Weighted Scale Value for June End of the Month Reservoir Storage Level | 0.26 | 0.48 | 0.66 |
| Weighted Scale Value for July End of the Month Reservoir Storage Level | 0.36 | 0.54 | 0.74 |
| Weighted Scale Value for August End of the Month Reservoir Storage Level | 0.53 | 0.93 | 0.69 |
| Weighted Scale Value for September End of the Month Reservoir Storage Level | 0.16 | 0.48 | 0.30 |
| Weighted Scale Value for October End of the Month Reservoir Storage Level | 0.10 | 0.28 | 0.16 |
| Weighted Scale Value for Other Months End of the Month Reservoir Storage Level | 0.00 | 0.00 | 0.04 |
| Annual Scale Value | 1.74 | 2.79 | 3.25 |

Table 3.3-11. Annual Visitation Relative to End of the Month Reservoir Storage Levels.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Annual Visitation Relative to the End of the Month Reservoir Storage Levels | 37.36% | 95.97% | 73.53% |

Table 3.3-12. Survey Year Annual Visitation Relative to End of the Month Reservoir Storage Levels.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Annual Visitation Relative to the End of the Month Reservoir Storage Levels | 37.36% | 95.97% | 73.53% |

Annual Number of Camping Visitors

The annual number of camping visitors to the reservoirs is derived by taking the survey year number of camping visitors for the campgrounds at the reservoirs and multiplying by the ratio of annual visitation for the given year to the annual visitation for survey year. The annual number of camping visitors is distributed monthly by the weights of the expected annual visitation to show the annual pattern of visitation.

The survey year number of camping visitors for the campgrounds at the reservoirs are taken from U.S. Forest Service data. This data is shown in Table 3.3-13. There are ten campgrounds in the area. Four campgrounds are near Prosser Reservoir. Another three campgrounds are near Stampede Reservoir. And the remaining three campgrounds are near Boca Reservoir. The annual number of camping visitors is provided for each campground.

The annual number of camping visitors for the given year is calculated through the following equation.

$$J_i = J_i^0 \frac{G_i}{G_i^0} \quad (3.3-7)$$

where:

- J_i is the annual number of camping visitors for reservoir i
- J_i^0 is the survey year annual number of camping visitors for reservoir i
- G_i is the annual percentage of visitation corresponding to the annual scale value for reservoir i
- G_i^0 is the survey year annual percentage of visitation corresponding to the annual scale value for reservoir i

The equation is formulated so that if the annual percentage of visitation for the given year is greater than the survey year annual percentage of visitation then the annual number of camping visitors for the given year is also greater. Likewise if the annual percentage of visitation for the given year is less than the survey year annual percentage of visitation then the annual number of camping visitors for the given year is also less.

The annual number of camping visitors by reservoir are shown in Table 3.3-14.

The annual number of camping visitors are then distributed by the weights for expected annual visitation to show the annual number of camping visitors by month. This is done through the following equation.

$$K_{it} = J_i (I_{it}) \quad (3.3-8)$$

where: K_{it} is the number of annual camping visitors to reservoir i in month t
 J_i is the annual number of camping visitors for reservoir i
 I_{it} is the weight of the expected annual visitation to reservoir i in month t

The annual number of camping visitors by month to the reservoirs are shown in Table 3.3-15. Together the annual number of camping visitors by month show the annual pattern of visitation to the reservoir by camping visitors.

Table 3.3-13. Annual Number of Camping Visitors by Campground by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|---------------------|-----------------------|-------------------|
| Number of Camping Visitors for Lakeside Campground | 0 | | |
| Number of Camping Visitors for Proser Family Campground | 30,062 | | |
| Number of Camping Visitors for Proser Ranch Campground | 7,734 | | |
| Number of Camping Visitors for Annie McCloud Campground | 0 | | |
| Number of Camping Visitors for Davis Creek Campground | | 2,221 | |
| Number of Camping Visitors for Emigrant Campground /1 | | 2,300 | |
| Number of Camping Visitors for Logger Campground | | 41,337 | |
| Number of Camping Visitors for Boca Campground | | | 0 |
| Number of Camping Visitors for Boca Rest Campground | | | 58,833 |
| Number of Camping Visitors for Boyington Mill Campground | | | 6,960 |
| Total Number of Camping Visitors for Campgrounds | 37,816 | 45,878 | 65,813 |

1. Estimate provided by boat at campground.

Table 3.3-14. Annual Number of Camping Visitors by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|---------------------|-----------------------|-------------------|
| Annual Number of Camping Visitors | 37,816 | 45,878 | 65,813 |

Table 3.3-15. Annual Number of Camping Visitors by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|---------------------|-----------------------|-------------------|
| Number of Camping Visitors during April | 4,363 | 2,999 | 4,150 |
| Number of Camping Visitors during May | 4,363 | 4,798 | 8,301 |
| Number of Camping Visitors during June | 4,363 | 7,496 | 10,672 |
| Number of Camping Visitors during July | 5,818 | 7,796 | 12,451 |
| Number of Camping Visitors during August | 8,727 | 13,793 | 13,637 |
| Number of Camping Visitors during September | 4,363 | 5,997 | 9,180 |
| Number of Camping Visitors during October | 4,363 | 2,999 | 5,633 |
| Number of Camping Visitors during Other Months | 1,454 | 0 | 1,779 |
| Annual Number of Camping Visitors | 37,816 | 45,878 | 65,813 |

Annual Number of Day Use Visitors

The annual number of day use visitors to the reservoirs is derived by multiplying the annual number of camping visitors to the reservoirs by the ratio of day use visitors to camping visitors taken from the survey.

The ratio of day use visitors to camping visitors is calculated through the following equations.

$$L_i = M_i (N_i) \quad (3.3-9)$$

$$O_i = (P_i (Q_i)) R_i \quad (3.3-10)$$

$$S_i = \frac{L_i}{O_i} \quad (3.3-11)$$

where:

| | |
|-------|---|
| L_i | is the number of day use visitors to reservoir i |
| M_i | is the number of day use respondents at reservoir i |
| N_i | is the average group size of day use respondents at reservoir i |
| O_i | is the number of camping visitors to reservoir i |
| P_i | is the number of camping respondents at reservoir i |
| Q_i | is the average group size of camping respondents at reservoir i |
| R_i | is the average number of days spent by camping respondents at reservoir i |
| S_i | is the ratio of day use visitors to camping visitors to reservoir i |

The ratios of day use visitors to camping visitors by reservoir are given in Table 3.3-16. However the ratio calculated for Boca Reservoir is used for Prosser and Stampede Reservoirs.

The annual number of day use visitors is then calculated through the following equation.

$$T_i = J_i (S_i) \quad (3.3-12)$$

where:

| | |
|-------|---|
| T_i | is the annual number of day use visitors for reservoir i |
| J_i | is the annual number of camping visitors for reservoir i |
| S_i | is the ratio of day use visitors to camping visitors to reservoir i |

The annual number of day use visitors by reservoir are shown in Table 3.3-17.

The annual number of day use visitors are then distributed by the weights for expected annual visitation to show the annual number of day use visitors by month. This is done through the following equation.

$$U_{it} = T_i (I_{it}) \quad (3.3-13)$$

where: U_{it} is the number of annual day use visitors to reservoir i in month t
 T_i is the annual number of day use visitors for reservoir i
 I_{it} is the weight of the expected annual visitation to reservoir i in month t

The annual number of day use visitors by month to the reservoirs are shown in Table 3.3-18. Together the annual number of day use visitors by month show the annual pattern of visitation to the reservoir by day use visitors.

Table 3.3-16. Ratio of Day Use Visitors to Camping Visitors by Reservoir.

| | Prosser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|------------------------------|-------------------------------|---------------------------|
| Number of Day Use Respondents | 6.00 | 10.00 | 41.00 |
| Average Group Size of Day Use Respondents | 3.33 | 3.30 | 4.71 |
| Number of Day Use Visitors | 19.98 | 35.00 | 193.11 |
| Number of Camping Respondents | 0.00 | 36.00 | 5.00 |
| Average Group Size of Camping Respondents | N.A. | 3.14 | 3.20 |
| Average Number of Days Spent by Camping Respondents | N.A. | 3.69 | 6.40 |
| Number of Camping Visitors | 0.00 | 602.80 | 102.40 |
| Ratio of Day Use Visitors to Camping Visitors | N.A. | N.A. | 1.89 |
| Ratio of Day Use Visitors to Camping Visitors¹ | 1.89 | 1.89 | 1.89 |

1. The Boon Reservoir ratio is used for both Prosser and Stampede Reservoirs.

Table 3.3-17. Annual Number of Day Use Visitors by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Annual Number of Day Use Visitors | 71,315 | 86,519 | 124,113 |

Table 3.3-18. Annual Number of Day Use Visitors by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|---|-----------------------------|-------------------------------|---------------------------|
| Number of Day Use Visitors during April | 8,229 | 5,655 | 7,827 |
| Number of Day Use Visitors during May | 8,229 | 9,048 | 15,654 |
| Number of Day Use Visitors during June | 8,229 | 14,137 | 20,126 |
| Number of Day Use Visitors during July | 10,912 | 14,700 | 23,481 |
| Number of Day Use Visitors during August | 16,451 | 28,012 | 25,717 |
| Number of Day Use Visitors during September | 8,229 | 11,310 | 17,331 |
| Number of Day Use Visitors during October | 8,229 | 5,655 | 10,622 |
| Number of Day Use Visitors during Other Months | 2,749 | 0 | 3,354 |
| Annual Number of Day Use Visitors | 71,315 | 86,519 | 124,113 |

Annual Number of Camping Visitor Groups

The annual number of camping visitor groups to the reservoirs is derived by dividing the annual number of camping visitors by month by the group size. This is done through the following equation.

$$V_{it} = \frac{K_{it}}{Q_i} \quad (3.3-14)$$

where: V_{it} is the annual number of camping visitor groups to reservoir i in month t
 K_{it} is the number of annual camping visitors to reservoir i in month t
 Q_i is the average group size of camping respondents at reservoir i

The annual number of camping visitor groups by month to the reservoirs are shown in Table 3.3-19.

Table 3.3-19. Annual Number of Camping Visitor Groups by Month by Reservoir.

| | Fraser Reservoir | Shampoda Reservoir | Boes Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Number of Camping Visitor Groups during April | 1,310 | 583 | 1,297 |
| Number of Camping Visitor Groups during May | 1,310 | 933 | 2,594 |
| Number of Camping Visitor Groups during June | 1,310 | 1,458 | 3,335 |
| Number of Camping Visitor Groups during July | 1,747 | 1,517 | 3,891 |
| Number of Camping Visitor Groups during August | 2,621 | 2,684 | 4,262 |
| Number of Camping Visitor Groups during September | 1,310 | 1,167 | 2,872 |
| Number of Camping Visitor Groups during October | 1,310 | 585 | 1,760 |
| Number of Camping Visitor Groups during Other Months | 437 | 0 | 356 |
| Annual Number of Camping Visitor Groups | 11,356 | 8,926 | 20,561 |

Annual Number of Day Use Visitor Groups

The annual number of day use visitor groups to the reservoirs is derived by dividing the annual number of day use visitors by month by the group size. This is done through the following equation.

$$W_{it} = \frac{U_{it}}{N_i} \quad (3.3-15)$$

where: W_{it} is the annual number of day use visitor groups to reservoir i in month t
 U_{it} is the number of annual day use visitors to reservoir i in month t
 N_i is the average group size of day use respondents at reservoir i

The annual number of day use visitor groups by month to the reservoirs are shown in Table 3.3-20.

Table 3.3-20. Annual Number of Day Use Visitor Groups by Month by Reservoir.

| | Frank Reservoir | Shampah Reservoir | Bona Reservoir |
|--|----------------------------|------------------------------|---------------------------|
| Number of Day Use Visitor Groups during April | 2,471 | 1,646 | 1,662 |
| Number of Day Use Visitor Groups during May | 2,471 | 2,585 | 3,324 |
| Number of Day Use Visitor Groups during June | 2,471 | 4,039 | 4,273 |
| Number of Day Use Visitor Groups during July | 3,295 | 4,201 | 4,983 |
| Number of Day Use Visitor Groups during August | 4,942 | 7,432 | 3,460 |
| Number of Day Use Visitor Groups during September | 2,471 | 3,231 | 3,680 |
| Number of Day Use Visitor Groups during October | 2,471 | 1,616 | 2,251 |
| Number of Day Use Visitor Groups during Other Months | 824 | 0 | 712 |
| Annual Number of Day Use Visitor Groups | 21,416 | 24,720 | 26,351 |

Annual Camping Visitor Expenditures

The annual camping visitor expenditures by reservoir are the summation of the annual number of camping visitor groups per month multiplied by the camping visitor group expenditure function value. This is done through the following equations.

$$X_{it} = V_{it} (Y_i) \quad (3.3-16)$$

$$Z_i = \sum X_{it} \quad (3.3-17)$$

where: X_{it} is the annual camping visitor expenditures for reservoir i in month t
 V_{it} is the annual number of camping visitor groups to reservoir i in month t
 Y_i is the camping visitor group expenditure function value for reservoir i
 Z_i is the annual camping visitor expenditures for reservoir i

The camping visitor group expenditure function values for each reservoir are shown in Table 3.3-21. The annual camping visitor expenditures by month by reservoir are shown in Table 3.3-22.

The annual camping visitor expenditures are proportioned by the amount of expenditure indicated by category by respondent for the reservoir. This is done through the following equation.

$$AA_{ci} = Z_i (AB_{ci}) \quad (3.3-18)$$

where: AA_{ci} is the annual camping visitor expenditures by category c for reservoir i
 Z_i is the annual camping visitor expenditures for reservoir i
 AB_{ci} is the proportion of the amount of expenditure by category c for reservoir i by camping respondents

The annual camping visitor expenditures by category by reservoir are shown in Table 3.3-23.

Table 3.3-21. Camping Visitor Group Expenditure Function Values by Reservoir.

| | Promet Reservoir | Shampoda Reservoir | Boon Reservoir |
|---|------------------|--------------------|----------------|
| Camping Visitor Group Expenditure per Day | \$93.91 | \$60.72 | \$24.34 |

Table 3.3-22. Annual Camping Visitor Expenditures by Month by Reservoir.

| | Promet Reservoir | Shampoda Reservoir | Boon Reservoir |
|--|-------------------|--------------------|------------------|
| Camping Visitor Expenditures during April | 123,105 | 35,423 | 31,569 |
| Camping Visitor Expenditures during May | 123,105 | 56,676 | 63,117 |
| Camping Visitor Expenditures during June | 123,105 | 88,537 | 81,177 |
| Camping Visitor Expenditures during July | 164,140 | 92,699 | 94,706 |
| Camping Visitor Expenditures during August | 246,211 | 162,944 | 103,726 |
| Camping Visitor Expenditures during September | 123,105 | 70,845 | 69,902 |
| Camping Visitor Expenditures during October | 123,105 | 35,423 | 42,843 |
| Camping Visitor Expenditures during Other Months | 41,035 | 0 | 13,529 |
| Annual Camping Visitor Expenditures | 31,066,912 | \$541,967 | \$500,590 |

Table 3.3-23. Annual Camping Visitor Expenditures by Category by Reservoir.

| | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|--------------------|--------------------|------------------|
| Average Expenditure on License by Camping Respondents | N.A. | 16.18 | 17.80 |
| Average Expenditure on Camping Fees by Camping Respondents | N.A. | 48.47 | 0.00 |
| Average Expenditure on Hotel or Motel by Camping Respondents | N.A. | 0.00 | 0.00 |
| Average Expenditure on Restaurant by Camping Respondents | N.A. | 8.58 | 0.00 |
| Average Expenditure on Groceries by Camping Respondents | N.A. | 70.39 | 46.00 |
| Average Expenditure on Equipment and Supplies by Camping Respondents | N.A. | 15.08 | 0.40 |
| Average Expenditure on Rental by Camping Respondents | N.A. | 0.00 | 0.00 |
| Average Expenditure on Fuel by Camping Respondents | N.A. | 40.42 | 16.60 |
| Average Expenditure on Other by Camping Respondents | N.A. | 0.60 | 12.00 |
| Average Total Expenditure by Camping Respondents | \$0 | \$199.12 | \$92.40 |
| Average Expenditure on License by Camping Respondents ¹ | 18.83% | 8.13% | 18.83% |
| Average Expenditure on Camping Fees by Camping Respondents | 0.00% | 24.34% | 0.00% |
| Average Expenditure on Hotel or Motel by Camping Respondents | 0.00% | 0.00% | 0.00% |
| Average Expenditure on Restaurant by Camping Respondents | 0.00% | 4.31% | 0.00% |
| Average Expenditure on Groceries by Camping Respondents | 49.78% | 35.35% | 49.78% |
| Average Expenditure on Equipment and Supplies by Camping Respondents | 0.43% | 7.57% | 0.43% |
| Average Expenditure on Rental by Camping Respondents | 0.00% | 0.00% | 0.00% |
| Average Expenditure on Fuel by Camping Respondents | 17.97% | 20.30% | 17.97% |
| Average Expenditure on Other by Camping Respondents | 12.99% | 0.00% | 12.99% |
| Average Total Expenditure by Camping Respondents | 100.00% | 100.00% | 100.00% |
| Annual Camping Visitor Expenditure on License | 200,912 | 44,809 | 94,267 |
| Annual Camping Visitor Expenditure on Camping Fees | 0 | 131,926 | 0 |
| Annual Camping Visitor Expenditure on Hotel or Motel | 0 | 0 | 0 |
| Annual Camping Visitor Expenditure on Restaurant | 0 | 23,353 | 0 |
| Annual Camping Visitor Expenditure on Groceries | 531,147 | 191,588 | 249,212 |
| Annual Camping Visitor Expenditure on Equipment and Supplies | 4,619 | 41,045 | 2,147 |
| Annual Camping Visitor Expenditure on Rental | 0 | 0 | 0 |
| Annual Camping Visitor Expenditure on Fuel | 191,675 | 112,816 | 89,933 |
| Annual Camping Visitor Expenditure on Other | 138,560 | 0 | 65,042 |
| Annual Camping Visitor Expenditure | \$1,066,912 | \$541,961 | \$300,590 |

1. The Boon Reservoir expenditure categories are used for Promer Reservoir.

Annual Day Use Visitor Expenditures

The annual day use visitor expenditures by reservoir are the summation of the annual number of day use visitor groups per month multiplied by the day use visitor group expenditure function value. This is done through the following equations.

$$AC_{it} = W_{it} (AD_i) \quad (3.3-19)$$

$$AE_i = \sum AC_{it} \quad (3.3-20)$$

where: AC_{it} is the annual day use visitor expenditures for reservoir i in month t
 W_{it} is the number of annual day use visitor groups to reservoir i in month t
 AD_i is the day use visitor group expenditure function value for reservoir i
 AE_i is the annual day use visitor expenditures for reservoir i

The day use visitor group expenditure function values for each reservoir are shown in Table 3.3-24. The annual day use visitor expenditures by month by reservoir are shown in Table 3.3-25.

The annual day use visitor expenditures are proportioned by the amount of expenditure indicated by category by respondent for the reservoir. This is done through the following equation.

$$AF_{ci} = AE_i (AG_{ci}) \quad (3.3-21)$$

where: AF_{ci} is the annual day use visitor expenditures by category c for reservoir i
 AE_i is the annual day use visitor expenditures for reservoir i
 AG_{ci} is the proportion of the amount of expenditure by category c for reservoir i by day use respondents

The annual day use visitor expenditures by category by reservoir are shown in Table 3.3-26.

Table 3.3-24. Day Use Visitor Group Expenditure Function Values by Reservoir.

| | Prater Reservoir | Stampede Reservoir | Boon Reservoir |
|---|-----------------------------|-------------------------------|---------------------------|
| Day Use Visitor Group Expenditure per Day | 3153.27 | 394.10 | 650.84 |

Table 3.3-25. Annual Day Use Visitor Expenditures by Month by Reservoir.

| | Prater Reservoir | Stampede Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Day Use Visitor Expenditures during April | 378,741 | 152,034 | 84,484 |
| Day Use Visitor Expenditures during May | 378,741 | 243,254 | 168,969 |
| Day Use Visitor Expenditures during June | 378,741 | 380,884 | 217,245 |
| Day Use Visitor Expenditures during July | 504,987 | 395,287 | 233,453 |
| Day Use Visitor Expenditures during August | 737,481 | 609,354 | 277,591 |
| Day Use Visitor Expenditures during September | 378,741 | 304,067 | 187,072 |
| Day Use Visitor Expenditures during October | 378,741 | 152,034 | 114,657 |
| Day Use Visitor Expenditures during Other Months | 126,247 | 0 | 36,208 |
| Annual Day Use Visitor Expenditures | 33,282,418 | 82,326,113 | 31,339,680 |

Table 3.3-26. Annual Day Use Visitor Expenditures by Category by Reservoir.

| | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|---------------------|-----------------------|--------------------|
| Average Expenditure on Licenses by Day Use Respondents | 23.79 | 38.60 | 9.40 |
| Average Expenditure on Camping Fees by Day Use Respondents | 0.00 | 0.00 | 7.32 |
| Average Expenditure on Hotel or Motel by Day Use Respondents | 1.80 | 14.00 | 32.68 |
| Average Expenditure on Restaurant by Day Use Respondents | 41.67 | 15.00 | 12.68 |
| Average Expenditure on Groceries by Day Use Respondents | 41.67 | 22.40 | 27.29 |
| Average Expenditure on Equipment and Supplies by Day Use Respondents | 4.50 | 3.76 | 5.16 |
| Average Expenditure on Rental by Day Use Respondents | 162.50 | 0.00 | 0.00 |
| Average Expenditure on Fuel by Day Use Respondents | 14.83 | 20.20 | 17.78 |
| Average Expenditure on Other by Day Use Respondents | 0.00 | 1.50 | 7.32 |
| Average Total Expenditure by Day Use Respondents | \$289.90 | \$117.46 | \$120.23 |
| Average Expenditure on Licenses by Day Use Respondents | 8.19% | 32.86% | 7.82% |
| Average Expenditure on Camping Fees by Day Use Respondents | 0.00% | 0.00% | 6.09% |
| Average Expenditure on Hotel or Motel by Day Use Respondents | 0.54% | 13.62% | 27.18% |
| Average Expenditure on Restaurant by Day Use Respondents | 14.37% | 12.77% | 10.55% |
| Average Expenditure on Groceries by Day Use Respondents | 14.37% | 19.07% | 22.70% |
| Average Expenditure on Equipment and Supplies by Day Use Respondents | 1.53% | 3.20% | 4.29% |
| Average Expenditure on Rental by Day Use Respondents | 56.05% | 0.00% | 0.00% |
| Average Expenditure on Fuel by Day Use Respondents | 5.12% | 17.20% | 14.79% |
| Average Expenditure on Other by Day Use Respondents | 0.00% | 1.28% | 6.09% |
| Average Total Expenditure by Day Use Respondents | 100.00% | 100.00% | 100.00% |
| Annual Day Use Visitor Expenditure on Licenses | 268,685 | 764,413 | 104,741 |
| Annual Day Use Visitor Expenditure on Camping Fees | 0 | 0 | 81,364 |
| Annual Day Use Visitor Expenditure on Hotel or Motel | 11,323 | 316,855 | 364,142 |
| Annual Day Use Visitor Expenditure on Restaurant | 471,812 | 297,052 | 141,289 |
| Annual Day Use Visitor Expenditure on Groceries | 471,812 | 445,997 | 304,083 |
| Annual Day Use Visitor Expenditure on Equipment and Supplies | 50,952 | 74,461 | 44,182 |
| Annual Day Use Visitor Expenditure on Rental | 1,839,920 | 0 | 0 |
| Annual Day Use Visitor Expenditure on Fuel | 167,914 | 408,030 | 198,116 |
| Annual Day Use Visitor Expenditure on Other | 0 | 29,705 | 81,364 |
| Annual Day Use Visitor Expenditure | \$1,282,418 | \$2,526,113 | \$1,339,680 |

Annual Number of Camping and Day Use Visitors

The annual number of camping and day use visitors by reservoir is the summation of the annual number of camping visitors and the annual number of day use visitors. This is done through the following equations.

$$AH_{it} = K_{it} + U_{it} \quad (3.3-22)$$

$$A_i = \sum AH_{it} \quad (3.3-23)$$

where:

- AH_{it} is the annual number of camping and day use visitors for reservoir i in month t
- K_{it} is the number of annual camping visitors to reservoir i in month t
- U_{it} is the number of annual day use visitors to reservoir i in month t
- A_i is the annual number of camping and day use visitors for reservoir i

The annual number of camping and day use visitors by month by reservoir are shown in Table 3.3-27.

Table 3.3-27. Annual Number of Camping and Day Use Visitors by Month by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boss Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Number of Camping and Day Use Visitors during April | 12,592 | 8,653 | 11,977 |
| Number of Camping and Day Use Visitors during May | 12,592 | 13,845 | 23,955 |
| Number of Camping and Day Use Visitors during June | 12,592 | 21,633 | 30,799 |
| Number of Camping and Day Use Visitors during July | 16,789 | 22,499 | 35,932 |
| Number of Camping and Day Use Visitors during August | 25,184 | 39,806 | 39,354 |
| Number of Camping and Day Use Visitors during September | 12,592 | 17,307 | 26,521 |
| Number of Camping and Day Use Visitors during October | 12,592 | 8,653 | 16,255 |
| Number of Camping and Day Use Visitors during Other months | 4,197 | 0 | 5,135 |
| Annual Number of Camping and Day Use Visitors | 109,131 | 132,397 | 189,926 |

Annual Camping and Day Use Visitor Expenditures

The annual camping and day use visitor expenditures by reservoir is the summation of the annual camping visitor expenditures and the annual day use visitor expenditures. This is done through the following equations.

$$AJ_{it} = X_{it} + AC_{it} \quad (3.3-24)$$

$$AK_i = \sum AJ_{it} \quad (3.3-25)$$

where: AJ_{it} is the annual camping and day use visitor expenditures for reservoir i in month t
 X_{it} is the annual camping visitor expenditures for reservoir i in month t
 AC_{it} is the annual day use visitor expenditures for reservoir i in month t
 AK_i is the annual camping and day use visitor expenditures for reservoir i

The annual camping and day use visitor expenditures by month by reservoir are shown in Table 3.3-28.

Table 3.3-28. Annual Camping and Day Use Visitor Expenditures by Month by Reservoir.

| | Proser Reservoir | Stumpick Reservoir | Boon Reservoir |
|--|-----------------------------|-------------------------------|---------------------------|
| Camping and Day Use Visitor Expenditures during April | 501,846 | 187,456 | 116,053 |
| Camping and Day Use Visitor Expenditures during May | 501,846 | 299,930 | 232,186 |
| Camping and Day Use Visitor Expenditures during June | 501,846 | 468,641 | 298,422 |
| Camping and Day Use Visitor Expenditures during July | 669,128 | 487,396 | 348,159 |
| Camping and Day Use Visitor Expenditures during August | 1,003,692 | 862,299 | 381,317 |
| Camping and Day Use Visitor Expenditures during September | 501,846 | 374,913 | 256,975 |
| Camping and Day Use Visitor Expenditures during October | 501,846 | 187,456 | 151,501 |
| Camping and Day Use Visitor Expenditures during Other months | 1,67,282 | 0 | 49,757 |
| Annual Camping and Day Use Visitor Expenditures | \$4,349,330 | \$2,668,081 | \$1,840,270 |

Annual Camping and Day Use Visitor Expenditures by Category

The annual camping and day use visitor expenditures by category by reservoir is the summation of the annual camping visitor expenditures by category and the annual day use visitor expenditures by category. This is done through the following equations.

$$AL_{ci} = AA_{ci} + AF_{ci} \quad (3.3-26)$$

$$AM_i = \sum AL_{ci} \quad (3.3-27)$$

where: AL_{ci} is the annual camping and day use visitor expenditures by category c for reservoir i
 AA_{ci} is the annual camping visitor expenditures by category c for reservoir i
 AF_{ci} is the annual day use visitor expenditures by category c for reservoir i
 AM_i is the annual camping and day use visitor expenditures for reservoir i

The annual camping and day use visitor expenditures by category by reservoir are shown in Table 3.3-29.

Table 3.3-29. Annual Camping and Day Use Visitor Expenditures by Category by Reservoir.

| | Proser Reservoir | Stampede Reservoir | Boss Reservoir |
|---|-----------------------------|-------------------------------|---------------------------|
| Annual Camping and Day Use Visitor Expenditures on Licenses | 469,597 | 808,452 | 199,008 |
| Annual Camping and Day Use Visitor Expenditures on Camping Fees | 0 | 131,926 | 81,564 |
| Annual Camping and Day Use Visitor Expenditures on Hotel or Motel | 11,323 | 516,855 | 364,142 |
| Annual Camping and Day Use Visitor Expenditures on Restaurants | 471,812 | 320,405 | 141,289 |
| Annual Camping and Day Use Visitor Expenditures on Groceries | 1,062,959 | 635,186 | 553,294 |
| Annual Camping and Day Use Visitor Expenditures on Equipment and Supplies | 55,570 | 115,506 | 66,349 |
| Annual Camping and Day Use Visitor Expenditures on Rental | 1,839,920 | 0 | 0 |
| Annual Camping and Day Use Visitor Expenditures on Fuel | 359,589 | 510,045 | 388,049 |
| Annual Camping and Day Use Visitor Expenditures on Other | 138,560 | 29,705 | 146,516 |
| Annual Camping and Day Use Visitor Expenditures | 84,149,330 | 52,868,881 | 81,840,270 |

4. Input-Output Model Component

The input-output model component of the regional economic impact model serves the purpose of estimating the economic impact on the regional economy from a selected sectoral change in economic activity. Development of this component involved definition of the region, collection of the control total data, and derivation of the model tables.

4.1 Definition of the Region

The region is outlined by the hydrologic boundaries of the Truckee River Basin. Within the region, there is an economic area, a population base, and economic sectors.

Economic Area

The economic area within the region is defined at state, county, and city levels. At the state level, the economic area covers part of eastern California and part of western Nevada. At the county level, parts of Sierra county, Nevada county, Placer county, El Dorado county, and Alpine county lie within the California portion of the area. Similarly, in Nevada, parts of Pershing county, Washoe county, Lyon county, Carson City (an independent city), and Douglas county lie within the area. At the city level, Reno and Sparks in Washoe county, are the major cities in the area followed by Carson City, South Lake Tahoe in El Dorado county, Truckee in Nevada county, and, Tahoe City in Placer county.

Population Base

The population base is only that portion of county population that lives within the region. This amount is determined from county subdivision level data taken from the *Census of Population* published by the Bureau of the Census. The data includes all persons.

Population in and out of the region by county is shown in Tables 4.1-1 through 4.1-5 for California and in Tables 4.1-7 through 4.1-12 for Nevada. County summaries are given in Table 4.1-6 for California and Table 4.1-13 for Nevada. From the California counties, some 50,358 persons live within the region and from the Nevada counties, some 266,023 persons live within the region.

Population in the region by county and by state is also presented in Table 4.1-14. Total population in the region is 316,381 persons. Of this amount, 16% is from the California counties and 84% is from the Nevada counties. Washoe county alone accounts for 254,020 persons or 80% of the total population in the region.

Table 4.1-1. Population In and Out of the Region for Sierra County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|---------------------------------|--|--|--|
| East Sierra | 2,029 | 0 | 2,029 |
| West Sierra | 0 | 1,289 | 1,289 |
| Total | 2,029 | 1,289 | 3,318 |
| Percentage of Population | 61.15% | 38.85% | 100.00% |

Table 4.1-2. Population In and Out of the Region for Nevada County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|---------------------------------|--|--|--|
| Dwinn-Truckee | 9,420 | 0 | 9,420 |
| Grass Valley | 0 | 56,399 | 56,399 |
| Nevada City | 0 | 12,221 | 12,221 |
| Total | 9,420 | 68,620 | 78,040 |
| Percentage of Population | 12.00% | 88.00% | 100.00% |

Table 4.1-3. Population In and Out of the Region for Placer County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|--|--|--|
| Auburn | 0 | 37,159 | 37,159 |
| Colusa-Summit | 0 | 15,546 | 15,546 |
| Foresthill-Beck Country | 0 | 4,699 | 4,699 |
| Lake Tahoe | 9,257 | 0 | 9,257 |
| Loomis Basin-Folsom Lake | 0 | 44,931 | 44,931 |
| Roseville | 0 | 47,395 | 47,395 |
| West Valley | 0 | 13,809 | 13,809 |
| Total | 9,257 | 163,539 | 172,796 |
| Percentage of Population | 5.36% | 94.64% | 100.00% |

Table 4.1-4. Population In and Out of the Region for El Dorado County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|--|--|--|
| North El Dorado | 0 | 24,396 | 24,396 |
| Placerville | 0 | 14,105 | 14,105 |
| South El Dorado | 0 | 57,842 | 57,842 |
| South Lake Tahoe | 29,652 | 0 | 29,652 |
| Total | 29,652 | 96,343 | 125,995 |
| Percentage of Population | 23.53% | 76.47% | 100.00% |

Table 4.1-5. Population In and Out of the Region for Alpine County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|---|---|--|
| Northville | 0 | 1,113 | 1,113 |
| Total | 0 | 1,113 | 1,113 |
| Percentage of Population | 0.00% | 100.00% | 100.00% |

Table 4.1-6. Population In and Out of the Region by County for California.

| County | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|---|---|--|
| Sierra | 1,029 | 1,289 | 3,318 |
| Nevada | 9,420 | 69,090 | 78,510 |
| Placer | 9,257 | 163,539 | 172,796 |
| El Dorado | 29,652 | 96,345 | 125,997 |
| Alpine | 0 | 1,113 | 1,113 |
| Total | 50,358 | 331,374 | 381,732 |
| Percentage of Population | 13.19% | 86.81% | 100.00% |

Table 4.1-7. Population In and Out of the Region for Washoe County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|---------------------------------|--|--|--|
| Finnigan | 790 | 0 | 790 |
| Orelack | 0 | 647 | 647 |
| Incline Village | 7,567 | 0 | 7,567 |
| New Washoe City | 10,109 | 0 | 10,109 |
| Pyramid Lake | 1,438 | 0 | 1,438 |
| Reno-Sparks | 231,651 | 0 | 231,651 |
| Verdi | 2,465 | 0 | 2,465 |
| Total | 254,020 | 647 | 254,667 |
| Percentage of Population | 99.75% | 0.25% | 100.00% |

Table 4.1-8. Population In and Out of the Region for Pershing County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|---------------------------------|--|--|--|
| Inley | 0 | 1,104 | 1,104 |
| Lowieck | 0 | 3,232 | 3,232 |
| Total | 0 | 4,336 | 4,336 |
| Percentage of Population | 0.00% | 100.00% | 100.00% |

Table 4.1-9. Population In and Out of the Region for Storey County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|--|--|--|
| Clark | 700 | 0 | 700 |
| Virginia City | 0 | 1,826 | 1,826 |
| Total | 700 | 1,826 | 2,526 |
| Percentage of Population | 27.71% | 72.29% | 100.00% |

Table 4.1-10. Population In and Out of the Region for Lyon County.

| County Subdivision | County Population in the Region all persons | County Population out of the Region all persons | Total County Population all persons |
|--------------------------|--|--|--|
| Dayton | 0 | 4,321 | 4,321 |
| Fernley | 5,188 | 0 | 5,188 |
| Silver Springs | 0 | 3,261 | 3,261 |
| Smith | 0 | 1,139 | 1,139 |
| Yerington | 0 | 6,692 | 6,692 |
| Total | 5,188 | 14,013 | 20,001 |
| Percentage of Population | 25.94% | 74.06% | 100.00% |

Table 4.1-11. Population In and Out of the Region for Carson City.

| County Subdivision | County Population in the Region <i>all persons</i> | County Population out of the Region <i>all persons</i> | Total County Population <i>all persons</i> |
|--------------------------|---|---|---|
| Carson City | 0 | 40,443 | 40,443 |
| Total | 0 | 40,443 | 40,443 |
| Percentage of Population | 0.00% | 100.00% | 100.00% |

Table 4.1-12. Population In and Out of the Region for Douglas County.

| County Subdivision | County Population in the Region <i>all persons</i> | County Population out of the Region <i>all persons</i> | Total County Population <i>all persons</i> |
|--------------------------|---|---|---|
| Oaktonville-Minden | 0 | 15,639 | 15,639 |
| Osage-Jacks Valley | 0 | 4,158 | 4,158 |
| Pine Hill | 0 | 296 | 296 |
| Topaz Lake | 0 | 1,429 | 1,429 |
| Zephyr Cove | 6,115 | 0 | 6,115 |
| Total | 6,115 | 21,522 | 27,637 |
| Percentage of Population | 22.12% | 77.87% | 100.00% |

Table 4.1-13. Population In and Out of the Region by County for Nevada.

| County | County Population in the Region <i>all persons</i> | County Population out of the Region <i>all persons</i> | Total County Population <i>all persons</i> |
|--------------------------|--|--|---|
| Washoe | 254,020 | 647 | 254,667 |
| Pershing | 0 | 4,336 | 4,336 |
| Storey | 700 | 1,826 | 2,526 |
| Lyon | 5,188 | 14,813 | 20,001 |
| Carson City | 0 | 40,443 | 40,443 |
| Douglas | 6,115 | 21,522 | 27,637 |
| Total | 266,023 | 83,581 | 349,610 |
| Percentage of Population | 96.09% | 23.91% | 100.00% |

Table 4.1-14. Population for the Region by County and by State.

| County | California Population in the Region <i>all persons</i> | Nevada Population in the Region <i>all persons</i> | Total Population in the Region <i>all persons</i> | Percentage of Population |
|--------------------------|--|--|---|--------------------------------|
| Sierra | 1,029 | | 1,029 | 0.64% |
| Nevada | 9,420 | | 9,420 | 2.98% |
| Piute | 9,257 | | 9,257 | 2.93% |
| El Dorado | 29,652 | | 29,652 | 9.37% |
| Alpine | 0 | | 0 | 0.00% |
| Washoe | | 254,020 | 254,020 | 80.29% |
| Pershing | | 0 | 0 | 0.00% |
| Storey | | 700 | 700 | 0.22% |
| Lyon | | 5,188 | 5,188 | 1.64% |
| Carson City | | 0 | 0 | 0.00% |
| Douglas | | 6,115 | 6,115 | 1.93% |
| Total | 50,358 | 266,023 | 316,381 | 100.00% |
| Percentage of Population | 15.92% | 84.08% | 100.00% | |

Economic Sectors

There are twenty economic sectors within the economy of the region. A sector is an aggregation of individual business enterprises, firms, establishments, or activities which produce the same or similar products, or which purchase the same inputs to use in production. Each economic sector is listed with a definition in Table 4.1-15. These sectors include agriculture sectors and non-agriculture sectors. The agriculture sectors are livestock production, dairy production, alfalfa hay production, other hay production, and barley production. The non-agriculture sectors are agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households. Agricultural services is included in the non-agriculture sectors because it isn't a agriculture production sector in the sense of producing a crop or commodity. Their sector definitions are based on standard industrial codes taken from the *Standard Industrial Classification Manual*. This manual is published by the Executive Office of the President, Office of Management and Budget.

State government is not included as one of the twenty sectors mentioned above. In splitting the state and local government sector apart an adjustment factor was necessary. This factor is based on the state and local government employment data by state given in Table 4.1-16 and the distribution of state and local government employment by state presented in Table 4.1-17.

Table 4.1-15. Economic Sector Definitions.

| Economic Sector | Definition |
|--|---|
| 1 Livestock Production | Livestock production sector accounts for cattle production. |
| 2 Dairy Production | Dairy production sector accounts for milk production. |
| 3 Alfalfa Hay Production | Alfalfa hay production sector accounts for alfalfa hay production. |
| 4 Other Hay Production | Other hay production sector accounts for hay production other than alfalfa hay. |
| 5 Barley Production | Barley production sector accounts for barley production. |
| 6 Agricultural Services | Agricultural services sector accounts for veterinary services, and, landscape and horticultural services. |
| 7 Gold Mining | Gold mining sector accounts for mining of gold and silver ores. |
| 8 Other Mining | Other mining sector accounts for mining geothermal energy, autonomous earth, clay, and gravel. |
| 9 Construction | Construction sector accounts for general building, heavy construction, and special trade contractors. |
| 10 Manufacturing | Manufacturing sector accounts for manufacturing of food products, wood products, furniture, paper products, printing, publishing, chemical products, petroleum products, plastic products, stone products, clay products, glass products, fabricated metal products, industry equipment, electronic equipment, transportation equipment, and instruments. |
| 11 Transportation and Communications | Transportation and communications sector accounts for railroad transportation, trucking, warehousing, air transportation, passenger transit, transportation services, and communications. |
| 12 Utilities | Utilities sector accounts for electric, gas, and sanitary services. |
| 13 Trade | Trade sector accounts for wholesale and retail trade. Wholesale trade is trade of durable and non-durable goods. Retail trade is trade of building materials, garden supplies, general merchandise stores, food stores, automotive dealers, service stations, apparel stores, and furniture stores. |
| 14 Eating, Drinking, and Lodging | Eating, drinking, and lodging sector accounts for non-casino restaurants, bars, hotels, and motels. |
| 15 Finance, Insurance, and Real Estate | Finance, insurance, and real estate sector accounts for depository institutions, non-depository institutions, security brokers, commodity brokers, insurance carriers, insurance agents, investment brokers, real estate, and investment offices. |
| 16 Services | Services sector accounts for personal services, business services, repair services, motion pictures, recreation, legal services, educational services, social services, business, membership organizations, engineering services, and management services. |
| 17 Hotels, Gaming, and Recreation | Hotels, gaming, and recreation sector accounts for casinos. |
| 18 Health | Health sector accounts for medical and dental services. |
| 19 Local Government | Local government sector accounts for local government activities of public administration, police protection, fire protection, public works, school district, finance, taxation, human resource programs, environmental quality programs, housing programs, and economic programs. |
| 20 Households | Household sector accounts for consumers. |

Table 4.1-16. State and Local Government Employment by State.

| | California jobs | Nevada jobs |
|----------------------------|--------------------|----------------|
| Local Government | 1,183,867 | 32,434 |
| State Government | 348,258 | 15,857 |
| State and Local Government | 1,532,125 | 55,291 |

Table 4.1-17. Distribution of State and Local Government Employment by State.

| | California jobs | Nevada jobs |
|----------------------------|--------------------|----------------|
| Local Government | 77.27% | 59.51% |
| State Government | 22.73% | 30.49% |
| State and Local Government | 100.00% | 100.00% |

4.2. Collection of the Control Total Data

Control total data was collected for output, employment, income, population, housing, agriculture water use, commercial water use, and residential water use.

Output

Output is the total gross output for each economic sector. Total gross output includes total value of sales and additions to inventories. Output is also referred to as the total value of intermediate plus final goods produced in the economy. The opposite of output is total gross outlay. Total gross outlay includes total value of purchases and depletion's from inventories. Total gross outlay is commonly called input.

Output by Agriculture Sector

Data to estimate the output by agriculture sector was provided by the California Department of Food and Agriculture and the Nevada Agricultural Statistics Service.

Output for the livestock, dairy, alfalfa hay, other hay, and barley production were taken from *California Livestock and Crop Report* and the *Nevada Agricultural Statistics Bulletin*. Livestock and dairy production are value of production based on marketing receipts from sales of cattle and milk. Alfalfa hay, other hay, and barley production are value of production based on crop yields and season prices.

The estimated value of production by commodity for both California and Nevada are provided in Tables 4.2-1 through 4.2-5. Output by agriculture sector for the region by state is then given in Table 4.2-6. Within the region the total agriculture production output for California is \$2,092,000 and \$3,123,153 for Nevada. Total agriculture output for the region is \$5,215,455.

Table 4.2-1. Value of Livestock Production for the Region by State.

| | California | Nevada | Total |
|-----------------------------------|-------------|-------------|-------------|
| Acres of Pasture | 7,217 | 7,334 | 14,551 |
| Number of Beef Cows per Acre | 0.50 | 0.50 | |
| Number of Beef Cows | 3,609 | 3,667 | 7,276 |
| Calf Crop Percentage | 0.90 | 0.90 | |
| Average Weight of Calves | 600 | 600 | |
| Average Price of Calves per Pound | 0.85 | 0.85 | |
| Value of Production | \$1,656,302 | \$1,683,153 | \$3,339,455 |

Table 4.2-2. Value of Dairy Production for the Region by State.

| | California | Nevada | Total |
|---|------------|-----------|-----------|
| Number of Dairy Cows | 0 | 500 | 500 |
| Pounds of Milk per Cow | 0 | 14,000 | |
| Average Price of Milk per Hundredweight | 0.00 | 12.00 | |
| Value of Production | 0 | \$960,000 | \$960,000 |

Table 4.2-3. Value of Alfalfa Hay Production for the Region by State.

| | California | Nevada | Total |
|----------------------|------------|-----------|-----------|
| Acres of Alfalfa Hay | 300 | 300 | 300 |
| Tons per Acre | 4.00 | 4.00 | |
| Price per Ton | 100.00 | 100.00 | |
| Value of Production | \$120,000 | \$208,000 | \$328,000 |

Table 4.2-4. Value of Other Hay Production for the Region by State.

| | California | Nevada | Total |
|---------------------|------------|-----------|-----------|
| Acres of Other Hay | 2,000 | 2,000 | 4,000 |
| Tons per Acre | 2.00 | 2.00 | |
| Price per Ton | 70.00 | 70.00 | |
| Value of Production | \$280,000 | \$280,000 | \$560,000 |

Table 4.2-5. Value of Barley Production for the Region by State.

| | California | Nevada | Total |
|---------------------|------------|--------|----------|
| Acres of Barley | 200 | 0 | 200 |
| Tons per Acre | 2.00 | 0.00 | |
| Price per Ton | 90.00 | 0.00 | |
| Value of Production | \$36,000 | \$0 | \$36,000 |

Table 4.2-6. Output by Agriculture Sector for the Region by State.

| Agriculture Sector | California \$ | Nevada \$ | Total \$ |
|--------------------------|--------------------|--------------------|--------------------|
| 1 Livestock Production | 1,656,302 | 1,683,153 | 3,339,455 |
| 2 Dairy Production | 0 | 960,000 | 960,000 |
| 3 Alfalfa Hay Production | 120,000 | 200,000 | 320,000 |
| 4 Other Hay Production | 280,000 | 280,000 | 560,000 |
| 5 Barley Production | 36,000 | 0 | 36,000 |
| Total | \$2,092,302 | \$3,123,153 | \$5,215,455 |

Output by Non-Agriculture Sector

Data to estimate the output by non-agriculture sector was provided by IMPLAN, the Nevada Department of Taxation, U.S. Department of Commerce, Bureau of the Census, and Bureau of Economic Analysis.

Output for all the non-agriculture sectors for the California counties was taken entirely from IMPLAN data. However, output for the non-agriculture sectors in the Nevada counties were taken from all sources. Output for agricultural services was taken from IMPLAN. Gold mining and other mining output are gross proceeds of mines taken from *Nevada Net Proceeds of Minerals*. This is a report published by the Nevada Department of Taxation. Construction output is the dollar value of construction business taken from the *Census of Construction Industries*. The dollar value of manufacturing shipments is the output for manufacturing. This is taken from the *Census of Manufacturers*. Transportation and communications and utilities industry output are taken from IMPLAN. Output for trade is all wholesale and retail trade sales except for sales to eating and drinking places. These are taken from the *Census of Wholesale Trade* and *Census of Retail Trade*. The trade output is marginalized to 25% to reflect that only the mark-up on items remains in the region. Hotels, gaming, and recreation output is total receipts from hotels with greater than 25 rooms taken from the *Census of Service Industries*. Output for eating, drinking, and lodging is the total receipts from hotels with fewer than 25 rooms and sales to eating and drinking places. This is taken from the *Census of Service Industries* and *Census of Retail Trade*. Finance, insurance, and real estate output is taken from IMPLAN. The insurance portion of the output is marginalized to 11% to represent that only a portion of the insurance premium stays in the region. Output for services is total receipts for services less total receipts for hotels and health services. This is taken from the *Census of Service Industries*. Output for health is total receipts for health services taken from the *Census of Service Industries*. Local government output is expenditures by local government taken from *Census of Governments*. Output for households is wages, salaries, other labor income, proprietors income, dividends, interest, rent, and government transfer payments. These are taken from the *Regional Economic Information System* of the Bureau of Economic Analysis.

All the data for the output of the non-agriculture sectors in the California and Nevada counties needed to be adjusted to the region. For California, the output data was taken from IMPLAN at the county level and was adjusted to the region by the portion of county population that lives within the region. For Nevada, the output data was given at the state level. This data was adjusted to the county level by the portion of county industry earnings taken from *Regional Economic Information System* of the Bureau of Economic Analysis. The county level data was then adjusted to the region based on the portion of county population that lives within the region. Also the state and local government sector output needed to be adjusted to only a local government sector output

for the California and Nevada counties. This was done by using the percentage of local government employment mention above in Tables 4.1-16 and 4.1-17.

For the California counties, output by non-agriculture sector by county is shown in Table 4.2-7. This output was adjusted to the region using the population percentage for the region by county in Table 4.2-8. The state and local government sector output was adjusted to only a local government sector output using the local government employment percentage for the region by county given in Table 4.2-9. The output for the non-agriculture sectors for the region by county is then presented in Table 4.2-10.

The total output for the non-agriculture sectors for the region by county for California is \$1,988,979,271. El Dorado county generates \$1,027,501,153 in output and is followed by Placer county with \$494,028,807, Nevada county with \$397,731,745, and Sierra county with \$69,717,566. Alpine county doesn't generate any output within the region.

For the Nevada counties, output by non-agriculture sector by county is shown in Table 4.2-11. This output was adjusted to the region using the population percentage for the region by county in Table 4.2-12. The state and local government sector output was adjusted to only a local government sector output using the local government employment percentage for the region by county given in Table 4.2-13. The output for the non-agriculture sectors for the region by county is then presented in Table 4.2-14.

The total output for the non-agriculture sectors for the region by county for Nevada is \$15,863,076,554. Washoe county generates \$15,252,709,168 in output and is followed by Douglas county with \$432,003,277, Lyon county with \$159,955,163, and Storey county with \$18,408,947. Pershing county and Carson City do not generate any output within the region.

Output by non-agriculture sector for the region by state is given in Table 4.2-15. Total output for both states is \$17,852,055,825. Of this amount, \$1,988,979,271 is generated in California and \$15,863,076,554 is generated in Nevada.

Table 4.2-7. Output by Non-Agriculture Sector by County for California.

| Non-Agriculture Sector | Sierra County \$ | Nevada County \$ | Placer County \$ | El Dorado County \$ | Alpine County \$ | Total \$ |
|--|------------------------|------------------------|------------------------|---------------------------|------------------------|----------------|
| 6 Agricultural Services | 285,004 | 5,812,830 | 34,768,350 | 14,477,052 | 373,277 | 55,636,513 |
| 7 Gold Mining | 1,651,487 | 478,645 | 3,844,218 | 456,323 | 1,807,838 | 8,248,500 |
| 8 Other Mining | 3,529,341 | 18,324,510 | 17,236,828 | 11,492,467 | 873,854 | 43,386,432 |
| 9 Construction | 5,638,936 | 432,733,100 | 1,052,699,000 | 573,332,169 | 3,748,892 | 2,058,172,097 |
| 10 Manufacturing | 23,228,780 | 397,622,980 | 813,776,509 | 259,813,966 | 2,130,323 | 1,516,572,469 |
| 11 Transportation and Communications | 6,981,680 | 34,746,420 | 374,392,208 | 73,793,737 | 249,050 | 490,163,087 |
| 12 Utilities | 813,584 | 46,638,520 | 199,325,909 | 42,443,690 | 856,087 | 329,879,781 |
| 13 Trade | 2,178,238 | 177,657,300 | 510,319,800 | 289,784,688 | 2,373,338 | 962,697,536 |
| 14 Eating, Drinking, and Lodging | 923,348 | 48,517,400 | 141,397,200 | 166,708,900 | 926,495 | 338,473,335 |
| 15 Finance, Insurance, and Real Estate | 5,805,943 | 413,653,100 | 1,213,433,600 | 686,543,408 | 2,286,682 | 2,242,928,133 |
| 16 Services | 3,469,896 | 274,931,900 | 705,719,600 | 338,931,178 | 4,513,366 | 1,333,368,134 |
| 17 Hotels, Gaming, and Recreation | 948,150 | 34,127,440 | 99,643,470 | 167,697,319 | 13,708,220 | 256,124,599 |
| 18 Health | 948,778 | 186,873,900 | 462,333,400 | 191,448,320 | 374,667 | 821,979,065 |
| 19 State and Local Government Sector | 11,049,650 | 87,733,150 | 239,144,700 | 157,017,800 | 2,979,543 | 499,924,643 |
| 20 Household Sector (1) | 42,195,316 | 1,202,940,384 | 3,346,131,873 | 1,587,787,317 | 20,994,684 | 6,200,049,734 |
| Total | 116,974,331 | 3,334,795,119 | 9,276,158,423 | 4,401,669,526 | 58,201,536 | 17,187,799,561 |

1. The county totals for the household sector were adjusted upward to the same proportion of the county total as for the county totals for the household sector for Nevada.

Table 4.2-8. Population Percentage for the Region by County for California.

| | Sierra County | Nevada County | Placer County | El Dorado County | Alpine County |
|-----------------------|------------------|------------------|------------------|---------------------|------------------|
| Population Percentage | 61.15% | 12.00% | 5.36% | 23.53% | 0.00% |

Table 4.2-9. Local Government Employment Percentage for the Region by County for California.

| | Sierra County | Nevada County | Placer County | El Dorado County | Alpine County |
|-----------------------|------------------|------------------|------------------|---------------------|------------------|
| Employment Percentage | 77.27% | 77.27% | 77.27% | 77.27% | 77.27% |

Table 4.2-10. Output by Non-Agriculture Sector for the Region by County for California.

| Non-Agriculture Sector | Sierra County \$ | Nevada County \$ | Placer County \$ | El Dorado County \$ | Alpine County \$ | Total \$ |
|--|------------------------|------------------------|------------------------|---------------------------|------------------------|----------------------|
| 6 Agricultural Services | 125,363 | 697,453 | 1,362,645 | 3,407,068 | 0 | 6,692,488 |
| 7 Gold Mining | 1,013,575 | 57,430 | 205,941 | 107,392 | 0 | 1,384,339 |
| 8 Other Mining | 2,158,385 | 1,238,783 | 922,839 | 2,690,547 | 0 | 7,010,545 |
| 9 Construction | 3,447,059 | 51,921,598 | 56,395,004 | 134,934,232 | 0 | 246,697,913 |
| 10 Manufacturing | 14,204,700 | 47,708,670 | 44,666,943 | 61,145,313 | 0 | 167,725,626 |
| 11 Transportation and Communications | 4,269,188 | 4,169,099 | 20,056,889 | 17,366,815 | 0 | 45,862,122 |
| 12 Utilities | 576,438 | 5,395,810 | 10,678,256 | 19,402,518 | 0 | 36,053,123 |
| 13 Trade | 1,576,626 | 21,316,161 | 27,338,729 | 63,487,141 | 0 | 113,718,656 |
| 14 Eating, Drinking, and Lodging | 564,634 | 5,821,346 | 9,717,782 | 25,113,138 | 0 | 41,216,901 |
| 15 Finance, Insurance, and Real Estate | 3,061,199 | 49,632,289 | 63,113,682 | 142,746,017 | 0 | 260,552,597 |
| 16 Services | 3,790,960 | 32,947,626 | 37,806,699 | 84,471,823 | 0 | 161,057,108 |
| 17 Hotels, Gaming, and Recreation | 579,806 | 4,694,771 | 3,338,181 | 25,345,725 | 0 | 34,358,543 |
| 18 Health | 580,190 | 20,022,317 | 24,768,052 | 45,055,959 | 0 | 90,426,518 |
| 19 Local Government Sector | 6,146,138 | 8,133,891 | 9,899,336 | 28,533,264 | 0 | 52,712,650 |
| 20 Household Sector | 25,803,185 | 144,334,460 | 179,258,448 | 375,674,130 | 0 | 725,070,123 |
| Total | 69,717,566 | 397,731,745 | 494,028,807 | 1,027,501,133 | 0 | 1,988,979,271 |
| Total with State Government | 71,531,454 | 400,124,491 | 496,948,893 | 1,035,900,669 | 0 | 2,004,497,511 |

Table 4.2-11. Output by Non-Agriculture Sector by County for Nevada.

| Non-Agriculture Sector | Washoe County | Pershing County | Storey County | Lyon County | Carson City | Douglas County | Total |
|--|-----------------------|--------------------|-------------------|--------------------|----------------------|----------------------|-----------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 6 Agricultural Services | 45,828,752 | 878,000 | 0 | 3,358,000 | 4,357,000 | 3,660,000 | 57,281,752 |
| 7 Gold Mining | 47,694,393 | 27,052,000 | 8,354,000 | 6,414,000 | 15,000 | 24,000 | 150,693,393 |
| 8 Other Mining | 5,386,970 | 9,845,000 | 1,081,000 | 725,000 | 2,000 | 3,000 | 17,042,970 |
| 9 Construction | 1,151,593,588 | 3,379,000 | 1,698,000 | 64,792,000 | 181,662,000 | 126,659,000 | 1,529,783,588 |
| 10 Manufacturing | 1,130,876,426 | 5,224,000 | 5,253,000 | 122,549,000 | 384,229,000 | 155,799,000 | 1,803,870,426 |
| 11 Transportation and Communications | 686,062,413 | 1,340,000 | 0 | 17,456,000 | 27,185,000 | 28,470,000 | 752,333,413 |
| 12 Utilities | 386,761,890 | 12,326,000 | 0 | 28,675,000 | 32,223,000 | 13,770,000 | 471,755,890 |
| 13 Trade | 1,305,354,494 | 1,724,000 | 3,302,000 | 26,306,000 | 138,739,000 | 45,681,000 | 1,519,508,494 |
| 14 Eating, Drinking, and Lodging | 235,137,545 | 3,924,000 | 5,832,000 | 5,934,000 | 33,597,000 | 24,351,000 | 388,799,545 |
| 15 Finance, Insurance, and Real Estate | 1,094,172,000 | 1,794,000 | 0 | 18,994,000 | 84,854,000 | 112,479,000 | 1,312,297,000 |
| 16 Services | 1,414,656,682 | 3,902,000 | 6,156,000 | 35,651,000 | 155,209,000 | 184,358,000 | 1,819,952,682 |
| 17 Hotels, Gaming, and Recreation | 1,218,728,991 | 656,900 | 0 | 779,000 | 28,631,000 | 536,342,000 | 1,777,375,991 |
| 18 Health | 572,526,698 | 683,900 | 0 | 3,982,000 | 49,862,000 | 15,182,809 | 641,435,698 |
| 19 State and Local Government Sector | 919,056,918 | 15,365,644 | 6,183,086 | 43,793,740 | 402,569,521 | 74,116,468 | 1,452,085,377 |
| 20 Household Sector | 5,772,837,000 | 77,434,000 | 29,256,000 | 254,586,000 | 874,455,080 | 741,779,800 | 7,754,347,000 |
| Total | 13,368,014,639 | 231,428,644 | 58,313,086 | 630,012,740 | 2,394,713,521 | 1,975,053,468 | 20,068,543,118 |

Table 4.2-12. Population Percentage for the Region by County for Nevada.

| | Washoe County | Pershing County | Storey County | Lyon County | Carson City | Douglas County |
|-----------------------|------------------|--------------------|------------------|----------------|----------------|-------------------|
| Population Percentage | 99.79% | 0.00% | 27.71% | 15.94% | 0.00% | 22.13% |

Table 4.2-13. Local Government Employment Percentage for the Region by County for Nevada.

| | Washoe County | Pershing County | Storey County | Lyon County | Carson City | Douglas County |
|-----------------------|------------------|--------------------|------------------|----------------|----------------|-------------------|
| Employment Percentage | 69.51% | 69.51% | 69.51% | 69.51% | 69.51% | 69.51% |

Table 4.2-14. Output by Non-Agriculture Sector for the Region by County for Nevada.

| Economic Sector | Washoe County \$ | Pershing County \$ | Storey County \$ | Lyon County \$ | Carson City \$ | Douglas County \$ | Total \$ |
|--|-----------------------|-----------------------|---------------------|--------------------|-------------------|----------------------|-----------------------|
| 6 Agricultural Services | 44,914,353 | 0 | 0 | 871,022 | 0 | 809,117 | 46,595,191 |
| 7 Gold Mining | 47,513,374 | 0 | 2,647,585 | 1,663,708 | 0 | 3,310 | 51,829,978 |
| 8 Other Mining | 5,373,284 | 0 | 299,563 | 188,056 | 0 | 664 | 5,861,568 |
| 9 Construction | 1,148,667,881 | 0 | 470,546 | 16,806,204 | 0 | 28,034,742 | 1,193,969,373 |
| 10 Manufacturing | 1,128,803,352 | 0 | 1,455,701 | 31,787,621 | 0 | 34,459,023 | 1,195,705,696 |
| 11 Transportation and Communications | 684,318,422 | 0 | 0 | 4,527,869 | 0 | 4,529,230 | 693,376,521 |
| 12 Utilities | 381,779,283 | 0 | 0 | 3,363,827 | 0 | 3,046,769 | 394,189,879 |
| 13 Trade | 1,301,237,548 | 0 | 913,044 | 4,822,433 | 0 | 16,151,693 | 1,323,127,719 |
| 14 Eating, Drinking, and Lodging | 234,540,161 | 0 | 1,616,132 | 1,545,428 | 0 | 5,387,935 | 243,089,676 |
| 15 Finance, Insurance, and Real Estate | 1,091,392,177 | 0 | 0 | 4,926,797 | 0 | 24,887,256 | 1,121,206,230 |
| 16 Services | 1,012,078,873 | 0 | 1,705,938 | 9,247,407 | 0 | 23,090,392 | 1,046,122,611 |
| 17 Hotels, Gaming, and Recreation | 1,207,653,046 | 0 | 0 | 301,809 | 0 | 111,724,859 | 1,320,679,714 |
| 18 Health | 571,072,132 | 0 | 0 | 1,032,879 | 0 | 3,359,190 | 575,464,221 |
| 19 Local Government Sector | 630,993,573 | 0 | 1,191,053 | 7,896,260 | 0 | 11,399,383 | 651,480,271 |
| 20 Household Sector | 3,734,170,689 | 0 | 8,107,363 | 67,973,835 | 0 | 164,127,025 | 5,997,478,931 |
| Total | 15,252,789,168 | 0 | 13,458,947 | 159,953,163 | 0 | 432,083,277 | 15,863,076,554 |
| Total with State Government | 16,051,813,407 | 0 | 13,931,338 | 163,736,518 | 0 | 448,914,607 | 16,685,438,070 |

Table 4.2-15. Output by Non-Agriculture Sector for the Region by State.

| Non-Agriculture Sector | California \$ | Nevada \$ | Total \$ |
|--|----------------------|-----------------------|-----------------------|
| 6 Agricultural Services | 6,092,488 | 46,595,191 | 52,687,679 |
| 7 Gold Mining | 1,384,339 | 51,829,978 | 53,214,316 |
| 8 Other Mining | 7,018,545 | 5,861,568 | 12,872,113 |
| 9 Construction | 246,697,913 | 1,193,969,373 | 1,440,667,287 |
| 10 Manufacturing | 167,725,626 | 1,195,701,696 | 1,363,431,322 |
| 11 Transportation and Communications | 45,862,122 | 693,376,502 | 739,238,624 |
| 12 Utilities | 36,053,171 | 394,188,879 | 430,242,050 |
| 13 Trade | 113,718,656 | 1,320,127,719 | 1,433,846,375 |
| 14 Eating, Drinking, and Lodging | 41,216,921 | 243,089,676 | 284,306,597 |
| 15 Finance, Insurance, and Real Estate | 260,152,997 | 1,121,206,230 | 1,381,758,027 |
| 16 Services | 161,857,108 | 1,046,122,611 | 1,207,179,719 |
| 17 Hotels, Gaming, and Recreation | 33,338,543 | 1,326,579,788 | 1,361,934,251 |
| 18 Health | 90,426,518 | 575,464,221 | 665,890,740 |
| 19 Local Government | 52,752,658 | 651,480,271 | 704,232,921 |
| 20 Households | 723,070,129 | 5,997,478,931 | 6,720,549,054 |
| Total | 1,988,979,271 | 13,863,076,554 | 17,852,055,825 |

Output by Economic Sector

Output by economic sector for the region by state is presented in Table 4.2-16. The agriculture sectors are combined with the non-agriculture sectors. Total output for the region is \$17,857,271,279. Of this amount, \$1,991,071,572 is generated in California and \$15,866,199,707 is generated in Nevada.

Table 4.2-16. Output by Economic Sector for the Region by State.

| Economic Sector | California \$ | Nevada \$ | Total \$ |
|--|------------------|----------------|----------------|
| 1 Livestock Production | 1,656,302 | 1,683,133 | 3,339,435 |
| 2 Dairy Production | 0 | 960,000 | 960,000 |
| 3 Alfalfa Hay Production | 120,000 | 200,000 | 320,000 |
| 4 Other Hay Production | 200,000 | 200,000 | 560,000 |
| 5 Barley Production | 36,000 | 0 | 36,000 |
| 6 Agricultural Services | 6,092,488 | 46,595,191 | 52,687,679 |
| 7 Gold Mining | 1,304,339 | 51,829,978 | 53,214,316 |
| 8 Other Mining | 7,010,545 | 5,861,566 | 12,872,113 |
| 9 Construction | 246,007,913 | 1,193,969,373 | 1,440,667,287 |
| 10 Manufacturing | 167,725,626 | 1,193,705,696 | 1,363,431,322 |
| 11 Transportation and Communications | 45,862,122 | 693,376,502 | 739,238,624 |
| 12 Utilities | 36,053,121 | 394,188,879 | 430,242,000 |
| 13 Trade | 113,718,636 | 1,320,121,719 | 1,433,840,375 |
| 14 Eating, Drinking, and Lodging | 41,216,921 | 243,089,636 | 284,306,597 |
| 15 Finance, Insurance, and Real Estate | 260,392,597 | 1,121,204,230 | 1,381,758,827 |
| 16 Services | 161,657,808 | 1,046,122,611 | 1,207,179,719 |
| 17 Hotels, Gaming, and Recreation | 33,338,543 | 1,326,579,700 | 1,361,938,251 |
| 18 Health | 80,406,518 | 575,464,221 | 655,890,740 |
| 19 Local Government | 52,732,630 | 651,480,271 | 704,232,921 |
| 20 Households | 723,070,123 | 5,997,478,951 | 6,720,549,054 |
| Total | 1,981,071,572 | 13,866,199,707 | 17,817,271,279 |

Employment

Employment is the number of full-time and part-time employees. Employment is measured by the number of jobs by place of work by economic sector.

Employment by Agriculture Sector

Data to estimate the employment by agriculture sector was provided by IMPLAN and the Bureau of Economic Analysis.

Employment for agriculture sectors in the California counties were taken from IMPLAN to correspond to the output numbers mentioned above. Employment for the Nevada counties were taken from the *Regional Economic Information System* of the Bureau of Economic Analysis.

The employment by agriculture sector for the region by state is shown in Table 4.2-17. Total employment is 101 jobs. Of these jobs, 39 jobs are in California and 62 jobs are in Nevada.

Table 4.2-17. Employment by Agriculture Sector for the Region by State.

| Economic Sector | California jobs | Nevada jobs | Total jobs |
|--------------------------|----------------------------|------------------------|-----------------------|
| 1 Livestock Production | 31 | 32 | 63 |
| 2 Dairy Production | 0 | 31 | 31 |
| 3 Alfalfa Hay Production | 2 | 4 | 6 |
| 4 Other Hay Production | 5 | 5 | 10 |
| 5 Barley Production | 1 | 0 | 1 |
| Total | 39 | 62 | 101 |

Employment by Non-Agriculture Sector

Data to estimate the employment by non-agriculture sector was provided by IMPLAN and the Bureau of Economic Analysis.

Employment for the non-agriculture sectors in the California counties were again taken from IMPLAN to correspond to the output numbers mentioned above. Employment for the Nevada counties were again taken from the *Regional Economic Information System* of the Bureau of Economic Analysis.

For the California counties, employment by non-agriculture sector by county is shown in Table 4.2-18. This employment was adjusted to the region using the population percentage for the region by county in Table 4.2-8. The state and local government sector employment was adjusted to only a local government sector employment using the local government employment percentage for the region by county given in Table 4.2-9. The employment by non-agriculture sector for the region by county is then presented in Table 4.2-19.

The total employment for the non-agriculture sectors for the region by county for California is 19,620 jobs. El Dorado county has 10,355 jobs followed by Placer county with 4,589 jobs, Nevada county with 3,887 jobs, and Sierra county with 789 jobs. Alpine county didn't have any jobs within the region.

For the Nevada counties, employment by non-agriculture sector by county is shown in Table 4.2-20. This employment was adjusted to the region using the population percentage for the region by county in Table 4.2-12. The state and local government sector employment was adjusted to only a local government sector employment using the local government employment percentage for the region by county given in Table 4.2-13. The employment by non-agriculture sector for the region by county is then presented in Table 4.2-21.

The total employment for the non-agriculture sectors for the region by county for Nevada is 168,400 jobs. Washoe county has 161,640 jobs followed by Douglas county with 4,800 jobs, Lyon county with 1,733 jobs, and Storey county with 227 jobs. Pershing county and Carson City did not have any jobs within the region.

Employment by non-agriculture sectors for the region by state is given in Table 4.2-22. Total employment for both states is 188,020 jobs. Of this amount, 19,620 jobs are in California and 168,400 jobs are in Nevada.

Table 4.2-18. Employment by Non-Agriculture Sector by County for California.

| Non-Agriculture Sector | Sierra County jobs | Nevada County jobs | Placer County jobs | El Dorado County jobs | Alpine County jobs | Total jobs |
|--|--------------------------|--------------------------|--------------------------|-----------------------------|--------------------------|----------------|
| 6 Agricultural Services | 5 | 169 | 877 | 395 | 7 | 1,453 |
| 7 Gold Mining | 8 | 2 | 21 | 2 | 6 | 39 |
| 8 Other Mining | 7 | 34 | 26 | 93 | 1 | 211 |
| 9 Construction | 70 | 5,023 | 11,314 | 6,244 | 44 | 22,695 |
| 10 Manufacturing | 198 | 3,169 | 1,579 | 2,220 | 8 | 13,174 |
| 11 Transportation and Communications | 177 | 427 | 3,172 | 784 | 4 | 4,564 |
| 12 Utilities | 3 | 167 | 562 | 271 | 4 | 1,007 |
| 13 Trade | 114 | 4,953 | 12,646 | 7,123 | 39 | 24,875 |
| 14 Eating, Drinking, and Lodging | 35 | 1,732 | 6,342 | 3,894 | 29 | 11,732 |
| 15 Finance, Insurance, and Real Estate | 8 | 4,027 | 18,061 | 4,554 | 9 | 18,659 |
| 16 Services | 243 | 5,294 | 13,465 | 4,620 | 55 | 25,717 |
| 17 Hotels, Gaming, and Recreation | 30 | 1,443 | 3,700 | 3,974 | 416 | 9,563 |
| 18 Health | 25 | 3,535 | 8,933 | 3,907 | 7 | 16,407 |
| 19 State and Local Government Sector | 476 | 3,130 | 9,052 | 5,329 | 123 | 18,110 |
| 20 Household Sector | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1,398 | 30,105 | 87,720 | 45,210 | 792 | 168,226 |

Table 4.2-19. Employment by Non-Agriculture Sector for the Region by County for California.

| Non-Agriculture Sector | Sierra County jobs | Nevada County jobs | Pleasant County jobs | El Dorado County jobs | Alpine County jobs | Total jobs |
|--|--------------------------|--------------------------|----------------------------|-----------------------------|--------------------------|---------------|
| 6 Agricultural Services | 3 | 20 | 47 | 91 | 0 | 163 |
| 7 Gold Mining | 5 | 0 | 1 | 0 | 0 | 7 |
| 8 Other Mining | 4 | 4 | 4 | 22 | 0 | 34 |
| 9 Construction | 43 | 603 | 606 | 1,469 | 0 | 2,721 |
| 10 Manufacturing | 121 | 388 | 406 | 522 | 0 | 1,437 |
| 11 Transportation and Communications | 108 | 51 | 170 | 185 | 0 | 514 |
| 12 Utilities | 3 | 28 | 30 | 64 | 0 | 125 |
| 13 Trade | 70 | 594 | 677 | 1,676 | 0 | 3,017 |
| 14 Eating, Drinking, and Lodging | 21 | 208 | 335 | 869 | 0 | 1,433 |
| 15 Finance, Insurance, and Real Estate | 5 | 483 | 539 | 1,072 | 0 | 2,099 |
| 16 Services | 149 | 635 | 721 | 1,558 | 0 | 3,063 |
| 17 Hotels, Gaming, and Recreation | 18 | 173 | 198 | 935 | 0 | 1,324 |
| 18 Health | 15 | 424 | 479 | 919 | 0 | 1,837 |
| 19 Local Government Sector | 223 | 290 | 375 | 969 | 0 | 1,857 |
| 20 Household Sector | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 789 | 3,827 | 4,589 | 10,355 | 0 | 19,559 |
| Total with State Government | 856 | 3,972 | 4,699 | 10,640 | 0 | 20,167 |

Table 4.2-20. Employment by Non-Agriculture Sector by County for Nevada.

| Non-Agriculture Sector | Washoe County jobs | Pershing County jobs | Storey County jobs | Lyon County jobs | Cassia City jobs | Douglas County jobs | Total jobs |
|--|--------------------------|----------------------------|--------------------------|------------------------|------------------------|---------------------------|----------------|
| 6 Agricultural Services | 1,152 | 17 | 0 | 91 | 140 | 142 | 1,522 |
| 1 Gold Mining | 1,442 | 618 | 145 | 156 | 48 | 13 | 2,422 |
| 8 Other Mining | 163 | 70 | 16 | 18 | 6 | 2 | 275 |
| 9 Construction | 9,404 | 29 | 22 | 718 | 1,536 | 1,182 | 12,910 |
| 10 Manufacturing | 9,211 | 56 | 18 | 1,276 | 3,583 | 1,333 | 15,477 |
| 11 Transportation and Communications | 8,103 | 12 | 0 | 267 | 322 | 283 | 8,985 |
| 12 Utilities | 2,315 | 66 | 0 | 174 | 250 | 105 | 3,110 |
| 13 Trade | 32,613 | 356 | 125 | 934 | 3,924 | 1,556 | 39,528 |
| 14 Eating, Drinking, and Lodging | 3,743 | 115 | 141 | 138 | 643 | 526 | 5,306 |
| 15 Finance, Insurance, and Real Estate | 13,815 | 35 | 0 | 478 | 1,611 | 1,842 | 16,981 |
| 16 Services | 30,735 | 231 | 238 | 1,600 | 4,800 | 3,253 | 40,879 |
| 17 Hotels, Gaming, and Recreation | 22,135 | 23 | 0 | 21 | 534 | 10,095 | 32,808 |
| 18 Health | 17,593 | 41 | 0 | 182 | 1,539 | 480 | 19,835 |
| 19 State and Local Government Sector | 14,143 | 333 | 134 | 871 | 6,834 | 1,263 | 24,178 |
| 20 Household Sector | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 166,547 | 2,001 | 859 | 6,946 | 25,790 | 23,077 | 224,220 |

Table 4.2-21. Employment by Non-Agriculture Sector for the Region by County for Nevada.

| Non-Agriculture Sector | Washoe County jobs | Fernando County jobs | Storey County jobs | Lyon County jobs | Carson City jobs | Douglas County jobs | Total jobs |
|--|--------------------------|----------------------------|--------------------------|------------------------|------------------------|---------------------------|----------------|
| 6 Agricultural Services | 1,129 | 0 | 0 | 24 | 0 | 31 | 1,184 |
| 7 Gold Mining | 1,438 | 0 | 49 | 40 | 0 | 3 | 1,522 |
| 8 Other Mining | 163 | 0 | 4 | 5 | 0 | 0 | 172 |
| 9 Construction | 9,380 | 0 | 6 | 186 | 0 | 262 | 9,834 |
| 10 Manufacturing | 9,188 | 0 | 5 | 331 | 0 | 295 | 9,819 |
| 11 Transportation and Communications | 4,062 | 0 | 0 | 69 | 0 | 63 | 4,215 |
| 12 Utilities | 2,509 | 0 | 0 | 45 | 0 | 23 | 2,577 |
| 13 Trade | 32,530 | 0 | 35 | 247 | 0 | 344 | 33,156 |
| 14 Eating, Drinking, and Lodging | 3,734 | 0 | 39 | 36 | 0 | 116 | 3,925 |
| 15 Finance, Insurance, and Real Estate | 12,982 | 0 | 0 | 124 | 0 | 408 | 13,513 |
| 16 Services | 30,657 | 0 | 71 | 416 | 0 | 730 | 31,864 |
| 17 Hotels, Gaming, and Recreation | 22,879 | 0 | 0 | 5 | 0 | 2,234 | 24,318 |
| 18 Health | 17,548 | 0 | 0 | 47 | 0 | 106 | 17,702 |
| 19 Local Government Sector | 10,222 | 0 | 26 | 137 | 0 | 194 | 10,599 |
| 20 Household Sector | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 161,640 | 0 | 227 | 1,733 | 0 | 4,800 | 168,400 |
| Total with State Government | 166,124 | 0 | 234 | 1,802 | 0 | 4,883 | 173,048 |

Table 4.2-22. Employment by Non-Agriculture Sector for the Region by State.

| Non-Agriculture Sector | California jobs | Nevada jobs | Total jobs |
|--|----------------------------|------------------------|-----------------------|
| 6 Agricultural Services | 163 | 1,184 | 1,347 |
| 7 Gold Mining | 7 | 1,322 | 1,329 |
| 8 Other Mining | 34 | 172 | 206 |
| 9 Construction | 2,721 | 9,834 | 12,555 |
| 10 Manufacturing | 1,430 | 9,819 | 11,248 |
| 11 Transportation and Communications | 514 | 8,215 | 8,729 |
| 12 Utilities | 116 | 2,577 | 2,693 |
| 13 Trade | 3,018 | 33,136 | 36,154 |
| 14 Eating, Drinking, and Lodging | 1,434 | 3,925 | 5,359 |
| 15 Finance, Insurance, and Real Estate | 2,099 | 13,513 | 15,612 |
| 16 Services | 3,963 | 31,864 | 34,927 |
| 17 Hotels, Gaming, and Recreation | 1,335 | 24,318 | 25,643 |
| 18 Health | 1,837 | 17,703 | 19,539 |
| 19 Local Government | 1,859 | 10,599 | 12,458 |
| 20 Household | 0 | 0 | 0 |
| Total | 19,620 | 168,400 | 188,020 |

Employment by Economic Sector

Employment by economic sector for the region by state is presented in Table 4.2-23. The agriculture sectors are combined with the non-agriculture sectors. Total employment for the region is 188,121 jobs. Of this amount, 19,659 jobs are in California and 168,462 jobs are in Nevada.

Table 4.2-23. Employment by Economic Sector for the Region by State.

| Economic Sector | California jobs | Nevada jobs | Total jobs |
|--|--------------------|----------------|----------------|
| 1 Livestock Production | 31 | 32 | 63 |
| 2 Dairy Production | 0 | 21 | 21 |
| 3 Alfalfa Hay Production | 3 | 4 | 6 |
| 4 Other Hay Production | 5 | 5 | 10 |
| 5 Berley Production | 1 | 0 | 1 |
| 6 Agricultural Services | 163 | 1,184 | 1,347 |
| 7 Gold Mining | 7 | 1,522 | 1,529 |
| 8 Other Mining | 34 | 173 | 206 |
| 9 Construction | 2,721 | 9,834 | 12,555 |
| 10 Manufacturing | 1,430 | 9,819 | 11,248 |
| 11 Transportation and Communications | 514 | 8,215 | 8,729 |
| 12 Utilities | 116 | 2,177 | 2,693 |
| 13 Trade | 3,018 | 33,156 | 36,174 |
| 14 Eating, Drinking, and Lodging | 1,434 | 3,925 | 5,359 |
| 15 Finance, Insurance, and Real Estate | 2,099 | 13,513 | 15,612 |
| 16 Services | 3,063 | 31,864 | 34,927 |
| 17 Health, Gaming, and Recreation | 1,325 | 24,318 | 25,643 |
| 18 Health | 1,837 | 17,702 | 19,539 |
| 19 Local Government | 1,859 | 10,599 | 12,458 |
| 20 Households | 0 | 0 | 0 |
| Total | 19,659 | 168,462 | 188,121 |

Income

Income is personal income in the form of wages, salaries, other labor income, proprietors income, dividends, interest, rent, and government transfer payments. Income is measured by earnings by place of work by economic sector.

Income by Economic Sector

Data to estimate the income by economic sector was provided by IMPLAN.

Income coefficients were calculated for each economic sector for the California and Nevada counties using IMPLAN. An income coefficient is interpreted as the amount of income created per dollar of output. The income coefficients by economic sector for the region by state are shown in Table 4.2-24.

The income by economic sector for the region by state are presented in Table 4.2-25. Total income created is \$6,720,549,054. Of this amount, \$723,070,123 is created in California and \$5,997,478,931 is created in Nevada. These numbers match the households output for the economic sectors for the region by state shown in Table 4.2-16.

Table 4.2-24. Income Coefficients by Economic Sector for the Region by State.

| Economic Sector | California | Nevada |
|--|------------|------------|
| 1 Livestock Production | 0.16178555 | 0.16178555 |
| 2 Dairy Production | 0.00000000 | 0.22500000 |
| 3 Alfalfa Hay Production | 0.40625000 | 0.40625000 |
| 4 Other Hay Production | 0.37857143 | 0.37857143 |
| 5 Beef Cattle Production | 0.30555556 | 0.00000000 |
| 6 Agricultural Services | 0.42301852 | 0.42301852 |
| 7 Gold Mining | 0.31215470 | 0.31215470 |
| 8 Other Mining | 0.26017713 | 0.26017713 |
| 9 Construction | 0.20854721 | 0.20854721 |
| 10 Manufacturing | 0.26369049 | 0.26369049 |
| 11 Transportation and Communications | 0.40103999 | 0.40103999 |
| 12 Utilities | 0.12544132 | 0.12544132 |
| 13 Trade | 0.48690061 | 0.48690061 |
| 14 Eating, Drinking, and Lodging | 0.33365810 | 0.33365810 |
| 15 Finance, Insurance, and Real Estate | 0.13871607 | 0.13871607 |
| 16 Services | 0.39651269 | 0.39651269 |
| 17 Hotels, Gaming, and Recreation | 0.32200030 | 0.32200030 |
| 18 Health | 0.42231663 | 0.42231663 |
| 19 Local Government | 0.37100700 | 0.37100700 |
| 20 Households | 0.47183814 | 0.46100076 |

Table 4.2-25. Income by Economic Sector for the Region by State.

| Economic Sector | California \$ | Nevada \$ | Total \$ |
|--|--------------------|----------------------|----------------------|
| 1 Livestock Production | 267,966 | 272,310 | 540,275 |
| 2 Dairy Production | 0 | 216,000 | 216,000 |
| 3 Alfalfa Hay Production | 48,750 | 81,250 | 130,000 |
| 4 Other Hay Production | 106,000 | 106,000 | 212,000 |
| 5 Barley Production | 11,000 | 0 | 11,000 |
| 6 Agricultural Services | 2,577,235 | 19,710,629 | 22,287,864 |
| 7 Gold Mining | 432,120 | 16,178,971 | 16,611,099 |
| 8 Other Mining | 1,823,983 | 1,525,046 | 3,349,029 |
| 9 Construction | 71,183,994 | 344,518,531 | 415,702,525 |
| 10 Manufacturing | 44,227,673 | 315,296,223 | 359,523,896 |
| 11 Transportation and Communications | 18,392,545 | 278,071,765 | 296,464,310 |
| 12 Utilities | 4,922,551 | 49,447,574 | 54,370,125 |
| 13 Trade | 55,368,683 | 642,790,987 | 698,159,670 |
| 14 Eating, Drinking, and Lodging | 13,752,339 | 81,108,840 | 94,861,199 |
| 15 Finance, Insurance, and Real Estate | 36,142,833 | 151,529,324 | 187,672,157 |
| 16 Services | 63,801,187 | 414,800,391 | 478,602,078 |
| 17 Hotels, Gaming, and Recreation | 11,413,749 | 428,220,333 | 439,634,081 |
| 18 Health | 38,188,623 | 243,028,112 | 281,216,735 |
| 19 Local Government | 19,575,822 | 241,751,859 | 261,327,681 |
| 20 Households | 341,172,061 | 2,764,842,347 | 3,106,014,408 |
| Total | 723,070,123 | 5,991,478,931 | 6,720,549,054 |

Population

Population is all persons.

Population by Economic Sector

A ratio of population for the region to employment for the region by state is calculated and shown in Table 4.2-26. Population reported as all persons for California and Nevada was taken from Table 4.2-14. Employment reported as the number of jobs for California and Nevada were taken from Tables 4.2-19 and 4.2-21. The ratio of population to employment for the region is 1.64 persons to 1 job. Likewise, the ratios of population to employment for California is 2.49 persons to 1 job, and for Nevada is 1.54 persons to 1 job. These ratios are then used to calculate population for the economic sectors for the region by state.

Population by economic sector for the region by state are shown in Table 4.2-27. Total population is 307,874 persons. Of this amount, there are 48,995 persons in California and 258,879 persons in Nevada.

Table 4.2-26. Ratio of Population for the Region to Employment for the Region by State.

| | California | Nevada | Total |
|---|------------|------------|------------|
| Population as All Persons | 50,358 | 266,023 | 316,381 |
| Employment as Number of Jobs ¹ | 20,205 | 173,110 | 193,316 |
| Ratio of Population to Employment | 2.49123904 | 1.53672446 | 1.63639871 |

¹ Employment is with state government.

Table 4.2-27. Population by Economic Sector for the Region by State.

| Economic Sector | California all persons | Nevada all persons | Total all persons |
|--|---------------------------|-----------------------|----------------------|
| 1 Livestock Production | 77 | 49 | 126 |
| 2 Dairy Production | 0 | 32 | 32 |
| 3 Alfalfa Hay Production | 3 | 6 | 11 |
| 4 Other Hay Production | 12 | 8 | 20 |
| 5 Barley Production | 2 | 0 | 2 |
| 6 Agricultural Services | 407 | 1,820 | 2,227 |
| 7 Gold Mining | 17 | 2,319 | 2,335 |
| 8 Other Mining | 84 | 265 | 350 |
| 9 Construction | 6,782 | 15,112 | 21,894 |
| 10 Manufacturing | 3,363 | 15,008 | 18,372 |
| 11 Transportation and Communications | 1,281 | 12,624 | 13,904 |
| 12 Utilities | 289 | 3,960 | 4,249 |
| 13 Trade | 7,521 | 50,952 | 58,474 |
| 14 Eating, Drinking, and Lodging | 3,574 | 6,031 | 9,605 |
| 15 Finance, Insurance, and Real Estate | 5,231 | 20,767 | 25,997 |
| 16 Services | 7,634 | 48,966 | 56,600 |
| 17 Health, Gaming, and Recreation | 3,302 | 37,370 | 40,672 |
| 18 Health | 4,579 | 27,203 | 31,782 |
| 19 Local Government | 4,633 | 14,258 | 20,921 |
| 20 Households | 0 | 0 | 0 |
| Total | 48,995 | 258,879 | 307,874 |

Housing

Housing is occupied housing units with households. Housing units are either single-units, multi-units of less than ten units per structure, or multi-units of ten or more units per structure. Households are either family or non-family households.

Housing by Economic Sector

Data to estimate housing by economic sector was provided by the U.S. Department of Commerce, Bureau of the Census.

Housing units, occupied housing units, and households were taken from the *Census of Housing*. Housing units are single-units, multi-units of less than ten units per structure, and multi-units of ten or more units per structure. Occupied housing units are the same but are occupied with households. Households are either family and non-family households. Housing units are measured as the number of dwellings by housing unit type and households are measured as the number of households by household type.

Housing units are analyzed in Tables 4.2-28 through 4.2-34. Housing units by type by county and for the region for California are shown in Tables 4.2-28 and 4.2-29. Housing units by type by county and for the region for Nevada are shown in Tables 4.2-30 and 4.2-31. As were output and employment, the housing units by county are also adjusted by the county population percentage to estimate the housing units for the region. Housing units by type for the region by state are given in Table 4.2-32. This table is followed by the distribution of housing units by type for the region by state and by the ratio of housing units for the region to population for the region by state presented in Tables 4.2-33 and 4.2-34.

Occupied housing units are analyzed in Tables 4.2-35 through 4.2-41. Occupied housing units by type by county and for the region for California are shown in Tables 4.2-35 and 4.2-36. Occupied units by type by county and for the region for Nevada are shown in Tables 4.2-37 and 4.2-38. As were output and employment, the occupied housing units by county are also adjusted by the county population percentage to estimate the housing units for the region. Occupied housing units by type for the region by state are given in Table 4.2-39. This table is followed by the distribution of occupied housing units by type for the region by state and by the ratio of occupied housing units for the region to population for the region by state presented in Tables 4.2-40 and 4.2-41.

Households are analyzed in Tables 4.2-42 through 4.2-48. Households by type by county and for the region for California are shown in Tables 4.2-42 and 4.2-43. Households by type by county and for the region for Nevada are shown in Tables 4.2-44 and 4.2-45. As were output and employment, the households by county are also adjusted

by the county population percentage to estimate the households for the region. Households by type for the region by state are given in Table 4.2-46. This table is followed by the distribution of households by type for the region by state and by the ratio of households for the region to population for the region by state presented in Tables 4.2-47 and 4.2-48.

The ratio of households for the region to population for the region by state shown in Table 4.2-48 are used to calculate housing for the economic sectors for the region by state. Housing is based on population. For California, there are 18,966 households and a population of 50,358 persons for a ratio of .377 households per person. For Nevada, there are 106,651 households and a population of 266,023 persons for a ratio of .401 households per person. For both states combined, there are 125,616 households and a population of 316,381 persons for a ratio of .397 households per person. The population by economic sector provided in Table 4.2-27 is then multiplied by these ratios to calculate housing for the economic sectors shown in Table 4.2-49.

Housing by economic sector for the region by state are shown in Table 4.2-49. Housing is estimated as the number of dwellings. Total housing for the region is 122,239 dwellings. Of this amount, there are 18,452 dwellings in California and 103,787 dwellings in Nevada.

Table 4.2-28. Housing Units by Type by County for California.

| Type | Sierra County dwellings | Nevada County dwellings | Placer County dwellings | El Dorado County dwellings | Alpine County dwellings | Total dwellings |
|--|-------------------------------|-------------------------------|-------------------------------|----------------------------------|-------------------------------|--------------------|
| Single Units | 1,741 | 30,554 | 61,447 | 48,300 | 878 | 142,921 |
| Multi-Units of Less than Ten per Structure | 390 | 5,751 | 12,539 | 10,815 | 372 | 29,866 |
| Multi-Units of Ten or More per Structure | 35 | 1,042 | 3,894 | 2,335 | 69 | 7,374 |
| Total | 2,166 | 37,346 | 77,879 | 61,451 | 1,319 | 189,161 |

Table 4.2-29. Housing Units by Type for the Region by County for California.

| Type | Sierra County dwellings | Nevada County dwellings | Placer County dwellings | El Dorado County dwellings | Alpine County dwellings | Total dwellings |
|--|-------------------------------|-------------------------------|-------------------------------|----------------------------------|-------------------------------|--------------------|
| Single Units | 1,063 | 3,666 | 3,292 | 11,367 | 0 | 19,390 |
| Multi-Units of Less than Ten per Structure | 232 | 690 | 672 | 2,543 | 0 | 4,145 |
| Multi-Units of Ten or More per Structure | 21 | 125 | 209 | 550 | 0 | 904 |
| Total | 1,325 | 4,481 | 4,172 | 14,462 | 0 | 28,440 |

Table 4.2-30. Housing Units by Type by County for Nevada.

| Type | Washoe County dwellings | Pershing County dwellings | Storey County dwellings | Lyon County dwellings | Carson City dwellings | Douglas County dwellings | Total dwellings |
|--|-------------------------------|---------------------------------|-------------------------------|-----------------------------|--------------------------|--------------------------------|--------------------|
| Single Units | 59,687 | 935 | 692 | 4,646 | 8,929 | 9,911.36 | 84,819 |
| Multi-Units of Less than Ten per Structure | 33,634 | 968 | 392 | 4,038 | 5,022 | 3,457.45 | 47,527 |
| Multi-Units of Ten or More per Structure | 18,848 | 13 | 1 | 17 | 3,677 | 798.92 | 22,356 |
| Total | 112,133 | 1,908 | 1,085 | 8,722 | 16,628 | 14,160 | 154,696 |

Table 4.2-31. Housing Units by Type for the Region by County for Nevada.

| Type | Washoe County dwellings | Pershing County dwellings | Storey County dwellings | Lyon County dwellings | Carson City dwellings | Douglas County dwellings | Total dwellings |
|--|-------------------------------|---------------------------------|-------------------------------|-----------------------------|--------------------------|--------------------------------|--------------------|
| Single Units | 59,535 | 0 | 192 | 1,210 | 0 | 2,193 | 63,130 |
| Multi-Units of Less than Ten per Structure | 33,572 | 0 | 109 | 1,847 | 0 | 765 | 35,493 |
| Multi-Units of Ten or More per Structure | 18,801 | 0 | 0 | 5 | 0 | 175 | 18,981 |
| Total | 111,908 | 0 | 301 | 2,262 | 0 | 3,133 | 117,604 |

Table 4.2-32. Housing Units by Type for the Region by State.

| Type | California dwellings | Nevada dwellings | Total dwellings |
|--|-------------------------|---------------------|--------------------|
| Single Units | 19,390 | 63,130 | 82,520 |
| Multi-Units of Less than Ten per Structure | 4,143 | 35,493 | 39,639 |
| Multi-Units of Ten or More per Structure | 904 | 18,980 | 19,885 |
| Total | 24,440 | 117,604 | 142,044 |

Table 4.2-33. Distribution of Housing Units by Type for the Region by State.

| Type | California | Nevada | Total |
|--|----------------|----------------|----------------|
| Single Units | 79.34% | 53.48% | 58.09% |
| Multi-Units of Less than Ten per Structure | 16.96% | 30.18% | 27.91% |
| Multi-Units of Ten or More per Structure | 3.70% | 16.14% | 14.00% |
| Total | 100.00% | 100.00% | 100.00% |

Table 4.2-34. Ratio of Housing Units for the Region to Population for the Region by State.

| | California | Nevada | Total |
|---|-------------------|-------------------|-------------------|
| Housing Units | 24,440 | 117,604 | 142,044 |
| Population at All Paces | 30,358 | 266,023 | 316,381 |
| Ratio of Housing Units to Population | 0.48531914 | 0.44208212 | 0.44895411 |

Table 4.2-35. Occupied Housing Units by Type by County for California.

| Type | Sierra County dwellings | Nevada County dwellings | Placer County dwellings | El Dorado County dwellings | Alpine County dwellings | Total dwellings |
|--|-------------------------------|-------------------------------|-------------------------------|----------------------------------|-------------------------------|--------------------|
| Single Units | 1,074 | 25,169 | 50,576 | 36,820 | 300 | 113,939 |
| Multi-Units of Less than Ten per Structure | 240 | 4,736 | 10,320 | 8,245 | 127 | 23,668 |
| Multi-Units of Ten or More per Structure | 21 | 858 | 3,205 | 1,780 | 23 | 5,886 |
| Total | 1,336 | 30,754 | 64,101 | 46,845 | 450 | 143,486 |

Table 4.2-36. Occupied Housing Units by Type for the Region by County for California.

| Type | Sierra County dwellings | Nevada County dwellings | Placer County dwellings | El Dorado County dwellings | Alpine County dwellings | Total dwellings |
|--|-------------------------------|-------------------------------|-------------------------------|----------------------------------|-------------------------------|--------------------|
| Single Units | 657 | 3,019 | 2,709 | 8,665 | 0 | 15,051 |
| Multi-Units of Less than Ten per Structure | 147 | 568 | 553 | 1,940 | 0 | 3,208 |
| Multi-Units of Ten or More per Structure | 13 | 103 | 172 | 419 | 0 | 707 |
| Total | 817 | 3,690 | 3,434 | 11,025 | 0 | 18,966 |

Table 4.2-37. Occupied Housing Units by Type by County for Nevada.

| Type | Washoe County dwellings | Pershing County dwellings | Storey County dwellings | Lyon County dwellings | Carson City dwellings | Douglas County dwellings | Total dwellings |
|--|-------------------------------|---------------------------------|-------------------------------|-----------------------------|--------------------------|--------------------------------|--------------------|
| Single Units | 54,420 | 790 | 642 | 4,109 | 8,534 | 7,421 | 75,917 |
| Multi-Units of Less than Ten per Structure | 30,688 | 312 | 363 | 3,556 | 4,800 | 2,589 | 43,808 |
| Multi-Units of Ten or More per Structure | 17,145 | 13 | 1 | 11 | 2,559 | 592 | 20,366 |
| Total | 102,254 | 1,614 | 1,006 | 7,680 | 15,893 | 10,602 | 139,051 |

Table 4.2-38. Occupied Housing Units by Type for the Region by County for Nevada.

| Type | Washoe County dwellings | Pershing County dwellings | Storey County dwellings | Lyon County dwellings | Carson City dwellings | Douglas County dwellings | Total dwellings |
|--|-------------------------------|---------------------------------|-------------------------------|-----------------------------|--------------------------|--------------------------------|--------------------|
| Single Units | 54,282 | 0 | 176 | 1,064 | 0 | 1,643 | 57,165 |
| Multi-Units of Less than Ten per Structure | 30,610 | 0 | 101 | 922 | 0 | 573 | 32,306 |
| Multi-Units of Ten or More per Structure | 17,142 | 0 | 0 | 4 | 0 | 131 | 17,277 |
| Total | 102,034 | 0 | 277 | 1,992 | 0 | 2,346 | 106,651 |

Table 4.2-39. Occupied Housing Units by Type for the Region by State.

| Type | California dwellings | Nevada dwellings | Total dwellings |
|--|-------------------------|---------------------|--------------------|
| Single Units | 15,051 | 57,148 | 72,218 |
| Multi-Units of Less than Ten per Structure | 3,206 | 32,206 | 35,414 |
| Multi-Units of Ten or More per Structure | 707 | 17,277 | 17,984 |
| Total | 18,966 | 106,651 | 125,616 |

Table 4.2-40. Distribution of Occupied Housing Units by Type for the Region by State.

| Type | California | Nevada | Total |
|--|------------|---------|---------|
| Single Units | 79.36% | 53.60% | 57.49% |
| Multi-Units of Less than Ten per Structure | 16.92% | 30.20% | 28.19% |
| Multi-Units of Ten or More per Structure | 3.72% | 16.20% | 14.32% |
| Total | 100.00% | 100.00% | 100.00% |

Table 4.2-41. Ratio of Occupied Housing Units for the Region to Population for the Region by State.

| | California | Nevada | Total |
|---|------------|------------|------------|
| Occupied Housing Units | 18,966 | 106,651 | 125,616 |
| Population of All Persons | 50,358 | 268,023 | 316,381 |
| Ratio of Occupied Housing Units to Population | 0.37661598 | 0.40090819 | 0.39704163 |

Table 4.2-42. Households by Type by County for California.

| Type | Sierra County households | Nevada County households | Placer County households | El Dorado County households | Alpine County households | Total households |
|-----------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------------|--------------------------------|---------------------|
| Family Households | 929 | 22,872 | 47,749 | 34,990 | 333 | 106,873 |
| Non-Family Households | 407 | 7,882 | 16,352 | 11,855 | 113 | 36,611 |
| Total | 1,336 | 30,754 | 64,101 | 46,845 | 450 | 143,486 |

Table 4.2-43. Households by Type for the Region by County for California.

| Type | Sierra County households | Nevada County households | Placer County households | El Dorado County households | Alpine County households | Total households |
|-----------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------------|--------------------------------|---------------------|
| Family Households | 568 | 2,744 | 2,358 | 8,235 | 0 | 14,105 |
| Non-Family Households | 249 | 946 | 876 | 2,798 | 0 | 4,861 |
| Total | 817 | 3,690 | 3,234 | 11,033 | 0 | 18,966 |

Table 4.2-44. Households by Type by County for Nevada.

| Type | Washoe County Households | Perkins County Households | Storey County Households | Lyon County Households | Carson City Households | Douglas County Households | Total Households |
|-----------------------|--------------------------------|---------------------------------|--------------------------------|------------------------------|---------------------------|---------------------------------|---------------------|
| Family Households | 74,613 | 1,130 | 691 | 5,629 | 10,618 | 7,888 | 100,569 |
| Non-Family Households | 27,681 | 484 | 315 | 2,081 | 5,277 | 2,714 | 38,532 |
| Total | 102,294 | 1,614 | 1,006 | 7,680 | 15,895 | 10,602 | 139,891 |

Table 4.2-45. Households by Type for the Region by County for Nevada.

| Type | Washoe County Households | Perkins County Households | Storey County Households | Lyon County Households | Carson City Households | Douglas County Households | Total Households |
|-----------------------|--------------------------------|---------------------------------|--------------------------------|------------------------------|---------------------------|---------------------------------|---------------------|
| Family Households | 74,424 | 0 | 192 | 1,460 | 0 | 1,745 | 77,621 |
| Non-Family Households | 27,610 | 0 | 87 | 532 | 0 | 601 | 28,830 |
| Total | 102,034 | 0 | 279 | 1,992 | 0 | 2,346 | 106,651 |

Table 4.2-46. Households by Type for the Region by State.

| Type | California Households | Nevada Households | Total Households |
|-----------------------|--------------------------|----------------------|---------------------|
| Family Households | 14,105 | 71,821 | 91,926 |
| Non-Family Households | 4,861 | 28,130 | 33,691 |
| Total | 18,966 | 106,651 | 125,616 |

Table 4.2-47. Distribution of Households by Type for the Region by State.

| Type | California | Nevada | Total |
|-----------------------|------------|---------|---------|
| Family Households | 74.37% | 72.97% | 73.18% |
| Non-Family Households | 25.63% | 27.03% | 26.82% |
| Total | 100.00% | 100.00% | 100.00% |

Table 4.2-48. Ratio of Households for the Region to Population for the Region by State.

| | California | Nevada | Total |
|-----------------------------------|------------|------------|------------|
| Households | 18,966 | 106,651 | 125,616 |
| Population or All Persons | 50,334 | 266,023 | 316,357 |
| Ratio of Households to Population | 0.37661395 | 0.40090819 | 0.39704163 |

Table 4.2-49. Housing by Economic Sector for the Region by State.

| Economic Sector | California Housing | Nevada Housing | Total Housing |
|--|-------------------------------|---------------------------|--------------------------|
| 1 Livestock Production | 29 | 20 | 49 |
| 2 Dairy Production | 0 | 13 | 13 |
| 3 Millable Hay Production | 2 | 2 | 4 |
| 4 Other Hay Production | 3 | 3 | 6 |
| 5 Bark Production | 1 | 0 | 1 |
| 6 Agricultural Services | 153 | 730 | 883 |
| 7 Gold Mining | 6 | 937 | 944 |
| 8 Other Mining | 32 | 106 | 138 |
| 9 Construction | 2,354 | 6,059 | 8,413 |
| 10 Manufacturing | 1,342 | 6,049 | 7,391 |
| 11 Transportation and Communications | 482 | 5,061 | 5,543 |
| 12 Utilities | 189 | 1,588 | 1,777 |
| 13 Trade | 2,833 | 20,427 | 23,260 |
| 14 Eating, Drinking, and Lodging | 1,346 | 2,418 | 3,764 |
| 15 Finance, Insurance, and Real Estate | 1,870 | 8,325 | 10,195 |
| 16 Services | 2,875 | 19,631 | 22,506 |
| 17 Hotels, Gaming, and Recreation | 1,244 | 14,982 | 16,226 |
| 18 Health | 1,725 | 10,906 | 12,631 |
| 19 Local Government | 1,745 | 6,330 | 8,075 |
| 20 Households | 0 | 0 | 0 |
| Total | 11,432 | 103,787 | 115,219 |

Agriculture Water Use

Agriculture water use is the combined use of irrigation water for crops and pasture and stock water for livestock.

Agriculture Water Use by Economic Sector

Data to estimate agriculture water use was provided by the State of California Department of Water Resources, U.S. District Court Water Master, and Department of Animal Science at the University of Nevada, Reno.

Irrigation water supply from Truckee River sources are actual water rights taken from the *Middle Fork of the Feather River Decree* and the *Orr Ditch Decree*. Stock water requirements were taken from *Livestock Feeds and Feeding*. Irrigation water supply is measured in acre-feet and stock water requirements are in gallons converted to acre-feet.

Irrigation water use is analyzed in Tables 4.2-50 through 4.2-53. Irrigation water supply from Truckee River sources for the region by state are shown in Table 4.2-50. For California, the irrigation water supply is 34,489 acre-feet. For Nevada, the irrigation water supply is 39,071 acre-feet. The total for the region is 73,560 acre-feet. Shown in Table 4.2-51 is the irrigated acreage per crop for the region by state. For California, the irrigated acreage is 9,717 acres. For Nevada, the irrigated acreage is 9,834 acres. Of the 19,551 acres, there were 14,551 acres in pasture, 800 acres in alfalfa hay, 4,000 acres in other hay, and 200 acres in barley. The application of irrigation water per crop for the region by state provided in Table 4.2-52 is 3.55 acre-feet per acre for California, 3.97 acre-feet per acre for Nevada, and 3.76 acre-feet per acre for the region. Irrigation water use per crop for the region by state is then given in Table 4.2-53. For the region, 54,754 acre-feet irrigated pasture, 3,051 irrigated alfalfa hay, 15,045 irrigated other hay, and 710 acre-feet irrigated barley.

Livestock water use is analyzed in Tables 4.2-54 through 4.2-56. Livestock water requirements per cow by state are shown in Table 4.2-54. On a daily basis, a beef cow requires 15 gallons of water per day and a dairy cow requires 25 gallons per day. Likewise, on an annual basis, a beef cow requires 5,475 gallons per year and a dairy cow requires 9,125 gallons per year. This in terms of acre-feet, a beef cow requires .016 acre-feet per year and a dairy cow requires .028 acre-feet per year. Number of cows for the region by state are provided in Table 4.2-55. Assuming two beef cows per acre of pasture, there are approximately 3,609 beef cows in California and 3,667 beef cows in Nevada for a total of 7,276 beef cows in the region. Dairy cows are only in Nevada and are estimated to be 500 cows. Livestock water use per cow for the region by state is then

given in Table 4.2-56. The beef cows use 122 acre-feet per year and the dairy cows use 14 acre-feet per year.

Agriculture water use by economic sector for the region by state are presented in Table 4.2-57. Agriculture water use for the region is 54,876 acre-feet per year for livestock production, 14 acre-feet per year for dairy production, 3,051 acre-feet for alfalfa hay production, 15,045 acre-feet for other hay production, and 710 acre-feet for barley production. Total agriculture water use for the region is 73,696 acre-feet per year.

Table 4.2-50. Irrigation Water Supply from Truckee River Sources for the Region by State.

| Truckee River Source | California <i>acre-foot</i> | Nevada <i>acre-foot</i> | Total <i>acre-foot</i> |
|------------------------------|--------------------------------|----------------------------|---------------------------|
| Little Truckee River | 3,293 | | 3,293 |
| Webber Creek and Tributaries | 29,197 | | 29,197 |
| Ditches from Truckee River | | 13,477 | 13,477 |
| Pumps from Truckee River | | 1,231 | 1,231 |
| Creeks | | 18,796 | 18,796 |
| Reservoir from Creek | | 948 | 948 |
| Drain | | 2,619 | 2,619 |
| Total | 34,489 | 39,871 | 73,560 |

Table 4.2-51. Irrigated Acreage per Crop for the Region by State.

| Crop | California <i>acres</i> | Nevada <i>acres</i> | Total <i>acres</i> |
|--------------|----------------------------|------------------------|-----------------------|
| Pasture | 7,217 | 1,334 | 14,551 |
| Alfalfa Hay | 300 | 500 | 800 |
| Other Hay | 2,000 | 2,000 | 4,000 |
| Barley | 200 | 0 | 200 |
| Total | 9,717 | 9,834 | 19,551 |

Table 4.2-52. Application of Irrigation Water per Crop for the Region by State.

| Crop | California <i>acre-foot / acre</i> | Nevada <i>acre-foot / acre</i> | Total <i>acre-foot / acre</i> |
|-------------|---------------------------------------|-----------------------------------|----------------------------------|
| Pasture | 3.34934651 | 3.97305267 | 3.76246739 |
| Alfalfa Hay | 3.34934651 | 3.97305267 | 3.76246739 |
| Other Hay | 3.34934651 | 3.97305267 | 3.76246739 |
| Barley | 3.34934651 | 3.97305267 | 3.76246739 |

Table 4.2-53. Irrigation Water Use per Crop for the Region by State.

| Crop | California acre-feet | Nevada acre-feet | Total acre-feet |
|--------------------|---------------------------------|-----------------------------|----------------------------|
| Pasture | 25,616 | 29,138 | 54,754 |
| Alfalfa Hay | 1,063 | 1,987 | 3,051 |
| Other Hay | 7,899 | 7,946 | 15,043 |
| Barley | 710 | 0 | 710 |
| Total | 34,499 | 39,071 | 73,560 |

Table 4.2-54. Livestock Water Requirements per Cow by State.

| Cow | California | Nevada |
|-----------|-----------------------------------|-----------------------------------|
| | <i>gallons / cow / day</i> | <i>gallons / cow / day</i> |
| Beef Cow | 15 | 15 |
| Dairy Cow | 25 | 25 |
| | <i>gallons / cow / year</i> | <i>gallons / cow / year</i> |
| Beef Cow | 5,475 | 5,475 |
| Dairy Cow | 9,125 | 9,125 |
| | <i>acre-feet / cow / year</i> | <i>acre-feet / cow / year</i> |
| Beef Cow | 0.01680216 | 0.01680216 |
| Dairy Cow | 0.02800360 | 0.02800360 |

Table 4.2-55. Number of Cows for the Region by State.

| Cow | California <i>cows</i> | Nevada <i>cows</i> | Total <i>cows</i> |
|-----------|---------------------------|-----------------------|----------------------|
| Beef Cow | 3,609 | 3,667 | 7,276 |
| Dairy Cow | 0 | 500 | 500 |

Table 4.2-56. Livestock Water Use per Cow for the Region by State.

| Cow | California <i>acre-feet</i> | Nevada <i>acre-feet</i> | Total <i>acre-feet</i> |
|-----------|--------------------------------|----------------------------|---------------------------|
| Beef Cow | 61 | 62 | 122 |
| Dairy Cow | 0 | 14 | 14 |

Table 4.2-57. Agriculture Water Use by Economic Sector for the Region by State.

| Economic Sector | California <i>acre-foot</i> | Nevada <i>acre-foot</i> | Total <i>acre-foot</i> |
|---------------------------------|--|------------------------------------|-----------------------------------|
| 1 Livestock Production | 25,676 | 29,200 | 54,876 |
| 2 Dairy Production | 0 | 14 | 14 |
| 3 Alfalfa Hay Production | 1,063 | 1,987 | 3,051 |
| 4 Other Hay Production | 7,099 | 7,946 | 15,045 |
| 5 Barley Production | 710 | 0 | 710 |
| Total | 34,550 | 39,147 | 73,696 |

Commercial Water Use

Commercial water use is the use of water for business purposes.

Commercial Water Use by Economic Sector

Data to estimate commercial water use was provided by the State of Nevada Department of Water Planning.

Commercial water use is analyzed in Tables 4.2-58 through 4.2-61. Commercial water requirements per employee by economic sector by state are provided in Tables 4.2-58 through 4.2-60. The difference among the tables is that the requirements are presented as gallons per employee per day, then again as gallons per employee per year, and then finally as acre-feet per employee per year. Using the requirements presented as acre-feet per employee per year, the employment by economic sector for the region by state given in Table 4.2-23 and measured in jobs are multiplied by the requirements to estimate the commercial water use by economic sector for the region by state in Table 4.2-61.

Commercial water use by economic sector for the region by state are shown in Table 4.2-61. Commercial water use for the region is 12,432 acre-feet. Of this amount, 1,084 acre-feet is in California and 11,348 acre-feet is in Nevada.

Table 4.2-58. Commercial Water Requirements per Employee by Economic Sector by State.

| Economic Sector | California gallons / employee / day | Nevada gallons / employee / day |
|--|--|--|
| 1 Livestock Production | 42.72500000 | 42.72500000 |
| 2 Dairy Production | 42.72500000 | 42.72500000 |
| 3 Alfalfa Hay Production | 42.72500000 | 42.72500000 |
| 4 Other Hay Production | 42.72500000 | 42.72500000 |
| 5 Barley Production | 42.72500000 | 42.72500000 |
| 6 Agricultural Services | 42.72500000 | 42.72500000 |
| 7 Gold Mining | 9.78999893 | 9.78999893 |
| 8 Other Mining | 10.62000537 | 10.62000537 |
| 9 Construction | 17.61000004 | 17.61000004 |
| 10 Manufacturing | 35.86999993 | 35.86999993 |
| 11 Transportation and Communications | 28.57999993 | 28.57999993 |
| 12 Utilities | 204.23000028 | 204.23000028 |
| 13 Trade | 33.06000001 | 33.06000001 |
| 14 Eating, Drinking, and Lodging | 96.18999995 | 96.18999995 |
| 15 Finance, Insurance, and Real Estate | 19.51999992 | 19.51999992 |
| 16 Services | 58.16000000 | 58.16000000 |
| 17 Hotels, Gaming, and Recreation | 159.74999997 | 159.74999997 |
| 18 Health | 75.11999991 | 75.11999991 |
| 19 Local Government | 21.70999990 | 21.70999990 |
| 20 Households | | |

Table 4.2-59. Commercial Water Requirements per Employee by Economic Sector by State.

| Economic Sector | California gallons/ employee / year | Nevada gallons/ employee / year |
|--|---|---------------------------------------|
| 1 Livestock Production | 15,595 | 15,595 |
| 2 Dairy Production | 15,595 | 15,595 |
| 3 Alfalfa Hay Production | 15,595 | 15,595 |
| 4 Other Hay Production | 15,595 | 15,595 |
| 5 Barley Production | 15,595 | 15,595 |
| 6 Agricultural Services | 15,595 | 15,595 |
| 7 Gold Mining | 3,876 | 3,876 |
| 8 Other Mining | 3,876 | 3,876 |
| 9 Construction | 6,209 | 6,209 |
| 10 Manufacturing | 13,093 | 13,093 |
| 11 Transportation and Communications | 10,432 | 10,432 |
| 12 Utilities | 74,540 | 74,540 |
| 13 Trade | 12,067 | 12,067 |
| 14 Eating, Drinking, and Lodging | 35,109 | 35,109 |
| 15 Finance, Insurance, and Real Estate | 7,125 | 7,125 |
| 16 Services | 18,308 | 18,308 |
| 17 Hotels, Gaming, and Recreation | 58,309 | 58,309 |
| 18 Health | 27,419 | 27,419 |
| 19 Local Government | 7,924 | 7,924 |
| 20 Households | 0 | 0 |

Table 4.2-60. Commercial Water Requirements per Employee by Economic Sector by State.

| Economic Sector | California <i>acre-foot / employee / year</i> | Nevada <i>acre-foot / employee / year</i> |
|--|--|--|
| 1 Livestock Production | 0.04785815 | 0.04785815 |
| 2 Dairy Production | 0.04785815 | 0.04785815 |
| 3 Alfalfa Hay Production | 0.04785815 | 0.04785815 |
| 4 Other Hay Production | 0.04785815 | 0.04785815 |
| 5 Barley Production | 0.04785815 | 0.04785815 |
| 6 Agricultural Services | 0.04785815 | 0.04785815 |
| 7 Gold Mining | 0.01096631 | 0.01096631 |
| 8 Other Mining | 0.01189593 | 0.01189593 |
| 9 Construction | 0.01905365 | 0.01905365 |
| 10 Manufacturing | 0.04017956 | 0.04017956 |
| 11 Transportation and Communications | 0.03201371 | 0.03201371 |
| 12 Utilities | 0.22875578 | 0.22875578 |
| 13 Trade | 0.03708196 | 0.03708196 |
| 14 Eating, Drinking, and Lodging | 0.10774664 | 0.10774664 |
| 15 Finance, Insurance, and Real Estate | 0.02186521 | 0.02186521 |
| 16 Services | 0.05618642 | 0.05618642 |
| 17 Health, Opining, and Recreation | 0.17894298 | 0.17894298 |
| 18 Health | 0.08414521 | 0.08414521 |
| 19 Local Government | 0.02431832 | 0.02431832 |
| 20 Households | 0.00000000 | 0.00000000 |

Table 4.2-61. Commercial Water Use by Economic Sector for the Region by State.

| Economic Sector | California acre-feet | Nevada acre-feet | Total acre-feet |
|--|-------------------------|---------------------|--------------------|
| 1 Livestock Production | 1 | 2 | 3 |
| 2 Dairy Production | 0 | 1 | 1 |
| 3 Alfalfa Hay Production | 0 | 0 | 0 |
| 4 Other Hay Production | 0 | 0 | 0 |
| 5 Barley Production | 0 | 0 | 0 |
| 6 Agricultural Services | 8 | 57 | 64 |
| 7 Gold Mining | 0 | 17 | 17 |
| 8 Other Mining | 0 | 2 | 2 |
| 9 Construction | 32 | 187 | 239 |
| 10 Manufacturing | 57 | 395 | 452 |
| 11 Transportation and Communications | 16 | 263 | 279 |
| 12 Utilities | 26 | 590 | 616 |
| 13 Trade | 112 | 1,228 | 1,340 |
| 14 Eating, Drinking, and Lodging | 155 | 423 | 577 |
| 15 Finance, Insurance, and Real Estate | 46 | 295 | 341 |
| 16 Services | 172 | 1,790 | 1,962 |
| 17 Hotels, Gaming, and Recreation | 237 | 4,352 | 4,589 |
| 18 Health | 155 | 1,490 | 1,644 |
| 19 Local Government | 45 | 254 | 303 |
| 20 Households | 0 | 0 | 0 |
| Total | 1,084 | 11,348 | 12,432 |

Residential Water Use

Residential water use is the use of water for household purposes, and the irrigation of lawns, gardens, and shrubbery surrounding a residence.

Residential Water Use by Economic Sector

Data to estimate residential water use was provided by Westpac Utilities.

Residential water use is analyzed in Tables 4.2-62 through 4.2-69. Residential water use is estimated by multiplying the residential water requirement per household in acre-feet by the distribution of households by type and by housing by economic sector for the region.

Residential water requirements per household by state are shown in Table 4.2-62. Requirements per household are 228,096 gallons per year for a family households, 162,926 gallons per year for a metered family household, and 97,755 gallons per year for both a non-family household and metered non-family household. In terms of acre-feet, the requirements per household are .70 acre-feet per year for a family household, .50 acre-feet per year for a metered family household, and .30 acre-feet per year for both a non-family household and metered non-family household. The distribution of households by type for the region by state is shown in Table 4.2-47. For California, of the total households, 74.37% are family households and 25.63% are non-family households. For Nevada, of the total households, 72.97% are family households and 27.03% are non-family households. The housing by economic sector is shown in Table 4.2-49. As mentioned earlier there are 18,452 occupied housing units with households in California and 103,787 occupied housing units with households in Nevada for a total of 122,239 occupied housing units with households for the region.

Residential water requirements for family households by economic sector for the region by state and residential water requirements for non-family households by economic sector for the region by state are shown in Tables 4.2-63 and 4.2-64. Then by combining these two, the residential water use by economic sector for the region by state is shown in Table 4.2-65.

Residential water use by economic sector for the region by state is shown in Table 4.2-65. Residential water use for the region is 72,453 acre-feet. Of this amount, 11,025 acre-feet is in California and 61,428 acre-feet is in Nevada.

Assuming that all residences have a water meter. Residential water requirements for metered family households by economic sector for the region by state and residential water requirements for metered non-family households by economic sector for the region by state are shown in Tables 4.2-66 and 4.2-67. Then by combining these two, the metered residential water use by economic sector for the region by state is shown in Table 4.2-68.

Metered residential water use by economic sector for the region by state is shown in Table 4.2-68. Metered residential water use for the region is 54,563 acre-feet. Of this amount, 8,280 acre-feet is in California and 46,282 acre-feet is in Nevada.

The ratio of metered residential water use to unmetered residential water use by economic sector for the region is shown in Table 4.2-69. The ratio for the region is .75 of an acre-foot of metered residential water use to 1.00 acre-foot of unmetered residential water use.

Table 4.2-62. Residential Water Requirements per Household by State.

| Household | California | Nevada |
|---------------------------------|---|---|
| | <i>gallons / household / year</i> | <i>gallons / household / year</i> |
| Family Household | 228,096 | 228,096 |
| Metered Family Household /1 | 162,926 | 162,926 |
| Non-Family Household | 97,755 | 97,755 |
| Metered Non-Family Household /1 | 97,755 | 97,755 |
| | <i>acre-feet / household / year</i> | <i>acre-feet / household / year</i> |
| Family Household | 0.7080092 | 0.7080092 |
| Metered Family Household /1 | 0.5060153 | 0.5060153 |
| Non-Family Household | 0.2999998 | 0.2999998 |
| Metered Non-Family Household /1 | 0.2999998 | 0.2999998 |

1. A water meter is required for new residential construction.

Table 4.2-63. Residential Water Requirements for Family Households by Economic Sector for the Region by State.

| Economic Sector | California acre-feet | Nevada acre-feet | Total acre-feet |
|--|---------------------------------|-----------------------------|----------------------------|
| 1 Livestock Production | 11 | 10 | 25 |
| 2 Dairy Production | 0 | 7 | 7 |
| 3 Alfalfa Hay Production | 1 | 1 | 2 |
| 4 Other Hay Production | 2 | 2 | 4 |
| 5 Barley Production | 0 | 0 | 0 |
| 6 Agricultural Services | 90 | 373 | 452 |
| 7 Gold Mining | 3 | 479 | 482 |
| 8 Other Mining | 17 | 54 | 71 |
| 9 Construction | 1,330 | 3,095 | 4,424 |
| 10 Manufacturing | 699 | 3,090 | 3,789 |
| 11 Transportation and Communications | 251 | 2,345 | 2,596 |
| 12 Utilities | 57 | 811 | 868 |
| 13 Trade | 1,475 | 10,434 | 11,909 |
| 14 Eating, Drinking, and Lodging | 701 | 1,233 | 1,936 |
| 15 Finance, Insurance, and Real Estate | 1,026 | 4,252 | 5,278 |
| 16 Services | 1,497 | 10,037 | 11,534 |
| 17 Hotels, Gaming, and Recreation | 647 | 1,652 | 2,300 |
| 18 Health | 898 | 5,370 | 6,268 |
| 19 Local Government | 908 | 3,335 | 4,244 |
| 20 Households | 0 | 0 | 0 |
| Total | 9,606 | 53,013 | 62,619 |

Table 4.2-64. Residential Water Requirements for Non-Family Households by Economic Sector for the Region by State.

| Economic Sector | California <i>acre-foot</i> | Nevada <i>acre-foot</i> | Total <i>acre-foot</i> |
|--|--|------------------------------------|-----------------------------------|
| 1 Livestock Production | 2 | 2 | 4 |
| 2 Dairy Production | 0 | 1 | 1 |
| 3 Alfalfa Hay Production | 0 | 0 | 0 |
| 4 Other Hay Production | 0 | 0 | 1 |
| 5 Barley Production | 0 | 0 | 0 |
| 6 Agricultural Services | 12 | 59 | 71 |
| 7 Gold Mining | 0 | 26 | 27 |
| 8 Other Mining | 2 | 9 | 11 |
| 9 Construction | 196 | 491 | 688 |
| 10 Manufacturing | 105 | 491 | 594 |
| 11 Transportation and Communications | 37 | 416 | 448 |
| 12 Utilities | 8 | 129 | 137 |
| 13 Trade | 218 | 1,657 | 1,874 |
| 14 Eating, Drinking, and Lodging | 103 | 196 | 300 |
| 15 Finance, Insurance, and Real Estate | 151 | 675 | 827 |
| 16 Services | 221 | 1,392 | 1,613 |
| 17 Hotels, Gaming, and Recreation | 96 | 1,215 | 1,311 |
| 18 Health | 133 | 884 | 1,017 |
| 19 Local Government | 134 | 530 | 664 |
| 20 Households | 0 | 0 | 0 |
| Total | 1,419 | 8,417 | 9,835 |

Table 4.2-65. Residential Water Use by Economic Sector for the Region by State.

| Economic Sector | California <i>acre-foot</i> | Nevada <i>acre-foot</i> | Total <i>acre-foot</i> |
|--|--|------------------------------------|-----------------------------------|
| 1 Livestock Production | 17 | 12 | 29 |
| 2 Dairy Production | 0 | 0 | 0 |
| 3 Alfalfa Hay Production | 1 | 1 | 3 |
| 4 Other Hay Production | 3 | 2 | 5 |
| 5 Barley Production | 1 | 0 | 1 |
| 6 Agricultural Services | 92 | 432 | 523 |
| 7 Gold Mining | 4 | 555 | 559 |
| 8 Other Mining | 19 | 63 | 82 |
| 9 Construction | 1,526 | 3,586 | 5,112 |
| 10 Manufacturing | 802 | 3,500 | 4,302 |
| 11 Transportation and Communications | 288 | 2,995 | 3,284 |
| 12 Utilities | 65 | 940 | 1,005 |
| 13 Trade | 1,692 | 12,090 | 13,783 |
| 14 Eating, Drinking, and Lodging | 864 | 1,431 | 2,295 |
| 15 Finance, Insurance, and Real Estate | 1,177 | 4,928 | 6,105 |
| 16 Services | 1,718 | 11,619 | 13,337 |
| 17 Hotels, Gaming, and Recreation | 743 | 8,867 | 9,610 |
| 18 Health | 1,030 | 6,455 | 7,485 |
| 19 Local Government | 1,042 | 3,865 | 4,907 |
| 20 Households | 0 | 0 | 0 |
| Total | 11,025 | 61,428 | 72,453 |

Table 4.2-66. Residential Water Requirements for Metered Family Households by Economic Sector for the Region by State.

| Economic Sector | California acre-feet | Nevada acre-feet | Total acre-feet |
|--|---------------------------------|-----------------------------|----------------------------|
| 1 Livestock Production | 11 | 7 | 18 |
| 2 Dairy Production | 8 | 5 | 5 |
| 3 Alfalfa Hay Production | 1 | 1 | 2 |
| 4 Other Hay Production | 2 | 1 | 3 |
| 5 Barley Production | 8 | 0 | 0 |
| 6 Agricultural Services | 57 | 265 | 323 |
| 7 Gold Mining | 2 | 342 | 344 |
| 8 Other Mining | 12 | 39 | 51 |
| 9 Construction | 950 | 2,210 | 3,160 |
| 10 Manufacturing | 499 | 2,207 | 2,706 |
| 11 Transportation and Communications | 179 | 1,846 | 2,026 |
| 12 Utilities | 48 | 579 | 628 |
| 13 Trade | 1,053 | 1,453 | 2,506 |
| 14 Eating, Drinking, and Lodging | 501 | 222 | 1,213 |
| 15 Finance, Insurance, and Real Estate | 733 | 3,037 | 3,770 |
| 16 Services | 1,069 | 7,162 | 8,231 |
| 17 Hotels, Gaming, and Recreation | 462 | 5,486 | 5,928 |
| 18 Health | 641 | 3,979 | 4,620 |
| 19 Local Government | 449 | 2,382 | 3,031 |
| 20 Households | 0 | 0 | 0 |
| Total | 6,862 | 17,866 | 44,727 |

Table 4.2-67. Residential Water Requirements for Metered Non-Family Households by Economic Sector for the Region by State.

| Economic Sector | California <i>acre-feet</i> | Nevada <i>acre-feet</i> | Total <i>acre-feet</i> |
|--|--|------------------------------------|-----------------------------------|
| 1 Livestock Production | 2 | 2 | 4 |
| 2 Dairy Production | 0 | 1 | 1 |
| 3 Alfalfa Hay Production | 0 | 0 | 0 |
| 4 Other Hay Production | 0 | 0 | 1 |
| 5 Barley Production | 0 | 0 | 0 |
| 6 Agricultural Services | 12 | 59 | 71 |
| 7 Gold Mining | 0 | 76 | 77 |
| 8 Other Mining | 2 | 9 | 11 |
| 9 Construction | 196 | 491 | 688 |
| 10 Manufacturing | 183 | 491 | 674 |
| 11 Transportation and Communications | 37 | 410 | 448 |
| 12 Utilities | 8 | 129 | 137 |
| 13 Trade | 218 | 1,657 | 1,874 |
| 14 Eating, Drinking, and Lodging | 103 | 196 | 300 |
| 15 Finance, Insurance, and Real Estate | 151 | 675 | 827 |
| 16 Services | 221 | 1,592 | 1,813 |
| 17 Hotels, Gaming, and Recreation | 96 | 1,213 | 1,311 |
| 18 Health | 133 | 884 | 1,017 |
| 19 Local Government | 134 | 530 | 664 |
| 20 Households | 0 | 0 | 0 |
| Total | 1,419 | 8,417 | 9,835 |

Table 4.2-68. Metered Residential Water Use by Economic Sector for the Region by State.

| Economic Sector | California acre-feet | Nevada acre-feet | Total acre-feet |
|--|---------------------------------|-----------------------------|----------------------------|
| 1 Livestock Production | 13 | 9 | 22 |
| 2 Dairy Production | 0 | 6 | 6 |
| 3 Alfalfa Hay Production | 1 | 1 | 2 |
| 4 Other Hay Production | 2 | 1 | 3 |
| 5 Forage Production | 0 | 0 | 0 |
| 6 Agricultural Services | 69 | 325 | 394 |
| 7 Gold Mining | 3 | 418 | 421 |
| 8 Other Mining | 14 | 47 | 62 |
| 9 Construction | 1,146 | 2,702 | 3,848 |
| 10 Manufacturing | 692 | 2,697 | 3,389 |
| 11 Transportation and Communications | 216 | 2,257 | 2,473 |
| 12 Utilities | 49 | 708 | 757 |
| 13 Trade | 1,271 | 9,109 | 10,380 |
| 14 Eating, Drinking, and Lodging | 604 | 1,079 | 1,682 |
| 15 Finance, Insurance, and Real Estate | 884 | 3,713 | 4,597 |
| 16 Services | 1,290 | 8,754 | 10,044 |
| 17 Hotels, Gaming, and Recreation | 558 | 6,621 | 7,179 |
| 18 Health | 774 | 4,863 | 5,637 |
| 19 Local Government | 783 | 2,912 | 3,695 |
| 20 Households | 0 | 0 | 0 |
| Total | 1,280 | 46,282 | 47,562 |

Table 4.2-69. Ratio of Metered Residential Water Use to Residential Water Use by Economic Sector for the Region.

| Economic Sector | Metered Residential Water Use acre-feet | Residential Water Use acre-feet | Ratio |
|--|--|------------------------------------|-------------------|
| 1 Livestock Production | 22 | 29 | 0.75200932 |
| 2 Dairy Production | 6 | 8 | 0.75343453 |
| 3 Alfalfa Hay Production | 2 | 3 | 0.75299914 |
| 4 Other Hay Production | 3 | 4 | 0.75199120 |
| 5 Barley Production | 0 | 1 | 0.75100273 |
| 6 Agricultural Services | 394 | 523 | 0.75301781 |
| 7 Gold Mining | 421 | 559 | 0.75341844 |
| 8 Other Mining | 62 | 82 | 0.75287559 |
| 9 Construction | 3,848 | 5,112 | 0.75272351 |
| 10 Manufacturing | 3,308 | 4,382 | 0.75299870 |
| 11 Transportation and Communications | 2,473 | 3,284 | 0.75322548 |
| 12 Utilities | 757 | 1,005 | 0.75328062 |
| 13 Trade | 10,390 | 13,783 | 0.75314206 |
| 14 Eating, Drinking, and Lodging | 1,682 | 2,235 | 0.75257762 |
| 15 Finance, Insurance, and Real Estate | 4,997 | 6,105 | 0.75297530 |
| 16 Services | 18,044 | 23,317 | 0.75312774 |
| 17 Hotels, Gaming, and Recreation | 7,239 | 9,610 | 0.75325038 |
| 18 Health | 5,637 | 7,485 | 0.75310663 |
| 19 Local Government | 3,895 | 4,907 | 0.75292857 |
| 20 Households | 0 | 0 | |
| Total | 54,563 | 72,453 | 0.75307210 |

Output Response Coefficients

Output response coefficients represent the unit change in employment, income, population, housing, agriculture water use, commercial water use, and residential water use from a one dollar change in output.

Output Response Coefficients by Economic Sector

Control totals by economic sector for the region are shown in Table 4.2-70. The output response is read across the columns for each sector.

For the region, output is \$17,857,271,279. Employment is 188,121 jobs. Income is \$6,720,549,054. Population is 307,874 persons. Housing is 122,239 dwellings. Agriculture water use is 73,696 acre-feet. Commercial water use is 12,432 acre-feet. Residential water use is 72,453 acre-feet.

Output response coefficients by economic sector for the region are shown in Table 4.2-71. These are calculated by dividing employment, income, population, housing, agriculture water use, commercial water use, and residential water use by output. Employment is interpreted as jobs per dollar of output. Income is interpreted as dollars per dollar of output. Population is interpreted as persons per dollar of output. Housing is interpreted as dwellings per dollar of output. Agriculture water use, commercial water use and residential water use are interpreted as acre-feet per dollar of output.

Table 4.2-70. Control Totals by Economic Sector for the Region.

| Economic Sector | Output | Employment | Income | Population | Housing | Agriculture Water Use | Commercial Water Use | Residential Water Use |
|--|-----------------------|----------------|----------------------|----------------|----------------|-----------------------------|----------------------------|-----------------------------|
| | \$ | jobs | \$ | all persons | dwellings | acre-feet | acre-feet | acre-feet |
| 1 Livestock Production | 3,339,455 | 63 | 540,275 | 126 | 49 | 54,876 | 3 | 28 |
| 2 Dairy Production | 960,000 | 21 | 216,000 | 32 | 13 | 14 | 1 | 8 |
| 3 Alfalfa Hay Production | 320,608 | 6 | 130,000 | 11 | 4 | 3,651 | 0 | 3 |
| 4 Other Hay Production | 560,800 | 10 | 212,000 | 20 | 8 | 15,045 | 0 | 5 |
| 5 Barley Production | 36,000 | 1 | 11,000 | 2 | 1 | 710 | 0 | 1 |
| 6 Agricultural Services | 52,687,679 | 1,347 | 22,287,864 | 2,227 | 883 | 0 | 64 | 523 |
| 7 Gold Mining | 33,214,316 | 1,529 | 16,611,099 | 2,355 | 944 | 0 | 17 | 359 |
| 8 Other Mining | 12,872,133 | 206 | 3,349,029 | 330 | 138 | 0 | 2 | 42 |
| 9 Construction | 1,440,667,287 | 12,555 | 435,700,523 | 21,894 | 8,613 | 0 | 239 | 3,112 |
| 10 Manufacturing | 1,363,431,322 | 11,248 | 339,323,876 | 18,632 | 7,391 | 0 | 452 | 4,382 |
| 11 Transportation and Communications | 739,238,624 | 8,729 | 296,464,250 | 13,984 | 5,543 | 0 | 279 | 3,284 |
| 12 Utilities | 430,342,000 | 2,693 | 53,970,125 | 4,248 | 1,696 | 0 | 616 | 1,005 |
| 13 Trade | 1,433,846,375 | 36,174 | 698,140,670 | 58,474 | 23,260 | 0 | 1,340 | 13,783 |
| 14 Eating, Drinking, and Lodging | 284,306,597 | 5,359 | 94,861,199 | 9,683 | 3,764 | 0 | 377 | 2,233 |
| 15 Finance, Insurance, and Real Estate | 1,381,758,827 | 15,612 | 191,672,157 | 25,997 | 10,295 | 0 | 341 | 6,105 |
| 16 Services | 1,207,179,719 | 34,927 | 478,662,678 | 56,680 | 22,506 | 0 | 1,962 | 13,337 |
| 17 Hotels, Gaming, and Recreation | 1,361,936,231 | 25,643 | 439,634,081 | 40,672 | 16,226 | 0 | 4,389 | 9,610 |
| 18 Health | 645,890,740 | 19,339 | 281,216,735 | 31,782 | 12,430 | 0 | 1,644 | 7,485 |
| 19 Local Government | 704,232,921 | 12,458 | 261,331,681 | 20,921 | 8,275 | 0 | 303 | 4,907 |
| 20 Households | 6,720,349,054 | 0 | 3,105,014,406 | 0 | 0 | 0 | 0 | 0 |
| Total | 17,857,271,279 | 188,121 | 6,720,549,054 | 307,874 | 122,239 | 73,696 | 12,432 | 72,433 |

Table 4.2-71. Output Response Coefficients by Economic Sector for the Region.

| Economic Sector | Output | Employment | Income | Population | Housing | Agriculture Water Use | Commercial Water Use | Residential Water Use |
|--|-----------|------------------------|---------------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | \$ | jobs / \$ of output | \$/ \$ of output | all persons / \$ of output | dwellings / \$ of output | acre-feet / \$ of output | acre-feet / \$ of output | acre-feet / \$ of output |
| 1 Livestock Production | 1.0000000 | 0.0001887 | 0.16178533 | 0.0000786 | 0.0001462 | 0.01643220 | 0.0000090 | 0.0000670 |
| 2 Dairy Production | 1.0000000 | 0.0002188 | 0.22500000 | 0.00009362 | 0.0001348 | 0.0001459 | 0.0000105 | 0.0000798 |
| 3 Alfalfa Hay Production | 1.0000000 | 0.0001875 | 0.40625000 | 0.0000479 | 0.0001357 | 0.0093341 | 0.0000090 | 0.0000806 |
| 4 Other Hay Production | 1.0000000 | 0.0001786 | 0.37857143 | 0.0000597 | 0.0001388 | 0.02686571 | 0.0000085 | 0.0000826 |
| 5 Berley Production | 1.0000000 | 0.0002778 | 0.30255556 | 0.0000693 | 0.0000607 | 0.01971858 | 0.0000133 | 0.0001358 |
| 6 Agricultural Services | 1.0000000 | 0.0002557 | 0.42981852 | 0.00004236 | 0.0001876 | 0.0000000 | 0.0000122 | 0.0000993 |
| 7 Gold Mining | 1.0000000 | 0.0002873 | 0.31213470 | 0.0000426 | 0.0001774 | 0.0000000 | 0.0000082 | 0.0001850 |
| 8 Other Mining | 1.0000000 | 0.0001604 | 0.26017213 | 0.00002719 | 0.0001874 | 0.0000000 | 0.0000019 | 0.0000637 |
| 9 Construction | 1.0000000 | 0.0000871 | 0.28854721 | 0.0001320 | 0.0000596 | 0.0000000 | 0.0000017 | 0.0000355 |
| 10 Manufacturing | 1.0000000 | 0.0000825 | 0.36369049 | 0.0001368 | 0.0000542 | 0.0000000 | 0.0000033 | 0.0000321 |
| 11 Transportation and Communications | 1.0000000 | 0.0001181 | 0.40103999 | 0.0001381 | 0.0000750 | 0.0000000 | 0.0000038 | 0.0000444 |
| 12 Utilities | 1.0000000 | 0.0000626 | 0.12544132 | 0.0000988 | 0.0000394 | 0.0000000 | 0.0000143 | 0.0000234 |
| 13 Trade | 1.0000000 | 0.0002523 | 0.48690061 | 0.00004078 | 0.0001622 | 0.0000000 | 0.0000093 | 0.0000861 |
| 14 Eating, Drinking, and Lodging | 1.0000000 | 0.0001845 | 0.33346810 | 0.0000378 | 0.0001324 | 0.0000000 | 0.0000039 | 0.0000786 |
| 15 Finance, Insurance, and Real Estate | 1.0000000 | 0.0001130 | 0.13871607 | 0.0001821 | 0.0000745 | 0.0000000 | 0.0000025 | 0.0000442 |
| 16 Services | 1.0000000 | 0.0002893 | 0.39631269 | 0.00004689 | 0.0001864 | 0.0000000 | 0.0000163 | 0.0001195 |
| 17 Hotels, Gaming, and Recreation | 1.0000000 | 0.0001883 | 0.32280030 | 0.0000298 | 0.0001191 | 0.0000000 | 0.0000037 | 0.0000706 |
| 18 Health | 1.0000000 | 0.0002934 | 0.42231663 | 0.00004773 | 0.0001897 | 0.0000000 | 0.0000047 | 0.0001124 |
| 19 Local Government | 1.0000000 | 0.0001769 | 0.37108700 | 0.00002971 | 0.0001175 | 0.0000000 | 0.0000043 | 0.0000697 |
| 20 Households | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |

Water Transfer Coefficients

Water transfer coefficients for agriculture water use are the proportions of agriculture water use in the agriculture sectors. Water transfer coefficients for commercial water use are the proportions of commercial water use in the non-agriculture sectors or commercial sectors.

Water Transfer Coefficients by Economic Sector

Water transfer coefficients by economic sector for the region are shown in Table 4.2-72. The agriculture water transfer coefficients are based on adjusted agriculture water use and the commercial water transfer coefficients are based on adjusted commercial water use. Adjusted agriculture water use reflects assignment of only the livestock production sector. Adjusted commercial water use reflects assignment of only the manufacturing, and, hotels, gaming, and recreation sectors. The water transfer coefficients are calculated by dividing the amount of water use in each of the assigned sectors by the total amount of water use for all the assigned sectors.

Table 4.2-72. Water Transfer Coefficients by Economic Sector for the Region.

| Economic Sector | Agriculture Water Use acre-foot | Adjusted /1 Agriculture Water Use acre-foot | Agriculture Water Transfer Coefficient | Commercial Water Use acre-foot | Adjusted /2 Commercial Water Use acre-foot | Commercial Water Transfer Coefficient |
|--|--|---|---|---|--|--|
| 1 Livestock Production | 54,876 | 54,876 | 1.0000000 | 3 | 0 | 0.0000000 |
| 2 Dairy Production | 14 | 0 | 0.0000000 | 1 | 0 | 0.0000000 |
| 3 Alfalfa Hay Production | 3,051 | 0 | 0.0000000 | 0 | 0 | 0.0000000 |
| 4 Other Hay Production | 15,045 | 0 | 0.0000000 | 0 | 0 | 0.0000000 |
| 5 Barley Production | 710 | 0 | 0.0000000 | 0 | 0 | 0.0000000 |
| 6 Agricultural Services | 0 | 0 | 0.0000000 | 64 | 0 | 0.0000000 |
| 7 Gold Mining | 0 | 0 | 0.0000000 | 17 | 0 | 0.0000000 |
| 8 Other Mining | 0 | 0 | 0.0000000 | 2 | 0 | 0.0000000 |
| 9 Construction | 0 | 0 | 0.0000000 | 239 | 0 | 0.0000000 |
| 10 Manufacturing | 0 | 0 | 0.0000000 | 452 | 432 | 0.0956279 |
| 11 Transportation and Communications | 0 | 0 | 0.0000000 | 279 | 0 | 0.0000000 |
| 12 Utilities | 0 | 0 | 0.0000000 | 616 | 0 | 0.0000000 |
| 13 Trade | 0 | 0 | 0.0000000 | 1,340 | 0 | 0.0000000 |
| 14 Eating, Drinking, and Lodging | 0 | 0 | 0.0000000 | 571 | 0 | 0.0000000 |
| 15 Finance, Insurance, and Real Estate | 0 | 0 | 0.0000000 | 341 | 0 | 0.0000000 |
| 16 Services | 0 | 0 | 0.0000000 | 1,962 | 0 | 0.0000000 |
| 17 Hotels, Gaming, and Recreation | 0 | 0 | 0.0000000 | 4,589 | 4,589 | 0.9105771 |
| 18 Health | 0 | 0 | 0.0000000 | 1,644 | 0 | 0.0000000 |
| 19 Local Government | 0 | 0 | 0.0000000 | 303 | 0 | 0.0000000 |
| 20 Households | 0 | 0 | 0.0000000 | 0 | 0 | 0.0000000 |
| Total | 73,696 | 54,876 | 1.0000000 | 12,432 | 5,041 | 1.0000000 |

1. Adjusted agriculture water use reflects assignment of only the livestock production sector.

2. Adjusted commercial water use reflects assignment of only the manufacturing sector, and, the hotel, gaming, and recreation sector (i.e., casino gaming industry).

4.3. Derivation of the Model Tables

Input-output tables include a transactions matrix, direct requirements, final demand requirements, output requirements, employment requirements, income requirements, and multipliers. Derivation of these tables is done using input-output procedures.

Transactions Matrix

There are twenty economic sectors within the economy of the region. Each sector is listed above with a definition in Table 4.1-15. These sectors include livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households. The economic activity of these twenty sectors is accounted for in a transactions matrix.

A transactions matrix is a double entry accounting system. All transactions that a economic sector has within the economy are accounted for in the transactions matrix. There is an individual row and column for each sector in the matrix. Row entries represent output and include sales, other final demand, and exports by a sector. Other final demand are capital formation, inventory accumulation, state government purchases, and federal government purchases. Column entries, on the other hand, represent input and include purchases, other final payments, and imports by a sector. Other final payments are depreciation, expenditures to state government, and expenditures to federal government. The accounting identity of the matrix requires that for any sector the row total must equal the column total.

The transactions matrix for the region is shown in Table 4.3-1. Direction of entries for the matrix is across the row for output and down the column for input. The titles of the economic sectors are listed across the top and down the left side. Sectors across the top are purchasing sectors and sectors down the side are selling sectors.

The transactions matrix has four quadrants. These are outlined within the matrix in the following manner. In the top left corner of the matrix is Quadrant I. Quadrant I contains purchases and sales by sector. This quadrant is closed to the local government and households sectors in the matrix. Quadrant II is in the top right corner of the matrix and contains other final demand and exports by sector. In the bottom left corner of the matrix is Quadrant III. Quadrant III contains other final payments and imports by sector. Quadrant IV is in the bottom right corner of the matrix and contains transactions not directly linked to the other quadrants. Row totals of the sectors are on the right side and column totals of the sectors are across the bottom.

In matrix algebra notation, all entries in the transactions matrix are denoted as x_{ij} 's. Where x is the value of the intersector transaction for row sector i and column sector j . All entries include sales, other final demand, exports, purchases, other final payments, and imports. Row totals are denoted as X_i 's. Where X is the total value of output for row sector i . Column totals are denoted as X_j 's. Where X is the total value of

input for column sector j. Again the accounting identity requires that row sector output must be equal to column sector input or if $i = j$ then, $X_i = X_j$.

The transactions matrix is represented by the T matrix presented below.

$$\begin{array}{rcccccccc}
 T = & & x_{11} & + & x_{12} & + & \cdot & + & x_{1n} & = & X_1 & & (4.3-1) \\
 & + & x_{21} & + & x_{22} & + & \cdot & + & x_{2n} & = & X_2 & & \\
 & & \cdot & & \\
 & & \cdot & & \\
 & + & x_{n1} & + & x_{n2} & + & \cdot & + & x_{nn} & = & X_n & & \\
 = & & X_1 & & X_2 & & \cdot & & X_n & & & &
 \end{array}$$

The dimensions of the T matrix include Quadrants I, II, III and IV.

Three assumptions are imposed on the transactions matrix. The first assumption is that individual businesses which make-up the economy can be grouped together into economic sectors. The reasoning here is that businesses in a given sector will be affected similarly by a given change. The second assumption is that all businesses in a given sector produce homogeneous products and services. The third assumption is that purchases of products and services by businesses in a sector from businesses in other sectors represent linear production functions. This last assumption is the assumption of fixed proportionality.

The transactions matrix for the region is based on the transactions matrix for Washoe county. The reason for this is because Washoe county makes-up 80% of the population base and 85% of the economic activity in the region.

The transactions matrix was derived in three steps. First, a transactions matrix for Washoe county was developed using IMPLAN. Second, the matrix was balanced to the output control totals mentioned above using a modified RAS technique. Third, the production functions were verified from a survey of businesses in selected sectors within the region. Particular attention was given to the hotel, gaming, and recreation sector since this sector is a large sector within the region.

Table 4.3-1. Transactions Matrix for the Region.

| Economic Sector | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|--|-------------------------|---------------------|---------------------------|-------------------------|----------------------|--------------------------|----------------|-----------------|---------------|
| | Livestock Production | Dairy Production | Alfalfa Hay Production | Other Hay Production | Barley Production | Agricultural Services | Gold Mining | Other Mining | Construction |
| | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 1 Livestock Production | 705,119 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 Dairy Production | 748 | 945 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 64,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 Other Hay Production | 294,983 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 Barley Production | 2,032 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 Agricultural Services | 49,690 | 3,000 | 24,000 | 3,000 | 0 | 89,999 | 11,000 | 0 | 1,729,006 |
| 7 Gold Mining | 0 | 0 | 0 | 0 | 0 | 94,999 | 0 | 11,600 | 0 |
| 8 Other Mining | 0 | 0 | 0 | 0 | 0 | 3,000 | 3,000 | 16,600 | 9,000 |
| 9 Construction | 27,084 | 8,553 | 0 | 0 | 0 | 476,108 | 251,514 | 558,716 | 210,284,691 |
| 10 Manufacturing | 92,281 | 51,000 | 0 | 13,000 | 1,000 | 2,063,987 | 1,820,011 | 93,001 | 72,445,266 |
| 11 Transportation and Communications | 29,971 | 17,000 | 0 | 4,000 | 0 | 641,996 | 690,004 | 77,001 | 14,189,052 |
| 12 Utilities | 16,563 | 8,000 | 7,000 | 7,000 | 0 | 484,997 | 2,994,018 | 772,007 | 4,839,025 |
| 13 Trade | 118,309 | 19,000 | 16,000 | 29,000 | 3,000 | 721,996 | 101,001 | 197,002 | 71,995,264 |
| 14 Eating, Drinking, and Lodging | 0 | 0 | 0 | 0 | 0 | 0 | 213,001 | 0 | 0 |
| 15 Finance, Insurance, and Real Estate | 121,562 | 37,000 | 20,000 | 15,000 | 2,000 | 1,126,993 | 2,920,017 | 263,002 | 33,129,122 |
| 16 Services | 23,394 | 8,000 | 27,000 | 7,000 | 0 | 1,441,991 | 2,802,017 | 334,003 | 46,805,172 |
| 17 Hotels, Gaming, and Recreation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 Health | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,000 | 0 |
| 19 Local Government | 71,774 | 10,600 | 12,000 | 33,000 | 0 | 1,178,993 | 893,005 | 267,002 | 11,820,043 |
| 20 Households | 540,276 | 216,000 | 130,000 | 212,000 | 11,000 | 22,287,864 | 16,611,699 | 1,349,029 | 415,700,526 |
| Other Final Payments | 115,154 | 74,000 | 23,000 | 33,000 | 4,000 | 11,468,930 | 3,861,853 | 3,371,030 | 160,160,508 |
| Imports | 1,118,515 | 429,699 | 59,000 | 180,000 | 15,000 | 10,605,826 | 15,041,576 | 3,568,320 | 391,542,132 |
| Column Total | 3,139,435 | 960,000 | 320,000 | 360,000 | 26,000 | 52,687,679 | 53,214,316 | 12,872,113 | 1,440,687,287 |

Table 4.3-1. Transactions Matrix (continues).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|---------------|--|--|----------------|---|--------------|---------------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ | \$ |
| 1 | 1,294,003 | 0 | 0 | 0 | 0 | 0 | 24,000 | 0 | 0 | 0 | 426,808 |
| 2 | 880,842 | 0 | 0 | 0 | 0 | 0 | 4,741 | 0 | 0 | 0 | 4,373 |
| 3 | 10,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 151,231 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 185,958 |
| 5 | 7,086 | 0 | 0 | 0 | 0 | 0 | 12,884 | 0 | 0 | 0 | 0 |
| 6 | 80,000 | 14,000 | 21,000 | 85,000 | 0 | 6,099,999 | 73,000 | 0 | 0 | 0 | 349,811 |
| 7 | 2,277,006 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17,000 | 0 | 5,601 |
| 8 | 3,998,007 | 0 | 19,000 | 0 | 0 | 0 | 1,000 | 0 | 0 | 0 | 0 |
| 9 | 11,952,923 | 14,843,768 | 14,107,998 | 9,047,975 | 1,510,008 | 62,306,305 | 21,348,615 | 1,329,028 | 6,452,111 | 48,422,620 | 21,863,814 |
| 10 | 103,934,233 | 8,536,008 | 4,328,010 | 22,536,022 | 5,239,611 | 8,151,999 | 14,479,053 | 24,623,080 | 13,636,804 | 4,068,334 | 108,396,820 |
| 11 | 29,260,071 | 30,345,026 | 6,183,014 | 27,299,026 | 2,139,004 | 12,423,998 | 21,944,049 | 9,997,002 | 2,310,822 | 4,899,054 | 137,867,232 |
| 12 | 32,842,080 | 3,640,803 | 43,053,103 | 32,518,001 | 11,435,024 | 15,132,998 | 22,480,051 | 24,309,004 | 9,709,025 | 12,952,602 | 125,074,805 |
| 13 | 18,952,846 | 3,113,003 | 271,001 | 2,923,003 | 15,443,032 | 2,551,800 | 2,023,018 | 11,276,802 | 11,379,830 | 14,613,887 | 553,004,922 |
| 14 | 0 | 7,902,007 | 526,604 | 11,013,011 | 0 | 10,112,999 | 19,679,044 | 0 | 0 | 0 | 193,521,981 |
| 15 | 13,081,944 | 13,372,011 | 3,343,008 | 77,162,824 | 8,892,019 | 149,480,981 | 42,926,097 | 5,896,001 | 36,889,696 | 15,781,275 | 483,965,295 |
| 16 | 36,104,081 | 36,123,020 | 3,336,008 | 75,139,072 | 6,214,013 | 40,721,995 | 82,389,186 | 23,858,004 | 32,993,086 | 20,998,323 | 654,674,760 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99,173,041 | 0 | 0 | 199,381,904 |
| 18 | 115,000 | 0 | 0 | 0 | 0 | 997,000 | 2,076,003 | 42,375,008 | 31,602,083 | 1,475,489 | 407,323,486 |
| 19 | 4,723,621 | 3,412,003 | 2,667,006 | 8,184,008 | 1,795,004 | 12,138,999 | 6,336,014 | 30,287,009 | 4,227,011 | 123,408,808 | 164,776,878 |
| 20 | 399,523,876 | 296,464,259 | 53,970,125 | 698,140,669 | 94,863,199 | 191,672,157 | 478,662,078 | 439,434,081 | 281,216,735 | 361,331,681 | 6,487,252 |
| | 153,973,375 | 197,913,167 | 133,016,314 | 340,642,332 | 36,147,076 | 683,221,914 | 276,060,622 | 533,442,102 | 55,249,144 | 27,622,368 | 1,146,671,954 |
| | 542,382,601 | 122,316,348 | 159,478,410 | 123,196,132 | 100,611,207 | 184,746,284 | 210,667,882 | 114,956,994 | 174,259,361 | 168,653,456 | 2,504,679,569 |
| | 1,363,431,322 | 739,238,624 | 430,242,000 | 1,433,846,375 | 284,306,397 | 1,381,754,827 | 1,207,179,719 | 1,361,934,231 | 663,890,740 | 704,232,921 | 6,720,349,054 |

Table 4.3-1. Transactions Matrix (continue).

| | Other Final Demand | Exports | Row Total |
|----|--------------------------|---------------|---------------|
| | \$ | \$ | \$ |
| 1 | 12,620 | 876,905 | 1,339,455 |
| 2 | 0 | 66,348 | 960,000 |
| 3 | 0 | 90,769 | 320,000 |
| 4 | 1,000 | 78,099 | 560,000 |
| 5 | 0 | 13,998 | 36,000 |
| 6 | 0 | 44,153,174 | 52,687,879 |
| 7 | 0 | 50,891,311 | 51,214,316 |
| 8 | 317,083 | 9,573,503 | 12,872,113 |
| 9 | 837,936,291 | 178,136,363 | 1,448,667,287 |
| 10 | 118,513,289 | 849,416,992 | 1,363,431,322 |
| 11 | 88,311,075 | 344,768,427 | 739,238,624 |
| 12 | 33,858,879 | 50,087,383 | 439,242,800 |
| 13 | 11,348,011 | 707,737,848 | 1,433,846,375 |
| 14 | 1,324,009 | 40,014,530 | 284,306,397 |
| 15 | 0 | 476,308,230 | 1,381,758,827 |
| 16 | 17,971,040 | 126,001,337 | 1,207,179,719 |
| 17 | 15,289,083 | 1,048,094,133 | 1,361,938,251 |
| 18 | 3,308,089 | 176,613,660 | 663,890,748 |
| 19 | 7,328,123 | 296,491,219 | 704,232,921 |
| 20 | 1,089,550,304 | 2,009,976,813 | 6,728,549,054 |
| | N.A. | N.A. | N.A. |
| | N.A. | N.A. | N.A. |
| | N.A. | N.A. | N.A. |

Direct Requirements

Direct requirements are the fixed combinations of inputs required for production of outputs. The fixed combinations of inputs represent linear production functions.

Direct requirements are shown in Table 4.3-2. These requirements are derived by dividing the column entries in Quadrant I and III of the T matrix by their respective column totals.

Direct requirements show the dollar amount of purchases made from a row sector by a column sector in order for that column sector to produce one dollar of output. These requirements are also known as technical coefficients of production or simply technical coefficients.

In matrix algebra notation, the direct requirements are denoted as a_{ij} 's. Where a is the dollar amount of purchases made from row sector i by column sector j in order for column sector j to produce one dollar of output. These are calculated by dividing the x_{ij} 's by the X_j 's of the T matrix. Where x_{ij} is the transactions value for the row sector i and column sector j and X_j is the total for column j .

The direct requirements are represented by the A matrix presented below.

$$\begin{array}{rcccc} A = & a_{11} & a_{12} & \cdot & a_{1n} \\ + & a_{21} & a_{22} & \cdot & a_{2n} \\ & \cdot & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot & \cdot \\ + & a_{n1} & a_{n2} & \cdot & a_{nn} \\ = & 1.0 & 1.0 & \cdot & 1.0 \end{array} \quad (4.3-2)$$

The dimensions of the A matrix include both Quadrants I and III.

Table 4.3-2. Direct Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.21114793 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 2 Dairy Production | 0.00022399 | 0.00096750 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 3 Alfalfa Hay Production | 0.00000000 | 0.07083333 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 4 Other Hay Production | 0.00033268 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 5 Barley Production | 0.00060848 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 6 Agricultural Services | 0.01487967 | 0.00312300 | 0.07500000 | 0.00892857 | 0.00000000 | 0.00178816 | 0.00028871 | 0.00000000 | 0.00120014 |
| 7 Gold Mining | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00180306 | 0.00000000 | 0.00083456 | 0.00000000 |
| 8 Other Mining | 0.00800000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00805694 | 0.00005638 | 0.00124308 | 0.00000625 |
| 9 Construction | 0.00011631 | 0.00070104 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00903642 | 0.00472643 | 0.04340515 | 0.14596298 |
| 10 Manufacturing | 0.02763355 | 0.03312500 | 0.00000000 | 0.02321429 | 0.02777778 | 0.03917400 | 0.03420133 | 0.00722300 | 0.05028591 |
| 11 Transportation and Communications | 0.00897482 | 0.01770833 | 0.00000000 | 0.00714286 | 0.00000000 | 0.01218494 | 0.01296631 | 0.00598200 | 0.00984894 |
| 12 Utilities | 0.00493929 | 0.00833333 | 0.02187500 | 0.01250000 | 0.00000000 | 0.00920513 | 0.05626339 | 0.05997516 | 0.00476031 |
| 13 Trade | 0.03342764 | 0.01979167 | 0.05625000 | 0.05178571 | 0.08333333 | 0.01370032 | 0.00189800 | 0.01530456 | 0.06997353 |
| 14 Eating, Drinking, and Lodging | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00408270 | 0.00000000 | 0.00000000 |
| 15 Finance, Insurance, and Real Estate | 0.01889799 | 0.03854167 | 0.06250000 | 0.06250000 | 0.05555556 | 0.02139007 | 0.05487277 | 0.00043192 | 0.02299568 |
| 16 Services | 0.00830299 | 0.00833333 | 0.08437500 | 0.01250000 | 0.00000000 | 0.02736866 | 0.05265332 | 0.02594780 | 0.03248854 |
| 17 Hotels, Camping, and Recreation | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 18 Health | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 19 Local Government | 0.02149273 | 0.01041667 | 0.03750000 | 0.05892857 | 0.00000000 | 0.02237702 | 0.01681888 | 0.01965800 | 0.00820456 |
| 20 Households | 0.16178568 | 0.22500000 | 0.40625000 | 0.37857143 | 0.30555556 | 0.42301852 | 0.31315478 | 0.26017710 | 0.28834721 |
| Other Final Payments | 0.03446287 | 0.07798333 | 0.07187500 | 0.06250000 | 0.11111111 | 0.21767263 | 0.16651634 | 0.26188638 | 0.11117181 |
| Imports | 0.33493938 | 0.43801979 | 0.18437500 | 0.32142857 | 0.41646667 | 0.20129813 | 0.28066005 | 0.27721323 | 0.29455481 |
| Column Total | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 |

Table 4.3-2. Direct Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Household |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|-----------------|
| 1 | 0.00294908 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00001942 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00006311 |
| 2 | 0.00064605 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000393 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000095 |
| 3 | 0.00000733 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00002250 |
| 4 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 5 | 0.00000520 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 6 | 0.00005868 | 0.00001894 | 0.00004881 | 0.00005928 | 0.00000000 | 0.00411468 | 0.00006047 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00003717 |
| 7 | 0.00167006 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 8 | 0.00273286 | 0.00000000 | 0.00004416 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000003 | 0.00000000 | 0.00002553 | 0.00000000 | 0.00000003 |
| 9 | 0.00676680 | 0.00000231 | 0.00343999 | 0.00631020 | 0.00531120 | 0.04309217 | 0.01768421 | 0.00097504 | 0.00968944 | 0.06875938 | 0.00321382 |
| 10 | 0.07622991 | 0.01209977 | 0.01609948 | 0.01571718 | 0.01842733 | 0.00549977 | 0.01190664 | 0.01808065 | 0.00047709 | 0.00377701 | 0.01412916 |
| 11 | 0.02146061 | 0.04117369 | 0.01457101 | 0.01909902 | 0.00752358 | 0.00899144 | 0.01817795 | 0.00704658 | 0.01249956 | 0.00695658 | 0.02051437 |
| 12 | 0.02400781 | 0.00492399 | 0.10472091 | 0.02367082 | 0.04002075 | 0.01093198 | 0.01862196 | 0.01704823 | 0.01458051 | 0.01839250 | 0.01861080 |
| 13 | 0.01390036 | 0.00421109 | 0.00662982 | 0.00203857 | 0.05431023 | 0.00184620 | 0.00664774 | 0.00827938 | 0.01700843 | 0.03075869 | 0.00228588 |
| 14 | 0.00000000 | 0.01048999 | 0.00122257 | 0.00768075 | 0.00000000 | 0.00731893 | 0.01630167 | 0.00000000 | 0.00000000 | 0.00000000 | 0.02879536 |
| 15 | 0.04331009 | 0.01808990 | 0.00753964 | 0.05377290 | 0.00127616 | 0.10811167 | 0.03555899 | 0.00432913 | 0.03398612 | 0.02240917 | 0.07380279 |
| 16 | 0.02648031 | 0.04886789 | 0.00700020 | 0.05341790 | 0.02185673 | 0.02947113 | 0.06824931 | 0.01693029 | 0.04948723 | 0.02981730 | 0.09741388 |
| 17 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.04344763 | 0.00000000 | 0.00000000 | 0.02966750 |
| 18 | 0.00008435 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00072154 | 0.00171971 | 0.03111375 | 0.04746836 | 0.00209517 | 0.06080866 |
| 19 | 0.00639794 | 0.00461356 | 0.00619003 | 0.00570773 | 0.00631362 | 0.00878512 | 0.00524861 | 0.09490043 | 0.00634790 | 0.17523062 | 0.03451837 |
| 20 | 0.36366049 | 0.40180999 | 0.12544132 | 0.48690061 | 0.33365810 | 0.13871607 | 0.39651269 | 0.32280030 | 0.42231663 | 0.37108708 | 0.00096529 |
| | 0.11299079 | 0.26772589 | 0.31381482 | 0.24175695 | 0.12714118 | 0.48590558 | 0.22808229 | 0.40783207 | 0.08295677 | 0.03922334 | 0.17062177 |
| | 0.42729149 | 0.16548280 | 0.37067141 | 0.08902003 | 0.33993312 | 0.13370371 | 0.17451244 | 0.08440691 | 0.26169362 | 0.23948533 | 0.37268972 |
| | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 | 1.00000000 |

Final Demand Requirements

Final demand requirements measure the change in total economic activity from a change in final demand. Final demand includes capital formation, inventory accumulation, state government purchases, federal government purchases, and exports.

A identity matrix and a $I - A$ matrix are necessary to calculate the final demand requirements.

The identity matrix is shown in Table 4.3-3. The identity matrix has one's placed along the main diagonal and zero's placed in other locations.

In matrix algebra notation, the identity matrix is represented by the I matrix presented below.

$$I = \begin{matrix} & 1.0 & 0.0 & \cdot & 0.0 \\ & 0.0 & 1.0 & \cdot & 0.0 \\ & \cdot & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot & \cdot \\ & 0.0 & 0.0 & \cdot & 1.0 \end{matrix} \quad (4.3-3)$$

The dimensions of the I matrix include only Quadrant I.

The $I - A$ matrix is shown in Table 4.3-4. This matrix is derived by subtracting the direct requirements matrix from the identity matrix.

In matrix algebra notation, the $I - A$ matrix is presented below.

$$I - A = \begin{matrix} (1.0 - a_{11}) & -a_{12} & \cdot & -a_{1n} \\ -a_{21} & (1.0 - a_{22}) & \cdot & -a_{2n} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ -a_{n1} & -a_{n2} & \cdot & (1.0 - a_{nn}) \end{matrix} \quad (4.3-4)$$

The dimensions of the $I - A$ matrix include only Quadrant I.

Final demand requirements are shown in Table 4.3-5. These requirements are derived by taking the inverse of the $I - A$ matrix.

Final demand requirements show the dollar amount of change in economic activity of the row sector from a one dollar change in final demand of the column sector. The column totals are the final demand total requirements that show the total dollar amount of change in economic activity of all row sectors combined from a one dollar change in final demand of the column sector.

In matrix algebra notation, the final demand requirements are denoted by b_{ij} 's. Where b is the dollar amount of change in economic activity of row sector i from a one dollar change in final demand of column sector j . The C_j 's are the final demand total requirements for column sector j .

The final demand requirements are represented by the B matrix presented below.

$$\begin{array}{rcccccl}
 B = & & b_{11} & & b_{12} & & \cdot & & b_{1n} & & (4.3-5) \\
 + & & b_{21} & & b_{22} & & \cdot & & b_{2n} & & \\
 & & \cdot & & \cdot & & \cdot & & \cdot & & \\
 & & \cdot & & \cdot & & \cdot & & \cdot & & \\
 + & & b_{n1} & & b_{n2} & & \cdot & & b_{nn} & & \\
 = & & B_1 & & B_2 & & \cdot & & B_n & &
 \end{array}$$

The dimensions of the B matrix include only Quadrant I.

The final demand total requirements are the same as the final demand multipliers.

Table 4.3-3. Identity Matrix.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 Dairy Production | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 Alfalfa Hay Production | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 Other Hay Production | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 Barley Production | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 Agricultural Services | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 7 Gold Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 |
| 8 Other Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 |
| 9 Construction | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 |
| 10 Manufacturing | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 11 Transportation and Communications | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 12 Utilities | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 13 Trade | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 14 Eating, Drinking, and Lodging | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 15 Finance, Insurance, and Real Estate | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 16 Services | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 17 Hotels, Gaming, and Recreation | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 Health | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 19 Local Government | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 20 Households | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Column Total | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 |

Table 4.3-3. Identity Matrix (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Outing, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|------------------|
| 1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 9 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 10 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 11 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 12 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 13 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 14 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 15 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 16 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 17 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 |
| 19 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 |
| 20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 |
| | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 | 1.0000000 |

Table 4.3-4. I - A Matrix.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.7885207 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 Dairy Production | -0.00022199 | 0.99901250 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 Alfalfa Hay Production | 0.0000000 | -0.07083333 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 Other Hay Production | -0.00833268 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 Barley Production | -0.00060448 | 0.0000000 | 0.0000000 | 0.0000000 | 1.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 Agricultural Services | -0.01487967 | -0.00312500 | -0.07500000 | -0.00892837 | 0.0000000 | 0.99829184 | -0.00820671 | 0.0000000 | -0.00120014 |
| 7 Gold Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.00190306 | 1.0000000 | -0.00085456 | -0.0000000 |
| 8 Other Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.00055694 | -0.0005638 | 0.99875700 | -0.0000000 |
| 9 Construction | -0.00811031 | -0.00870104 | 0.0000000 | 0.0000000 | 0.0000000 | -0.00963642 | -0.00472643 | -0.04340515 | -0.25409702 |
| 10 Manufacturing | -0.02763335 | -0.05312500 | 0.0000000 | -0.02321429 | -0.02777778 | -0.03917400 | -0.03420153 | -0.00722580 | -0.05028391 |
| 11 Transportation and Communications | -0.00897482 | -0.01790833 | 0.0000000 | -0.00714286 | 0.0000000 | -0.01218494 | -0.01296631 | -0.00598280 | -0.00984894 |
| 12 Utilities | -0.00495979 | -0.00833333 | -0.02187500 | -0.01250000 | 0.0000000 | -0.00920513 | -0.05636339 | -0.05997516 | -0.00476031 |
| 13 Trade | -0.01542764 | -0.01979167 | -0.05625000 | -0.05178571 | -0.00333333 | -0.01370332 | -0.00189800 | -0.01530456 | -0.04997353 |
| 14 Eating, Drinking, and Lodging | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.00400270 | 0.0000000 | 0.0000000 |
| 15 Finance, Insurance, and Real Estate | -0.03849790 | -0.03854167 | -0.06250000 | -0.06250000 | -0.01535556 | -0.02139007 | -0.05487277 | -0.02803192 | -0.02299568 |
| 16 Services | -0.00858259 | -0.00833333 | -0.08407500 | -0.01250000 | 0.0000000 | -0.02736866 | -0.05265532 | -0.02594780 | -0.03248254 |
| 17 Hotels, Gaming, and Recreation | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 Health | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | -0.0000000 | 0.0000000 |
| 19 Local Government | -0.02149273 | -0.01041667 | -0.03750000 | -0.05892857 | 0.0000000 | -0.02237702 | -0.01661888 | -0.01996580 | -0.00820456 |
| 20 Households | -0.16178568 | -0.22500000 | -0.40625000 | -0.37857143 | -0.30555556 | -0.42301852 | -0.31215470 | -0.26017710 | -0.28854721 |
| Column Total | 0.56942226 | 0.53340319 | 0.23625000 | 0.38392857 | 0.52777778 | -0.41897378 | 0.44817667 | 0.53909952 | 0.38572592 |

Table 4.3-4. I - A Matrix (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Catering, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|------------------|
| 1 | -0.00094908 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00001988 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00006351 |
| 2 | -0.00064605 | 0.00000000 | 0.00000000 | -0.00000000 | 0.00000000 | 0.00000000 | -0.00008393 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00000095 |
| 3 | -0.00000733 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00002250 |
| 4 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00002767 |
| 5 | -0.00000528 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00001867 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 6 | -0.00000968 | -0.00001894 | -0.00004681 | -0.00005928 | 0.00000000 | -0.00001466 | -0.00006047 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00003717 |
| 7 | -0.00167006 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 8 | -0.00213286 | 0.00000000 | -0.00004416 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00000003 | 0.00000000 | -0.00002553 | 0.00000000 | -0.00000003 |
| 9 | -0.00076680 | -0.00000251 | -0.00004999 | -0.00001028 | -0.00005120 | -0.00000217 | -0.00001768 | -0.00001758 | -0.00000000 | -0.00000000 | -0.00000000 |
| 10 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 11 | -0.00000000 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 12 | -0.00000000 | -0.00000000 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 13 | -0.00000000 | -0.00000000 | -0.00000000 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 14 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | 1.00000000 | -0.00000000 | -0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00000000 |
| 15 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | 0.00000000 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 16 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00000000 |
| 17 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 18 | -0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 19 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| 20 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 | -0.00000000 |
| | 0.34022228 | 0.49310029 | 0.68440623 | 0.32767700 | 0.40109430 | 0.62960929 | 0.40319473 | 0.49223090 | 0.34465009 | 0.27870067 | 0.54331169 |

Table 4.3-5. Final Demand Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 1.26776906 | 0.00011998 | 0.00009876 | 0.00018015 | 0.00089348 | 0.00012434 | 0.00010682 | 0.00006394 | 0.00014308 |
| 2 Dairy Production | 0.08002138 | 1.90109314 | 0.00001780 | 0.00002951 | 0.08002949 | 0.00004023 | 0.00003529 | 0.00001614 | 0.00005289 |
| 3 Alfalfa Hay Production | 0.00005285 | 0.87091630 | 1.00001687 | 0.00001573 | 0.00001285 | 0.00001090 | 0.00001381 | 0.00001659 | 0.00001626 |
| 4 Other Hay Production | 0.11199732 | 0.00002182 | 0.00082695 | 1.00002348 | 0.00002100 | 0.00002771 | 0.00002288 | 0.00001706 | 0.00002721 |
| 5 Barley Production | 0.80077252 | 0.00000122 | 0.00080216 | 0.00080131 | 1.00000098 | 0.00800155 | 0.00000164 | 0.00000107 | 0.00080173 |
| 6 Agricultural Services | 0.00047670 | 0.00893928 | 0.07517868 | 0.08962162 | 0.00056174 | 1.80218448 | 0.00078952 | 0.00042291 | 0.00187418 |
| 7 Gold Mining | 0.00013189 | 0.00013495 | 0.08017921 | 0.08009113 | 0.00007548 | 0.80190840 | 1.00009821 | 0.00089620 | 0.00013758 |
| 8 Other Mining | 0.00043401 | 0.00015477 | 0.00005286 | 0.00009821 | 0.00009719 | 0.00018594 | 0.00017495 | 1.00138067 | 0.00018162 |
| 9 Construction | 0.02977421 | 0.02432043 | 0.02394317 | 0.02336358 | 0.01371873 | 0.02784598 | 0.02502261 | 0.06642639 | 1.18685061 |
| 10 Manufacturing | 0.05632947 | 0.87107572 | 0.02335309 | 0.04413877 | 0.04448433 | 0.06061927 | 0.05307134 | 0.02380980 | 0.08026513 |
| 11 Transportation and Communications | 0.02948537 | 0.03383068 | 0.80407464 | 0.02876511 | 0.01891848 | 0.03331389 | 0.03195005 | 0.82128586 | 0.03188783 |
| 12 Utilities | 0.02751813 | 0.02885091 | 0.85301348 | 0.03811058 | 0.01883050 | 0.83307428 | 0.88348061 | 0.88305181 | 0.02811763 |
| 13 Trade | 0.09238912 | 0.66345537 | 0.12109531 | 0.10754835 | 0.12368942 | 0.06991315 | 0.04783730 | 0.85606476 | 0.10778321 |
| 14 Eating, Drinking, and Lodging | 0.01548750 | 0.81442114 | 0.02513621 | 0.02078355 | 0.01642180 | 0.02077968 | 0.02163507 | 0.81453288 | 0.01898053 |
| 15 Finance, Insurance, and Real Estate | 0.11315460 | 0.09429669 | 0.15098844 | 0.13735208 | 0.11334141 | 0.08984502 | 0.11608365 | 0.87838053 | 0.09132535 |
| 16 Services | 0.87579342 | 0.07341941 | 0.18521697 | 0.09575682 | 0.06483640 | 0.10876997 | 0.12216153 | 0.88458647 | 0.11360231 |
| 17 Health, Gaming, and Recreation | 0.01332535 | 0.01257408 | 0.01125876 | 0.01834994 | 0.01438011 | 0.81874856 | 0.81505879 | 0.91278517 | 0.01643234 |
| 18 Health | 0.02812975 | 0.02648609 | 0.04492130 | 0.03873344 | 0.03021906 | 0.03945725 | 0.05178617 | 0.02735277 | 0.83460036 |
| 19 Local Government | 0.05874683 | 0.03214322 | 0.07402698 | 0.09442580 | 0.01803818 | 0.04882969 | 0.09974764 | 0.08868884 | 0.03222442 |
| 20 Households | 0.42964153 | 0.40541884 | 0.68543413 | 0.59164630 | 0.46364864 | 0.60453132 | 0.48553208 | 0.41222501 | 0.52961530 |
| Column Total | 2.37181331 | 1.95901623 | 2.31474053 | 2.34896856 | 1.94343518 | 2.16126301 | 2.07569180 | 1.91641888 | 2.27451846 |

Table 4.3-5. Final Demand Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Dining, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|------------------|
| 1 | 0.00135448 | 0.00008977 | 0.00004485 | 0.00010435 | 0.00004685 | 0.00004618 | 0.00911531 | 0.00008573 | 0.00018689 | 0.00009562 | 0.00014271 |
| 2 | 0.00070984 | 0.00002226 | 0.00001426 | 0.00002368 | 0.00002416 | 0.00001284 | 0.00002599 | 0.00003406 | 0.00002905 | 0.00002206 | 0.00002264 |
| 3 | 0.00006772 | 0.00001496 | 0.00000620 | 0.00001753 | 0.00001326 | 0.00000703 | 0.00001534 | 0.00001324 | 0.00001677 | 0.00001675 | 0.00002983 |
| 4 | 0.00013121 | 0.00003412 | 0.00001015 | 0.00002420 | 0.00002148 | 0.00001346 | 0.00002650 | 0.00002143 | 0.00002714 | 0.00002682 | 0.00004702 |
| 5 | 0.00007944 | 0.0000161 | 0.00000857 | 0.0000181 | 0.0000122 | 0.00000950 | 0.00001252 | 0.0000116 | 0.0000178 | 0.0000159 | 0.0000117 |
| 6 | 0.00042490 | 0.00048114 | 0.00028200 | 0.00073305 | 0.00047148 | 0.00028147 | 0.00061705 | 0.00032764 | 0.00068103 | 0.00064793 | 0.00055414 |
| 7 | 0.00183324 | 0.00005582 | 0.00003644 | 0.00006430 | 0.00006111 | 0.00004116 | 0.00005511 | 0.00006069 | 0.00007331 | 0.00005528 | 0.00005504 |
| 8 | 0.00234401 | 0.00007299 | 0.00009655 | 0.00008469 | 0.00008131 | 0.00004316 | 0.00007365 | 0.00008086 | 0.00012263 | 0.00007380 | 0.00007995 |
| 9 | 0.02369612 | 0.03921347 | 0.05349533 | 0.02756234 | 0.02209497 | 0.06761178 | 0.03833619 | 0.01740048 | 0.03129967 | 0.11499533 | 0.02293341 |
| 10 | 1.99605325 | 0.03274770 | 0.02145720 | 0.03778609 | 0.03603903 | 0.01908862 | 0.05228417 | 0.03584790 | 0.04039735 | 0.05236270 | 0.03231500 |
| 11 | 0.03849158 | 1.06274000 | 0.83473331 | 0.04297963 | 0.03005997 | 0.02066669 | 0.09961339 | 0.02489735 | 0.03583283 | 0.03198350 | 0.03639103 |
| 12 | 0.94409140 | 0.02790820 | 1.12546614 | 0.05054695 | 0.06434884 | 0.02478590 | 0.04367436 | 0.03992397 | 0.04122566 | 0.04933945 | 0.03935033 |
| 13 | 0.05378710 | 0.03929041 | 0.02383108 | 1.06532307 | 0.10953794 | 0.03026378 | 0.06253114 | 0.05571883 | 0.07706956 | 0.06016465 | 0.11041228 |
| 14 | 0.01477710 | 0.03142823 | 0.00918757 | 0.03180896 | 1.01773795 | 0.04788995 | 0.05746411 | 0.01781394 | 0.02272080 | 0.02307019 | 0.04048998 |
| 15 | 0.06342695 | 0.08472350 | 0.03505524 | 0.13422857 | 0.09190233 | 1.15325984 | 0.10574057 | 0.06161422 | 0.13524821 | 0.10490860 | 0.12533404 |
| 16 | 0.06007148 | 0.12945675 | 0.04079044 | 0.14531155 | 0.09148918 | 0.07268308 | 1.15074434 | 0.06883932 | 0.13998798 | 0.12784994 | 0.15154910 |
| 17 | 0.01295794 | 0.01814742 | 0.00695864 | 0.02127806 | 0.01355735 | 0.00827276 | 0.01828207 | 1.06094657 | 0.01984033 | 0.00059720 | 0.03837693 |
| 18 | 0.02756118 | 0.03818453 | 0.01460167 | 0.04478720 | 0.03272204 | 0.01829872 | 0.04832781 | 0.06686129 | 1.09161089 | 0.04396528 | 0.04006964 |
| 19 | 0.02433596 | 0.02769314 | 0.01727267 | 0.03287892 | 0.02705731 | 0.02279980 | 0.02902819 | 0.06530437 | 0.03253316 | 1.22819228 | 0.04370713 |
| 20 | 0.41779557 | 0.58511678 | 0.22371941 | 0.68605625 | 0.50160610 | 0.26671387 | 0.58945824 | 0.58067614 | 0.63979726 | 0.66410381 | 1.24301409 |
| | 1.90924436 | 2.13681463 | 1.59926976 | 2.32154772 | 2.02795308 | 1.72745799 | 2.16843808 | 2.03116211 | 2.31132517 | 2.54447284 | 1.96687119 |

Output Requirements

Output requirements measure the change in total economic activity from a change in output.

Output requirements are shown in Table 4.3-6. These requirements are derived by taking the final demand requirements in the B matrix and dividing them by their respective intersectoral final demand requirements. The intersectoral final demand requirements are the final demand requirements along the main diagonal in the B matrix. In so doing, the output requirements along the main diagonal become one's.

Output requirements show the dollar amount of change in economic activity of the row sector from a one dollar change in output of the column sector. The column totals are the output total requirements that show the total dollar amount of change in economic activity of all row sectors from a one dollar change in output of the column sector.

In matrix algebra notation, the output requirements are denoted by c_{ij} 's. Where c is the dollar amount of change in economic activity of row sector i from a one dollar change in output of column sector j . The C_j 's are the output total requirements for column sector j .

The output requirements are represented by the C matrix presented below.

$$\begin{array}{rcccc} C = & c_{11} & c_{12} & \cdot & c_{1n} \\ + & c_{21} & c_{22} & \cdot & c_{2n} \\ & \cdot & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot & \cdot \\ + & c_{n1} & c_{n2} & \cdot & c_{nn} \\ = & C_1 & C_2 & \cdot & C_n \end{array} \quad (4.3-6)$$

The dimensions of the B matrix include only Quadrant I.

The output total requirements are the same as the output multipliers.

Table 4.3-6. Output Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 1.0000000 | 0.00011965 | 0.00089035 | 0.00010915 | 0.00009249 | 0.00013487 | 0.00010601 | 0.00006388 | 0.00011972 |
| 2 Dairy Production | 0.00025359 | 1.00000000 | 0.00081780 | 0.00082950 | 0.00002949 | 0.00004014 | 0.00083528 | 0.00001611 | 0.00004456 |
| 3 Alfalfa Hay Production | 0.00002391 | 0.07084297 | 1.00000000 | 0.00081573 | 0.00001285 | 0.00001686 | 0.00001381 | 0.00001058 | 0.00001370 |
| 4 Other Hay Production | 0.06234205 | 0.00002179 | 0.00082695 | 1.00000000 | 0.00002108 | 0.00002745 | 0.00082280 | 0.00001703 | 0.00002295 |
| 5 Barley Production | 0.00000935 | 0.00000121 | 0.00000216 | 0.0000131 | 1.00000000 | 0.00000155 | 0.00000164 | 0.00000106 | 0.00000145 |
| 6 Agricultural Services | 0.01614703 | 0.000893004 | 0.07587740 | 0.0862137 | 0.00056174 | 1.00000000 | 0.00078945 | 0.00042236 | 0.0157912 |
| 7 Gold Mining | 0.00010348 | 0.00013481 | 0.00017921 | 0.00009114 | 0.00007548 | 0.00190424 | 1.00000000 | 0.00089503 | 0.00011592 |
| 8 Other Mining | 0.00009782 | 0.00045461 | 0.00006286 | 0.00009820 | 0.00009719 | 0.00082952 | 0.00017484 | 1.00000000 | 0.00015303 |
| 9 Construction | 0.02348552 | 0.00449507 | 0.02594473 | 0.02336298 | 0.01371871 | 0.02782518 | 0.02582033 | 0.06634010 | 1.00000000 |
| 10 Manufacturing | 0.04443197 | 0.07108223 | 0.02533466 | 0.04413765 | 0.04449428 | 0.04048712 | 0.03386695 | 0.02377887 | 0.0676267 |
| 11 Transportation and Communications | 0.02326549 | 0.03579571 | 0.00607428 | 0.02876437 | 0.01691846 | 0.03324126 | 0.03194747 | 0.02175256 | 0.02686780 |
| 12 Utilities | 0.02170595 | 0.02802190 | 0.05304459 | 0.03610953 | 0.01885048 | 0.03308218 | 0.08347317 | 0.08294395 | 0.02385947 |
| 13 Trade | 0.07287533 | 0.06239098 | 0.12109139 | 0.10754368 | 0.12568929 | 0.06976014 | 0.04783299 | 0.03599193 | 0.09081447 |
| 14 Eating, Drinking, and Lodging | 0.01223423 | 0.01440623 | 0.02513379 | 0.00378302 | 0.01642178 | 0.00873434 | 0.02163312 | 0.01451400 | 0.01599235 |
| 15 Finance, Insurance, and Real Estate | 0.08957041 | 0.09419918 | 0.15098390 | 0.13734858 | 0.11534790 | 0.08964914 | 0.11607318 | 0.07028911 | 0.07694764 |
| 16 Services | 0.05978402 | 0.07234433 | 0.18521294 | 0.09575438 | 0.06483634 | 0.10853284 | 0.12213052 | 0.06447660 | 0.09571745 |
| 17 Hotels, Gaming, and Recreation | 0.01051086 | 0.01256108 | 0.02125840 | 0.01834947 | 0.01438009 | 0.01876848 | 0.01503743 | 0.01276256 | 0.01384525 |
| 18 Health | 0.02218839 | 0.02645870 | 0.044892055 | 0.03875346 | 0.03021909 | 0.03937123 | 0.03178330 | 0.02731734 | 0.02915308 |
| 19 Local Government | 0.04633812 | 0.03210998 | 0.07402573 | 0.05442339 | 0.01803816 | 0.04877286 | 0.03974405 | 0.04063398 | 0.02715128 |
| 20 Households | 0.33389574 | 0.40489964 | 0.48342258 | 0.59163142 | 0.46364919 | 0.60021338 | 0.48348829 | 0.41168954 | 0.44640437 |
| Column Total | 1.87083997 | 1.95699048 | 2.31469813 | 2.24890326 | 1.94345328 | 2.13655122 | 2.07341476 | 1.91392950 | 1.91645197 |

Table 4.3-6. Output Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Household |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|-----------------|
| 1 | 0.00123378 | 0.00008447 | 0.00003985 | 0.00009795 | 0.00008453 | 0.00004094 | 0.00010521 | 0.00008080 | 0.00009792 | 0.00007723 | 0.00011474 |
| 2 | 0.00064763 | 0.00002095 | 0.00001267 | 0.00003411 | 0.00002374 | 0.00001114 | 0.00002259 | 0.00002279 | 0.00002661 | 0.00001781 | 0.00001820 |
| 3 | 0.00008179 | 0.00001410 | 0.00000551 | 0.00001646 | 0.00001303 | 0.00000611 | 0.00001333 | 0.00001248 | 0.00001536 | 0.00001352 | 0.00002398 |
| 4 | 0.00011971 | 0.00002270 | 0.00000902 | 0.00002647 | 0.00002111 | 0.00000994 | 0.00002303 | 0.00002020 | 0.00002487 | 0.00002166 | 0.00003711 |
| 5 | 0.00006679 | 0.00000151 | 0.00000051 | 0.00000170 | 0.00000119 | 0.00000078 | 0.00001088 | 0.00000189 | 0.00000163 | 0.00000128 | 0.00000150 |
| 6 | 0.00008766 | 0.00005273 | 0.00002590 | 0.00008811 | 0.00006377 | 0.00001023 | 0.00003422 | 0.00003082 | 0.00002348 | 0.00002328 | 0.00002591 |
| 7 | 0.00167256 | 0.00005234 | 0.00003238 | 0.00006054 | 0.00006004 | 0.00001569 | 0.00004789 | 0.00005721 | 0.00006716 | 0.00004464 | 0.00004425 |
| 8 | 0.00213459 | 0.00006864 | 0.00008378 | 0.00007977 | 0.00007989 | 0.00003742 | 0.00006400 | 0.00007621 | 0.00011236 | 0.00005967 | 0.00006945 |
| 9 | 0.02161546 | 0.03689846 | 0.04929999 | 0.02347228 | 0.02170989 | 0.05862667 | 0.03331426 | 0.01648063 | 0.02867292 | 0.09287359 | 0.01843797 |
| 10 | 1.00000000 | 0.03081441 | 0.01906178 | 0.03346914 | 0.03341092 | 0.01648231 | 0.02806372 | 0.03388367 | 0.03948051 | 0.05613705 | 0.02590017 |
| 11 | 0.03511828 | 1.00000000 | 0.02197215 | 0.04034422 | 0.02560378 | 0.01792024 | 0.03442588 | 0.02346785 | 0.03282366 | 0.02543061 | 0.02925761 |
| 12 | 0.04068353 | 0.02568603 | 1.00000000 | 0.04748507 | 0.06334697 | 0.02142286 | 0.03795314 | 0.03763042 | 0.03763990 | 0.03984797 | 0.01162684 |
| 13 | 0.04807333 | 0.05579814 | 0.02118841 | 1.00000000 | 0.09880534 | 0.02634194 | 0.05439976 | 0.03251789 | 0.07060168 | 0.07281959 | 0.00876912 |
| 14 | 0.01348207 | 0.02957285 | 0.00816190 | 0.02985853 | 1.00000000 | 0.01342586 | 0.03255641 | 0.01605632 | 0.02811411 | 0.01863215 | 0.03255388 |
| 15 | 0.05695602 | 0.07972176 | 0.03114177 | 0.12599400 | 0.09030858 | 1.00000000 | 0.09188884 | 0.05807460 | 0.12389782 | 0.04472724 | 0.10092669 |
| 16 | 0.07832859 | 0.12181412 | 0.00623671 | 0.13630752 | 0.08989483 | 0.06302316 | 1.00000000 | 0.08109852 | 0.12823954 | 0.18325533 | 0.12184224 |
| 17 | 0.01182234 | 0.01707606 | 0.00616405 | 0.01997334 | 0.01528618 | 0.00717337 | 0.01588717 | 1.00000000 | 0.01817803 | 0.01663498 | 0.03101503 |
| 18 | 0.02496352 | 0.03593027 | 0.01297158 | 0.04204094 | 0.03215176 | 0.01586685 | 0.03504488 | 0.06300523 | 1.00000000 | 0.03712290 | 0.06501747 |
| 19 | 0.02222484 | 0.0066013 | 0.01534440 | 0.00086217 | 0.02634573 | 0.01978887 | 0.02522557 | 0.06174126 | 0.02980289 | 1.00000000 | 0.03513960 |
| 20 | 0.38118112 | 0.35017578 | 0.19874482 | 0.64398891 | 0.49286371 | 0.23128688 | 0.51234083 | 0.47191323 | 0.38610377 | 0.53634954 | 1.00000000 |
| | 1.74192345 | 2.01066549 | 1.42073187 | 2.17919595 | 1.99260830 | 1.49789140 | 1.90175471 | 1.91636034 | 2.11735261 | 2.05489020 | 1.38132349 |

Employment Requirements

Employment requirements measure the change in employment from a change in output. Employment is the number of jobs.

Employment requirements are the output response coefficients for employment. These requirements show the number of jobs required to produce one dollar of output in a given sector.

The employment requirements are shown in Table 4.3-7. These are taken from Table 4.2-71 as the output response coefficients for employment. They are placed along the main diagonal of the matrix. Zero's are placed in other locations of the matrix.

In matrix algebra notation, the employment requirements are denoted by d_{ij} 's. Where d is the number of jobs required to produce one dollar of output in row sector i and column sector j , being that $i = j$. Column totals are denoted by D_j 's.

The employment requirements matrix is represented by the D matrix presented below.

$$\begin{array}{rcccc} D = & d_{11} & 0.0 & \cdot & 0.0 \\ + & 0.0 & d_{22} & \cdot & 0.0 \\ & \cdot & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot & \cdot \\ + & 0.0 & 0.0 & \cdot & d_{nn} \\ = & D_1 & D_2 & \cdot & D_n \end{array} \quad (4.3-7)$$

The dimensions of the D matrix include only Quadrant I.

The employment requirements are not the same as employment multipliers. Employment multipliers instead measure the total change in the number of jobs from a single job change in a given sector.

A total employment requirements matrix is necessary to calculate the employment multipliers.

Total employment requirements are shown in Table 4.3-8. These requirements are derived by multiplying the employment requirements matrix by the final demand requirements matrix.

Total employment requirements show the total number of jobs in row sector i and column sector j created by employment.

In matrix algebra notation, the total employment requirements are denoted by e_{ij} 's. Where e is the total number of jobs in row sector i and column sector j . Column totals are denoted by E_j 's.

The total employment requirements are represented by the E matrix presented below.

$$\begin{array}{rcccc}
 E = & e_{11} & e_{12} & \cdot & e_{1n} \\
 + & e_{21} & e_{22} & \cdot & e_{2n} \\
 & \cdot & \cdot & \cdot & \cdot \\
 & \cdot & \cdot & \cdot & \cdot \\
 + & e_{n1} & e_{n2} & \cdot & e_{nn} \\
 = & E_1 & E_2 & \cdot & E_n
 \end{array} \tag{4.3-8}$$

The dimensions of the E matrix include only Quadrant I.

Employment multipliers are calculated by dividing the column totals of the total employment requirements matrix by the column totals of the employment requirements matrix.

Employment multipliers show the total change in the number of jobs of all row sectors from a single job change in the column sector.

Table 4.3-7. Employment Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.000187 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 2 Dairy Production | 0.000000 | 0.000218 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 3 Alfalfa Hay Production | 0.000000 | 0.000000 | 0.000175 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 4 Other Hay Production | 0.000000 | 0.000000 | 0.000000 | 0.000176 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 5 Barley Production | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000277 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 6 Agricultural Services | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000257 | 0.000000 | 0.000000 | 0.000000 |
| 7 Gold Mining | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000275 | 0.000000 | 0.000000 |
| 8 Other Mining | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000164 | 0.000000 |
| 9 Construction | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000071 |
| 10 Manufacturing | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 11 Transportation and Communications | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 12 Utilities | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 13 Trade | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 14 Eating, Drinking, and Lodging | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 15 Finance, Insurance, and Real Estate | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 16 Services | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 17 Hotels, Gaming, and Recreation | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 18 Health | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 19 Local Government | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| 20 Households | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| Column Total | 0.000187 | 0.000218 | 0.000175 | 0.000176 | 0.000277 | 0.000257 | 0.000275 | 0.000164 | 0.000071 |

Table 4.3-7. Employment Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eatng, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|-------------|---|--|----------------|---|--------------|---------------------------|------------------|
| 1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 9 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 10 | 0.0000025 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 11 | 0.0000000 | 0.0001181 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 12 | 0.0000000 | 0.0000000 | 0.0000626 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 13 | 0.0000000 | 0.0000000 | 0.0000000 | 0.00002523 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 14 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0001181 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 15 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0001130 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 16 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000293 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 17 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0001181 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0002934 | 0.0000000 | 0.0000000 | 0.0000000 |
| 19 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0001769 | 0.0000000 | 0.0000000 |
| 20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| | 0.0000025 | 0.0001181 | 0.0000626 | 0.00002523 | 0.0001181 | 0.0001130 | 0.0000293 | 0.0001181 | 0.0002934 | 0.0001769 | 0.0000000 |

Table 4.3-8. Total Employment Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.00002392 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 2 Dairy Production | 0.00000001 | 0.00002190 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 3 Alfalfa Hay Production | 0.00000000 | 0.00000133 | 0.00001775 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 4 Other Hay Production | 0.00000000 | 0.00000000 | 0.00000000 | 0.0001786 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 5 Barley Production | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00002778 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| 6 Agricultural Services | 0.00000052 | 0.00000023 | 0.00000194 | 0.00000025 | 0.00000001 | 0.00002563 | 0.00000002 | 0.00000001 | 0.00000005 |
| 7 Gold Mining | 0.00000000 | 0.00000000 | 0.00000001 | 0.00000000 | 0.00000000 | 0.00000005 | 0.00002073 | 0.00000003 | 0.00000000 |
| 8 Other Mining | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00001606 | 0.00000000 |
| 9 Construction | 0.00000006 | 0.00000021 | 0.00000023 | 0.00000020 | 0.00000012 | 0.00000024 | 0.00000022 | 0.00000058 | 0.00001034 |
| 10 Manufacturing | 0.00000046 | 0.00000059 | 0.00000021 | 0.00000036 | 0.00000037 | 0.00000050 | 0.00000044 | 0.00000020 | 0.00000066 |
| 11 Transportation and Communications | 0.00000015 | 0.00000040 | 0.00000031 | 0.00000034 | 0.00000020 | 0.00000039 | 0.00000038 | 0.00000026 | 0.00000038 |
| 12 Utilities | 0.00000017 | 0.00000018 | 0.00000033 | 0.00000024 | 0.00000012 | 0.00000021 | 0.00000052 | 0.00000052 | 0.00000018 |
| 13 Trade | 0.00000023 | 0.00000158 | 0.00000030 | 0.00000027 | 0.00000017 | 0.00000076 | 0.00000121 | 0.00000041 | 0.00000022 |
| 14 Eating, Drinking, and Lodging | 0.00000029 | 0.00000027 | 0.00000047 | 0.00000039 | 0.00000031 | 0.00000039 | 0.00000041 | 0.00000027 | 0.00000036 |
| 15 Finance, Insurance, and Real Estate | 0.00000020 | 0.00000107 | 0.00000071 | 0.00000135 | 0.00000130 | 0.00000102 | 0.00000131 | 0.00000080 | 0.00000103 |
| 16 Services | 0.00000019 | 0.00000210 | 0.00000036 | 0.00000027 | 0.00000138 | 0.00000315 | 0.00000053 | 0.00000025 | 0.00000029 |
| 17 Hotels, Gaming, and Recreation | 0.00000025 | 0.00000024 | 0.00000040 | 0.00000035 | 0.00000027 | 0.00000035 | 0.00000028 | 0.00000024 | 0.00000031 |
| 18 Health | 0.00000003 | 0.00000070 | 0.00000032 | 0.00000114 | 0.00000009 | 0.00000116 | 0.00000093 | 0.00000080 | 0.00000102 |
| 19 Local Government | 0.00000104 | 0.00000027 | 0.00000031 | 0.00000167 | 0.00000052 | 0.00000008 | 0.00000070 | 0.00000072 | 0.00000057 |
| 20 Households | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| Column Total | 0.00003593 | 0.00003141 | 0.00003540 | 0.00002984 | 0.00003674 | 0.00003575 | 0.00003868 | 0.00002434 | 0.00002091 |

Table 4.3-8. Total Employment Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Household |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|-----------------|
| 1 | 0.0000003 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 | 0.0000002 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 | 0.0000001 | 0.0000001 | 0.0000001 | 0.0000002 | 0.0000001 | 0.0000013 | 0.0000002 | 0.0000001 | 0.0000002 | 0.0000002 | 0.0000002 |
| 7 | 0.0000005 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8 | 0.0000004 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 9 | 0.0000021 | 0.0000034 | 0.0000048 | 0.0000024 | 0.0000019 | 0.0000059 | 0.0000033 | 0.0000013 | 0.0000027 | 0.0000010 | 0.0000030 |
| 10 | 0.0000004 | 0.0000007 | 0.0000010 | 0.0000031 | 0.0000030 | 0.0000014 | 0.0000027 | 0.0000030 | 0.0000036 | 0.0000027 | 0.0000027 |
| 11 | 0.0000045 | 0.0001253 | 0.0000029 | 0.0000051 | 0.0000031 | 0.0000034 | 0.0000047 | 0.0000029 | 0.0000042 | 0.0000038 | 0.0000043 |
| 12 | 0.0000028 | 0.0000017 | 0.0000070 | 0.0000012 | 0.0000040 | 0.0000013 | 0.0000027 | 0.0000025 | 0.0000026 | 0.0000031 | 0.0000025 |
| 13 | 0.0000136 | 0.0000150 | 0.0000060 | 0.0000268 | 0.0000254 | 0.0000076 | 0.0000158 | 0.0000141 | 0.0000194 | 0.0000227 | 0.0000279 |
| 14 | 0.0000028 | 0.0000059 | 0.0000017 | 0.0000060 | 0.0000018 | 0.0000034 | 0.0000013 | 0.0000032 | 0.0000043 | 0.0000043 | 0.0000076 |
| 15 | 0.0000071 | 0.0000096 | 0.0000040 | 0.0000152 | 0.0000104 | 0.0001303 | 0.0000119 | 0.0000070 | 0.0000153 | 0.0000119 | 0.0000142 |
| 16 | 0.0000349 | 0.0000375 | 0.0000118 | 0.0000420 | 0.0000265 | 0.0000210 | 0.0000329 | 0.0000249 | 0.0000405 | 0.0000370 | 0.0000438 |
| 17 | 0.0000024 | 0.0000034 | 0.0000013 | 0.0000040 | 0.0000029 | 0.0000016 | 0.0000034 | 0.0000199 | 0.0000037 | 0.0000039 | 0.0000073 |
| 18 | 0.0000080 | 0.0000112 | 0.0000043 | 0.0000131 | 0.0000096 | 0.0000074 | 0.0000118 | 0.0000194 | 0.0000320 | 0.0000135 | 0.0000237 |
| 19 | 0.0000043 | 0.0000049 | 0.0000023 | 0.0000023 | 0.0000048 | 0.0000040 | 0.0000051 | 0.0000116 | 0.0000054 | 0.0000190 | 0.0000077 |
| 20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| | 0.0001644 | 0.0002209 | 0.0001123 | 0.0003489 | 0.0002136 | 0.0001861 | 0.0004018 | 0.0002901 | 0.0004227 | 0.0003321 | 0.0004439 |

Income Requirements

Income requirements measure the change in income from a change in output.

Income requirements are the output response coefficients for income. These requirements show the income required to produce one dollar of output in a given sector.

The income requirements are shown in Table 4.3-9. These are taken from Table 4.2-71 as the output response coefficients for employment. They are placed along the main diagonal of the matrix. Zero's are placed in other locations of the matrix.

In matrix algebra notation, the income requirements are denoted by f_{ij} 's. Where f is the income required to produce one dollar of output in row sector i and column sector j , being that $i = j$. Column totals are denoted by F_j 's.

The income requirements matrix is represented by the F matrix presented below.

$$\begin{array}{rcccc} F = & f_{11} & 0.0 & \cdot & 0.0 \\ + & 0.0 & f_{22} & \cdot & 0.0 \\ & \cdot & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot & \cdot \\ + & 0.0 & 0.0 & \cdot & f_{nn} \\ = & F_1 & F_2 & \cdot & F_n \end{array} \quad (4.3-9)$$

The dimensions of the F matrix include only Quadrant I.

The income requirements are not the same as income multipliers. Income multipliers instead measure the total dollar amount of change in income from a one dollar change in income in a given sector.

A total income requirements matrix is necessary to calculate the income multipliers.

Total income requirements are shown in Table 4.3-10. These requirements are derived by multiplying the income requirements matrix by the final demand requirements matrix.

Total income requirements show the total dollar amount of income in row sector i and column sector j created by income.

In matrix algebra notation, the total income requirements are denoted by g_{ij} 's. Where g is the total dollar amount of income in row sector i and column sector j . Column totals are denoted by G_j 's.

The total income requirements are represented by the G matrix presented below.

$$\begin{array}{rcccc}
 G = & g_{11} & g_{12} & \cdot & g_{1n} \\
 + & g_{21} & g_{22} & \cdot & g_{2n} \\
 & \cdot & \cdot & \cdot & \cdot \\
 & \cdot & \cdot & \cdot & \cdot \\
 & \cdot & \cdot & \cdot & \cdot \\
 + & g_{n1} & g_{n2} & \cdot & g_{nn} \\
 = & G_1 & G_2 & \cdot & G_n
 \end{array} \tag{4.3-10}$$

The dimensions of the G matrix include only Quadrant I.

Income multipliers are calculated by dividing the column totals of the total income requirements matrix by the column totals of the income requirements matrix.

Income multipliers show the total dollar amount of change in income of all row sectors from a one dollar change in income of a column sector.

Table 4.3-9. Income Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.1617855 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 Dairy Production | 0.0000000 | 0.2250000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 Alfalfa Hay Production | 0.0000000 | 0.0000000 | 0.4062500 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 Other Hay Production | 0.0000000 | 0.0000000 | 0.0000000 | 0.37837143 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 Barley Production | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.30555556 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 Agricultural Services | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.42301452 | 0.0000000 | 0.0000000 | 0.0000000 |
| 7 Gold Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.31213470 | 0.0000000 | 0.0000000 |
| 8 Other Mining | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.26017713 | 0.0000000 |
| 9 Construction | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.28854721 |
| 10 Manufacturing | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 11 Transportation and Communications | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 12 Utilities | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 13 Trade | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 14 Eating, Drinking, and Lodging | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 15 Finance, Insurance, and Real Estate | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 16 Services | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 17 Hotels, Gaming, and Recreation | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 Health | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 19 Local Government | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 20 Households | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| Column Total | 0.1617855 | 0.2250000 | 0.4062500 | 0.37837143 | 0.30555556 | 0.42301452 | 0.31213470 | 0.26017713 | 0.28854721 |

Table 4.3-9. Income Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Camping, and Recreation | 18 Health | 19 Local Government | 20 Household |
|----|---------------------|---|-----------------|-------------|--|--|----------------|--|--------------|---------------------------|-----------------|
| 1 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 2 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 3 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 4 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 5 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 6 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 7 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 8 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 9 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 10 | 0.26369049 | 0.40109999 | 0.12544132 | 0.48690061 | 0.33365410 | 0.13871607 | 0.39651269 | 0.32280030 | 0.42231663 | 0.37108790 | 0.00000000 |
| 11 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 12 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 13 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 14 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 15 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 16 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 17 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 18 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 19 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| 20 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 | 0.0000000 |
| | 0.26369049 | 0.40109999 | 0.12544132 | 0.48690061 | 0.33365410 | 0.13871607 | 0.39651269 | 0.32280030 | 0.42231663 | 0.37108790 | 0.00000000 |

Table 4.3-10. Total Income Requirements.

| Economic Sector | 1 Livestock Production | 2 Dairy Production | 3 Alfalfa Hay Production | 4 Other Hay Production | 5 Barley Production | 6 Agricultural Services | 7 Gold Mining | 8 Other Mining | 9 Construction |
|--|------------------------------|--------------------------|--------------------------------|------------------------------|---------------------------|-------------------------------|---------------------|----------------------|-------------------|
| 1 Livestock Production | 0.20510671 | 0.00001941 | 0.00001462 | 0.00001669 | 0.00001496 | 0.00003012 | 0.00001715 | 0.00001035 | 0.00002299 |
| 2 Dairy Production | 0.00007231 | 0.22523291 | 0.00000400 | 0.00000664 | 0.00000664 | 0.00000905 | 0.00000794 | 0.00000363 | 0.00001190 |
| 3 Alfalfa Hay Production | 0.00001234 | 0.02880975 | 0.40625685 | 0.00000639 | 0.00000522 | 0.00000486 | 0.00000561 | 0.00000430 | 0.00000660 |
| 4 Other Hay Production | 0.04229899 | 0.00000626 | 0.00001020 | 0.37638108 | 0.00000795 | 0.00001049 | 0.00000863 | 0.00000646 | 0.00001030 |
| 5 Barley Production | 0.00023603 | 0.00000037 | 0.00000066 | 0.00000040 | 0.30553585 | 0.00000047 | 0.00000050 | 0.00000033 | 0.00000052 |
| 6 Agricultural Services | 0.00063949 | 0.00378148 | 0.01209809 | 0.00407012 | 0.00023762 | 0.42394277 | 0.00033398 | 0.00017990 | 0.00079281 |
| 7 Gold Mining | 0.00004092 | 0.00004213 | 0.00005594 | 0.00002845 | 0.00002354 | 0.00059372 | 0.11218285 | 0.00027975 | 0.00004295 |
| 8 Other Mining | 0.00003226 | 0.00004027 | 0.00001636 | 0.00002155 | 0.00002529 | 0.00004942 | 0.00004512 | 0.26811553 | 0.00004725 |
| 9 Construction | 0.00059127 | 0.00767530 | 0.00748661 | 0.00674150 | 0.00395830 | 0.00004642 | 0.00722020 | 0.01916715 | 0.34246243 |
| 10 Manufacturing | 0.01485355 | 0.01074199 | 0.00668590 | 0.01143897 | 0.01173273 | 0.01398475 | 0.01399451 | 0.00627942 | 0.02116315 |
| 11 Transportation and Communications | 0.01182878 | 0.01356746 | 0.01045697 | 0.01113396 | 0.00679499 | 0.01336638 | 0.01281337 | 0.00673700 | 0.01278829 |
| 12 Utilities | 0.00946191 | 0.00351874 | 0.00663033 | 0.00478063 | 0.00236463 | 0.00414888 | 0.01034648 | 0.01041819 | 0.00355220 |
| 13 Trade | 0.04498432 | 0.03040965 | 0.05096043 | 0.05236535 | 0.06119825 | 0.03404876 | 0.02329291 | 0.02729796 | 0.05247971 |
| 14 Eating, Drinking, and Lodging | 0.00517087 | 0.00481173 | 0.00036890 | 0.00693460 | 0.00547927 | 0.00693331 | 0.00721872 | 0.00444901 | 0.00633301 |
| 15 Finance, Insurance, and Real Estate | 0.01575183 | 0.01308047 | 0.02094452 | 0.01905294 | 0.01600854 | 0.01246295 | 0.01648067 | 0.00976291 | 0.01266829 |
| 16 Services | 0.03005305 | 0.02871522 | 0.07344052 | 0.05794879 | 0.02570646 | 0.04012867 | 0.04843460 | 0.03353961 | 0.04504476 |
| 17 Hotels, Gaming, and Recreation | 0.00430143 | 0.00405892 | 0.00686233 | 0.00592336 | 0.00464190 | 0.00601236 | 0.00486098 | 0.00412706 | 0.00530433 |
| 18 Health | 0.01187966 | 0.01118552 | 0.01897101 | 0.01635778 | 0.01276201 | 0.01666345 | 0.01342383 | 0.01155153 | 0.01461231 |
| 19 Local Government | 0.02179989 | 0.01192793 | 0.02747843 | 0.03304019 | 0.00669373 | 0.01849115 | 0.01474983 | 0.01509910 | 0.01195806 |
| 20 Households | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| Column Total | 0.42922663 | 0.40502748 | 0.68477251 | 0.59107539 | 0.46320209 | 0.60094778 | 0.48506340 | 0.41182713 | 0.52930388 |

Table 4.3-10. Total Income Requirements (continue).

| | 10 Manufacturing | 11 Transportation and Communications | 12 Utilities | 13 Trade | 14 Eating, Drinking, and Lodging | 15 Finance, Insurance, and Real Estate | 16 Services | 17 Hotels, Gaming, and Recreation | 18 Health | 19 Local Government | 20 Households |
|----|---------------------|---|-----------------|-------------|--|--|----------------|---|--------------|---------------------------|------------------|
| 1 | 0.00021914 | 0.00001452 | 0.00000726 | 0.00001688 | 0.00001392 | 0.00000747 | 0.00001866 | 0.00001387 | 0.00001729 | 0.00001547 | 0.00002399 |
| 2 | 0.00015971 | 0.00000591 | 0.00000321 | 0.00000178 | 0.00000544 | 0.00000289 | 0.00000585 | 0.00000542 | 0.00000654 | 0.00000497 | 0.00000589 |
| 3 | 0.00002751 | 0.00000699 | 0.00000252 | 0.00000712 | 0.00000539 | 0.00000286 | 0.00000623 | 0.00000538 | 0.00000681 | 0.00000680 | 0.00001212 |
| 4 | 0.00004867 | 0.00000913 | 0.00000384 | 0.00001068 | 0.00000813 | 0.00000434 | 0.00001609 | 0.00000811 | 0.00001028 | 0.00001015 | 0.00001790 |
| 5 | 0.00000227 | 0.00000049 | 0.00000018 | 0.00000025 | 0.00000037 | 0.00000028 | 0.00000383 | 0.00000385 | 0.00000354 | 0.00000349 | 0.00000357 |
| 6 | 0.00017974 | 0.00020053 | 0.00012352 | 0.00031010 | 0.00019942 | 0.00020032 | 0.00005182 | 0.00013868 | 0.00008809 | 0.00027409 | 0.00027671 |
| 7 | 0.00057226 | 0.00001736 | 0.00001138 | 0.00002013 | 0.00001907 | 0.00001265 | 0.00001720 | 0.00001895 | 0.00002261 | 0.00001726 | 0.00001718 |
| 8 | 0.00060986 | 0.00001899 | 0.00002512 | 0.00002211 | 0.00002115 | 0.00001123 | 0.00001916 | 0.00002104 | 0.00003191 | 0.00001922 | 0.00001924 |
| 9 | 0.00683743 | 0.01131484 | 0.01681302 | 0.03792304 | 0.00627544 | 0.01958919 | 0.01106180 | 0.00582086 | 0.00905143 | 0.03118159 | 0.08661737 |
| 10 | 0.28901953 | 0.00883526 | 0.00645806 | 0.06996385 | 0.00950315 | 0.00901239 | 0.00851567 | 0.00947909 | 0.01136436 | 0.00853374 | 0.00849479 |
| 11 | 0.01543666 | 0.42620124 | 0.00991905 | 0.01723653 | 0.01045109 | 0.00823817 | 0.01588725 | 0.00998482 | 0.01437041 | 0.01282666 | 0.01459426 |
| 12 | 0.00599368 | 0.00342538 | 0.14120605 | 0.00634369 | 0.00807451 | 0.00909924 | 0.00547957 | 0.00580812 | 0.00517140 | 0.00618921 | 0.00493616 |
| 13 | 0.00618297 | 0.02886854 | 0.01161310 | 0.31470645 | 0.04886172 | 0.01473543 | 0.03044647 | 0.02712953 | 0.03752522 | 0.04390122 | 0.05175961 |
| 14 | 0.00493050 | 0.01048629 | 0.00306531 | 0.01861332 | 0.33927651 | 0.00993576 | 0.01250020 | 0.00567684 | 0.00758101 | 0.00768755 | 0.01351014 |
| 15 | 0.00865962 | 0.01175251 | 0.08486272 | 0.01961966 | 0.01274833 | 0.15997567 | 0.01466792 | 0.00834688 | 0.01876110 | 0.01455251 | 0.01741359 |
| 16 | 0.05412831 | 0.03133124 | 0.01617393 | 0.86757822 | 0.83627662 | 0.02081937 | 0.45628474 | 0.03411568 | 0.05356689 | 0.05669412 | 0.86089114 |
| 17 | 0.00418283 | 0.08885799 | 0.00223988 | 0.00684856 | 0.00582191 | 0.00057043 | 0.00590146 | 0.34287484 | 0.00840543 | 0.00664678 | 0.01245265 |
| 18 | 0.01155508 | 0.01612596 | 0.00614659 | 0.01891438 | 0.01381907 | 0.00772785 | 0.01703111 | 0.02823663 | 0.46100544 | 0.01941190 | 0.03415259 |
| 19 | 0.00902955 | 0.01027731 | 0.00640966 | 0.01220094 | 0.01084062 | 0.00846071 | 0.01077198 | 0.02430782 | 0.01207263 | 0.49947703 | 0.01621915 |
| 20 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 | 0.00000000 |
| | 0.41799228 | 0.38435197 | 0.22159346 | 0.68539401 | 0.50112198 | 0.26647639 | 0.58889214 | 0.50019283 | 0.63917958 | 0.66346276 | 0.24261346 |

Multipliers

Multipliers for final demand, output, employment, and income are shown in Table 4.3-11.

Final demand multipliers show the total dollar amount of change in total economic activity from a one dollar change in final demand of a given sector.

Output multipliers show the total dollar amount of change in total economic activity from a one dollar change in output of a given sector.

Employment multipliers show the total change in the number of jobs from a single job change of a given sector.

Income multipliers show the total dollar amount of change in income from a one dollar change in income of a given sector.

Table 4.3-11. Multipliers.

| Economic Sector | Final Demand Multiplier \$ | Output Multiplier \$ | Employment / Multiplier Job | Income / Multiplier \$ |
|--|----------------------------------|----------------------------|-----------------------------------|------------------------------|
| 1 Livestock Production | 2.97181531 | 1.87085597 | 1.90478143 | 2.65305922 |
| 2 Dairy Production | 1.95901623 | 1.95699048 | 1.43643842 | 1.80012219 |
| 3 Alfalfa Hay Production | 2.51474055 | 2.51469813 | 1.88779391 | 1.68559387 |
| 4 Other Hay Production | 2.34896056 | 2.34890326 | 1.67883221 | 1.56133122 |
| 5 Barley Production | 1.94345518 | 1.94345328 | 1.32262396 | 1.51593418 |
| 6 Agricultural Services | 2.16126301 | 2.15655122 | 1.39772153 | 1.42771001 |
| 7 Gold Mining | 2.07360188 | 2.07341476 | 1.34668330 | 1.53291991 |
| 8 Other Mining | 1.91641288 | 1.91392950 | 1.51787242 | 1.36287214 |
| 9 Construction | 2.27451846 | 1.91643197 | 2.39925602 | 1.83437532 |
| 10 Manufacturing | 1.90914436 | 1.74192345 | 1.99242059 | 1.54288712 |
| 11 Transportation and Communications | 2.13681463 | 2.01066547 | 1.87103488 | 1.45759024 |
| 12 Utilities | 1.59266936 | 1.42875187 | 1.79351823 | 1.76173789 |
| 13 Trade | 2.32154772 | 2.17919595 | 1.46230428 | 1.40766719 |
| 14 Eating, Drinking, and Lodging | 2.02795308 | 1.99260838 | 1.50437558 | 1.50198240 |
| 15 Finance, Insurance, and Real Estate | 1.72745799 | 1.49789140 | 1.64704348 | 1.92102001 |
| 16 Services | 2.18843808 | 1.90175871 | 1.38866337 | 1.48517123 |
| 17 Hotels, Gaming, and Recreation | 2.03316211 | 1.91636074 | 1.34182120 | 1.54954268 |
| 18 Health | 2.31132517 | 2.11735261 | 1.44040138 | 1.51350818 |
| 19 Local Government | 2.54447284 | 2.05499020 | 1.87744348 | 1.78789028 |
| 20 Households | 1.96687119 | 1.58132549 | | |

1. Employment and income multipliers are ratio multipliers. The ratio multiplier for employment is the total employment requirements to employment requirements. Similarly, the ratio multiplier for income is the total income requirements to income requirements.

5. Model Application

Two applications are performed by the regional economic impact model. The first application is the estimation of the economic impacts for alternative reservoir storage levels. The second application is the estimation of the economic impacts for reallocations of water. These two applications are performed with the aid of a computer program.

5.1. Estimation of the Economic Impacts for Alternative Reservoir Storage Levels

Estimation of the economic impacts for alternative reservoir storage levels at Prosser, Stampede, and Boca Reservoirs is done by integrating the recreation model component with the input-output model component. A direct economic impact is calculated first using the recreation model component. Then second, the total economic impact is calculated using the input-output model component. Third, the response economic impact is also calculated using the input-output model component.

Direct Economic Impact

The direct economic impact is the expenditures that camping and day use visitors at Prosser, Stampede, and Boca Reservoirs make in the regional economy during the year. Expenditures are on licenses, camping fees, hotel or motel, restaurant, groceries, equipment and supplies, rental, fuel, and other items.

Estimation of the direct economic impact is done through the following process. Using the recreation model component, the end of the month reservoir storage levels at Prosser, Stampede, and Boca Reservoirs is the input data. In turn, annual number of camping and day use visitors, annual camping and day use visitor expenditures, and annual camping and day use visitor expenditures by category are calculated for each of the reservoirs. The total expenditures by category for all the reservoirs are then placed into economic sectors to become the direct economic impact. Underlying details of the recreation model component and equations used to calculate annual visitors, annual visitor expenditures, and annual visitor expenditures by category are given in Chapter 3.

End of the Month Reservoir Storage Levels

End of the month reservoir storage levels at Prosser, Stampede, and Boca Reservoirs are provided in Table 5.1-1.

End of the month reservoir storage levels for Prosser, Stampede, and Boca Reservoirs are given for April through October and Other Months. April through October is considered to be the recreation season in a given year. Other Months are January, February, March, November and December of the given year. The reservoir storage levels are taken in total for April through October and as an average for the Other Months.

End of the month reservoir storage levels for Prosser, Stampede, and Boca Reservoirs also have a set range of storage level. Reservoir storage levels at Prosser Reservoir can only range between 11,000 acre-feet and 29,840 acre-feet. Reservoir storage levels at Stampede Reservoir can only range between 80,000 acre-feet and 226,000 acre-feet. Reservoir storage levels at Boca Reservoir can only range between less than 22,000 acre-feet to 41,100 acre-feet.

Annual Number of Camping and Day Use Visitors

Annual number of camping and day use visitors by month by reservoir are provided in Table 5.1-2.

Annual Camping and Day Use Visitor Expenditures

Annual camping and day use visitor expenditures by month by reservoir are provided in Table 5.1-3.

Annual Camping and Day Use Visitor Expenditures by Category

Annual camping and day use visitor expenditures by category by reservoir are provided in Table 5.1-4.

Direct Economic Impact

The direct economic impact by economic sector is provided in Table 5.1-5. The total expenditures by category for the reservoirs are placed into economic sectors. The direct impact is presented as total direct expenditures.

There are twenty economic sectors within the regional economy. These sectors include livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households. In addition to these sectors, there is also other final payments and imports.

The trade sector accounts for expenditure categories of groceries, equipment and supplies, fuel, and other. The eating, drinking, and lodging sector accounts for the expenditure categories of hotel or motel, restaurant, and rental. Other final payments account for expenditure categories of camping fees and license fees.

The total direct expenditures are trade, eating, drinking, and lodging sector expenditures, other final payments, and imports. Other final payments and imports are leakage's out of the regional economy. Other final payments are expenditures to the federal and state government. Imports make-up the balance of the marginalized trade sector expenditures. The trade sector expenditures are marginalized to 25% to reflect that only the mark-up value on goods sold remains in the regional economy.

Table 5.1-1. End of the Month Reservoir Storage Levels.

| Month | Promer Reservoir acre-feet | Stampede Reservoir acre-feet | Boon Reservoir acre-feet |
|----------------------|-------------------------------|---------------------------------|-----------------------------|
| April | 9,767 | 30,136 | 36,763 |
| May | 16,414 | 113,577 | 37,473 |
| June | 20,957 | 166,953 | 38,557 |
| July | 22,110 | 177,424 | 38,084 |
| August | 21,691 | 174,288 | 34,582 |
| September | 14,394 | 172,442 | 23,927 |
| October | 10,050 | 170,696 | 16,419 |
| Other Months Average | 9,834 | 113,263 | 9,561 |
| January | 9,827 | 73,944 | 5,247 |
| February | 9,723 | 75,751 | 4,396 |
| March | 9,642 | 76,677 | 3,953 |
| November | 9,981 | 170,433 | 17,842 |
| December | 10,098 | 169,510 | 18,163 |

Table 5.1-2. Annual Number of Camping and Day Use Visitors by Month by Reservoir.

| Month | Promer Reservoir visitors | Stampede Reservoir visitors | Boon Reservoir visitors | Total visitors |
|--------------|------------------------------|--------------------------------|----------------------------|-------------------|
| April | 12,592 | 8,653 | 11,977 | 33,223 |
| May | 12,592 | 13,845 | 23,953 | 50,392 |
| June | 12,592 | 21,633 | 30,799 | 65,024 |
| July | 16,789 | 22,469 | 35,932 | 75,220 |
| August | 25,184 | 39,306 | 39,354 | 104,344 |
| September | 12,592 | 17,307 | 26,521 | 56,420 |
| October | 12,592 | 8,653 | 14,255 | 37,500 |
| Other Months | 4,197 | 0 | 5,153 | 9,350 |
| Total | 109,131 | 132,397 | 189,926 | 431,453 |

Table 5.1-3. Annual Camping and Day Use Visitor Expenditures by Month by Reservoir.

| Month | Proser Reservoir \$ | Stampede Reservoir \$ | Beck Reservoir \$ | Total \$ |
|--------------|---------------------------|-----------------------------|-------------------------|-------------|
| April | 501,846 | 187,436 | 116,053 | 805,335 |
| May | 501,846 | 299,930 | 232,106 | 1,033,882 |
| June | 501,846 | 468,641 | 298,422 | 1,268,909 |
| July | 669,128 | 487,386 | 348,159 | 1,504,673 |
| August | 1,083,692 | 862,299 | 381,317 | 2,247,308 |
| September | 501,846 | 374,913 | 256,975 | 1,133,733 |
| October | 501,846 | 137,456 | 157,501 | 846,803 |
| Other Months | 167,282 | 0 | 49,737 | 217,019 |
| Total | 4,349,330 | 2,868,081 | 1,840,278 | 9,057,681 |

Table 5.1-4. Annual Camping and Day Use Visitor Expenditures by Category by Reservoir.

| Category | Proser Reservoir \$ | Stampede Reservoir \$ | Beck Reservoir \$ | Total \$ |
|------------------------|---------------------------|-----------------------------|-------------------------|-------------|
| Licenses | 469,597 | 808,432 | 199,008 | 1,477,037 |
| Camping Fees | 0 | 131,926 | 81,544 | 213,490 |
| Hotel or Motel | 11,323 | 316,235 | 364,142 | 692,319 |
| Restaurants | 471,812 | 328,405 | 141,289 | 941,506 |
| Groceries | 1,002,959 | 635,186 | 553,294 | 2,191,439 |
| Equipment and Supplies | 55,370 | 111,506 | 66,349 | 233,225 |
| Rental | 1,839,920 | 0 | 0 | 1,839,920 |
| Fuel | 339,349 | 110,043 | 288,049 | 1,157,683 |
| Other | 138,560 | 29,705 | 146,376 | 314,641 |
| Total | 4,349,330 | 2,868,081 | 1,840,278 | 9,057,681 |

Table 5.1-5. Direct Economic Impact by Economic Sector.

| Economic Sector | Total Direct Expenditures \$ |
|--|---|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 0 |
| 10 Manufacturing | 0 |
| 11 Transportation and Communications | 0 |
| 12 Utilities | 0 |
| 13 Trade | 994,854 |
| 14 Eating, Drinking, and Lodging | 3,465,746 |
| 15 Finance, Insurance, and Real Estate | 0 |
| 16 Services | 0 |
| 17 Hotels, Gaming, and Recreation | 0 |
| 18 Health | 0 |
| 19 Local Government | 0 |
| 20 Households | 0 |
| Other Final Payments | 1,698,547 |
| Imports | 2,906,534 |
| Total | 9,017,681 |

Total Economic Impact

The total economic impact is the total amount of economic activity in terms of output generated from the direct economic impact.

The total economic impact includes the direct economic impact plus indirect and induced economic impacts. The direct economic impact is the expenditures accounted for in the trade, and, eating, drinking, and lodging sectors. The indirect economic impact is the additional impact that occurs due to linkages that the trade, and, eating, drinking, and lodging sectors have with each other and with the other economic sectors in the regional economy, except for local government and households sectors. The induced economic impact is the additional impact that occurs due to linkages that the trade, and, eating, drinking, and lodging sectors have with the local government and households sectors.

Estimation of the total economic impact is done through the following process. The direct economic impact by economic sector is the input data. In turn, using the input-output model component, the direct economic impact by economic sector is post-multiplied by the output requirements to become the total economic impact. Underlying details of the input-output model component and output requirements are given in Chapter 4.

Total Economic Impact

The total economic impact by economic sector is provided in Table 5.1-6. The total economic impact is presented as total output and adjusted output. The adjusted output is net of agriculture production and mining sectors. The reason for this is because the agriculture production and mining sectors have a fixed resource base.

Table 5.1-6. Total Economic Impact by Economic Sector.

| Economic Sector | Total Output \$ | Adjusted ¹ Output \$ |
|--|--------------------|------------------------------------|
| 1 Livestock Production | 398 | 0 |
| 2 Dairy Production | 104 | 0 |
| 3 Alfalfa Hay Production | 62 | 0 |
| 4 Other Hay Production | 99 | 0 |
| 5 Barley Production | 6 | 0 |
| 6 Agricultural Services | 2,290 | 2,290 |
| 7 Gold Mining | 264 | 0 |
| 8 Other Mining | 356 | 0 |
| 9 Construction | 100,980 | 100,980 |
| 10 Manufacturing | 158,012 | 158,012 |
| 11 Transportation and Communications | 128,800 | 128,800 |
| 12 Utilities | 266,439 | 266,439 |
| 13 Trade | 1,337,288 | 1,337,288 |
| 14 Eating, Drinking, and Lodging | 3,495,451 | 3,495,451 |
| 15 Finance, Insurance, and Real Estate | 438,306 | 438,306 |
| 16 Services | 447,158 | 447,158 |
| 17 Hotels, Gaming, and Recreation | 72,849 | 72,849 |
| 18 Health | 153,254 | 153,254 |
| 19 Local Government | 122,843 | 122,843 |
| 20 Households | 2,346,813 | 2,346,220 |
| Other Final Payments | 1,690,547 | 1,690,547 |
| Imports | 2,906,534 | 2,906,534 |
| Total | 13,670,937 | 13,667,054 |

1. Adjusted output is net of agriculture production and mining activities.

Response Economic Impact

The response economic impact includes the employment response, income response, population response, housing response, agriculture water use response, commercial water use response, and residential water use response to the total economic impact.

Estimation of the response economic impact is done through the following process. The total economic impact by economic sector is the input data. In turn, using the input-output model component, the total economic impact by economic sector is multiplied by the output response coefficients by economic sector to become the response economic impact. Output response coefficients are given for employment, income, population, housing, agriculture water use, commercial water use, and residential water use. Underlying details of the input-output model component and output response coefficients are given in Chapter 4.

Employment Response

Employment response by economic sector is provided in Table 5.1-7. Employment is measured as jobs.

Income Response

Income response by economic sector is provided in Table 5.1-8. Income is measured in dollars.

Population Response

Population response by economic sector is provided in Table 5.1-9. Population is measured as all persons.

Housing Response

Housing response by economic sector is provided in Table 5.1-10. Housing is measured as dwellings.

Agriculture Water Use Response

Agriculture water use response by economic sector is provided in Table 5.1-11. Agriculture water use is measured in acre-feet.

Commercial Water Use Response

Commercial water use response by economic sector is provided in Table 5.1-12. Commercial water use is measured in acre-feet and in gallons.

Residential Water Use Response

Residential water use response by economic sector is provided in Table 5.1-13. Residential water use is measured in acre-feet and in gallons.

Table 5.1-7. Employment Response by Economic Sector.

| Economic Sector | Employment jobs |
|--|----------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 1 |
| 10 Manufacturing | 1 |
| 11 Transportation and Communications | 2 |
| 12 Utilities | 2 |
| 13 Trade | 34 |
| 14 Eating, Drinking, and Lodging | 66 |
| 15 Finance, Insurance, and Real Estate | 3 |
| 16 Services | 13 |
| 17 Hotels, Gaming, and Recreation | 1 |
| 18 Health | 4 |
| 19 Local Government | 2 |
| 20 Households | 0 |
| Total | 131 |

Table 5.1-8. Income Response by Economic Sector.

| Economic Sector | Income \$ |
|--|----------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 969 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 25,138 |
| 10 Manufacturing | 41,666 |
| 11 Transportation and Communications | 51,686 |
| 12 Utilities | 33,422 |
| 13 Trade | 651,126 |
| 14 Eating, Drinking, and Lodging | 1,164,285 |
| 15 Finance, Insurance, and Real Estate | 68,880 |
| 16 Services | 177,304 |
| 17 Hotels, Gaming, and Recreation | 23,516 |
| 18 Health | 64,722 |
| 19 Local Government | 45,586 |
| 20 Households | 0 |
| Total | 2,346,220 |

Table 5.1-9. Population Response by Economic Sector.

| Economic Sector | Population all persons |
|--|-----------------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 2 |
| 10 Manufacturing | 2 |
| 11 Transportation and Communications | 2 |
| 12 Utilities | 3 |
| 13 Trade | 35 |
| 14 Eating, Drinking, and Lodging | 118 |
| 15 Finance, Insurance, and Real Estate | 4 |
| 16 Services | 21 |
| 17 Hotels, Gaming, and Recreation | 2 |
| 18 Health | 7 |
| 19 Local Government | 4 |
| 20 Households | 0 |
| Total | 224 |

Table 5.1-10. Housing Response by Economic Sector.

| Economic Sector | Housing Jobs |
|--|-------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 1 |
| 10 Manufacturing | 1 |
| 11 Transportation and Communications | 1 |
| 12 Utilities | 1 |
| 13 Trade | 22 |
| 14 Eating, Drinking, and Lodging | 46 |
| 15 Finance, Insurance, and Real Estate | 3 |
| 16 Services | 8 |
| 17 Hotels, Gaming, and Recreation | 1 |
| 18 Health | 3 |
| 19 Local Government | 1 |
| 20 Households | 0 |
| Total | 84 |

Table 5.1-11. Agriculture Water Use Response by Economic Sector.

| Economic Sector | Agriculture Water Use acre-feet |
|--|--|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 All-Use Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 0 |
| 10 Manufacturing | 0 |
| 11 Transportation and Communications | 0 |
| 12 Utilities | 0 |
| 13 Trade | 0 |
| 14 Eating, Drinking, and Lodging | 0 |
| 15 Finance, Insurance, and Real Estate | 0 |
| 16 Services | 0 |
| 17 Hotels, Gaming, and Recreation | 0 |
| 18 Health | 0 |
| 19 Local Government | 0 |
| 20 Households | 0 |
| Total | 0 |

Table 5.1-12. Commercial Water Use Response by Economic Sector.

| Economic Sector | Commercial Water Use <i>acre-foot</i> | Commercial Water Use <i>gallons</i> |
|--|--|--|
| 1 Livestock Production | 0 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 913 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 5,864 |
| 10 Manufacturing | 0 | 17,067 |
| 11 Transportation and Communications | 0 | 15,874 |
| 12 Utilities | 0 | 124,305 |
| 13 Trade | 1 | 407,114 |
| 14 Eating, Drinking, and Lodging | 7 | 2,313,169 |
| 15 Finance, Insurance, and Real Estate | 0 | 35,245 |
| 16 Services | 1 | 236,863 |
| 17 Hotels, Gaming, and Recreation | 0 | 79,977 |
| 18 Health | 0 | 123,301 |
| 19 Local Government | 0 | 17,220 |
| 20 Households | 0 | 0 |
| Total | 10 | 3,376,534 |

Table 5.1-13. Residential Water Use Response by Economic Sector.

| Economic Sector | Residential /1 | Residential /1 |
|--|------------------------|---------------------|
| | Water Use acre-foot | Water Use gallon |
| 1 Livestock Production | 0 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 7,413 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 116,755 |
| 10 Manufacturing | 1 | 165,485 |
| 11 Transportation and Communications | 1 | 186,339 |
| 12 Utilities | 1 | 202,728 |
| 13 Trade | 13 | 4,188,676 |
| 14 Eating, Drinking, and Lodging | 27 | 8,955,406 |
| 15 Finance, Insurance, and Real Estate | 2 | 630,997 |
| 16 Services | 3 | 1,609,741 |
| 17 Hotels, Gaming, and Recreation | 1 | 167,504 |
| 18 Health | 2 | 561,356 |
| 19 Local Government | 1 | 278,939 |
| 20 Households | 0 | 0 |
| Total | 52 | 17,071,539 |

1. Residential water use is non-metered residential water use.

Summary

A summary is provided in Table 5.1-14. This summary includes average end of the month reservoir storage for the reservoirs, camping and day use visitors for the reservoirs, direct economic impact, total economic impact, employment response, income response, population response, housing response, agriculture water use response, commercial water use response, residential water use response, and a recreation expenditure multiplier.

Table 5.1-14. Summary.

| | |
|---|-------------------------------------|
| Proser Reservoir Average End of the Month Reservoir Storage | 15,855 acre-feet |
| Stampede Reservoir Average End of the Month Reservoir Storage | 146,104 acre-feet |
| Boon Reservoir Average End of the Month Reservoir Storage | 28,171 acre-feet |
| Proser Reservoir Camping and Day Use Visitors | 109,131 visitors |
| Stampede Reservoir Camping and Day Use Visitors | 152,397 visitors |
| Boon Reservoir Camping and Day Use Visitors | 149,926 visitors |
| Direct Economic Impact | 9,057,661 \$ <i> of expenditure</i> |
| Total Economic Impact | 13,667,054 \$ <i> of output</i> |
| Employment Response | 131 jobs |
| Income Response | 2,346,228 \$ <i> of income</i> |
| Population Response | 224 <i>all persons</i> |
| Housing Response | 81 <i>dwellings</i> |
| Agriculture Water Use Response | 0 <i>acre-feet</i> |
| Commercial Water Use Response | 10 <i>acre-feet</i> |
| Residential Water Use Response /1 | 32 <i>acre-feet</i> |
| Recreation Expenditure Multiplier /2 | 1.50889099 |

1. Residential water use is non-metered residential water use.

2. Recreation expenditure multiplier is a ratio multiplier. The recreation expenditure multiplier is the total economic impact to direct economic impact. Multiplier interpretation: a \$1 expenditure causes an additional \$.51 in economic activity.

5.2. Estimation of the Economic Impacts for Reallocations of Water

Estimation of the economic impacts for reallocations of water is done entirely with the input-output model component. Reallocations of water include an agriculture water transfer and a commercial water transfer. A direct economic impact, a total economic impact, and a response economic impact are calculated separately for each water transfer using the input-output model component.

Direct Economic Impact

The direct economic impact for an agriculture water transfer and for a commercial water transfer is output.

Estimation of the direct economic impact is done through the following process. Using the input-output model component, the water transfer amount for an agriculture water transfer and for a commercial water transfer is the input data. In turn, the water transfer amount is multiplied by water transfer coefficients for agriculture water use and for commercial water use. Water transfer coefficients distribute the water transfer amount by economic sector in the regional economy. The water transfer amount by economic sector for a agriculture water transfer and for a commercial water transfer is then divided by output response coefficients by economic sector for agriculture water use and for commercial water use to become the direct economic impact. Underlying details of the input-output model component and output response coefficients are given in Chapter 4.

Water Transfer

The water transfer amount for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-1. The water transfer amount is measured in acre-feet.

Water transfer coefficients for agriculture water use and for commercial water use are provided in Table 5.2-2. These coefficients reflect a water transfer pattern by economic sector in the regional economy.

There are twenty economic sectors within the regional economy. These sectors include livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households.

The water transfer amount by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-3. An agriculture water transfer affects the livestock production sector. A commercial water transfer affects the manufacturing, and, hotels, gaming, and recreation sectors.

Direct Economic Impact

The direct economic impact by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-4. Again, the direct economic impact is output.

Table 5.2-1. Water Transfer Amount.

| | Agriculture Water Transfer | Commercial Water Transfer |
|------------------------------|-----------------------------------|----------------------------------|
| Water Transfer Amount | 34,909 acre-feet | 3,833 acre-feet |

Table 5.2-2. Water Transfer Coefficients by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|-----------------------------|----------------------------|
| | Agriculture Water Use | Commercial Water Use |
| 1 Livestock Production | 1.0000000 | 0.0000000 |
| 2 Dairy Production | 0.0000000 | 0.0000000 |
| 3 Alfalfa Hay Production | 0.0000000 | 0.0000000 |
| 4 Other Hay Production | 0.0000000 | 0.0000000 |
| 5 Berley Production | 0.0000000 | 0.0000000 |
| 6 Agricultural Services | 0.0000000 | 0.0000000 |
| 7 Gold Mining | 0.0000000 | 0.0000000 |
| 8 Other Mining | 0.0000000 | 0.0000000 |
| 9 Construction | 0.0000000 | 0.0000000 |
| 10 Manufacturing | 0.0000000 | 0.0000000 |
| 11 Transportation and Communications | 0.0000000 | 0.0000000 |
| 12 Utilities | 0.0000000 | 0.0000000 |
| 13 Trade | 0.0000000 | 0.0000000 |
| 14 Eating, Drinking, and Lodging | 0.0000000 | 0.0000000 |
| 15 Finance, Insurance, and Real Estate | 0.0000000 | 0.0000000 |
| 16 Services | 0.0000000 | 0.0000000 |
| 17 Hotels, Gaming, and Recreation | 0.0000000 | 0.0000000 |
| 18 Health | 0.0000000 | 0.0000000 |
| 19 Local Government | 0.0000000 | 0.0000000 |
| 20 Households | 0.0000000 | 0.0000000 |
| Total | 1.0000000 | 1.0000000 |

Table 5.2-3. Water Transfer Amount by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|---|---|
| | Water Transfer Amount <i>acre-foot</i> | Water Transfer Amount <i>acre-foot</i> |
| 1 Livestock Production | 34,909 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 0 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 0 |
| 10 Manufacturing | 0 | 794 |
| 11 Transportation and Communications | 0 | 0 |
| 12 Utilities | 0 | 0 |
| 13 Trade | 0 | 0 |
| 14 Eating, Drinking, and Lodging | 0 | 0 |
| 15 Finance, Insurance, and Real Estate | 0 | 0 |
| 16 Services | 0 | 0 |
| 17 Hotels, Gaming, and Recreation | 0 | 3,059 |
| 18 Health | 0 | 0 |
| 19 Local Government | 0 | 0 |
| 20 Households | 0 | 0 |
| Total | 34,909 | 3,853 |

Table 5.2-4. Direct Economic Impact by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|----------------------------|---------------------------|
| | Output \$ | Output \$ |
| 1 Livestock Production | 2,124,370 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 0 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 0 |
| 10 Manufacturing | 0 | 2,394,682,714 |
| 11 Transportation and Communications | 0 | 0 |
| 12 Utilities | 0 | 0 |
| 13 Trade | 0 | 0 |
| 14 Eating, Drinking, and Lodging | 0 | 0 |
| 15 Finance, Insurance, and Real Estate | 0 | 0 |
| 16 Services | 0 | 0 |
| 17 Hotels, Gaming, and Recreation | 0 | 2,392,060,337 |
| 18 Health | 0 | 0 |
| 19 Local Government | 0 | 0 |
| 20 Households | 0 | 0 |
| Total | 2,124,370 | 4,786,743,051 |

Total Economic Impact

The total economic impact for an agriculture water transfer and for a commercial water transfer is the total amount of economic activity in terms of output generated from the direct economic impact.

The total economic impact includes the direct economic impact plus indirect and induced economic impacts. The direct economic impact is the output accounted for in the livestock production sector for an agriculture water transfer and in the manufacturing, and, hotel, gaming, and recreation sectors for a commercial water transfer. The indirect economic impact is the additional impact that occurs due to linkages that the livestock production sector and manufacturing, hotels, gaming, and recreation sectors have with each other and with the other economic sectors in the regional economy, except for local government and households sectors. The induced economic impact is the additional impact that occurs due to linkages that the livestock production sector and manufacturing, hotels, gaming, and recreation sectors have with the local government and households sectors.

Estimation of the total economic impact is done through the following process. The direct economic impact by economic sector for an agriculture water transfer and for a commercial water transfer is the input data. In turn, using the input-output model component, the direct economic impact by economic sector is post-multiplied by the output requirements to become the total economic impact. Underlying details of the input-output model component and output requirements are given in Chapter 4.

Total Economic Impact

The total economic impact by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-5. The total economic impact is presented as total output and adjusted output. The adjusted output for the agriculture water transfer is net of the mining sectors. The adjusted output for a commercial water transfer is net of the agriculture production and mining sectors. The reason for this is because the agriculture production and mining sectors have a fixed resource base.

Table 5.2-5. Total Economic Impact by Economic Sector.

| Economic Sector | Agriculture Water Transfer | | Commercial Water Transfer | |
|--|----------------------------|------------------------------------|---------------------------|------------------------------------|
| | Total Output \$ | Adjusted ¹ Output \$ | Total Output \$ | Adjusted ² Output \$ |
| 1 Livestock Production | 2,124,370 | 2,124,370 | 3,152,511 | 0 |
| 2 Dairy Production | 539 | 539 | 1,605,169 | 0 |
| 3 Alfalfa Hay Production | 35 | 35 | 177,800 | 0 |
| 4 Other Hay Production | 187,671 | 187,671 | 334,969 | 0 |
| 5 Barley Production | 1,294 | 1,294 | 18,863 | 0 |
| 6 Agricultural Services | 34,302 | 34,302 | 1,667,047 | 1,667,047 |
| 7 Gold Mining | 220 | 0 | 4,142,148 | 0 |
| 8 Other Mining | 208 | 0 | 5,303,543 | 0 |
| 9 Construction | 49,892 | 49,892 | 91,003,566 | 91,003,566 |
| 10 Manufacturing | 94,390 | 94,390 | 2,475,732,106 | 2,475,732,106 |
| 11 Transportation and Communications | 49,425 | 49,425 | 140,231,732 | 140,231,732 |
| 12 Utilities | 46,111 | 46,111 | 187,438,371 | 187,438,371 |
| 13 Trade | 154,814 | 154,814 | 243,141,052 | 243,141,052 |
| 14 Eating, Drinking, and Lodging | 25,969 | 25,969 | 70,645,612 | 70,645,612 |
| 15 Finance, Insurance, and Real Estate | 190,281 | 190,281 | 275,309,352 | 275,309,352 |
| 16 Services | 121,005 | 121,005 | 342,038,837 | 342,038,837 |
| 17 Hotels, Gaming, and Recreation | 22,329 | 22,329 | 2,420,371,102 | 2,420,371,102 |
| 18 Health | 47,136 | 47,136 | 210,529,430 | 210,529,430 |
| 19 Local Government | 98,439 | 98,439 | 200,910,260 | 200,910,260 |
| 20 Households | 719,940 | 719,122 | 2,041,632,781 | 3,035,933,140 |
| Total | 3,974,391 | 3,973,146 | 8,755,404,515 | 8,734,949,797 |

1 Adjusted output is net of mining sectors.

2 Adjusted output is net of agriculture production and mining sectors.

Response Economic Impact

The response economic impact for an agriculture water transfer and for a commercial water transfer includes the employment response, income response, population response, housing response, agriculture water use response, commercial water use response, and residential water use response to the total economic impact.

Estimation of the response economic impact is done through the following process. The total economic impact by economic sector for an agriculture water transfer and for a commercial water transfer is the input data. In turn, using the input-output model component, the total economic impact by economic sector is multiplied by the output response coefficients by economic sector to become the response economic impact. Output response coefficients are given for employment, income, population, housing, agriculture water use, commercial water use, and residential water use. Underlying details of the input-output model component and output response coefficients are given in Chapter 4.

Employment Response

Employment response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-6. Employment is measured as jobs.

Income Response

Income response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-7. Income is measured in dollars.

Population Response

Population response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-8. Population is measured as all persons.

Housing Response

Housing response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-9. Housing is measured as dwellings.

Agriculture Water Use Response

Agriculture water use response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-10. Agriculture water use is measured in acre-feet.

Commercial Water Use Response

Commercial water use response by economic sector for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-11. Commercial water use is measured in acre-feet and in gallons.

Residential Water Use Response

Residential water use response by economic sector for an agriculture water transfer and a commercial water transfer is provided in Table 5.2-12. Residential water use is measured in acre-feet and in gallons.

Table 5.2-6. Employment Response by Economic Sector.

| Economic Sector | Agricultural Water Transfer | Commercial Water Transfer |
|--|-----------------------------|---------------------------|
| | Employment jobs | Employment jobs |
| 1 Livestock Production | 40 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 3 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 1 | 43 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 799 |
| 10 Manufacturing | 1 | 20,425 |
| 11 Transportation and Communications | 1 | 1,656 |
| 12 Utilities | 0 | 1,173 |
| 13 Trade | 4 | 4,134 |
| 14 Eating, Drinking, and Lodging | 0 | 1,332 |
| 15 Finance, Insurance, and Real Estate | 2 | 3,111 |
| 16 Services | 4 | 11,053 |
| 17 Hotels, Gaming, and Recreation | 0 | 45,571 |
| 18 Health | 1 | 6,177 |
| 19 Local Government | 2 | 3,534 |
| 20 Households | 0 | 0 |
| Total | 60 | 101,022 |

Table 5.2-7. Income Response by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|----------------------------|---------------------------|
| | Income \$ | Income \$ |
| 1 Livestock Production | 343,693 | 0 |
| 2 Dairy Production | 131 | 0 |
| 3 Alfalfa Hay Production | 22 | 0 |
| 4 Other Hay Production | 71,847 | 0 |
| 5 Barley Production | 396 | 0 |
| 6 Agricultural Services | 14,310 | 705,192 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 14,396 | 26,238,825 |
| 10 Manufacturing | 24,890 | 652,827,017 |
| 11 Transportation and Communications | 19,321 | 56,238,533 |
| 12 Utilities | 5,784 | 23,512,517 |
| 13 Trade | 75,379 | 118,385,326 |
| 14 Eating, Drinking, and Lodging | 4,665 | 23,571,481 |
| 15 Finance, Insurance, and Real Estate | 26,395 | 34,189,860 |
| 16 Services | 50,339 | 151,483,247 |
| 17 Hotels, Gaming, and Recreation | 7,208 | 781,296,527 |
| 18 Health | 19,908 | 44,909,251 |
| 19 Local Government | 36,530 | 74,553,183 |
| 20 Households | 0 | 0 |
| Total | 719,122 | 2,033,933,140 |

Table 5.2-8. Population Response by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|----------------------------------|----------------------------------|
| | Population <i>all persons</i> | Population <i>all persons</i> |
| 1 Livestock Production | 80 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 7 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 1 | 79 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 1 | 1,383 |
| 10 Manufacturing | 1 | 33,868 |
| 11 Transportation and Communications | 1 | 2,638 |
| 12 Utilities | 0 | 1,851 |
| 13 Trade | 6 | 9,916 |
| 14 Eating, Drinking, and Lodging | 1 | 2,387 |
| 15 Finance, Insurance, and Real Estate | 4 | 5,180 |
| 16 Services | 6 | 17,912 |
| 17 Hotels, Gaming, and Recreation | 1 | 72,281 |
| 18 Health | 2 | 10,048 |
| 19 Local Government | 3 | 3,969 |
| 20 Households | 0 | 0 |
| Total | 115 | 163,502 |

Table 5.2-9. Housing Response by Economic Sector.

| Economic Sector | Agricultural Water Transfer | Commercial Water Transfer |
|--|-----------------------------|---------------------------|
| | Housing dwelling | Housing dwelling |
| 1 Livestock Production | 31 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 3 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 1 | 28 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 544 |
| 10 Manufacturing | 1 | 13,421 |
| 11 Transportation and Communications | 0 | 1,052 |
| 12 Utilities | 0 | 739 |
| 13 Trade | 3 | 3,944 |
| 14 Eating, Drinking, and Lodging | 0 | 935 |
| 15 Finance, Insurance, and Real Estate | 1 | 2,061 |
| 16 Services | 2 | 7,122 |
| 17 Hotels, Gaming, and Recreation | 0 | 28,833 |
| 18 Health | 1 | 3,993 |
| 19 Local Government | 1 | 2,361 |
| 20 Households | 0 | 0 |
| Total | 45 | 65,826 |

Table 5.2-10. Agriculture Water Use Response by Economic Sector.

| Economic Sector | Agriculture Water Transfer | Commercial Water Transfer |
|--|------------------------------------|------------------------------------|
| | Agriculture Water Use acre-feet | Agriculture Water Use acre-feet |
| 1 Livestock Production | 34,909 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 1 | 0 |
| 4 Other Hay Production | 3,042 | 0 |
| 5 Berley Production | 26 | 0 |
| 6 Agricultural Services | 0 | 0 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 0 |
| 10 Manufacturing | 0 | 0 |
| 11 Transportation and Communications | 0 | 0 |
| 12 Utilities | 0 | 0 |
| 13 Trade | 0 | 0 |
| 14 Eating, Drinking, and Lodging | 0 | 0 |
| 15 Finance, Insurance, and Real Estate | 0 | 0 |
| 16 Services | 0 | 0 |
| 17 Hotels, Gaming, and Recreation | 0 | 0 |
| 18 Health | 0 | 0 |
| 19 Local Government | 0 | 0 |
| 20 Households | 0 | 0 |
| Total | 39,977 | 0 |

Table 5.2-11. Commercial Water Use Response by Economic Sector.

| Economic Sector | Agricultural Water Transfer | | Commercial Water Transfer | |
|--|-----------------------------------|---------------------------------|-----------------------------------|---------------------------------|
| | Commercial Water Use acre-feet | Commercial Water Use gallons | Commercial Water Use acre-feet | Commercial Water Use gallons |
| 1 Livestock Production | 2 | 624,966 | 0 | 0 |
| 2 Dairy Production | 0 | 134 | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 16 | 0 | 0 |
| 4 Other Hay Production | 0 | 52,263 | 0 | 0 |
| 5 Forage Production | 0 | 561 | 0 | 0 |
| 6 Agricultural Services | 0 | 13,680 | 2 | 664,642 |
| 7 Gold Mining | 0 | 0 | 0 | 0 |
| 8 Other Mining | 0 | 0 | 0 | 0 |
| 9 Construction | 0 | 2,699 | 13 | 4,923,915 |
| 10 Manufacturing | 0 | 10,195 | 821 | 267,412,358 |
| 11 Transportation and Communications | 0 | 6,088 | 53 | 17,272,579 |
| 12 Utilities | 0 | 21,513 | 268 | 87,448,018 |
| 13 Trade | 0 | 47,131 | 227 | 74,020,431 |
| 14 Eating, Drinking, and Lodging | 0 | 17,125 | 143 | 46,750,827 |
| 15 Finance, Insurance, and Real Estate | 0 | 15,318 | 68 | 22,162,992 |
| 16 Services | 0 | 67,276 | 621 | 202,368,686 |
| 17 Hotels, Gaming, and Recreation | 0 | 24,514 | 2,135 | 2,657,206,939 |
| 18 Health | 0 | 37,924 | 520 | 160,379,628 |
| 19 Local Government | 0 | 13,799 | 36 | 28,163,813 |
| 20 Nonresidential | 0 | 0 | 0 | 0 |
| Total | 3 | 955,330 | 10,980 | 3,571,777,048 |

Table 5.2-12. Residential Water Use Response by Economic Sector.

| Economic Sector | Agriculture Water Transfers | | Commercial Water Transfers | |
|--|-----------------------------|----------------------|----------------------------|----------------------|
| | Residential /1 | Residential /1 | Residential /1 | Residential /1 |
| | Water Use acre-foot | Water Use gallons | Water Use acre-foot | Water Use gallons |
| 1 Livestock Production | 14 | 4,524,986 | 0 | 0 |
| 2 Dairy Production | 0 | 1,055 | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 109 | 0 | 0 |
| 4 Other Hay Production | 1 | 379,987 | 0 | 0 |
| 5 Barley Production | 0 | 4,935 | 0 | 0 |
| 6 Agricultural Services | 0 | 83,606 | 12 | 4,063,160 |
| 7 Gold Mining | 0 | 0 | 0 | 0 |
| 8 Other Mining | 0 | 0 | 0 | 0 |
| 9 Construction | 0 | 43,422 | 243 | 79,201,461 |
| 10 Manufacturing | 0 | 74,437 | 5,992 | 1,952,381,713 |
| 11 Transportation and Communications | 0 | 53,883 | 469 | 152,882,315 |
| 12 Utilities | 0 | 26,429 | 330 | 107,431,642 |
| 13 Trade | 1 | 365,207 | 1,760 | 573,570,783 |
| 14 Eating, Drinking, and Lodging | 0 | 50,871 | 418 | 136,213,086 |
| 15 Finance, Insurance, and Real Estate | 1 | 206,264 | 916 | 298,434,724 |
| 16 Services | 1 | 344,338 | 3,179 | 1,033,784,382 |
| 17 Hotels, Gaming, and Recreation | 0 | 38,673 | 12,863 | 4,192,047,146 |
| 18 Health | 0 | 130,828 | 1,782 | 580,732,065 |
| 19 Local Government | 1 | 168,298 | 1,054 | 343,489,595 |
| 20 Households | 0 | 0 | 0 | 0 |
| Total | 20 | 6,499,730 | 29,020 | 9,436,262,932 |

1 Residential water use is net residential water use.

Summary

A summary for an agriculture water transfer and for a commercial water transfer is provided in Table 5.2-13. This summary includes water transfer amount, direct economic impact, total economic impact, employment response, income response, population response, housing response, agriculture water use response, commercial water use response, residential water use response, combined water use, and a water transfer multiplier.

Table 5.2-13. Summary.

| | Agriculture Water Transfer | Commercial Water Transfer |
|------------------------------------|--------------------------------|------------------------------------|
| Water Transfer Amount | 34,909 acre-feet | 8,853 acre-feet |
| Direct Economic Impact | 2,124,370 \$ <i> of output</i> | 4,786,743,051 \$ <i> of output</i> |
| Total Economic Impact | 3,973,146 \$ <i> of output</i> | 7,734,949,797 \$ <i> of output</i> |
| Employment Response | 60 jobs | 101,022 jobs |
| Income Response | 719,122 \$ <i> of income</i> | 2,815,933,140 \$ <i> of income</i> |
| Population Response | 115 all persons | 163,502 all persons |
| Housing Response | 43 dwellings | 65,026 dwellings |
| Agriculture Water Use Response | 39,977 acre-feet | 0 acre-feet |
| Commercial Water Use Response | 3 acre-feet | 10,980 acre-feet |
| Residential Water Use Response (1) | 20 acre-feet | 29,020 acre-feet |
| Combined Water Use (2) | 40,000 acre-feet | 40,000 acre-feet |
| Water Transfer Multiplier (3) | 1.14583167 | 4.51820000 |

1. Residential water use is metered residential water use.

2. Combined water use is the summation of agriculture water use, commercial water use, and residential water use.

3. Water transfer multiplier is a ratio multiplier. The water transfer multiplier is the combined water use to water transfer amount.

Multiplier interpretation: a 1 acre-foot agriculture water transfer requires an additional .14 acre-feet, and a 1 acre-foot commercial water transfer requires an additional 3.52 acre-feet.

6. Conclusion

The Truckee River Basin regional economic impact model has been developed following regional economic modeling procedures. An overview of this model, with respect to, model components, model applications, and model improvements, is presented here. Model components include a recreation model component and an input-output model component. Model applications include estimation of economic impacts for alternative reservoir storage levels and estimation of economic impacts for reallocations of water. Model improvements include supplement work to improve the recreation model component and model application for the estimation of the economic impacts for alternative reservoir storage levels. A description of the model components is given to describe tasks and model elements. This is followed by an explanation of the model applications to explain separate actions. A presentation of the model improvements is also given to introduce supplement work.

6.1. Description of the Model Components

The regional economic impact model has two model components. The first component is a recreation model component and the second component is an input-output model component.

Recreation Model Component

The recreation model component estimates the annual number of camping and day use visitors and the annual camping and day use visitor expenditures relative to the end of the month reservoir storage levels for each reservoir. Tasks performed to develop this component were survey of the visitation, estimation of the expenditure function, and formulation of the model equations. Model elements include end of the month reservoir storage levels, visitation and end of the month reservoir storage level relationships, annual patterns of visitation, annual number of camping and day use visitors, and annual camping and day use visitor expenditures. A summary of each task and model element is given below.

Survey of the Visitation

Surveys of the visitation and recreation use at river, lake, and reservoir sites on the Truckee River were done during August of 1993 and again during June, July, and August of 1994. These surveys were followed by separate surveys of the second-home owners and vacation-home renters in the Truckee area done during February of 1995. The purpose of the surveys were to, first, obtain an overall picture of the visitation and recreation activities occurring at the sites, second, quantify the amount of expenditures that visitors at the sites make to the local economy, and third, identify how the visitation would change in relationship to the water level at the sites. The surveys of the visitation and recreation use involved personal interviews of both camping and day use visitors along the Upper Truckee River, at Donner Lake, at Prosser Reservoir, at Stampede Reservoir, at Boca Reservoir, along the Lower Truckee River, and at Pyramid Lake. A questionnaire was used for the personal interviews. The surveys of the second-home owners and vacation-home renters involved mail-out questionnaires. The second-home owners and vacation-home renters were considered to be day use visitors at Donner Lake. There were a total of 506 respondents that participated in the surveys. Of the total respondents, 443 respondents participated in the surveys of the visitation and recreation use, and 63 respondents participated in the surveys of the second-home owners and vacation-home renters.

Estimation of the Expenditure Function

An expenditure function was estimated with data taken from the survey of the visitation. This expenditure function calculates the expenditures of camping and day use visitors per group per day by site. The sites, again, include Upper Truckee River, Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, Lower Truckee River, and Pyramid Lake. This expenditure function was specified in a semi-logarithmic form and then estimated using a maximum-likelihood estimation technique. The expenditures per group per day by site were found to be dependent upon activity hours of respondents at the site and group size of respondents at the site.

Formulation of Model Equations

Model equations were formulated to calculate the annual number of camping and day use visitors at the reservoirs and the annual camping and day use visitor expenditures in the local economy relative to end of the month reservoir storage levels at Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir. For each of these sites, the model equations calculate the annual number of camping and day use visitors by use of end of the month reservoir storage levels, visitation and end of the month reservoir storage level relationships, annual patterns of visitation, annual numbers of camping visitors, and ratios of day use visitors to camping visitors variables. The model equations calculate the annual camping and day use visitor expenditures by use of camping visitor expenditures and day use visitor expenditures variables. Data for these variables were taken from either the survey of the visitation, estimation of the expenditure function, or additional sources. Data taken from additional sources included the end of the month storage levels for each reservoir and number of camping visitors to the campgrounds at each reservoir.

End of the Month Reservoir Storage Levels

End of the month reservoir storage levels at Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir serve as input data into the recreation model. The recreation model takes end of the month reservoir storage levels for April through October and the average reservoir storage level for November through March. End of the month reservoir storage levels range from a maximum of 9,660 acre-feet to 5,796 acre-feet at Donner Lake, from a maximum of 29,840 acre-feet to 0 acre-feet or drained at Prosser Reservoir, from a maximum of 226,500 acre-feet to 0 acre-feet or drained at Stampede Reservoir, and from a maximum of 40,780 acre-feet to 0 acre-feet or drained at Boca Reservoir. End of the month reservoir storage levels for 1993 were provided by the Bureau of Reclamation.

Visitation and End of the Month Reservoir Storage Level Relationships

Visitation and end of the month reservoir storage level relationships show the expected percentage of visitation at an end of the month reservoir storage level for Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir. Visitation at Donner Lake and Boca Reservoir increases gradually as increases in storage levels occur. For Donner Lake, the visitation at a 6,000 acre-foot storage level is 83%. Visitation increases gradually to 100% as the storage levels reach the maximum of 9,660 acre-feet. For Boca Reservoir, the visitation for a drained reservoir is 5%. Visitation increases gradually from 5% to 100% as storage levels reach the maximum of 40,780 acre-feet. Visitation at Prosser Reservoir and Stampede Reservoir increases stepwise then gradually as increases in storage levels occur. For Prosser Reservoir, the visitation at a 6,000 acre-foot storage level is 15%. Visitation increases sharply to 70% as storage levels reach 9,000 acre-feet. Visitation increases gradually to 100% as storage levels reach the maximum of 29,840 acre-feet. For Stampede Reservoir, the visitation at a 46,000 acre-foot storage level is 20%. Visitation increases sharply to 60% as storage levels reach 69,000 acre-feet. Visitation increases not as sharply to 80% as storage levels reach 115,000 acre-feet. Visitation increases gradually to 100% as storage levels reach the maximum of 226,000 acre-feet. Definite visitation thresholds occur at different reservoir storage levels at Prosser and Stampede Reservoirs.

Annual Patterns of Visitation

Annual patterns of visitation show the distribution of visitation that occurs throughout the year at Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir. The patterns of visitation for Donner Lake, Prosser Reservoir, and Stampede Reservoir are concave bell-shaped curves with the peak visitation in June, July, and August. For 100% visitation at Donner Lake, 5% occurs in April, 9% occurs in May, 17% occurs in June, 25% occurs in July, 24% occurs in August, 11% occurs in September, 4% occurs in October, and 5% occurs in November through March. For 100% visitation at Prosser Reservoir, 5% occurs in April, 10% occurs in May, 18% occurs in June, 24% occurs in July, 22% occurs in August, 12% occurs in September, 7% occurs in October, and 2% occurs in November through March. For 100% visitation at Stampede Reservoir, 5% occurs in April, 10% occurs in May, 22% occurs in June, 21% occurs in July, 25% occurs in August, 11% occurs in September, 5% occurs in October, and 1% occurs in November through March. The pattern of visitation for Boca Reservoir is a concave semi-circle-shaped curve with the peak visitation in August. For 100% visitation at Boca Reservoir, 6% occurs in April, 14% occurs in May, 18% occurs in June, 19% occurs in July, 20% occurs in August, 13% occurs in September, 7% occurs in October, and 3% occurs in November through March. Similar, for each of these sites, the visitation starts in April, reaches a peak in either July or August, and drops-off in September and October.

Annual Number of Camping and Day Use Visitors

The annual number of camping and day use visitors was calibrated to the annual number of camping for 1993. The California Department of Parks and Recreation and the Forest Service provided the annual number of camping visitors by campground at Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir. For Donner Lake, Donner State Park had 195,099 camping visitors. For Prosser Reservoir, Lakeside, Prosser Family, Prosser Ranch, and Annie McCloud campgrounds had 37,816 camping visitors. For Stampede Reservoir, Davis Creek, Emigrant, and Logger campgrounds had 237,841 camping visitors. For Boca Reservoir, Boca, Boca Rest, Boca Spring, and Boyington Mill campgrounds had 65,813 camping visitors. The annual number of day use visitors were estimated with ratios of day use visitors to camping visitors at Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir. Except for Donner Lake, the ratios were developed from data taken from the survey of the visitation. The Donner Lake ratio was developed from data provided by the California Department of Parks and Recreation. For Donner Lake, the ratio is .71 for 138,246 day use visitors. For Prosser Reservoir, the ratio is .38 for 14,384 day use visitors. For Stampede Reservoir, the ratio is .20 for 46,674 day use visitors. For Boca Reservoir, the ratio is 1.26 for 82,941 day use visitors. Donner Lake, Prosser Reservoir and Stampede Reservoir had fewer day use visitors than camping visitors, where as, Boca Reservoir had more day use visitors than camping visitors. The annual number of camping visitors and day use visitors deviate from the 1993 number under alternative end of the month reservoir storage levels.

Annual Camping and Day Use Visitor Expenditures

Camping and day use visitor expenditures for Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir were taken from the estimation of the expenditure function. The expenditures were calculated as the group expenditure per day. For Donner Lake, the camping visitor group expenditure per day is \$36.97 and the day use visitor group expenditure is \$52.00. For Prosser Reservoir, the camping visitor group expenditure per day is \$27.90 and the day use visitor group expenditure is \$34.07. For Stampede Reservoir, the camping visitor group expenditure per day is \$39.61 and the day use visitor group expenditure is \$52.78. For Boca Reservoir, the camping visitor group expenditure per day is \$34.40 and the day use visitor group expenditure is \$48.85. For each of these sites, the day use visitor group expenditures per day were higher than the camping visitor group expenditures per day.

Input-Output Model Component

The input-output model component estimates the economic impacts. Tasks performed to develop this component include definition of the region, collection of the control total data, and derivation of the model tables. Model elements include output response coefficients, water transfer coefficients, and output requirements. A summary of each task and model element is given below.

Definition of the Region

The region was defined by an economic area, a population base, and several economic sectors. The hydrologic boundaries of the Truckee River Basin outline the region. Within the region, the economic area covers part of eastern California and part of western Nevada. Part of eastern California includes portions of Sierra, Nevada, Placer, El Dorado, and Alpine counties and the towns of Truckee, Tahoe City, and South Lake Tahoe. Part of western Nevada includes portions of Pershing, Washoe, Lyon, Carson City (an independent city), and Douglas counties and the cities of Reno and Sparks. The population base for the region is 316,381 persons. Of this amount, 16% is from the California counties and 84% is from the Nevada counties. There are several economic sectors in the economy in the region. These sectors include livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households.

Collection of the Control Total Data

Control total data was collected for the region. There is a control total for output, employment, income, population, housing, agriculture water use, commercial water use, and residential water use. A definition, a source, and values by economic sector for the region by state are given for each control total. The values are estimated either by using specific information, coefficients, or county level data adjusted to the region by population. For the region, output is \$17,857,271,279. Employment is 188,121 jobs. Income is \$6,720,549,054. Population is 307,874 persons. Housing is 122,239 dwellings. Agriculture water use is 73,696 acre-feet. Commercial water use is 12,432 acre-feet. Residential water use is 72,453 acre-feet.

Derivation of the Model Tables

Input-output tables were derived from the transactions matrix for the region. A transactions matrix is a double entry accounting system. All transactions that an economic sector has within the economy are accounted for in the transactions matrix. There is an individual row and column for each sector in the matrix. Row entries represent output and include sales, other final demand, and exports by a sector. Other final demand are capital formation, inventory accumulation, state government purchases, and federal government purchases. Column entries, on the other hand, represent input and include purchases, other final payments, and imports by a sector. Other final payments are depreciation, expenditures to state government, and expenditures to federal government. The accounting identity of the matrix requires that for any sector the row total must equal the column total. Input-output model tables were found by performing a sequence of calculations involving matrix algebra. The input-output tables include direct requirements, final demand requirements, output requirements, employment requirements, income requirements, and multipliers.

Output Response Coefficients

Output response coefficients measure the employment, income, population, housing, agriculture water use, commercial water use and residential water use response to output from an economic sector. Key sectors include livestock production, manufacturing, trade, eating, drinking, and lodging, and hotels, gaming, and recreation. The response to a \$1 million output in livestock production is 19 jobs, \$161,786 in income, 38 people, 15 dwellings, 16,433 acre-feet of agriculture water use, .90 acre-feet of commercial water use, and 9 acre-feet of residential water use. The response to a \$1 million output in manufacturing is 8 jobs, \$263,690 in income, 14 people, 5 dwellings, .33 acre-feet of commercial water use, and 3 acre-feet of residential water use. The response to a \$1 million output in trade is 25 jobs, \$486,901 in income, 41 people, 16 dwellings, .93 acre-feet of commercial water use, and 10 acre-feet of residential water use. The response to a \$1 million output in eating, drinking, and lodging is 19 jobs, \$333,658 in income, 34 people, 13 dwellings, 2 acre-feet of commercial water use, and 8 acre-feet of residential water use. The response to a \$1 million output in hotels, gaming, and recreation is 19 jobs, \$322,800 of income, 30 people, 12 dwellings, 3.37 acre-feet of commercial water use, and 7 acre-feet of residential water use. These output response coefficients are taken from the collection of the control total data.

Water Transfer Coefficients

Water transfer coefficients determine the portions of agriculture water use among economic sectors for an agriculture water transfer and the portions of commercial water use among sectors for a commercial water transfer. Key sectors include livestock production for an agriculture water transfer and manufacturing, and hotels, gaming, and recreation for a commercial water transfer. The water transfer coefficient is 1 or 100% for livestock production. This coefficient is based on an agriculture water use of 54,876 acre-feet for livestock production. For a 1,000 acre-foot agriculture water transfer, the entire 1,000 acre-feet of agriculture water use is from livestock production. Water transfer coefficients are .09 or 9% for manufacturing, and .91 or 91% for hotels, gaming, and recreation. These coefficients are based on a commercial water use of 452 acre-feet for manufacturing and commercial water use of 4,589 acre-feet for hotels, gaming, and recreation. For a 1,000 acre-foot commercial water transfer, the 1,000 acre-feet of commercial water use is to manufacturing and hotels, gaming, and recreation. The commercial water use for manufacturing is 90 acre-feet. The commercial water use for hotels, gaming, and recreation is 910 acre-feet. These water transfer coefficients are also taken from the collection of the control total data.

Output Requirements

Output requirements measure the total economic impact from a change in output. The output requirements table is taken from the derivation of the model tables. Output requirements show the dollar amount of change in economic activity of the row sector from a dollar change in output of the column sector. The column totals are the output total requirements that show the total dollar amount of change in economic activity of all row sectors from a dollar change in output of the column sector. Key sectors include livestock production, manufacturing, trade, eating, drinking, and lodging, and hotels, gaming, and recreation. A \$1 million output change in livestock production leads to a \$1.9 million change economic activity. A \$1 million output change in manufacturing leads to a \$1.7 million change economic activity. A \$1 million output change in trade leads to a \$2.2 million change economic activity. A \$1 million output change in eating, drinking, and lodging leads to a \$2 million change economic activity. A \$1 million output change in hotels, gaming, and recreation leads to a \$1.9 million change economic activity. The output total requirements are the same as output multipliers.

6.2. Explanation of the Model Applications

The regional economic model has two applications. The first application is estimation of economic impacts for alternative reservoir storage levels at Donner Lake, and at, Prosser, Stampede, and Boca Reservoirs. The second application is estimation of economic impacts for reallocations of water.

Estimation of the Economic Impacts for Alternative Reservoir Storage Levels

Estimation of the economic impacts for alternative reservoir storage levels requires an understanding of three separate actions. These actions include measurement of an economic impact, operation of the computer program, presentation of the results. A summary of each action is given below.

Measurement of an Economic Impact

The economic impact for alternative reservoir storage levels at Donner Lake, and at, Prosser, Stampede, and Boca Reservoirs is measured in the following manner. An economic impact occurs because of recreation activities at the reservoirs. At each alternative reservoir storage level there is a different level of recreation in terms of visitation to the reservoirs and expenditures in the local economy. Visitation to the reservoirs is by camping and day use visitors. Expenditures in the economy are on items necessary for recreation at the reservoirs. Items such as gas, groceries, supplies, meals at restaurants, hotel rooms, and vacation-home rent. Camping and day use visitors purchase these items from businesses and cause a direct effect to occur on the economic activity in the region. In addition to this direct effect, indirect and induced effects also occur. Given that businesses in the region sell items for recreation to camping and day use visitors, these businesses also purchase products and services from other businesses in the region. Because of these purchases being made, there is then an indirect effect on other businesses and on economic activity in the region. The induced effect on economic activity in the region is household spending by employees of these affected businesses. At each alternative reservoir storage level there is a different amount of household spending by employees. Together the direct, indirect, and induced effects on economic activity make-up the total effect or total economic impact on the region for alternative reservoir storage levels.

Operation of the Computer Program

The computer program starts with input data. The input data is the alternative end of the month reservoir storage levels at Donner Lake, and at, Prosser, Stampede, and Boca Reservoirs. The program takes the alternative reservoir storage levels and performs the first process. This process calculates the number of camping and day use visitors and

the annual camping and day use visitor expenditures with the recreation model. Output from this process is the direct economic impact by economic sector. From this, the program takes the direct economic impact by economic sector and performs the second process. This process multiplies the direct economic impact by economic sector by the output requirements of the input-output model. Output from this process is the total economic impact by economic sector. Finally, the program takes the total economic impact by economic sector and performs the third process. This process multiplies the total economic impact by economic sector by the output response coefficients of the input-output model. Output from this process is the response economic impact by economic sector. Having generated the direct economic impact, total economic impact, and response economic impact the program stops.

Presentation of the Results

Given 1993 end of the month reservoir storage levels for Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir, the results are presented in the following sequence. Average end of the month reservoir storage is 6,742 acre-feet for Donner Lake, 15,655 acre-feet for Prosser Reservoir, 146,104 acre-feet for Stampede Reservoir, and, 28,171 acre-feet for Boca Reservoir. Relative to the end of the month reservoir storage levels, the camping and day use visitors are 333,345 visitors for Donner Lake, 52,200 visitors for Prosser Reservoir, 284,515 visitors for Stampede Reservoir, and 148,754 visitors for Boca Reservoir. The direct economic impact from the camping and day use visitors is recreation expenditures of \$6,972,260. This direct economic impact generates additional economic activity for a total economic impact of \$9,882,066. The response economic impact is 83 jobs for employment, \$1,502,805 of income, 141 persons for population, 56 dwellings for housing, 6 acre-feet for commercial water use, and 33 acre-feet for residential water use. The recreation expenditure multiplier is 1.42. An additional dollar of recreation expenditure generates an additional forty-two cents of economic activity.

Estimation of the Economic Impacts for Reallocations of Water

Estimation of the economic impacts for reallocations of water also requires an understanding of three separate actions. These actions include, again, measurement of an economic impact, operation of the computer program, presentation of the results. A summary of each action is given below.

Measurement of an Economic Impact

The economic impact for a reallocation of water from agriculture water use to commercial water use is measured in the following manner. An economic impact occurs since water is a resource requirement for agriculture production and commercial activity. A reallocation of water transfers an amount of water from agriculture water use to commercial water use. The direct effect on economic activity in the region is a decrease in agriculture production from farms and ranches, and an increase in commercial activity from businesses. The indirect effect on economic activity in the region is also a decrease in business activity from those businesses that sell products and services to farms and ranches for agriculture production, and also an increase in business activity of the businesses that sell products and services to businesses that have an increase in commercial activity. The induced effect on economic activity in the region is a decrease in household spending by employees on farms and ranches, and an increase in household spending by employees in commercial businesses. Together the direct, indirect, and induced effects on economic activity make-up the total effect or total economic impact on the region for a reallocation of water from agriculture water use to commercial water use.

Operation of the Computer Program

The computer program starts with input data. The input data is either an agriculture water transfer amount or a commercial water transfer amount. From this, the program takes the water transfer amount and performs the first process. This process multiplies the water transfer amount by water transfer coefficients of the input-output model. Output from this process is the water transfer amount by economic sector for either an agriculture water transfer or a commercial water transfer. From this, the program then takes the water transfer amount by economic sector and performs the second process. This process divides the water transfer amount by economic sector by the output response coefficients for either agriculture water use or commercial water use of the input-output model. Output from this process is the direct economic impact by economic sector for either an agriculture water transfer or a commercial water transfer. From this, again the program takes the direct economic impact by economic sector and performs the third process. This process multiplies the direct economic impact by economic sector by the output requirements of the input-output model. Output from this process is the total economic impact by economic sector for either a agriculture water

transfer or commercial water transfer. Finally, the program takes the total economic impact by economic sector and performs the fourth process. This process multiplies the total economic impact by economic sector by output response coefficients of the input-output model. Output from this process is the response economic impact by economic sector for either a agriculture water transfer or commercial water transfer. Having generated the direct economic impact, total economic impact, and response economic impact the program stops.

Presentation of the Results

Given a 40,000 acre-foot reallocation of water from agriculture water use to commercial water use, the results are presented in the following sequence. For the agriculture water transfer, the water transfer amount is 34,909 acre-feet. The direct economic impact for the transfer amount is output of \$2,124,370. The total economic impact is output of \$3,973,146. The response economic impact is 60 jobs for employment, \$719,122 of income, 115 persons for population, 45 dwellings for housing, 39,977 acre-feet for agriculture water use, 3 acre-feet for commercial water use, and 20 acre-feet for residential water use. Combined water use is 40,000 acre-feet. The water transfer multiplier is 1.15. To compensate for commercial and residential water use, each additional acre-foot for a agriculture water transfer requires an additional .15 acre-feet. For the commercial water transfer, the water transfer amount is 8,853 acre-feet. The direct economic impact for the transfer amount is output of \$4,786,743,051. The total economic impact is output of \$8,734,949,797. The response economic impact is 101,022 jobs for employment, \$2,035,933,140 of income, 163,502 persons for population, 65,026 dwellings for housing, 0 acre-feet for agriculture water use, 10,980 acre-feet for commercial water use, and 29,020 acre-feet for residential water use. Combined water use is 40,000 acre-feet. The water transfer multiplier is 4.52. To compensate for residential water use, each additional acre-foot for a commercial water transfer requires an additional 3.52 acre-feet.

6.3. Presentation of the Model Improvements

Model improvements are made to the recreation model component and model application for estimation of the economic impacts for alternative reservoir storage levels. These improvements required supplement work.

Recreation Model Component Improvement

Supplement work for recreation model component improvement is a repeat of the recreation model component tasks. Tasks include survey of the visitation, estimation of the expenditure function, survey of the second-home owners, survey of the vacation-home renters, estimation of the expenditure function, and formulation of the model equations. The first estimation of the expenditure function is with 1993 and 1994 survey of visitation data. The second estimation is with 1993 and 1994 survey of visitation data plus 1995 survey of second-home owners and survey of vacation-home renters data.

Model Application Improvement

Supplement work for model application improvement is a repeat of the estimation of the economic impacts for alternative reservoir storage levels.

**TRUCKEE RIVER BASIN
REGIONAL ECONOMIC IMPACT MODEL**

PART 2 OF 2



**Truckee River Basin
Regional Economic Impact Model**

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July 1995

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This publication, *Truckee River Regional Economic Impact Model*, was published by the University Center for Economic Development in the Department of Agricultural Economics at the University of Nevada, Reno. Funds for this publication were provided by the United States Department of the Interior, Bureau of Reclamation. This publication's statements, conclusions, recommendations, and/or data represent solely the findings and views of the authors and do not necessarily represent the views of the United States Department of the Interior, the Bureau of Reclamation, University of Nevada, Reno, or any reference sources used or quoted by this study. Reference to research projects, programs, books, magazines, or newspaper articles does not imply an endorsement or recommendation by the authors unless otherwise stated. Correspondence regarding this document should be sent to:

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Supplement

7. Recreation Model Component Improvement

Recreation model component improvement includes survey of the visitation, estimation of the expenditure function, survey of the second-home owners, survey of the vacation-home renters, estimation of the expenditure function, and formulation of the model equations. There are two sections on estimation of the expenditure function. The first section is estimation with 1993 and 1994 survey of visitation data. The second section is estimation with 1993 and 1994 survey of visitation data plus 1995 survey of second-home owners and survey of vacation-home renters data.

7.1. Survey of the Visitation

A visitation survey of the Truckee River Basin was done from May 28th through September 3rd, 1994. Specific recreation sites visited included Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, and Pyramid Lake. The purpose of the survey was to first obtain an overall picture of the visitation and recreation activities occurring at the sites, second, quantify the amount of expenditures that visitors at the sites make to the local economy, and third, identify how the visitation would change in relation to the level of water at the sites. To achieve this purpose, information was gathered from visitors at each site through an interview process using a questionnaire. During the interview process, observations were also made at each site. Once the interview process was completed, all the data was then compiled and analyzed to develop a set of descriptive statistics. The interview questionnaire, a list of observations, and the descriptive statistics of the data are presented below.

Interview Questionnaire

On-site interviews were done using a questionnaire. Through this questionnaire, visitors were asked to provide general information and answer general, site specific, and demographic questions. General information includes gender of respondent, type of visitor and length of stay, group size, and group make-up. General questions identify visitation in terms of number of visits to the reservoirs and lakes and in which months, and the importance of decision factors to visit any reservoir or lake. Site specific questions were asked on the site where the visitor was at the time of the interview. These questions identify the quality of site characteristics, the number of hours spent participating in recreation activities at the site, local expenditures made to visit the site, whether or not respondents would continue to visit the site if the water level were to change, which other site would be chosen in the event that the water level did change to the point they would no longer continue to visit the site, and the willingness to pay by the visitor to keep the water level at the interview site suitable for recreation. Demographic questions identify age, marital status, number of adults and children in household, education, and household income of the visitor. These demographic questions, however, due to their sensitivity, were made optional. The questions and interview schedule are given below.

General Information

Gender of Respondent:

Male _____
Female _____

Type of Visitor and Length of Stay:

Day User _____ Length of Stay _____ Hours
Camper _____ Length of Stay _____ Days

Group Size:

Number of Adults _____
Number of Children _____

Group Make-up:

Family _____
Friends _____

Number of Vehicles _____ (include cars, pickups, campers, & RVs)
Number of Boats _____
Number of Jet Ski's _____
Number of Camp Trailers _____

City: _____
County: _____
State: _____
Zip Code: _____

General Questions

1. (a) How many times in a year do you typically visit the following reservoirs or lakes?

Donner Lake _____
 Prosser Reservoir _____
 Stampede Reservoir _____
 Boca Reservoir _____
 Pyramid Lake _____

- (b) Which months of the year do you visit these reservoirs or lakes?

April _____
 May _____
 June _____
 July _____
 August _____
 September _____
 October _____
 Other _____

2. How important to you are the following factors in visiting a reservoir or lake? Please rate the factors as very important, somewhat important, somewhat unimportant, not important at all, or no opinion. We will assign 1 point for "very important", 2 for "somewhat important", 3 for "somewhat unimportant", 4 for "not important at all", or 5 for "no opinion".

| Factors | 1 Very Important | 2 Somewhat Important | 3 Somewhat Unimportant | 4 Not Important at All | 5 No Opinion |
|----------------------|------------------------|----------------------------|------------------------------|---------------------------------|--------------------|
| Activity Opportunity | | | | | |
| Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |
| Water-Level | | | | | |
| Area Setting | | | | | |

Site Specific Questions

1. How do you rate the following characteristics at this reservoir or lake? Please rate the characteristics as very good, good, satisfactory, poor, or very poor. We will assign 1 point for "very good", 2 for "good", 3 for "satisfactory", 4 for "poor", or 5 for "very poor".

| Characteristics | 1 Very Good | 2 Good | 3 Satisfactory | 4 Poor | 5 Very Poor |
|----------------------|-------------------|-----------|-------------------|-----------|-------------------|
| Activity Opportunity | | | | | |
| Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |
| Water-Level | | | | | |
| Area Setting | | | | | |

2. (a) What is the approximate time you will spend today on each of the following activities? Please also list any additional activities.

| Activities | Hours per Day | | | | | | | | | | | |
|--------------------|---------------|---|---|---|---|---|---|---|---|----|----|----|
| Fishing from Shore | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Fishing from Boat | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Water Skiing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Pleasure Boating | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Jet Skiing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Swimming | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Picnicing | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Hiking | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Biking | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

- (b) If the water-level changed, would your activities change?

Yes _____

No _____

3. (a) How many times did you visit this reservoir or lake last month?

(b) Which of the following activities did you participate in?

Activities

| | |
|--------------------|--|
| Fishing from Shore | |
| Fishing from Boat | |
| Water Skiing | |
| Pleasure Boating | |
| Jet Skiing | |
| Swimming | |
| Picnicing | |
| Hiking | |
| Biking | |
| | |
| | |

4. How much did you spend on the following items to visit this reservoir or lake this trip? Indicate the percentage of the total spent in Truckee, Reno/Sparks or Other Area.

| Items | Total \$ | Truckee % | Reno/Sparks % | Other-Area % |
|------------------------|-------------|--------------|------------------|-----------------|
| Camping Fees | | | | |
| License Fees | | | | |
| Hotel and Motel | | | | |
| Restaurant | | | | |
| Groceries and Supplies | | | | |
| Gas | | | | |
| Shopping | | | | |
| Rental | | | | |
| | | | | |
| | | | | |
| Total | | | | |

Today the water-levels at these reservoirs or lakes are:

Donner Lake _____ acre-feet or _____ % of full storage.
 Prosser Reservoir _____ acre-feet or _____ % of full storage.
 Stampede Reservoir _____ acre-feet or _____ % of full storage.
 Boca Reservoir _____ acre-feet or _____ % of full storage.

5. (a) If this water-level is maintained at the level you see today, how many times would you visit this reservoir or lake during this month including this trip?

- (b) If the water-level at this reservoir or lake were higher than the level you see today, would you change the number of visits during this month?

Yes _____

No _____

- (c) If the water-level at this reservoir or lake were lower than the level you see today, would you change the number of visits during this month?

Yes _____

No _____

- (d) If (b) and or (c) is yes, on the chart, indicate the number of times you would visit at the following water-levels during this month:

Donner Lake

| Storage as a % of Full Capacity | Number of Visits per Month | Acre-Feet of Storage | Acres of Surface Area | Elevation Lowering in Feet | Boat Ramp Status |
|---------------------------------|----------------------------|----------------------|-----------------------|----------------------------|------------------|
| 100% | <input type="text"/> | 9,670 | 748 | 0 | usable |
| 90% | <input type="text"/> | 8,703 | 707 | 1 | usable |
| 80% | <input type="text"/> | 7,736 | 672 | 2 | not usable |
| 70% | <input type="text"/> | 6,769 | 633 | 3 | not usable |
| 60% | <input type="text"/> | 5,802 | 587 | 4 | not usable |

Prosser Reservoir

| Storage as a % of Full Capacity | Number of Visits per Month | Acre-Feet of Storage | Acres of Surface Area | Elevation Lowering in Feet | Boat Ramp Status |
|---------------------------------|----------------------------|----------------------|-----------------------|----------------------------|------------------|
| 100% | | 29,840 | 748 | 0 | usable |
| 90% | | 26,856 | 707 | 8 | usable |
| 80% | | 23,872 | 672 | 16 | usable |
| 70% | | 20,888 | 633 | 24 | usable |
| 60% | | 17,904 | 587 | 32 | usable |
| 50% | | 14,920 | 533 | 40 | usable |
| 40% | | 11,936 | 468 | 48 | usable |
| 30% | | 8,952 | 389 | 56 | not usable |
| 20% | | 5,968 | 291 | 64 | not usable |
| 10% | | 2,984 | 166 | 72 | not usable |
| 0% | | 0 | 0 | 80 | not usable |

Stampede Reservoir

| Storage as a % of Full Capacity | Number of Visits per Month | Acre-Feet of Storage | Acres of Surface Area | Elevation Lowering in Feet | Boat Ramp Status |
|---------------------------------|----------------------------|----------------------|-----------------------|----------------------------|------------------|
| 100% | | 226,500 | 3,440 | 0 | usable |
| 90% | | 203,850 | 3,185 | 15 | usable |
| 80% | | 181,200 | 3,020 | 30 | usable |
| 70% | | 158,550 | 2,831 | 45 | usable |
| 60% | | 135,900 | 2,613 | 60 | usable |
| 50% | | 113,250 | 2,359 | 75 | usable |
| 40% | | 90,600 | 2,059 | 90 | usable |
| 30% | | 67,950 | 1,699 | 105 | not usable |
| 20% | | 45,300 | 1,258 | 120 | not usable |
| 10% | | 22,650 | 708 | 135 | not usable |
| 0% | | 0 | 0 | 151 | not usable |

Boca Reservoir

| Storage as a % of Full Capacity | Number of Visits per Month | Acre-Feet of Storage | Acres of Surface Area | Elevation Lowering in Feet | Boat Ramp Status |
|---------------------------------|----------------------------|----------------------|-----------------------|----------------------------|------------------|
| 100% | | 40,870 | 977 | 0 | usable |
| 90% | | 36,783 | 920 | 8 | usable |
| 80% | | 32,696 | 896 | 16 | usable |
| 70% | | 28,609 | 867 | 24 | not usable |
| 60% | | 24,522 | 831 | 32 | not usable |
| 50% | | 20,435 | 786 | 40 | not usable |
| 40% | | 16,348 | 727 | 48 | not usable |
| 30% | | 12,261 | 645 | 56 | not usable |
| 20% | | 8,174 | 527 | 64 | not usable |
| 10% | | 4,087 | 341 | 72 | not usable |
| 0% | | 0 | 0 | 82 | not usable |

6. If you no longer choose to visit this reservoir or lake because of water-level, which of the following reservoirs or lakes would you then choose to visit assuming the water-levels at these other reservoirs and lakes remained at today's level?

Donner Lake _____
 Prosser Reservoir _____
 Stampede Reservoir _____
 Boca Reservoir _____
 Pyramid Lake _____
 Other _____

7. How much would you be willing to pay per year not to have the water-level at this reservoir or lake fall below today's level?

\$0 _____
 \$1 - 5 _____
 \$6 - 10 _____
 \$11 -25 _____
 \$26 - 50 _____
 \$51 - 100 _____
 Over \$100 _____

Demographic Questions

1. Indicate your age:

Under 16 years _____
16 - 20 _____
21 - 30 _____
31 - 40 _____
41 - 50 _____
51 - 60 _____
61 - 70 _____
Over 70 _____

2. What is your marital status:

Single _____
Married _____

3. How many adults are in your household:

Male _____
Female _____

4. How many children are in your household:

Male _____
Female _____

5. Indicate your education level:

Elementary School _____
High School _____
Technical School _____
2 Years of College _____
4 Years of College _____
Graduate School _____

6. Indicate your annual household income level:

| | |
|-----------------------|-------|
| Below \$10,000 | _____ |
| \$10,000 - \$25,000 | _____ |
| \$26,000 - \$50,000 | _____ |
| \$51,000 - \$75,000 | _____ |
| \$76,000 - \$100,000 | _____ |
| \$100,000 - \$150,000 | _____ |
| Over \$150,000 | _____ |

Interview Schedule

The interview schedule is given below. Trips were made to each site on a week day, a weekend day, and a holiday weekend day. Trips to Boca, Stampede, and Prosser Reservoirs were combined because of visitation and water-levels.

| | | |
|-------------------|----------|---|
| May (1 day) | | |
| May 28, 1994 | Saturday | Boca, Stampede, and Prosser |
| June (5 days) | | |
| June 10, 1994 | Friday | Pyramid Lake |
| June 11, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs |
| June 17, 1994 | Friday | Boca, Stampede, and Prosser Reservoirs |
| June 24, 1994 | Friday | Donner Lake |
| June 25, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs |
| July (6 days) | | |
| July 2, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs Donner Lake |
| July 8, 1994 | Friday | Boca, Stampede, and Prosser Reservoirs |
| July 9, 1994 | Saturday | Pyramid Lake |
| July 16, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs |
| July 22, 1994 | Friday | Boca, Stampede, and Prosser Reservoirs |
| July 23, 1994 | Saturday | Donner Lake |
| August (4 days) | | |
| August 5, 1994 | Friday | Pyramid Lake |
| August 6, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs |
| August 12, 1994 | Friday | Donner Lake |
| August 20, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs |
| September (1 day) | | |
| September 3, 1994 | Saturday | Boca, Stampede, and Prosser Reservoirs Donner Lake |

The total number of visitors that participated in an interview was 281. There were 83 interviews at Donner Lake, 32 interviews at Prosser Reservoir, 64 interviews at Stampede Reservoir, 31 interviews at Boca Reservoir, and 71 interviews at Pyramid Lake.

List of Observations

Observations were made at each site during the interview process. Key observations are listed below.

1. Approximately 90,000 acre-feet of water was released from Stampede Reservoir prior to the summer season of June, July, and August. This water increased river flows in the Truckee River so that the cui ui fish could spawn upstream from Pyramid Lake. On account of this, storage in Stampede Reservoir went from 170,000 acre-feet in March to 80,000 acre-feet in May.
2. At Donner Lake, storage was at the maximum of 9,700 acre-feet in June. In July, however, water was released from storage and the lake water-level dropped approximately three feet to a storage of 6,800 acre-feet. Another foot could have been released but the Town of Truckee forced an exchange agreement to have water released from Boca Reservoir instead of Donner Lake. Donner Lake was then held at 6,800 acre-feet of storage through August.
3. At Prosser Reservoir, storage went from 9,700 acre-feet in June to 9,600 acre-feet in August. This storage is approximately 32% of full storage. Full storage at Prosser Reservoir is 29,840 acre-feet.
4. At Stampede Reservoir, storage went from 80,000 acre-feet or 35% of full storage in June to 69,000 acre-feet or 30% of full storage in August. Full storage at Stampede Reservoir is 226,500 acre-feet.
5. At Boca Reservoir, storage went from 28,700 acre-feet or 70% of full storage to 7,300 acre-feet or 18% of full storage in June. Through July and August, Boca Reservoir went from the 7,300 acre-feet to 4,300 acre-feet or 10% of full storage in August. Full storage for Boca Reservoir is 40,870 acre-feet.
6. Visitation to Donner Lake and Pyramid Lake peaked in August whereas visitation to Prosser, Stampede, and Boca Reservoirs peaked in July. The reason for the shorten summer season at Prosser, Stampede, and Boca Reservoirs was because of low water-levels, drought conditions, and the threat of wild fires.
7. The highest number of camping visitors were at Donner Lake followed by Stampede Reservoir, Pyramid Lake, and Prosser Reservoir. The highest number of day use visitors were also at Donner Lake followed by Pyramid Lake and Boca Reservoir.

8. The proportionate split of camping visitors to day use visitors was approximately 50% camping visitors to 50% day use visitors at Donner Lake, 100% camping visitors at Prosser Reservoir, 90% camping visitors to 10% day use visitors at Stampede Reservoir, 20% camping visitors to 80% day use visitors at Boca Reservoir, and 10% camping visitors to 90% day use visitors at Pyramid Lake.
9. At improved campgrounds, the occupancy throughout the summer season was 100% at Donner Lake, 40% at Prosser Reservoir, 60% at Stampede Reservoir, and 10% at Boca Reservoir.
10. Boat ramps were out of the water throughout the summer season at Prosser, Stampede, and Boca Reservoirs. At Prosser and Stampede Reservoirs, however, the boat ramps were still in use because of natural hard pack beyond the paved portions of the boat ramps. At Boca Reservoir, natural boat ramps were in use.
11. Water related activities at Donner Lake and Pyramid Lake were swimming, boating, water skiing, and jet skiing. Water related activities at Prosser Reservoir were fishing from shore, and fishing from a boat. Water related activities at Stampede Reservoir were swimming, fishing from shore, boating, fishing from a boat, water skiing, and jet skiing. Water related activities at Boca Reservoir were swimming, fishing from shore, and jet skiing.

Descriptive Statistics

The descriptive statistics of the data are presented below with an explanation of their interpretation. The descriptive statistics include number of respondents, site visitation of respondents, activities of respondents, annual visitation of respondents, annual visitation of respondents per site, number of visits by respondents per site, local and non-local respondents per site, group make-up of respondents per site, camping and day use respondents per site, ranking of reasons to visit by respondents per site, expenditures by respondents per site, expenditures by camping respondents per site, expenditures by day use respondents per site, activity hours per day by respondents per site, activity hours per day by camping respondents per site, activity hours per day by day use respondents per site, indicated number of visits by respondents at alternative water levels per site, site substitution of respondents per site, willingness of respondents to pay to maintain water level per site, age brackets of respondents, education levels of respondents, and household income levels of respondents.

Number of Respondents

The number of respondents successfully interviewed were 281 visitors.

The breakdown of the number of respondents for each site is provided in Table 7.1-1. There were 83 respondents at Donner Lake, 32 respondents at Prosser Reservoir, 64 respondents at Stampede Reservoir, 31 respondents at Boca Reservoir, and 71 respondents at Pyramid Lake.

Table 7.1-1. Number of Respondents.

| Study Area | Donner Lake | Promer Reservoir | Stump Lake Reservoir | Boon Reservoir | Pyramid Lake |
|---------------------------|-------------|------------------|----------------------|----------------|--------------|
| Number of Respondents | 281 | 83 | 32 | 64 | 31 |
| Percentage of Respondents | 29.54% | 11.39% | 22.78% | 11.03% | 25.27% |

Site Visitation of Respondents

The overall greatest site visitation of respondents was at Donner Lake.

The site visitation of respondents is presented in Table 7.1-2. Of the 281 respondents, 46% indicated that they visited Donner Lake an average of 5 visits during the year, 16% indicated that they visited Prosser Reservoir an average of 6 visits during the year, 37% indicated that they visited Stampede Reservoir an average of 4 visits during the year, 26% indicated that they visited Boca Reservoir an average of 6 visits during the year, 36% indicated that they visited Pyramid Lake an average of 10 visits during the year. The highest percentage of respondents indicated that they visited Donner Lake and Stampede Reservoir. The highest average number of visits by respondents are indicated for Pyramid Lake and Boca Reservoir. These numbers are influenced by local day use visitors choosing to visit the sites more frequently. In contrast, the lowest number of visits by respondents are for Donner Lake and Stampede Reservoir. These numbers are influenced by non-local camping visitors choosing to visit the sites less frequently.

Table 7.1-2. Site Visitation of Respondents.

| | Study Area | Corner Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir | Pyramid Lake |
|--|-------------------|--------------------|-------------------------|---------------------------|-----------------------|---------------------|
| Number of Respondents | 281 | 130 | 46 | 104 | 73 | 100 |
| Percentage of Respondents | | 46.26% | 16.37% | 37.01% | 25.98% | 35.59% |
| Number of Visits by Respondents | | 685 | 256 | 452 | 443 | 1007 |
| Average Number of Visits by Respondents | | 5.27 | 5.57 | 4.15 | 6.10 | 10.37 |

Activities of Respondents

Most of the respondents participated in picnicking, hiking, swimming, and fishing activities.

Activities of respondents are shown in Table 7.1-3. The activities include picnicking, camping, fishing, swimming, boating, fishing from a boat, water skiing, jet skiing, rafting, kayaking, biking, hiking, and other activities. Of the 281 respondents, 56% indicated that they were picnicking, 27% indicated that they were fishing, 38% indicated that they were swimming, 9% indicated that they were boating, 18% indicated that they were fishing from a boat, 5% indicated that they were water skiing, 4% indicated that they were jet skiing, 18% indicated that they were biking, 39% indicated that they were hiking, and 15% indicated that they were doing other activities. The other activities mentioned by the respondents include relaxing, getting away from it all, reading, and drinking beer.

Table 7.1-3. Activities of Respondents.

| | Study Area |
|---|---------------|
| Number of Respondents Picnicking | 157 |
| Number of Respondents Camping | N.A. |
| Number of Respondents Fishing | 77 |
| Number of Respondents Swimming | 106 |
| Number of Respondents Boating | 25 |
| Number of Respondents Fishing from Boat | 50 |
| Number of Respondents Water Skiing | 15 |
| Number of Respondents Jet Skiing | 11 |
| Number of Respondents Rafting | N.A. |
| Number of Respondents Kayaking | N.A. |
| Number of Respondents Biking | 50 |
| Number of Respondents Hiking | 109 |
| Number of Respondents Other | 42 |
| Percentage of Respondents Picnicking | 55.87% |
| Percentage of Respondents Camping | N.A. |
| Percentage of Respondents Fishing | 27.40% |
| Percentage of Respondents Swimming | 37.72% |
| Percentage of Respondents Boating | 8.90% |
| Percentage of Respondents Fishing from Boat | 17.79% |
| Percentage of Respondents Water Skiing | 5.34% |
| Percentage of Respondents Jet Skiing | 3.91% |
| Percentage of Respondents Rafting | N.A. |
| Percentage of Respondents Kayaking | N.A. |
| Percentage of Respondents Biking | 17.79% |
| Percentage of Respondents Hiking | 38.79% |
| Percentage of Respondents Other | 14.95% |

Annual Visitation of Respondents

Annual visitation of respondents to the study area is the highest in the summer months of June, July, and August.

Annual visitation of respondents is presented in Table 7.1-4. Of the 281 respondents, 18% indicated that they visit the study area in April, 40% indicated that they visit the study area in May, 79% indicated that they visit the study area in June, 88% indicated that they visit the study area in July, 79% indicated that they visit the study area in August, 43% indicated that they visit the study area in September, 22% indicated that they visit the study area in October, and 11% indicated that they visit the study area in Other months. Other months include January, February, March, November, and December.

Table 7.1-4. Annual Visitation of Respondents.

| | Study Area |
|---|-------------------|
| Number of Respondents that Visit during April | 50 |
| Number of Respondents that Visit during May | 111 |
| Number of Respondents that Visit during June | 221 |
| Number of Respondents that Visit during July | 244 |
| Number of Respondents that Visit during August | 223 |
| Number of Respondents that Visit during September | 120 |
| Number of Respondents that Visit during October | 61 |
| Number of Respondents that Visit during Other | 30 |
| Percentage of Visitation during April | 17.75% |
| Percentage of Visitation during May | 39.50% |
| Percentage of Visitation during June | 78.65% |
| Percentage of Visitation during July | 88.20% |
| Percentage of Visitation during August | 79.36% |
| Percentage of Visitation during September | 42.90% |
| Percentage of Visitation during October | 21.71% |
| Percentage of Visitation during Other | 10.68% |

Annual Visitation of Respondents per Site

The annual visitation of respondents per site follow a similar pattern. This pattern shows that during the year visitation at a site will begin in April and steadily increase throughout May, June, July, and August and then decrease sharply during September and October to end at very low visitation during the Other months.

The annual visitation of respondents per site are shown in Table 7.1-5. The pattern of annual visitation for a site is based on the number of respondents that indicated that they visit the study area and visit the site in a given month. To clarify this, for Boca Reservoir, 8 out of the 50 respondents indicated that they visit in April, 22 out of the 111 respondents indicated that they visit in May, 30 out of the 221 indicated that they visit in June, 28 out of the 248 respondents indicated that they visit in July, 26 out of the 223 respondents indicated that they visit in August, 17 out of the 120 indicated that they visit in September, 9 out of the 61 respondents indicated that they visit in October, and 5 out of the 30 respondents indicated that they visit in Other months.

These numbers are then divided by their summation and presented as a percentage of visitation during the given month. Of the total annual visitation at Boca Reservoir, 6% is during April, 15% is during May, 21% is during June, 19% is during July, 18% is during August, 12% is during September, 6% is during October, and 3% is during Other months.

The percentages taken together for all the months then show the pattern of annual visitation.

A similar interpretation can be made for the other sites.

Table 7.1-5. Annual Visitation of Respondents per Site.

| | Stady Aeon | Dooner Lake | Promer Reservoir | Stempale Reservoir | Boca Reservoir | Pyramid Lake |
|---|---------------|----------------|---------------------|-----------------------|-------------------|-----------------|
| Number of Respondents that Visit during April | 90 | 9 | 4 | 9 | 8 | 20 |
| Number of Respondents that Visit during May | 111 | 21 | 19 | 24 | 22 | 34 |
| Number of Respondents that Visit during June | 221 | 50 | 28 | 34 | 30 | 63 |
| Number of Respondents that Visit during July | 248 | 71 | 26 | 53 | 28 | 68 |
| Number of Respondents that Visit during August | 223 | 63 | 22 | 47 | 26 | 65 |
| Number of Respondents that Visit during September | 120 | 25 | 12 | 23 | 17 | 43 |
| Number of Respondents that Visit during October | 61 | 10 | 8 | 11 | 9 | 23 |
| Number of Respondents that Visit during Other | 30 | 12 | 2 | 2 | 5 | 9 |
| Total | | 261 | 184 | 229 | 145 | 325 |
| Percentage of Visitation during April | | 3.45% | 3.83% | 3.93% | 5.52% | 6.15% |
| Percentage of Visitation during May | | 8.05% | 9.62% | 10.48% | 15.17% | 18.46% |
| Percentage of Visitation during June | | 19.16% | 19.13% | 25.33% | 20.69% | 19.38% |
| Percentage of Visitation during July | | 27.20% | 25.00% | 24.02% | 19.31% | 20.92% |
| Percentage of Visitation during August | | 24.14% | 21.15% | 20.52% | 17.99% | 20.00% |
| Percentage of Visitation during September | | 9.54% | 11.34% | 10.04% | 11.72% | 13.23% |
| Percentage of Visitation during October | | 3.83% | 1.69% | 4.80% | 6.21% | 7.07% |
| Percentage of Visitation during Other | | 4.60% | 1.92% | 0.87% | 3.45% | 2.77% |

Number of Visits by Respondents per Site

The highest number of visits by respondents occur at Pyramid Lake, at Donner Lake, and at Boca Reservoir. Opposite of this, the lowest number of visits by respondents occur at Prosser Reservoir, and at Stampede Reservoir.

These numbers are shown in Table 7.1-6. At Donner Lake, the 83 respondents indicated that they make 459 visits to the site for an average of 5.5 visits each. At Prosser Reservoir, the 32 respondents indicated that they make 161 visits to the site for an average of 5 visits each. At Stampede Reservoir, the 64 respondents indicated that they make 227 visits to the site for an average of 3.5 visits each. At Boca Reservoir, the 31 respondents indicated that they make 280 visits to the site for an average of 9 visits each. At Pyramid Lake, the 71 respondents indicated that they make 890 visits to the site for an average of 12.5 visits each. The higher numbers for Boca Reservoir and Pyramid Lake reflect that a greater proportion of the respondents were local residents that frequented the site as day use visitors.

Table 7.1-6. Number of Visits by Respondents per Site.

| | Donner Lake | Pruner Reservoir | Stampede Reservoir | Boos Reservoir | Pyramid Lake |
|--|------------------------|-----------------------------|-------------------------------|---------------------------|-------------------------|
| Number of Visits by Respondents | 459 | 161 | 227 | 280 | 890 |
| Average Number of Visits by Respondents | 5.13 | 5.03 | 3.35 | 9.03 | 12.54 |

Local and Non-Local Respondents per Site

A higher number of respondents living within the study area were at Boca Reservoir and at Pyramid Lake. Whereas, a higher number of respondents living outside the study area were at Donner Lake, at Prosser Reservoir, and at Stampede Reservoir. Respondents living within the study area are considered as local respondents and respondents living outside the study area are considered as non-local respondents.

The numbers and the percentages of local and non-local respondents per site are provided in Table 7.1-7. At Boca Reservoir, 81% of the respondents were local respondents. At Pyramid Lake, 87% of the respondents were local respondents. The higher number of local respondents at these sites is because these sites are primarily day use sites that draw visitors from Truckee and the Reno-Sparks area. In contrast, at Donner Lake, 71% of the respondents were non-local respondents. At Prosser Reservoir, 84% of the respondents were non-local respondents. At Stampede Reservoir, 70% of the respondents were non-local respondents. The higher number of non-local respondents at these sites is because these sites are primarily camping sites that draw visitors from Sacramento and the San Francisco Bay area.

Table 7.1-7. Local and Non-Local Respondents per Site.

| | Daneau Lake | Prater Reservoir | Stampede Reservoir | Boos Reservoir | Pyramid Lake |
|-------------------------------------|----------------|---------------------|-----------------------|-------------------|-----------------|
| Number of Local Respondents | 24 | 5 | 19 | 25 | 62 |
| Number of Non-Local Respondents | 59 | 27 | 45 | 6 | 9 |
| Percentage of Local Respondents | 28.92% | 15.63% | 29.69% | 80.63% | 87.32% |
| Percentage of Non-Local Respondents | 71.08% | 84.37% | 70.31% | 19.37% | 12.68% |

Group Make-Up of Respondents per Site

Average group size of respondents among all sites ranged from 3.66 persons at Prosser Reservoir to 5.9 persons at Pyramid Lake. As per group, the number of adults were greater than the number of children at all sites. The percentage of groups that included children ranged from 45% at Boca Reservoir to 70% at Stampede Reservoir.

This group make-up information is presented in Table 7.1-8. At Donner Lake, the average group size was 5.1 persons of which 3 persons were adults and 65% of the groups included children. At Prosser Reservoir, the average group size was 3.66 persons of which 2.53 persons were adults and 47% of the groups included children. At Stampede Reservoir, the average group size was 4.95 persons of which 3.25 persons were adults and 70% of the groups included children. At Boca Reservoir, the average group size was 5.71 persons of which 4.06 persons were adults and 45% of the groups included children. At Pyramid Lake, the average group size was 5.9 persons of which 3.38 persons were adults and 69% of the groups included children.

Table 7.1-8. Group Make-Up of Respondents per Site.

| | Donner Lake | Proser Reservoir | Stampede Reservoir | Boza Reservoir | Pyramid Lake |
|---|------------------------|-----------------------------|-------------------------------|---------------------------|-------------------------|
| Average Group Size of Respondents | 3.11 | 3.66 | 4.93 | 5.71 | 5.90 |
| Average Number of Adults in Group of Respondents | 3.00 | 2.53 | 3.25 | 4.06 | 3.38 |
| Percentage of Groups that include Children | 65.06% | 46.88% | 79.31% | 43.10% | 69.01% |

Camping and Day Use Respondents per Site

The highest percentage of camping respondents were at Prosser Reservoir and at Stampede Reservoir. The largest average group size of camping respondents was at Pyramid Lake. The greatest average numbers of days spent by camping respondents were at Prosser Reservoir and at Boca Reservoir.

This camping respondent information is provided in Table 7.1-9. At Donner Lake, 51% of the respondents were camping respondents having a group size of 5.24 persons with 3.63 days being spent. At Prosser Reservoir, 94% of the respondents were camping respondents having a group size of 3.73 persons with 3.9 days being spent. At Boca Reservoir, 55% of the respondents were camping respondents having a group size of 5.47 persons with 3.65 days being spent. At Pyramid Lake, 27% of the respondents were camping respondents having a group size of 5.53 persons with 2.95 days being spent. At Stampede Reservoir, 100% of the respondents were camping respondents having a group size of 4.95 persons with 4.44 days being spent. Only interviews of camping visitors were made at Stampede Reservoir.

The highest percentage of day use respondents, except for Stampede Reservoir, were at Donner Lake and at Pyramid Lake. The largest average group size of day use respondents was at Pyramid Lake. The greatest average number of hours spent by day use respondents were at Boca Reservoir and at Pyramid Lake.

This day use respondent information is also provided in Table 7.1-9. At Donner Lake, 49% of the respondents were day use respondents having a group size of 4.98 persons with 4.92 hours being spent. At Prosser Reservoir, 6% of the respondents were day use respondents having a group size of 2.50 persons with 3.50 hours being spent. At Boca Reservoir, 45% of the respondents were day use respondents having a group size of 6 persons with 4.28 hours being spent. At Pyramid Lake, 73% of the respondents were day use respondents having a group size of 6.04 persons with 5.42 hours being spent. At Stampede Reservoir, this information is not available because no interviews of day use visitors were made.

Table 7.1-9. Camping and Day Use Respondents per Site.

| | Downer Lake | Proser Reservoir | Stimpole Reservoir | Boon Reservoir | Pyramid Lake |
|---|--------------------|-------------------------|---------------------------|-----------------------|---------------------|
| Number of Camping Respondents | 42 | 30 | 54 | 17 | 19 |
| Percentage of Camping Respondents | 50.60% | 93.75% | 100.00% | 54.84% | 26.76% |
| Average Group Size of Camping Respondents | 5.24 | 3.73 | 4.95 | 5.47 | 5.53 |
| Average Number of Days Spent by Camping Respondents | 3.63 | 3.90 | 4.44 | 3.65 | 2.95 |
| Number of Day Use Respondents | 41 | 2 | 0 | 14 | 52 |
| Percentage of Day Use Respondents | 49.40% | 6.25% | N.A. | 45.16% | 73.24% |
| Average Group Size of Day Use Respondents | 4.98 | 2.50 | N.A. | 6.00 | 6.04 |
| Average Number of Hours Spent by Day Use Respondents | 4.92 | 3.50 | N.A. | 4.20 | 3.42 |

Ranking of Reasons to Visit by Respondents per Site

Reasons to visit include importance of decision factors and quality of site characteristics.

The decision factors ranked very important to somewhat unimportant in visiting a reservoir or lake. These factors are activity opportunity, access, crowd level, facilities, water-level, and area setting.

Ranking the importance of decision factors to visit by respondents per site is shown in Table 7.1-10. Activity opportunity is ranked very important by respondents at Prosser Reservoir, at Boca Reservoir, and at Pyramid Lake. Activity opportunity is ranked somewhat important by respondents at Donner Lake and at Stampede Reservoir. Access is ranked very important by respondents at Donner Lake, at Stampede Reservoir, and at Pyramid Lake. Access is ranked somewhat important by respondents at Prosser Reservoir and at Boca Reservoir. Crowd level is ranked very important by respondents at Prosser Reservoir and somewhat important by respondents at Donner Lake, at Stampede Reservoir, at Boca Reservoir, and at Pyramid Lake. Facilities is ranked somewhat important by respondents at Donner Lake, at Prosser Reservoir, at Stampede Reservoir, and at Pyramid Lake. Facilities is ranked somewhat unimportant by respondents at Boca Reservoir. Water-level is ranked very important by respondents at Pyramid Lake and somewhat important by respondents at Donner Lake, at Prosser Reservoir, at Stampede Reservoir, and at Boca Reservoir. Area setting is ranked very important by respondents at Donner Lake, at Prosser Reservoir, at Stampede Reservoir, and at Boca Reservoir. Area setting is ranked somewhat important by respondents at Pyramid Lake.

The site characteristics ranked very good to poor. These site characteristics are activity, access, crowd level, facilities, water-level, and area setting.

Ranking the quality of site characteristics by respondents per site is also shown in Table 7.1-10. Activity opportunity is ranked very good by respondents at Pyramid Lake and good by respondents at Donner Lake, at Prosser Reservoir, at Stampede Reservoir, and at Boca Reservoir. Access is ranked very good by respondents at Donner Lake and good by respondents at Prosser Reservoir, at Stampede Reservoir, at Boca Reservoir, and at Pyramid Lake. Crowd level is ranked good by respondents at all the reservoirs and lakes. Facilities is ranked good by respondents at Donner Lake, at Prosser Reservoir, and at Stampede Reservoir. Facilities is ranked satisfactory by respondents at Boca Reservoir and at Pyramid Lake. Water-level is ranked good by respondents at Donner Lake and at Pyramid Lake. Water-level is ranked poor by respondents at Prosser Reservoir, at Stampede Reservoir, and at Boca Reservoir. Area setting is ranked very good by respondents at Donner Lake and good by respondents at Prosser Reservoir, at Stampede Reservoir, at Boca Reservoir, and at Pyramid Lake.

Table 7.1-10. Ranking of Reasons to Visit by Respondents per Site.

| | Donner Lake | Prosser Reservoir | Sharpsho Reservoir | Boat Reservoir | Pyramid Lake |
|---|------------------------|------------------------------|-------------------------------|---------------------------|-------------------------|
| Decision Factors /1 | | | | | |
| <i>Average Value of Activity Opportunity by Respondents</i> | 1.73 | 1.44 | 1.50 | 1.16 | 1.48 |
| <i>Average Value of Access by Respondents</i> | 1.45 | 1.69 | 1.44 | 1.71 | 1.39 |
| <i>Average Value of Crowd Level by Respondents</i> | 1.59 | 1.44 | 1.66 | 1.58 | 1.66 |
| <i>Average Value of Facilities by Respondents</i> | 1.70 | 2.09 | 1.98 | 2.52 | 2.14 |
| <i>Average Value of Water-Level by Respondents</i> | 1.84 | 1.88 | 1.55 | 1.52 | 1.48 |
| <i>Average Value of Area Setting by Respondents</i> | 1.37 | 1.47 | 1.38 | 1.42 | 1.99 |
| Site Characteristics /2 | | | | | |
| <i>Average Value of Activity Opportunity by Respondents</i> | 1.62 | 1.94 | 2.03 | 2.29 | 1.45 |
| <i>Average Value of Access by Respondents</i> | 1.35 | 1.56 | 1.69 | 2.13 | 1.68 |
| <i>Average Value of Crowd Level by Respondents</i> | 1.94 | 1.66 | 1.86 | 2.13 | 2.06 |
| <i>Average Value of Facilities by Respondents</i> | 1.59 | 2.34 | 2.06 | 3.00 | 3.21 |
| <i>Average Value of Water-Level by Respondents</i> | 1.84 | 1.75 | 1.50 | 4.96 | 2.01 |
| <i>Average Value of Area Setting by Respondents</i> | 1.28 | 1.72 | 1.41 | 2.83 | 2.04 |

1. Ranking: 1=Very Important, 2=Somewhat Important, 3=Somewhat Unimportant, 4=Not Important at All, and, 5=No Opinion.

2. Ranking: 1=Very Good, 2=Good, 3=Satisfactory, 4=Poor, and, 5=Very Poor.

Expenditures by Respondents per Site

Expenditures are the highest amount for respondents at Stampede Reservoir followed by expenditures of respondents at Boca Reservoir, at Donner Lake, at Prosser Reservoir, and at Pyramid Lake. Main expenditures are on groceries, camping fees, and fuel.

The expenditures by respondents are presented as average values in Table 7.1-11. At Donner Lake, respondents have total expenditures of \$115.14 in which the largest portion is on groceries, camping fees, restaurant, other, and fuel. At Prosser Reservoir, respondents have total expenditures of \$111.75 in which the largest portion is on groceries, camping fees, other, and fuel. At Stampede Reservoir, respondents have total expenditures of \$188.74 in which the largest portion is on other, groceries, camping fees, and fuel. At Boca Reservoir, respondents have total expenditures of \$134.46 in which the largest portion is on groceries, other, fuel, and camping fees. At Pyramid Lake, respondents have a total expenditure of \$89.44 in which the largest portion is on groceries, fuel, and camping fees.

Table 7.1-11. Expenditures by Respondents per Site.

| | Dorset Lake | Picoma Reservoir | Stampede Reservoir | Boon Reservoir | Pyramid Lake |
|--|------------------------|-----------------------------|-------------------------------|---------------------------|-------------------------|
| <i>Average Expenditures on Licenses by Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Expenditures on Camping Fees by Respondents</i> | 26.64 | 19.47 | 41.12 | 14.00 | 3.65 |
| <i>Average Expenditures on Hotel or Motel by Respondents</i> | 4.13 | 0.00 | 0.00 | 7.42 | 0.00 |
| <i>Average Expenditures on Restaurant by Respondents</i> | 18.08 | 7.72 | 12.47 | 4.84 | 0.28 |
| <i>Average Expenditures on Groceries by Respondents</i> | 37.24 | 57.52 | 55.47 | 69.77 | 53.44 |
| <i>Average Expenditures on Equipment and Supplies by Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Expenditures on Rental by Respondents</i> | 4.34 | 0.00 | 0.00 | 0.10 | 1.55 |
| <i>Average Expenditures on Fuel by Respondents</i> | 18.24 | 12.40 | 20.83 | 17.68 | 25.11 |
| <i>Average Expenditures on Other by Respondents</i> | 14.35 | 14.64 | 58.85 | 20.65 | 1.41 |
| Average Total Expenditures by Respondents | \$115.14 | \$131.75 | \$188.74 | \$134.46 | \$89.44 |

Expenditures by Camping Respondents per Site

Expenditures are the highest amount for camping respondents at Boca Reservoir followed by expenditures of camping respondents at Stampede Reservoir, at Donner Lake, at Pyramid Lake, and at Prosser Reservoir. Main expenditures are on groceries, camping fees, other, and fuel.

The expenditures for camping respondents are provided as average values in Table 7.1-12. At Donner Lake, camping respondents have total expenditures of \$181.14 in which the largest portion is on groceries, camping fees, restaurant, other, and fuel. At Prosser Reservoir, camping respondents have total expenditures of \$116.50 in which the largest portion is on groceries, camping fees, other, and fuel. At Stampede Reservoir, camping respondents have total expenditures of \$188.74 in which the largest portion is on other, groceries, camping fees, and fuel. At Boca Reservoir, camping respondents have total expenditures of \$213.89 in which the largest portion is on groceries, other, camping fees, and fuel. At Pyramid Lake, camping respondents have a total expenditure of \$178.47 in which the largest portion is on groceries, fuel, and camping fees.

Expenditures per day by camping respondents is calculated by dividing the expenditures by camping respondents by the number of days spent by camping respondents. At Donner Lake, total expenditures per day are \$49.90. At Prosser Reservoir, total expenditures per day are \$29.87. At Stampede Reservoir, total expenditures per day are \$42.51. At Boca Reservoir, total expenditures per day are \$58.60. At Pyramid Lake, total expenditures per day are \$60.50.

Expenditures per day per person by camping respondents is calculated by dividing the expenditures per day by camping respondent by the average group size of camping respondents. At Donner Lake, total expenditures per day per person are \$9.52. At Prosser Reservoir, total expenditures per day per person are \$8.01. At Stampede Reservoir, total expenditures per day per person are \$8.59. At Boca Reservoir, total expenditures per day per person are \$10.71. At Pyramid Lake, total expenditures per day per person are \$10.94.

Table 7.1-12. Expenditures by Camping Respondents per Site.

| | Dovey Lake | Proctor Reservoir | Scampede Reservoir | Boos Reservoir | Pyramid Lake |
|--|-----------------|----------------------|-----------------------|-------------------|-----------------|
| Average Expenditures on Licenses by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures on Camping Fees by Camping Respondents | 48.71 | 20.77 | 41.12 | 25.53 | 16.89 |
| Average Expenditures on Hotel or Motel by Camping Respondents | 5.60 | 0.00 | 0.00 | 12.94 | 0.00 |
| Average Expenditures on Restaurant by Camping Respondents | 28.33 | 8.23 | 12.47 | 7.05 | 0.00 |
| Average Expenditures on Groceries by Camping Respondents | 56.96 | 61.36 | 55.47 | 108.59 | 117.37 |
| Average Expenditures on Equipment and Supplies by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures on Rental by Camping Respondents | 0.60 | 0.00 | 0.00 | 0.18 | 0.00 |
| Average Expenditures on Fuel by Camping Respondents | 15.38 | 12.19 | 20.83 | 21.94 | 43.16 |
| Average Expenditures on Other by Camping Respondents | 25.36 | 13.95 | 38.85 | 37.65 | 1.85 |
| Average Total Expenditures by Camping Respondents | \$181.14 | \$116.50 | \$188.74 | \$213.89 | \$178.47 |
| Average Expenditures per Day on Licenses by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures per Day on Camping Fees by Camping Respondents | 13.42 | 5.33 | 9.26 | 6.99 | 5.73 |
| Average Expenditures per Day on Hotel or Motel by Camping Respondents | 1.54 | 0.00 | 0.00 | 3.55 | 0.00 |
| Average Expenditures per Day on Restaurant by Camping Respondents | 7.80 | 2.11 | 2.81 | 1.93 | 0.00 |
| Average Expenditures per Day on Groceries by Camping Respondents | 15.69 | 15.73 | 12.49 | 28.75 | 35.79 |
| Average Expenditures per Day on Equipment and Supplies by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures per Day on Rental by Camping Respondents | 0.17 | 0.00 | 0.00 | 0.05 | 0.00 |
| Average Expenditures per Day on Fuel by Camping Respondents | 4.29 | 3.13 | 4.69 | 4.01 | 14.63 |
| Average Expenditures per Day on Other by Camping Respondents | 6.99 | 3.38 | 13.25 | 18.32 | 0.36 |
| Average Total Expenditures per Day by Camping Respondents | \$49.90 | \$29.47 | \$42.51 | \$52.60 | \$60.50 |
| Average Expenditures per Day per Person on Licenses by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures per Day per Person on Camping Fees by Camping Respondents | 2.56 | 1.43 | 1.67 | 1.28 | 1.04 |
| Average Expenditures per Day per Person on Hotel or Motel by Camping Respondents | 0.29 | 0.00 | 0.00 | 0.65 | 0.00 |
| Average Expenditures per Day per Person on Restaurant by Camping Respondents | 1.49 | 0.57 | 0.57 | 0.35 | 0.00 |
| Average Expenditures per Day per Person on Groceries by Camping Respondents | 2.99 | 4.22 | 2.52 | 5.44 | 7.19 |
| Average Expenditures per Day per Person on Equipment and Supplies by Camping Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditures per Day per Person on Rental by Camping Respondents | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 |
| Average Expenditures per Day per Person on Fuel by Camping Respondents | 0.82 | 0.84 | 0.95 | 1.10 | 2.63 |
| Average Expenditures per Day per Person on Other by Camping Respondents | 1.33 | 0.96 | 2.68 | 1.89 | 0.06 |
| Average Total Expenditures per Day per Person by Camping Respondents | \$9.52 | \$8.04 | \$8.59 | \$10.71 | \$10.94 |

Expenditures by Day Use Respondents per Site

Expenditures are the highest amount for day use respondents at Pyramid Lake followed by expenditures of day use respondents at Donner Lake, at Prosser Reservoir, and at Boca Reservoir. Main expenditures are on groceries and fuel.

The average expenditures by day use respondents are shown in Table 7.1-13. At Donner Lake, day use respondents have total expenditures of \$47.55 in which the largest portion is on groceries, rental, restaurant, and fuel. At Prosser Reservoir, day use respondents have total expenditures of \$40.50 in which the largest portion is on other and fuel. At Boca Reservoir, day use respondents have total expenditures of \$37.99 in which the largest portion is on groceries and fuel. At Pyramid Lake, day use respondents have a total expenditure of \$56.91 in which the largest portion is on groceries and fuel.

Expenditures per person by day use respondents is calculated by dividing the expenditures by day use respondents by the average group size of day use respondents. At Donner Lake, total expenditures per person are \$9.55. At Prosser Reservoir, total expenditures per person are \$16.20. At Boca Reservoir, total expenditures per person are \$6.33. At Pyramid Lake, total expenditures per person are \$9.42.

Table 7.1-13. Expenditures by Day Use Respondents per Site.

| | Danner Lake | Proser Reservoir | Stampede Reservoir | Boon Reservoir | Pymad Lake |
|---|----------------|------------------|--------------------|----------------|----------------|
| Average Expenditure on Licenses by Day Use Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditure on Camping Fees by Day Use Respondents | 4.04 | 0.00 | N.A. | 0.00 | 4.27 |
| Average Expenditure on Hotel or Motel by Day Use Respondents | 2.63 | 0.00 | N.A. | 0.71 | 0.80 |
| Average Expenditure on Restaurant by Day Use Respondents | 7.32 | 0.00 | N.A. | 2.14 | 0.32 |
| Average Expenditure on Groceries by Day Use Respondents | 17.29 | 0.00 | N.A. | 22.64 | 30.08 |
| Average Expenditure on Equipment and Supplies by Day Use Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditure on Rental by Day Use Respondents | 2.12 | 0.00 | N.A. | 0.00 | 2.12 |
| Average Expenditure on Fuel by Day Use Respondents | 4.76 | 15.50 | N.A. | 12.50 | 18.52 |
| Average Expenditure on Other by Day Use Respondents | 3.07 | 25.00 | N.A. | 0.00 | 1.34 |
| Average Total Expenditure by Day Use Respondents | \$47.55 | \$40.50 | N.A. | \$37.99 | \$56.91 |
| Average Expenditure per Person on Licenses by Day Use Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditure per Person on Camping Fees by Day Use Respondents | 0.81 | 0.00 | N.A. | 0.00 | 0.71 |
| Average Expenditure per Person on Hotel or Motel by Day Use Respondents | 0.53 | 0.00 | N.A. | 0.12 | 0.00 |
| Average Expenditure per Person on Restaurant by Day Use Respondents | 1.52 | 0.00 | N.A. | 0.36 | 0.06 |
| Average Expenditure per Person on Groceries by Day Use Respondents | 2.47 | 0.00 | N.A. | 3.77 | 4.98 |
| Average Expenditure per Person on Equipment and Supplies by Day Use Respondents | N.A. | N.A. | N.A. | N.A. | N.A. |
| Average Expenditure per Person on Rental by Day Use Respondents | 1.64 | 0.00 | N.A. | 0.00 | 0.35 |
| Average Expenditure per Person on Fuel by Day Use Respondents | 0.96 | 6.20 | N.A. | 2.08 | 3.97 |
| Average Expenditure per Person on Other by Day Use Respondents | 0.62 | 10.00 | N.A. | 0.00 | 0.25 |
| Average Total Expenditure per Person by Day Use Respondents | \$9.55 | \$16.20 | N.A. | \$6.33 | \$9.42 |

Activity Hours per Day by Respondents per Site

Hours per day spent by respondents participating in non-camping activities at all sites ranged from 6.88 hours at Pyramid Lake to 10.31 hours at Stampede Reservoir. Activities of respondents also varied among all sites from that of picnicking, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, biking, hiking, and other activities.

The average activity hours per day by respondents are provided in Table 7.1-14. At Donner Lake, respondents spent 6.95 hours per day participating in activities including picnicking, fishing, swimming, hiking, and other. At Prosser Reservoir, respondents spent 7.47 hours per day participating in activities including picnicking, fishing, hiking, and other. At Stampede Reservoir, respondents spent 10.31 hours per day participating in activities including picnicking, fishing, fishing from boat, and hiking. At Boca Reservoir, respondents spent 7.64 hours per day participating in activities including picnicking, fishing, swimming, and hiking. At Pyramid Lake, respondents spent 6.88 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing.

Table 7.1-14. Activity Hours per Day by Respondents per Site.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boat Reservoir | Pyramid Lake |
|--|----------------|----------------------|-----------------------|-------------------|-----------------|
| <i>Average Activity Hours per Day spent Picnicking by Respondents</i> | 2.10 | 2.00 | 2.44 | 2.03 | 1.22 |
| <i>Average Activity Hours per Day spent Camping by Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Fishing by Respondents</i> | 0.73 | 1.33 | 1.52 | 1.50 | 0.02 |
| <i>Average Activity Hours per Day spent Swimming by Respondents</i> | 1.30 | 0.38 | 0.75 | 0.89 | 1.85 |
| <i>Average Activity Hours per Day spent Boating by Respondents</i> | 0.24 | 0.06 | 0.30 | 0.33 | 0.80 |
| <i>Average Activity Hours per Day spent Fishing from Boat by Respondents</i> | 0.86 | 0.14 | 2.66 | 0.46 | 0.09 |
| <i>Average Activity Hours per Day spent Water Skiing by Respondents</i> | 0.12 | 0.00 | 0.21 | 0.32 | 1.28 |
| <i>Average Activity Hours per Day spent Jet Skiing by Respondents</i> | 0.12 | 0.00 | 0.06 | 0.56 | 1.45 |
| <i>Average Activity Hours per Day spent Rafting by Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Kayaking by Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Biking by Respondents</i> | 0.53 | 0.41 | 0.47 | 0.26 | 0.03 |
| <i>Average Activity Hours per Day spent Hiking by Respondents</i> | 0.73 | 1.00 | 1.07 | 0.71 | 0.04 |
| <i>Average Activity Hours per Day spent on Other activities by Respondents</i> | 1.02 | 1.25 | 0.73 | 0.16 | 0.10 |
| Total Activity Hours per Day by Respondents | 6.95 | 7.47 | 10.31 | 7.64 | 6.88 |
| Total Activity Hours per Day spent on Non-Camping Activities by Respondents | 6.95 | 7.47 | 10.31 | 7.64 | 6.88 |

Activity Hours per Day by Camping Respondents per Site

Hours per day spent by camping respondents participating in non-camping activities at all sites ranged from 7.73 hours at Prosser Reservoir to 10.96 hours at Pyramid Lake. Activities of camping respondents also varied among all sites from that of picnicking, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, biking, hiking, and other activities.

The average activity hours per day by camping respondents are presented in Table 7.1-15. At Donner Lake, camping respondents spent 8.95 hours per day participating in activities including picnicking, fishing, swimming, hiking, and other. At Prosser Reservoir, camping respondents spent 7.73 hours per day participating in activities including picnicking, fishing, hiking, and other. At Stampede Reservoir, camping respondents spent 10.31 hours per day participating in activities including picnicking, fishing, swimming, fishing from boat, hiking, and other. At Boca Reservoir, camping respondents spent 10.38 hours per day participating in activities including picnicking, fishing, swimming, fishing from boat, and hiking. At Pyramid Lake, camping respondents spent 10.96 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing.

Table 7.1-15. Activity Hours per Day by Camping Respondents per Site.

| | Dexter Lake | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Pyramid Lake |
|--|-------------|-------------------|--------------------|----------------|--------------|
| <i>Average Activity Hours per Day spent Picnicking by Camping Respondents</i> | 2.67 | 2.13 | 2.44 | 2.85 | 2.05 |
| <i>Average Activity Hours per Day spent Camping by Camping Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Fishing by Camping Respondents</i> | 1.10 | 1.50 | 1.52 | 2.68 | 0.03 |
| <i>Average Activity Hours per Day spent Swimming by Camping Respondents</i> | 1.45 | 0.00 | 0.75 | 1.31 | 3.32 |
| <i>Average Activity Hours per Day spent Boating by Camping Respondents</i> | 0.14 | 0.07 | 0.30 | 0.54 | 1.32 |
| <i>Average Activity Hours per Day spent Fishing from Boat by Camping Respondents</i> | 0.07 | 0.00 | 2.65 | 0.78 | 0.35 |
| <i>Average Activity Hours per Day spent Water Skiing by Camping Respondents</i> | 0.02 | 0.00 | 0.31 | 0.34 | 2.14 |
| <i>Average Activity Hours per Day spent Jet Skiing by Camping Respondents</i> | 0.00 | 0.00 | 0.06 | 0.12 | 1.53 |
| <i>Average Activity Hours per Day spent Rafting by Camping Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Kayaking by Camping Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Biking by Camping Respondents</i> | 0.79 | 0.43 | 0.47 | 0.47 | 0.03 |
| <i>Average Activity Hours per Day spent Hiking by Camping Respondents</i> | 1.31 | 1.07 | 1.07 | 1.23 | 0.08 |
| <i>Average Activity Hours per Day spent on Other activities by Camping Respondents</i> | 1.40 | 1.33 | 0.73 | 0.06 | 0.11 |
| Total Activity Hours per Day by Camping Respondents | 8.95 | 7.73 | 10.31 | 10.38 | 10.96 |
| Total Activity Hours per Day spent on Non-Camping Activities by Camping Respondents | 8.95 | 7.73 | 10.31 | 10.38 | 10.96 |

Activity Hours per Day by Day Use Respondents per Site

Hours per day spent by day use respondents participating in activities at all sites ranged from 3.50 hours at Prosser Reservoir to 5.42 hours at Pyramid Lake. Activities of day use respondents also varied among all sites from that of picnicking, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, biking, hiking, and other activities.

The average activity hours per day by day use respondents are shown in Table 7.1-16. At Donner Lake, day use respondents spent 4.92 hours per day participating in activities including picnicking, fishing, swimming, and other. At Prosser Reservoir, day use respondents spent 3.50 hours per day participating in activities including fishing and fishing from boat. At Boca Reservoir, day use respondents spent 4.28 hours per day participating in activities including picnicking, fishing, swimming, and jet skiing. At Pyramid Lake, day use respondents spent 5.42 hours per day participating in activities including picnicking, swimming, boating, water skiing, and jet skiing.

Table 7.1-16. Activity Hours per Day by Day Use Respondents per Site.

| | Dumont Lake | Proser Reservoir | Stampsie Reservoir | Boon Reservoir | Pyramid Lake |
|--|----------------|---------------------|-----------------------|-------------------|-----------------|
| <i>Average Activity Hours per Day spent Paddling by Day Use Respondents</i> | 1.31 | 0.00 | N.A. | 1.02 | 0.92 |
| <i>Average Activity Hours per Day spent Camping by Day Use Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Fishing by Day Use Respondents</i> | 0.37 | 2.00 | N.A. | 0.55 | 0.02 |
| <i>Average Activity Hours per Day spent Swimming by Day Use Respondents</i> | 1.13 | 0.00 | N.A. | 0.34 | 1.31 |
| <i>Average Activity Hours per Day spent Boating by Day Use Respondents</i> | 0.34 | 0.00 | N.A. | 0.07 | 0.62 |
| <i>Average Activity Hours per Day spent Fishing from Boat by Day Use Respondents</i> | 0.03 | 1.30 | N.A. | 0.07 | 0.00 |
| <i>Average Activity Hours per Day spent Water Skiing by Day Use Respondents</i> | 0.22 | 0.00 | N.A. | 0.29 | 0.96 |
| <i>Average Activity Hours per Day spent Jet Skiing by Day Use Respondents</i> | 0.24 | 0.00 | N.A. | 1.14 | 1.43 |
| <i>Average Activity Hours per Day spent Rafting by Day Use Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Kayaking by Day Use Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Activity Hours per Day spent Biking by Day Use Respondents</i> | 0.27 | 0.00 | N.A. | 0.00 | 0.03 |
| <i>Average Activity Hours per Day spent Hiking by Day Use Respondents</i> | 0.15 | 0.00 | N.A. | 0.07 | 0.03 |
| <i>Average Activity Hours per Day spent on Other activities by Day Use Respondents</i> | 0.62 | 0.00 | N.A. | 0.29 | 0.10 |
| Total Activity Hours per Day by Day Use Respondents | 4.92 | 3.30 | N.A. | 4.28 | 5.42 |

Indicated Number of Visits by Respondents at Alternative Water Levels per Site

Respondents, at all sites not including Pyramid Lake, indicated more visits at higher water levels and less visits at lower water levels.

The indicated average number of visits by respondents at alternative water levels are presented in Table 7.1-17.

Alternative water levels are 1 for the highest and either 5 or 11 for the lowest. At Donner Lake, water level 1 is 9,660 acre-feet or maximum storage and water level 5 is 5,796 acre-feet or minimum storage for June, July, and August. At Prosser Reservoir, water level 1 is 29,840 acre-feet or maximum storage and water level 11 is 0 acre-feet or no storage. At Stampede Reservoir, water level 1 is 226,000 acre-feet or maximum storage and water level 11 is 0 acre-feet or no storage. At Boca Reservoir, water level 1 is 40,870 acre-feet or maximum storage and water level 11 is 0 acre-feet or no storage.

Given the alternative water levels, the number of visits by respondents vary accordingly. At Donner Lake, respondents indicated 3.11 visits at water level 1 to 2.57 visits at water level 5. At Prosser Reservoir, respondents indicated 3.03 visits at water level 1 to .25 visits at water level 11. At Stampede Reservoir, respondents indicated 3.08 visits at water level 1 to .48 visits at water level 11. At Boca Reservoir, respondents indicated 5.55 visits at water level 1 to .26 visits at water level 11.

Assuming that there is 100% visitation at alternative water level 1, the average number of visits by respondents at other water levels are also provided in relative percentage terms. At Donner Lake, visitation drops from 100% at water level 1 to 83% at water level 5. At Prosser Reservoir, visitation holds constant at 100% for water levels 1 and 2 and then drops to 8% at water level 11. At Stampede Reservoir, visitation drops from 100% at water level 1 to 16% at water level 11. At Boca Reservoir, visitation holds constant at 100% for water levels 1 and 2 and then drops to 5% at water level 11.

Table 7.1-17. Indicated Number of Visits by Respondents at Alternative Water Levels per Site.

| | Donner Lake | Proctor Reservoir | Steepede Reservoir | Boon Reservoir |
|--|----------------|----------------------|-----------------------|-------------------|
| <i>Acres-Foot of Storage at Alternative Water Level 1</i> | 9,660 | 29,840 | 236,300 | 40,070 |
| <i>Acres-Foot of Storage at Alternative Water Level 2</i> | 8,494 | 26,836 | 203,850 | 36,783 |
| <i>Acres-Foot of Storage at Alternative Water Level 3</i> | 7,728 | 23,872 | 181,200 | 32,696 |
| <i>Acres-Foot of Storage at Alternative Water Level 4</i> | 6,762 | 20,888 | 158,550 | 28,609 |
| <i>Acres-Foot of Storage at Alternative Water Level 5</i> | 5,796 | 17,904 | 135,900 | 24,522 |
| <i>Acres-Foot of Storage at Alternative Water Level 6</i> | | 14,920 | 113,250 | 20,435 |
| <i>Acres-Foot of Storage at Alternative Water Level 7</i> | | 11,936 | 90,600 | 16,348 |
| <i>Acres-Foot of Storage at Alternative Water Level 8</i> | | 8,952 | 67,950 | 12,261 |
| <i>Acres-Foot of Storage at Alternative Water Level 9</i> | | 5,968 | 45,300 | 8,174 |
| <i>Acres-Foot of Storage at Alternative Water Level 10</i> | | 2,984 | 22,650 | 4,087 |
| <i>Acres-Foot of Storage at Alternative Water Level 11</i> | | 0 | 0 | 0 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 1</i> | 3.11 | 3.03 | 3.08 | 3.55 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 2</i> | 3.07 | 3.03 | 3.02 | 3.53 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 3</i> | 2.94 | 2.94 | 2.94 | 3.06 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 4</i> | 2.72 | 2.78 | 2.77 | 2.68 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 5</i> | 2.57 | 2.59 | 2.61 | 2.63 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 6</i> | | 2.50 | 2.47 | 2.68 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 7</i> | | 2.16 | 1.88 | 2.90 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 8</i> | | 2.06 | 1.84 | 2.81 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 9</i> | | 0.47 | 0.63 | 1.84 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 10</i> | | 0.23 | 0.55 | 1.29 |
| <i>Average Number of Visits by Respondents at Alternative Water Level 11</i> | | 0.25 | 0.48 | 0.26 |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 1</i> | 100.00% | 100.00% | 100.00% | 100.00% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 2</i> | 98.71% | 100.00% | 98.05% | 100.00% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 3</i> | 94.53% | 97.03% | 95.43% | 91.17% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 4</i> | 87.46% | 91.75% | 89.94% | 84.32% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 5</i> | 82.64% | 85.48% | 84.74% | 72.61% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 6</i> | | 82.51% | 80.19% | 66.31% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 7</i> | | 71.25% | 61.04% | 52.25% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 8</i> | | 67.99% | 59.74% | 50.63% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 9</i> | | 15.51% | 20.45% | 33.15% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 10</i> | | 8.25% | 17.80% | 23.24% |
| <i>Percentage of Visitation of Respondents at Alternative Water Level 11</i> | | 0.25% | 13.52% | 4.66% |

Site Substitution of Respondents per Site

A high number of respondents indicated that they would substitute an alternative site for their preferred site when they could no longer visit their preferred site because of water level.

Site substitution of respondents per site is shown in Table 7.1-18. The number of respondents that indicated site substitution are 57 at Donner Lake, 27 at Prosser Reservoir, 53 at Stampede Reservoir, 28 at Boca Reservoir, and, 66 at Pyramid Lake. For respondents at Donner Lake, site substitution to Lake Tahoe is 41%, to Prosser Reservoir is 3%, to Stampede Reservoir is 11%, to Boca Reservoir is 3%, to Pyramid Lake is 3%, and, to Other Sites is 38%. For respondents at Prosser Reservoir, site substitution to Donner Lake is 38%, to Stampede Reservoir is 19%, to Pyramid Lake is 8%, and, to Other Sites is 35%. For respondents at Stampede Reservoir, site substitution to Lake Tahoe is 4%, to Donner Lake is 30%, to Prosser Reservoir is 3%, to Boca Reservoir is 1%, to Pyramid Lake is 10%, and, to Other Sites is 51%. For respondents at Boca Reservoir, site substitution to Lake Tahoe is 6%, to Donner Lake is 35%, to Prosser Reservoir is 4%, to Stampede Reservoir is 21%, to Pyramid Lake is 21%, and, to Other Sites is 13%. For respondents at Pyramid Lake, site substitution to Lake Tahoe is 19%, to Donner Lake is 30%, to Stampede Reservoir is 9%, to Boca Reservoir is 17%, and, to Other Sites is 25%. Other Sites are located outside the Truckee River Basin.

Table 7.1-18. Site Substitution of Respondents per Site.

| | Dorsey Lake | Prosser Reservoir | Stampsede Reservoir | Boon Reservoir | Pyramid Lake |
|---|-------------|-------------------|---------------------|----------------|--------------|
| Number of Respondents indicating Site Substitution | 57 | 27 | 53 | 28 | 66 |
| Percentage of Respondents indicating Site Substitution | 68.70% | 84.80% | 82.90% | 90.30% | 93.60% |
| Number of Respondents indicating Site Substitution to Lake Tahoe | 25 | 0 | 3 | 3 | 17 |
| Number of Respondents indicating Site Substitution to Upper Truckee River | 0 | 0 | 0 | 0 | 0 |
| Number of Respondents indicating Site Substitution to Donner Lake | N.A. | 14 | 21 | 18 | 27 |
| Number of Respondents indicating Site Substitution to Prosser Reservoir | 2 | N.A. | 2 | 2 | 0 |
| Number of Respondents indicating Site Substitution to Stampsede Reservoir | 7 | 7 | N.A. | 11 | 8 |
| Number of Respondents indicating Site Substitution to Boon Reservoir | 1 | 0 | 1 | N.A. | 15 |
| Number of Respondents indicating Site Substitution to Lower Truckee River | 0 | 0 | 0 | 0 | 0 |
| Number of Respondents indicating Site Substitution to Pyramid Lake | 2 | 3 | 7 | 11 | N.A. |
| Number of Respondents indicating Site Substitution to Other Sites¹⁾ | 23 | 13 | 36 | 7 | 22 |
| Percentage of Site Substitution to Lake Tahoe | 40.98% | 0.00% | 4.29% | 5.77% | 19.10% |
| Percentage of Site Substitution to Upper Truckee River | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Percentage of Site Substitution to Donner Lake | 0.00% | 17.84% | 30.00% | 34.62% | 30.34% |
| Percentage of Site Substitution to Prosser Reservoir | 3.28% | 0.00% | 2.86% | 3.85% | 0.00% |
| Percentage of Site Substitution to Stampsede Reservoir | 11.48% | 18.92% | 0.00% | 21.15% | 8.99% |
| Percentage of Site Substitution to Boon Reservoir | 3.28% | 0.00% | 1.43% | 0.00% | 16.45% |
| Percentage of Site Substitution to Lower Truckee River | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Percentage of Site Substitution to Pyramid Lake | 3.28% | 4.11% | 10.80% | 21.15% | 0.00% |
| Percentage of Site Substitution to Other Sites¹⁾ | 37.70% | 35.14% | 31.43% | 13.46% | 24.72% |

1. Other sites are located outside the Truckee River Basin.

Willingness of Respondents to Pay to Maintain Water Level per Site

Respondents at Pyramid Lake show a greater willingness to pay not to have the water level drop than do respondents at any other site.

The willingness to pay information is provided in Table 7.1-19. At Donner Lake, with 34% of respondents indicating a "Zero" response, the average value for respondents is \$16.97. At Prosser Reservoir, with 47% of the respondents indicating a "Zero" response, the average value for respondents is \$16.58. At Stampede Reservoir, with 42% of the respondents indicating a "Zero" response, the average value for respondents is \$14.68. At Boca Reservoir, with 19% of the respondents indicating a "Zero" response, the average value for respondents is \$18.85. At Pyramid Lake, with 15% of the respondents indicating a "Zero" response, the average value for respondents is \$25.63.

Table 7.1-19. Willingness of Respondents to Pay to Maintain Water Level per Site.

| | Donner Lake | Prosser Reservoir | Steepede Reservoir | Boon Reservoir | Pyramid Lake |
|---|----------------|----------------------|-----------------------|-------------------|-----------------|
| <i>Average Value for Respondents</i> | \$16.97 | \$16.58 | \$14.68 | \$18.85 | \$25.61 |
| <i>Percentage of Respondents indicating a "Zero" Response</i> | 33.73% | 46.28% | 42.19% | 19.35% | 15.49% |
| <i>Average Value for Local Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |
| <i>Average Value for Non-Local Respondents</i> | N.A. | N.A. | N.A. | N.A. | N.A. |

Age Brackets of Respondents

The greatest number of respondents were between 31 and 50 years of age.

Presented in Table 7.1-20 are the age brackets with corresponding number of respondents and percentage of respondents. Of the 281 respondents, 1% were under 16 years of age, 4% were between 16 and 20 years of age, 15% were between 21 and 30 years of age, 34% were between 31 and 40 years of age, 28% were between 41 and 50 years of age, 10% were between 51 and 60 years of age, 7% were between 61 and 70 years of age, and 2% were over 70 years of age.

Table 7.1-20. Age Brackets of Respondents.

| | Study Area |
|--|-----------------------|
| Number of Respondents under 16 Years of Age | 2 |
| Number of Respondents between 16 - 20 Years of Age | 10 |
| Number of Respondents between 21 - 30 Years of Age | 41 |
| Number of Respondents between 31 - 40 Years of Age | 96 |
| Number of Respondents between 41 - 50 Years of Age | 78 |
| Number of Respondents between 51 - 60 Years of Age | 29 |
| Number of Respondents between 61 - 70 Years of Age | 20 |
| Number of Respondents over 70 Years of Age | 5 |
| Percentage of Respondents under 16 Years of Age | 0.71% |
| Percentage of Respondents between 16 - 20 Years of Age | 3.56% |
| Percentage of Respondents between 21 - 30 Years of Age | 14.59% |
| Percentage of Respondents between 31 - 40 Years of Age | 34.16% |
| Percentage of Respondents between 41 - 50 Years of Age | 27.76% |
| Percentage of Respondents between 51 - 60 Years of Age | 10.32% |
| Percentage of Respondents between 61 - 70 Years of Age | 7.12% |
| Percentage of Respondents over 70 Years of Age | 1.78% |

Education Levels of Respondents

The greatest number of respondents held a college level of education.

Provided in Table 7.1-21 are the education levels with corresponding number of respondents and percentage of respondents. Of only 280 respondents, 1% held a elementary school level of education, 24% held a high school level of education, 10% held a technical school level of education, 25% held a 2 years of college level of education, 25% held a 4 years of college level of education, and 15% held over 4 years of college level of education.

Table 7.1-21. Education Levels of Respondents.

| | Study Area |
|---|------------|
| Number of Respondents with a Elementary School Level of Education | 2 |
| Number of Respondents with a High School Level of Education | 68 |
| Number of Respondents with a Technical School Level of Education | 28 |
| Number of Respondents with a 2 Years of College Level of Education | 70 |
| Number of Respondents with a 4 Years of College Level of Education | 69 |
| Number of Respondents with a Over 4 Years of College Level of Education | 43 |
| Percentage of Respondents with a Elementary School Level of Education | 0.71% |
| Percentage of Respondents with a High School Level of Education | 24.29% |
| Percentage of Respondents with a Technical School Level of Education | 10.00% |
| Percentage of Respondents with a 2 Years of College Level of Education | 25.00% |
| Percentage of Respondents with a 4 Years of College Level of Education | 24.64% |
| Percentage of Respondents with a Over 4 Years of College Level of Education | 15.36% |

Household Income Levels of Respondents

The greatest number of respondents had a household income level of \$26,000 to \$75,000 per year.

Shown in Table 7.1-22 are the household income levels with corresponding number of respondents and percentage of respondents. Of only 262 respondents, 2% had a household income level below \$10,000 per year, 11% had a household income level of \$10,000 to \$25,000 per year, 38% had a household income level of \$26,000 to \$50,000 per year, 27% had a household income level of \$51,000 to \$75,000 per year, 13% had a household income level of \$76,000 to \$100,000 per year, and 9% had a household income level of over \$100,000 per year.

Table 7.1-22. Household Income Levels of Respondents.

| | Study Area |
|--|---------------|
| Number of Respondents with a Household Income Level Below \$10,000 per Year | 3 |
| Number of Respondents with a Household Income Level of \$10,000 - \$25,000 per Year | 28 |
| Number of Respondents with a Household Income Level of \$26,000 - \$50,000 per Year | 100 |
| Number of Respondents with a Household Income Level of \$51,000 - \$75,000 per Year | 71 |
| Number of Respondents with a Household Income Level of \$76,000 - \$100,000 per Year | 35 |
| Number of Respondents with a Household Income Level of Over \$100,000 per Year | 23 |
| Percentage of Respondents with a Household Income Level Below \$10,000 per Year | 1.91% |
| Percentage of Respondents with a Household Income Level of \$10,000 - \$25,000 per Year | 10.69% |
| Percentage of Respondents with a Household Income Level of \$26,000 - \$50,000 per Year | 38.17% |
| Percentage of Respondents with a Household Income Level of \$51,000 - \$75,000 per Year | 27.10% |
| Percentage of Respondents with a Household Income Level of \$76,000 - \$100,000 per Year | 13.56% |
| Percentage of Respondents with a Household Income Level of Over \$100,000 per Year | 8.78% |

7.2. Estimation of the Expenditure Function

Expenditures of camping and day use visitors at each of the sites are calculated using an expenditure function. Specification of the expenditure function and estimation of the expenditure function are as follows.

Specification of the Expenditure Function

The expenditure function is an important ingredient of the modern theory of consumer behavior. It shows the minimal expenditures necessary to achieve a given utility level for a particular set of prices. The properties of the expenditure function in the areas of theoretical and applied analysis of consumer behavior are developed in the studies by Barton and Bohm (1982), Deaton and Muelbauer (1980), Hicks (1946), Samuelson (1947), Silberberg (1978), Theil (1975), and Varian (1992). Let $E(P, U)$ be an expenditure function, where P is a vector of commodity prices and U is a given level of utility. The expenditure function is the solution to the following problem:

$$E(P, U) = \text{Min } PX \quad (7.2-1)$$

such that $U(X) \geq U$

where X is a vector of non-negative quantities of goods. The solution to this optimization problem is the expenditure function that gives the minimum cost of achieving the fixed level of utility. For the expenditure function $E(P, U)$ to be well behaved, it must have the following properties: (i) $E(P, U)$ is non decreasing in P , (ii) $E(P, U)$ is homogeneous of the degree 1 in P , (iii) $E(P, U)$ is concave in P , (iv) $E(P, U)$ is continuous in P , for $P > 0$, and (v) if $X(P, U)$ is the expenditure-minimizing bundle necessary to achieve utility level U at prices P , then $X(P, U) = \delta E(P, U) / \delta P$ assuming the derivative exists and that $P > 0$.

The application of the expenditure function in empirical studies of consumer behavior requires the availability of observed market prices on goods and the existence of a well-behaved utility function. In the area of demand for recreation activities, there are no market-based transactions to determine observed market prices. Consequently, the notion of a regular utility function has to be modified in developing the expenditure function for the recreation activities. Let F be a vector of the time spent on a series of recreational activities by an individual at a particular site. The indirect utility function V for recreational activities for this individual is:

$$V = V(F, S, I) \quad (7.2-2)$$

where S is a vector of site characteristics that captures the substitutability of visits across various sites and I is the total budget allocated by an individual to participate in all the recreational activities included in F . The expenditure function E dual to the indirect utility function in (7.2-2) is the minimum expenditure required for the individual to participate in all the recreational activities in F , given the site characteristics in S . The expenditure function E derived from (7.2-2) is:

$$E = I = V^{-1}(F, S) \quad (7.2-3)$$

The expenditure function in (7.2-3) can also be modified to include the variable of the total number of visitors to the site. Let N be the total number of visitors. Then the expenditures function is:

$$E = V^{-1} (F, S, N) \quad (7.2-4)$$

The specification of the expenditure function in (7.2-4) is an empirical issue and it could be determined upon a estimation model selection technique, e.g., the Box-Cox estimation technique. One notable feature of the expenditure function in (7.2-4) is that it can be used to estimate expenditures of recreational activities at a particular site.

The expenditure function in (7.2-4) is used to evaluate the expenditures of recreational activities at the following seven sites in California and Nevada: Upper Truckee River, Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, Lower Truckee River, and Pyramid Lake. The attributes of the characteristics of each site are captured by including dummy variable for each site in S. The definition of the dummy variables included in S are: UTR = 1 if the visitation site is Upper Truckee River and 0 otherwise; DL = 1 if the visitation site is Donner Lake and 0 otherwise; PR = 1 if the visitation site is Prosser Reservoir and 0 otherwise; SR = 1 if the visitation site is Stampede Reservoir and 0 otherwise; BR = 1 if the visitation site is Boca Reservoir and 0 otherwise; LTR = 1 if the visitation site is Lower Truckee River and 0 otherwise; and, PL = 1 if the visitation site is Pyramid Lake and 0 otherwise. The hours spent on each of the following eleven recreational activities are included in F. The activities were determined according to their availability and popularity at the sites. The activities are: picnicking, camping, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, rafting, kayaking, biking, hiking, and other activities. To capture the effect of the type of visitor at a given site on their expenditures, i.e., camping versus day use, a dummy variable D, defined as D = 1 if camping visitor and 0 if day use visitor, is included in the expenditure function in (7.2-4). Following the categorization of expenditures on the recreation survey, the expenditures by a visitor to a given site are identified as licenses, camping fees, hotel or motel, restaurant, groceries, equipment and supplies, rental, fuel, and other. Using the above specification of the variables, the expenditure function in (7.2-4) can now be presented as:

$$E_i = V^{-1} (UTR, DL, PR, SR, BR, LTR, PL, D, \sum_{j=1}^{13} F_j, N); i = 1, \dots, 7 \quad (7.2-5)$$

The functional form specification of the expenditure function in (7.2-5) is an empirical issue and it will be determined using the Box-Cox flexible functional form technique. The Box-Cox specification of the expenditure function in (7.2-5) is:

$$\frac{E_t^\lambda - 1}{\lambda} = \beta_1 UTR + \beta_2 DL + \beta_3 PR + \beta_4 SR + \beta_5 BR + \beta_6 LTR + \beta_7 PL + \beta_8 D \quad (7.2-6)$$

$$+ \sum_{j=1}^9 \beta_j \left(\frac{F_j^\lambda - 1}{\lambda} \right) + \beta_{22} \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

where U is the stochastic error term, β is the slope parameter, and λ is the transformation parameter. The transformation parameter may take a wide range of values that would determine the particular functional form that the variable subject to the Box-Cox transformation will assume. For example, one gets a logarithmic transformation for a variable if λ is equal to zero. All of the coefficients of the expenditure function in (7.2-5), including λ , will be estimated using the estimation of the following log-likelihood function:

$$L(\lambda, \beta, \sigma^2; E, X) = -\frac{T}{2} \ln(2\pi\sigma^2) - \frac{1}{2\sigma^2} (E^\lambda - X^\lambda B)' (E^\lambda - X^\lambda B) \quad (7.2-7)$$

$$+ \ln(J); \text{ and } J = \det \left[\frac{\partial E^\lambda}{\partial E} \right] = \prod_{t=1}^T E_t^{\lambda-1}$$

where X is a vector of observations on all the exogenous variables, B is a vector of all the slope parameters to be estimated, and T is the number of observations.

Estimation of the Expenditure Function

The data collected through the recreation survey for the seven sites is used to estimate the expenditure function in (7.2-6). A total number of 432 out of the 443 complete questionnaires are used in the estimation. The initial diagnosis of the data revealed that there are a large number of zeros on most of the recreational activities and a number of expenditure categories making the estimation of the expenditure function in its generalized form in (7.2-6) impossible. A number of alternatives to combine some of the recreational activities are tried to estimate a modified form of the expenditure function in (7.2-6). All of these attempts resulted into some difficulties in estimation of the expenditure function in (7.2-6).

The final modified form of the expenditure function in (7.2-6) that provides meaningful estimation results is:

$$\frac{E^\lambda - 1}{\lambda} = \beta_1 UTR + \beta_2 DL + \beta_3 PR + \beta_4 SR + \beta_5 BR + \beta_6 LTR + \beta_7 PL + \beta_8 D \quad (7.2-8)$$
$$+ \beta_9 \left(\frac{F^\lambda - 1}{\lambda} \right) + \beta_{10} \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

The expenditure function expressed in simple notation becomes:

$$\ln E = \beta_1 UTR + \beta_2 DL + \beta_3 PR + \beta_4 SR + \beta_5 BR + \beta_6 LTR + \beta_7 PL + \beta_8 D \quad (7.2-9)$$
$$+ \beta_9 \ln F + \beta_{10} \ln N + U$$

where E is the sum of the nine expenditure categories per day, F is the sum of the hours spent per day by a visitor on the thirteen categories of recreational activities, and N is the group size. The Ln is an abbreviation for natural logarithm.

Using the survey observations on the variables E, F, N, the seven location dummy variables, and the type of visitor dummy variable, the expenditure function in (7.2-8) or (7.2-9) is estimated having the following results.

$$\begin{aligned} \text{LnE} = & 3.5638\text{UTR} + 2.7958\text{DL} + 2.8436\text{PR} + 3.0767\text{SR} + 3.0267\text{BR} & (7.2-10) \\ & (11.44) \quad (11.07) \quad (8.43) \quad (11.42) \quad (11.93) \\ & + 2.8453\text{LTR} + 3.0900\text{PL} - 0.2791\text{D} + 0.1653\text{LnF} + 0.3388\text{LnN} \\ & (7.85) \quad (13.45) \quad (-1.98) \quad (1.43) \quad (4.30) \end{aligned}$$

The numbers in the parentheses are the asymptotic t-ratios for 422 degrees of freedom. The adjusted R^2 is 0.0659 for the 432 observations. The 443 observations were edited down to 432. Observations that were deleted were observations having a zero for total expenditures, or a zero for total recreation activity hours, or a zero for group size. The camping and day use visitor expenditure function observations are given in Table 7.2-1.

The maximum likelihood (ML) ratio test is then used to check the validity of alternative functional specifications of the expenditure function for specific value of λ , i.e., logarithmic ($\lambda = 0$) and linear ($\lambda = 1$) functional forms. Let S denote the parameter space under the Box-Cox specification and s denote the subspace of S restricted by the null hypothesis (H^0). The ML ratio test to test for a given functional form under H^0 is a large sample test and can be conducted as follows:

$$d = -2 [L (S) - L (s)] \quad (7.2-11)$$

where $L (S)$ is the maximum of the log likelihood function under S and $L (s)$ is the maximum value of the log likelihood function under s. If H^0 is true, the statistic d has the limiting chi-squared (χ^2) with n degrees of freedom, where n is the number of restrictions imposed by H^0 .

The maximum likelihood estimation of λ in (7.2-8) is 0.07 with the maximum of the log likelihood function $L(S)$ of -803.568 . Using estimates of the maximum log likelihood function of λ , $L(s)$ for the logarithmic and linear specifications of the expenditure function, the test statistic in (7.2-11) is calculated. The test results provide evidence to accept $H^0: \lambda = 0$ and to reject $H^0: \lambda = 1$ against the alternative hypothesis that $H^0: \lambda = 0.07$. In other words, the final functional specification of the expenditure function is in logarithmic functional form.

The estimated expenditure function predicts the logarithm of the average expenditures per day at a particular site for both camping and day use visitors for given values of the logarithm of their hours of non-camping recreation activity and the logarithm of their group size. Then the average expenditures per day are determined by taking the anti-log of the logarithm of the average expenditures. This procedure is shown below by site.

Upper Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(1) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(1) + 0.1653\text{Ln}(5.50) + 0.3388\text{Ln}(3.47) \end{aligned}$$

$$\text{LnE} = 3.5638 - 0.2791 + 0.1653(1.70) + 0.3388(1.24)$$

$$\text{LnE} = 3.9881$$

$$E = \$53.95$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(1) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(0) + 0.1653\text{Ln}(3.00) + 0.3388\text{Ln}(5.50) \end{aligned}$$

$$\text{LnE} = 3.5638 + 0.1653(1.10) + 0.3388(1.70)$$

$$\text{LnE} = 4.3231$$

$$E = \$75.42$$

Donner Lake

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(1) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(1) + 0.1653\text{Ln}(8.29) + 0.3388\text{Ln}(5.24) \end{aligned}$$

$$\text{LnE} = 2.7958 - 0.2791 + 0.1653(2.12) + 0.3388(1.66)$$

$$\text{LnE} = 3.4276$$

$$E = \$30.80$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(1) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(0) + 0.1653\text{Ln}(4.87) + 0.3388\text{Ln}(4.98) \end{aligned}$$

$$\text{LnE} = 2.7958 + 0.1653(1.58) + 0.3388(1.61)$$

$$\text{LnE} = 3.6014$$

$$E = \$36.65$$

Prosser Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(1) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(1) + 0.1653\text{Ln}(7.67) + 0.3388\text{Ln}(3.73) \end{aligned}$$

$$\text{LnE} = 2.8436 - 0.2791 + 0.1653(2.04) + 0.3388(1.32)$$

$$\text{LnE} = 3.3473$$

$$E = \$28.43$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(1) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(0) + 0.1653\text{Ln}(3.38) + 0.3388\text{Ln}(3.13) \end{aligned}$$

$$\text{LnE} = 2.8436 + 0.1653(1.22) + 0.3388(1.14)$$

$$\text{LnE} = 3.4316$$

$$E = \$30.93$$

Stampede Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(1) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(1) + 0.1653 \ln(7.82) + 0.3388 \ln(5.12) \end{aligned}$$

$$\ln E = 3.0767 - 0.2791 + 0.1653(2.06) + 0.3388(1.63)$$

$$\ln E = 3.6909$$

$$E = \$40.08$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(1) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(0) + 0.1653 \ln(5.67) + 0.3388 \ln(3.89) \end{aligned}$$

$$\ln E = 3.0767 + 0.1653(1.74) + 0.3388(1.36)$$

$$\ln E = 3.8238$$

$$E = \$45.78$$

Boca Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(1) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(1) + 0.1653\text{Ln}(7.83) + 0.3388\text{Ln}(5.10) \end{aligned}$$

$$\text{LnE} = 3.0267 - 0.27913 + 0.1653(2.05) + 0.3388(1.63)$$

$$\text{LnE} = 3.6398$$

$$E = \$38.09$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(1) \\ &\quad + 2.8453(0) + 3.0900(0) - 0.2791(0) + 0.1653\text{Ln}(5.24) + 0.3388\text{Ln}(5.02) \end{aligned}$$

$$\text{LnE} = 3.0267 + 0.1653(1.66) + 0.3388(1.61)$$

$$\text{LnE} = 3.8472$$

$$E = \$46.86$$

Lower Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(1) + 3.0900(0) - 0.2791(1) + 0.1653 \ln(3.00) + 0.3388 \ln(2.00) \end{aligned}$$

$$\ln E = 2.8453 - 0.2791 + 0.1653(1.10) + 0.3388(0.69)$$

$$\ln E = 2.9827$$

$$E = \$19.74$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \ln E &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(1) + 3.0900(0) - 0.2791(0) + 0.1653 \ln(3.96) + 0.3388 \ln(2.29) \end{aligned}$$

$$\ln E = 2.8453 + 0.1653(1.38) + 0.3388(0.83)$$

$$\ln E = 3.3536$$

$$E = \$28.60$$

Pyramid Lake

Camping Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(1) - 0.2791(1) + 0.1653\text{Ln}(8.20) + 0.3388\text{Ln}(4.72)\end{aligned}$$

$$\text{LnE} = 3.0900 - 0.2791 + 0.1653(2.10) + 0.3388(1.55)$$

$$\text{LnE} = 3.6845$$

$$E = \$39.83$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.5638(0) + 2.7958(0) + 2.8436(0) + 3.0767(0) + 3.0267(0) \\ &\quad + 2.8453(0) + 3.0900(1) - 0.2791(0) + 0.1653\text{Ln}(5.74) + 0.3388\text{Ln}(5.92)\end{aligned}$$

$$\text{LnE} = 3.0900 + 0.1653(1.75) + 0.3388(1.78)$$

$$\text{LnE} = 3.9815$$

$$E = \$53.60$$

The above camping and day use visitor expenditure function values are presented by site in Table 7.2-2.

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations.

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Truckee River UTR | Donner Lake DL | French Reservoir FR | Stampede Reservoir SR | Scott Reservoir RR | Lower Truckee River LTR | Spotted Lake PL | Camping Visitor | Activity Score | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|-------------------------|----------------|---------------------|-----------------------|--------------------|-------------------------|-----------------|-----------------|----------------|------------|
| 1 | 1999 | UTR | 1 | C | 267.00 | 7.0 | 38.14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.3 | 4.0 |
| 2 | 1999 | UTR | 2 | C | 540.00 | 14.0 | 38.57 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 3 | 1999 | UTR | 3 | C | 190.00 | 3.0 | 63.33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 4 | 1999 | UTR | 4 | C | 290.00 | 3.0 | 96.67 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 5 | 1999 | UTR | 5 | C | 183.50 | 5.0 | 36.70 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 6 | 1999 | UTR | 6 | C | 83.00 | 1.0 | 83.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 7 | 1999 | UTR | 7 | C | 30.00 | 2.0 | 15.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 4.0 |
| 8 | 1999 | UTR | 8 | C | 71.00 | 1.0 | 71.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 9 | 1999 | UTR | 9 | C | 34.00 | 5.0 | 6.80 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 4.0 |
| 10 | 1999 | UTR | 10 | C | 190.00 | 5.0 | 38.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 11 | 1999 | UTR | 11 | C | 20.00 | 2.0 | 10.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 4.0 |
| 12 | 1999 | UTR | 12 | C | 223.00 | 4.0 | 55.75 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 13 | 1999 | UTR | 13 | C | 200.00 | 14.0 | 14.29 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 14 | 1999 | UTR | 14 | C | 75.00 | 1.0 | 75.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 2.0 |
| 15 | 1999 | UTR | 15 | C | 517.00 | 14.0 | 36.93 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 16 | 1999 | UTR | 16 | C | 430.00 | 6.0 | 71.67 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 7.0 |
| 17 | 1999 | UTR | 17 | C | 540.00 | 6.0 | 90.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 4.0 |
| 18 | 1999 | PR | 18 | DU | 37.50 | 6.0 | 6.25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 3.0 |
| 19 | 1999 | PR | 19 | DU | 54.00 | 6.0 | 9.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| 20 | 1999 | PR | 20 | DU | 792.00 | 6.0 | 132.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 8.0 |
| 21 | 1999 | PR | 21 | DU | 300.00 | 6.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 5.0 |
| 22 | 1999 | PR | 22 | DU | 34.50 | 6.0 | 5.75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| 23 | 1999 | PR | 23 | DU | 423.00 | 6.0 | 70.50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| 24 | 1999 | SR | 24 | C | 145.00 | 3.0 | 48.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 25 | 1999 | SR | 25 | C | 84.00 | 3.0 | 28.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 26 | 1999 | SR | 26 | C | 177.50 | 3.0 | 59.17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 27 | 1999 | SR | 27 | C | 137.00 | 3.0 | 45.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 3.0 |
| 28 | 1999 | SR | 28 | C | 142.00 | 3.0 | 47.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 3.0 |
| 29 | 1999 | SR | 29 | C | 86.00 | 3.0 | 28.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 7.0 |
| 30 | 1999 | SR | 30 | C | 431.00 | 7.0 | 61.57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 9.0 |
| 31 | 1999 | SR | 31 | C | 194.50 | 1.0 | 194.50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 32 | 1999 | SR | 32 | C | 500.00 | 2.0 | 250.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 14.0 |
| 33 | 1999 | SR | 33 | C | 239.00 | 5.0 | 47.80 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 8.0 |
| 34 | 1999 | SR | 34 | C | 76.00 | 5.0 | 15.20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 35 | 1999 | SR | 35 | C | 56.00 | 2.0 | 28.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 36 | 1999 | SR | 36 | C | 91.00 | 5.0 | 18.20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 37 | 1999 | SR | 37 | C | 325.00 | 4.0 | 81.25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 38 | 1999 | SR | 38 | C | 313.00 | 3.0 | 104.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 10.0 |
| 39 | 1999 | SR | 39 | C | 113.00 | 2.0 | 56.50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 3.0 |
| 40 | 1999 | SR | 40 | C | 147.50 | 3.0 | 49.17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 41 | 1999 | SR | 41 | C | 76.00 | 1.0 | 76.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 3.0 |
| 42 | 1999 | SR | 42 | C | 90.93 | 1.0 | 90.93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 6.0 |
| 43 | 1999 | SR | 43 | C | 722.00 | 10.0 | 72.20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 19.0 |
| 44 | 1999 | SR | 44 | C | 48.00 | 5.0 | 9.60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 45 | 1999 | SR | 45 | C | 239.00 | 6.0 | 39.83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 46 | 1999 | SR | 46 | C | 340.00 | 2.0 | 170.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 14.0 | 3.0 |
| 47 | 1999 | SR | 47 | C | 364.00 | 7.0 | 52.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 48 | 1999 | SR | 48 | C | 123.00 | 6.0 | 20.50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 49 | 1999 | SR | 49 | C | 160.00 | 6.0 | 26.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 50 | 1999 | SR | 50 | C | 71.00 | 3.0 | 23.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 2.0 |
| 51 | 1999 | SR | 51 | C | 194.00 | 3.0 | 64.67 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 12.0 |
| 52 | 1999 | SR | 52 | C | 349.00 | 3.0 | 116.33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 13.0 |
| 53 | 1999 | SR | 53 | C | 96.00 | 1.0 | 96.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 54 | 1999 | SR | 54 | C | 341.00 | 1.0 | 341.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 55 | 1999 | SR | 55 | C | 43.50 | 3.0 | 14.50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 56 | 1999 | SR | 56 | C | 236.00 | 1.0 | 236.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 7.0 |
| 57 | 1999 | SR | 57 | DU | 41.00 | 6.0 | 6.83 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 58 | 1999 | SR | 58 | DU | 204.00 | 6.0 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 8.0 |
| 59 | 1999 | SR | 59 | DU | 13.00 | 6.0 | 2.17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Troutless River UTR | Duane Lake DL | Thomas Reservoir TR | Shawspole Reservoir SR | Ben Reservoir BR | Lower Troutless River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|---------------------------|---------------|---------------------|------------------------|------------------|---------------------------|-----------------|-----------------|----------------|------------|
| 40 | 1995 | SE | | 4 DU | 271.00 | 0.0 | 271.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 1.0 |
| 41 | 1995 | SE | | 5 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 42 | 1995 | SE | | 6 DU | 137.00 | 0.0 | 137.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 43 | 1995 | SE | | 7 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10.0 | 4.0 |
| 44 | 1995 | SE | | 8 DU | 35.00 | 0.0 | 35.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 2.0 |
| 45 | 1995 | SE | | 9 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 7.0 |
| 46 | 1995 | BE | | 1 CP | 45.00 | 1.0 | 31.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 7.0 | 4.0 |
| 47 | 1995 | BE | | 2 CP | 175.00 | 10.0 | 17.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3.0 | 2.0 |
| 48 | 1995 | SE | | 3 CP | 120.00 | 1.0 | 42.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 7.0 | 4.0 |
| 49 | 1995 | SE | | 4 CP | 300.00 | 14.0 | 7.14 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 4.0 | 4.0 |
| 50 | 1995 | BE | | 1 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 5.0 |
| 51 | 1995 | BE | | 1 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 3.0 |
| 52 | 1995 | BE | | 3 DU | 70.00 | 0.0 | 23.33 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 4.0 |
| 53 | 1995 | BE | | 4 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 2.0 |
| 54 | 1995 | BE | | 5 DU | 465.00 | 0.0 | 465.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 55 | 1995 | BE | | 6 DU | 110.00 | 0.0 | 110.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 10.0 |
| 56 | 1995 | BE | | 7 DU | 71.00 | 0.0 | 71.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 1.0 |
| 57 | 1995 | BE | | 8 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 1.0 |
| 58 | 1995 | BE | | 9 DU | 130.00 | 0.0 | 130.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 4.0 |
| 59 | 1995 | BE | | 10 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 10.0 |
| 60 | 1995 | BE | | 11 DU | 12.00 | 0.0 | 12.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 2.0 |
| 61 | 1995 | BE | | 12 DU | 12.00 | 0.0 | 12.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 4.0 |
| 62 | 1995 | BE | | 13 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 63 | 1995 | BE | | 14 DU | 46.50 | 0.0 | 46.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 1.0 |
| 64 | 1995 | BE | | 15 DU | 129.00 | 0.0 | 129.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 5.0 |
| 65 | 1995 | BE | | 16 DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 5.0 |
| 66 | 1995 | BE | | 17 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 3.0 |
| 67 | 1995 | BE | | 18 DU | 32.00 | 0.0 | 32.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 6.0 |
| 68 | 1995 | BE | | 19 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 7.0 |
| 69 | 1995 | BE | | 20 DU | 21.00 | 0.0 | 21.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 6.0 |
| 70 | 1995 | BE | | 21 DU | 1910.00 | 0.0 | 1910.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 3.0 |
| 71 | 1995 | BE | | 22 DU | 42.50 | 0.0 | 42.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 2.0 |
| 72 | 1995 | BE | | 23 DU | 230.00 | 0.0 | 230.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 30.0 |
| 73 | 1995 | BE | | 24 DU | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0.0 | 4.0 |
| 74 | 1995 | BE | | 25 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 5.0 |
| 75 | 1995 | BE | | 26 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 2.0 |
| 76 | 1995 | BE | | 27 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 1.0 |
| 77 | 1995 | BE | | 28 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 4.0 |
| 78 | 1995 | BE | | 29 DU | 40.00 | 0.0 | 40.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 0.0 |
| 79 | 1995 | BE | | 30 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 7.0 |
| 80 | 1995 | BE | | 31 DU | 223.00 | 0.0 | 223.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 9.0 | 1.0 |
| 81 | 1995 | BE | | 32 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 7.0 |
| 82 | 1995 | BE | | 33 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 3.0 |
| 83 | 1995 | BE | | 34 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 84 | 1995 | BE | | 35 DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 7.0 |
| 85 | 1995 | BE | | 36 DU | 17.00 | 0.0 | 17.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 10.0 |
| 86 | 1995 | BE | | 37 DU | 0.50 | 0.0 | 0.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1.0 | 1.0 |
| 87 | 1995 | BE | | 38 DU | 200.00 | 0.0 | 200.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12.0 | 1.0 |
| 88 | 1995 | BE | | 39 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 2.0 |
| 89 | 1995 | BE | | 40 DU | 300.00 | 0.0 | 300.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 3.0 |
| 90 | 1995 | LTR | | 1 CP | 35.00 | 1.0 | 17.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 3.0 | 1.0 |
| 91 | 1995 | LTR | | 1 DU | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 92 | 1995 | LTR | | 2 DU | 94.00 | 0.0 | 94.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 3.0 |
| 93 | 1995 | LTR | | 3 DU | 151.00 | 0.0 | 151.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7.0 | 1.0 |
| 94 | 1995 | LTR | | 4 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 1.0 |
| 95 | 1995 | LTR | | 5 DU | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7.0 | 1.0 |
| 96 | 1995 | LTR | | 6 DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 4.0 |
| 97 | 1995 | LTR | | 7 DU | 13.50 | 0.0 | 13.50 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 1.0 |
| 98 | 1995 | LTR | | 8 DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 1.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Triathlon River USE | Dinner Lake DC | Forest Reserve FR | Statepark Reserve SR | Boat Reserve BR | Lower Triathlon River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|---------------------------|----------------|-------------------|----------------------|-----------------|---------------------------|-----------------|-----------------|----------------|------------|
| 119 | 1993 | LTR | 9 | DU | 21.00 | 0.0 | 21.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 2.0 |
| 120 | 1993 | LTR | 10 | DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 2.0 |
| 121 | 1993 | LTR | 11 | DU | 775.00 | 0.0 | 775.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 1.0 |
| 122 | 1993 | LTR | 12 | DU | 44.00 | 0.0 | 44.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 123 | 1993 | LTR | 13 | DU | 52.00 | 0.0 | 52.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 1.0 |
| 124 | 1993 | LTR | 14 | DU | 0.50 | 0.0 | 0.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 1.0 |
| 125 | 1993 | LTR | 15 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 1.0 |
| 126 | 1993 | LTR | 16 | DU | 21.50 | 0.0 | 21.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 127 | 1993 | LTR | 17 | DU | 26.50 | 0.0 | 26.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 5.0 |
| 128 | 1993 | LTR | 18 | DU | 102.00 | 0.0 | 102.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 10.0 |
| 129 | 1993 | LTR | 19 | DU | 22.00 | 0.0 | 22.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 3.0 |
| 130 | 1993 | LTR | 20 | DU | 14.00 | 0.0 | 14.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 2.0 |
| 131 | 1993 | LTR | 21 | DU | 21.50 | 0.0 | 21.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 1.0 |
| 132 | 1993 | LTR | 22 | DU | 73.00 | 0.0 | 73.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 2.0 |
| 133 | 1993 | LTR | 23 | DU | 23.00 | 0.0 | 23.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 2.0 |
| 134 | 1993 | LTR | 24 | DU | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 2.0 |
| 135 | 1993 | PL | 1 | CP | 328.00 | 4.0 | 82.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1.0 | 2.0 |
| 136 | 1993 | PL | 2 | CP | 73.00 | 3.0 | 24.33 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 7.0 | 2.0 |
| 137 | 1993 | PL | 3 | CP | 170.00 | 2.0 | 85.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 7.0 | 2.0 |
| 138 | 1993 | PL | 4 | CP | 41.00 | 1.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4.0 | 2.0 |
| 139 | 1993 | PL | 5 | CP | 87.00 | 1.0 | 87.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 12.0 | 2.0 |
| 140 | 1993 | PL | 6 | CP | 162.00 | 0.0 | 162.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 16.0 | 3.0 |
| 141 | 1993 | PL | 7 | CP | 140.00 | 2.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 6.0 | 5.0 |
| 142 | 1993 | PL | 8 | CP | 71.00 | 3.0 | 23.67 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 8.0 | 1.0 |
| 143 | 1993 | PL | 9 | CP | 191.00 | 6.0 | 31.83 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3.0 | 6.0 |
| 144 | 1993 | PL | 10 | CP | 100.00 | 4.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1.0 | 6.0 |
| 145 | 1993 | PL | 11 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5.0 | 2.0 |
| 146 | 1993 | PL | 12 | DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 7.0 | 3.0 |
| 147 | 1993 | PL | 13 | DU | 61.00 | 0.0 | 61.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3.0 | 1.0 |
| 148 | 1993 | PL | 14 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5.0 | 3.0 |
| 149 | 1993 | PL | 15 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 7.0 | 10.0 |
| 150 | 1993 | PL | 16 | DU | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 5.0 | 5.0 |
| 151 | 1993 | PL | 17 | DU | 230.00 | 0.0 | 230.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 6.0 | 7.0 |
| 152 | 1994 | DC | 1 | CP | 60.00 | 4.0 | 15.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 4.0 |
| 153 | 1994 | DC | 2 | CP | 343.00 | 5.0 | 68.60 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 9.0 | 6.0 |
| 154 | 1994 | DC | 3 | CP | 100.00 | 1.0 | 100.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 155 | 1994 | DC | 4 | CP | 155.00 | 0.0 | 155.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 156 | 1994 | DC | 5 | CP | 110.00 | 3.0 | 36.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 157 | 1994 | DC | 6 | CP | 56.25 | 1.0 | 56.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 9.0 |
| 158 | 1994 | DC | 7 | CP | 160.00 | 1.0 | 160.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 159 | 1994 | DC | 8 | CP | 137.00 | 1.0 | 137.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 160 | 1994 | DC | 9 | CP | 163.00 | 1.0 | 163.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 161 | 1994 | DC | 10 | CP | 40.00 | 2.0 | 20.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 162 | 1994 | DC | 11 | CP | 134.00 | 4.0 | 33.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 163 | 1994 | DC | 12 | CP | 400.00 | 4.0 | 100.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 2.0 |
| 164 | 1994 | DC | 13 | CP | 900.00 | 0.0 | 900.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 8.0 |
| 165 | 1994 | DC | 14 | CP | 111.00 | 5.0 | 22.20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 166 | 1994 | DC | 15 | CP | 305.00 | 0.0 | 305.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 17.0 | 7.0 |
| 167 | 1994 | DC | 16 | CP | 18.00 | 6.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 7.0 |
| 168 | 1994 | DC | 17 | CP | 130.00 | 2.0 | 65.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 169 | 1994 | DC | 18 | CP | 80.00 | 3.0 | 26.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 10.0 |
| 170 | 1994 | DC | 19 | CP | 150.00 | 3.0 | 50.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 2.0 |
| 171 | 1994 | DC | 20 | CP | 17.00 | 1.0 | 17.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 172 | 1994 | DC | 21 | CP | 162.00 | 3.0 | 54.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 9.0 |
| 173 | 1994 | DC | 22 | CP | 165.00 | 4.0 | 41.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 174 | 1994 | DC | 23 | CP | 200.00 | 3.0 | 66.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 7.0 |
| 175 | 1994 | DC | 24 | CP | 271.25 | 0.0 | 271.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 7.0 |
| 176 | 1994 | DC | 25 | CP | 47.00 | 3.0 | 15.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 10.0 |
| 177 | 1994 | DC | 26 | CP | 170.00 | 3.0 | 56.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 7.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trochan Reservoir LTR | Demon Lake DL | French Reservoir FR | Shawpelt Reservoir SR | Boss Reservoir BR | Lower Trochan Reservoir LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|-----------------------------|---------------|---------------------|-----------------------|-------------------|-----------------------------|-----------------|-----------------|----------------|------------|
| 178 | 1994 | DL | 27 | CP | 131.25 | 2.0 | 65.63 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 14.0 |
| 179 | 1994 | DL | 28 | CP | 254.00 | 7.0 | 36.29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 180 | 1994 | DL | 29 | CP | 51.00 | 2.0 | 25.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 181 | 1994 | DL | 30 | CP | 146.00 | 2.0 | 73.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 2.0 |
| 182 | 1994 | DL | 31 | CP | 144.25 | 2.0 | 72.13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 1.0 |
| 183 | 1994 | DL | 32 | CP | 120.00 | 7.0 | 17.14 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 0.0 |
| 184 | 1994 | DL | 33 | CP | 64.75 | 2.0 | 32.38 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 185 | 1994 | DL | 34 | CP | 36.00 | 2.0 | 18.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 4.0 |
| 186 | 1994 | DL | 35 | CP | 25.00 | 2.0 | 12.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 187 | 1994 | DL | 36 | CP | 14.00 | 2.0 | 7.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 2.0 |
| 188 | 1994 | DL | 37 | CP | 36.00 | 2.0 | 18.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 189 | 1994 | DL | 38 | CP | 121.00 | 4.0 | 30.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 6.0 |
| 190 | 1994 | DL | 39 | CP | 73.00 | 2.0 | 36.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 191 | 1994 | DL | 40 | CP | 119.50 | 2.0 | 59.75 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 7.0 |
| 192 | 1994 | DL | 41 | CP | 140.00 | 1.0 | 140.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 193 | 1994 | DL | 42 | CP | 74.00 | 4.0 | 18.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 194 | 1994 | DL | 1 | DU | 25.00 | 0.0 | 25.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 195 | 1994 | DL | 2 | DU | 43.00 | 0.0 | 43.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| 196 | 1994 | DL | 3 | DU | 19.00 | 0.0 | 19.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 4.0 |
| 197 | 1994 | DL | 4 | DU | 33.00 | 0.0 | 33.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 6.0 |
| 198 | 1994 | DL | 5 | DU | 34.00 | 0.0 | 34.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 11.0 |
| 199 | 1994 | DL | 6 | DU | 93.00 | 0.0 | 93.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 10.0 |
| 200 | 1994 | DL | 7 | DU | 27.00 | 0.0 | 27.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 201 | 1994 | DL | 8 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 5.0 |
| 202 | 1994 | DL | 9 | DU | 5.00 | 0.0 | 5.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10.0 | 4.0 |
| 203 | 1994 | DL | 10 | DU | 7.00 | 0.0 | 7.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9.0 | 7.0 |
| 204 | 1994 | DL | 11 | DU | 60.50 | 0.0 | 60.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 3.0 |
| 205 | 1994 | DL | 12 | DU | 123.00 | 0.0 | 123.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 6.0 |
| 206 | 1994 | DL | 13 | DU | 22.50 | 0.0 | 22.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.5 | 5.0 |
| 207 | 1994 | DL | 14 | DU | 25.00 | 0.0 | 25.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 208 | 1994 | DL | 15 | DU | 43.00 | 0.0 | 43.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 2.0 |
| 209 | 1994 | DL | 16 | DU | 20.00 | 0.0 | 20.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 9.0 |
| 210 | 1994 | DL | 17 | DU | 140.00 | 0.0 | 140.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10.0 | 2.0 |
| 211 | 1994 | DL | 18 | DU | 25.00 | 0.0 | 25.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 212 | 1994 | DL | 19 | DU | 22.00 | 0.0 | 22.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 16.0 |
| 213 | 1994 | DL | 20 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 7.0 |
| 214 | 1994 | DL | 21 | DU | 40.00 | 0.0 | 40.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 215 | 1994 | DL | 22 | DU | 11.00 | 0.0 | 11.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 216 | 1994 | DL | 23 | DU | 31.00 | 0.0 | 31.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 217 | 1994 | DL | 24 | DU | 19.00 | 0.0 | 19.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.5 | 4.0 |
| 218 | 1994 | DL | 25 | DU | 12.63 | 0.0 | 12.63 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 4.0 |
| 219 | 1994 | DL | 26 | DU | 5.00 | 0.0 | 5.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 220 | 1994 | DL | 27 | DU | 177.99 | 0.0 | 177.99 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 1.0 |
| 221 | 1994 | DL | 28 | DU | 46.00 | 0.0 | 46.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 1.0 |
| 222 | 1994 | DL | 29 | DU | 149.51 | 0.0 | 149.51 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 5.0 |
| 223 | 1994 | DL | 30 | DU | 13.00 | 0.0 | 13.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 224 | 1994 | DL | 31 | DU | 156.06 | 0.0 | 156.06 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 6.0 |
| 225 | 1994 | DL | 32 | DU | 92.50 | 0.0 | 92.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| 226 | 1994 | DL | 33 | DU | 31.00 | 0.0 | 31.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 227 | 1994 | DL | 34 | DU | 5.00 | 0.0 | 5.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 2.0 |
| 228 | 1994 | DL | 35 | DU | 26.00 | 0.0 | 26.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 2.0 |
| 229 | 1994 | DL | 36 | DU | 11.00 | 0.0 | 11.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 230 | 1994 | DL | 37 | DU | 15.00 | 0.0 | 15.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 231 | 1994 | DL | 38 | DU | 4.50 | 0.0 | 4.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 4.0 |
| 232 | 1994 | DL | 39 | DU | 127.00 | 0.0 | 127.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 7.0 |
| 233 | 1994 | DL | 40 | DU | 2.00 | 0.0 | 2.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| 234 | 1994 | DL | 41 | DU | 5.00 | 0.0 | 5.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 235 | 1994 | FR | 1 | CP | 127.79 | 4.0 | 31.95 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 236 | 1994 | FR | 2 | CP | 16.00 | 2.0 | 8.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Combinator Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Tenches River UTR | Deer Lake DL | Payson Reservoir PR | Shoshone Reservoir SR | Beck Reservoir BR | Lower Tenches River LTR | Physical Lake PL | Camping Visitor | Activity Score | Group Size |
|--------------------|------|------|-------------------|--------------|-------------|----------------|---------------------|-------------------------|--------------|---------------------|-----------------------|-------------------|-------------------------|------------------|-----------------|----------------|------------|
| 237 | 1994 | PR | 1 | 0 | 193.00 | 3.0 | 64.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 3.0 |
| 238 | 1994 | PR | 4 | 0 | 144.00 | 14.0 | 10.29 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 239 | 1994 | PR | 5 | 0 | 125.00 | 7.0 | 17.86 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 240 | 1994 | PR | 6 | 0 | 125.00 | 2.0 | 62.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 241 | 1994 | PR | 7 | 0 | 242.00 | 5.0 | 48.40 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 6.0 |
| 242 | 1994 | PR | 8 | 0 | 6.00 | 1.0 | 6.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 243 | 1994 | PR | 9 | 0 | 279.00 | 3.0 | 93.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 2.0 |
| 244 | 1994 | PR | 10 | 0 | 8.00 | 2.0 | 4.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 245 | 1994 | PR | 11 | 0 | 8.00 | 1.0 | 8.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 246 | 1994 | PR | 12 | 0 | 31.00 | 4.0 | 7.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 247 | 1994 | PR | 13 | 0 | 43.00 | 1.0 | 43.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 1.0 |
| 248 | 1994 | PR | 14 | 0 | 97.50 | 6.0 | 16.25 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 249 | 1994 | PR | 15 | 0 | 522.00 | 6.0 | 87.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 6.0 |
| 250 | 1994 | PR | 16 | 0 | 64.00 | 3.0 | 21.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 3.0 |
| 251 | 1994 | PR | 17 | 0 | 244.00 | 3.0 | 81.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 252 | 1994 | PR | 18 | 0 | 74.00 | 2.0 | 37.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 13.0 | 3.0 |
| 253 | 1994 | PR | 19 | 0 | 16.00 | 2.0 | 8.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 1.0 |
| 254 | 1994 | PR | 20 | 0 | 130.00 | 7.0 | 18.57 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 255 | 1994 | PR | 21 | 0 | 426.00 | 12.0 | 35.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 256 | 1994 | PR | 22 | 0 | 30.00 | 3.0 | 10.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 257 | 1994 | PR | 23 | 0 | 24.00 | 2.0 | 12.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 7.0 |
| 258 | 1994 | PR | 24 | 0 | 94.00 | 3.0 | 31.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5.0 | 5.0 |
| 259 | 1994 | PR | 25 | 0 | 39.25 | 4.0 | 9.81 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 4.0 |
| 260 | 1994 | PR | 26 | 0 | 34.00 | 2.0 | 17.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 261 | 1994 | PR | 27 | 0 | 156.00 | 2.0 | 78.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 5.0 |
| 262 | 1994 | PR | 28 | 0 | 14.00 | 1.0 | 14.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 2.0 |
| 263 | 1994 | PR | 29 | 0 | 54.00 | 1.0 | 54.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 264 | 1994 | PR | 30 | 0 | 64.00 | 1.0 | 64.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 265 | 1994 | PR | 31 | 0 | 1.00 | 0.0 | 1.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 266 | 1994 | PR | 32 | 0 | 80.00 | 0.0 | 80.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 2.0 |
| 267 | 1994 | PR | 33 | 0 | 11.00 | 3.0 | 3.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.5 | 3.0 |
| 268 | 1994 | PR | 34 | 0 | 292.00 | 3.0 | 97.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 3.0 |
| 269 | 1994 | PR | 35 | 0 | 11.00 | 1.0 | 11.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 270 | 1994 | PR | 36 | 0 | 71.00 | 4.0 | 17.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 271 | 1994 | PR | 37 | 0 | 22.00 | 2.0 | 11.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 272 | 1994 | PR | 38 | 0 | 200.00 | 5.0 | 40.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 273 | 1994 | PR | 39 | 0 | 242.00 | 2.0 | 121.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 274 | 1994 | PR | 40 | 0 | 227.00 | 7.0 | 32.43 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 275 | 1994 | PR | 41 | 0 | 11.00 | 1.0 | 11.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 5.0 |
| 276 | 1994 | PR | 42 | 0 | 14.00 | 4.0 | 3.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 6.0 |
| 277 | 1994 | PR | 43 | 0 | 227.00 | 14.0 | 16.21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 278 | 1994 | PR | 44 | 0 | 151.00 | 4.0 | 37.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 279 | 1994 | PR | 45 | 0 | 40.00 | 4.0 | 10.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 280 | 1994 | PR | 46 | 0 | 45.00 | 6.0 | 7.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 281 | 1994 | PR | 47 | 0 | 14.50 | 3.0 | 4.83 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 282 | 1994 | PR | 48 | 0 | 95.00 | 5.0 | 19.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 3.0 |
| 283 | 1994 | PR | 49 | 0 | 123.00 | 2.0 | 61.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 8.0 |
| 284 | 1994 | PR | 50 | 0 | 142.50 | 6.0 | 23.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 285 | 1994 | PR | 51 | 0 | 206.00 | 14.0 | 14.71 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 286 | 1994 | PR | 52 | 0 | 101.00 | 2.0 | 50.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 10.0 |
| 287 | 1994 | PR | 53 | 0 | 176.00 | 1.0 | 176.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 288 | 1994 | PR | 54 | 0 | 44.00 | 1.0 | 44.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 289 | 1994 | PR | 55 | 0 | 222.00 | 14.0 | 15.86 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 290 | 1994 | PR | 56 | 0 | 46.00 | 3.0 | 15.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 291 | 1994 | PR | 57 | 0 | 140.00 | 4.0 | 35.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 1.0 |
| 292 | 1994 | PR | 58 | 0 | 142.00 | 2.0 | 71.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 5.0 |
| 293 | 1994 | PR | 59 | 0 | 194.00 | 5.0 | 38.80 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 294 | 1994 | PR | 60 | 0 | 152.00 | 3.0 | 50.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 1.0 |
| 295 | 1994 | PR | 61 | 0 | 92.00 | 2.0 | 46.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trestles River UTR | Down Lake DL | Pocket Reservoir PL | Statewide Reservoir SR | Down Reservoir DR | Lower Trestles River LTR | Pocket Lake PL | Camping Visitor | Activity Score | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|--------------------------|--------------|---------------------|------------------------|-------------------|--------------------------|----------------|-----------------|----------------|------------|
| 296 | 1994 | SE | 30 | C | 143.00 | 4.0 | 35.75 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 297 | 1994 | SE | 31 | C | 78.00 | 6.0 | 13.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 9.0 | 3.0 |
| 298 | 1994 | SE | 32 | C | 106.50 | 4.0 | 26.63 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 299 | 1994 | SE | 33 | C | 30.00 | 2.0 | 15.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 300 | 1994 | SE | 34 | C | 21.00 | 4.0 | 5.25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 301 | 1994 | SE | 35 | C | 48.00 | 2.0 | 24.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 4.0 |
| 302 | 1994 | SE | 36 | C | 151.00 | 4.0 | 37.75 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 20.0 |
| 303 | 1994 | SE | 37 | C | 11.00 | 1.0 | 11.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 304 | 1994 | SE | 38 | C | 19.00 | 2.0 | 9.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 3.0 |
| 305 | 1994 | SE | 39 | C | 401.00 | 20.0 | 20.05 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 306 | 1994 | SE | 40 | C | 150.00 | 4.0 | 37.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 0.0 |
| 307 | 1994 | SE | 41 | C | 206.00 | 2.0 | 103.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 6.0 |
| 308 | 1994 | SE | 42 | C | 72.00 | 2.0 | 36.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 15.0 | 7.0 |
| 309 | 1994 | SE | 43 | C | 103.00 | 8.0 | 12.88 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 3.0 |
| 310 | 1994 | SE | 44 | C | 253.00 | 3.0 | 84.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 311 | 1994 | SE | 45 | C | 103.00 | 3.0 | 34.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 3.0 |
| 312 | 1994 | SE | 46 | C | 57.00 | 3.0 | 19.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 313 | 1994 | SE | 47 | C | 70.50 | 7.0 | 10.07 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 314 | 1994 | SE | 48 | C | 33.00 | 4.0 | 8.25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 9.0 |
| 315 | 1994 | SE | 49 | C | 103.00 | 3.0 | 34.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 316 | 1994 | SE | 50 | C | 207.50 | 4.0 | 51.88 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 317 | 1994 | SE | 51 | C | 100.00 | 6.0 | 16.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 11.0 |
| 318 | 1994 | SE | 52 | C | 47.00 | 2.0 | 23.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 3.0 |
| 319 | 1994 | SE | 53 | C | 80.00 | 3.0 | 26.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 4.0 |
| 320 | 1994 | SE | 54 | C | 242.00 | 6.0 | 40.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 321 | 1994 | SE | 55 | C | 114.00 | 2.0 | 57.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 3.0 |
| 322 | 1994 | SE | 56 | C | 403.00 | 16.0 | 25.19 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 3.0 |
| 323 | 1994 | SE | 57 | C | 64.00 | 3.0 | 21.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 4.0 |
| 324 | 1994 | SE | 58 | C | 226.50 | 4.0 | 56.63 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 22.0 |
| 325 | 1994 | SE | 59 | C | 134.00 | 3.0 | 44.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 4.0 |
| 326 | 1994 | SE | 60 | C | 142.50 | 4.0 | 35.63 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 5.0 |
| 327 | 1994 | SE | 61 | C | 440.00 | 3.0 | 146.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 25.0 |
| 328 | 1994 | SE | 62 | C | 242.50 | 7.0 | 34.64 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 329 | 1994 | SE | 63 | C | 1.50 | 2.0 | 0.75 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 10.0 |
| 330 | 1994 | SE | 64 | C | 30.00 | 3.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 331 | 1994 | SE | 1 | C | 900.00 | 7.0 | 128.57 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 10.0 |
| 332 | 1994 | SE | 2 | C | 250.00 | 1.0 | 250.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 333 | 1994 | SE | 3 | C | 257.00 | 2.0 | 128.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 334 | 1994 | SE | 4 | C | 6.00 | 2.0 | 3.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 3.0 |
| 335 | 1994 | SE | 5 | C | 30.00 | 3.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.5 | 3.0 |
| 336 | 1994 | SE | 6 | C | 46.00 | 2.0 | 23.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 337 | 1994 | SE | 7 | C | 60.00 | 1.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 20.0 |
| 338 | 1994 | SE | 8 | C | 12.00 | 2.0 | 6.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 339 | 1994 | SE | 9 | C | 35.00 | 2.0 | 17.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 340 | 1994 | SE | 10 | C | 50.00 | 5.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 341 | 1994 | SE | 11 | C | 122.00 | 1.0 | 122.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 342 | 1994 | SE | 12 | C | 206.00 | 24.0 | 8.58 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 9.0 |
| 343 | 1994 | SE | 13 | C | 52.00 | 1.0 | 52.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 2.0 |
| 344 | 1994 | SE | 14 | C | 207.00 | 14.0 | 14.79 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1.0 | 3.0 |
| 345 | 1994 | SE | 15 | C | 450.00 | 2.0 | 225.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 346 | 1994 | SE | 16 | C | 153.00 | 2.0 | 76.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 14.0 |
| 347 | 1994 | SE | 17 | C | 72.00 | 5.0 | 14.40 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 348 | 1994 | SE | 18 | C | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 349 | 1994 | SE | 19 | C | 15.00 | 6.0 | 2.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 350 | 1994 | SE | 20 | C | 100.00 | 0.0 | 100.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 25.0 |
| 351 | 1994 | SE | 4 | C | 100.00 | 0.0 | 100.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 6.0 |
| 352 | 1994 | SE | 5 | C | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 2.0 |
| 353 | 1994 | SE | 6 | C | 50.00 | 0.0 | 50.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 9.0 |
| 354 | 1994 | SE | 7 | C | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Touches River UTR | Down Lake DL | Forest Reserve FR | Stampede Reserve SR | Boat Reserve BR | Lower Touches River LTR | Payroll Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|---------|------|----------------------|--------------|-------------|----------------|---------------------|-------------------------|--------------|-------------------|---------------------|-----------------|-------------------------|-----------------|-----------------|----------------|------------|
| 351 | 1994 BR | | | 8 DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 5.0 |
| 352 | 1994 BR | | | 9 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 5.0 |
| 357 | 1994 BR | | | 16 DU | 22.00 | 0.0 | 22.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12.0 | 2.0 |
| 358 | 1994 BR | | | 18 DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 10.0 | 1.0 |
| 359 | 1994 BR | | | 12 DU | 95.00 | 0.0 | 95.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 13.0 |
| 360 | 1994 BR | | | 15 DU | 8.00 | 0.0 | 8.00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 2.0 |
| 361 | 1994 BR | | | 14 DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2.0 | 6.0 |
| 362 | 1994 PL | | | 1 CP | 120.00 | 1.0 | 120.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 2.0 |
| 363 | 1994 PL | | | 2 CP | 300.00 | 4.0 | 120.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 9.0 |
| 364 | 1994 PL | | | 3 CP | 10.00 | 3.0 | 3.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10.0 | 15.0 |
| 365 | 1994 PL | | | 4 CP | 150.00 | 3.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9.0 | 4.0 |
| 366 | 1994 PL | | | 5 CP | 85.71 | 3.0 | 28.57 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 8.0 |
| 367 | 1994 PL | | | 6 CP | 86.00 | 3.0 | 28.67 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9.0 | 3.0 |
| 368 | 1994 PL | | | 7 CP | 125.00 | 2.0 | 62.50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 4.0 |
| 369 | 1994 PL | | | 8 CP | 56.00 | 3.0 | 18.67 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 2.0 |
| 370 | 1994 PL | | | 9 CP | 15.00 | 3.0 | 5.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 371 | 1994 PL | | | 10 CP | 130.00 | 3.0 | 43.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 13.0 | 3.0 |
| 372 | 1994 PL | | | 11 CP | 100.00 | 2.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 13.0 | 14.0 |
| 373 | 1994 PL | | | 12 CP | 105.00 | 2.0 | 52.50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10.0 | 4.0 |
| 374 | 1994 PL | | | 13 CP | 130.00 | 2.0 | 65.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 4.0 |
| 375 | 1994 PL | | | 14 CP | 405.00 | 4.0 | 101.25 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 1.0 |
| 376 | 1994 PL | | | 15 CP | 184.00 | 2.0 | 92.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 6.0 |
| 377 | 1994 PL | | | 16 CP | 253.00 | 5.0 | 50.60 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 4.0 |
| 378 | 1994 PL | | | 17 CP | 153.00 | 10.0 | 15.30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 3.0 |
| 379 | 1994 PL | | | 18 CP | 200.00 | 4.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 5.0 |
| 380 | 1994 PL | | | 19 CP | 171.00 | 2.0 | 85.50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 4.0 |
| 381 | 1994 PL | | | 1 DU | 50.00 | 0.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 6.0 |
| 382 | 1994 PL | | | 2 DU | 300.00 | 0.0 | 300.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 26.0 |
| 383 | 1994 PL | | | 3 DU | 50.00 | 0.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 3.0 |
| 384 | 1994 PL | | | 4 DU | 6.00 | 0.0 | 6.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 385 | 1994 PL | | | 5 DU | 65.00 | 0.0 | 65.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 3.0 |
| 386 | 1994 PL | | | 6 DU | 71.00 | 0.0 | 71.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 1.0 |
| 387 | 1994 PL | | | 7 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 1.0 |
| 388 | 1994 PL | | | 8 DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 4.0 |
| 389 | 1994 PL | | | 9 DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 1.0 |
| 390 | 1994 PL | | | 10 DU | 110.00 | 0.0 | 110.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 1.0 |
| 391 | 1994 PL | | | 11 DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 4.0 |
| 392 | 1994 PL | | | 12 DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 1.0 |
| 393 | 1994 PL | | | 13 DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 1.0 |
| 394 | 1994 PL | | | 14 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 1.0 |
| 395 | 1994 PL | | | 15 DU | 40.00 | 0.0 | 40.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 4.0 |
| 396 | 1994 PL | | | 16 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 3.0 |
| 397 | 1994 PL | | | 17 DU | 50.00 | 0.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 398 | 1994 PL | | | 18 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.0 | 2.0 |
| 399 | 1994 PL | | | 19 DU | 75.00 | 0.0 | 75.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 3.0 |
| 400 | 1994 PL | | | 20 DU | 15.00 | 0.0 | 15.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10.0 | 0.0 |
| 401 | 1994 PL | | | 21 DU | 31.00 | 0.0 | 31.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 0.0 |
| 402 | 1994 PL | | | 22 DU | 111.00 | 0.0 | 111.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 15.0 |
| 403 | 1994 PL | | | 23 DU | 76.00 | 0.0 | 76.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 14.0 |
| 404 | 1994 PL | | | 24 DU | 33.00 | 0.0 | 33.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 3.0 |
| 405 | 1994 PL | | | 25 DU | 95.00 | 0.0 | 95.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8.0 | 15.0 |
| 406 | 1994 PL | | | 26 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 1.0 |
| 407 | 1994 PL | | | 27 DU | 13.00 | 0.0 | 13.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 6.0 |
| 408 | 1994 PL | | | 28 DU | 33.00 | 0.0 | 33.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 409 | 1994 PL | | | 29 DU | 36.00 | 0.0 | 36.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8.0 | 10.0 |
| 410 | 1994 PL | | | 30 DU | 36.00 | 0.0 | 36.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 411 | 1994 PL | | | 31 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 6.0 |
| 412 | 1994 PL | | | 32 DU | 13.00 | 0.0 | 13.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 2.0 |
| 413 | 1994 PL | | | 33 DU | 90.00 | 0.0 | 90.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 6.0 |

Table 7.2-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Triathlon River UTR | Deep Lake DL | Traver Reservoir TR | Shastah Reservoir SR | Beck Reservoir BR | Lower Truckee River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Camp Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|---------------------------|--------------|---------------------|----------------------|-------------------|-------------------------|-----------------|-----------------|----------------|-----------|
| 414 | 1994 | PL | 34 | DU | 47.00 | 0.0 | 47.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.0 | 0.0 |
| 415 | 1994 | PL | 35 | DU | 19.00 | 0.0 | 19.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.0 | 3.0 |
| 416 | 1994 | PL | 36 | DU | 55.00 | 0.0 | 55.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 14.0 | 4.0 |
| 417 | 1994 | PL | 37 | DU | 190.00 | 0.0 | 190.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.0 | 5.0 |
| 418 | 1994 | PL | 38 | DU | 31.00 | 0.0 | 31.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.0 | 3.0 |
| 419 | 1994 | PL | 39 | DU | 35.00 | 0.0 | 35.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4.0 | 5.0 |
| 420 | 1994 | PL | 40 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.0 | 10.0 |
| 421 | 1994 | PL | 41 | DU | 195.00 | 0.0 | 195.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0.0 | 13.0 |
| 422 | 1994 | PL | 42 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1.0 | 6.0 |
| 423 | 1994 | PL | 43 | DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2.0 | 3.0 |
| 424 | 1994 | PL | 44 | DU | 35.00 | 0.0 | 35.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 11.0 |
| 425 | 1994 | PL | 45 | DU | 37.00 | 0.0 | 37.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 7.0 |
| 426 | 1994 | PL | 46 | DU | 36.00 | 0.0 | 36.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12.0 | 2.0 |
| 427 | 1994 | PL | 47 | DU | 7.00 | 0.0 | 7.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.3 | 5.0 |
| 428 | 1994 | PL | 48 | DU | 190.00 | 0.0 | 190.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 15.0 |
| 429 | 1994 | PL | 49 | DU | 17.00 | 0.0 | 17.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4.0 | 3.0 |
| 430 | 1994 | PL | 50 | DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 2.0 |
| 431 | 1994 | PL | 51 | DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 3.0 |
| 432 | 1994 | PL | 52 | DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10.0 | 10.0 |

Table 7.2-2. Camping and Day Use Visitor Expenditure Function Values.

| | Upper Truckee River | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------------|----------------|----------------------|-----------------------|-------------------|---------------------------|-----------------|
| Camping Visitor Group Expenditures per Day | \$51.95 | \$39.80 | \$28.40 | \$40.08 | \$34.69 | \$19.74 | \$39.23 |
| Day Use Visitor Group Expenditures per Day | \$75.42 | \$36.65 | \$50.95 | \$45.79 | \$46.86 | \$28.60 | \$51.60 |

7.3. Survey of the Second-Home Owners

A survey of second-home owners for the Truckee area was done during February 1995. The purpose of the survey was to first obtain an overall picture of the summer season visitation and recreation activities of second-home owners, second, quantify the amount of expenditures that second-home owners make to the local economy, and third, identify how second-home visitation would change during the summer season in relation to alternative lake-levels at Donner Lake. To achieve this purpose, information was collected from second-home owners using a questionnaire. Questionnaires were mailed-out to second-home owners and when returned the data was compiled and analyzed to develop a set of descriptive statistics. The cover letter to the questionnaire, the questionnaire, a response summary, descriptive statistics of the data, and comments are presented below.

Cover Letter

February 15, 1995

Dear Second-Home Owner:

The Town of Truckee requests your participation in a survey. This survey is being conducted by the University of Nevada, Reno. Information collected will be used in assessing the economic and recreation issues associated with lakes and reservoirs in the Truckee area. This information will help local, state, and federal officials make informed decisions on how best to manage the lakes, reservoirs, and rivers in the Truckee River Basin.

The enclosed questionnaire takes less than 15 minutes to complete. A limited number of second-home owners are receiving this questionnaire, so your response means a lot. Please complete the questionnaire as best you can and then mail the questionnaire in the stamped pre-addressed envelope.

The tabulated results of this survey will be made available for your review at the Truckee Town Hall. The Town of Truckee appreciates your participation in this survey and thanks you for your time.

PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE BEFORE
MARCH 1ST.

Sincerely,

Embree B. (Breeze) Cross
Mayor

Questionnaire

The questionnaire is made-up of ten questions and a comment page. Through the questionnaire, second-home owners were asked to provide information on the location of main residence, influence of decision factors to purchase or build a second-home, second-home ownership, group make-up, second-home visitation in terms of both the number of visits per month and number of days per visit, site visitation at area lakes and reservoirs, summer season visitation and recreation activities at Donner Lake, summer season characteristics of Donner Lake, sensitivity to alternative lake-levels at Donner Lake, expenditures per visit, and annual expenditures on second-home upkeep and repairs. Also through the questionnaire, second-home owners were asked to mention any comments about owning a second-home in the Truckee area. Each of the ten questions and the comment page are presented below.

1. Where is your main residence?

City _____
State _____
Zip Code _____

2. How did the following factors influence your decision to purchase or build a second-home in the Truckee area? Please indicate, as a percentage, the level of influence each factor had on your decision. Be sure that the total is equal to 100%.

| Decision Factors | Level of Influence % |
|---|----------------------|
| Business / Job / Retirement | |
| Financial / Investment / Tax Purposes | |
| Family / Community / Rural Lifestyle | |
| Natural Setting / Environment / Climate | |
| Winter Recreation / Proximity to Ski Areas | |
| Water-Related Summer Recreation / Proximity to Lakes and Reservoirs | |
| Other Summer Recreation / Proximity to Golf Courses and Hiking Trails | |
| Total | 100% |

3. Do you share ownership of your second-home with others not in your family?

No _____
Yes _____

4. How many adults and children are included in a typical visit to your second-home?

Typical Number of Adults per Visit _____
Typical Number of Children per Visit _____

5. How many times do you visit your second-home and how many days do you spend per visit during each of the following months?

| Months | Typical Number of Visits per Month | Typical Number of Days per Visit |
|-----------|---|---|
| January | | |
| February | | |
| March | | |
| April | | |
| May | | |
| June | | |
| July | | |
| August | | |
| September | | |
| October | | |
| November | | |
| December | | |

6. How many times do you visit Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, and Pyramid Lake for recreation during each of the following months?

| Months | Typical Number of Visits per Month | | | | | |
|------------------------|------------------------------------|----------------|----------------------|-----------------------|-------------------|-----------------|
| | Lake Tahoe | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir | Pyramid Lake |
| April | | | | | | |
| May | | | | | | |
| June | | | | | | |
| July | | | | | | |
| August | | | | | | |
| September | | | | | | |
| October | | | | | | |
| November through March | | | | | | |

7. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season: (please answer questions a, b, and c)

- a. How many days per visit to your second-home do you spend on recreation at Donner Lake?

Typical Number of Days per Visit _____

- b. How many hours per day do you spend on the following recreation activities at Donner Lake? Please indicate by marking the appropriate box, the number of hours per day for each recreation activity. Extra space is provided for other activities.

Recreation Activities

Typical Number of Hours per Day

| | | | | | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|
| Fishing from Shore | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Fishing from Boat | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Water Skiing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Pleasure Boating | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Jet Skiing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Swimming | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Picnicing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Hiking | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Biking | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

- c. How do you rate the following characteristics of Donner Lake? Please rate the characteristics as very good, good, satisfactory, poor, or very poor.

| Characteristics | Very Good | Good | Satisfactory | Poor | Very Poor |
|---------------------------------|-----------|------|--------------|------|-----------|
| Natural Setting and Environment | | | | | |
| Recreation Opportunities | | | | | |
| Lake-Level | | | | | |
| Boat Ramp and Dock Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |

8. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season, the lake-level at Donner Lake is regulated between the following five lake-levels: (please answer questions a, b, and c)

| Lake-Levels | | | Boat Ramp and Boat Dock Status | | | |
|-------------|----------------|---------------------|--------------------------------|-------------------------------|---|--------------------------|
| Lake-Level | Lake Elevation | Lake Elevation Drop | Public Boat Ramp Status | Tahoe Donner Boat Ramp Status | Donner Lake Property Owner Boat Ramp Status | Public Boat Docks Status |
| | <i>feet</i> | <i>feet</i> | | | | |
| 1 | 5,936 maximum | 0 | usable | usable | usable | usable / safe |
| 2 | 5,935 | 1 | usable | usable | usable | usable / safe |
| 3 | 5,934 | 2 | usable | marginal | marginal | marginal |
| 4 | 5,933 | 3 | usable | unusable | unusable | unusable / unsafe |
| 5 | 5,932 | 4 | usable | unusable | unusable | unusable / unsafe |

- a. Would the number of visits you make during each month to your second-home change at any of the above lake-levels?

No _____ (if No, please go to question 9)

Yes _____

- b. If Yes, please indicate below, how you would change your number of visits per month to your second-home? At each lake-level, circle whether you would have no change, an increase, or a decrease in the number of visits per month to your second-home. Also indicate the corresponding increase or decrease in the number of visits per month.

| Lake-Level | Change in Number of Visits per Month | | | Increase / Decrease |
|------------|--------------------------------------|----------|----------|---------------------|
| | No Change | Increase | Decrease | |
| 1 | No Change | Increase | Decrease | |
| 2 | No Change | Increase | Decrease | |
| 3 | No Change | Increase | Decrease | |
| 4 | No Change | Increase | Decrease | |
| 5 | No Change | Increase | Decrease | |

- c. If Yes, how would you then rate the following characteristics of Donner Lake at the lake-level where you first indicated that you would change the number of visits to your second-home? Please rate the following characteristics as very good, good, satisfactory, poor, or very poor.

| Characteristics | Very Good | Good | Satisfactory | Poor | Very Poor |
|---------------------------------|-----------|------|--------------|------|-----------|
| Natural Setting and Environment | | | | | |
| Recreation Opportunities | | | | | |
| Lake-Level | | | | | |
| Boat Ramp and Dock Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |

9. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season: (please answer question a)

- a. How much do you spend on the following items per visit to your second-home? Please indicate your expenditure on each item and the portion that you spend in the Truckee-Donner Lake area, Reno-Sparks area, Lake Tahoe area, and Other area. Extra space is provided for other items.

| Items | Typical Expenditure per Visit | Truckee-Donner Lake Area Portion | Reno-Sparks Area Portion | Lake Tahoe Area Portion | Other Area Portion |
|--|-------------------------------|----------------------------------|--------------------------|-------------------------|--------------------|
| | \$ | % | % | % | % |
| Restaurant | | | | | |
| Groceries and Supplies | | | | | |
| Gasoline | | | | | |
| Other Shopping | | | | | |
| Recreation Rental (boats, bikes, horses, etc.) | | | | | |
| Golf Fees | | | | | |
| Other User Fees | | | | | |
| Gaming | | | | | |
| | | | | | |
| | | | | | |
| Total | | | | | |

10. How much do you spend per year on the following upkeep and repair items to your second-home? Extra space is provided for other items.

Items
Typical
Expenditure
per
Year
\$

| | |
|---------------------------------|--|
| Painting, Sealing, and Staining | |
| Landscape Maintenance | |
| House Cleaning | |
| Driveway Crack Sealing | |
| | |
| | |
| Total | |

Response Summary

Questionnaire response, question response, and comment response is given below. There were 100 questionnaires mailed-out and 42 returned for a 42% response. Question response, meaning the number of respondents that answered each question, varied from 42 respondents that answered question 1 to 28 respondents that answered question 9a. This indicates that of the 42 questionnaires returned only 28 respondents completed the questionnaire. The comment response, meaning the number of respondents that made comments, was 29.

| | |
|---|-----|
| Number of Questionnaires Mailed-Out | 100 |
| Number of Questionnaires Returned | 42 |
| Number of Respondents that Answered Question 1 | 42 |
| Number of Respondents that Answered Question 2 | 41 |
| Number of Respondents that Answered Question 3 | 40 |
| Number of Respondents that Answered Question 4 | 39 |
| Number of Respondents that Answered Question 5 | 38 |
| Number of Respondents that Answered Question 6 | 38 |
| Number of Respondents that Answered Question 7a | 37 |
| Number of Respondents that Answered Question 7b | 36 |
| Number of Respondents that Answered Question 7c | 31 |
| Number of Respondents that Answered Question 8a | 38 |
| Number of Respondents that Answered Question 8b | 3 |
| Number of Respondents that Answered Question 8c | 3 |
| Number of Respondents that Answered Question 9a | 28 |
| Number of Respondents that Answered Question 10 | 30 |
| Number of Respondents that Made Comments | 29 |

Descriptive Statistics

The descriptive statistics of the data are presented below with an explanation of their interpretation. The descriptive statistics include the location of main residence, decision factor influence to purchase or build a second-home, second-home ownership, group make-up, annual second-home visitation, site visitation, annual site visitation, summer season Donner Lake visitation, summer season Donner Lake activities, summer season Donner Lake activity hours, ranking of summer season Donner Lake characteristics, summer season Donner Lake alternative lake-level sensitivity, summer season visitation expenditures, and annual second-home upkeep and repair expenditures.

Location of Main Residence

The highest number of respondents are respondents with a main residence in the San Francisco Bay area.

Table 7.3-1 provides the number of respondents with a main residence in the Sacramento area, the San Francisco Bay area, and Other areas. There are 8 respondents with a main residence in the Sacramento area, 29 respondents with a main residence in the San Francisco Bay area, and 5 respondents with a main residence in Other areas. Other areas being areas of California and out of state.

Table 7.3-1. Location of Main Residence.

| | |
|---|----|
| Number of Respondents with a Main Residence in the Sacramento Area | 8 |
| Number of Respondents with a Main Residence in the San Francisco Bay Area | 29 |
| Number of Respondents with a Main Residence in Other Areas | 5 |
| Total Number of Respondents | 42 |

Decision Factor Influence to Purchase or Build a Second-Home

Winter recreation/proximity to ski areas is the decision factor that has the highest level of influence on the decision to build or purchase a second-home in the Truckee area.

Decision factor influence to purchase or build a second-home by respondents is presented in Table 7.3-2. Decision factors include business/job/retirement, financial/investment/tax purposes, family/community/rural lifestyle, natural setting/environment/climate, winter recreation/proximity to ski areas, water-related summer recreation/proximity to lakes and reservoirs, and other summer recreation/proximity to golf courses and hiking trails. An average level of influence, as a percentage, is given for each decision factor.

The average level of influence is 7% for business/job/retirement, 11% for financial/investment/tax purposes, 7% for family/community/rural lifestyle, 21% for natural setting/environment/climate, 28% for winter recreation/proximity to ski areas, 13% for water-related summer recreation/proximity to lakes and reservoirs, and 13% for other summer recreation/proximity to golf courses and hiking trails. Together the decision factor influence equals 100%.

Table 7.3-2. Decision Factor Influence to Purchase or Build a Second-Home.

| | |
|--|---------------------|
| <i>Average Level of Influence for Business / Job / Retirement by Respondents</i> | 7.14% |
| <i>Average Level of Influence for Financial / Investment / Tax Purposes by Respondents</i> | 10.32% |
| <i>Average Level of Influence for Family / Community / Rural Lifestyle by Respondents</i> | 6.55% |
| <i>Average Level of Influence for Natural Setting / Environment / Climate by Respondents</i> | 21.23% |
| <i>Average Level of Influence for Winter Recreation / Proximity to Ski Areas by Respondents</i> | 27.69% ^X |
| <i>Average Level of Influence for Water-Related Summer Recreation / Proximity to Lakes and Reservoirs by Respondents</i> | 13.49% |
| <i>Average Level of Influence for Other Summer Recreation / Proximity to Golf Courses and Hiking Trails by Respondents</i> | 13.99% |
| Total | 100.00% |

Second-Home Ownership

The highest number of respondents are respondents that do not share ownership of second-home.

Table 7.3-3 provides the number of respondents that share ownership of second-home with others and the number of respondents that do not share ownership of second-home. Of 40 respondents, only one respondent did indicate that they share ownership of second-home with others.

Table 7.3-3. Second-Home Ownership.

| | |
|---|-----------|
| Number of Respondents that Share Ownership of Second-Home with Others | 1 |
| Number of Respondents that do not Share Ownership of Second-Home | 39 |
| Total Number of Respondents | 40 |

Group Make-Up

Average group size of respondents is 4.41 persons. Average number of adults per group is 2.69 persons and average number of children per group is 1.72 persons.

Table 7.3-4 provides group make-up of respondents.

Table 7.3-4. Group Make-Up.

| | |
|--|------|
| Average Group Size per Visit of Respondents | 4.41 |
| Average Number of Adults in Group of Respondents | 2.69 |
| Average Number of Children in Group of Respondents | 1.72 |

Annual Second-Home Visitation

Second-home visitation by respondents occurs in all months of the year. The greatest visitation, in terms of both the number of visits by respondents and the number of days per visit by respondents, is in the winter months of December, January, and February. This is followed by visitation in the summer months of June, July, and August.

The average number of visits per month by respondents are presented in Table 7.3-5. Average number of visits by respondents is 1.84 in January, 1.74 in February, 1.66 in March, 1.47 in April, 1.53 in May, 1.67 in June, 1.70 in July, 1.75 in August, 1.62 in September, 1.28 in October, 1.50 in November, and 1.75 in December. The annual or total average number of visits by respondents is 19.51.

The average number of days per visit per month by respondents are also presented in Table 7.3-5. Average number of days per visit by respondents is 3.24 in January, 3.55 in February, 3.14 in March, 3.16 in April, 3.29 in May, 3.10 in June, 3.61 in July, 4.62 in August, 3.40 in September, 2.89 in October, 3.68 in November, and 5.24 in December.

Table 7.3-5. Annual Second-Home Visitation.

| | |
|---|--------------|
| <i>Average Number of Visits by Respondents during January</i> | 1.84 |
| <i>Average Number of Visits by Respondents during February</i> | 1.74 |
| <i>Average Number of Visits by Respondents during March</i> | 1.66 |
| <i>Average Number of Visits by Respondents during April</i> | 1.47 |
| <i>Average Number of Visits by Respondents during May</i> | 1.53 |
| <i>Average Number of Visits by Respondents during June</i> | 1.67 |
| <i>Average Number of Visits by Respondents during July</i> | 1.70 |
| <i>Average Number of Visits by Respondents during August</i> | 1.75 |
| <i>Average Number of Visits by Respondents during September</i> | 1.62 |
| <i>Average Number of Visits by Respondents during October</i> | 1.28 |
| <i>Average Number of Visits by Respondents during November</i> | 1.50 |
| <i>Average Number of Visits by Respondents during December</i> | 1.75 |
| Total Average Number of Visits by Respondents | 19.51 |
| <i>Average Number of Days per Visit by Respondents during January</i> | 3.24 |
| <i>Average Number of Days per Visit by Respondents during February</i> | 3.55 |
| <i>Average Number of Days per Visit by Respondents during March</i> | 3.14 |
| <i>Average Number of Days per Visit by Respondents during April</i> | 3.16 |
| <i>Average Number of Days per Visit by Respondents during May</i> | 3.29 |
| <i>Average Number of Days per Visit by Respondents during June</i> | 3.10 |
| <i>Average Number of Days per Visit by Respondents during July</i> | 3.61 |
| <i>Average Number of Days per Visit by Respondents during August</i> | 4.63 |
| <i>Average Number of Days per Visit by Respondents during September</i> | 3.40 |
| <i>Average Number of Days per Visit by Respondents during October</i> | 2.89 |
| <i>Average Number of Days per Visit by Respondents during November</i> | 3.68 |
| <i>Average Number of Days per Visit by Respondents during December</i> | 3.24 |

Site Visitation

The overall greatest site visitation of respondents occurs at Donner Lake.

The site visitation of respondents is presented in Table 7.3-6. Study area sites include Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir.

Of the 38 respondents, 63% indicate they visit Lake Tahoe an average of 5 visits during the year, 89% indicate they visit Donner Lake an average of 10 visits during the year, 21% indicate they visit Prosser Reservoir an average of 3 visits during the year, 13% indicate they visit Stampede Reservoir an average of 3 visits during the year, and 16% indicate they visit Boca Reservoir an average of 6 visits during the year.

None of the respondents indicate they visit Pyramid Lake. Pyramid Lake was also listed as a study area site in the question.

Table 7.3-6. Site Visitation.

| | Study Area | Lake Tahoe | Downs Lake | Promer Reservoir | Steepside Reservoir | Boon Reservoir |
|--|-------------------|-------------------|-------------------|-------------------------|----------------------------|-----------------------|
| Number of Respondents | 38 | 24 | 34 | 8 | 5 | 6 |
| Percentage of Respondents | | 63.16% | 89.47% | 21.05% | 13.16% | 15.79% |
| Number of Visits by Respondents | | 128.90 | 352.50 | 36.00 | 15.00 | 34.00 |
| Average Number of Visits by Respondents | | 5.37 | 10.37 | 4.50 | 3.00 | 5.67 |

Annual Site Visitation

The annual site visitation of respondents follow a similar pattern. This pattern shows that during the year, visitation to a site will begin in April and steadily increase throughout May, June, July, and August and then decrease sharply during September and October to end at a very low visitation during the Other months.

The annual site visitation of respondents is shown in Table 7.3-7. Again, study area sites include Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir.

The pattern of annual visitation for a site is based on the number of respondents that indicate they visit the study area and visit the site in a given month. To clarify this, for Donner Lake, 9 out of 17 respondents indicate they visit in April, 13 out of 29 respondents indicate they visit in May, 20 out of 41 respondents indicate they visit in June, 28 out of 55 respondents indicate they visit in July, 29 out of 63 respondents indicate they visit in August, 19 out of 37 respondents indicate they visit in September, 6 out of 14 respondents indicate they visit in October, and 6 out of 14 respondents indicate they visit in Other months.

These numbers are then divided by their summation and presented as a percentage of visitation during the given month. Of the total annual visitation at Donner Lake, 7% is during April, 10% is during May, 15% is during June, 21% is during July, 22% is during August, 15% is during September, 5% is during October, and 5% is during Other months.

The percentages taken together for all the months show the pattern of annual site visitation.

A similar interpretation can be made for the other sites.

Table 7.3-7. Annual Site Visitation.

| Study Area | Lake Tahoe | Donner Lake | Prosser Reservoir | Stampede Reservoir | Beck Reservoir | |
|---|------------|-------------|-------------------|--------------------|----------------|-----------|
| Number of Respondents that Visit during April | 17 | 5 | 9 | 1 | 0 | 2 |
| Number of Respondents that Visit during May | 29 | 10 | 13 | 2 | 1 | 3 |
| Number of Respondents that Visit during June | 41 | 13 | 20 | 2 | 3 | 3 |
| Number of Respondents that Visit during July | 55 | 16 | 28 | 5 | 2 | 4 |
| Number of Respondents that Visit during August | 63 | 21 | 29 | 5 | 4 | 4 |
| Number of Respondents that Visit during September | 37 | 13 | 19 | 2 | 0 | 3 |
| Number of Respondents that Visit during October | 14 | 7 | 6 | 0 | 0 | 1 |
| Number of Respondents that Visit during Other | 14 | 8 | 6 | 0 | 0 | 0 |
| Total Number of Respondents | | 93 | 130 | 17 | 10 | 30 |
| Percentage of Visitation during April | | 5.38% | 6.92% | 5.88% | 0.00% | 10.00% |
| Percentage of Visitation during May | | 10.75% | 10.00% | 11.76% | 10.00% | 13.00% |
| Percentage of Visitation during June | | 13.98% | 15.38% | 11.76% | 30.00% | 15.00% |
| Percentage of Visitation during July | | 17.30% | 21.54% | 29.41% | 20.00% | 20.00% |
| Percentage of Visitation during August | | 22.58% | 22.31% | 29.41% | 40.00% | 30.00% |
| Percentage of Visitation during September | | 13.98% | 14.62% | 11.76% | 0.00% | 15.00% |
| Percentage of Visitation during October | | 7.53% | 4.62% | 0.00% | 0.00% | 5.00% |
| Percentage of Visitation during Other | | 8.60% | 4.62% | 0.00% | 0.00% | 0.00% |

Summer Season Donner Lake Visitation

The number of respondents that visit Donner Lake during the summer season months of June, July, and August is 32. This number of respondents is out of 37 respondents that visit their second-home during the summer season months. Average number of days per visit at Donner Lake by these 32 respondents during the summer season months is 2.42 days.

Table 7.3-8 presents the summer season Donner Lake visitation.

Table 7.3-8. Summer Season Donner Lake Visitation.

Number of Respondents
Average Number of Days per Visit by Respondents

32
1.42

Summer Season Donner Lake Activities

Respondents that visit Donner Lake during the summer season participate in picnicking, hiking, swimming, fishing and biking activities.

Summer season Donner Lake activities of respondents are shown in Table 7.3-9. The activities include fishing from shore, fishing from a boat, water skiing, boating, jet skiing, swimming, picnicking, hiking, biking and other activities.

Of 36 respondents, 43% indicate fishing from shore, 23% indicate fishing from a boat, 17% indicate water skiing, 33% indicate boating, 7% indicate jet skiing, 57% indicate swimming, 70% indicate picnicking, 70% indicate hiking, and 43% indicate biking.

Table 7.3-9. Summer Season Donner Lake Activities.

| | |
|---|--------|
| Number of Respondents Fishing | 13 |
| Number of Respondents Fishing from Boat | 7 |
| Number of Respondents Water Skiing | 5 |
| Number of Respondents Boating | 10 |
| Number of Respondents Jet Skiing | 2 |
| Number of Respondents Swimming | 17 |
| Number of Respondents Picnicking | 21 |
| Number of Respondents Hiking | 21 |
| Number of Respondents Biking | 13 |
| Number of Respondents Other | 0 |
| Percentage of Respondents Fishing | 43.33% |
| Percentage of Respondents Fishing from Boat | 23.33% |
| Percentage of Respondents Water Skiing | 16.67% |
| Percentage of Respondents Boating | 33.33% |
| Percentage of Respondents Jet Skiing | 6.67% |
| Percentage of Respondents Swimming | 56.67% |
| Percentage of Respondents Picnicking | 70.00% |
| Percentage of Respondents Hiking | 70.00% |
| Percentage of Respondents Biking | 43.33% |
| Percentage of Respondents Other | 0.00% |

Summer Season Donner Lake Activity Hours

Respondents that visit Donner Lake during the summer season spend an average of 6.62 hours per day on activities.

Summer season Donner Lake activity hours per day of respondents are provided in Table 7.3-10. Again the activities include fishing from shore, fishing from a boat, water skiing, boating, jet skiing, swimming, picnicking, hiking, biking and other activities.

Respondents indicate they spend an average of 0.74 hours per day fishing from shore, 0.52 hours per day fishing from a boat, 0.32 hours per day water skiing, 0.74 hours per day boating, 0.23 hours per day jet skiing, 1.00 hour per day swimming, 1.23 hours per day picnicking, 1.16 hours per day hiking, 0.68 hours per day biking, and 0.00 hours per day on other activities.

Table 7.3-10. Summer Season Donner Lake Activity Hours.

| | |
|--|-------------|
| <i>Average Activity Hours per Day spent Fishing by Respondents</i> | <i>0.74</i> |
| <i>Average Activity Hours per Day spent Fishing from Boat by Respondents</i> | <i>0.52</i> |
| <i>Average Activity Hours per Day spent Water Skiing by Respondents</i> | <i>0.22</i> |
| <i>Average Activity Hours per Day spent Boating by Respondents</i> | <i>0.74</i> |
| <i>Average Activity Hours per Day spent Jet Skiing by Respondents</i> | <i>0.23</i> |
| <i>Average Activity Hours per Day spent Swimming by Respondents</i> | <i>1.00</i> |
| <i>Average Activity Hours per Day spent Picnicking by Respondents</i> | <i>1.23</i> |
| <i>Average Activity Hours per Day spent Hiking by Respondents</i> | <i>1.16</i> |
| <i>Average Activity Hours per Day spent Biking by Respondents</i> | <i>0.64</i> |
| <i>Average Activity Hours per Day spent on Other activities by Respondents</i> | <i>0.08</i> |
| Total Activity Hours per Day by Respondents | 6.62 |

Ranking of Summer Season Donner Lake Characteristics

Respondents that visit Donner Lake during the summer season rank site characteristics as very good to satisfactory.

Ranking of summer season Donner Lake Characteristics by respondents is shown in Table 7.3-11. Site characteristics include natural setting and environment, recreation opportunities, lake-level, boat ramp and dock access, crowd level, and facilities. The ranking of each can range from 1 being very good to 5 being very poor.

Respondents rank natural setting and environment as very good, recreation opportunities as good, lake-level as satisfactory, boat ramp and dock access as good, crowd level as satisfactory, and facilities as good.

Table 7.3-11. Ranking of Summer Season Donner Lake Characteristics.

| | |
|--|------|
| <i>Average Value of Natural Setting and Environment by Respondents</i> | 1.24 |
| <i>Average Value of Recreation Opportunities by Respondents</i> | 1.78 |
| <i>Average Value of Lake-Level by Respondents</i> | 2.57 |
| <i>Average Value of Boat Ramp and Dock Access by Respondents</i> | 2.37 |
| <i>Average Value of Crowd Level by Respondents</i> | 2.51 |
| <i>Average Value of Facilities by Respondents</i> | 2.34 |

Ranking: 1=Very Good, 2=Good, 3=Satisfactory, 4=Poor, and, 5=Very Poor.

Summer Season Donner Lake Alternative Lake Level Sensitivity

The number of respondents that indicate a change in the number of second-home visits at alternative lake-levels for Donner Lake during the summer season is 7. The number of respondents that indicate no change in the number of second-home visits at alternative lake levels for Donner Lake during the summer season is 30.

Table 7.3-12 provides the summer season Donner Lake alternative lake-level sensitivity.

Table 7.3-12. Summer Season Donner Lake Alternative Lake-Level Sensitivity.

| | |
|---|----|
| Number of Respondents that indicated a Change in the Number of Second-Home Visits at Alternative Lake Levels | 7 |
| Number of Respondents that indicated No Change in the Number of Second-Home Visits at Alternative Lake Levels | 30 |
| Total Number of Respondents | 37 |

Summer Season Visitation Expenditures

Visitation expenditures by respondents during the summer season are highest on restaurant and groceries.

Summer season visitation expenditures by respondents are presented in Table 7.3-13. Average expenditure per visit, average expenditure per visit per day, and average expenditure per visit per day per person are given for restaurant, groceries, gasoline, other shopping, recreation rental, golf fees, other user fees, gaming, and other.

Respondents indicate an average total expenditure per visit of \$343.26, an average total expenditure per visit per day of \$92.73, and an average total expenditure per visit per day per person of \$26.09.

Table 7.3-13. Summer Season Visitation Expenditures.

| | |
|--|-----------------|
| Average Expenditure per Visit on Restaurant by Respondents | 94.38 |
| Average Expenditure per Visit on Groceries by Respondents | 88.89 |
| Average Expenditure per Visit on Gasoline by Respondents | 28.75 |
| Average Expenditure per Visit on Other Shopping by Respondents | 12.32 |
| Average Expenditure per Visit on Recreation Rental by Respondents | 30.89 |
| Average Expenditure per Visit on Golf Fees by Respondents | 33.3 |
| Average Expenditure per Visit on Other User Fees by Respondents | 2.59 |
| Average Expenditure per Visit on Gaming by Respondents | 28.57 |
| Average Expenditure per Visit on Other by Respondents | 3.57 |
| Average Total Expenditure per Visit by Respondents | \$343.26 |
| Average Expenditure per Visit per Day on Restaurant by Respondents | 26.95 |
| Average Expenditure per Visit per Day on Groceries by Respondents | 23.25 |
| Average Expenditure per Visit per Day on Gasoline by Respondents | 7.81 |
| Average Expenditure per Visit per Day on Other Shopping by Respondents | 9.38 |
| Average Expenditure per Visit per Day on Recreation Rental by Respondents | 9.67 |
| Average Expenditure per Visit per Day on Golf Fees by Respondents | 8.62 |
| Average Expenditure per Visit per Day on Other User Fees by Respondents | 0.76 |
| Average Expenditure per Visit per Day on Gaming by Respondents | 6.66 |
| Average Expenditure per Visit per Day on Other by Respondents | 0.89 |
| Average Total Expenditure per Visit per Day by Respondents | \$92.73 |
| Average Expenditure per Visit per Day per Person on Restaurant by Respondents | 7.91 |
| Average Expenditure per Visit per Day per Person on Groceries by Respondents | 6.73 |
| Average Expenditure per Visit per Day per Person on Gasoline by Respondents | 2.33 |
| Average Expenditure per Visit per Day per Person on Other Shopping by Respondents | 2.61 |
| Average Expenditure per Visit per Day per Person on Recreation Rental by Respondents | 2.29 |
| Average Expenditure per Visit per Day per Person on Golf Fees by Respondents | 2.20 |
| Average Expenditure per Visit per Day per Person on Other User Fees by Respondents | 0.15 |
| Average Expenditure per Visit per Day per Person on Gaming by Respondents | 1.74 |
| Average Expenditure per Visit per Day per Person on Other by Respondents | 0.09 |
| Average Total Expenditure per Visit per Day per Person by Respondents | \$26.09 |

Annual Second-Home Upkeep and Repair Expenditures

The average annual total expenditure by respondents on second-home upkeep and repair is \$1,201.67.

Annual second-home upkeep and repair expenditures by respondents are provided in Table 7.3-14. Expenditures are average annual expenditures on painting, sealing, staining, landscape maintenance, house cleaning, driveway crack sealing, and other.

Respondents indicate an average annual expenditure on painting, sealing, and staining of \$507.50, on landscape maintenance of \$158.33, on house cleaning of \$271.00, on driveway crack sealing of \$110.67, and on other upkeep of \$154.17. Again, the average annual total expenditure is \$1,201.67.

Table 7.3-14. Annual Second-Home Upkeep and Repair Expenditures.

| | |
|---|-------------------|
| <i>Average Annual Expenditure on Painting, Sealing, and Staining by Respondents</i> | 507.50 |
| <i>Average Annual Expenditure on Landscape Maintenance by Respondents</i> | 158.33 |
| <i>Average Annual Expenditure on House Cleaning by Respondents</i> | 271.00 |
| <i>Average Annual Expenditure on Driveway Crack Sealing by Respondents</i> | 110.67 |
| <i>Average Annual Expenditure on Other by Respondents</i> | 134.17 |
| Average Annual Total Expenditure by Respondents | \$1,281.67 |

Comments

Excerpts taken from a few comments made by respondents on owning a second-home in the Truckee area are listed below.

1. "A good vacation area near the Bay Area, Family oriented climate in Tahoe-Donner"
2. "Recreation surroundings are very nice - water level is a concern and it is too bad that so much is taken from it each year for the valley..."
3. "We like the Tahoe Donner and Truckee area very much. Our main concern is over development...We are concerned that Tahoe Donner will get too crowded. ...Re: The Tahoe Donner Marina - the swimming area needs to be improved to make wading into the water easier for children...sand needs to be added in the shallow area so children are not walking on rocks... pool areas too crowded."
4. "...Tahoe Donner is a beautiful setting for a second home - the area is perfect year round...We like the small community lifestyle...We'd like to see the Tahoe Donner Area remain beautiful, scenic and that growth be controlled."
5. "Great place to get away. Love the natural mountain environment and the town of Truckee."
6. "We love our home. However...Tahoe Donner ski area would be more appealing if it were expanded...Another golf course perhaps not so difficult would be a big plus...We would like to see an expanded Trout Creek facility..."
7. "I don't use Donner Lake because of the crowds and noise...My decision to purchase a second home is based mainly on access to streams and rivers in the summer, winter sports in the winter...The total lack of water conservation in Reno/Sparks and the over use of water in Carson Valley (and related areas) on agri-business is my #1 concern for the area."
8. "I would like to see growth slowed in the region to minimize the impact on the environment...If it gets too crowded in future years I will have to sell and relocate."

9. "The Truckee area is as beautiful of an area as any I have seen...a rare mix...amenities available and still having a feeling of being by an unspoiled mountain lake...it is of utmost importance to preserve this balance from an economic viewpoint as well as an ecological one. I answered "NO" to your question #8 but I do feel that the lake is much more enjoyable both aesthetically as well as from a useful point of view, when lake levels are kept as high as possible. Please do whatever is possible to keep these levels high. Thank you"

10. "Would prefer No more development either commercial or residential as too many people destroy the environment's beauty that is inherent in this setting"

7.4. Survey of the Vacation-Home Renters

A survey of vacation-home renters for the Truckee area was done during February 1995. The purpose of the survey was to first obtain an overall picture of the summer season visitation and recreation activities of vacation-home renters, second, quantify the amount of expenditures that vacation-home renters make to the local economy, and third, identify how vacation-home visitation would change during the summer season in relation to alternative lake-levels at Donner Lake. To achieve this purpose, information was collected from vacation-home renters using a questionnaire. Questionnaires were mailed-out to vacation-home renters and when returned the data was compiled and analyzed to develop a set of descriptive statistics. The cover letter to the questionnaire, the questionnaire, a response summary, descriptive statistics of the data, and comments are presented below.

Cover Letter

February 15, 1995

Dear Vacation-Home Renter:

The Town of Truckee requests your participation in a survey. This survey is being conducted by the University of Nevada, Reno. Information collected will be used in assessing the economic and recreation issues associated with lakes and reservoirs in the Truckee area. This information will help local, state, and federal officials make informed decisions on how best to manage the lakes, reservoirs, and rivers in the Truckee River Basin.

The enclosed questionnaire takes less than 15 minutes to complete. A limited number of vacation-home renters are receiving this questionnaire, so your response means a lot. Please complete the questionnaire as best you can and then mail the questionnaire in the stamped pre-addressed envelope.

The tabulated results of this survey will be made available for your review at the Truckee Town Hall. The Town of Truckee appreciates your participation in this survey and thanks you for your time.

**PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE BEFORE
MARCH 1ST.**

Sincerely,

Embree B. (Breeze) Cross
Mayor

Questionnaire

The questionnaire is made-up of eight questions and a comment page. Through the questionnaire, vacation-home renters were asked to provide information on the location of main residence, influence of decision factors to rent a vacation-home, group make-up, vacation-home visitation in terms of both the number of visits per month and number of days per visit, site visitation at area lakes and reservoirs, summer season visitation and recreation activities at Donner Lake, summer season characteristics of Donner Lake, sensitivity to alternative lake-levels at Donner Lake, expenditures per visit, and vacation-home rent. Also through the questionnaire, vacation-home renters were asked to mention any comments about renting a vacation-home in the Truckee area. Each of the eight questions and the comment page are presented below.

1. Where is your main residence?

City _____
State _____
Zip Code _____

2. How did the following factors influence your decision to rent a vacation-home in the Truckee area? Please indicate, as a percentage, the level of influence each factor had on your decision. Be sure that the total is equal to 100%.

| Decision Factors | Level of Influence % |
|---|-------------------------------|
| Family / Community / Rural Lifestyle | |
| Natural Setting / Environment / Climate | |
| Winter Recreation / Proximity to Ski Areas | |
| Water-Related Summer Recreation / Proximity to Lakes and Reservoirs | |
| Other Summer Recreation / Proximity to Golf Courses and Hiking Trails | |
| Total | 100% |

3. How many adults and children are included in a typical visit to the Truckee area?

Typical Number of Adults per Visit _____
Typical Number of Children per Visit _____

4. How many times do you visit the Truckee area and how many days do you spend per visit during each of the following months?

| Months | Typical Number of Visits per Month | Typical Number of Days per Visit |
|-----------|---|---|
| January | | |
| February | | |
| March | | |
| April | | |
| May | | |
| June | | |
| July | | |
| August | | |
| September | | |
| October | | |
| November | | |
| December | | |

5. How many times do you visit Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, and Pyramid Lake for recreation during each of the following months?

| Months | Typical Number of Visits per Month | | | | | |
|------------------------|------------------------------------|----------------|----------------------|-----------------------|-------------------|-----------------|
| | Lake Tahoe | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir | Pyramid Lake |
| April | | | | | | |
| May | | | | | | |
| June | | | | | | |
| July | | | | | | |
| August | | | | | | |
| September | | | | | | |
| October | | | | | | |
| November through March | | | | | | |

6. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season: (please answer questions a, b, and c)

a. How many days per visit to the Truckee area do you spend on recreation at Donner Lake?

Typical Number of Days per Visit _____

b. How many hours per day do you spend on the following recreation activities at Donner Lake? Please indicate by marking the appropriate box, the number of hours per day for each recreation activity. Extra space is provided for other activities.

Recreation Activities

Typical Number of Hours per Day

| | | | | | | | | | | | | | |
|--------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|
| Fishing from Shore | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Fishing from Boat | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Water Skiing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Pleasure Boating | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Jet Skiing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Swimming | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Picnicing | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Hiking | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Biking | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

c. How do you rate the following characteristics of Donner Lake? Please rate the characteristics as very good, good, satisfactory, poor, or very poor.

| Characteristics | Very Good | Good | Satisfactory | Poor | Very Poor |
|---------------------------------|-----------|------|--------------|------|-----------|
| Natural Setting and Environment | | | | | |
| Recreation Opportunities | | | | | |
| Lake-Level | | | | | |
| Boat Ramp and Dock Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |

7. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season, the lake-level at Donner Lake is regulated between the following five lake-levels: (please answer questions a, b, and c)

| Lake-Level | Lake-Levels | | Boat Ramp and Boat Dock Status | | | |
|------------|-------------------------------|------------------------------------|--------------------------------|-------------------------------|---|--------------------------|
| | Lake Elevation <i>feet</i> | Lake Elevation Drop <i>feet</i> | Public Boat Ramp Status | Tahoe Donner Boat Ramp Status | Donner Lake Property Owner Boat Ramp Status | Public Boat Docks Status |
| 1 | 5,936 maximum | 0 | usable | usable | usable | usable / safe |
| 2 | 5,935 | 1 | usable | usable | usable | usable / safe |
| 3 | 5,934 | 2 | usable | marginal | marginal | marginal |
| 4 | 5,933 | 3 | usable | unusable | unusable | unusable / unsafe |
| 5 | 5,932 | 4 | usable | unusable | unusable | unusable / unsafe |

- a. Would the number of visits you make during each month to the Truckee area change at any of the above lake-levels?

No _____ (if No, please go to question 8)

Yes _____

- b. If Yes, please indicate below, how you would change your number of visits per month to the Truckee area? At each lake-level, circle whether you would have no change, an increase, or a decrease in the number of visits per month. Also indicate the corresponding increase or decrease in the number of visits per month.

| Lake-Level | Change in Number of Visits per Month | | | Increase / Decrease |
|------------|--------------------------------------|----------|----------|---------------------|
| | No Change | Increase | Decrease | |
| 1 | No Change | Increase | Decrease | |
| 2 | No Change | Increase | Decrease | |
| 3 | No Change | Increase | Decrease | |
| 4 | No Change | Increase | Decrease | |
| 5 | No Change | Increase | Decrease | |

- c. If Yes, how would you then rate the following characteristics of Donner Lake at the lake-level where you first indicated that you would change the number of visits to the Truckee area? Please rate the following characteristics as very good, good, satisfactory, poor, or very poor.

| Characteristics | Very Good | Good | Satisfactory | Poor | Very Poor |
|---------------------------------|-----------|------|--------------|------|-----------|
| Natural Setting and Environment | | | | | |
| Recreation Opportunities | | | | | |
| Lake-Level | | | | | |
| Boat Ramp and Dock Access | | | | | |
| Crowd Level | | | | | |
| Facilities | | | | | |

8. The summer recreation season is comprised of the months of June, July, and August including Memorial Day and Labor Day weekends. During this season: (please answer question a)

- a. How much do you spend on the following items per visit to the Truckee area? Please indicate your expenditure on each item and the portion that you spend in the Truckee-Donner Lake area, Reno-Sparks area, Lake Tahoe area, and Other area. Extra space is provided for other items.

| Items | Typical Expenditure per Visit | Truckee-Donner Lake Area Portion | Reno-Sparks Area Portion | Lake Tahoe Area Portion | Other Area Portion |
|--|-------------------------------|----------------------------------|--------------------------|-------------------------|--------------------|
| | \$ | % | % | % | % |
| Restaurant | | | | | |
| Groceries and Supplies | | | | | |
| Gasoline | | | | | |
| Other Shopping | | | | | |
| Recreation Rental (boats, bikes, horses, etc.) | | | | | |
| Golf Fees | | | | | |
| Other User Fees | | | | | |
| Gaming | | | | | |
| | | | | | |
| | | | | | |
| Total | | | | | |

- b. How much do you spend per visit to rent a vacation-home in the Truckee area?

Typical Vacation-Home Rent Expenditure per Visit \$ _____

Response Summary

Questionnaire response, question response, and comment response is given below. There were 100 questionnaires mailed-out and 21 returned for a 21% response. Question response, meaning the number of respondents that answered each question, varied from 21 respondents that answered question 1 to 8 respondents that answered question 8a. This indicates that of the 21 questionnaires returned only 8 respondents completed the questionnaire. The comment response, meaning the number of respondents that made comments, was 15.

| | |
|---|-----|
| Questionnaires Mailed-Out | 100 |
| Questionnaires Returned | 21 |
| Number of Respondents that Answered Question 1 | 21 |
| Number of Respondents that Answered Question 2 | 21 |
| Number of Respondents that Answered Question 3 | 20 |
| Number of Respondents that Answered Question 4 | 20 |
| Number of Respondents that Answered Question 5 | 20 |
| Number of Respondents that Answered Question 6a | 20 |
| Number of Respondents that Answered Question 6b | 8 |
| Number of Respondents that Answered Question 6c | 8 |
| Number of Respondents that Answered Question 7a | 19 |
| Number of Respondents that Answered Question 7b | 0 |
| Number of Respondents that Answered Question 7c | 0 |
| Number of Respondents that Answered Question 8a | 8 |
| Number of Respondents that Answered Question 8b | 8 |
| Number of Respondents that Made Comments | 15 |

Descriptive Statistics

The descriptive statistics of the data are presented below with an explanation of their interpretation. The descriptive statistics include the location of main residence, decision factor influence to rent a vacation home, group make-up, annual vacation-home visitation, site visitation, annual site visitation, summer season Donner Lake visitation, summer season Donner Lake activities, summer season Donner Lake activity hours, ranking of summer season Donner Lake characteristics, summer season Donner Lake alternative lake-level sensitivity, summer season visitation expenditures, and rent expenditures.

Location of Main Residence

The highest number of respondents are respondents with a main residence in the San Francisco Bay area.

Table 7.4-1 provides the number of respondents with a main residence in the Sacramento area, the San Francisco Bay area, and Other areas. There are 4 respondents with a main residence in the Sacramento area, 14 respondents with a main residence in the San Francisco Bay area, and 3 respondents with a main residence in Other areas. Other areas being areas of California and out of state.

Table 7.4-1. Location of Main Residence.

| | |
|---|-----------|
| Number of Respondents with a Main Residence in the Sacramento Area | 4 |
| Number of Respondents with a Main Residence in the San Francisco Bay Area | 14 |
| Number of Respondents with a Main Residence in Other Areas | 3 |
| Total Number of Respondents | 21 |

Decision Factor Influence to Rent a Vacation-Home

Winter recreation/proximity to ski areas is the decision factor that has the highest level of influence on the decision to rent a vacation-home in the Truckee area.

Decision factor influence to rent a vacation-home by respondents is presented in Table 7.4-2. Decision factors include family/community/rural lifestyle, natural setting/environment/climate, winter recreation/proximity to ski areas, water-related summer recreation/proximity to lakes and reservoirs, and other summer recreation/proximity to golf courses and hiking trails. An average level of influence, as a percentage, is given for each decision factor.

The average level of influence is 12% for family/community/rural lifestyle, 25% for natural setting/environment/climate, 52% for winter recreation/proximity to ski areas, 7% for water-related summer recreation/proximity to lakes and reservoirs, and 4% for other summer recreation/proximity to golf courses and hiking trails. Together the decision factor influence equals 100%.

Table 7.4-2. Decision Factor Influence to Rent a Vacation-Home.

| | |
|--|---------|
| <i>Average Level of Influence for Family / Community / Rural Lifestyle by Respondents</i> | 12.30% |
| <i>Average Level of Influence for Natural Setting / Environments / Climate by Respondents</i> | 25.30% |
| <i>Average Level of Influence for Winter Recreation / Proximity to Ski Areas by Respondents</i> | 51.90% |
| <i>Average Level of Influence for Water-Related Summer Recreation / Proximity to Lakes and Reservoirs by Respondents</i> | 6.39% |
| <i>Average Level of Influence for Other Summer Recreation / Proximity to Golf Courses and Hiking Trails by Respondents</i> | 4.19% |
| Total | 100.00% |

Group Make-Up

Average group size of respondents is 6.15 persons. Average number of adults per group is 4.85 persons and average number of children per group is 1.30 persons.

Table 7.4-3 provides group make-up of respondents.

Table 7.4-3. Group Make-Up.

| | |
|---|------|
| <i>Average Group Size per Visit of Respondents</i> | 6.15 |
| <i>Average Number of Adults in Group of Respondents</i> | 4.85 |
| <i>Average Number of Children in Group of Respondents</i> | 1.30 |

Annual Vacation-Home Visitation

Vacation-home visitation by respondents occurs in all months of the year. The greatest number of visits by respondents is in the months of December, January, February, March, and April. This is followed by visits in the months of July and August. The greatest number of days per visit by respondents, however, is in the months of July and August. This is followed by days per visit in the months of December, January, February, March, and April.

The average number of visits per month by respondents are presented in Table 7.4-4. Average number of visits by respondents is 1.05 in January, 1.20 in February, 0.73 in March, 0.43 in April, 0.05 in May, 0.10 in June, 0.30 in July, 0.30 in August, 0.00 in September, 0.05 in October, 0.05 in November, and 0.65 in December. The annual or total average number of visits by respondents is 4.91.

The average number of days per visit per month by respondents are also presented in Table 7.4-4. Average number of days per visit by respondents is 2.57 in January, 2.63 in February, 2.97 in March, 2.41 in April, 3.00 in May, 2.25 in June, 4.42 in July, 4.08 in August, 0.00 in September, 1.00 in October, 2.00 in November, and 2.35 in December.

Table 7.4-4. Annual Vacation-Home Visitation.

| | |
|---|-------------|
| <i>Average Number of Visits by Respondents during January</i> | 1.03 |
| <i>Average Number of Visits by Respondents during February</i> | 1.20 |
| <i>Average Number of Visits by Respondents during March</i> | 0.73 |
| <i>Average Number of Visits by Respondents during April</i> | 0.43 |
| <i>Average Number of Visits by Respondents during May</i> | 0.05 |
| <i>Average Number of Visits by Respondents during June</i> | 0.10 |
| <i>Average Number of Visits by Respondents during July</i> | 0.30 |
| <i>Average Number of Visits by Respondents during August</i> | 0.30 |
| <i>Average Number of Visits by Respondents during September</i> | 0.00 |
| <i>Average Number of Visits by Respondents during October</i> | 0.05 |
| <i>Average Number of Visits by Respondents during November</i> | 0.05 |
| <i>Average Number of Visits by Respondents during December</i> | 0.65 |
| Total Average Number of Visits by Respondents | 4.91 |
| <i>Average Number of Days per Visit by Respondents during January</i> | 2.57 |
| <i>Average Number of Days per Visit by Respondents during February</i> | 2.63 |
| <i>Average Number of Days per Visit by Respondents during March</i> | 2.97 |
| <i>Average Number of Days per Visit by Respondents during April</i> | 2.44 |
| <i>Average Number of Days per Visit by Respondents during May</i> | 3.00 |
| <i>Average Number of Days per Visit by Respondents during June</i> | 2.25 |
| <i>Average Number of Days per Visit by Respondents during July</i> | 4.42 |
| <i>Average Number of Days per Visit by Respondents during August</i> | 4.08 |
| <i>Average Number of Days per Visit by Respondents during September</i> | 0.00 |
| <i>Average Number of Days per Visit by Respondents during October</i> | 1.80 |
| <i>Average Number of Days per Visit by Respondents during November</i> | 2.80 |
| <i>Average Number of Days per Visit by Respondents during December</i> | 2.35 |

Site Visitation

The overall greatest site visitation of respondents occurs at Donner Lake.

The site visitation of respondents is presented in Table 7.4-5. Study area sites include Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir.

Of the 20 respondents, 50% indicate they visit Lake Tahoe an average of 3 visits during the year, 45% indicate they visit Donner Lake an average of 3 visits during the year, 5% indicate they visit Prosser Reservoir an average of 1 visit during the year, 0% indicate they visit Stampede Reservoir an average of 0 visits during the year, and 10% indicate they visit Boca Reservoir an average of 3 visits during the year.

None of the respondents indicate they visit Pyramid Lake. Pyramid Lake was also listed as a study area site in the question.

Table 7.4-5. Site Visitation.

| Study Area | Lake Tahoe | Donner Lake | Promer Reservoir | Stampede Reservoir | Boca Reservoir |
|--|-------------------|--------------------|-------------------------|---------------------------|-----------------------|
| Number of Respondents | 10 | 9 | 1 | 0 | 2 |
| Percentage of Respondents | 50.00% | 45.00% | 5.00% | 0.00% | 10.00% |
| Number of Visits by Respondents | 26.00 | 27.50 | 1.00 | 0.00 | 6.00 |
| Average Number of Visits by Respondents | 2.60 | 3.06 | 1.00 | 0.00 | 3.00 |

Annual Site Visitation

The annual site visitation of respondents follow a similar pattern. This pattern shows that visitation at a site is the highest in June, July, and August.

The annual site visitation of respondents is shown in Table 7.4-6. Again, study area sites include Lake Tahoe, Donner Lake, Prosser Reservoir, Stampede Reservoir, and Boca Reservoir.

The pattern of annual visitation for a site is based on the number of respondents that indicate they visit the study area and visit the site in a given month. To clarify this, for Donner Lake, 2 out of 2 respondents indicate they visit in April, 1 out of 2 respondents indicate they visit in May, 1 out of 6 respondents indicate they visit in June, 4 out of 9 respondents indicate they visit in July, 4 out of 10 respondents indicate they visit in August, 0 out of 2 respondents indicate they visit in September, 0 out of 0 respondents indicate they visit in October, and 3 out of 6 respondents indicate they visit in Other months.

These numbers are then divided by their summation and presented as a percentage of visitation during the given month. Of the total annual visitation at Donner Lake, 13% is during April, 7% is during May, 7% is during June, 27% is during July, 27% is during August, 0% is during September, 0% is during October and 19% is during other months.

The percentages taken together for all the months then show the pattern of annual site visitation.

A similar interpretation can be made for the other sites.

Table 7.4-6. Annual Site Visitation.

| Study Area | Lake Tahoe | Doerner Lake | Prosser Reservoir | Steppede Reservoir | Boat Reservoir | |
|---|------------|--------------|-------------------|--------------------|----------------|--------|
| Number of Respondents that Visit during April | 2 | 0 | 2 | 0 | 0 | |
| Number of Respondents that Visit during May | 2 | 1 | 1 | 0 | 0 | |
| Number of Respondents that Visit during June | 6 | 4 | 1 | 1 | 0 | |
| Number of Respondents that Visit during July | 9 | 4 | 4 | 0 | 1 | |
| Number of Respondents that Visit during August | 10 | 4 | 4 | 0 | 2 | |
| Number of Respondents that Visit during September | 2 | 2 | 0 | 0 | 0 | |
| Number of Respondents that Visit during October | 0 | 0 | 0 | 0 | 0 | |
| Number of Respondents that Visit during Other | 6 | 3 | 3 | 0 | 0 | |
| Total Number of Respondents | | 18 | 15 | 1 | 3 | |
| Percentage of Visitation during April | | 0.00% | 13.33% | 0.00% | 0.00% | 0.00% |
| Percentage of Visitation during May | | 5.56% | 6.67% | 0.00% | 0.00% | 0.00% |
| Percentage of Visitation during June | | 22.22% | 6.67% | 100.00% | 0.00% | 0.00% |
| Percentage of Visitation during July | | 22.22% | 26.67% | 0.00% | 0.00% | 33.33% |
| Percentage of Visitation during August | | 22.22% | 26.67% | 0.00% | 0.00% | 66.67% |
| Percentage of Visitation during September | | 11.11% | 0.00% | 0.00% | 0.00% | 0.00% |
| Percentage of Visitation during October | | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Percentage of Visitation during Other | | 16.67% | 20.00% | 0.00% | 0.00% | 0.00% |

Summer Season Donner Lake Visitation

The number of respondents that visit Donner Lake during the summer season months of June, July, and August is 8. This number of respondents is out of 9 respondents that rent a vacation-home during the summer season months. Average number of days per visit at Donner Lake by these 8 respondents during the summer season months is 3.25 days.

Table 7.4-7 presents the summer season Donner Lake visitation.

Table 7.4-7. Summer Season Donner Lake Visitation.

Number of Respondents
Average Number of Days per Visit by Respondents

8
3.25

Summer Season Donner Lake Activities

Respondents that visit Donner Lake during the summer season participate in swimming, picnicking, hiking, boating, fishing, jet skiing, and biking activities.

Summer season Donner Lake activities of respondents are shown in Table 7.4-8. The activities include fishing from shore, fishing from a boat, water skiing, boating, jet skiing, swimming, picnicking, hiking, biking and other activities.

Of 8 respondents, 25% indicate fishing from shore, 13% indicate fishing from a boat, 0% indicate water skiing, 63% indicate boating, 0% indicate jet skiing, 63% indicate swimming, 75% indicate picnicking, 63% indicate hiking, and 13% indicate biking.

Table 7.4-8. Summer Season Donner Lake Activities.

| | |
|---|--------|
| Number of Respondents Fishing | 2 |
| Number of Respondents Fishing from Boat | 1 |
| Number of Respondents Water Skiing | 0 |
| Number of Respondents Boating | 3 |
| Number of Respondents Jet Skiing | 1 |
| Number of Respondents Swimming | 3 |
| Number of Respondents Picnicking | 6 |
| Number of Respondents Hiking | 5 |
| Number of Respondents Biking | 1 |
| Number of Respondents Other | 0 |
| Percentage of Respondents Fishing | 25.00% |
| Percentage of Respondents Fishing from Boat | 12.50% |
| Percentage of Respondents Water Skiing | 0.00% |
| Percentage of Respondents Boating | 62.50% |
| Percentage of Respondents Jet Skiing | 12.50% |
| Percentage of Respondents Swimming | 62.50% |
| Percentage of Respondents Picnicking | 75.00% |
| Percentage of Respondents Hiking | 62.50% |
| Percentage of Respondents Biking | 12.50% |
| Percentage of Respondents Other | 0.00% |

Summer Season Donner Lake Activity Hours

Respondents that visit Donner Lake during the summer season spend an average of 8.40 hours per day on activities.

Summer season Donner Lake activity hours per day of respondents are provided in Table 7.4-9. Again the activities include fishing from shore, fishing from a boat, water skiing, boating, jet skiing, swimming, picnicking, hiking, biking and other activities.

Respondents indicate they spend an average of 1.13 hours per day fishing from shore, 0.25 hours per day fishing from a boat, 0.00 hours per day water skiing, 1.38 hours per day boating, 0.25 hours per day jet skiing, 2.13 hour per day swimming, 1.88 hours per day picnicking, 1.25 hours per day hiking, 0.13 hours per day biking, and 0.00 hours per day on other activities.

Table 7.4-9. Summer Season Donner Lake Activity Hours.

| | |
|---|-------------|
| Average Activity Hours per Day spent Fishing by Respondents | 1.13 |
| Average Activity Hours per Day spent Fishing from Boat by Respondents | 0.25 |
| Average Activity Hours per Day spent Water Skiing by Respondents | 0.80 |
| Average Activity Hours per Day spent Boating by Respondents | 1.38 |
| Average Activity Hours per Day spent Jet Skiing by Respondents | 0.25 |
| Average Activity Hours per Day spent Swimming by Respondents | 2.13 |
| Average Activity Hours per Day spent Picnicking by Respondents | 1.84 |
| Average Activity Hours per Day spent Hiking by Respondents | 1.25 |
| Average Activity Hours per Day spent Biking by Respondents | 0.13 |
| Average Activity Hours per Day spent on Other activities by Respondents | 0.00 |
| Total Activity Hours per Day by Respondents | 8.40 |

Ranking of Summer Season Donner Lake Characteristics

Respondents that visit Donner Lake during the summer season rank site characteristics as good to satisfactory.

Ranking of summer season Donner Lake Characteristics by respondents is shown in Table 7.4-10. Site characteristics include natural setting and environment, recreation opportunities, lake-level, boat ramp and dock access, crowd level, and facilities. The ranking of each can range from 1 being very good to 5 being very poor.

Respondents rank natural setting and environment as good, recreation opportunities as good, lake-level as good, boat ramp and dock access as good, crowd level as satisfactory, and facilities as good.

Table 7.4-10. Ranking of Summer Season Donner Lake Characteristics.

| | |
|--|------|
| <i>Average Value of Natural Setting and Environment by Respondents</i> | 1.88 |
| <i>Average Value of Recreation Opportunities by Respondents</i> | 2.00 |
| <i>Average Value of Lake-Level by Respondents</i> | 2.38 |
| <i>Average Value of Boat Ramp and Dock Access by Respondents</i> | 2.43 |
| <i>Average Value of Crowd Level by Respondents</i> | 3.00 |
| <i>Average Value of Facilities by Respondents</i> | 2.38 |

Ranking: 1=Very Good, 2=Good, 3=Satisfactory, 4=Poor, and 5=Very Poor.

Summer Season Donner Lake Alternative Lake Level Sensitivity

The number of respondents that indicate a change in the number of vacation-home visits at alternative lake-levels for Donner Lake during the summer season is 1. The number of respondents that indicate no change in the number of vacation-home visits at alternative lake levels for Donner Lake during the summer season is 18.

Table 7.4-11 provides the summer season Donner Lake alternative lake-level sensitivity.

Table 7.4-11. Summer Season Donner Lake Alternative Lake-Level Sensitivity.

| | |
|---|----|
| Number of Respondents that indicated a Change in the Number of Vacation-Home Visits at Alternative Lake-Levels | 1 |
| Number of Respondents that indicated No Change in the Number of Vacation-Home Visits at Alternative Lake-Levels | 18 |
| Total Number of Respondents | 19 |

Summer Season Visitation Expenditures

Visitation expenditures by respondents during the summer season are highest on restaurant and groceries.

Summer season visitation expenditures by respondents are presented in Table 7.4-12. Average expenditure per visit, average expenditure per visit per day, and average expenditure per visit per day per person are given for restaurant, groceries, gasoline, other shopping, recreation rental, golf fees, other user fees, gaming, and other.

Respondents indicate an average total expenditure per visit of \$560.25, an average total expenditure per visit per day of \$143.03, and an average total expenditure per visit per day per person of \$26.12.

Vacation-home rent is treated separately and not included in the above expenditure values.

Table 7.4-12. Summer Season Visitation Expenditures.

| | |
|---|-----------------|
| <i>Average Expenditure per Visit on Restaurant by Respondents</i> | 132.50 |
| <i>Average Expenditure per Visit on Groceries by Respondents</i> | 165.31 |
| <i>Average Expenditure per Visit on Gasoline by Respondents</i> | 43.75 |
| <i>Average Expenditure per Visit on Other Shopping by Respondents</i> | 84.81 |
| <i>Average Expenditure per Visit on Recreation Rental by Respondents</i> | 63.06 |
| <i>Average Expenditure per Visit on Golf Fees by Respondents</i> | 25.00 |
| <i>Average Expenditure per Visit on Other User Fees by Respondents</i> | 25.00 |
| <i>Average Expenditure per Visit on Gaming by Respondents</i> | 18.75 |
| <i>Average Expenditure per Visit on Other by Respondents</i> | 6.00 |
| <i>Average Total Expenditure per Visit by Respondents</i> | \$560.25 |
| <i>Average Expenditure per Visit per Day on Restaurant by Respondents</i> | 35.33 |
| <i>Average Expenditure per Visit per Day on Groceries by Respondents</i> | 40.58 |
| <i>Average Expenditure per Visit per Day on Gasoline by Respondents</i> | 11.07 |
| <i>Average Expenditure per Visit per Day on Other Shopping by Respondents</i> | 21.03 |
| <i>Average Expenditure per Visit per Day on Recreation Rental by Respondents</i> | 12.69 |
| <i>Average Expenditure per Visit per Day on Golf Fees by Respondents</i> | 15.00 |
| <i>Average Expenditure per Visit per Day on Other User Fees by Respondents</i> | 4.63 |
| <i>Average Expenditure per Visit per Day on Gaming by Respondents</i> | 2.64 |
| <i>Average Expenditure per Visit per Day on Other by Respondents</i> | 0.00 |
| <i>Average Total Expenditure per Visit per Day by Respondents</i> | \$143.03 |
| <i>Average Expenditure per Visit per Day per Person on Restaurant by Respondents</i> | 6.41 |
| <i>Average Expenditure per Visit per Day per Person on Groceries by Respondents</i> | 7.90 |
| <i>Average Expenditure per Visit per Day per Person on Gasoline by Respondents</i> | 1.99 |
| <i>Average Expenditure per Visit per Day per Person on Other Shopping by Respondents</i> | 4.24 |
| <i>Average Expenditure per Visit per Day per Person on Recreation Rental by Respondents</i> | 2.23 |
| <i>Average Expenditure per Visit per Day per Person on Golf Fees by Respondents</i> | 1.88 |
| <i>Average Expenditure per Visit per Day per Person on Other User Fees by Respondents</i> | 0.99 |
| <i>Average Expenditure per Visit per Day per Person on Gaming by Respondents</i> | 0.48 |
| <i>Average Expenditure per Visit per Day per Person on Other by Respondents</i> | 0.00 |
| <i>Average Total Expenditure per Visit per Day per Person by Respondents</i> | \$26.12 |

Summer Season Vacation-Home Rent Expenditure

The average rent expenditure per visit by respondents on vacation-home rent during the summer season is \$671.88.

The summer season vacation-home rent expenditure by respondents is provided in Table 7.4-13. An average rent expenditure per visit with an average rent expenditure per visit per day and average rent expenditure per visit per day per person is given.

Respondents indicate an average rent expenditure per visit of \$671.88, and average rent expenditure per visit per day of \$165.53, and an average rent expenditure per visit per day per person of \$29.00.

Table 7.4-13. Summer Season Vacation-Home Rent Expenditure.

| | |
|---|-----------------|
| <i>Average Rent Expenditure per Visit by Respondents</i> | <i>\$671.81</i> |
| <i>Average Rent Expenditure per Visit per Day by Respondents</i> | <i>\$163.53</i> |
| <i>Average Rent Expenditure per Visit per Day per Person by Respondents</i> | <i>\$29.00</i> |

Comments

Excerpts taken from a few comments made by respondents on renting a vacation-home in the Truckee area are listed below.

1. "...Great location and cute town. We hope it doesn't Grow too much. Beautiful area."
2. "We love the Truckee area and have increased the amount of time spent there over Tahoe due to water level in Tahoe and the crowds there. If the lake level were decreased I'm sure it would influence us to choose another place to stay but that would be sad as we have truly grown to love Truckees beauty and small town charm."
3. "I rent in the Tahoe area because the climate is radically different from that in the Bay Area during the winter and because of the social interaction we can create by gathering friends in a large house. I would come more often if real-estate rental were cheaper."
4. "We have enjoyed coming to Truckee to play in the adult coed soccer tournament..."
5. "We are not boaters but came for some snow fun and minimal skiing."
6. "We rent a home in Truckee for the summer months of July, Aug, Sept. We live in the desert so we come there for the summer climate -we spend most of our time golfing - Rent boats on Lake Tahoe and Donner once in a while - so I am not qualified to answer detail questions"
7. "Typically we enjoy the Truckee area most in the winter. Usually we rent a home in the winter months from one of the property management offices. Skiing is our favorite sport."
8. "This was the first time we rented a vacation home. Have stayed in hotels before. Really did enjoy it...have decided to buy a home in Incline Village. We are selling our home in California."
9. "We don't visit during the summer months...enjoy Truckee area best....It's also near enough to everything we need."

10. "We tend to rent in Tahoe-Donner for the following reasons: ...Rustic Truckee vs "Tacky" South Shore...Donner Lake setting vs Tahoe...trains above Donner Lake...family atmosphere...walking/hiking around TD and Donner lake... Casinos in Boomtown..." "Concerns: water-level..skidoo drivers rude and out of control...Tahoe-Donner needs to offer renters a pass option for amenities... it is often impossible to plan ahead with small children - they offer no refund on unused amenity tickets..."

7.5. Estimation of the Expenditure Function

Expenditures of camping and day use visitors at each of the sites are calculated using an expenditure function. Specification of the expenditure function and estimation of the expenditure function are as follows.

Specification of the Expenditure Function

The expenditure function is an important ingredient of the modern theory of consumer behavior. It shows the minimal expenditures necessary to achieve a given utility level for a particular set of prices. The properties of the expenditure function in the areas of theoretical and applied analysis of consumer behavior are developed in the studies by Barton and Bohm (1982), Deaton and Muelbauer (1980), Hicks (1946), Samuelson (1947), Silberberg (1978), Theil (1975), and Varian (1992). Let $E(P, U)$ be an expenditure function, where P is a vector of commodity prices and U is a given level of utility. The expenditure function is the solution to the following problem:

$$\begin{aligned} E(P, U) &= \text{Min } PX \\ \text{such that } U(X) &\geq U \end{aligned} \tag{7.5-1}$$

where X is a vector of non-negative quantities of goods. The solution to this optimization problem is the expenditure function that gives the minimum cost of achieving the fixed level of utility. For the expenditure function $E(P, U)$ to be well behaved, it must have the following properties: (i) $E(P, U)$ is non decreasing in P , (ii) $E(P, U)$ is homogeneous of the degree 1 in P , (iii) $E(P, U)$ is concave in P , (iv) $E(P, U)$ is continuous in P , for $P > 0$, and (v) if $X(P, U)$ is the expenditure-minimizing bundle necessary to achieve utility level U at prices P , then $X(P, U) = \delta E(P, U) / \delta P$ assuming the derivative exists and that $P > 0$.

The application of the expenditure function in empirical studies of consumer behavior requires the availability of observed market prices on goods and the existence of a well-behaved utility function. In the area of demand for recreation activities, there are no market-based transactions to determine observed market prices. Consequently, the notion of a regular utility function has to be modified in developing the expenditure function for the recreation activities. Let F be a vector of the time spent on a series of recreational activities by an individual at a particular site. The indirect utility function V for recreational activities for this individual is:

$$V = V(F, S, I) \tag{7.5-2}$$

where S is a vector of site characteristics that captures the substitutability of visits across various sites and I is the total budget allocated by an individual to participate in all the recreational activities included in F . The expenditure function E dual to the indirect utility function in (7.5-2) is the minimum expenditure required for the individual to participate in all the recreational activities in F , given the site characteristics in S . The expenditure function E derived from (7.5-2) is:

$$E = I = V^{-1}(F, S) \tag{7.5-3}$$

The expenditure function in (7.5-3) can also be modified to include the variable of the total number of visitors to the site. Let N be the total number of visitors. Then the expenditures function is:

$$E = V^{-1} (F, S, N) \quad (7.5-4)$$

The specification of the expenditure function in (7.5-4) is an empirical issue and it could be determined upon a estimation model selection technique, e.g., the Box-Cox estimation technique. One notable feature of the expenditure function in (7.5-4) is that it can be used to estimate expenditures of recreational activities at a particular site.

The expenditure function in (7.5-4) is used to evaluate the expenditures of recreational activities at the following seven sites in California and Nevada: Upper Truckee River, Donner Lake, Prosser Reservoir, Stampede Reservoir, Boca Reservoir, Lower Truckee River, and Pyramid Lake. The attributes of the characteristics of each site are captured by including dummy variable for each site in S . The definition of the dummy variables included in S are: $UTR = 1$ if the visitation site is Upper Truckee River and 0 otherwise; $DL = 1$ if the visitation site is Donner Lake and 0 otherwise; $PR = 1$ if the visitation site is Prosser Reservoir and 0 otherwise; $SR = 1$ if the visitation site is Stampede Reservoir and 0 otherwise; $BR = 1$ if the visitation site is Boca Reservoir and 0 otherwise; $LTR = 1$ if the visitation site is Lower Truckee River and 0 otherwise; and, $PL = 1$ if the visitation site is Pyramid Lake and 0 otherwise. The hours spent on each of the following eleven recreational activities are included in F . The activities were determined according to their availability and popularity at the sites. The activities are: picnicking, camping, fishing, swimming, boating, fishing from boat, water skiing, jet skiing, rafting, kayaking, biking, hiking, and other activities. To capture the effect of the type of visitor at a given site on their expenditures, i.e., camping versus day use, a dummy variable D , defined as $D = 1$ if camping visitor and 0 if day use visitor, is included in the expenditure function in (7.5-4). Following the categorization of expenditures on the recreation survey, the expenditures by a visitor to a given site are identified as licenses, camping fees, hotel or motel, restaurant, groceries, equipment and supplies, rental, fuel, and other. Using the above specification of the variables, the expenditure function in (7.5-4) can now be presented as:

$$E_i = V^{-1} (UTR, DL, PR, SR, BR, LTR, PL, D, \sum_{j=1}^{13} F_j, N); i = 1, \dots, 7 \quad (7.5-5)$$

The functional form specification of the expenditure function in (7.5-5) is an empirical issue and it will be determined using the Box-Cox flexible functional form technique. The Box-Cox specification of the expenditure function in (7.5-5) is:

$$\frac{E_1^\lambda - 1}{\lambda} = \beta_1 \text{UTR} + \beta_2 \text{DL} + \beta_3 \text{PR} + \beta_4 \text{SR} + \beta_5 \text{BR} + \beta_6 \text{LTR} + \beta_7 \text{PL} + \beta_8 \text{D} \quad (7.5-6)$$

$$+ \sum_{j=1}^21 \beta_j \left(\frac{F_j^\lambda - 1}{\lambda} \right) + \beta_{22} \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

where U is the stochastic error term, β is the slope parameter, and λ is the transformation parameter. The transformation parameter may take a wide range of values that would determine the particular functional form that the variable subject to the Box-Cox transformation will assume. For example, one gets a logarithmic transformation for a variable if λ is equal to zero. All of the coefficients of the expenditure function in (7.5-5), including λ , will be estimated using the estimation of the following log-likelihood function:

$$L(\lambda, \beta, \sigma^2; E, X) = -\frac{T}{2} \ln(2\pi\sigma^2) - \frac{1}{2\sigma^2} (E^\lambda - X^\lambda B) / (E^\lambda - X^\lambda B) \quad (7.5-7)$$

$$+ \ln(J); \text{ and } J = \det \left[\frac{\partial E^\lambda}{\partial E} \right] = \prod_{t=1}^T E_t^{\lambda-1}$$

where X is a vector of observations on all the exogenous variables, B is a vector of all the slope parameters to be estimated, and T is the number of observations.

Estimation of the Expenditure Function

The data collected through the recreation survey for the seven sites is used to estimate the expenditure function in (7.5-6). A total number of 432 out of the 443 complete questionnaires are used in the estimation. The initial diagnosis of the data revealed that there are a large number of zeros on most of the recreational activities and a number of expenditure categories making the estimation of the expenditure function in its generalized form in (7.5-6) impossible. A number of alternatives to combine some of the recreational activities are tried to estimate a modified form of the expenditure function in (7.5-6). All of these attempts resulted into some difficulties in estimation of the expenditure function in (7.5-6).

The final modified form of the expenditure function in (7.5-6) that provides meaningful estimation results is:

$$\frac{E^\lambda - 1}{\lambda} = \beta_1 UTR + \beta_2 DL + \beta_3 PR + \beta_4 SR + \beta_5 BR + \beta_6 LTR + \beta_7 PL + \beta_8 D \quad (7.5-8)$$
$$+ \beta_9 \left(\frac{F^\lambda - 1}{\lambda} \right) + \beta_{10} \left(\frac{N^\lambda - 1}{\lambda} \right) + U$$

The expenditure function expressed in simple notation becomes:

$$\ln E = \beta_1 UTR + \beta_2 DL + \beta_3 PR + \beta_4 SR + \beta_5 BR + \beta_6 LTR + \beta_7 PL + \beta_8 D \quad (7.5-9)$$
$$+ \beta_9 \ln F + \beta_{10} \ln N + U$$

where E is the sum of the nine expenditure categories per day, F is the sum of the hours spent per day by a visitor on the thirteen categories of recreational activities, and N is the group size. The Ln is an abbreviation for natural logarithm.

Using the survey observations on the variables E, F, N, the seven location dummy variables, and the type of visitor dummy variable, the expenditure function in (7.5-8) or (7.5-9) is estimated having the following results.

$$\begin{aligned} \ln E = & 3.6390\text{UTR} + 3.0354\text{DL} + 2.8812\text{PR} + 3.1279\text{SR} + 2.9892\text{BR} & (7.5-10) \\ & (12.20) \quad (13.07) \quad (8.79) \quad (12.16) \quad (12.21) \\ & + 2.7781\text{LTR} + 3.0575\text{PL} - 0.4474\text{D} + 0.2320\text{LnF} + 0.3195\text{LnN} \\ & (7.73) \quad (13.76) \quad (-3.38) \quad (2.15) \quad (4.10) \end{aligned}$$

The numbers in the parentheses are the asymptotic t-ratios for 452 degrees of freedom. The adjusted R^2 is 0.0753 for the 462 observations. The 473 observations were edited down to 462. Observations that were deleted were observations having a zero for total expenditures, or a zero for total recreation activity hours, or a zero for group size. The camping and day use visitor expenditure function observations are given in Table 7.5-1.

The maximum likelihood (ML) ratio test is then used to check the validity of alternative functional specifications of the expenditure function for specific value of λ , i.e., logarithmic ($\lambda = 0$) and linear ($\lambda = 1$) functional forms. Let S denote the parameter space under the Box-Cox specification and s denote the subspace of S restricted by the null hypothesis (H^0). The ML ratio test to test for a given functional form under H^0 is a large sample test and can be conducted as follows:

$$d = -2 [L(S) - L(s)] \quad (7.5-11)$$

where $L(S)$ is the maximum of the log likelihood function under S and $L(s)$ is the maximum value of the log likelihood function under s . If H^0 is true, the statistic d has the limiting chi-squared (χ^2) with n degrees of freedom, where n is the number of restrictions imposed by H^0 .

The maximum likelihood estimation of λ in (7.5-8) is 0.07 with the maximum of the log likelihood function $L(S)$ of -803.568 . Using estimates of the maximum log likelihood function of λ , $L(s)$ for the logarithmic and linear specifications of the expenditure function, the test statistic in (7.5-11) is calculated. The test results provide evidence to accept $H^0: \lambda = 0$ and to reject $H^0: \lambda = 1$ against the alternative hypothesis that $H^0: \lambda = 0.07$. In other words, the final functional specification of the expenditure function is in logarithmic functional form.

The estimated expenditure function predicts the logarithm of the average expenditures per day at a particular site for both camping and day use visitors for given values of the logarithm of their hours of non-camping recreation activity and the logarithm of their group size. Then the average expenditures per day are determined by taking the anti-log of the logarithm of the average expenditures. This procedure is shown below by site.

Upper Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(1) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(5.50) + 0.3195(3.47) \end{aligned}$$

$$\text{LnE} = 3.6390 - 0.4474 + 0.2320(1.70) + 0.3195(1.24)$$

$$\text{LnE} = 3.9822$$

$$E = \$53.63$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(1) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(3.00) + 0.3195\text{Ln}(5.50) \end{aligned}$$

$$\text{LnE} = 3.6390 + 0.2320(1.10) + 0.3195(1.70)$$

$$\text{LnE} = 4.4374$$

$$E = \$84.55$$

Donner Lake

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(0) + 3.0354(1) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(8.29) + 0.3195\text{Ln}(5.24) \end{aligned}$$

$$\text{LnE} = 3.0354 - 0.4474 + 0.2320(2.12) + 0.3195(1.66)$$

$$\text{LnE} = 3.6102$$

$$E = \$36.97$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(0) + 3.0354(1) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(5.63) + 0.3195\text{Ln}(5.02) \end{aligned}$$

$$\text{LnE} = 3.0354 + 0.2320(1.73) + 0.3195(1.61)$$

$$\text{LnE} = 3.9512$$

$$E = \$52.00$$

Prosser Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(1) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(7.67) + 0.3195\text{Ln}(3.73) \end{aligned}$$

$$\text{LnE} = 2.8812 - 0.4474 + 0.2320(2.04) + 0.3195(1.32)$$

$$\text{LnE} = 3.3288$$

$$E = \$27.90$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned} \text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(1) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(3.38) + 0.3195\text{Ln}(3.13) \end{aligned}$$

$$\text{LnE} = 2.8812 + 0.2320(1.22) + 0.3195(1.14)$$

$$\text{LnE} = 3.5284$$

$$E = \$34.07$$

Stampede Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned}\text{Ln}E &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(1) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(7.82) + 0.3195\text{Ln}(5.12)\end{aligned}$$

$$\text{Ln}E = 3.1279 - 0.4474 + 0.2320(2.06) + 0.3195(1.63)$$

$$\text{Ln}E = 3.6792$$

$$E = \$39.61$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned}\text{Ln}E &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(1) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(5.67) + 0.3195\text{Ln}(3.89)\end{aligned}$$

$$\text{Ln}E = 3.1279 + 0.2320(1.74) + 0.3195(1.36)$$

$$\text{Ln}E = 3.9661$$

$$E = \$52.78$$

Boca Reservoir

Camping Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(1) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(7.83) + 0.3195\text{Ln}(5.10)\end{aligned}$$

$$\text{LnE} = 2.9892 - 0.44743 + 0.2320(2.05) + 0.3195(1.63)$$

$$\text{LnE} = 3.5382$$

$$E = \$34.40$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(1) \\ &\quad + 2.7781(0) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(5.24) + 0.3195\text{Ln}(5.02)\end{aligned}$$

$$\text{LnE} = 2.9892 + 0.2320(1.66) + 0.3195(1.61)$$

$$\text{LnE} = 3.8887$$

$$E = \$48.85$$

Lower Truckee River

Camping Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(1) + 3.0575(0) - 0.4474(1) + 0.2320\text{Ln}(3.00) + 0.3195\text{Ln}(2.00)\end{aligned}$$

$$\text{LnE} = 2.7781 - 0.4474 + 0.2320(1.10) + 0.3195(0.69)$$

$$\text{LnE} = 2.8064$$

$$E = \$16.55$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(1) + 3.0575(0) - 0.4474(0) + 0.2320\text{Ln}(3.96) + 0.3195\text{Ln}(2.29)\end{aligned}$$

$$\text{LnE} = 2.7781 + 0.2320(1.38) + 0.3195(0.83)$$

$$\text{LnE} = 3.3635$$

$$E = \$28.89$$

Pyramid Lake

Camping Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(1) - 0.4474(1) + 0.2320\text{Ln}(8.20) + 0.3195\text{Ln}(4.72)\end{aligned}$$

$$\text{LnE} = 3.0575 - 0.4474 + 0.2320(2.10) + 0.3195(1.55)$$

$$\text{LnE} = 3.5925$$

$$E = \$36.32$$

Day Use Visitor Group Expenditures per Day

$$\begin{aligned}\text{LnE} &= 3.6390(0) + 3.0354(0) + 2.8812(0) + 3.1279(0) + 2.9892(0) \\ &\quad + 2.7781(0) + 3.0575(1) - 0.4474(0) + 0.2320\text{Ln}(5.74) + 0.3195\text{Ln}(5.92)\end{aligned}$$

$$\text{LnE} = 3.0575 + 0.2320(1.75) + 0.3195(1.78)$$

$$\text{LnE} = 4.0322$$

$$E = \$56.38$$

The above camping and day use visitor expenditure function values are presented by site in Table 7.5-2.

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations.

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Truckee River UTR | Dinner Lake DL | Proctor Reservoir PR | Stampede Reservoir SR | Bass Reservoir BR | Lower Truckee River LTR | Pyramid Lake PL | Camping Value | Activity Hours | Overnight Site |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|-------------------------|----------------|----------------------|-----------------------|-------------------|-------------------------|-----------------|---------------|----------------|----------------|
| 1 | 1993 | UTR | 1 | CU | 267.00 | 7.0 | 38.14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.5 | 4.0 |
| 2 | 1993 | UTR | 2 | CU | 340.00 | 10.0 | 34.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 3 | 1993 | UTR | 3 | CU | 189.00 | 2.0 | 94.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 4.0 |
| 4 | 1993 | UTR | 4 | CU | 236.00 | 2.0 | 118.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 5 | 1993 | UTR | 5 | CU | 83.50 | 3.0 | 27.83 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 1.0 |
| 6 | 1993 | UTR | 6 | CU | 63.00 | 7.0 | 9.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 4.0 |
| 7 | 1993 | UTR | 7 | CU | 50.00 | 1.0 | 50.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 8 | 1993 | UTR | 8 | CU | 71.00 | 1.0 | 71.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 9 | 1993 | UTR | 9 | CU | 36.00 | 3.0 | 12.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 2.0 |
| 10 | 1993 | UTR | 10 | CU | 190.00 | 3.0 | 63.33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 11 | 1993 | UTR | 11 | CU | 70.00 | 1.0 | 70.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 6.0 |
| 12 | 1993 | UTR | 12 | CU | 123.00 | 4.0 | 30.75 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 14.0 | 1.0 |
| 13 | 1993 | UTR | 13 | CU | 230.00 | 14.0 | 16.43 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 14 | 1993 | UTR | 14 | CU | 75.00 | 1.0 | 75.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 15 | 1993 | UTR | 15 | CU | 317.00 | 10.0 | 31.70 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 7.0 |
| 16 | 1993 | UTR | 16 | CU | 450.00 | 8.0 | 56.25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 4.0 |
| 17 | 1993 | UTR | 17 | CU | 540.00 | 8.0 | 67.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 18 | 1993 | PR | 18 | CU | 37.00 | 8.0 | 4.63 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 1.0 |
| 19 | 1993 | PR | 19 | CU | 54.00 | 6.0 | 9.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 20 | 1993 | PR | 20 | CU | 732.00 | 6.0 | 122.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 5.0 |
| 21 | 1993 | PR | 21 | CU | 260.00 | 8.0 | 32.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 22 | 1993 | PR | 22 | CU | 34.50 | 8.0 | 4.31 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 23 | 1993 | PR | 23 | CU | 625.00 | 8.0 | 78.13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 24 | 1993 | SR | 24 | CU | 145.00 | 3.0 | 48.33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 4.0 |
| 25 | 1993 | SR | 25 | CU | 66.00 | 3.0 | 22.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 26 | 1993 | SR | 26 | CU | 177.50 | 1.0 | 177.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 1.0 |
| 27 | 1993 | SR | 27 | CU | 137.00 | 1.0 | 137.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 28 | 1993 | SR | 28 | CU | 143.00 | 1.0 | 143.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 7.0 |
| 29 | 1993 | SR | 29 | CU | 126.00 | 1.0 | 126.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9.0 | 9.0 |
| 30 | 1993 | SR | 30 | CU | 421.00 | 1.0 | 421.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 31 | 1993 | SR | 31 | CU | 194.00 | 2.0 | 97.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 14.0 |
| 32 | 1993 | SR | 32 | CU | 580.00 | 2.0 | 290.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 0.0 |
| 33 | 1993 | SR | 33 | CU | 250.00 | 1.0 | 250.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 34 | 1993 | SR | 34 | CU | 76.00 | 3.0 | 25.33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 35 | 1993 | SR | 35 | CU | 56.00 | 1.0 | 56.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 36 | 1993 | SR | 36 | CU | 91.00 | 3.0 | 30.33 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 37 | 1993 | SR | 37 | CU | 325.00 | 4.0 | 81.25 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 16.0 |
| 38 | 1993 | SR | 38 | CU | 313.00 | 1.0 | 313.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 1.0 |
| 39 | 1993 | SR | 39 | CU | 193.00 | 1.0 | 193.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 1.0 |
| 40 | 1993 | SR | 40 | CU | 163.00 | 1.0 | 163.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.5 | 1.0 |
| 41 | 1993 | SR | 41 | CU | 76.00 | 1.0 | 76.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 42 | 1993 | SR | 42 | CU | 90.00 | 2.0 | 45.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 6.0 |
| 43 | 1993 | SR | 43 | CU | 721.00 | 10.0 | 72.10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 19.0 |
| 44 | 1993 | SR | 44 | CU | 60.00 | 1.0 | 60.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 45 | 1993 | SR | 45 | CU | 239.00 | 8.0 | 29.88 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 46 | 1993 | SR | 46 | CU | 500.00 | 1.0 | 500.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 0.0 |
| 47 | 1993 | SR | 47 | CU | 366.00 | 7.0 | 52.29 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.5 | 1.0 |
| 48 | 1993 | SR | 48 | CU | 173.00 | 6.0 | 28.83 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 4.0 |
| 49 | 1993 | SR | 49 | CU | 160.00 | 4.0 | 40.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 50 | 1993 | SR | 50 | CU | 77.00 | 2.0 | 38.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15.0 | 1.0 |
| 51 | 1993 | SR | 51 | CU | 199.00 | 2.0 | 99.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 12.0 |
| 52 | 1993 | SR | 52 | CU | 340.00 | 1.0 | 340.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 15.0 |
| 53 | 1993 | SR | 53 | CU | 90.00 | 1.0 | 90.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 54 | 1993 | SR | 54 | CU | 341.00 | 7.0 | 48.71 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 55 | 1993 | SR | 55 | CU | 45.50 | 1.0 | 45.50 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 56 | 1993 | SR | 56 | CU | 250.00 | 1.0 | 250.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 7.0 |
| 57 | 1993 | SR | 57 | CU | 43.00 | 8.0 | 5.38 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 58 | 1993 | SR | 58 | CU | 304.00 | 8.0 | 38.00 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 1.0 |
| 59 | 1993 | SR | 59 | CU | 15.00 | 8.0 | 1.88 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Sex | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trochanteric Nerve UTR | Duane Lake DL | Plover Reservoir PR | Stamps Reservoir SR | Bees Reservoir BR | Lower Trochanteric Nerve LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Deep Skin |
|--------------------|------|-----|----------------------|--------------|-------------|----------------|---------------------|------------------------------|---------------|---------------------|---------------------|-------------------|------------------------------|-----------------|-----------------|----------------|-----------|
| 60 | 1995 | BL | | 4 DU | 271.00 | 0.0 | 271.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 2.0 |
| 61 | 1995 | BL | | 3 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 62 | 1995 | BL | | 6 DU | 157.00 | 0.0 | 157.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 63 | 1995 | BL | | 7 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 10.0 | 4.0 |
| 64 | 1995 | BL | | 9 DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 65 | 1995 | BL | | 9 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 7.0 |
| 66 | 1995 | BL | | 1 CP | 63.00 | 2.0 | 31.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 7.0 | 4.0 |
| 67 | 1995 | BL | | 2 CP | 175.00 | 10.0 | 17.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 2.0 |
| 68 | 1995 | BL | | 3 CP | 134.00 | 2.0 | 67.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 69 | 1995 | BL | | 4 CP | 100.00 | 3.0 | 33.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 70 | 1995 | BL | | 1 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 3.0 |
| 71 | 1995 | BL | | 1 DU | 40.00 | 0.0 | 40.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 72 | 1995 | BL | | 3 DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 73 | 1995 | BL | | 4 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 2.0 |
| 74 | 1995 | BL | | 1 DU | 465.00 | 0.0 | 465.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 3.0 |
| 75 | 1995 | BL | | 4 DU | 170.00 | 0.0 | 170.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2.0 | 10.0 |
| 76 | 1995 | BL | | 7 DU | 73.00 | 0.0 | 73.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 3.0 |
| 77 | 1995 | BL | | 6 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| 78 | 1995 | BL | | 7 DU | 130.00 | 0.0 | 130.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 4.0 |
| 79 | 1995 | BL | | 10 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 10.0 |
| 80 | 1995 | BL | | 11 DU | 12.00 | 0.0 | 12.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 81 | 1995 | BL | | 12 DU | 12.00 | 0.0 | 12.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 82 | 1995 | BL | | 13 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 1.0 |
| 83 | 1995 | BL | | 14 DU | 44.00 | 0.0 | 44.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 84 | 1995 | BL | | 15 DU | 120.00 | 0.0 | 120.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 3.0 |
| 85 | 1995 | BL | | 16 DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 3.0 |
| 86 | 1995 | BL | | 17 DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| 87 | 1995 | BL | | 18 DU | 33.00 | 0.0 | 33.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 4.0 |
| 88 | 1995 | BL | | 19 DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 7.0 |
| 89 | 1995 | BL | | 20 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 6.0 |
| 90 | 1995 | BL | | 21 DU | 1910.00 | 0.0 | 1910.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| 91 | 1995 | BL | | 22 DU | 42.50 | 0.0 | 42.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 92 | 1995 | BL | | 23 DU | 230.00 | 0.0 | 230.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 10.0 |
| 93 | 1995 | BL | | 24 DU | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 4.0 |
| 94 | 1995 | BL | | 25 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 4.0 |
| 95 | 1995 | BL | | 26 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2.0 | 3.0 |
| 96 | 1995 | BL | | 27 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 1.0 |
| 97 | 1995 | BL | | 28 DU | 60.00 | 0.0 | 60.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 4.0 |
| 98 | 1995 | BL | | 29 DU | 40.00 | 0.0 | 40.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 3.0 |
| 99 | 1995 | BL | | 30 DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 7.0 |
| 100 | 1995 | BL | | 31 DU | 220.00 | 0.0 | 220.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0.0 | 1.0 |
| 101 | 1995 | BL | | 32 DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 7.0 |
| 102 | 1995 | BL | | 33 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3.0 | 3.0 |
| 103 | 1995 | BL | | 34 DU | 10.00 | 0.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 1.0 |
| 104 | 1995 | BL | | 35 DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 3.0 |
| 105 | 1995 | BL | | 36 DU | 37.00 | 0.0 | 37.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6.0 | 10.0 |
| 106 | 1995 | BL | | 37 DU | 0.00 | 0.0 | 0.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1.0 | 2.0 |
| 107 | 1995 | BL | | 38 DU | 300.00 | 0.0 | 300.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 12.0 | 3.0 |
| 108 | 1995 | BL | | 39 DU | 90.00 | 0.0 | 90.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5.0 | 2.0 |
| 109 | 1995 | BL | | 40 DU | 300.00 | 0.0 | 300.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| 110 | 1995 | LTR | | 1 CP | 35.00 | 3.0 | 11.67 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 3.0 |
| 111 | 1995 | LTR | | 1 DU | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 112 | 1995 | LTR | | 1 DU | 94.00 | 0.0 | 94.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 5.0 |
| 113 | 1995 | LTR | | 3 DU | 151.00 | 0.0 | 151.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 2.0 |
| 114 | 1995 | LTR | | 4 DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 115 | 1995 | LTR | | 5 DU | 1.00 | 0.0 | 1.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 2.0 |
| 116 | 1995 | LTR | | 4 DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 4.0 |
| 117 | 1995 | LTR | | 7 DU | 13.50 | 0.0 | 13.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 1.0 |
| 118 | 1995 | LTR | | 8 DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 2.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Troutcut River UTR | Deep Lake DL | Panor Reserve PR | Beaupre Reserve BR | Tom Reserve TR | Lower Troutcut River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|--------------------------|--------------|------------------|--------------------|----------------|--------------------------|-----------------|-----------------|----------------|------------|
| 119 | 1995 | LTR | 9 | DU | 11.00 | 0.0 | 11.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 120 | 1995 | LTR | 10 | DU | 34.00 | 0.0 | 34.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 4.0 |
| 121 | 1995 | LTR | 11 | DU | 775.00 | 0.0 | 775.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 1.0 |
| 122 | 1995 | LTR | 12 | DU | 44.00 | 0.0 | 44.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 1.0 |
| 123 | 1995 | LTR | 13 | DU | 52.00 | 0.0 | 52.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 1.0 |
| 124 | 1995 | LTR | 14 | DU | 0.50 | 0.0 | 0.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 1.0 |
| 125 | 1995 | LTR | 15 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 1.0 |
| 126 | 1995 | LTR | 16 | DU | 21.50 | 0.0 | 21.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4.0 | 1.0 |
| 127 | 1995 | LTR | 17 | DU | 30.50 | 0.0 | 30.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 5.0 |
| 128 | 1995 | LTR | 18 | DU | 102.00 | 0.0 | 102.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 10.0 |
| 129 | 1995 | LTR | 19 | DU | 22.00 | 0.0 | 22.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 2.0 |
| 130 | 1995 | LTR | 20 | DU | 14.00 | 0.0 | 14.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 2.0 |
| 131 | 1995 | LTR | 21 | DU | 31.50 | 0.0 | 31.50 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 1.0 |
| 132 | 1995 | LTR | 22 | DU | 75.00 | 0.0 | 75.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 2.0 |
| 133 | 1995 | LTR | 23 | DU | 23.00 | 0.0 | 23.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 2.0 |
| 134 | 1995 | LTR | 24 | DU | 42.00 | 0.0 | 42.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 2.0 |
| 135 | 1995 | PL | 1 | CP | 120.00 | 4.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1.0 | 2.0 |
| 136 | 1995 | PL | 2 | CP | 75.00 | 3.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 7.0 | 5.0 |
| 137 | 1995 | PL | 3 | CP | 170.00 | 2.0 | 85.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 7.0 | 2.0 |
| 138 | 1995 | PL | 4 | CP | 41.00 | 1.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4.0 | 2.0 |
| 139 | 1995 | PL | 5 | CP | 97.00 | 1.0 | 97.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 12.0 | 2.0 |
| 140 | 1995 | PL | 6 | CP | 162.00 | 4.0 | 40.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 10.0 | 5.0 |
| 141 | 1995 | PL | 7 | CP | 100.00 | 2.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 6.0 | 5.0 |
| 142 | 1995 | PL | 8 | CP | 75.00 | 3.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 8.0 | 1.0 |
| 143 | 1995 | PL | 9 | CP | 195.00 | 6.0 | 32.50 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 3.0 | 4.0 |
| 144 | 1995 | PL | 10 | CP | 100.00 | 4.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1.0 | 4.0 |
| 145 | 1995 | PL | 1 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1.0 | 3.0 |
| 146 | 1995 | PL | 2 | DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 3.0 |
| 147 | 1995 | PL | 3 | DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2.0 | 3.0 |
| 148 | 1995 | PL | 4 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3.0 | 3.0 |
| 149 | 1995 | PL | 5 | DU | 45.00 | 0.0 | 45.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 7.0 | 10.0 |
| 150 | 1995 | PL | 6 | DU | 41.00 | 0.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5.0 | 5.0 |
| 151 | 1995 | PL | 7 | DU | 220.00 | 0.0 | 220.00 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6.0 | 7.0 |
| 152 | 1994 | DL | 1 | CP | 46.00 | 4.0 | 11.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 153 | 1994 | DL | 2 | CP | 645.00 | 5.0 | 129.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 9.0 | 6.0 |
| 154 | 1994 | DL | 3 | CP | 100.00 | 3.0 | 33.33 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 155 | 1994 | DL | 4 | CP | 355.00 | 6.0 | 59.17 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 156 | 1994 | DL | 5 | CP | 210.00 | 3.0 | 70.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 157 | 1994 | DL | 6 | CP | 56.25 | 3.0 | 18.75 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 0.0 |
| 158 | 1994 | DL | 7 | CP | 100.00 | 5.0 | 20.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 159 | 1994 | DL | 8 | CP | 155.00 | 2.0 | 77.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 160 | 1994 | DL | 9 | CP | 143.00 | 1.0 | 143.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 161 | 1994 | DL | 10 | CP | 40.00 | 2.0 | 20.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 162 | 1994 | DL | 11 | CP | 101.00 | 4.0 | 25.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 14.0 |
| 163 | 1994 | DL | 12 | CP | 490.00 | 4.0 | 122.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 20.0 | 3.0 |
| 164 | 1994 | DL | 13 | CP | 300.00 | 0.0 | 122.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 8.0 |
| 165 | 1994 | DL | 14 | CP | 111.00 | 3.0 | 37.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 166 | 1994 | DL | 15 | CP | 303.00 | 0.0 | 40.40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 7.0 |
| 167 | 1994 | DL | 16 | CP | 10.00 | 6.0 | 1.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 6.0 | 7.0 |
| 168 | 1994 | DL | 17 | CP | 130.00 | 2.0 | 65.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 169 | 1994 | DL | 18 | CP | 60.00 | 2.0 | 30.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 10.0 |
| 170 | 1994 | DL | 19 | CP | 130.00 | 5.0 | 26.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 2.0 |
| 171 | 1994 | DL | 20 | CP | 47.00 | 2.0 | 23.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 172 | 1994 | DL | 21 | CP | 142.00 | 2.0 | 71.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 9.0 |
| 173 | 1994 | DL | 22 | CP | 143.00 | 4.0 | 35.75 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 174 | 1994 | DL | 23 | CP | 300.00 | 3.0 | 100.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 11.0 | 7.0 |
| 175 | 1994 | DL | 24 | CP | 271.25 | 4.0 | 67.81 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 7.0 |
| 176 | 1994 | DL | 25 | CP | 47.00 | 5.0 | 9.40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 10.0 |
| 177 | 1994 | DL | 26 | CP | 190.00 | 2.0 | 95.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 7.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditures | Number of Days | Expenditures per Day | Upper Tushnet River UTR | Emmer Lake DL | Prater Reservoir PR | Shampok Reservoir SR | Rees Reservoir RR | Lower Tushnet River LTR | Pyramid Lake PL | Camping Visitor | Activity Fees | Camp Size |
|--------------------|------|------|----------------------|--------------|--------------|----------------|----------------------|-------------------------|---------------|---------------------|----------------------|-------------------|-------------------------|-----------------|-----------------|---------------|-----------|
| 176 | 1994 | DL | 27 | CF | 121.25 | 2.0 | 60.63 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 14.0 |
| 179 | 1994 | DL | 28 | CF | 354.00 | 7.0 | 50.57 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 180 | 1994 | DL | 29 | CF | 51.00 | 2.5 | 20.40 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 0.0 |
| 181 | 1994 | DL | 30 | CF | 140.00 | 2.0 | 70.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 13.0 | 2.0 |
| 182 | 1994 | DL | 31 | CF | 144.25 | 2.0 | 72.13 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 1.0 |
| 183 | 1994 | DL | 32 | CF | 830.00 | 7.0 | 118.57 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 0.0 |
| 184 | 1994 | DL | 33 | CF | 64.75 | 2.0 | 32.38 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 185 | 1994 | DL | 34 | CF | 30.00 | 2.0 | 15.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3.0 | 4.0 |
| 186 | 1994 | DL | 35 | CF | 25.00 | 2.0 | 12.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 187 | 1994 | DL | 36 | CF | 14.00 | 2.0 | 7.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0.0 | 3.0 |
| 188 | 1994 | DL | 37 | CF | 34.00 | 2.0 | 17.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1.0 | 2.0 |
| 189 | 1994 | DL | 38 | CF | 111.00 | 4.0 | 27.75 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 5.0 | 2.0 |
| 190 | 1994 | DL | 39 | CF | 71.00 | 5.0 | 14.20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 191 | 1994 | DL | 40 | CF | 105.50 | 5.0 | 21.10 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 192 | 1994 | DL | 41 | CF | 140.00 | 3.0 | 46.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 7.0 | 7.0 |
| 193 | 1994 | DL | 42 | CF | 74.00 | 4.0 | 18.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 194 | 1994 | DL | 1 | DU | 25.00 | 0.0 | 25.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 4.0 |
| 195 | 1994 | DL | 2 | DU | 43.00 | 0.0 | 43.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| 196 | 1994 | DL | 3 | DU | 19.00 | 0.0 | 19.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 4.0 |
| 197 | 1994 | DL | 4 | DU | 53.00 | 0.0 | 53.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 6.0 |
| 198 | 1994 | DL | 5 | DU | 34.00 | 0.0 | 34.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 11.0 |
| 199 | 1994 | DL | 6 | DU | 91.00 | 0.0 | 91.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 10.0 |
| 200 | 1994 | DL | 7 | DU | 27.00 | 0.0 | 27.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 201 | 1994 | DL | 8 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 3.0 |
| 202 | 1994 | DL | 9 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 10.0 | 4.0 |
| 203 | 1994 | DL | 10 | DU | 7.00 | 0.0 | 7.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9.0 | 7.0 |
| 204 | 1994 | DL | 11 | DU | 60.50 | 0.0 | 60.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 3.0 |
| 205 | 1994 | DL | 12 | DU | 125.00 | 0.0 | 125.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9.0 | 4.0 |
| 206 | 1994 | DL | 13 | DU | 22.50 | 0.0 | 22.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.3 | 3.0 |
| 207 | 1994 | DL | 14 | DU | 85.00 | 0.0 | 85.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 208 | 1994 | DL | 15 | DU | 43.00 | 0.0 | 43.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 2.0 |
| 209 | 1994 | DL | 16 | DU | 30.00 | 0.0 | 30.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 14.0 | 2.0 |
| 210 | 1994 | DL | 17 | DU | 140.00 | 0.0 | 140.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 211 | 1994 | DL | 18 | DU | 25.00 | 0.0 | 25.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 16.0 |
| 212 | 1994 | DL | 19 | DU | 35.00 | 0.0 | 35.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 7.0 |
| 213 | 1994 | DL | 20 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 214 | 1994 | DL | 21 | DU | 60.00 | 0.0 | 60.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 215 | 1994 | DL | 22 | DU | 11.00 | 0.0 | 11.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 216 | 1994 | DL | 23 | DU | 51.00 | 0.0 | 51.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 9.0 |
| 217 | 1994 | DL | 24 | DU | 10.00 | 0.0 | 10.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.5 | 4.0 |
| 218 | 1994 | DL | 25 | DU | 61.65 | 0.0 | 61.65 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 4.0 |
| 219 | 1994 | DL | 26 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0.5 | 0.0 |
| 220 | 1994 | DL | 27 | DU | 177.00 | 0.0 | 177.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| 221 | 1994 | DL | 28 | DU | 40.00 | 0.0 | 40.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 5.0 |
| 222 | 1994 | DL | 29 | DU | 140.51 | 0.0 | 140.51 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 223 | 1994 | DL | 30 | DU | 12.00 | 0.0 | 12.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 1.0 |
| 224 | 1994 | DL | 31 | DU | 156.06 | 0.0 | 156.06 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 0.0 |
| 225 | 1994 | DL | 32 | DU | 92.50 | 0.0 | 92.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 4.0 |
| 226 | 1994 | DL | 33 | DU | 21.00 | 0.0 | 21.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 2.0 |
| 227 | 1994 | DL | 34 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 2.0 |
| 228 | 1994 | DL | 35 | DU | 50.00 | 0.0 | 50.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 2.0 |
| 229 | 1994 | DL | 36 | DU | 11.00 | 0.0 | 11.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 1.0 |
| 230 | 1994 | DL | 37 | DU | 15.00 | 0.0 | 15.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 1.0 |
| 231 | 1994 | DL | 38 | DU | 4.50 | 0.0 | 4.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 0.0 |
| 232 | 1994 | DL | 39 | DU | 137.00 | 0.0 | 137.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 7.0 |
| 233 | 1994 | DL | 40 | DU | 2.00 | 0.0 | 2.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.0 |
| 234 | 1994 | DL | 41 | DU | 3.00 | 0.0 | 3.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 2.0 |
| 235 | 1994 | DL | 1 | CF | 179.70 | 6.0 | 29.95 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |
| 236 | 1994 | DL | 2 | CF | 16.00 | 3.0 | 5.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Tulelake River LTR | Center Lake DL | Lower Reservoir PL | Shingadee Reservoir SR | Bees Reservoir BR | Lower Tulelake River LTR | Pyramid Lake PL | Camping Visitor | Activity Fees | Overnight |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|--------------------------|----------------|--------------------|------------------------|-------------------|--------------------------|-----------------|-----------------|---------------|-----------|
| 337 | 1994 | PR | 3 | C | 193.00 | 2.0 | 96.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 16.0 | 9.0 |
| 338 | 1994 | PR | 4 | C | 114.00 | 14.0 | 8.14 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 1.0 |
| 339 | 1994 | PR | 5 | C | 125.00 | 7.0 | 17.86 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 340 | 1994 | PR | 6 | C | 185.00 | 3.0 | 61.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 341 | 1994 | PR | 7 | C | 245.00 | 3.0 | 81.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 7.0 |
| 342 | 1994 | PR | 8 | C | 6.00 | 1.0 | 6.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5.0 | 6.0 |
| 343 | 1994 | PR | 9 | C | 279.00 | 3.0 | 93.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 344 | 1994 | PR | 10 | C | 8.00 | 1.0 | 8.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 345 | 1994 | PR | 11 | C | 8.00 | 1.0 | 8.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 346 | 1994 | PR | 12 | C | 31.00 | 4.0 | 7.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 2.0 |
| 347 | 1994 | PR | 13 | C | 43.00 | 1.0 | 43.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 348 | 1994 | PR | 14 | C | 87.00 | 4.0 | 21.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 1.0 |
| 349 | 1994 | PR | 15 | C | 322.00 | 4.0 | 80.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 350 | 1994 | PR | 16 | C | 64.00 | 9.0 | 7.11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 6.0 |
| 351 | 1994 | PR | 17 | C | 344.00 | 9.0 | 38.22 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 8.0 |
| 352 | 1994 | PR | 18 | C | 76.00 | 2.0 | 38.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 353 | 1994 | PR | 19 | C | 16.00 | 3.0 | 5.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 354 | 1994 | PR | 20 | C | 130.00 | 7.0 | 18.57 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 1.0 |
| 355 | 1994 | PR | 21 | C | 406.00 | 13.0 | 31.23 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 356 | 1994 | PR | 22 | C | 60.00 | 3.0 | 20.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 6.0 |
| 357 | 1994 | PR | 23 | C | 34.00 | 3.0 | 11.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 8.0 |
| 358 | 1994 | PR | 24 | C | 96.00 | 3.0 | 32.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 7.0 |
| 359 | 1994 | PR | 25 | C | 99.25 | 4.0 | 24.81 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 5.0 | 5.0 |
| 360 | 1994 | PR | 26 | C | 24.00 | 2.0 | 12.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 4.0 |
| 361 | 1994 | PR | 27 | C | 134.00 | 1.0 | 134.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 362 | 1994 | PR | 28 | C | 14.00 | 1.0 | 14.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 14.0 | 5.0 |
| 363 | 1994 | PR | 29 | C | 74.00 | 1.0 | 74.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 16.0 | 1.0 |
| 364 | 1994 | PR | 30 | C | 46.00 | 2.0 | 23.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 365 | 1994 | PR | 31 | C | 1.00 | 0.0 | 1.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4.0 | 1.0 |
| 366 | 1994 | PR | 32 | C | 80.00 | 0.0 | 80.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 367 | 1994 | PR | 33 | C | 17.00 | 2.0 | 8.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 2.0 |
| 368 | 1994 | PR | 34 | C | 232.00 | 3.0 | 77.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.5 | 2.0 |
| 369 | 1994 | PR | 35 | C | 11.00 | 1.0 | 11.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 2.0 |
| 370 | 1994 | PR | 36 | C | 73.00 | 4.0 | 18.25 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 2.0 |
| 371 | 1994 | PR | 37 | C | 22.00 | 1.0 | 22.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 6.0 | 3.0 |
| 372 | 1994 | PR | 38 | C | 380.00 | 5.0 | 76.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 373 | 1994 | PR | 39 | C | 342.00 | 2.0 | 171.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1.0 | 1.0 |
| 374 | 1994 | PR | 40 | C | 257.00 | 7.0 | 36.71 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 375 | 1994 | PR | 41 | C | 11.00 | 1.0 | 11.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 3.0 |
| 376 | 1994 | PR | 42 | C | 16.00 | 4.0 | 4.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 6.0 |
| 377 | 1994 | PR | 43 | C | 227.00 | 14.0 | 16.21 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 378 | 1994 | PR | 44 | C | 195.00 | 4.0 | 48.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 379 | 1994 | PR | 45 | C | 40.00 | 4.0 | 10.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 6.0 |
| 380 | 1994 | PR | 46 | C | 43.00 | 4.0 | 10.75 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 6.0 |
| 381 | 1994 | PR | 47 | C | 14.50 | 3.0 | 4.83 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 382 | 1994 | PR | 48 | C | 91.00 | 3.0 | 30.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 383 | 1994 | PR | 49 | C | 131.00 | 3.0 | 43.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 6.0 |
| 384 | 1994 | PR | 50 | C | 142.50 | 3.0 | 47.50 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 385 | 1994 | PR | 51 | C | 3100.00 | 14.0 | 221.43 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 4.0 | 4.0 |
| 386 | 1994 | PR | 52 | C | 163.00 | 3.0 | 54.33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 16.0 |
| 387 | 1994 | PR | 53 | C | 170.00 | 3.0 | 56.67 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 388 | 1994 | PR | 54 | C | 44.00 | 1.0 | 44.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 389 | 1994 | PR | 55 | C | 322.00 | 14.0 | 23.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 390 | 1994 | PR | 56 | C | 46.00 | 1.0 | 46.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 391 | 1994 | PR | 57 | C | 149.00 | 4.0 | 37.25 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 9.0 | 1.0 |
| 392 | 1994 | PR | 58 | C | 142.00 | 2.0 | 71.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 11.0 | 1.0 |
| 393 | 1994 | PR | 59 | C | 198.00 | 3.0 | 66.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 394 | 1994 | PR | 60 | C | 132.00 | 3.0 | 44.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 12.0 | 5.0 |
| 395 | 1994 | PR | 61 | C | 92.00 | 1.0 | 92.00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trailhead River UTR | Greene Lake DL | Truman Reservoir TR | Steepfork Reservoir SR | Boon Reservoir BR | Lower Trailhead River LTR | Pyramid Lake PL | Camping Visitor | Activity Hours | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|---------------------------|----------------|---------------------|------------------------|-------------------|---------------------------|-----------------|-----------------|----------------|------------|
| 294 | 1994 | 00 | 20 | C | 141.00 | 4.0 | 35.25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 4.0 |
| 297 | 1994 | 00 | 21 | C | 75.00 | 6.0 | 12.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 298 | 1994 | 00 | 22 | C | 196.50 | 4.0 | 49.13 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 14.0 | 4.0 |
| 299 | 1994 | 00 | 23 | C | 30.00 | 3.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 300 | 1994 | 00 | 24 | C | 22.00 | 4.0 | 5.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 2.0 |
| 301 | 1994 | 00 | 25 | C | 60.00 | 2.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 4.0 |
| 302 | 1994 | 00 | 26 | C | 153.00 | 4.0 | 38.25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 20.0 |
| 303 | 1994 | 00 | 27 | C | 11.00 | 1.0 | 11.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2.0 | 3.0 |
| 304 | 1994 | 00 | 28 | C | 19.00 | 3.0 | 6.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 3.0 |
| 305 | 1994 | 00 | 29 | C | 401.00 | 30.0 | 13.37 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 5.0 |
| 306 | 1994 | 00 | 30 | C | 330.00 | 4.0 | 82.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 9.0 |
| 307 | 1994 | 00 | 41 | C | 306.00 | 3.0 | 102.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 6.0 |
| 308 | 1994 | 00 | 42 | C | 73.00 | 2.0 | 36.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 7.0 |
| 309 | 1994 | 00 | 43 | C | 143.00 | 6.0 | 23.83 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 3.0 |
| 310 | 1994 | 00 | 44 | C | 253.00 | 3.0 | 84.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 311 | 1994 | 00 | 45 | C | 125.00 | 1.0 | 125.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 2.0 |
| 312 | 1994 | 00 | 46 | C | 37.00 | 3.0 | 12.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 1.0 |
| 313 | 1994 | 00 | 47 | C | 70.50 | 7.0 | 10.07 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 1.0 |
| 314 | 1994 | 00 | 48 | C | 33.00 | 4.0 | 8.25 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 0.0 |
| 315 | 1994 | 00 | 49 | C | 185.00 | 3.0 | 61.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 316 | 1994 | 00 | 50 | C | 267.50 | 4.0 | 66.88 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 317 | 1994 | 00 | 51 | C | 180.00 | 6.0 | 30.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 11.0 |
| 318 | 1994 | 00 | 52 | C | 47.00 | 2.0 | 23.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 2.0 |
| 319 | 1994 | 00 | 53 | C | 80.00 | 3.0 | 26.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 4.0 |
| 320 | 1994 | 00 | 54 | C | 342.00 | 3.0 | 114.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 1.0 |
| 321 | 1994 | 00 | 55 | C | 174.00 | 3.0 | 58.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 2.0 |
| 322 | 1994 | 00 | 56 | C | 483.00 | 14.0 | 34.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 3.0 |
| 323 | 1994 | 00 | 57 | C | 64.00 | 2.0 | 32.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 324 | 1994 | 00 | 58 | C | 226.50 | 4.0 | 56.63 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 22.0 |
| 325 | 1994 | 00 | 59 | C | 134.00 | 3.0 | 44.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 4.0 |
| 326 | 1994 | 00 | 60 | C | 142.50 | 4.0 | 35.63 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 327 | 1994 | 00 | 61 | C | 440.00 | 3.0 | 146.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 25.0 |
| 328 | 1994 | 00 | 62 | C | 340.50 | 7.0 | 48.64 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 329 | 1994 | 00 | 63 | C | 3.50 | 2.0 | 1.75 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 10.0 |
| 330 | 1994 | 00 | 64 | C | 80.00 | 3.0 | 26.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 5.0 |
| 331 | 1994 | 00 | 65 | C | 360.00 | 7.0 | 51.43 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 10.0 |
| 332 | 1994 | 00 | 66 | C | 250.00 | 1.0 | 250.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 2.0 |
| 333 | 1994 | 00 | 67 | C | 237.00 | 2.0 | 118.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 334 | 1994 | 00 | 68 | C | 4.00 | 2.0 | 2.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 11.0 | 9.0 |
| 335 | 1994 | 00 | 69 | C | 89.00 | 3.0 | 29.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 5.0 | 3.0 |
| 336 | 1994 | 00 | 70 | C | 44.00 | 3.0 | 14.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 337 | 1994 | 00 | 71 | C | 66.00 | 1.0 | 66.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 20.0 |
| 338 | 1994 | 00 | 72 | C | 12.00 | 3.0 | 4.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 9.0 | 4.0 |
| 339 | 1994 | 00 | 73 | C | 64.00 | 3.0 | 21.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 12.0 | 3.0 |
| 340 | 1994 | 00 | 74 | C | 30.00 | 3.0 | 10.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 1.0 |
| 341 | 1994 | 00 | 75 | C | 122.00 | 1.0 | 122.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 4.0 |
| 342 | 1994 | 00 | 76 | C | 284.00 | 14.0 | 20.29 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 9.0 |
| 343 | 1994 | 00 | 77 | C | 32.00 | 1.0 | 32.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4.0 | 3.0 |
| 344 | 1994 | 00 | 78 | C | 207.00 | 14.0 | 14.79 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 345 | 1994 | 00 | 79 | C | 454.00 | 1.0 | 454.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 2.0 |
| 346 | 1994 | 00 | 80 | C | 173.00 | 1.0 | 173.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 13.0 | 14.0 |
| 347 | 1994 | 00 | 81 | C | 12.00 | 1.0 | 12.00 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 10.0 | 4.0 |
| 348 | 1994 | 00 | 82 | C | 10.00 | 6.0 | 1.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3.0 | 3.0 |
| 349 | 1994 | 00 | 83 | C | 15.00 | 6.0 | 2.50 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1.0 | 2.0 |
| 350 | 1994 | 00 | 84 | C | 100.00 | 6.0 | 16.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 25.0 |
| 351 | 1994 | 00 | 85 | C | 100.00 | 6.0 | 16.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 8.0 | 6.0 |
| 352 | 1994 | 00 | 86 | C | 20.00 | 6.0 | 3.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 2.0 |
| 353 | 1994 | 00 | 87 | C | 50.00 | 6.0 | 8.33 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |
| 354 | 1994 | 00 | 88 | C | 40.00 | 6.0 | 6.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 7.0 | 3.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Truckee River UTR | Dennis Lake DL | Fremont Reservoir FR | Sagehen Reservoir SR | Beck Reservoir BR | Lower Truckee River LTR | Pyramid Lake PL | Camping Visitor | Activity Score | Group Size |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|-------------------------|----------------|----------------------|----------------------|-------------------|-------------------------|-----------------|-----------------|----------------|------------|
| 355 | 1994 | BR | 4 | DU | 30.00 | 0.2 | 30.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 5.0 |
| 356 | 1994 | BR | 4 | DU | 25.00 | 0.3 | 23.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5.0 | 5.0 |
| 357 | 1994 | BR | 10 | DU | 22.00 | 0.3 | 22.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 12.0 | 3.0 |
| 358 | 1994 | BR | 11 | DU | 70.00 | 0.8 | 70.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 14.0 | 3.0 |
| 359 | 1994 | BR | 12 | DU | 95.00 | 0.8 | 95.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6.0 | 13.0 |
| 360 | 1994 | BR | 13 | DU | 0.00 | 0.0 | 0.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4.0 | 2.0 |
| 361 | 1994 | BR | 14 | DU | 43.00 | 0.6 | 45.00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3.0 | 6.0 |
| 362 | 1994 | PL | 1 | DU | 130.00 | 3.0 | 40.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 2.0 |
| 363 | 1994 | PL | 2 | DU | 500.00 | 4.0 | 125.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 9.0 |
| 364 | 1994 | PL | 3 | DU | 10.00 | 3.0 | 3.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 10.0 | 15.0 |
| 365 | 1994 | PL | 4 | DU | 150.00 | 2.0 | 75.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9.0 | 4.0 |
| 366 | 1994 | PL | 5 | DU | 10.75 | 2.0 | 41.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 6.0 |
| 367 | 1994 | PL | 6 | DU | 35.00 | 3.0 | 43.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 9.0 | 3.0 |
| 368 | 1994 | PL | 7 | DU | 125.00 | 3.0 | 42.30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 4.0 |
| 369 | 1994 | PL | 8 | DU | 56.00 | 3.0 | 18.67 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 2.0 |
| 370 | 1994 | PL | 9 | DU | 15.00 | 3.0 | 5.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 371 | 1994 | PL | 10 | DU | 130.00 | 3.0 | 43.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 5.0 |
| 372 | 1994 | PL | 11 | DU | 140.00 | 3.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 14.0 |
| 373 | 1994 | PL | 12 | DU | 105.00 | 3.0 | 52.50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 4.0 |
| 374 | 1994 | PL | 13 | DU | 150.00 | 3.0 | 75.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 4.0 |
| 375 | 1994 | PL | 14 | DU | 445.00 | 4.0 | 111.25 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 5.0 |
| 376 | 1994 | PL | 15 | DU | 314.00 | 2.0 | 157.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 6.0 |
| 377 | 1994 | PL | 16 | DU | 253.00 | 3.0 | 84.33 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 4.0 |
| 378 | 1994 | PL | 17 | DU | 135.00 | 10.0 | 13.50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 3.0 |
| 379 | 1994 | PL | 18 | DU | 300.00 | 4.0 | 75.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 11.0 | 5.0 |
| 380 | 1994 | PL | 19 | DU | 152.00 | 2.0 | 76.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 12.0 | 4.0 |
| 381 | 1994 | PL | 20 | DU | 20.00 | 0.2 | 20.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 6.0 |
| 382 | 1994 | PL | 21 | DU | 540.00 | 0.2 | 270.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 26.0 |
| 383 | 1994 | PL | 22 | DU | 50.00 | 0.2 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 3.0 |
| 384 | 1994 | PL | 23 | DU | 6.00 | 0.2 | 4.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 385 | 1994 | PL | 24 | DU | 45.00 | 0.2 | 45.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 9.0 |
| 386 | 1994 | PL | 25 | DU | 72.00 | 0.2 | 72.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 4.0 | 3.0 |
| 387 | 1994 | PL | 26 | DU | 60.00 | 0.2 | 60.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8.0 | 2.0 |
| 388 | 1994 | PL | 27 | DU | 34.00 | 0.2 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 4.0 |
| 389 | 1994 | PL | 28 | DU | 70.00 | 0.2 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 3.0 |
| 390 | 1994 | PL | 29 | DU | 114.00 | 0.2 | 114.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 3.0 |
| 391 | 1994 | PL | 30 | DU | 45.00 | 0.2 | 45.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 4.0 |
| 392 | 1994 | PL | 31 | DU | 70.00 | 0.2 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 2.0 |
| 393 | 1994 | PL | 32 | DU | 41.00 | 0.2 | 41.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 2.0 |
| 394 | 1994 | PL | 33 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3.0 | 3.0 |
| 395 | 1994 | PL | 34 | DU | 40.00 | 0.2 | 40.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 4.0 |
| 396 | 1994 | PL | 35 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 3.0 |
| 397 | 1994 | PL | 36 | DU | 50.00 | 0.2 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 398 | 1994 | PL | 37 | DU | 20.00 | 0.2 | 20.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 2.0 |
| 399 | 1994 | PL | 38 | DU | 75.00 | 0.2 | 75.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 3.0 |
| 400 | 1994 | PL | 39 | DU | 15.00 | 0.2 | 15.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 16.0 | 4.0 |
| 401 | 1994 | PL | 40 | DU | 31.00 | 0.2 | 31.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 402 | 1994 | PL | 41 | DU | 131.00 | 0.2 | 131.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 13.0 |
| 403 | 1994 | PL | 42 | DU | 74.00 | 0.2 | 74.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 14.0 |
| 404 | 1994 | PL | 43 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2.0 | 3.0 |
| 405 | 1994 | PL | 44 | DU | 95.00 | 0.2 | 95.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8.0 | 13.0 |
| 406 | 1994 | PL | 45 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 3.0 |
| 407 | 1994 | PL | 46 | DU | 12.00 | 0.2 | 12.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 7.0 | 6.0 |
| 408 | 1994 | PL | 47 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 4.0 |
| 409 | 1994 | PL | 48 | DU | 34.00 | 0.2 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8.0 | 13.0 |
| 410 | 1994 | PL | 49 | DU | 34.00 | 0.2 | 34.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0.0 | 4.0 |
| 411 | 1994 | PL | 50 | DU | 25.00 | 0.2 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 6.0 |
| 412 | 1994 | PL | 51 | DU | 15.00 | 0.2 | 15.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5.0 | 2.0 |
| 413 | 1994 | PL | 52 | DU | 90.00 | 0.2 | 90.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 6.0 | 6.0 |

Table 7.5-1. Camping and Day Use Visitor Expenditure Function Observations (continue).

| Observation Number | Year | Site | Questionnaire Number | Visitor Type | Expenditure | Number of Days | Expenditure per Day | Upper Trout Run UTR | Down Lake PL | Fresh Reservoir PR | Stumpede Reservoir SR | Beck Reservoir BR | Lower Trout Run River LTR | Pyramid Lake PL | Camping Vehicle | Activity Hours | Camp Site |
|--------------------|------|------|----------------------|--------------|-------------|----------------|---------------------|---------------------|--------------|--------------------|-----------------------|-------------------|---------------------------|-----------------|-----------------|----------------|-----------|
| 414 | 1994 | PL | 54 | DU | 67.00 | 0.0 | 67.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2.0 | 0.0 |
| 415 | 1994 | PE | 55 | DU | 19.00 | 0.0 | 19.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 2.0 |
| 416 | 1994 | PC | 56 | DU | 55.00 | 0.0 | 55.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10.0 | 6.0 |
| 417 | 1994 | PL | 57 | DU | 150.00 | 0.0 | 150.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.0 | 5.0 |
| 418 | 1994 | PE | 58 | DU | 31.00 | 0.0 | 31.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 3.0 |
| 419 | 1994 | PE | 59 | DU | 35.00 | 0.0 | 35.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 3.0 |
| 420 | 1994 | PE | 60 | DU | 66.00 | 0.0 | 66.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8.0 | 10.0 |
| 421 | 1994 | PL | 61 | DU | 195.00 | 0.0 | 195.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 8.0 | 15.0 |
| 422 | 1994 | PL | 62 | DU | 70.00 | 0.0 | 70.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 8.0 |
| 423 | 1994 | PL | 63 | DU | 25.00 | 0.0 | 25.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2.0 | 3.0 |
| 424 | 1994 | PL | 64 | DU | 35.00 | 0.0 | 35.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 11.0 |
| 425 | 1994 | PL | 65 | DU | 37.00 | 0.0 | 37.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 7.0 |
| 426 | 1994 | PL | 66 | DU | 50.00 | 0.0 | 50.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 12.0 | 3.0 |
| 427 | 1994 | PE | 67 | DU | 7.00 | 0.0 | 7.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3.3 | 5.0 |
| 428 | 1994 | PE | 68 | DU | 190.00 | 0.0 | 190.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 15.0 |
| 429 | 1994 | PE | 69 | DU | 17.00 | 0.0 | 17.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6.0 | 3.0 |
| 430 | 1994 | PL | 70 | DU | 30.00 | 0.0 | 30.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2.0 | 2.0 |
| 431 | 1994 | PL | 71 | DU | 20.00 | 0.0 | 20.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5.0 | 2.0 |
| 432 | 1994 | PL | 72 | DU | 36.00 | 0.0 | 36.00 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10.0 | 10.0 |
| 433 | 1995 | DL | 1 | SHO-DU | 10.39 | 0.0 | 10.39 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 10.0 |
| 434 | 1995 | DL | 2 | SHO-DU | 73.33 | 0.0 | 73.33 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 435 | 1995 | DL | 3 | SHO-DU | 40.43 | 0.0 | 40.43 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 1.0 |
| 436 | 1995 | DL | 4 | SHO-DU | 137.50 | 0.0 | 137.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13.0 | 4.0 |
| 437 | 1995 | DL | 5 | SHO-DU | 44.29 | 0.0 | 44.29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 |
| 438 | 1995 | DL | 6 | SHO-DU | 90.94 | 0.0 | 90.94 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 5.0 |
| 439 | 1995 | DL | 7 | SHO-DU | 115.00 | 0.0 | 115.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 4.0 |
| 440 | 1995 | DL | 8 | SHO-DU | 105.00 | 0.0 | 105.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 4.0 |
| 441 | 1995 | DL | 9 | SHO-DU | 164.44 | 0.0 | 164.44 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12.0 | 4.0 |
| 442 | 1995 | DL | 10 | SHO-DU | 42.00 | 0.0 | 42.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 13.0 |
| 443 | 1995 | DL | 11 | SHO-DU | 137.14 | 0.0 | 137.14 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9.0 | 4.0 |
| 444 | 1995 | DL | 12 | SHO-DU | 76.67 | 0.0 | 76.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 3.0 |
| 445 | 1995 | DL | 13 | SHO-DU | 85.00 | 0.0 | 85.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 10.0 |
| 446 | 1995 | DL | 14 | SHO-DU | 362.50 | 0.0 | 362.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 4.0 |
| 447 | 1995 | DL | 15 | SHO-DU | 40.39 | 0.0 | 40.39 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 4.0 |
| 448 | 1995 | DL | 16 | SHO-DU | 114.84 | 0.0 | 114.84 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9.0 | 5.0 |
| 449 | 1995 | DL | 17 | SHO-DU | 30.00 | 0.0 | 30.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12.0 | 4.0 |
| 450 | 1995 | DL | 18 | SHO-DU | 36.00 | 0.0 | 36.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4.0 | 3.0 |
| 451 | 1995 | DL | 19 | SHO-DU | 125.00 | 0.0 | 125.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 3.0 |
| 452 | 1995 | DL | 20 | SHO-DU | 54.67 | 0.0 | 54.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3.0 | 6.0 |
| 453 | 1995 | DL | 21 | SHO-DU | 67.50 | 0.0 | 67.50 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 4.0 |
| 454 | 1995 | DL | 22 | SHO-DU | 106.67 | 0.0 | 106.67 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 5.3 |
| 455 | 1995 | DL | 23 | SHO-DU | 153.35 | 0.0 | 153.35 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 6.0 |
| 456 | 1995 | DL | 24 | SHO-DU | 53.00 | 0.0 | 53.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12.0 | 3.0 |
| 457 | 1995 | DL | 1 | VHL-DU | 423.33 | 0.0 | 423.33 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 6.0 | 4.0 |
| 458 | 1995 | DL | 2 | VHL-DU | 141.25 | 0.0 | 141.25 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 7.0 | 4.0 |
| 459 | 1995 | DL | 3 | VHL-DU | 394.37 | 0.0 | 394.37 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 12.0 | 5.0 |
| 460 | 1995 | DL | 4 | VHL-DU | 396.43 | 0.0 | 396.43 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8.0 | 7.0 |
| 461 | 1995 | DL | 5 | VHL-DU | 375.00 | 0.0 | 375.00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5.0 | 6.0 |
| 462 | 1995 | DL | 6 | VHL-DU | 170.57 | 0.0 | 170.57 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13.0 | 4.0 |

Table 7.5-2. Camping and Day Use Visitor Expenditure Function Values.

| | Upper Truckee River | Dorset Lake | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Lower Truckee River | Pyramid Lake |
|--|---------------------------|----------------|----------------------|-----------------------|-------------------|---------------------------|-----------------|
| Camping Visitor Group Expenditures per Day | \$53.63 | \$36.97 | \$27.90 | \$39.61 | \$34.40 | \$16.35 | \$36.32 |
| Day Use Visitor Group Expenditures per Day | \$84.53 | \$52.00 | \$34.07 | \$52.78 | \$48.85 | \$28.89 | \$56.38 |

\$100

7.6. Formulation of the Model Equations

Model formulation incorporates the above descriptive statistics and expenditure function values. The variable that drives the model is the end of the month reservoir storage levels at Donner Lake and Prosser, Stampede, and Boca Reservoirs. Relative to the storage levels at Donner Lake and Prosser, Stampede, and Boca Reservoirs the model calculates the annual number of camping and day use visitors and the annual expenditures of the camping and day use visitors.

There are eleven functions within the model. Using only end of the month reservoir storage levels as the input into the model, the functions then generate the following data.

- Visitation Relative to End of the Month Reservoir Storage Levels
- Annual Visitation Relative to End of the Month Reservoir Storage Levels
- Annual Number of Camping Visitors
- Annual Number of Day Use Visitors
- Annual Number of Camping Visitor Groups
- Annual Number of Day Use Visitor Groups
- Annual Camping Visitor Expenditures
- Annual Day Use Visitor Expenditures
- Annual Number of Camping and Day Use Visitors
- Annual Camping and Day Use Visitor Expenditures
- Annual Camping and Day Use Visitor Expenditures by Category

Each of the functions calculate data either by use of a single equation or multiple equations. Simultaneously, data is generated by one function and inputted into another function and so on. Throughout the model, there are twenty-seven equations with thirty-eight variables.

Visitation Relative to End of the Month Reservoir Storage Levels

The visitation relative to end of the month reservoir storage levels is derived by assigning a scale value to the end of the month reservoir storage level and then calculating a percentage of visitation corresponding to the assigned scale value. Each of these functions are based on data taken from the survey.

The scale values for reservoir storage levels are shown in Table 7.6-1. Scale values for Donner Lake range from high to low or 5 to 1. These scale values correspond to reservoir storage levels at Donner Lake from 9,660 acre-feet to 5,796 acre-feet. Scale values for Prosser, Stampede, and Boca Reservoirs range from high to low or 11 to 1. These scale values correspond to reservoir storage levels at Prosser Reservoir from 29,840 acre-feet to 0 acre-feet, at Stampede Reservoir from 226,500 acre-feet to 0 acre-feet, and at Boca Reservoir from 40,870 acre-feet to 0 acre-feet. These reservoir storage levels are stated in the survey questionnaire.

The end of the month reservoir storage level is assigned a scale value through the following equation.

$$\text{If } A_i \geq B_{it} \geq C_i \text{ storage level, then scale value } D_{it} = \alpha_i + \beta_i (B_{it}) \quad (7.6-1)$$

where:

| | |
|------------|--|
| A_i | is the high storage level for reservoir i |
| B_{it} | is the end of the month storage level for reservoir i in month t |
| C_i | is the low storage level for reservoir i |
| D_{it} | is the scale value for the end of the month storage level for reservoir i in month t |
| α_i | is the scale value constant term for reservoir i |
| β_i | is the scale value slope coefficient term for reservoir i |

This equation is formulated to linearly interpolate an end of the month storage level for a reservoir during any month to a scale value.

Separate equations for reservoir storage levels are formulated for Donner Lake and Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Donner Lake

If $9,660 \geq B_{it} \geq 5,796$ storage level, then scale value $D_{it} = -5.000000 + .001035 (B_{it})$

If $5,796 > B_{it} \geq 0$ storage level, then scale value $D_{it} = 1.000000$

Prosser Reservoir

If $29,840 \geq B_{it} \geq 0$ storage level, then scale value $D_{it} = 1.000000 + .000335 (B_{it})$

Stampede Reservoir

If $226,500 \geq B_{it} \geq 0$ storage level, then scale value $D_{it} = 1.000000 + .000044 (B_{it})$

Boca Reservoir

If $40,870 \geq B_{it} \geq 0$ storage level, then scale value $D_{it} = 1.000000 + .000245 (B_{it})$

End of the month reservoir storage levels at Donner Lake and Prosser, Stampede, and Boca Reservoirs for April through October and Other Months are given in Table 7.6-2. April through October is considered to be the recreation season in a given year. Other Months are January, February, March, November, and December of the given year. The reservoir storage levels are taken in total for April through October and as an average for the Other Months. The scale values for these end of the month reservoir storage levels are calculated using the above equations and shown by reservoir in Table 7.6-3.

The percentage of visitation corresponding to the scale value of an end of the month reservoir storage level is based on the indicated number of visits per respondent for reservoir storage levels taken from the survey.

The indicated number of visits per respondent for reservoir storage levels are provided in Table 7.6-4. Also provided for reservoir storage levels are percentages of visitation.

Given that the percentage of visitation for reservoir storage level 1 is 100% at Donner Lake and Prosser, Stampede, and Boca Reservoirs. The visitation declines from 100% for reservoir storage level 1 to 82.64% for reservoir storage level 5 at Donner Lake, to 8.25% for reservoir storage level 11 at Prosser Reservoir, to 15.58% for reservoir storage level 11 at Stampede Reservoir, and to 4.68% for reservoir storage level 11 at Boca Reservoir.

The percentage of visitation corresponding to the scale value is then calculated through the following equation.

$$\text{If } E_i \geq D_{it} > F_i \text{ scale value, then visitation } G_{it} = \alpha_i + \beta_i (D_{it}) \quad (7.6-2)$$

where:

- E_i is the high scale value for reservoir i
- D_{it} is the scale value for the end of the month storage level for reservoir i in month t
- F_i is the low scale value for reservoir i
- G_{it} is the percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t
- α_i is the percentage of visitation constant term for reservoir i
- β_i is the percentage of visitation slope coefficient term for reservoir i

This equation is formulated to linearly interpolate a scale value for an end of the month storage level for a reservoir during any month to a percentage of visitation.

Separate equations for scale value and reservoir storage levels are formulated for Donner Lake and Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Donner Lake

$$\text{If } 5 \geq D_{it} > 4 \text{ scale value, then visitation } G_{it} = .935691 + .012862 (D_{it})$$

$$\text{If } 4 \geq D_{it} > 3 \text{ scale value, then visitation } G_{it} = .819936 + .041801 (D_{it})$$

$$\text{If } 3 \geq D_{it} > 2 \text{ scale value, then visitation } G_{it} = .733119 + .070740 (D_{it})$$

$$\text{If } 2 \geq D_{it} > 1 \text{ scale value, then visitation } G_{it} = .778135 + .048232 (D_{it})$$

$$\text{If } 1 = D_{it} \text{ scale value, then visitation } G_{it} = .826367$$

Prosser Reservoir

If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = 1.000000 + .000000 (D_{it})$

If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .702970 + .029703 (D_{it})$

If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .495050 + .052805 (D_{it})$

If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = .415842 + .062706 (D_{it})$

If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .646865 + .029703 (D_{it})$

If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = .151815 + .112211 (D_{it})$

If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .547855 + .033003 (D_{it})$

If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = - 1.419142 + .524752 (D_{it})$

If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = - .062706 + .072607 (D_{it})$

If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = .082508 + .000000 (D_{it})$

If $1 = D_{it}$ scale value, then visitation $G_{it} = .082508$

Stampede Reservoir

If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = .785714 + .019481 (D_{it})$

If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .720779 + .025974 (D_{it})$

If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .457792 + .055195 (D_{it})$

If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = .483766 + .051948 (D_{it})$

If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .529221 + .045455 (D_{it})$

If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = - .347403 + .191558 (D_{it})$

If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .545455 + .012987 (D_{it})$

If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = - .974026 + .392857 (D_{it})$

If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = .126623 + .025974 (D_{it})$

If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = .133117 + .022727 (D_{it})$

If $1 = D_{it}$ scale value, then visitation $G_{it} = .155844$

Boca Reservoir

If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = 1.000000 + .000000 (D_{it})$

If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .117117 + .088288 (D_{it})$

If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .295495 + .068468 (D_{it})$

If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = -.093694 + .117117 (D_{it})$

If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .284685 + .063063 (D_{it})$

If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = -.180180 + .140541 (D_{it})$

If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .441441 + .016216 (D_{it})$

If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = -.192793 + .174775 (D_{it})$

If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = .034234 + .099099 (D_{it})$

If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = -.138739 + .185586 (D_{it})$

If $1 = D_{it}$ scale value, then visitation $G_{it} = .046847$

Visitation relative to end of the month reservoir storage levels for Donner Lake and Prosser, Stampede, and Boca Reservoirs for April through October and Other months are shown in Table 7.6-5. The percentages of visitation for the end of the month reservoir storage levels are calculated using the above equations. Again, percentages of visitation correspond to scale values which in turn correspond to end of the month reservoir storage levels.

Survey year visitation relative to end of the month reservoir storage levels are the same because of end of the month reservoir storage levels. The percentages of visitation are shown in Table 7.6-6. Visitation would differ under alternative reservoir storage levels.

Visitation and end of the month reservoir storage level relationships for Donner Lake and Prosser, Stampede, and Boca Reservoirs are also shown in Figures 7.6-1, 7.6-2, 7.6-3, and 7.6-4.

Table 7.6-1. Scale Values for Reservoir Storage Levels.

| | Dancer Lake | Front Reservoir | Stampsch Reservoir | Boon Reservoir |
|--|-------------|-----------------|--------------------|----------------|
| Reservoir Storage Level 1 in Acre-feet | 9,660 | 29,640 | 226,500 | 40,870 |
| Reservoir Storage Level 2 in Acre-feet | 8,694 | 26,856 | 203,856 | 36,783 |
| Reservoir Storage Level 3 in Acre-feet | 7,728 | 23,872 | 181,208 | 32,696 |
| Reservoir Storage Level 4 in Acre-feet | 6,762 | 20,888 | 158,556 | 28,609 |
| Reservoir Storage Level 5 in Acre-feet | 5,796 | 17,904 | 135,900 | 24,522 |
| Reservoir Storage Level 6 in Acre-feet | | 14,920 | 113,250 | 20,435 |
| Reservoir Storage Level 7 in Acre-feet | | 11,936 | 90,600 | 16,348 |
| Reservoir Storage Level 8 in Acre-feet | | 8,952 | 67,950 | 12,261 |
| Reservoir Storage Level 9 in Acre-feet | | 5,968 | 45,300 | 8,174 |
| Reservoir Storage Level 10 in Acre-feet | | 2,984 | 22,650 | 4,087 |
| Reservoir Storage Level 11 in Acre-feet | | 0 | 0 | 0 |
| Scale Value for Reservoir Storage Level 1 | 5.00 | 11.00 | 11.00 | 11.00 |
| Scale Value for Reservoir Storage Level 2 | 4.00 | 10.00 | 10.00 | 10.00 |
| Scale Value for Reservoir Storage Level 3 | 3.00 | 9.00 | 9.00 | 9.00 |
| Scale Value for Reservoir Storage Level 4 | 2.00 | 8.00 | 8.00 | 8.00 |
| Scale Value for Reservoir Storage Level 5 | 1.00 | 7.00 | 7.00 | 7.00 |
| Scale Value for Reservoir Storage Level 6 | | 6.00 | 6.00 | 6.00 |
| Scale Value for Reservoir Storage Level 7 | | 5.00 | 5.00 | 5.00 |
| Scale Value for Reservoir Storage Level 8 | | 4.00 | 4.00 | 4.00 |
| Scale Value for Reservoir Storage Level 9 | | 3.00 | 3.00 | 3.00 |
| Scale Value for Reservoir Storage Level 10 | | 2.00 | 2.00 | 2.00 |
| Scale Value for Reservoir Storage Level 11 | | 1.00 | 1.00 | 1.00 |

Table 7.6-2. End of the Month Reservoir Storage Levels.

| | Dexter Lake | Frosser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|----------------|----------------------|-----------------------|-------------------|
| April End of the Month Reservoir Storage Level in Acre-Feet | 4,938 | 9,767 | 30,186 | 26,763 |
| May End of the Month Reservoir Storage Level in Acre-Feet | 9,300 | 16,414 | 113,577 | 37,475 |
| June End of the Month Reservoir Storage Level in Acre-Feet | 9,600 | 20,957 | 166,935 | 38,557 |
| July End of the Month Reservoir Storage Level in Acre-Feet | 9,420 | 22,110 | 177,424 | 38,084 |
| August End of the Month Reservoir Storage Level in Acre-Feet | 8,880 | 21,691 | 174,288 | 34,582 |
| September End of the Month Reservoir Storage Level in Acre-Feet | 5,300 | 14,954 | 172,442 | 23,927 |
| October End of the Month Reservoir Storage Level in Acre-Feet | 3,150 | 10,050 | 170,696 | 16,419 |
| Other Months Average End of the Month Reservoir Storage Level in Acre-Feet | 3,366 | 9,854 | 113,263 | 9,561 |
| January End of the Month Reservoir Storage Level in Acre-Feet | 3,290 | 8,827 | 73,944 | 5,247 |
| February End of the Month Reservoir Storage Level in Acre-Feet | 3,320 | 9,723 | 75,751 | 4,396 |
| March End of the Month Reservoir Storage Level in Acre-Feet | 4,290 | 9,642 | 76,677 | 2,955 |
| November End of the Month Reservoir Storage Level in Acre-Feet | 2,980 | 9,981 | 170,439 | 11,042 |
| December End of the Month Reservoir Storage Level in Acre-Feet | 2,950 | 10,098 | 169,510 | 16,163 |

Table 7.6-3. Scale Values for End of the Month Reservoir Storage Levels.

| | Dexter Lake | Frosser Reservoir | Stampede Reservoir | Boon Reservoir |
|---|----------------|----------------------|-----------------------|-------------------|
| Scale Value for April End of the Month Reservoir Storage Level | 1.00 | 4.27 | 4.54 | 7.53 |
| Scale Value for May End of the Month Reservoir Storage Level | 4.63 | 6.50 | 6.08 | 10.17 |
| Scale Value for June End of the Month Reservoir Storage Level | 4.94 | 8.02 | 8.37 | 10.49 |
| Scale Value for July End of the Month Reservoir Storage Level | 4.75 | 8.41 | 8.83 | 10.32 |
| Scale Value for August End of the Month Reservoir Storage Level | 4.19 | 8.27 | 8.69 | 9.46 |
| Scale Value for September End of the Month Reservoir Storage Level | 1.00 | 5.82 | 8.61 | 6.85 |
| Scale Value for October End of the Month Reservoir Storage Level | 1.00 | 4.37 | 8.54 | 5.02 |
| Scale Value for Other Months End of the Month Reservoir Storage Level | 1.00 | 4.30 | 6.09 | 3.34 |

Table 7.6-4. Indicated Number of Visits per Respondent for Reservoir Storage Levels.

| | Dorpat Lake | Proser Reservoir | Stampede Reservoir | Boon Reservoir |
|--|----------------|---------------------|-----------------------|-------------------|
| Number of Visits per Respondent for Reservoir Storage Level 1 | 3.11 | 3.03 | 3.08 | 3.55 |
| Number of Visits per Respondent for Reservoir Storage Level 2 | 3.07 | 3.03 | 3.02 | 3.55 |
| Number of Visits per Respondent for Reservoir Storage Level 3 | 2.94 | 2.94 | 2.94 | 3.06 |
| Number of Visits per Respondent for Reservoir Storage Level 4 | 2.72 | 2.78 | 2.77 | 4.68 |
| Number of Visits per Respondent for Reservoir Storage Level 5 | 2.57 | 2.39 | 2.61 | 4.03 |
| Number of Visits per Respondent for Reservoir Storage Level 6 | | 2.50 | 2.47 | 3.88 |
| Number of Visits per Respondent for Reservoir Storage Level 7 | | 2.16 | 1.88 | 2.90 |
| Number of Visits per Respondent for Reservoir Storage Level 8 | | 2.06 | 1.84 | 2.81 |
| Number of Visits per Respondent for Reservoir Storage Level 9 | | 0.47 | 0.63 | 1.84 |
| Number of Visits per Respondent for Reservoir Storage Level 10 | | 0.25 | 0.53 | 1.29 |
| Number of Visits per Respondent for Reservoir Storage Level 11 | | 0.25 | 0.48 | 0.26 |
| Percentage of Visitation for Reservoir Storage Level 1 | 100.00% | 100.00% | 100.00% | 100.00% |
| Percentage of Visitation for Reservoir Storage Level 2 | 98.71% | 100.00% | 98.05% | 100.00% |
| Percentage of Visitation for Reservoir Storage Level 3 | 94.53% | 97.03% | 95.45% | 91.17% |
| Percentage of Visitation for Reservoir Storage Level 4 | 87.46% | 91.75% | 89.94% | 84.37% |
| Percentage of Visitation for Reservoir Storage Level 5 | 82.64% | 85.48% | 84.74% | 72.61% |
| Percentage of Visitation for Reservoir Storage Level 6 | | 82.51% | 80.19% | 66.31% |
| Percentage of Visitation for Reservoir Storage Level 7 | | 71.29% | 61.04% | 52.25% |
| Percentage of Visitation for Reservoir Storage Level 8 | | 67.99% | 59.74% | 50.63% |
| Percentage of Visitation for Reservoir Storage Level 9 | | 15.11% | 20.45% | 33.15% |
| Percentage of Visitation for Reservoir Storage Level 10 | | 8.25% | 17.86% | 23.24% |
| Percentage of Visitation for Reservoir Storage Level 11 | | 8.25% | 13.56% | 4.68% |

Table 7.6-5. Visitation Relative to End of the Month Reservoir Storage Levels.

| | Dexter Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|----------------|---------------------|-----------------------|-------------------|
| Visitation Relative to April End of the Month Reservoir Storage Level | 82.64% | 68.88% | 60.44% | 79.01% |
| Visitation Relative to May End of the Month Reservoir Storage Level | 99.52% | 83.99% | 80.26% | 100.00% |
| Visitation Relative to June End of the Month Reservoir Storage Level | 99.92% | 91.86% | 91.98% | 100.00% |
| Visitation Relative to July End of the Month Reservoir Storage Level | 99.68% | 93.98% | 94.53% | 100.00% |
| Visitation Relative to August End of the Month Reservoir Storage Level | 98.96% | 93.16% | 93.77% | 95.22% |
| Visitation Relative to September End of the Month Reservoir Storage Level | 82.64% | 80.51% | 93.32% | 71.68% |
| Visitation Relative to October End of the Month Reservoir Storage Level | 82.64% | 69.20% | 92.89% | 52.48% |
| Visitation Relative to Other Months End of the Month Reservoir Storage Level | 82.64% | 68.98% | 80.20% | 39.07% |

Table 7.6-6. Survey Year Visitation Relative to End of the Month Reservoir Storage Levels.

| | Dexter Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|----------------|---------------------|-----------------------|-------------------|
| Visitation Relative to April End of the Month Reservoir Storage Level | 82.64% | 68.88% | 60.44% | 79.01% |
| Visitation Relative to May End of the Month Reservoir Storage Level | 99.52% | 83.99% | 80.26% | 100.00% |
| Visitation Relative to June End of the Month Reservoir Storage Level | 99.92% | 91.86% | 91.98% | 100.00% |
| Visitation Relative to July End of the Month Reservoir Storage Level | 99.68% | 93.98% | 94.53% | 100.00% |
| Visitation Relative to August End of the Month Reservoir Storage Level | 98.96% | 93.16% | 93.77% | 95.22% |
| Visitation Relative to September End of the Month Reservoir Storage Level | 82.64% | 80.51% | 93.32% | 71.68% |
| Visitation Relative to October End of the Month Reservoir Storage Level | 82.64% | 69.20% | 92.89% | 52.48% |
| Visitation Relative to Other Months End of the Month Reservoir Storage Level | 82.64% | 68.98% | 80.20% | 39.07% |

Figure 7.6-1. Donner Lake Visitation and End of the Month Reservoir Storage Level Relationship.

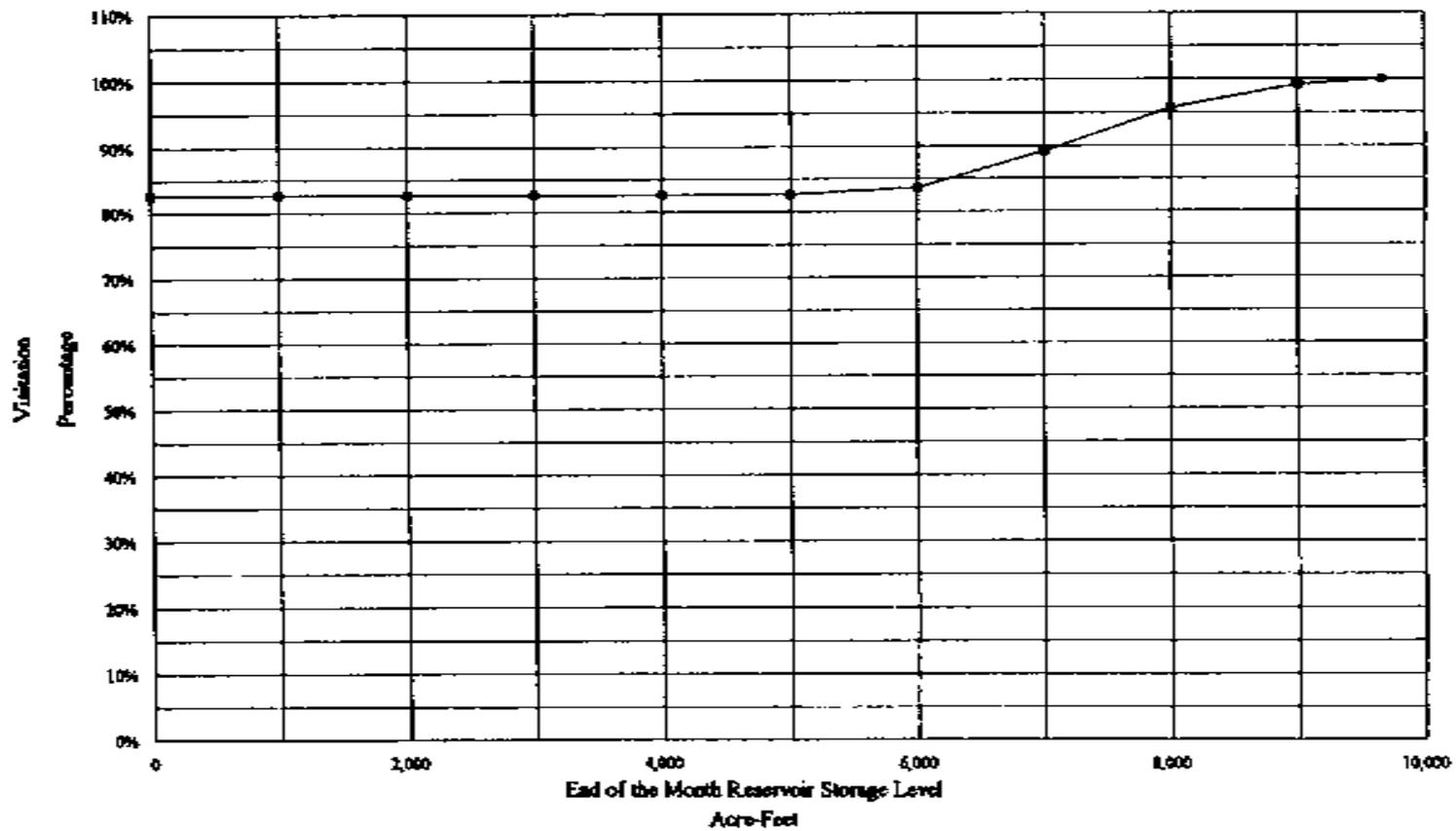


Figure 7.6-2. Prosser Reservoir Visitation and End of the Month Reservoir Storage Level Relationship.

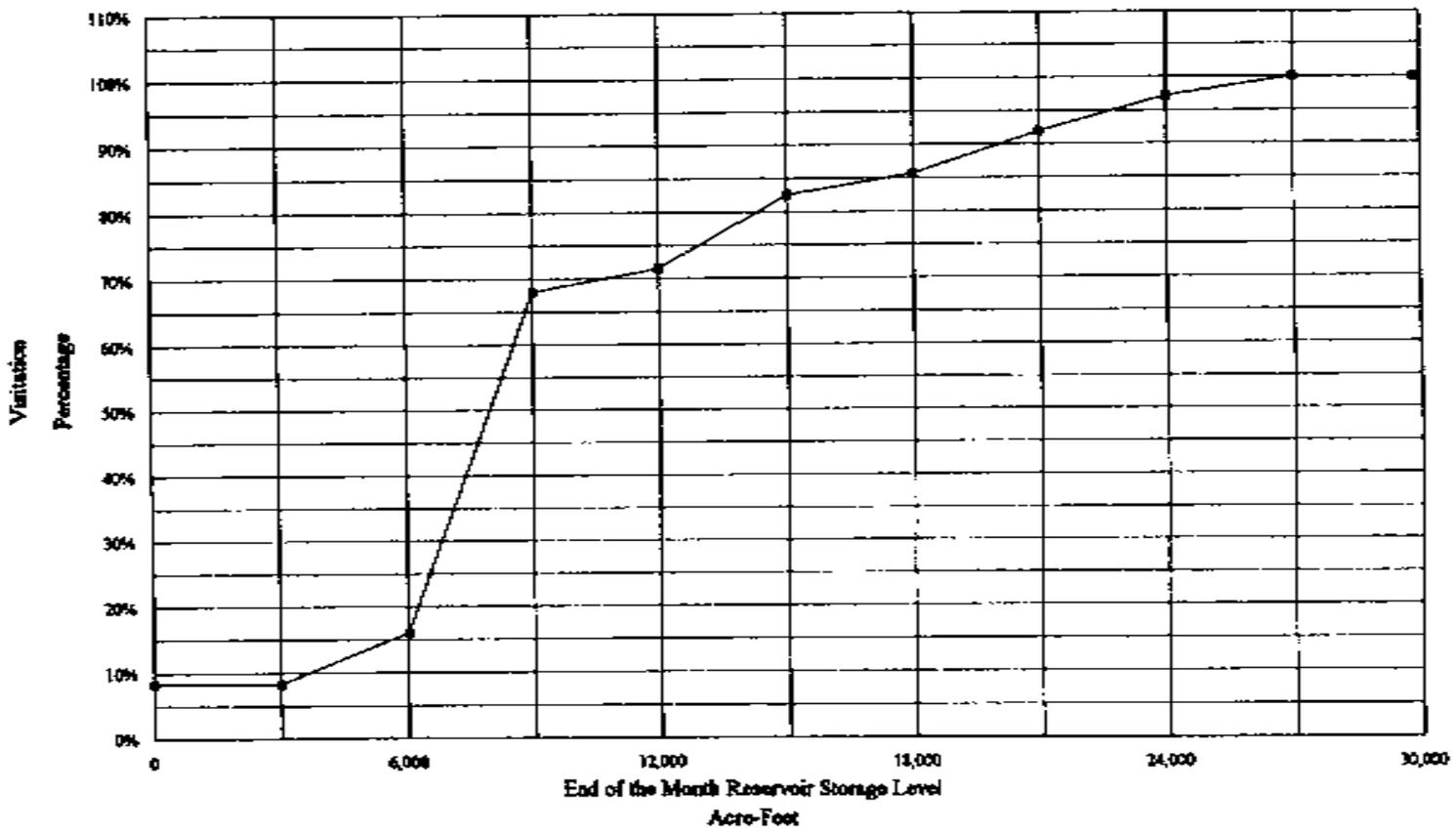


Figure 7.6-3. Stampede Reservoir Visitation and End of the Month Reservoir Storage Level Relationship.

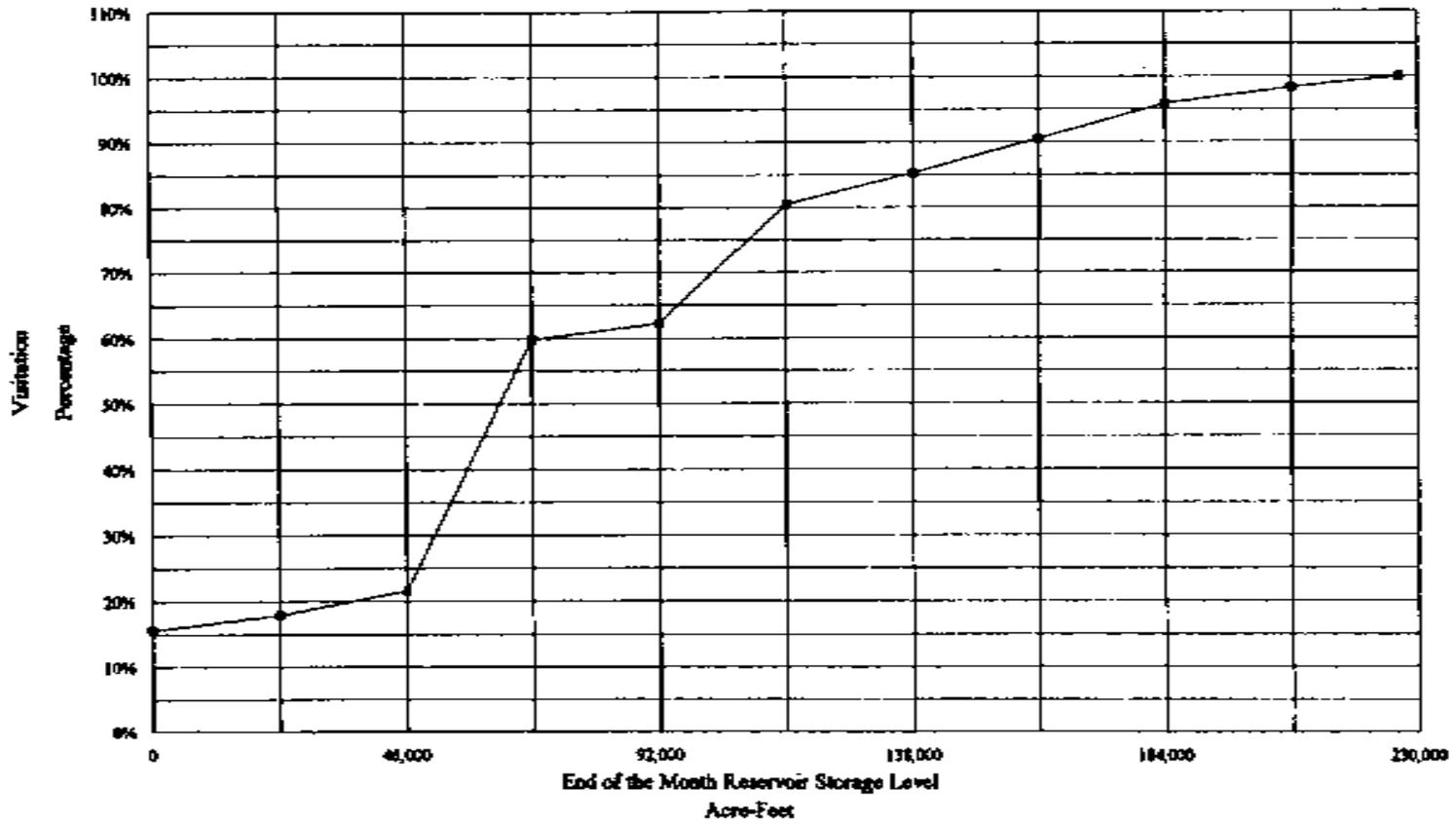
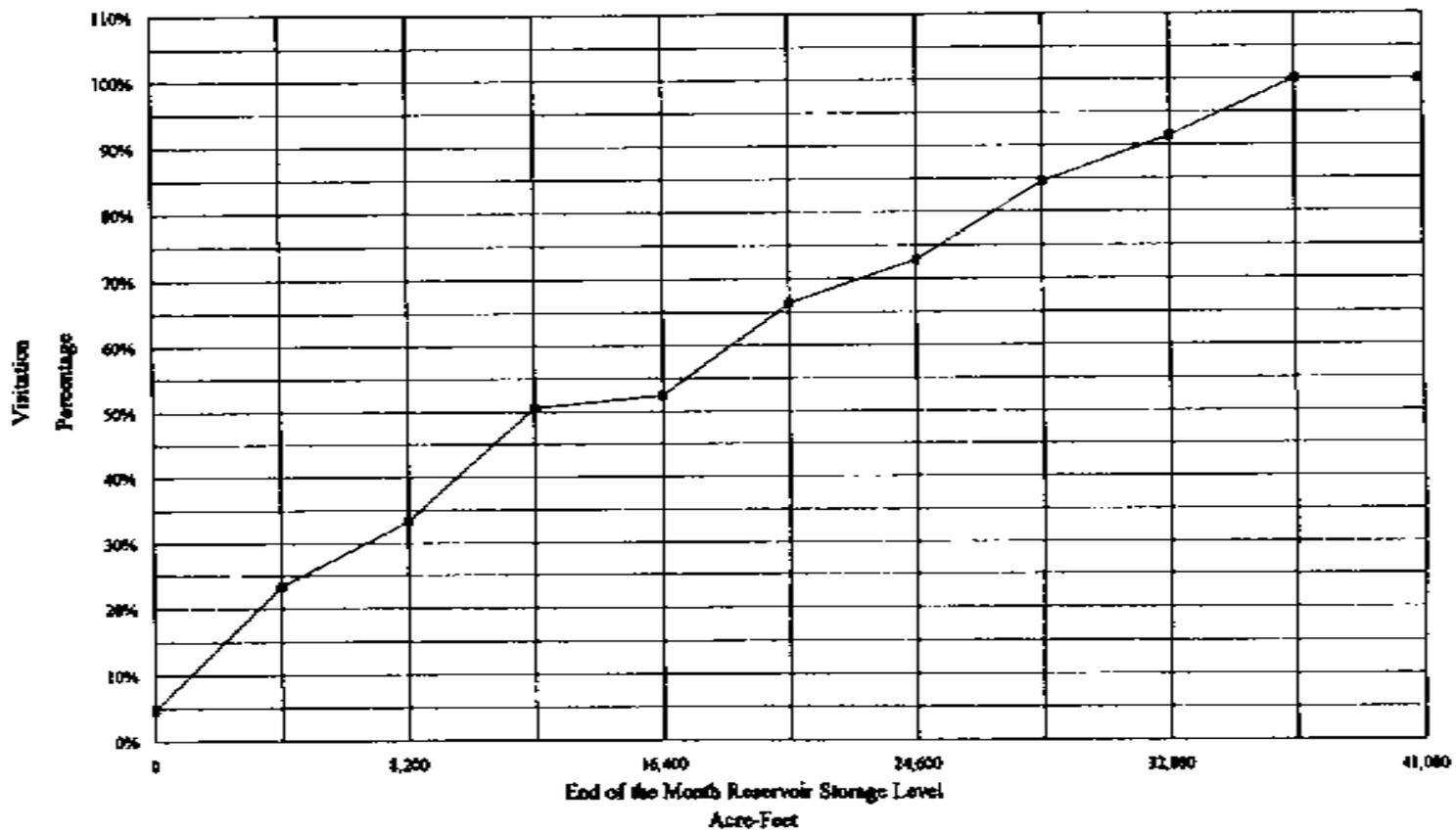


Figure 7.6-4. Boca Reservoir Visitation and End of the Month Reservoir Storage Level Relationship.



Annual Visitation Relative to End of the Month Reservoir Storage Levels

The annual visitation relative to end of the month reservoir storage levels is derived by weighting the scale values for the end of the month reservoir storage levels for the reservoir by the expected annual visitation to the reservoir for the year and then calculating an annual percentage of visitation.

The scale values are weighted by survey year annual visitation by respondents to reservoirs and expected annual visitation to the reservoirs for the year.

The survey year annual visitation by respondents to the reservoirs is shown in Table 7.6-7. The expected annual visitation is calculated through the following equation.

$$H_{it} = \frac{G_{it} (H_{it}^o)}{G_{it}^o} \quad (7.6-3)$$

where:

- H_{it} is the expected annual visitation to reservoir i in month t
- G_{it} is the percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t
- H_{it}^o is the survey year annual visitation by respondents to reservoir i in month t
- G_{it}^o is the survey year percentage of visitation corresponding to the scale value for the end of the month storage level for reservoir i in month t

The expected annual visitation is shown in Table 7.6-8. These values are the same as the values for the survey year since the end of the month reservoir storage levels are the same. The expected annual visitation would differ under alternative reservoir storage levels.

The weights for the expected annual visitation are then calculated through the following equation.

$$I_{it} = \frac{H_{it}}{\sum H_{it}} \quad (7.6-4)$$

where: I_{it} is the weight of the expected annual visitation to reservoir i in month t
 H_{it} is the expected annual visitation to reservoir i in month t

These weights are shown in Table 7.6-9. These weights show the annual pattern of visitation to the reservoirs.

The annual scale values for the reservoirs are then calculated through the following equation.

$$D_i = \sum_t D_{it} (I_{it}) \quad (7.6-5)$$

where: D_i is the annual scale value for reservoir i
 D_{it} is the scale value for the end of the month storage level for reservoir i in month t
 I_{it} is the weight of the expected annual visitation to reservoir i in month t

The weighted scale values are shown by month and by reservoir in Table 7.6-10. The summation of these weighted scale values is the annual scale value. Corresponding to an annual scale value is an annual percentage of visitation.

The annual percentage of visitation corresponding to the annual scale value is then calculated through the following equation.

$$\text{If } E_i \geq D_i \geq F_i \text{ scale value, then visitation } G_i = \alpha_i + \beta_i (D_i) \quad (7.6-6)$$

where:

- E_i is the high scale value for reservoir i
- D_i is the annual scale value for reservoir i
- F_i is the low scale value for reservoir i
- G_i is the annual percentage of visitation corresponding to the annual scale value for reservoir i
- α_i is the annual percentage of visitation constant term for reservoir i
- β_i is the annual percentage of visitation slope coefficient term for reservoir i

This equation is formulated to linearly interpolate an annual scale value to an annual percentage of visitation.

Separate equations for annual scale value and reservoir storage levels are formulated for Donner Lake and Prosser, Stampede, and Boca Reservoirs. These equations are provided below by reservoir.

Donner Lake

If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .935691 + .012862 (D_{it})$

If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = .819936 + .041801 (D_{it})$

If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = .733119 + .070740 (D_{it})$

If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = .778135 + .048232 (D_{it})$

If $1 = D_{it}$ scale value, then visitation $G_{it} = .826367$

Prosser Reservoir

- If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = 1.000000 + .000000 (D_{it})$
If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .702970 + .029703 (D_{it})$
If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .495050 + .052805 (D_{it})$
If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = .415842 + .062706 (D_{it})$
If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .646865 + .029703 (D_{it})$
If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = .151815 + .112211 (D_{it})$
If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .547855 + .033003 (D_{it})$
If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = - 1.419142 + .524752 (D_{it})$
If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = - .062706 + .072607 (D_{it})$
If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = .082508 + .000000 (D_{it})$
If $1 = D_{it}$ scale value, then visitation $G_{it} = .082508$

Stampede Reservoir

- If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = .785714 + .019481 (D_{it})$
If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .720779 + .025974 (D_{it})$
If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .457792 + .055195 (D_{it})$
If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = .483766 + .051948 (D_{it})$
If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .529221 + .045455 (D_{it})$
If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = - .347403 + .191558 (D_{it})$
If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .545455 + .012987 (D_{it})$
If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = - .974026 + .392857 (D_{it})$
If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = .126623 + .025974 (D_{it})$
If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = .133117 + .022727 (D_{it})$
If $1 = D_{it}$ scale value, then visitation $G_{it} = .155844$

Boca Reservoir

If $11 \geq D_{it} > 10$ scale value, then visitation $G_{it} = 1.000000 + .000000 (D_{it})$

If $10 \geq D_{it} > 9$ scale value, then visitation $G_{it} = .117117 + .088288 (D_{it})$

If $9 \geq D_{it} > 8$ scale value, then visitation $G_{it} = .295495 + .068468 (D_{it})$

If $8 \geq D_{it} > 7$ scale value, then visitation $G_{it} = -.093694 + .117117 (D_{it})$

If $7 \geq D_{it} > 6$ scale value, then visitation $G_{it} = .284685 + .063063 (D_{it})$

If $6 \geq D_{it} > 5$ scale value, then visitation $G_{it} = -.180180 + .140541 (D_{it})$

If $5 \geq D_{it} > 4$ scale value, then visitation $G_{it} = .441441 + .016216 (D_{it})$

If $4 \geq D_{it} > 3$ scale value, then visitation $G_{it} = -.192793 + .174775 (D_{it})$

If $3 \geq D_{it} > 2$ scale value, then visitation $G_{it} = .034234 + .099099 (D_{it})$

If $2 \geq D_{it} > 1$ scale value, then visitation $G_{it} = -.138739 + .185586 (D_{it})$

If $1 = D_{it}$ scale value, then visitation $G_{it} = .046847$

Annual visitation relative to end of the month reservoir storage levels for Donner Lake and Prosser, Stampede, and Boca Reservoirs are given in Table 7.6-11. An annual percentage of visitation corresponds to an annual scale value which in turn corresponds to end of the month reservoir storage levels.

Survey year annual visitation relative to end of the month reservoir storage levels are the same because of end of the month reservoir storage levels being the same. The annual percentages of visitation are shown in Table 7.6-12. Annual visitation would differ under alternative reservoir storage levels.

Annual patterns of visitation for Donner Lake and Prosser, Stampede, and Boca Reservoirs are also shown in Figures 7.6-5, 7.6-6, 7.6-7, and 7.6-8.

Table 7.6-7. Survey Year Annual Visitation by Respondents by Month by Reservoir.

| | Dancer Lake | Proser Reservoir | Stampede Reservoir | Boss Reservoir |
|--|-------------|------------------|--------------------|----------------|
| Number of Respondents that Visit during April | 30 | 8 | 19 | 34 |
| Number of Respondents that Visit during May | 35 | 15 | 41 | 53 |
| Number of Respondents that Visit during June | 11 | 26 | 86 | 69 |
| Number of Respondents that Visit during July | 103 | 35 | 83 | 75 |
| Number of Respondents that Visit during August | 96 | 33 | 97 | 78 |
| Number of Respondents that Visit during September | 44 | 17 | 43 | 51 |
| Number of Respondents that Visit during October | 16 | 11 | 21 | 29 |
| Number of Respondents that Visit during Other Months | 21 | 3 | 2 | 11 |
| Total | 406 | 148 | 392 | 398 |

Table 7.6-8. Expected Annual Visitation by Month by Reservoir.

| | Dancer Lake | Proser Reservoir | Stampede Reservoir | Boss Reservoir |
|---|-------------|------------------|--------------------|----------------|
| Expected Visitation during April | 30 | 8 | 19 | 34 |
| Expected Visitation during May | 35 | 15 | 41 | 53 |
| Expected Visitation during June | 11 | 26 | 86 | 69 |
| Expected Visitation during July | 100 | 35 | 83 | 75 |
| Expected Visitation during August | 96 | 33 | 97 | 78 |
| Expected Visitation during September | 44 | 17 | 43 | 51 |
| Expected Visitation during October | 16 | 11 | 21 | 29 |
| Expected Visitation during Other Months | 21 | 3 | 2 | 11 |
| Total | 406 | 148 | 392 | 398 |

Table 7.6-9. Weights for Expected Annual Visitation by Month by Reservoir.

| | Dancer Lake | Proser Reservoir | Stampede Reservoir | Boss Reservoir |
|--|-------------|------------------|--------------------|----------------|
| Weight for expected Visitation during April | 4.93% | 5.41% | 4.85% | 6.15% |
| Weight for expected Visitation during May | 8.62% | 10.14% | 10.46% | 13.59% |
| Weight for expected Visitation during June | 17.49% | 17.57% | 21.94% | 17.69% |
| Weight for expected Visitation during July | 25.37% | 23.65% | 21.17% | 19.29% |
| Weight for expected Visitation during August | 23.65% | 22.30% | 24.74% | 20.00% |
| Weight for expected Visitation during September | 10.84% | 11.49% | 10.97% | 13.06% |
| Weight for expected Visitation during October | 3.94% | 7.43% | 5.36% | 7.44% |
| Weight for expected Visitation during Other Months | 5.17% | 2.03% | 0.51% | 2.82% |

Table 7.6-10. Annual Scale Values by Reservoir.

| | Dexter Lake | Proser Reservoir | Stampsie Reservoir | Boon Reservoir |
|--|------------------------|-----------------------------|-------------------------------|---------------------------|
| Weighted Scale Value for April End of the Month Reservoir Storage Level | 0.85 | 0.23 | 0.32 | 0.46 |
| Weighted Scale Value for May End of the Month Reservoir Storage Level | 0.40 | 0.46 | 0.53 | 1.35 |
| Weighted Scale Value for June End of the Month Reservoir Storage Level | 0.36 | 1.48 | 1.84 | 1.85 |
| Weighted Scale Value for July End of the Month Reservoir Storage Level | 1.20 | 1.99 | 1.87 | 1.98 |
| Weighted Scale Value for August End of the Month Reservoir Storage Level | 0.99 | 1.84 | 2.15 | 1.89 |
| Weighted Scale Value for September End of the Month Reservoir Storage Level | 0.11 | 0.67 | 0.94 | 0.90 |
| Weighted Scale Value for October End of the Month Reservoir Storage Level | 0.04 | 0.32 | 0.46 | 0.37 |
| Weighted Scale Value for Other Months End of the Month Reservoir Storage Level | 0.05 | 0.09 | 0.03 | 0.09 |
| Annual Scale Value | 5.71 | 7.21 | 8.14 | 8.93 |

Table 7.6-11. Annual Visitation Relative to End of the Month Reservoir Storage Levels.

| | Dexter Lake | Proser Reservoir | Stampsie Reservoir | Boon Reservoir |
|--|------------------------|-----------------------------|-------------------------------|---------------------------|
| Annual Visitation Relative to the End of the Month Reservoir Storage Levels | 97.45% | 86.80% | 90.71% | 90.69% |

Table 7.6-12. Survey Year Annual Visitation Relative to End of the Month Reservoir Storage Levels.

| | Dexter Lake | Proser Reservoir | Stampsie Reservoir | Boon Reservoir |
|--|------------------------|-----------------------------|-------------------------------|---------------------------|
| Annual Visitation Relative to the End of the Month Reservoir Storage Levels | 97.45% | 86.80% | 90.71% | 90.69% |

Figure 7.6-5. Donner Lake Annual Pattern of Visitation.

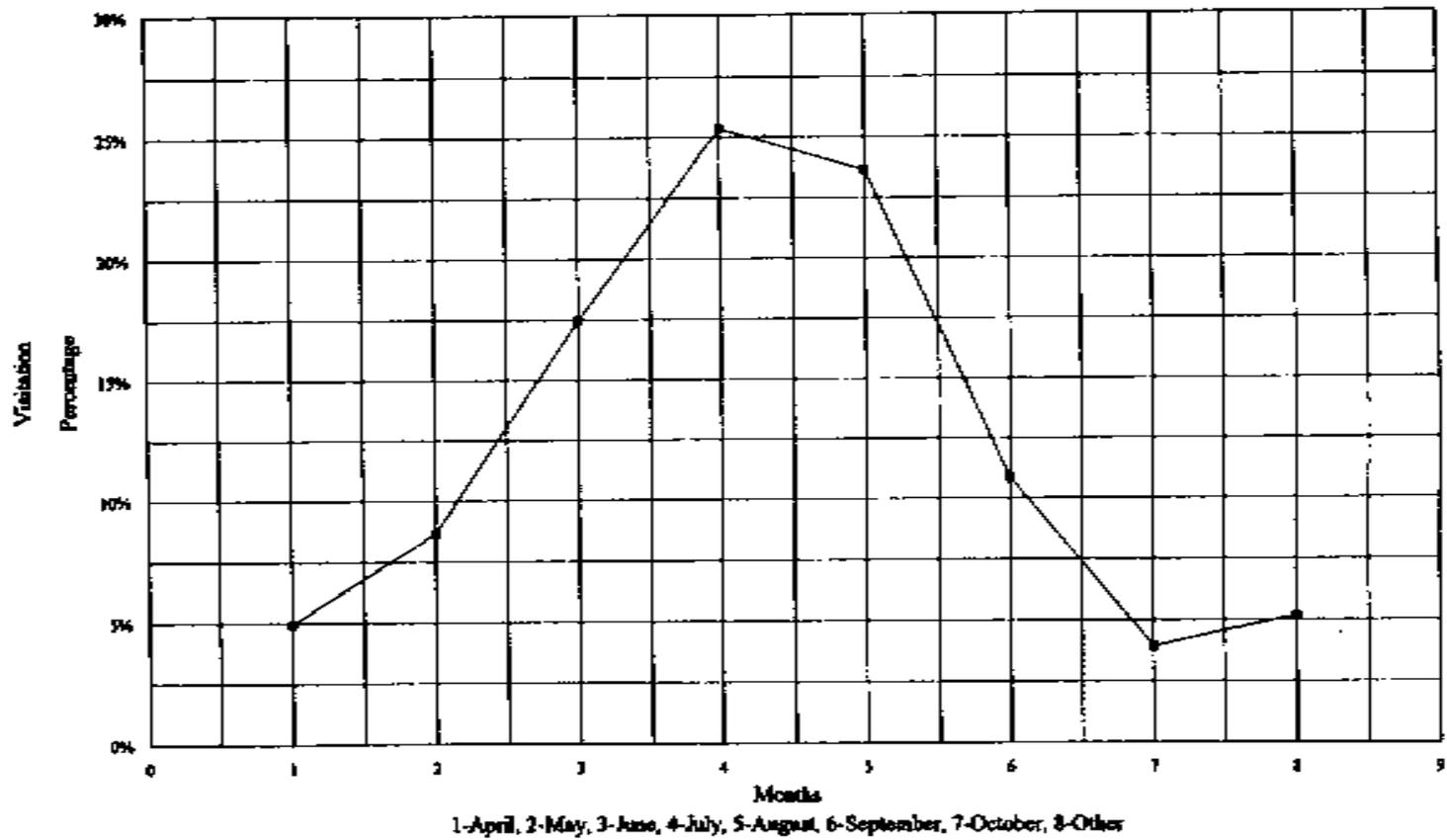


Figure 7.6-6. Prosser Reservoir Annual Pattern of Visitation.

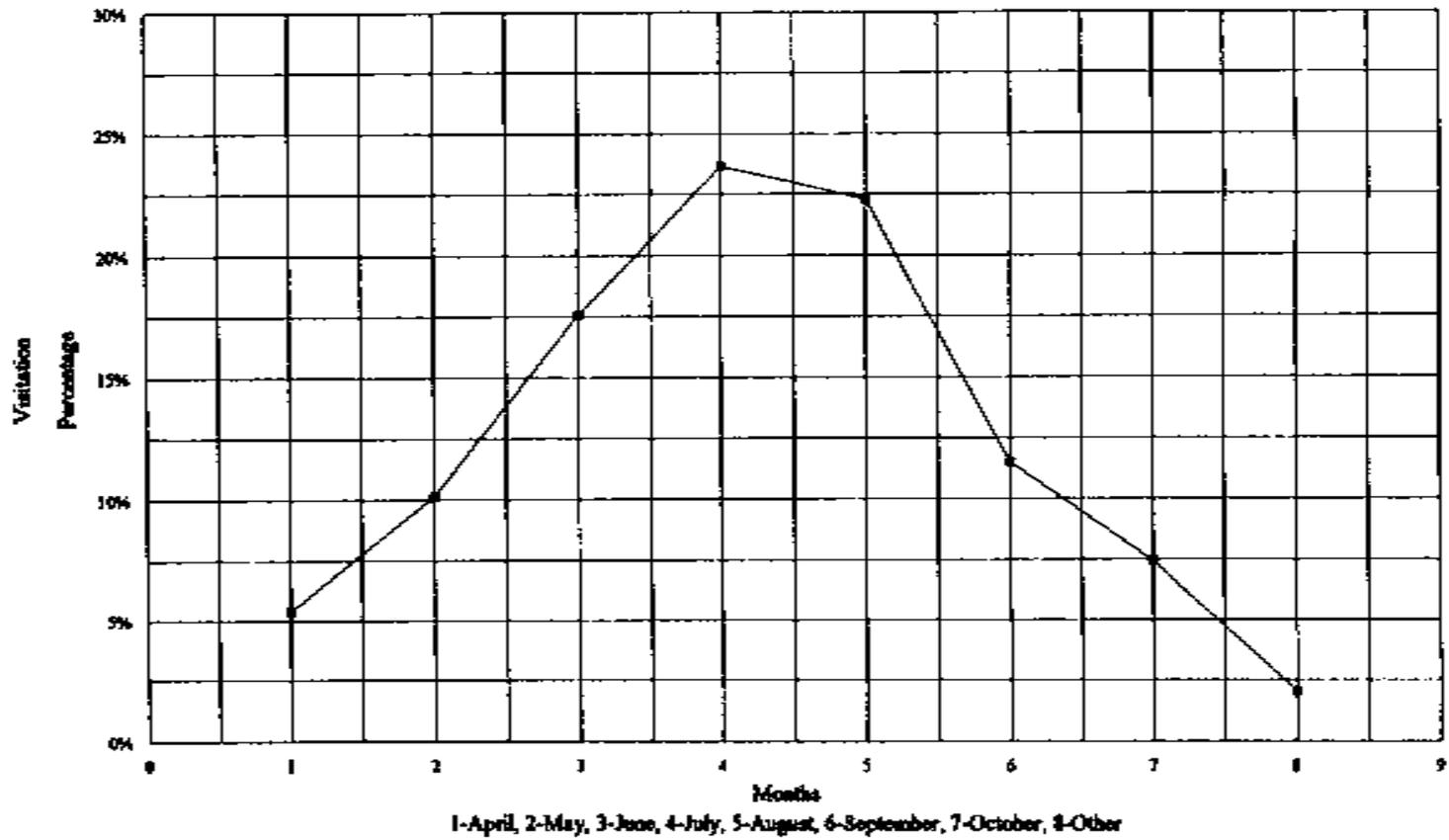


Figure 7.6-7. Stampede Reservoir Annual Pattern of Visitation.

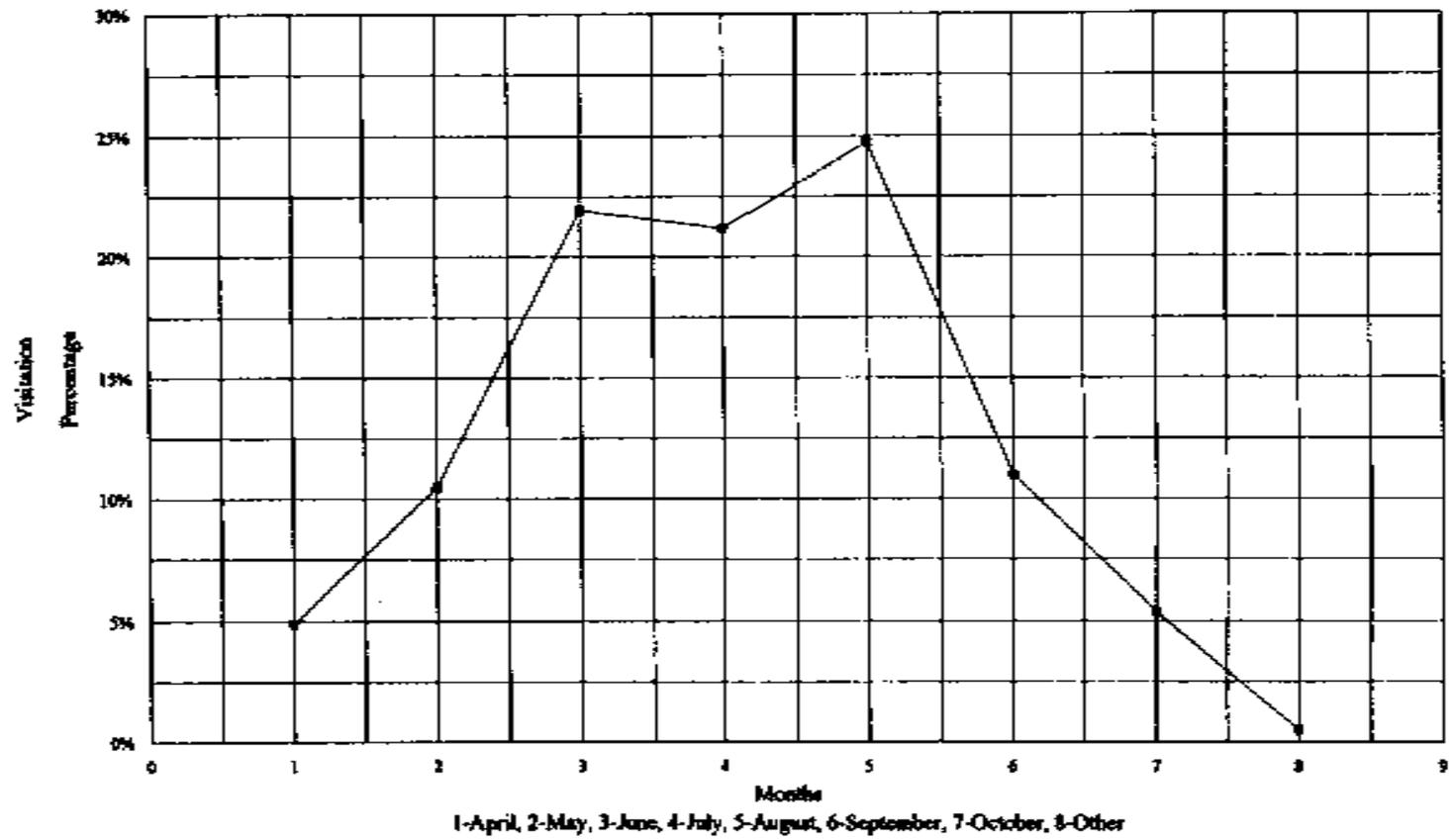
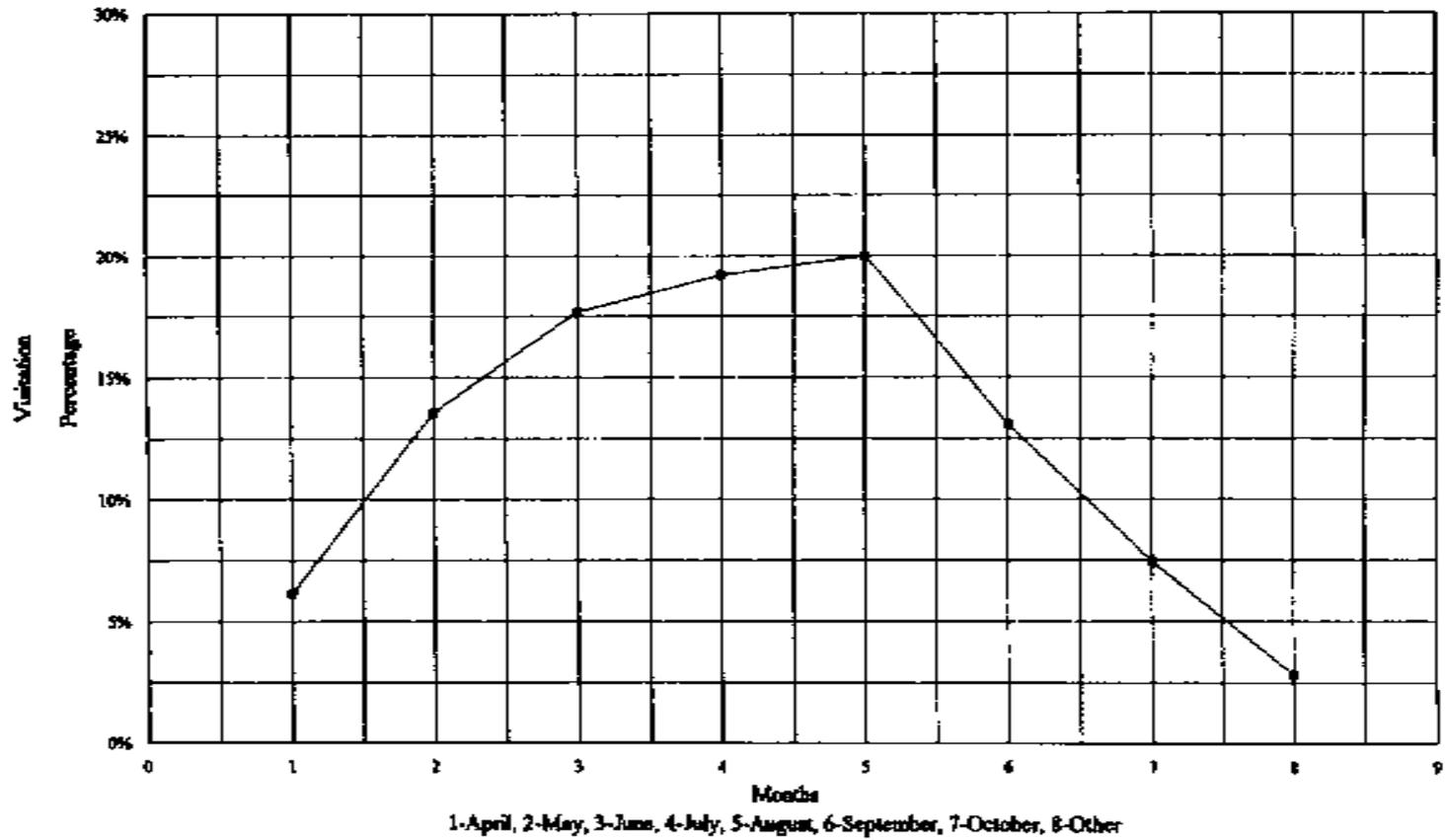


Figure 7.6-8. Boca Reservoir Annual Pattern of Visitation.



Annual Number of Camping Visitors

The annual number of camping visitors to the reservoirs is derived by taking the survey year number of camping visitors for the campgrounds at the reservoirs and multiplying by the ratio of annual visitation for the given year to the annual visitation for survey year. The annual number of camping visitors is distributed monthly by the weights of the expected annual visitation to show the annual pattern of visitation.

The survey year number of camping visitors for the campgrounds at the reservoirs are taken from California State Park and U.S. Forest Service data. This data is shown in Table 7.6-13. There are twelve campgrounds in the area. One campground is near Donner Lake. Four campgrounds are near Prosser Reservoir. Another three campgrounds are near Stampede Reservoir. And the remaining four campgrounds are near Boca Reservoir. The annual number of camping visitors is provided for each campground.

The annual number of camping visitors for the given year is calculated through the following equation.

$$J_i = J_i^0 \frac{G_i}{G_i^0} \quad (7.6-7)$$

where:

- J_i is the annual number of camping visitors for reservoir i
- J_i^0 is the survey year annual number of camping visitors for reservoir i
- G_i is the annual percentage of visitation corresponding to the annual scale value for reservoir i
- G_i^0 is the survey year annual percentage of visitation corresponding to the annual scale value for reservoir i

The equation is formulated so that if the annual percentage of visitation for the given year is greater than the survey year annual percentage of visitation then the annual number of camping visitors for the given year is also greater. Likewise if the annual percentage of visitation for the given year is less than the survey year annual percentage of visitation then the annual number of camping visitors for the given year is also less.

The annual number of camping visitors by reservoir are shown in Table 7.6-14.

The annual number of camping visitors are then distributed by the weights for expected annual visitation to show the annual number of camping visitors by month. This is done through the following equation.

$$K_{it} = J_i (I_{it}) \quad (7.6-8)$$

where: K_{it} is the number of annual camping visitors to reservoir i in month t
 J_i is the annual number of camping visitors for reservoir i
 I_{it} is the weight of the expected annual visitation to reservoir i in month t .

The annual number of camping visitors by month to the reservoirs are shown in Table 7.6-15. Together the annual number of camping visitors by month show the annual pattern of visitation to the reservoir by camping visitors.

Table 7.6-13. Annual Number of Camping Visitors by Campground by Reservoir.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|-------------|-------------------|--------------------|----------------|
| Number of Camping Visitors for Donner State Park | 56,715 | | | |
| Number of Camping Visitors for Lakeside Campground | | 0 | | |
| Number of Camping Visitors for Prosser Family Campground | | 15,021 | | |
| Number of Camping Visitors for Prosser Ranch Campground | | 3,677 | | |
| Number of Camping Visitors for Annie McCloud Campground | | 0 | | |
| Number of Camping Visitors for Davies Creek Campground | | | 1,111 | |
| Number of Camping Visitors for Emigrant Campground | | | 20,679 | |
| Number of Camping Visitors for Logger Campground | | | 97,132 | |
| Number of Camping Visitors for Boca Campground | | | | 0 |
| Number of Camping Visitors for Boca Rest Campground | | | | 29,427 |
| Number of Camping Visitors for Boca Spring Campground | | | | 0 |
| Number of Camping Visitors for Boyington McI Campground | | | | 3,480 |
| Total Number of Camping Visitors for Campgrounds | 56,715 | 18,908 | 118,921 | 32,907 |

Note: There are 152 open campsites at Donner Lake, 46 open campsites at Prosser Reservoir, 216 to 256 open campsites at Stampede Reservoir, and 59 open campsites at Boca Reservoir.

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Table 7.6-14. Annual Number of Camping Visitors by Reservoir.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir |
|-----------------------------------|-------------|-------------------|--------------------|----------------|
| Annual Number of Camping Visitors | 56,715 | 18,908 | 118,921 | 32,907 |

Table 7.6-15. Annual Number of Camping Visitors by Month by Reservoir.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|-------------|-------------------|--------------------|----------------|
| Number of Camping Visitors during April | 2,294 | 1,022 | 5,764 | 2,325 |
| Number of Camping Visitors during May | 4,389 | 1,916 | 12,438 | 4,472 |
| Number of Camping Visitors during June | 9,918 | 3,322 | 26,090 | 5,822 |
| Number of Camping Visitors during July | 14,388 | 4,471 | 25,180 | 6,328 |
| Number of Camping Visitors during August | 13,410 | 4,216 | 29,427 | 6,581 |
| Number of Camping Visitors during September | 6,146 | 2,172 | 13,045 | 4,503 |
| Number of Camping Visitors during October | 2,235 | 1,405 | 6,371 | 2,447 |
| Number of Camping Visitors during Other Months | 2,934 | 363 | 607 | 928 |
| Annual Number of Camping Visitors | 56,715 | 18,908 | 118,921 | 32,907 |

Annual Number of Day Use Visitors

The annual number of day use visitors to the reservoirs is derived by multiplying the annual number of camping visitors to the reservoirs by the ratio of day use visitors to camping visitors taken from the survey vehicle count data.

The ratio of day use visitors to camping visitors is calculated through the following equations.

$$L_i = M_i (N_i) \quad (7.6-9)$$

$$O_i = P_i (Q_i) \quad (7.6-10)$$

$$R_i = \frac{O_i}{L_i} \quad (7.6-11)$$

where:

| | |
|-------|---|
| L_i | is the number of camping visitors to reservoir i |
| M_i | is the number of camping visitor vehicles at reservoir i |
| N_i | is the average group size of camping respondents at reservoir i |
| O_i | is the number of day use visitors to reservoir i |
| P_i | is the number of day use visitor vehicles at reservoir i |
| Q_i | is the average group size of day use respondents at reservoir i |
| R_i | is the ratio of day use visitors to camping visitors to reservoir i |

The ratios of day use visitors to camping visitors by reservoir are given in Table 7.6-16.

The annual number of day use visitors is then calculated through the following equation.

$$S_i = J_i (R_i) \quad (7.6-12)$$

where:

| | |
|-------|---|
| S_i | is the annual number of day use visitors for reservoir i |
| J_i | is the annual number of camping visitors for reservoir i |
| R_i | is the ratio of day use visitors to camping visitors to reservoir i |

The annual number of day use visitors by reservoir are shown in Table 7.6-17.

The annual number of day use visitors are then distributed by the weights for expected annual visitation to show the annual number of day use visitors by month. This is done through the following equation.

$$T_{it} = S_i (I_{it}) \quad (7.6-13)$$

where: T_{it} is the number of annual day use visitors to reservoir i in month t
 S_i is the annual number of day use visitors for reservoir i
 I_{it} is the weight of the expected annual visitation to reservoir i
in month t

The annual number of day use visitors by month to the reservoirs are shown in Table 7.6-18. Together the annual number of day use visitors by month show the annual pattern of visitation to the reservoir by day use visitors.

Table 7.6-16. Ratio of Day Use Visitors to Camping Visitors by Reservoir.

| | Donner Lake | Prosser Reservoir | Sumpede Reservoir | Boca Reservoir |
|---|----------------|----------------------|----------------------|-------------------|
| Average Group Size of Camping Respondents | 5.24 | 3.73 | 5.12 | 5.10 |
| Average Group Size of Day Use Respondents | 5.02 | 3.13 | 3.89 | 5.02 |
| Number of Camping Visitor Vehicles counted on May 28, 1994 | | 26 | 227 | 91 |
| Number of Camping Visitor Vehicles counted on June 11, 1994 | | 44 | 136 | 16 |
| Number of Camping Visitor Vehicles counted on June 17, 1994 | | 11 | 86 | 9 |
| Number of Camping Visitor Vehicles counted on June 24, 1994 | | | | |
| Number of Camping Visitor Vehicles counted on June 25, 1994 | | 37 | 157 | 9 |
| Number of Camping Visitor Vehicles counted on July 2, 1994 | | 30 | 208 | 31 |
| Number of Camping Visitor Vehicles counted on July 8, 1994 | | 13 | 63 | 12 |
| Number of Camping Visitor Vehicles counted on July 16, 1994 | | 26 | 131 | 16 |
| Number of Camping Visitor Vehicles counted on July 22, 1994 | | 34 | 90 | 3 |
| Number of Camping Visitor Vehicles counted on July 23, 1994 | | | | |
| Number of Camping Visitor Vehicles counted on August 6, 1994 | | 22 | 86 | 12 |
| Number of Camping Visitor Vehicles counted on August 12, 1994 | | | | |
| Number of Camping Visitor Vehicles counted on August 20, 1994 | | 21 | 93 | 10 |
| Number of Camping Visitor Vehicles counted on September 3, 1994 | | 25 | 70 | 11 |
| Total Number of Camping Visitor Vehicles | N.A. | 289 | 1,257 | 235 |
| Number of Day Use Visitor Vehicles counted on May 28, 1994 | | 33 | 36 | 43 |
| Number of Day Use Visitor Vehicles counted on June 11, 1994 | | 4 | 39 | 62 |
| Number of Day Use Visitor Vehicles counted on June 17, 1994 | | 3 | 82 | 22 |
| Number of Day Use Visitor Vehicles counted on June 24, 1994 | | | | |
| Number of Day Use Visitor Vehicles counted on June 25, 1994 | | 16 | 18 | 28 |
| Number of Day Use Visitor Vehicles counted on July 2, 1994 | | 35 | 65 | 50 |
| Number of Day Use Visitor Vehicles counted on July 8, 1994 | | 9 | 14 | 18 |
| Number of Day Use Visitor Vehicles counted on July 16, 1994 | | 10 | 49 | 19 |
| Number of Day Use Visitor Vehicles counted on July 22, 1994 | | 4 | 15 | 9 |
| Number of Day Use Visitor Vehicles counted on July 23, 1994 | | | | |
| Number of Day Use Visitor Vehicles counted on August 6, 1994 | | 2 | 21 | 12 |
| Number of Day Use Visitor Vehicles counted on August 12, 1994 | | | | |
| Number of Day Use Visitor Vehicles counted on August 20, 1994 | | 9 | 40 | 20 |
| Number of Day Use Visitor Vehicles counted on September 3, 1994 | | 6 | 26 | 23 |
| Total Number of Day Use Visitor Vehicles | N.A. | 131 | 335 | 306 |
| Number of Camping Visitors | N.A. | 1,078 | 6,641 | 1,219 |
| Number of Day Use Visitors | N.A. | 410 | 1,303 | 1,536 |
| Ratio of Day Use Visitors to Camping Visitors /1 | 1.72 | 0.38 | 0.20 | 1.26 |

1 Ratio of day use visitors to camping visitors for Donner Lake is based on estimates of recreation visits for 1993. Estimates are 195,099 camping visits and 133,245 day use visits.

Table 7.6-17. Annual Number of Day Use Visitors by Reservoir.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir |
|-----------------------------------|----------------|----------------------|-----------------------|-------------------|
| Annual Number of Day Use Visitors | 211,037 | 7,192 | 23,337 | 41,470 |

Table 7.6-18. Annual Number of Day Use Visitors by Month by Reservoir.

| | Donner Lake | Prosser Reservoir | Stampede Reservoir | Boca Reservoir |
|--|----------------|----------------------|-----------------------|-------------------|
| Number of Day Use Visitors during April | 10,396 | 389 | 1,131 | 2,532 |
| Number of Day Use Visitors during May | 15,193 | 729 | 2,441 | 5,636 |
| Number of Day Use Visitors during June | 56,905 | 1,263 | 5,120 | 7,337 |
| Number of Day Use Visitors during July | 53,539 | 1,701 | 4,941 | 7,975 |
| Number of Day Use Visitors during August | 49,900 | 1,604 | 5,775 | 8,294 |
| Number of Day Use Visitors during September | 22,871 | 826 | 2,560 | 5,423 |
| Number of Day Use Visitors during October | 4,317 | 535 | 1,250 | 3,084 |
| Number of Day Use Visitors during Other Months | 10,916 | 146 | 119 | 1,170 |
| Annual Number of Day Use Visitors | 211,037 | 7,192 | 23,337 | 41,470 |

Annual Number of Camping Visitor Groups

The annual number of camping visitor groups to the reservoirs is derived by dividing the annual number of camping visitors by month by the group size. This is done through the following equation.

$$U_{it} = \frac{K_{it}}{N_i} \quad (7.6-14)$$

where: U_{it} is the annual number of camping visitor groups to reservoir i in month t
 K_{it} is the number of annual camping visitors to reservoir i in month t
 N_i is the average group size of camping respondents at reservoir i

The annual number of camping visitor groups by month to the reservoirs are shown in Table 7.6-19.

Table 7.6-19. Annual Number of Camping Visitor Groups by Month by Reservoir.

| | Documt Lake | Prosser Reservoir | Stampsie Reservoir | Boon Reservoir |
|--|------------------------|------------------------------|-------------------------------|---------------------------|
| Number of Camping Visitor Groups during April | 1,834 | 548 | 2,252 | 794 |
| Number of Camping Visitor Groups during May | 3,210 | 1,028 | 4,859 | 1,754 |
| Number of Camping Visitor Groups during June | 6,511 | 1,781 | 10,191 | 2,283 |
| Number of Camping Visitor Groups during July | 5,446 | 2,390 | 9,836 | 2,482 |
| Number of Camping Visitor Groups during August | 8,904 | 2,261 | 11,495 | 2,581 |
| Number of Camping Visitor Groups during September | 4,035 | 1,165 | 5,096 | 1,688 |
| Number of Camping Visitor Groups during October | 1,467 | 754 | 2,489 | 960 |
| Number of Camping Visitor Groups during Other Months | 1,926 | 206 | 231 | 364 |
| Annual Number of Camping Visitor Groups | 37,233 | 10,198 | 46,453 | 12,903 |

Annual Number of Day Use Visitor Groups

The annual number of day use visitor groups to the reservoirs is derived by dividing the annual number of day use visitors by month by the group size. This is done through the following equation.

$$V_{it} = \frac{T_{it}}{Q_i} \quad (7.6-15)$$

where: V_{it} is the annual number of day use visitor groups to reservoir i in month t
 T_{it} is the number of annual day use visitors to reservoir i in month t
 Q_i is the average group size of day use respondents at reservoir i

The annual number of day use visitor groups by month to the reservoirs are shown in Table 7.6-20.

Table 7.6-20. Annual Number of Day Use Visitor Groups by Month by Reservoir.

| | Deer Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|----------------------|-----------------------------|-------------------------------|---------------------------|
| Number of Day Use Visitor Groups during April | 1,357 | 248 | 342 | 1,017 |
| Number of Day Use Visitor Groups during May | 2,374 | 466 | 1,255 | 2,245 |
| Number of Day Use Visitor Groups during June | 4,816 | 807 | 2,632 | 2,923 |
| Number of Day Use Visitor Groups during July | 6,987 | 1,087 | 2,540 | 3,177 |
| Number of Day Use Visitor Groups during August | 6,512 | 1,023 | 2,969 | 3,304 |
| Number of Day Use Visitor Groups during September | 2,985 | 528 | 1,316 | 2,161 |
| Number of Day Use Visitor Groups during October | 1,085 | 342 | 643 | 1,229 |
| Number of Day Use Visitor Groups during Other Months | 1,424 | 93 | 61 | 466 |
| Annual Number of Day Use Visitor Groups | 27,599 | 4,596 | 11,998 | 16,522 |

Annual Camping Visitor Expenditures

The annual camping visitor expenditures by reservoir are the summation of the annual number of camping visitor groups per month multiplied by the camping visitor group expenditure function value. This is done through the following equations.

$$W_{it} = U_{it} (X_i) \quad (7.6-16)$$

$$Y_i = \sum W_{it} \quad (7.6-17)$$

where: W_{it} is the annual camping visitor expenditures for reservoir i in month t
 U_{it} is the annual number of camping visitor groups to reservoir i in month t
 X_i is the camping visitor group expenditure function value for reservoir i
 Y_i is the annual camping visitor expenditures for reservoir i

The camping visitor group expenditure function values for each reservoir are shown in Table 7.6-21. The annual camping visitor expenditures by month by reservoir are shown in Table 7.6-22.

The annual camping visitor expenditures are proportioned by the percentage of expenditure per category indicated by camping respondents for the reservoir. This is done through the following equation.

$$Z_{ci} = Y_i (AA_{ci}) \quad (7.6-18)$$

where: Z_{ci} is the annual camping visitor expenditures by category c for reservoir i
 Y_i is the annual camping visitor expenditures for reservoir i
 AA_{ci} is the percentage of expenditure per category c for reservoir i by camping respondents

The annual camping visitor expenditures by category by reservoir are shown in Table 7.6-23.

Table 7.6-21. Camping Visitor Group Expenditure Function Values by Reservoir.

| | Dexter Lake | Proser Reservoir | Stamps Reservoir | Boon Reservoir |
|---|--------------------|-------------------------|-------------------------|-----------------------|
| Camping Visitor Group Expenditure per Day | \$36.97 | \$27.90 | \$39.61 | \$34.40 |

Table 7.6-22. Annual Camping Visitor Expenditures by Month by Reservoir.

| | Dexter Lake | Proser Reservoir | Stamps Reservoir | Boon Reservoir |
|--|--------------------|-------------------------|-------------------------|-----------------------|
| Camping Visitor Expenditures during April | 67,807 | 15,290 | 89,184 | 27,318 |
| Camping Visitor Expenditures during May | 118,663 | 28,668 | 192,451 | 60,327 |
| Camping Visitor Expenditures during June | 240,716 | 49,692 | 403,677 | 78,339 |
| Camping Visitor Expenditures during July | 349,208 | 66,892 | 389,395 | 85,368 |
| Camping Visitor Expenditures during August | 325,476 | 63,870 | 453,310 | 88,783 |
| Camping Visitor Expenditures during September | 148,176 | 32,491 | 201,838 | 58,050 |
| Camping Visitor Expenditures during October | 54,246 | 21,623 | 98,572 | 23,009 |
| Camping Visitor Expenditures during Other Months | 71,198 | 1,734 | 9,388 | 12,521 |
| Annual Camping Visitor Expenditures | \$1,376,490 | \$282,860 | \$1,840,016 | \$443,915 |

Table 7.6-23. Annual Camping Visitor Expenditures by Category by Reservoir.

| | Donner Lake | Power Reservoir | Shawpoke Reservoir | Boas Reservoir |
|---|--------------------|-------------------|--------------------|-------------------|
| Number of Camping Respondents | 42 | 30 | 97 | 21 |
| Expenditures on Licenses by Camping Respondents | 0.00 | 0.00 | 535.94 | 69.60 |
| Expenditures on Camping Fees by Camping Respondents | 2045.82 | 623.10 | 4231.19 | 434.81 |
| Expenditures on Hotel or Motel by Camping Respondents | 233.20 | 0.00 | 0.00 | 219.98 |
| Expenditures on Restaurants by Camping Respondents | 1189.86 | 246.90 | 1081.22 | 120.62 |
| Expenditures on Groceries by Camping Respondents | 2392.31 | 1840.80 | 5872.95 | 2030.63 |
| Expenditures on Equipment and Supplies by Camping Respondents | 0.00 | 0.00 | 497.64 | 1.40 |
| Expenditures on Rental by Camping Respondents | 25.20 | 0.00 | 0.00 | 1.06 |
| Expenditures on Fuel by Camping Respondents | 854.36 | 365.78 | 2666.98 | 439.38 |
| Expenditures on Other by Camping Respondents | 1065.12 | 418.50 | 3766.40 | 688.05 |
| Total Expenditures by Camping Respondents | \$7,697.63 | \$3,495.00 | \$18,650.32 | \$4,005.73 |
| Expenditures on Licenses by Camping Respondents | 0.00% | 0.00% | 2.86% | 1.14% |
| Expenditures on Camping Fees by Camping Respondents | 26.85% | 17.83% | 22.69% | 10.83% |
| Expenditures on Hotel or Motel by Camping Respondents | 3.05% | 0.00% | 0.00% | 1.49% |
| Expenditures on Restaurants by Camping Respondents | 15.64% | 7.06% | 5.80% | 3.00% |
| Expenditures on Groceries by Camping Respondents | 31.43% | 52.67% | 31.49% | 50.48% |
| Expenditures on Equipment and Supplies by Camping Respondents | 0.00% | 0.00% | 2.67% | 0.04% |
| Expenditures on Rental by Camping Respondents | 0.33% | 0.00% | 0.00% | 0.08% |
| Expenditures on Fuel by Camping Respondents | 11.09% | 10.46% | 14.30% | 10.97% |
| Expenditures on Other by Camping Respondents | 14.00% | 11.97% | 20.19% | 17.18% |
| Total Expenditures by Camping Respondents | 100.00% | 100.00% | 100.00% | 100.00% |
| Annual Camping Visitor Expenditures on Licenses | 0 | 0 | 52,678 | 7,713 |
| Annual Camping Visitor Expenditures on Camping Fees | 370,149 | 58,429 | 417,444 | 48,097 |
| Annual Camping Visitor Expenditures on Hotel or Motel | 42,555 | 0 | 0 | 24,378 |
| Annual Camping Visitor Expenditures on Restaurants | 215,281 | 19,982 | 106,672 | 13,301 |
| Annual Camping Visitor Expenditures on Groceries | 432,841 | 148,961 | 519,418 | 224,968 |
| Annual Camping Visitor Expenditures on Equipment and Supplies | 0 | 0 | 49,097 | 171 |
| Annual Camping Visitor Expenditures on Rental | 4,550 | 0 | 0 | 339 |
| Annual Camping Visitor Expenditures on Fuel | 118,393 | 29,397 | 263,121 | 48,692 |
| Annual Camping Visitor Expenditures on Other | 192,712 | 33,870 | 371,588 | 76,250 |
| Annual Camping Visitor Expenditures | \$1,376,490 | \$282,660 | \$1,840,016 | \$443,915 |

Annual Day Use Visitor Expenditures

The annual day use visitor expenditures by reservoir are the summation of the annual number of day use visitor groups per month multiplied by the day use visitor group expenditure function value. This is done through the following equations.

$$AB_{it} = V_{it} (AC_i) \quad (7.6-19)$$

$$AD_i = \sum AB_{it} \quad (7.6-20)$$

where: AB_{it} is the annual day use visitor expenditures for reservoir i in month t
 V_{it} is the number of annual day use visitor groups to reservoir i in month t
 AC_i is the day use visitor group expenditure function value for reservoir i
 AD_i is the annual day use visitor expenditures for reservoir i

The day use visitor group expenditure function values for each reservoir are shown in Table 7.6-24. The annual day use visitor expenditures by month by reservoir are shown in Table 7.6-25.

The annual day use visitor expenditures are proportioned by the percentage of expenditure per category indicated by day use respondents for the reservoir. This is done through the following equation.

$$AE_{ci} = AD_i (AF_{ci}) \quad (7.6-21)$$

where: AE_{ci} is the annual day use visitor expenditures by category c for reservoir i
 AD_i is the annual day use visitor expenditures for reservoir i
 AF_{ci} is the percentage of expenditure per category c for reservoir i by day use respondents

The annual day use visitor expenditures by category by reservoir are shown in Table 7.6-26.

Table 7.6-24. Day Use Visitor Group Expenditure Function Values by Reservoir.

| | Deer Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|---|--------------|---------------------|-----------------------|-------------------|
| Day Use Visitor Group Expenditure per Day | \$12.00 | \$34.07 | \$52.78 | \$48.85 |

Table 7.6-25. Annual Day Use Visitor Expenditures by Month by Reservoir.

| | Deer Lake | Promer Reservoir | Stampede Reservoir | Boon Reservoir |
|--|--------------------|---------------------|-----------------------|-------------------|
| Day Use Visitor Expenditures during April | 70,543 | 8,463 | 30,694 | 49,668 |
| Day Use Visitor Expenditures during May | 123,451 | 15,889 | 66,235 | 109,683 |
| Day Use Visitor Expenditures during June | 250,429 | 27,506 | 138,932 | 142,795 |
| Day Use Visitor Expenditures during July | 363,298 | 37,027 | 134,086 | 155,212 |
| Day Use Visitor Expenditures during August | 338,608 | 34,911 | 156,703 | 161,421 |
| Day Use Visitor Expenditures during September | 135,195 | 17,983 | 69,466 | 105,544 |
| Day Use Visitor Expenditures during October | 56,435 | 11,637 | 33,925 | 60,015 |
| Day Use Visitor Expenditures during Other Months | 74,071 | 3,114 | 3,231 | 22,764 |
| Annual Day Use Visitor Expenditures | \$1,432,030 | \$156,571 | \$633,213 | \$807,104 |

Table 7.6-26. Annual Day Use Visitor Expenditures by Category by Reservoir.

| | Dexter Lake | Proser Reservoir | Stamps Reservoir | Beck Reservoir |
|---|--------------------|-------------------|-------------------|-------------------|
| Number of Day Use Respondents | 71 | 8 | 9 | 54 |
| Expenditures on Licenses by Day Use Respondents | 0.00 | 142.38 | 347.40 | 376.00 |
| Expenditures on Camping Fees by Day Use Respondents | 165.64 | 0.00 | 0.00 | 292.80 |
| Expenditures on Hotel or Motel by Day Use Respondents ¹⁾ | 1101.01 | 6.08 | 144.00 | 1317.14 |
| Expenditures on Restaurants by Day Use Respondents | 1169.56 | 250.02 | 135.00 | 597.16 |
| Expenditures on Groceries by Day Use Respondents | 1510.37 | 250.02 | 201.60 | 1408.56 |
| Expenditures on Equipment and Supplies by Day Use Respondents | 351.30 | 27.00 | 33.84 | 230.40 |
| Expenditures on Rental by Day Use Respondents | 956.38 | 975.00 | 0.00 | 0.00 |
| Expenditures on Fuel by Day Use Respondents | 449.02 | 119.98 | 181.80 | 386.20 |
| Expenditures on Other by Day Use Respondents | 323.15 | 50.00 | 13.50 | 292.30 |
| Total Expenditures by Day Use Respondents | \$6,026.43 | \$1,820.40 | \$1,057.14 | \$5,341.06 |
| Expenditures on Licenses by Day Use Respondents | 0.00% | 1.82% | 32.86% | 7.04% |
| Expenditures on Camping Fees by Day Use Respondents | 2.73% | 0.00% | 0.00% | 5.48% |
| Expenditures on Hotel or Motel by Day Use Respondents ¹⁾ | 18.27% | 0.33% | 13.62% | 24.60% |
| Expenditures on Restaurants by Day Use Respondents | 19.41% | 13.73% | 12.73% | 10.06% |
| Expenditures on Groceries by Day Use Respondents | 25.06% | 13.73% | 19.01% | 26.37% |
| Expenditures on Equipment and Supplies by Day Use Respondents | 5.82% | 1.48% | 3.20% | 4.31% |
| Expenditures on Rental by Day Use Respondents | 15.87% | 53.56% | 0.00% | 0.00% |
| Expenditures on Fuel by Day Use Respondents | 7.45% | 6.59% | 17.20% | 16.59% |
| Expenditures on Other by Day Use Respondents | 5.36% | 2.75% | 1.28% | 5.48% |
| Total Expenditures by Day Use Respondents | 100.00% | 100.00% | 100.00% | 100.00% |
| Annual Day Use Visitor Expenditures on Licenses | 0 | 12,246 | 208,188 | 56,819 |
| Annual Day Use Visitor Expenditures on Camping Fees | 39,360 | 0 | 0 | 44,248 |
| Annual Day Use Visitor Expenditures on Hotel or Motel ¹⁾ | 261,627 | 51.6 | 86,262 | 199,807 |
| Annual Day Use Visitor Expenditures on Restaurants | 277,917 | 21,504 | 80,871 | 61,172 |
| Annual Day Use Visitor Expenditures on Groceries | 358,902 | 21,504 | 120,267 | 212,832 |
| Annual Day Use Visitor Expenditures on Equipment and Supplies | 83,478 | 2,322 | 20,272 | 34,816 |
| Annual Day Use Visitor Expenditures on Rental | 227,260 | 83,859 | 0 | 0 |
| Annual Day Use Visitor Expenditures on Fuel | 106,698 | 10,319 | 108,906 | 133,916 |
| Annual Day Use Visitor Expenditures on Other | 76,789 | 4,300 | 8,087 | 44,246 |
| Annual Day Use Visitor Expenditures | \$1,432,090 | \$156,371 | \$633,273 | \$803,164 |

1. Expenditures on hotel or motel include vacation-home rent expenditures.

Annual Number of Camping and Day Use Visitors

The annual number of camping and day use visitors by reservoir is the summation of the annual number of camping visitors and the annual number of day use visitors. This is done through the following equations.

$$AG_{it} = K_{it} + T_{it} \quad (7.6-22)$$

$$AH_i = \sum AG_{it} \quad (7.6-23)$$

where: AG_{it} is the annual number of camping and day use visitors for reservoir i in month t
 K_{it} is the number of annual camping visitors to reservoir i in month t
 T_{it} is the number of annual day use visitors to reservoir i in month t
 AH_i is the annual number of camping and day use visitors for reservoir i

The annual number of camping and day use visitors by month by reservoir are shown in Table 7.6-27.

Table 7.6-27. Annual Number of Camping and Day Use Visitors by Month by Reservoir.

| | Donner Lake | Proser Reservoir | Sampele Reservoir | Boos Reservoir |
|--|----------------|---------------------|----------------------|-------------------|
| Number of Camping and Day Use Visitors during April | 16,421 | 2,822 | 13,390 | 9,154 |
| Number of Camping and Day Use Visitors during May | 28,757 | 5,291 | 29,158 | 20,315 |
| Number of Camping and Day Use Visitors during June | 53,294 | 9,170 | 62,419 | 26,312 |
| Number of Camping and Day Use Visitors during July | 84,568 | 12,345 | 60,242 | 28,607 |
| Number of Camping and Day Use Visitors during August | 78,820 | 11,639 | 70,493 | 29,131 |
| Number of Camping and Day Use Visitors during September | 36,126 | 5,996 | 31,210 | 19,452 |
| Number of Camping and Day Use Visitors during October | 13,137 | 3,880 | 15,242 | 11,061 |
| Number of Camping and Day Use Visitors during Other months | 17,242 | 1,058 | 1,452 | 4,196 |
| Annual Number of Camping and Day Use Visitors | 333,345 | 52,200 | 284,515 | 148,754 |

Annual Camping and Day Use Visitor Expenditures

The annual camping and day use visitor expenditures by reservoir is the summation of the annual camping visitor expenditures and the annual day use visitor expenditures. This is done through the following equations.

$$AI_{it} = W_{it} + AB_{it} \quad (7.6-24)$$

$$AJ_i = \sum AI_{it} \quad (7.6-25)$$

where: AI_{it} is the annual camping and day use visitor expenditures for reservoir i in month t
 W_{it} is the annual camping visitor expenditures for reservoir i in month t
 AB_{it} is the annual day use visitor expenditures for reservoir i in month t
 AJ_i is the annual camping and day use visitor expenditures for reservoir i

The annual camping and day use visitor expenditures by month by reservoir are shown in Table 7.6-28.

Table 7.6-28. Annual Camping and Day Use Visitor Expenditures by Month by Reservoir.

| | Donner Lake | Proser Reservoir | Shampede Reservoir | Boon Reservoir |
|---|------------------------|-----------------------------|-------------------------------|---------------------------|
| <i>Camping and Day Use Visitor Expenditures during April</i> | 138,351 | 23,753 | 119,879 | 76,986 |
| <i>Camping and Day Use Visitor Expenditures during May</i> | 242,114 | 44,537 | 258,686 | 170,610 |
| <i>Camping and Day Use Visitor Expenditures during June</i> | 498,145 | 17,197 | 542,609 | 221,334 |
| <i>Camping and Day Use Visitor Expenditures during July</i> | 712,506 | 103,919 | 523,681 | 240,581 |
| <i>Camping and Day Use Visitor Expenditures during August</i> | 654,884 | 97,981 | 642,013 | 250,204 |
| <i>Camping and Day Use Visitor Expenditures during September</i> | 304,372 | 50,475 | 271,305 | 163,595 |
| <i>Camping and Day Use Visitor Expenditures during October</i> | 110,681 | 32,668 | 132,498 | 93,025 |
| <i>Camping and Day Use Visitor Expenditures during Other months</i> | 145,268 | 8,507 | 12,619 | 35,785 |
| Annual Camping and Day Use Visitor Expenditures | \$2,808,521 | \$409,931 | \$2,473,289 | \$1,251,019 |

Annual Camping and Day Use Visitor Expenditures by Category

The annual camping and day use visitor expenditures by category by reservoir is the summation of the annual camping visitor expenditures by category and the annual day use visitor expenditures by category. This is done through the following equations.

$$AK_{ci} = Z_{ci} + AE_{ci} \quad (7.6-26)$$

$$AL_j = \sum AK_{ci} \quad (7.6-27)$$

where:

- AK_{ci} is the annual camping and day use visitor expenditures by category c for reservoir i
- Z_{ci} is the annual camping visitor expenditures by category c for reservoir i
- AE_{ci} is the annual day use visitor expenditures by category c for reservoir i
- AL_j is the annual camping and day use visitor expenditures for reservoir i

The annual camping and day use visitor expenditures by category by reservoir are shown in Table 7.6-29.

Table 7.6-29. Annual Camping and Day Use Visitor Expenditures by Category by Reservoir.

| | Donner Lake | Proser Reservoir | Stampede Reservoir | Boos Reservoir |
|---|------------------------|-----------------------------|-------------------------------|---------------------------|
| Annual Camping and Day Use Visitor Expenditures on Licenses | 0 | 12,246 | 269,786 | 64,332 |
| Annual Camping and Day Use Visitor Expenditures on Camping Fees | 409,310 | 50,429 | 417,444 | 92,343 |
| Annual Camping and Day Use Visitor Expenditures on Hotel or Motel | 394,182 | 319 | 96,262 | 223,415 |
| Annual Camping and Day Use Visitor Expenditures on Restaurants | 493,198 | 41,486 | 187,543 | 94,473 |
| Annual Camping and Day Use Visitor Expenditures on Groceries | 791,243 | 170,483 | 700,185 | 437,820 |
| Annual Camping and Day Use Visitor Expenditures on Equipment and Supplies | 83,478 | 2,322 | 69,368 | 34,994 |
| Annual Camping and Day Use Visitor Expenditures on Rental | 231,819 | 63,859 | 0 | 139 |
| Annual Camping and Day Use Visitor Expenditures on Fuel | 225,094 | 39,916 | 372,027 | 182,609 |
| Annual Camping and Day Use Visitor Expenditures on Other | 269,580 | 38,171 | 379,675 | 120,496 |
| Annual Camping and Day Use Visitor Expenditures | \$2,808,521 | \$439,431 | \$3,473,289 | \$1,251,049 |

8. Model Application Improvement

Model application improvement includes estimation of the economic impacts for alternative reservoir storage levels.

8.1. Estimation of the Economic Impacts for Alternative Reservoir Storage Levels

Estimation of the economic impacts for alternative reservoir storage levels at Donner Lake and at Prosser, Stampede, and Boca Reservoirs is done by integrating the recreation model component with the input-output model component. A direct economic impact is calculated first using the recreation model component. Then second, the total economic impact is calculated using the input-output model component. Third, the response economic impact is also calculated using the input-output model component.

Direct Economic Impact

The direct economic impact is the expenditures that camping and day use visitors at Donner Lake and at Prosser, Stampede, and Boca Reservoirs make in the regional economy during the year. Expenditures are on licenses, camping fees, hotel or motel, restaurant, groceries, equipment and supplies, rental, fuel, and other items.

Estimation of the direct economic impact is done through the following process. Using the recreation model component, the end of the month reservoir storage levels at Donner Lake and at Prosser, Stampede, and Boca Reservoirs is the input data. In turn, annual number of camping and day use visitors, annual camping and day use visitor expenditures, and, annual camping and day use visitor expenditures by category are calculated for each of the reservoirs. The total expenditures by category for all the reservoirs are then placed into economic sectors to become the direct economic impact. Underlying details of the recreation model component and equations used to calculate annual visitors, annual visitor expenditures, and annual visitor expenditures by category are given in Chapter 7.

End of the Month Reservoir Storage Levels

End of the month reservoir storage levels at Donner Lake and at Prosser, Stampede, and Boca Reservoirs are provided in Table 8.1-1.

End of the month reservoir storage levels for Donner Lake and Prosser, Stampede, and Boca Reservoirs are given for April through October and Other Months. April through October is considered to be the recreation season in a given year. Other Months are January, February, March, November and December of the given year. The reservoir storage levels are taken in total for April through October and as an average for the Other Months.

End of the month reservoir storage levels for Donner Lake and Prosser, Stampede, and Boca Reservoirs also have a set range of storage level. Reservoir storage levels at Donner Lake can range between 5,796 acre-feet and 9,660 acre-feet. Reservoir storage levels at Prosser Reservoir can range between 0 acre-feet and 29,840 acre-feet. Reservoir storage levels at Stampede Reservoir can range between 0 acre-feet and 226,500 acre-feet. Reservoir storage levels at Boca Reservoir can range between 0 acre-feet to 40,870 acre-feet.

Annual Number of Camping and Day Use Visitors

Annual number of camping and day use visitors by month by reservoir are provided in Table 8.1-2.

Annual Camping and Day Use Visitor Expenditures

Annual camping and day use visitor expenditures by month by reservoir are provided in Table 8.1-3.

Annual Camping and Day Use Visitor Expenditures by Category

Annual camping and day use visitor expenditures by category by reservoir are provided in Table 8.1-4.

Direct Economic Impact

The direct economic impact by economic sector is provided in Table 8.1-5. The total expenditures by category for the reservoirs are placed into economic sectors. The direct impact is presented as total direct expenditures.

There are twenty economic sectors within the regional economy. These sectors include livestock production, dairy production, alfalfa hay production, other hay production, barley production, agricultural services, gold mining, other mining, construction, manufacturing, transportation and communications, utilities, trade, eating, drinking, and lodging, finance, insurance, and real estate, services, hotels, gaming, and recreation, health, local government, and households. In addition to these sectors, there is also other final payments and imports.

The trade sector accounts for expenditure categories of groceries, equipment and supplies, fuel, and other. The eating, drinking, and lodging sector accounts for the expenditure categories of hotel or motel, restaurant, and rental. Other final payments account for expenditure categories of camping fees and license fees.

The total direct expenditures are trade, eating, drinking, and lodging sector expenditures, other final payments, and imports. Other final payments and imports are leakage's out of the regional economy. Other final payments are expenditures to the federal and state government. Imports make-up the balance of the marginalized trade sector expenditures. The trade sector expenditures are marginalized to 25% to reflect that only the mark-up value on goods sold remains in the regional economy.

Table 8.1-1. End of the Month Reservoir Storage Levels.

| Month | Damsee Lake acre-feet | Prosser Reservoir acre-feet | Stampede Reservoir acre-feet | Boon Reservoir acre-feet |
|----------------------|--------------------------|--------------------------------|---------------------------------|-----------------------------|
| April | 4,930 | 9,767 | 30,136 | 26,763 |
| May | 9,300 | 16,414 | 113,577 | 37,473 |
| June | 9,600 | 20,937 | 166,915 | 38,337 |
| July | 9,420 | 22,110 | 177,414 | 38,084 |
| August | 8,880 | 21,691 | 174,208 | 34,582 |
| September | 5,300 | 14,394 | 172,442 | 23,927 |
| October | 3,150 | 10,050 | 170,686 | 18,419 |
| Other Months Average | 3,366 | 9,254 | 113,263 | 9,561 |
| January | 3,290 | 9,827 | 73,944 | 5,247 |
| February | 3,320 | 9,723 | 73,731 | 4,396 |
| March | 4,290 | 9,642 | 76,677 | 2,953 |
| November | 2,980 | 9,981 | 170,433 | 17,042 |
| December | 2,950 | 10,098 | 169,510 | 18,163 |

Table 8.1-2. Annual Number of Camping and Day Use Visitors by Month by Reservoir.

| Month | Damsee Lake visitors | Prosser Reservoir visitors | Stampede Reservoir visitors | Boon Reservoir visitors | Total visitors |
|--------------|-------------------------|-------------------------------|--------------------------------|----------------------------|-------------------|
| April | 16,421 | 2,322 | 13,790 | 9,154 | 42,187 |
| May | 24,737 | 5,291 | 29,758 | 20,215 | 84,008 |
| June | 54,294 | 9,170 | 62,419 | 26,318 | 156,202 |
| July | 84,568 | 12,345 | 80,242 | 28,607 | 185,761 |
| August | 78,820 | 11,639 | 70,409 | 29,731 | 190,613 |
| September | 36,126 | 5,996 | 31,210 | 19,432 | 92,784 |
| October | 13,137 | 3,880 | 15,242 | 11,061 | 43,320 |
| Other Months | 17,242 | 1,058 | 1,432 | 4,196 | 23,947 |
| Total | 332,345 | 52,300 | 284,515 | 148,754 | 818,014 |

Table 8.1-3. Annual Camping and Day Use Visitor Expenditures by Month by Reservoir.

| Month | Downer Lake | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Total |
|--------------|------------------|-------------------|--------------------|------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ |
| April | 138,351 | 23,753 | 119,179 | 76,986 | 358,269 |
| May | 242,114 | 44,337 | 258,686 | 170,010 | 715,147 |
| June | 491,143 | 77,197 | 542,699 | 221,334 | 1,332,286 |
| July | 712,506 | 103,919 | 523,611 | 240,541 | 1,580,588 |
| August | 664,084 | 97,961 | 612,033 | 250,284 | 1,624,282 |
| September | 304,372 | 50,475 | 271,305 | 163,595 | 789,746 |
| October | 110,081 | 32,660 | 132,498 | 93,023 | 368,263 |
| Other Months | 145,268 | 8,907 | 12,819 | 35,283 | 202,080 |
| Total | 2,808,521 | 439,431 | 2,473,289 | 1,251,019 | 6,972,260 |

Table 8.1-4. Annual Camping and Day Use Visitor Expenditures by Category by Reservoir.

| Category | Downer Lake | Prosser Reservoir | Stampede Reservoir | Boon Reservoir | Total |
|------------------------|------------------|-------------------|--------------------|------------------|------------------|
| | \$ | \$ | \$ | \$ | \$ |
| Licenses | 0 | 12,246 | 260,796 | 64,332 | 337,363 |
| Camping Fees | 469,510 | 50,429 | 417,444 | 92,343 | 969,725 |
| Hotel or Motel | 304,182 | 516 | 86,262 | 223,413 | 614,376 |
| Restaurant | 493,198 | 41,486 | 187,543 | 94,473 | 816,699 |
| Groceries | 791,743 | 170,485 | 700,185 | 437,620 | 2,100,033 |
| Equipment and Supplies | 83,478 | 2,322 | 69,368 | 34,994 | 190,162 |
| Rental | 231,819 | 83,259 | 0 | 339 | 315,417 |
| Fuel | 225,091 | 39,916 | 372,027 | 182,609 | 819,643 |
| Other | 269,508 | 38,171 | 379,675 | 120,496 | 807,842 |
| Total | 2,808,521 | 439,431 | 2,473,289 | 1,251,019 | 6,972,260 |

Table 8.1-5. Direct Economic Impact by Economic Sector.

| Economic Sector | Total Direct Expenditure \$ |
|--|--------------------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Berley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 0 |
| 10 Manufacturing | 0 |
| 11 Transportation and Communications | 0 |
| 12 Utilities | 0 |
| 13 Trade | 999,699 |
| 14 Eating, Drinking, and Lodging | 1,741,693 |
| 15 Finance, Insurance, and Real Estate | 0 |
| 16 Services | 0 |
| 17 Hotels, Gaming, and Recreation | 0 |
| 18 Health | 0 |
| 19 Local Government | 0 |
| 20 Households | 0 |
| Other Final Payments | 1,307,288 |
| Imports | 2,918,820 |
| Total | 6,972,360 |

Total Economic Impact

The total economic impact is the total amount of economic activity in terms of output generated from the direct economic impact.

The total economic impact includes the direct economic impact plus indirect and induced economic impacts. The direct economic impact is the expenditures accounted for in the trade, and, eating, drinking, and lodging sectors. The indirect economic impact is the additional impact that occurs due to linkages that the trade, and, eating, drinking, and lodging sectors have with each other and with the other economic sectors in the regional economy, except for local government and households sectors. The induced economic impact is the additional impact that occurs due to linkages that the trade, and, eating, drinking, and lodging sectors have with the local government and households sectors.

Estimation of the total economic impact is done through the following process. The direct economic impact by economic sector is the input data. In turn, using the input-output model component, the direct economic impact by economic sector is post-multiplied by the output requirements to become the total economic impact. Underlying details of the input-output model component and output requirements are given in Chapter 4.

Total Economic Impact

The total economic impact by economic sector is provided in Table 8.1-6. The total economic impact is presented as total output and adjusted output. The adjusted output is net of agriculture production and mining sectors. The reason for this is because the agriculture production and mining sectors have a fixed resource base.

Table 8.1-6. Total Economic Impact by Economic Sector.

| Economic Sector | Total Output \$ | Adjusted ¹ Output \$ |
|--|--------------------|------------------------------------|
| 1 Livestock Production | 246 | 0 |
| 2 Dairy Production | 66 | 0 |
| 3 Alfalfa Hay Production | 39 | 0 |
| 4 Other Hay Production | 63 | 0 |
| 5 Berley Production | 4 | 0 |
| 6 Agricultural Services | 1,497 | 1,497 |
| 7 Gold Mining | 165 | 0 |
| 8 Other Mining | 219 | 0 |
| 9 Construction | 63,777 | 63,777 |
| 10 Manufacturing | 97,302 | 97,302 |
| 11 Transportation and Communications | 83,042 | 83,042 |
| 12 Utilities | 157,939 | 157,939 |
| 13 Trade | 1,171,681 | 1,171,681 |
| 14 Eating, Drinking, and Lodging | 1,776,923 | 1,776,923 |
| 15 Finance, Insurance, and Real Estate | 283,643 | 283,643 |
| 16 Services | 293,234 | 293,234 |
| 17 Hotels, Gaming, and Recreation | 46,661 | 46,661 |
| 18 Health | 98,173 | 98,173 |
| 19 Local Government | 77,282 | 77,282 |
| 20 Households | 1,504,461 | 1,502,805 |
| Other: Family Payments | 1,307,288 | 1,307,288 |
| Imports | 2,918,826 | 2,918,826 |
| Total | 9,884,525 | 9,882,056 |

1. Adjusted output is net of agriculture production and mining sectors

Response Economic Impact

The response economic impact includes the employment response, income response, population response, housing response, agriculture water use response, commercial water use response, and residential water use response to the total economic impact.

Estimation of the response economic impact is done through the following process. The total economic impact by economic sector is the input data. In turn, using the input-output model component, the total economic impact by economic sector is multiplied by the output response coefficients by economic sector to become the response economic impact. Output response coefficients are given for employment, income, population, housing, agriculture water use, commercial water use, and residential water use. Underlying details of the input-output model component and output response coefficients are given in Chapter 4.

Employment Response

Employment response by economic sector is provided in Table 8.1-7. Employment is measured as jobs.

Income Response

Income response by economic sector is provided in Table 8.1-8. Income is measured in dollars.

Population Response

Population response by economic sector is provided in Table 8.1-9. Population is measured as all persons.

Housing Response

Housing response by economic sector is provided in Table 8.1-10. Housing is measured as dwellings.

Agriculture Water Use Response

Agriculture water use response by economic sector is provided in Table 8.1-11. Agriculture water use is measured in acre-feet.

Commercial Water Use Response

Commercial water use response by economic sector is provided in Table 8.1-12. Commercial water use is measured in acre-feet and in gallons.

Residential Water Use Response

Residential water use response by economic sector is provided in Table 8.1-13. Residential water use is measured in acre-feet and in gallons.

Table 8.1-7. Employment Response by Economic Sector.

| Economic Sector | Employment jobs |
|--|--------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 1 |
| 10 Manufacturing | 1 |
| 11 Transportation and Communications | 1 |
| 12 Utilities | 1 |
| 13 Trade | 30 |
| 14 Eating, Drinking, and Lodging | 33 |
| 15 Finance, Insurance, and Real Estate | 3 |
| 16 Services | 2 |
| 17 Hotels, Gaming, and Recreation | 1 |
| 18 Health | 3 |
| 19 Local Government | 1 |
| 20 Households | 0 |
| Total | 63 |

Table 8.1-8. Income Response by Economic Sector.

| Economic Sector | Income \$ |
|--|--------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 633 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 18,403 |
| 10 Manufacturing | 25,658 |
| 11 Transportation and Communications | 34,105 |
| 12 Utilities | 19,812 |
| 13 Trade | 570,492 |
| 14 Eating, Drinking, and Lodging | 992,845 |
| 15 Finance, Insurance, and Real Estate | 39,346 |
| 16 Services | 116,271 |
| 17 Hotels, Gaming, and Recreation | 15,062 |
| 18 Health | 41,468 |
| 19 Local Government | 28,678 |
| 20 Households | 0 |
| Total | 1,932,805 |

Table 8.1-9. Population Response by Economic Sector.

| Economic Sector | Population all persons |
|--|-----------------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 1 |
| 10 Manufacturing | 1 |
| 11 Transportation and Communications | 2 |
| 12 Utilities | 2 |
| 13 Trade | 48 |
| 14 Eating, Drinking, and Lodging | 60 |
| 15 Finance, Insurance, and Real Estate | 5 |
| 16 Services | 14 |
| 17 Hotels, Gaming, and Recreation | 1 |
| 18 Health | 3 |
| 19 Local Government | 2 |
| 20 Households | 0 |
| Total | 141 |

Table 8.1-10. Housing Response by Economic Sector.

| Economic Sector | Housing dwelling |
|--|-----------------------------|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 0 |
| 10 Manufacturing | 1 |
| 11 Transportation and Communications | 1 |
| 12 Utilities | 1 |
| 13 Trade | 19 |
| 14 Eating, Drinking, and Lodging | 24 |
| 15 Finance, Insurance, and Real Estate | 2 |
| 16 Services | 5 |
| 17 Hotels, Gaming, and Recreation | 1 |
| 18 Health | 2 |
| 19 Local Government | 1 |
| 20 Households | 0 |
| Total | 56 |

Table 8.1-11. Agriculture Water Use Response by Economic Sector.

| Economic Sector | Agriculture Water Use acre-feet |
|--|--|
| 1 Livestock Production | 0 |
| 2 Dairy Production | 0 |
| 3 Alfalfa Hay Production | 0 |
| 4 Other Hay Production | 0 |
| 5 Barley Production | 0 |
| 6 Agricultural Services | 0 |
| 7 Gold Mining | 0 |
| 8 Other Mining | 0 |
| 9 Construction | 0 |
| 10 Manufacturing | 0 |
| 11 Transportation and Communications | 0 |
| 12 Utilities | 0 |
| 13 Trade | 0 |
| 14 Eating, Drinking, and Lodging | 0 |
| 15 Finance, Insurance, and Real Estate | 0 |
| 16 Services | 0 |
| 17 Hotels, Gaming, and Recreation | 0 |
| 18 Health | 0 |
| 19 Local Government | 0 |
| 20 Households | 0 |
| Total | 0 |

Table 8.1-12. Commercial Water Use Response by Economic Sector.

| Economic Sector | Commercial Water Use acre-feet | Commercial Water Use gallons |
|--|---|---------------------------------------|
| 1 Livestock Production | 0 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Berley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 597 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 3,451 |
| 10 Manufacturing | 0 | 10,310 |
| 11 Transportation and Communications | 0 | 10,475 |
| 12 Utilities | 0 | 73,685 |
| 13 Trade | 1 | 356,700 |
| 14 Eating, Drinking, and Lodging | 4 | 1,175,986 |
| 15 Finance, Insurance, and Real Estate | 0 | 22,874 |
| 16 Services | 0 | 155,328 |
| 17 Hotels, Gaming, and Recreation | 0 | 51,227 |
| 18 Health | 0 | 78,983 |
| 19 Local Government | 0 | 10,873 |
| 20 Households | 0 | 0 |
| Total | 6 | 1,950,531 |

Table 8.1-13. Residential Water Use Response by Economic Sector.

| Economic Sector | Residential /1 Water Use acre-feet | Residential /1 Water Use gallons |
|--|---|---|
| 1 Livestock Production | 0 | 0 |
| 2 Dairy Production | 0 | 0 |
| 3 Alfalfa Hay Production | 0 | 0 |
| 4 Other Hay Production | 0 | 0 |
| 5 Barley Production | 0 | 0 |
| 6 Agricultural Services | 0 | 4,845 |
| 7 Gold Mining | 0 | 0 |
| 8 Other Mining | 0 | 0 |
| 9 Construction | 0 | 71,740 |
| 10 Manufacturing | 0 | 101,904 |
| 11 Transportation and Communications | 0 | 123,089 |
| 12 Utilities | 0 | 120,173 |
| 13 Trade | 11 | 3,669,999 |
| 14 Eating, Drinking, and Lodging | 14 | 4,552,507 |
| 15 Finance, Insurance, and Real Estate | 1 | 400,338 |
| 16 Services | 3 | 1,055,622 |
| 17 Hotels, Gaming, and Recreation | 0 | 107,290 |
| 18 Health | 1 | 399,600 |
| 19 Local Government | 1 | 173,482 |
| 20 Households | 0 | 0 |
| Total | 33 | 10,752,548 |

1. Residential water use is not-metered residential water use.

Summary

A summary is provided in Table 8.1-14. This summary includes average end of the month reservoir storage for the reservoirs, camping and day use visitors for the reservoirs, direct economic impact, total economic impact, employment response, income response, population response, housing response, agriculture water use response, commercial water use response, residential water use response, and a recreation expenditure multiplier.

Table 8.1-14. Summary.

| | |
|---|-------------------------------------|
| Donner Lake Average End of the Month Reservoir Storage | 6,743 acre-feet |
| Promer Reservoir Average End of the Month Reservoir Storage | 13,633 acre-feet |
| Stampede Reservoir Average End of the Month Reservoir Storage | 146,104 acre-feet |
| Boca Reservoir Average End of the Month Reservoir Storage | 28,171 acre-feet |
| Donner Lake Camping and Day Use Visitors | 333,345 visitors |
| Promer Reservoir Camping and Day Use Visitors | 52,200 visitors |
| Stampede Reservoir Camping and Day Use Visitors | 284,515 visitors |
| Boca Reservoir Camping and Day Use Visitors | 148,754 visitors |
| Direct Economic Impact | 6,972,260 \$ <i> of expenditure</i> |
| Total Economic Impact | 9,892,056 \$ <i> of output</i> |
| Employment Response | 83 jobs |
| Income Response | 1,502,805 \$ <i> of income</i> |
| Population Response | 141 <i>all persons</i> |
| Housing Response | 36 <i>dwellings</i> |
| Agriculture Water Use Response | 0 <i>acre-feet</i> |
| Commercial Water Use Response | 6 <i>acre-feet</i> |
| Residential Water Use Response ¹ | 33 <i>acre-feet</i> |
| Recreation Expenditure Multiplier ² | 1.41734047 |

1. Residential water use is non-metered residential water use.

2. Recreation expenditure multiplier is a ratio multiplier. The recreation expenditure multiplier is the total economic impact to direct economic impact. Multiplier interpretation: a \$1 expenditure creates an additional \$ 42 in economic activity.

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