UPPER NORTH FORK FEATHER RIVER HYDROELECTRIC RELICENSING PROJECT

FERC PROJECT NO. 2105

REPORT E6
LAND MANAGEMENT AND AESTHETICS

PREPARED FOR:
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ACRONYMS AND ABBREVIATIONS

Caltrans	California Department of Transportation
CDF	California Department of Forestry and Fire Protection
cfs	cubic feet per second
FERC	Federal Energy Regulatory Commission
FDR	Forest Development Road
Forest Service	USDA Forest Service
KVP	key viewing point
Licensee	Pacific Gas and Electric Company
ORV	off-road recreational vehicle
PCT	Pacific Crest Trail
Project	Upper North Fork Feather River Hydroelectric Project
ROS	Recreation Opportunity Spectrum
SR	State Route
TPZ	Timberland Production Zone
VQO	visual quality objective

REPORT E6
LAND MANAGEMENT AND AESTHETICS

18 CFR § 4.5 (f)(6) Report on land management and aesthetics. The report must discuss the management of land within the proposed project boundary, including wetlands and floodplains, and the protection of the recreational and scenic values of the project. The report must be prepared following consultation with local and state zoning and land management authorities and any Federal or state agency with managerial authority over any part of the project lands. Consultation must be documented by appending to the report a letter from each agency consulted indicating the nature, extent, and results of the consultation. The report must contain:

(i) A description of existing development and use of project lands and all other land abutting the project impoundment.

(ii) A description of the measures proposed by the applicant to ensure that any proposed project works, rights-of-way, access roads, and other topographic alterations blend, to the extent possible, with the surrounding environment.

(iii) A description of wetlands or floodplains within, or adjacent to, the project boundary, any short-term or long-term impacts of the project on those wetlands or floodplains, and any mitigative measures in the construction or operation of the project that minimize any adverse impacts on the wetlands or floodplains.

(iv) A statement, including an analysis of costs and other constraints, of the applicant's ability to provide a buffer zone around all or any part of the impoundment, for the purpose of ensuring public access to project lands and waters and protecting the recreational and aesthetic values of the impoundment and its shoreline.

(v) A description of the applicant's policy, if any, with regard to permitting development of piers, docks, boat landings, bulkheads, and other shoreline facilities on project lands and waters.

(vi) Maps or drawings that conform to the size, scale and legibility requirements of §4.39, or photographs, sufficient to show the location and nature of the measures proposed under paragraph (f)(6)(ii) of this section (maps or drawings in this exhibit may be consolidated).

E6.1 INTRODUCTION AND OVERVIEW

This report evaluates land ownership, land use, land management, and aesthetic resources at Pacific Gas and Electric Company (Licensee) Upper North Fork Feather River Hydroelectric Project (Project). The Project is located within the upper portions of the North Fork Feather River drainage in northeastern Plumas County, California. The Project operates under Federal Energy Regulatory Commission (FERC) License Number 2105 and consists of three dams and reservoirs and five powerhouses, each with associated water conveyance systems. The Project developments span a 30-mile reach of

the upper North Fork Feather River and approximately 4 miles of the Butt Creek drainage on both USDA Forest Service (Forest Service) and private lands.

Lake Almanor Dam (commonly referred to as Canyon Dam), the most upstream and northerly development, forms Lake Almanor, a 27,000-acre reservoir holding up to 1,142,900 acre-feet of water that is the major source of water for the Project and the remainder of the North Fork Feather River integrated power system. The dam is a 135-foot-high earth-filled dam that also serves as the State Route (SR) 89 bridge crossing of the upper North Fork Feather River. Lake Almanor is a highly developed reservoir with over 1,000 adjacent residential lots, 22 commercial resorts, and 13 public recreation developments. Water from Lake Almanor is diverted through a 10,899-foot-long tunnel and 5,568-foot-long penstock leading into the Butt Valley Powerhouse on the shores of Butt Valley Reservoir adjacent to Butt Creek inlet.

Butt Valley Reservoir has a surface area of 1,600 acres and is formed by the 74-foot-high and 1,350-foot-long earth-filled Butt Valley Dam. Water is routed from Lake Almanor to the North Fork Feather River by passing through Butt Valley Reservoir and then through either Caribou No. 1 or 2 Powerhouses. Caribou No. 1 and 2 Powerhouses take water from Butt Valley Reservoir through independent underground tunnel and aboveground penstock conduit systems. The Caribou No.1 development includes a 9,776-foot-long tunnel, a 2,222-foot-long penstock, and an aboveground concrete powerhouse with three Pelton turbine generators and electric switchyard facility. The Caribou No. 2 development includes an 8,710-foot-long tunnel, a 2,322-foot-long penstock, and a

partially underground powerhouse with two Pelton turbine generator units. Caribou No. 1 and 2 Powerhouses share the same switchyard facility.

Both Caribou powerhouses discharge water back into the North Fork Feather River, through a small in-channel project impoundment known as Belden Forebay.

Belden Forebay is the smallest Project reservoir with 2,477-acre-feet of storage and a surface area of 42 acres. The forebay is formed by a rock-filled dam 152 feet high and 630 feet wide. The Belden Forebay supplies water to both the Belden and Oak Flat Powerhouses. The Oak Flat Powerhouse, at the base of Belden Dam, is the Project's smallest powerhouse, generating power from instream flow releases passed through Belden Forebay into the North Fork Feather River. Most of the North Fork Feather River water in Belden Forebay is conveyed to Belden Powerhouse through a power conduit system consisting of two underground tunnels, an aboveground pipe siphon system, and an aboveground penstock. The 23,637-foot-long upper tunnel diverts water from Belden Forebay to the aboveground siphon. The aboveground siphon is a 12-foot-diameter steel pipe that extends 1,859-feet down into and across the North Fork Feather River valley. The siphon pipe passes diverted water from the higher northeast valley wall across the lower elevation valley to the ridgeline on the southwest valley, crossing overhead of both Caribou Road and the North Fork Feather River. Water is then directed into the lower tunnel extending 9,649 feet to a single 924-foot-long aboveground, steel penstock that terminates in the Belden Powerhouse, situated directly adjacent to Highway 70 at the southerly end of the Project area.

The Belden Powerhouse is a concrete structure built into the hillside containing a single vertical shaft Francis turbine and outdoor generator. Its switchyard is located across the mouth of Yellow Creek. Water from this powerhouse is returned to the North Fork Feather River, leading directly into downstream hydroelectric developments. Adjacent to the Belden Powerhouse, the Licensee operates and maintains the Belden Day Use Area and Roadside Rest. The facility has four picnic sites, restroom facilities, parking, and an information kiosk. In addition, there is a historic gold ore stamp mill and interpretive information on the mining history of the area.

There are approximately 30,920 acres of land encompassed by the current FERC project boundary. Of these lands, the Licensee owns approximately 29,893 acres or 97 percent (Figures E6-1 and E6-2, Land Ownership). The Forest Service currently manages 986 acres and the Bureau of Land Management manages 38 acres in the Lake Almanor area. Other private parties own 3 acres along the Butt Valley Powerhouse tunnel facilities. Of the Federal lands, the Lassen National Forest administers approximately 568 acres along the shorelines of Lake Almanor, and the Plumas National Forest administers 418 acres, all within the Project boundary. All lands are within Plumas County, California.

The character of the landscape within the Project area is highly diverse. The Lake Almanor Basin is highly developed; development is spread out amongst the expansive open spaces created by the lake and broad open valley. Extensive residential development dots the shoreline of Lake Almanor and extends into the adjoining hills. Only about 13 percent of the Lake Almanor shoreline area abuts public lands. In contrast, the Butt Valley and Caribou areas present dramatically different landscapes. Butt Valley

Reservoir sits within a fairly narrow wooded and long and shallow valley with no commercial or residential uses. The Forest Service manages lands that completely surround the Licensee-owned Butt Valley Reservoir. The Caribou Powerhouse and the Licensee town of Caribou (operators' village) sit within the North Fork Feather River canyon that is a deep and narrow valley more rocky and rural in character. Other than the Licensee town of Caribou, there are no commercial or residential developments in this area.

Farther downstream near Belden, there are limited commercial and residential areas clustered around the SR 70 corridor. The Caribou portion of the Project area consists of a mix of Federal and Licensee lands with more Federal land present in the area.

E6.2 DESCRIPTION OF HISTORICAL AND CURRENT LAND USE

This section provides a general overview of historical and current land uses within the upper North Fork River basin.

E6.2.1 General Overview of Historical Land Use in the Upper North Fork River Basin

The upper portions of the North Fork Feather River basin had been inhabited by Native Americans for thousands of years before the arrival of European explorers. The earliest evidence of human habitation dates to at least 8,000 years ago, when hunting- and gathering-based cultures occupied the region. Archaeological evidence indicates that permanent village sites were commonly located in large river valleys and meadows. The archaeological record also indicates these populations were highly dependent on fish,

waterfowl, nuts, roots, berries, and seeds. The Maidu people had winter villages in the area that consisted of one to six semi-subterranean earth lodges. Summer shelters were more temporary and often consisted of simple brush windbreaks.

The Euroamerican presence in the upper part of the North Fork Feather River basin began in the early 1800s. At this time, the Hudson's Bay Company began to send trading and trapping expeditions into the region. Euroamerican settlement began in the 1850s when mining claims were staked along the North Fork Feather River and small communities at the Caribou, Seneca, and Butt Creek were established. In the early 1900s both logging and power generation development began in earnest. In 1902 the first water rights notice was posted and construction of the first dam was started on Butt Creek, upstream of the present dam. In 1912 the Red River Lumber Company was beginning its large-scale forestry operations in the region with a large sawmill started in Westwood. In 1914, the Great Western Power Company completed construction of the first stage of Canyon Dam to provide a water storage capacity of 220,000 acre-feet. The company made use of the services of the Red River Lumber Company to clear the Big Meadows area of trees. Big Meadows was the area that became Lake Almanor. The Red River Lumber Company helped develop the surrounding area. The company built a 13-mile-long electric logging railroad from Westwood to Chester and later constructed a branch leading down into the Butt Creek Valley. In 1914 the Southern Pacific Railroad brought its railroad line from Nevada into Westwood to serve the new Red River Lumber Company mill facility. In 1931 the Western Pacific Railroad built its North South rail line along the east shore of Lake Almanor. This rail line, still in use today, extends from Quincy to the Great Northern Railroads connecting line in northern Lassen County.

In 1919 construction began on Caribou No. 1 Powerhouse followed by work on the Prattville and Caribou tunnel systems. By 1924 Butt Valley Dam was complete. In 1927, Great Western completed the second phase of Canyon Dam and Lake Almanor's capacity was increased from 220,000 acre-feet to approximately 1,300,000 acre-feet. As the reservoir was being filled, though, the dam began to leak and the lake was operated at approximately half this capacity. In 1930 the Great Western Power Company was acquired by the Licensee and by the late 1950s several new hydroelectric facilities had been added to the project including Caribou No. 2 tunnel and powerhouse, Butt Valley Powerhouse, and the Belden Forebay. In 1944 the Licensee received authorization to operate Lake Almanor up to 4,474 feet (equaling approximately 650,000 acre-feet of storage). The Belden Powerhouse was completed in 1969. Oak Flat Powerhouse was built in 1985 to harness power from instream flow releases. Construction workers and operators of the early facilities lived in small company towns at Canyon Dam, Butt Valley, and Caribou. The Licensee received a 50-year license for the Project from the Federal Power Commission on January 24, 1955 (effective from November 1, 1954). In 1964 the Licensee completed improvements to Canyon Dam and received authorization to increase the maximum operating level of Lake Almanor to 4,490 feet (equaling approximately 1,000,000 acre-feet of storage).

After World War II, the timber-based economy of the region started to decline and tourism and recreation assumed importance. Development of small resorts, campgrounds, lodges, and boat ramps ensued. The Lake Almanor region attracted a growing number of post-war recreationists from the 1950s through the 1980s. By 1945 the Red River Lumber Company sold its large mill facility in nearby Westwood and the

population of the region declined. Real estate developers soon realized the potential of the area for second home, retirement, and small resort development. Seattle developer Edward Clifford first purchased large tracts of lands in 1949 that later became Lake Almanor Country Club on the peninsula. The first lots were sold in 1954. Other smaller residential developments followed at Big Springs and Peninsula Village, and the eastern shoreline began to develop with summer homes. In the 1970s the last large lakeshore development, Lake Almanor West, was completed on the western shoreline. During the 1970s the Licensee undertook numerous studies in support of its application to the California Department of Water Resources to raise the maximum operating level of Lake Almanor from 4,490 feet to 4,494 feet (approximately 1,100,000 acre-feet of storage). The Licensee received authorization in 1976.

The community of Chester has always served as a commercial hub for the region since it grew up along the primary highway corridor between Susanville and Red Bluff. The original Chester Hotel, a traveler's rest stop, was built in 1913. The Chester airfield was first laid out in 1928. Collins Pine Corporation set up their large timber operation in Chester in 1943 making use of the 13-mile rail spur connecting to Western Pacific's trunk line. After several devastating floods in the town of Chester, including major floods in 1937 and 1969, the U.S. Army Corps of Engineers constructed the Chester Flood Control Channel. The Chester Flood Control Channel was completed in 1976. The flood control channel works by passing large flows of the upper North Fork Feather River around the town of Chester, thereby diverting the highest flows directly into Lake Almanor.

E6.2.2 General Overview of Current Land Use in the Upper North Fork River Basin

The upper North Fork River Basin can be characterized by the land use patterns typical of high mountain valleys in the Far West. The region has large tracts of wilderness, nearby park lands, and wild and scenic rivers. Lower- and mid-elevation forests on both private and federal lands are generally maintained for timber production or habitat protection purposes. Recreation and residential development is extensive around the Lake Almanor shoreline. Within the basin, some livestock grazing operations are interspersed among large areas of timbered slopes and there are scattered commercial developments along transportation corridors. Small winter sports sites, including ski areas and snowmobile trails, are found in the mountains rising above the Lake Almanor Basin. The area is connected by a network of state highways crossing through the area. The highways run along all sides of Lake Almanor.

The major components of the transportation system consist of three state highways, a regional airport, and a railroad system. The principal highways are SR 36, SR 89, and SR 147. SR 36 provides a major transportation corridor between Red Bluff and Susanville with connecting access into Mount Lassen Volcanic National Park. Mount Lassen Volcanic National Park, established in 1916, encompasses over 106,000 acres and receives an average of 358,000 visitors a year. SR 36 also provides access via 395 to the Reno area. SR 89 serves as a well-used transportation corridor between communities in the Lake Almanor Basin and Quincy, the Plumas County seat. The route is also used as a north-south corridor to access Reno and commercial centers to the south. The roads

serving Butt Valley and Caribou areas are more rural in nature and generally are used for local use.

The Burlington Northern and Santa Fe Railroad operate the single-track line that carries freight on north-south routes from Nevada and California to Oregon. This rail line passes along the eastern shores Lake Almanor just above State Highway 147. A 13-mile spur crosses the north end of Lake Almanor on the Causeway leading to the Collins Pine Company mill in Chester.

The Lassen National Forest encompasses over 1.1 million acres of land mostly to the north of the Project. The Lassen National Forest is used for multiple purposes including significant amounts of recreation.

The Plumas National Forest covers an area of approximately 1,400,000 acres with more than 80 percent being located in Plumas County. The Plumas National Forest is a multiple use forest used for recreation, timber management, mining, and other open space uses. Recreation activities include camping, picnicking, off-road recreational vehicle (ORV) uses, sightseeing, hiking, and cross-country skiing. The Plumas National Forest also includes the 21-000-acre Bucks Lake Wilderness Area, located in a mountainous area just south of Highway 70 and the Belden Powerhouse.

The 2000 census lists Plumas County as having a total population of 20,824 persons. The unincorporated community of Chester has a total of 2,316 residents and serves as the commercial hub for the region. The well-traveled SR 36 highway passes through the center of town. The Collins Pine Company lumber mill is located in town and employs

up to 200 area residents. The Lake Almanor Basin has several different residential areas surrounding the lake. These include Lake Almanor Country Club, Lake Almanor Peninsula (includes Peninsula Village), Hamilton Branch, East Shore, Lake Almanor West, and Prattville. The 2000 census puts the total permanent population around the lake at 4,620 (Table E6-1), but this does not include neighboring Lassen County communities of Westwood and Clear Creek.

Table E6-1.

Year 2000 Census for Lake Almanor Area

CENSUS DESIGNATED PLACE	TOTAL PERMANENT POPULATION	PERMANENTLY OCCUPIED HOUSING UNITS	SEASONAL OR VACANT HOUSING UNITS	TOTAL NUMBER HOUSING UNITS
Chester	2,316	956	174	1,130
Lake Almanor Country Club	847	399	791	1,190
Lake Almanor Peninsula	336	156	257	413
Hamilton Branch	587	271	149	420
East Shore	177	87	245	332
Lake Almanor West	329	165	202	367
Prattville	28	17	80	97
TOTALS	4,620	2,051	1,898	3,949

According to the census, there are 3,949 total housing units in the Lake Almanor area, although only slightly less than half of them are permanently occupied. According to the recreation studies documented in Exhibit E5, over 350,000 recreation days are experienced in the Project area on an annual basis. Assuming at least two people occupy each seasonal housing unit shown in Table E6-1 during summer, there would be as many as 3,796 additional persons residing in the Lake Almanor areas in the summer season.

The trend in growth of residential development is continuing in the basin with two major new developments in the early construction phases. The new Bailey Creek and Foxwood developments are both situated within what is generally known as the Lake Almanor Peninsula, or what historically was known as the Walker Ranch area (see Figure E6-1). Bailey Creek is a major residential development on approximately 528 acres adjacent to County Highway A13 and Clifford Drive. The Bailey Creek residential areas are being built around an 18-hole golf course that was completed in summer 2001. Bailey Creek has a total of 700 residential lots that are currently being sold with a planned 16-acre commercial area adjacent to Clifford Drive. Foxwood is a new development in its initial construction stages that will support 804 residential units, a 300-unit recreational vehicle park, and 24 acres of commercial development on approximately 370 acres adjoining the Bailey Creek development on its south side. This development will also adjoin existing development in the Peninsula Village area of Lake Almanor. Plumas County has approved a maximum of 2,177 dwelling units for both developments that will add significantly to the totals listed in Table E6-1.

E6.3 MANAGEMENT FRAMEWORK

The Project is surrounded by National Forest lands and unincorporated private lands within Plumas County. The Lassen and Plumas National Forests administer the National Forest lands. Water resources management is under the auspices of the California Department of Water Resources in cooperation with other agencies. Water resources are examined in the Report on Water Use and Quality (Exhibit E2).

E6.3.1 National Forest Plans

Both the Lassen and Plumas National Forests have approved Land and Resource Management Plans to guide resource management on National Forest lands. The Lassen National Forest's approved Land and Resource Management Plan was finalized in 1992. This plan prescribes management practices for federal lands along Lake Almanor's southwest shore roughly centered on the Prattville area. The Plumas Land and Resource Management Plan was finalized in January 1988. This plan prescribes land management practices and policies on federal lands that generally fall within the south half of the Project area but also include a small area adjacent to Canyon Dam on Lake Almanor.

In January 2001, the Forest Service implemented the Sierra Nevada Forest Plan Amendment Record of Decision for Land Management Planning Documents for National Forests within the Sierra Nevada and Modoc Plateau. The Sierra Nevada Forest Plan Amendment was implemented to protect, increase, and perpetuate old forest ecosystems; protect and restore aquatic, riparian, and meadow ecosystems; manage fire and fuels in a consistent manner across forests; reduce the spread of noxious weeds; and maintain and enhance hardwood forest ecosystems on the lower westside of the Sierra Nevada.

Implementation of the Sierra Nevada Forest Plan required the individual National Forests to amend existing National Forest land and resource management plans. The Sierra Nevada Forest Plan amended the 1992 Lassen and 1988 Plumas National Forest Plans by overlaying new land allocations on the existing allocations. Only existing standards and guidelines that are in conflict with the Sierra Nevada Forest Plan are replaced by the new plan (Figures E6-3 and E6-4, Land Management Allocations).

E6.3.1.1 Sierra Nevada Forest Plan

The Sierra Nevada Forest Plan provides a framework of management direction for 16 new land allocations in the National Forests of the Sierra Nevada. The plan's management direction serves as an overlay to existing forest plan designations and only replaces existing standards and guidelines that conflict with the new amendments. The primary objective of the plan is to conserve important components of the landscape such as stands of mid-seral and late-seral forests with large trees. Riparian Conservation Area designations are provided along streams and around water bodies to preserve, enhance, and restore habitat for riparian and aquatic-dependent species as well as ensure water quality is maintained or restored. There are also important and wide ranging new land allocations for fire and fuels management. The plan attempts to link potential fuel treatment areas so that they can support one another. The zone where human habitation is mixed with areas of flammable wildland vegetation is called the Urban Wildland Intermix zones.

The Urban Wildland Intermix zones represent a new land allocation that covers most of the Project area. The Urban Wildland Intermix allocation generally applies to areas within 1.5 miles of structures and includes a "threat" and "defense" zone. The standards and guidelines provide direction for treating fuels to prevent loss of life and property from a wildland fire (defense zone), for interrupting the spread of wildland fire, and for reducing fire intensity (threat zone). Another important new land allocation affecting the lands around the Project area is the Riparian Conservation Area zone that is applied to the

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Project-affected rivers and streams. Land managers are to assess how proposed future management activities measure against the riparian conservation objectives. The riparian conservation objectives include the following six objectives:

- ensure that identified beneficial uses of water bodies are adequately protected;
- maintain or restore the geomorphic and biological characteristics of special aquatic features and streams;
- ensure a renewable supply of large down logs can reach the stream channel and provide suitable habitat within and adjacent to the riparian area;
- ensure that other management actions such as fuel reductions enhance or maintain physical or biological characteristics associated with aquatic- and riparian-dependent species;
- preserve, restore, and enhance special aquatic features such as meadows, lakes, ponds, and wetlands; and
- identify and implement restoration actions to maintain, restore, or enhance water quality and habitat for riparian and aquatic species.

To maintain or restore the geomorphic and biological characteristics of streams, the Forest Service is charged with determining and recommending instream flow requirements to maintain, enhance, or restore all life stages of native aquatic species during relicensing of the hydroelectric project. Two other new land designations apply to the Project area: 1) General Forest, and 2) Old Forest Emphasis areas. The General Forest allocation covers most of the Project area with management guidelines directed at how fuel treatments are to take place. The Old Forest Emphasis areas are found along the

Belden bypass reach and in some areas southwest of SR 89 and Lake Almanor. This allocation's standards and guidelines provide direction for managing old forest emphasis areas. Notably, where this allocation is overlain by Urban Wildland Intermix, the standards and guidelines for the Urban Wildland Intermix zones supercede the guidelines for this zone. Within the Project area, the Urban Wildland Intermix zone is the predominant allocation for Lassen and Plumas National Forest-managed lands.

E6.3.1.2 Lassen National Forest Land and Resource Management Plan

Most of the lands on Lake Almanor's southwest shoreline between Canyon Dam and the Lake Almanor West subdivision are managed by the Lassen National Forest. An approximately 1 mile stretch of land adjacent to the Project boundary at the Licensee's Lake Almanor Campground and Canyon Dam are in the Plumas National Forest.

The Prattville Management Area is one of 48 specific management areas on the Lassen National Forest. The Prattville Management Area covers approximately 6,280 acres along the large southwest shoreline area above Lake Almanor. Most of this management unit lies southwest of SR 89. The majority of intensive public recreation is generally found along lands on the northeast side of SR 89, although there is a group camp and rest area on the southwest side of the highway. Approximately 480 acres are dedicated to recreation uses and management emphasis around the Almanor Campground and neighboring summer housing area. Another 2,210 acres south of Prattville have been dedicated to promoting Late Successional forests and these areas are now Old Forest Emphasis Areas under the Framework Plan. The Lassen Plan specifically recognizes that the Prattville area is a highly used recreation area although snags, wetlands, and nest site

protection is important to protect waterfowl and raptors in the area. Specifically for bald eagles, the plan calls for protection and enhancement of eagle nesting habitat at Rocky Point and Prattville.

For recreation considerations, the Lassen Plan recognizes the need for a comprehensive recreation development plan for the Almanor Campground and vicinity. Recreation facilities include a large campground, two boat ramps, paved bicycle trail, and a group campground. The plan also recommends investigating the potential of constructing a group campground near Lake Almanor. Almanor Campground currently has 103 sites with a boat ramp and popular day use beach area. An associated group campground facility is located a mile away along the southwest side of SR 89. According to the Lassen Plan, the Forest Service is currently planning to move the group campground nearer the main family campground, reconstruct the boat ramp, and reconstruct the entire Almanor Campground to add recreational vehicle sites, redo the amphitheater, and develop spur trails to the shoreline. Recently, the Forest Service approved a 1.5-mile-long extension of the 9.5-mile-long bicycle trail. The extension will provide bicycle access the full distance between a trailhead close to the Lake Almanor West subdivision and the Forest Service Canyon Dam boat launch. The Forest Service is also planning on rehabilitating the Canyon Dam boat launch by replacing the courtesy dock, reconstructing the ramp, and replacing the toilet facilities.

E6.3.1.3 Plumas National Forest Land and Resource Management Plan

From the Butt Valley Reservoir downstream, most of the Project area including parts of the Belden bypass reach are within the Plumas National Forest. The primary Resource

Management Plan land allocation on Lake Almanor area lands is Bald Eagle Habitat. This designation includes the small area of Plumas National Forest land near Canyon Dam on Lake Almanor in order to protect nesting bald eagles.

The Plumas National Forest Land and Resource Management Plan (Plumas Plan) recognizes hydroelectric development in several ways. First, it encourages full development of the hydroelectric resource as long as other resources and uses are not unacceptably impaired. The Plumas Plan further recognizes the large-scale hydroelectric development on the North Fork Feather River as unique within the National context due to favorable "hydro-topographic conditions." Under forest-wide standards and guidelines, the plan encourages hydroelectric development to provide protection of all resources. This plan also advises applicants to furnish adequate plans and environmental studies.

There are three specific management units that overlay the Project area: Butt Lake, Rich, and a small portion of North Fork. The Butt Lake management unit encompasses the Butt Valley Reservoir, although the Plumas National Forest recognizes that the reservoir lands and shorelines are in Licensee ownership, including the recreation facilities along the reservoir. For the lands along Lake Almanor near Canyon Dam, the primary land allocation is for protection of bald eagle habitat, which is aimed at limiting human activities between November 1 and March 1 to minimize disturbance. For recreation uses in this area, the Plumas Plan expresses a need to prohibit camping at the Canyon Dam boat launch and to develop camping facilities on the opposite side of SR 89. There is

also an expressed need to provide a fishing access trail between Lake Almanor and the small community of Seneca.

The Rich management unit includes the lower portion of the Belden bypass reach just upstream of the East Branch North Fork Feather River confluence. This management area contains three small National Forest campgrounds along the North Fork Feather River. The plan calls improving the recreation development, eliminating some grazing uses, and reconstructing the Caribou Road from Highway 70 to the old railroad bridge at Queen Lily Campground.

E6.3.2 Bureau of Land Management Plans

The Bureau of Land Management administers two parcels of land along the western shores of Lake Almanor. One parcel is 34 acres near the end of the northeast-southwest runway at Chester airport that is used almost exclusively for airport open space. This parcel is slated to be transferred to Plumas County. Of this parcel, the area below the 4,500-foot-elevation is used for storing water for Project purposes. The other parcel includes about 4 acres within the Project boundary along the west side of the SR 36 causeway north of Chester. This parcel is used for grazing above the 4,500-foot-elevation line and is an isolated parcel within the larger Eagle Lake Resource Area managed by the Bureau of Land Management in Susanville, California.

E6.3.3 California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (CDF) is mandated to provide wildland resource fire protection within the state. CDF provides fire suppression advice

and services that are guided by principles designed to maintain landowners' options for future management. However, CDF has no authority to manage land through its wildfire management work. During the fire season, CDF provides staff at dispatch and fire stations on a 24-hour basis and provides a variety of resources to control wildfires.

With increasing portions of California's population moving into wildland areas, such as around Lake Almanor, traditional vegetation fires have a higher probability of becoming interface fires (occurring across the interface between urban fuels and vegetation fuels). These fires can inflict great damage on both ecological and social systems. In recent years, some of the most destructive fires have occurred when fires have crossed the interface and burned into communities where the response capabilities of urban fire departments were overwhelmed.

CDF has enacted several strategies to assist in effective management of fire environments. These strategies cover a range of pre-fire management, fire suppression activities, and post-fire actions. CDF tracks the occurrence of large and small fires within the state. For the Lake Almanor region, there have been over 350 recorded small fires since 1981 (Appendix E6-A). Small fires are considered to be those of less than 300 acres in size. Many of the small fire incidents burn less than an acre. As shown on the map in Appendix A, most of these fires have occurred close to developed areas. The most recent large fire (not mapped in Appendix E6-A) was the Storrie fire of early September 2000. The Storrie fire burnt over 46,000 acres including some Project facilities near Belden Powerhouse. Ongoing fire management by CDF, Plumas County,

private timber companies, the Licensee, and the Forest Service are helping to reduce the danger faced by fires in the Project area in the future.

E6.3.4 Plumas County General Plan

The Plumas County General Plan, as amended, presents goals and policies concerning land and resource use in the county. It also serves as the basis for all decisions regarding land use in the county. The plan contains plan elements relating to use of lands and natural resources, public safety, and natural hazards. These plan elements are universally applicable throughout the county and also detailed on constraint maps leading to the application of site-specific protection measures. The plan elements most relevant to the Project are land use, open space, seismic safety, scenic highways, noise safety, and conservation. Table E6-2 provides some relevant findings and polices regarding each element.

The Plumas County General Plan specifically addresses hydroelectric power generation under its constraints policies. Under these policies, the expressed goal of the county is to encourage the use of water for hydroelectric generation to meet the energy needs of the county. Hydroelectric power generation is a use that can be permitted in all land use zones. However, a case-by-case permit process is to be employed to impose conditions of approval necessary to mitigate adverse environmental and social impacts. Hydroelectric generation facilities are to be consistent with the "integrity of the opportunity and constraint areas where it is established." The establishment of facilities for hydroelectric generation plants are not considered "building construction" as defined in the plan. The flood hazard constraint areas do not necessarily prohibit hydroelectric use and the

Table E6-2.

Plumas County General Plan Elements Potentially Relevant to the Project

ELEMENT	CONSIDERATION	POLICY
Land Use	Identifies location and extent and standards for housing, business, industry, open space, and public infrastructure buildings and grounds.	Developments to be consistent with standards whenever possible. Site-specific densities considered by limiting lot sizes and densities.
Open Space	Open space uses including outdoor recreation uses, and public health and safety.	Site-specific constraint maps are prepared and plans and measures are prescribed for the preservation and protection of open space uses.
Seismic Safety	Identification and appraisal of seismic hazards, and landslide-prone areas.	Hazard areas incorporated into county constraint mapping for avoidance or minimization of hazard potential.
Scenic Highway	Identification of scenic highway corridors and regulations of advertising, along with any construction and development proposals.	Establishment and protection of scenic highway corridors with regulations on land uses, advertising, and ground disturbance activities.
Noise	Quantifiable noise factors including highways, railroads, airports, and local industrial plants.	Site-specific constraint maps are prepared to protect adjoining land uses from further noise pollution.
Safety	Identification of fire and geologic hazard threats.	Development of protection measures including identification of evacuation routes, clearances around structures, and minimum road widths.
Conservation	Identification of important natural resource-based elements including water and its hydraulic forces, forests, soils, rivers and open waters, wildlife, minerals, and agriculture.	Policies toward conservation and development of natural resources.

hydroelectric generation facilities are not subject to building exclusion provisions required within scenic corridors.

A component of the Plumas County General Plan is the Plumas County Zoning ordinances. The zoning ordinances prescribe regulations governing land use through the establishment of land use zones, parcel sizes, and placement of structures within the county. Much of the private property within and adjacent to the project boundary lies within residential zones, especially along Lake Almanor (Figures E6-5 and E6-6). However, there are some private lands in other Commercial, Recreation and Timberland Production Zones (TPZs). TPZs are special designations on some lands within the General Forest Zone. They are state-designated zones under the California Forest Taxation Reform Act of 1976 and California Timberland Productivity Act of 1982. California Timberland Productivity Act of 1982. The TPZs are zones reserved for the production of timber and compatible uses. The county places a 10-year, rolling restriction on the property to ensure uses in the growing and harvesting of timber. Under this program, assessments on timber are based on the value of timber at time of harvest, rather than an annual assessment on the market value of standing timber. One objective of this zone is to protect timberland and thereby discourage the premature conversion of timberland to other uses.

Within the area surrounding the Project, there are several residential zones including Secondary Suburban, Rural, and Single-Family. Each of these zones prescribes differing levels of allowable dwelling units per acre. Also prevalent along the adjoining shoreline area of Lake Almanor are the Prime Recreation zones, which are set up to allow marinas,

resorts, and boat ramps as well as dwelling units. In addition to the basic zoning designations, there are scenic area regulations for the Feather River Highway corridor (SR 70) and for Lake Almanor and its immediate shoreline within the Project boundary. At Lake Almanor, the reservoir and shallow areas north of the SR 36 causeway are designated as the Lake Almanor Scenic Area and the Johnson Fields – North Causeway Scenic Area. The scenic protection designations provide additional planning measures in addition to the basic underlying designation. The standards for land development within the scenic areas at Lake Almanor are:

- Locate transmission and distribution lines where they may be concealed by vegetation or topographical features;
- Control the amount and number of landfill projects within the lakeshore area to specifically include boat ramps and breakwaters; and
- Ensure on-premise signs do not exceed 6 square feet for residential uses and 100 square feet for commercial uses.

There are also standards for scenic highways and roads. These include SR 70, 147, and SR 89 except where SR 89 crosses Canyon Dam. SR 36 is designated scenic from Chester to the Lassen County line near Clear Creek, California; Almanor Drive West is also designated scenic. Almanor Drive West is an important roadway serving the Prattville area and many public recreation areas along the southwest shoreline of Lake Almanor. For each of these scenic roads, a 100-foot scenic corridor is designated from

the outer edges of the road easement. Within these zones, there are to be no "off-premise" advertising signs and transmission and utility lines are to be located where they may be concealed by vegetation or topographical features.

Within the county-designated TPZs, forest management practices are allowed, along with hunting, fishing, camping, and recreational uses not involving any permanent improvement of the land. The zone also allows for the erection, construction, or alteration of a gas, electrical, water, communication transmission facility, or other public improvements.

Plumas County has also initiated efforts toward developing a watershed management plan for the Lake Almanor basin. While not complete, the plan is intended to help establish a carrying capacity for the basin and prioritize continued monitoring of water quality. The plan is intended to consider and act on planning actions that will help maintain the good water quality conditions currently found at Lake Almanor. The concept is that the plan will be a strategic plan that establishes environmental threshold standards and provides for orderly growth and development. The County also would like the plan to include a public awareness program that includes voluntary citizen actions like cleaning litter and wastes along Lake Almanor highways and shorelines.

E6.3.5 Licensee Project Lands

The Licensee manages its land at the Project to support hydroelectric power generation, comply with FERC license conditions, and to provide a land buffer for environmental resource protection and recreation and commercial uses. Of the approximate 30,954

acres of land encompassed by the current FERC project boundary (not including the Caribou-Big Bend transmission line), the Licensee owns approximately 29,927 acres or 97 percent. The Forest Service manages 986 acres of Federal land, the Bureau of Land Management manages 38 acres of Federal land, and other private parties own the remaining 3 acres. Other than 616 acres of Federal lands, the Licensee owns all lands at Lake Almanor below the 4,500-foot-elevation contour and, generally, all lands at Butt Valley Reservoir below the 4,140-foot-elevation contour.

The Licensee manages and maintains all land and waters within the Project boundary in cooperation with land management and resource agencies, along with Plumas County and the California Department of Transportation (Caltrans). These lands and waters are used directly and indirectly for supporting water storage and hydroelectric power generation, providing aquatic habitats, supporting recreation uses, maintaining wildlife habitats, and protecting cultural resources. There are numerous easements, permits, and leases the Licensee has granted to others since the Project was first developed in the early 1900s. Permits and licenses issued to private parties for development on Lake Almanor shorelines are discussed in the following sections and in the Shoreline Management Plan being prepared for the Project. Leases and easements for Project lands or for other Project purposes are summarized on a map and table presented in Appendix E6-B. These leases and easements include rights granted by the Licensee to the State of California and the Forest Service, as well as the permits and other authorizations the Licensee has obtained from the State of California and the Forest Service.

As part of this relicensing, the Licensee proposes to add 34 acres of Plumas National Forest land into the Project at Caribou and below Belden Dam (see Exhibit G). The addition of these 34 acres will bring the total acreage within the Project boundary to 31,106 acres. These new lands will be used for penstock maintenance and spoil management. An additional 450 acres are not included in this total because the Caribou-Big Bend transmission line is proposed to be removed from the Project boundary.

While much of Lake Almanor is surrounded by private residential lands that limit easy public access to large areas of shoreline, all Project shorelines are open to the public because they are either Licensee lands or in some cases are public domain lands administered by the Forest Service. Access to Project shorelines is variable, with most areas accessible by foot or boat, and specific areas accessible by bicycle, wheelchair, or motor vehicles. Vehicle access is available at all commercial and public recreation sites, as well as several locations where public road rights-of-way parallel project shorelines. At Lake Almanor, there are several roaded access points along SR 147, SR 36, and SR 89, including at least two side roads accessing the reservoir off of Almanor Drive West southeast of Prattville. At Butt Valley Reservoir and Belden Forebay, there are several locations providing easy road access to shorelines along Prattville-Butt Valley Road and Caribou Roads, both of which closely parallel the undeveloped reservoir shorelines. The Licensee's public recreation policy allows access and includes the following provisions:

1. Provide public access to FERC project lands without compromising public safety or environmental resources or interfering with the operation of the Project for the primary purpose of power generation in accordance with FERC regulations.

2. Provide appropriate recreation facilities for public use, without discrimination, which contribute to meeting Project area needs for various outdoor recreational uses.

3. Provide general information about the availability of Project lands and waters for recreational use through brochures, public notices, and signs.

There are five Project roads that are wholly within the Project boundary and are essential to operation and maintenance of the Project. These are:

- Butt Valley Dam (two roads)
- Butt Valley Powerhouse Road
- Oak Flat Powerhouse Road
- French Creek Road
- Belden Surge Chamber Road

Access to the remainder of Project facilities is possible over public roads. In addition, there are ten recreation facilities and access roads wholly within or partially within the Project boundary. These are:

- Almanor Scenic Overlook
- Canyon Dam Day Use Area
- Eastshore Picnic Area
- Lake Almanor Campground (three road loops)
- Camp Conery Organization Camp
- Last Chance Campground
- Last Chance Group Camp

- Ponderosa Flat Campground
- Alder Creek Day Use Area
- Cool Springs Campground

The Licensee maintains Project roads for year-round vehicular use. The Project boundary is 60 feet wide along most of the Project roads and 40 feet wide along the French Creek water supply road. As part of the relicensing process, the Licensee undertook a road and traffic management study in 2001. The study identified several minor measures to improve Project roads and these are presented in Section E.6.8. As part of the Project-licensed facilities, the Licensee also manages the lands around each of the three diversion tunnels and continuing power conduits for each development. The Project boundary along the diversion tunnels (Butt Valley Powerhouse, Caribou, and Belden tunnels) and associated pipelines and penstocks is 100 feet wide across the centerline of each conduit. Most of the lands along the Project power conduits are federal lands managed by the Forest Service. Because access to the tunnels on these surface lands is infrequent, these lands are primarily used for open space, habitat, and timber production based on federal land management policies and Plumas County zoning.

In addition to the reservoirs, powerhouses, roads, and tunnels there are several transmission lines within the Project boundary. A 230-kV transmission line, operated as a 115-kV line, runs between Butt Valley Powerhouse and Caribou Switchyard, adjacent to the Caribou Powerhouses. This power line is supported by steel lattice towers and runs adjacent to the northeast shoreline of Butt Valley Reservoir. From Butt Valley Reservoir it extends down a steep grade to the Caribou Powerhouses along a 100-foot-wide right-of-

way. In addition, a 21-kV tap power line extends 600 feet near Oak Flat Powerhouse to a power line that connects into the non-Project transmission line system. Lands along the power lines are maintained by periodically brushing and trimming vegetation and also by periodic maintenance of the electric transmission system.

Each Project development dispatches electrical power through electric transmission lines that send the electrical power generated at the Project to the load centers outside the Project area.

On April 3, 1998, the Licensee applied to FERC for a license amendment to delete the 38.2-mile long Caribou-Big Bend 115-kV transmission line from the Project boundary. The reason for the amendment was that this transmission line serves as an essential link in the Licensee's interconnected power distribution system. The transmission line would need to operate even if the Project did not generate power. Therefore, the line is considered a non-jurisdictional facility and is not necessary to be within the FERC Project boundary. On December 22, 1998, FERC granted the amendment to remove the transmission line from the Project boundary conditioned upon any requisite authorization from the Forest Service for those lands crossed by the line. The Forest Service has not yet provided this authorization.

This transmission line consists of single-circuit 115-kV transmission line on steel lattice towers running on 100-foot-wide right-of-way for 38.2 miles. Approximately 328 acres of Forest Service lands are within the 450 acres total area being removed from the Project

boundary as a result of this action. The remaining Project transmission system uses approximately 33 acres of federally held lands.

Currently, the Forest Service is requesting the Licensee to prepare environmental and related documentation to support the change in administration of the Caribou-Big Bend 115-kV transmission line. Once the environmental documentation is approved, the license amendment process will be essentially complete. At that time, approximately 450 acres will be removed from the FERC project boundary. This will include the removal of 328 acres of Forest Service land, leaving a total of approximately 1,058 acres of total U.S. Government land within the new Project boundary (includes the proposed addition of 34 acres of Plumas National Forest lands). The newly adjusted Project boundary encompasses a grand total of 31,106 acres of land.

The Licensee not only manages lands around Lake Almanor to maintain reservoir operations, but also manages them for recreation, wildlife habitat, and cultural resource protection. There are 13 developed public recreation facilities and 22 commercial public resorts along Lake Almanor shorelines, along with numerous sensitive archaeological sites. There also are bald eagles along the Project shoreline and all of these factors require coordinated management practices. As part of the Licensee's management practices, some roads along upper Lake Almanor and at Lake Almanor Campground are seasonally closed to vehicular traffic and this closure helps to minimize disturbance to bald eagles. Lesser-used private roads are permanently gated or blocked off to prevent vehicular damage to archaeological sites. As part of the relicensing effort some new

areas will be included in the Project boundary and these include more lands along the Caribou penstocks and some small areas near Belden Forebay.

E6.4 EXISTING USES

Existing land use within the Project area may be classified as three major types: Developed, Undeveloped, and Reservoir/Open Water. Developed land use may be further classified as Industrial/Project facilities, Commercial, Residential, Developed Recreation, Agriculture, and Resource Extraction. Distribution of the various land uses in the Project area is shown in Figures E6-7 and E6-8, Generalized Land Use.

E6.4.1 Developed

Industrial uses in the area consist of a large lumber mill, road maintenance equipment yards, logging operations, power generation, and gas and electric power transmission facilities. Collins Pine Corporation operates a large lumber mill in the town of Chester. Caltrans and Plumas County Department of Public Works each operate road maintenance yards immediately south of the town of Chester. The Chester Public Utility District operates a sewage treatment plant on 78 acres adjacent to the Project boundary. The Licensee maintains and operates the Butt Valley, Caribou, Oak Flat, and Belden Powerhouses, including power conduits and dam facilities in several locations throughout the Project boundary. There are several residential communities in the Project vicinity including high density housing developments at Lake Almanor Country Club, Peninsula Village, Hamilton Branch, Big Springs, East Shore, and Lake Almanor West. There are over 1,000 residential lots adjacent to the Licensee-owned shoreline along Lake Almanor.

The small communities of Canyon Dam, Belden, and Chester contain the remainder of clustered residential uses in the Project area.

Commercial uses consist of numerous convenience stores, home construction and maintenance services, restaurants, gas stations, and approximately 25 recreation-based resorts in the small communities around the reservoir. In addition, there are several transportation facilities in the area including the state highway system, two railroads, and the Chester Rogers Airfield complex immediately south of the town of Chester. The Chester Rogers Airfield is a medium-to-small sized airport with two 1-mile-long, 100-foot-wide, paved runways used for a variety of aircraft and helicopters. The airfield is used for commercial and private flights as well as for staging fire fighting operations.

Developed public recreation uses are found at several locations along the Lake Almanor and Butt Valley shorelines. Also, there are three public campgrounds along the Belden bypass reach of the North Fork Feather River. At Lake Almanor these uses include Licensee-owned and maintained facilities consisting of Lake Almanor Campground, Last Chance Campground, Canyon Dam Day Use area, Camp Conery Group Camp, Almanor Scenic Overlook, and East Shore Picnic Area. Other developed public recreation sites along Lake Almanor include the Lassen National Forest-administered Almanor Campground, a 9.5-mile-long paved bike trail, and Canyon Dam Boat Ramp. The 9.5-mile-long bike trail, known as the Lake Almanor Recreation Trail, is being proposed by the Lassen National Forest as a National Recreation Trail. Developed public recreation sites at Butt Valley Reservoir include the Ponderosa Flat Campground, Alder Creek Day Use Area, and Cool Springs Campground. Developed sites along the Belden bypass

reach of the North Fork Feather River include Plumas National Forest-administered Queen Lily, Gansner Bar, and North Fork campgrounds. Adjacent to the Belden Powerhouse along SR 70, the Licensee built and maintains the Belden Day Use Area and Roadside Rest, which has an interpretive facility, picnic facilities, historic mining ore stamp mill, and restroom facility. Agricultural uses are limited in the area and are found primarily on the open space lands north of the SR 36 highway causeway outside of the Project boundary. These lands are used for cattle grazing. In past years cattle did graze on lands within the Project boundary; however, this practice has been eliminated in recent years. Some seasonal cattle grazing also takes place on nearby federal lands within the Project vicinity.

Lands in resource extraction or stockpiling include a few barrow pits used during the original Project construction. Other locations are at the tunnel spoil piles near tunnel portals located below Oak Flat Powerhouse along the Belden Tunnel alignment and along the Prattville-Butt Valley Tunnel alignment, not far from the Prattville-Butt Valley Road.

Another important land use within the Project area is mining. There are 206 active mining claims on Federal lands situated along the North Fork Feather River, mostly situated within the Seneca bypass reach (Appendix E6-C). A mining claim is a particular parcel of Federal land, valuable for a specific mineral deposit or deposits. It is a parcel for which an individual has asserted a right of possession. The right is restricted to the extraction and development of a mineral deposit. The rights granted by a mining claim are valid against a challenge by the United States and other claimants only after the

discovery of a valuable mineral deposit. There are two types of mining claims: lode and placer. Lode claims include rock-in-place bearing veins or lodes of valuable minerals having well-defined boundaries. Placer claims are mineral deposits not subject to lode claims and generally consist of deposits of unconsolidated materials such as sand and gravel containing free gold or other materials.

The major Federal law governing locatable minerals is the Mining Law of 1872 as amended (30 USC 22-54). This law provides citizens of the United States the opportunity to explore for, discover, and purchase certain valuable mineral deposits on those Federal lands that remain open for that purpose. These minerals include metallic minerals and certain nonmetallic minerals. The law also sets general standards and guidelines for claiming the possessory rights to valuable minerals discovered during exploration. The Bureau of Land Management administers and maintains mining claim records that include detailed mining claim site boundaries.

Most of the mining claims in the Project area are placer claims and most are located around the small community of Seneca within the Seneca bypass reach of the North Fork Feather River. The maximum size of a placer claim is 20 acres and most of the claims in the Feather River area are 20-acre claims. There are also a few lode mines as well as mining activities on the scattered private lands in the Seneca area. Most of these mines are irregularly worked but each claim has generally been worked more than one time over the last 80 years.

E6.4.2 Undeveloped

Outside of the Lake Almanor area, most of the Project facilities are situated within relatively undeveloped areas. Lands within the Undeveloped category include riparian/wetland areas, non-forested upland areas (such as montane grasslands and cliff/rock talus), and large expanses of undeveloped forested areas (such as mixed conifer, Ponderosa Pine, and incense cedar stands). The use of these lands is based on the conditions stipulated in the Federal land and resource management plans or Plumas County zoning for privately held lands within the area.

E6.4.3 Reservoir/Open Water

The reservoir and open water areas include Lake Almanor, Butt Valley Reservoir, and the Belden Forebay, as well as open reaches of the North Fork Feather River.

E6.4.4 Proposed Land Uses

There are several proposed residential development projects in the Project area that are in various stages of development in the vicinity of Lake Almanor. The Bailey Creek and Foxwood developments are located adjacent to Peninsula Village and County Highway A-13. These two developments represent two of three approved residential and commercial complexes on approximately 1,251 acres. The total number of housing units approved for construction at these three developments is 2,177. A new four-season resort is also proposed in adjoining Lassen County for the north-facing slopes of Dyer Mountain near Westwood, California. This development, called Dyer Mountain Four Season Mountain Resort, will consist of up to 1,200 housing units, at least two18-hole golf courses, and a ski area on 7,476-foot-high Dyer Mountain. The Dyer Mountain resort, if

approved and financed, will be developed on lands within 5 miles of Lake Almanor. Each of these new developments will create more demand for recreation facilities and water-oriented recreation uses on Lake Almanor. These planned residential developments will also spur further growth in commercial developments in Chester and Westwood, as well as near existing developed areas along the state highways passing through the area.

Also relevant to this land use and aesthetics exhibit, a traffic study (Appendix E6-D) and draft Shoreline Management Plan have been developed (Appendix E6-E) to support the relicensing effort.

E6.5 AESTHETIC RESOURCES ASSESSMENT

The landscapes of the Project area are not static; they are always undergoing change as a result of natural environmental processes or external modification. Underlying the character and condition of the landscape are the geologic conditions and processes under which it has evolved. These factors, in combination with climate, influence the type and condition of soils and vegetative cover that develop, the types and abundance of wildlife that inhabit the land, and human land use patterns. As part of the relicensing studies, a detailed aesthetic resources assessment was undertaken. The following findings are based on that assessment.

E6.5.1 Visual Characteristics of the Project Area

The Sierra Nevada and Cascade mountain ranges provide a diverse mosaic of vegetation types with a variety of habitat conditions contributing to interesting landscape types and

good wildlife viewing opportunities. Distant mountainous terrain is typically present in the background landscapes at most locations. Rugged volcanic rocks in the northern Lake Almanor Basin give way to reflective granite outcrops in the North Fork Feather River valley below Caribou. The rocky terrain provides distinguishing middle-ground landscape attributes. Large groves of trees with open understories and low green wet meadows add to the area's unique landscape character and scenic integrity.

The natural beauty of the Sierra/Cascade provinces is widely known and scenic highway designations reinforce the expectations of visitors to experience scenic views and dramatic landscape features. Visitors drawn to view outstanding scenery are sensitized to scenic quality along their travel routes as well. Recreation and tourism, based in part on the area's scenery, comprise one of the largest employment sectors in the Sierra Nevada range. The high and growing value of the region's scenery and its contribution to development of local support services and related facilities has been documented. This value is depicted in the significant and increasing contribution of tourism and property taxes to some county tax bases (USDA 2001).

For the purposes of analysis, the Project area has been divided into four landscape units. These landscape units are defined to delimit zones of generally similar landscape conditions. The landscape units encompass the entire area within the Project boundary, and in some cases also include portions of the surrounding area that are a logical part of each unit. The landscape units are the Lake Almanor Basin, Butt Creek Valley, North Fork Feather River/Caribou Road Canyon and the Belden area.

When evaluating landscape units, it is important to consider the distance from which most viewers might encounter a landscape (distance zones) and the degree of people's likely concern for scenic quality (sensitivity level). In addition, it is appropriate to consider the relative variety and regional abundance of a particular landscape type. This involves a characterization of the distinctiveness, or uniqueness, of a particular landform.

Lake Almanor Basin

The Lake Almanor Basin is a large basin rimmed by densely wooded mountains and rolling topography. Lake Almanor, the dominant feature of the basin, is an extensive reservoir of high scenic quality. The scale of the reservoir is very large and it has an attractive medium-to-dark blue hue that provides an interesting and pleasing foreground to the wooded mountainous terrain rimming the basin. A generally low bank shoreline surrounds the reservoir with short rocky banks blending into moderately dense stands of conifers where development is not present. Much of the reservoir's long eastern shoreline is highly developed with a continuous strip of homes interspersed with small marina and resort facilities. There are few coves or inlets along the shoreline except near the Peninsula Village area. Because the basin is somewhat flat and the lake is several miles wide and long, broad sweeping views are generally available along most reservoir shorelines. These include highly scenic views of 10,457-foot-high Mt. Lassen and the rugged terrain within Mt. Lassen Volcanic National Park. Views of Mt. Lassen are possible from the northeast shoreline near SR 36's Johnson Grade, the SR 36 Rest Area, Lake Almanor Country Club, County Highway A13, most of the East Shore area, and from much of the shoreline in the Prattville community and Lake Almanor West

subdivision. There are also good views of Mt. Lassen for westbound travelers on SR 89 near Lake Almanor West subdivision. On the eastern side of the reservoir, Dyer Mountain rises up 2,800 vertical feet from the reservoir surface and is the most noticeable mountain feature due to its proximity to Lake Almanor. On the surface of Lake Almanor, boaters have sweeping views of all the nearby mountains within the Lassen and Plumas National Forests.

Views into the Lassen Volcanic National Park are more distant, although highly noticeable on clear days. Other scenic areas of high quality include the broad meadow landscapes found north of the SR 36 causeway and on the extensive lowlands between Chester and Lake Almanor's western shoreline. These areas offer viewers a distinctive change in scenery from the predominant wooded terrain. The green high meadow landscapes consist of low growing grasslands pocketed by clumps of willows intermixed with other vegetative types. These meadows offer a lot of variety and gradually blend into mixed lands with interspersed wooded clumps on relatively flat terrain. Waterfowl and other bird life offer additional aesthetic values to these areas. Other attractive small meadows are found intermixed in the wooded areas along SR 89 from Lake Almanor West to Canyon Dam. The grasses in these meadows tend to stay green throughout spring and early summer and provide a generally pleasing variety of colors to viewers in the area.

North of Causeway

Butt Creek Valley

The Butt Creek Valley landscape extends from about halfway between Prattville and the Butt Valley Powerhouse to the Caribou Powerhouses near the mouth of Butt Creek on the North Fork Feather River. This landscape offers a wide variety of dramatic topographic relief that is gentle in the upper elevations and steep and rugged in the lower elevations leading down to the Caribou area. There are few meadows and the terrain is densely wooded. Butt Valley Reservoir is of high scenic quality with moderately low banks rimmed by a uniform and fairly densely wooded shoreline. The shoreline has several small rock outcrop areas forming small peninsulas and small coves. The reservoir is confined inside the valley bottom and is long and narrow allowing good views across its waters to the surrounding undeveloped shorelines. There are few long distance views from within this basin since it is somewhat confined in a narrow valley.

Butt Valley Reservoir

Butt Valley Reservoir is surrounded by rolling hills that lead up to long ridgelines and smooth peaks draped by a layer of fairly dense conifers. The lake water is very clear and medium blue in color with traces of a greenish hue in the many small coves and shallow areas near the shoreline. The main road, Prattville-Butt Valley Road, traverses the northeast shoreline running the length of the reservoir. While there are no residences along the shoreline, the Butt Valley-Caribou Electric Transmission line, supported by steel lattice towers, dominates the foreground landscape as viewed by

travelers on the road. To many users, the power line detracts from the natural landscape qualities that dominate the scenery.

From the Butt Valley Reservoir down to the Caribou Powerhouses, the terrain is extremely steep and rugged. A single-lane dirt road that splits into two one-way separated roadways that wind steeply down the hill provide most visitors their only access into this landscape. There are several locations along the roads in the upper and lower reaches that offer dramatic views down into the rugged and deep North Fork Feather River Canyon below. Numerous stream channels and small canyons bisect the terrain providing a variety of interesting terrain along the road corridor.

Butt Valley Creek

North Fork Feather River/Caribou Road

This landscape unit extends the length of the North Fork Feather River from Canyon Dam passing through Caribou leading downstream to the confluence of the East Branch North Fork Feather River at the scenic SR 70 highway corridor. The uppermost part of this landscape unit can be characterized by rolling wooded terrain bisected by the incised North Fork Feather River. The river is of fairly high gradient with short interspersed cascading sections. The river is hidden from wide-spread public viewing in most locations because there are few trails or roads in the area. Moving

Caribou Road

down slope past Seneca, a small cluster of old cabins near the road crossing of the river, the river canyon is deeply incised, which is especially noticeable around the Caribou Powerhouses. Immediately downstream of the Caribou Powerhouses, the river fits inside a small box canyon rimmed by jagged rock ledges. The river valley from this location to Belden is narrow and tucked deep down inside a more open canyon with ridges and mountain tops extending over 3,000 feet above the valley floor on both sides. The lower elevation river bottomlands are moderately wooded with the Caribou Road following closely along the well-cobbled river channel. The valley is highly scenic and has a largely undeveloped feel with rough mountainous character. There are numerous interesting views of somewhat dramatic rocky slopes and outcrops that continue up the slopes out of the valley bottom. The three primitive campgrounds and numerous narrow and informal riverside trails reinforce the rustic feeling of the area.

Belden Area

SR 70 Corridor

The Belden area landscape spans a distance of less than 2 miles along the deep scenic gorge of the North Fork Feather River along the SR 70 highway corridor. The upper end of this distinctive landscape is the confluence of the East Branch North Fork Feather River and the North Fork Feather River, where Caribou Road begins. The landscape is fairly uniform in topography but has an impressive variety of geologic and vegetative conditions leading to the Belden Powerhouse located at the confluence of Yellow Creek and the North Fork Feather River. The canyon gorge is generally U-shaped

with both wooded and open rocky slopes bisected by steeply defined stream channels extending up several thousand feet above the valley bottom. Most viewers experience the landscape from well-traveled SR 70. The river is fairly large and offers a variety of turbulent features with rolling white frothy water. The Pacific Crest Trail (PCT) also crosses the canyon at Belden Powerhouse.

The PCT is a 2,638-mile-long National Scenic Trail extending from Canada to Mexico. The PCT was one of the first two trails designated under the National Trails System Act of 1968. The PCT is noted for its use by long distance trail users although much of the use involves short- to medium-distance hikes by local and regional users on shorter outings. In general, the PCT section crossing the North Fork Feather River receives light use, although some horseback use is noted in late summer. Views of the Project from the PCT can be seen as northbound users descend the canyon from the south where the Belden Powerhouse penstocks and surge chamber are readily visible on the lower slopes of the canyon. At the SR 70 crossing, the Belden Powerhouse becomes visible although viewer sensitivity in this stretch is low because of the variety of developed features present. The Eby-Stamp Mill interpretive site, developed and maintained by the Licensee, provides a highway rest stop and unique diversion from the change in scenery encountered at the moderately developed river canyon bottom.

E6.5.2 Management Plans Relevant to Aesthetic/Visual Resources

Management policies applicable to aesthetic and visual resources are primarily those of the National Forest plans (Lassen and Plumas), although some aesthetic considerations can be taken from Caltrans as well as Plumas County.

E6.5.2.1 National Forest

As described in Section E6.3, both the Lassen and Plumas National Forests have Land and Resource Management Plans that guide resource management on Forest Service lands. The Lassen National Forest Plan was finalized in 1992 and the Plumas Plan in 1988. For the management of visual resources, the Forest Service uses a Visual Management System that provides a framework for inventory and management of visual resources. Within this system, visual quality objectives (VQOs) are established. VQOs are a land management prescription for a desired level of excellence based on physical, biological, and sociological characteristics of an area. VQOs are based on the degree of acceptable alteration of the characteristic landscape. The combination of landscape variety, landscape sensitivity, and viewer distance are considered in the National Forests' allocation of VQOs for a particular landscape. Each objective describes the degree of acceptable visual alteration permitted within natural landscapes, based upon the importance of aesthetics. These objectives are applicable to all project proposals and activities on Forest Service lands.

Table E6-3 presents the ranges of VQOs used by the National Forest. Only Retention, Partial Retention, and Modification VQOs presented in Table E6-3 are applicable to the Project area.

Figures E6-9 and E6-10 display the spatial extent of the adopted VQOs for the Project area.

The Lassen National Forest Plan assigns two VQOs to the Project area. Retention is prescribed for most of the recreation and lightly developed lands on the southwest shore

Table E6-3.

Visual Quality Objectives

VQO DESIGNATION	GENERAL DEFINITION
Preservation	Provides for ecological changes. Developments, other than low visual impact recreation facilities, are prohibited.
Retention	Provides for management activities that are not visually evident.
Partial Retention	Management activities remain visually subordinate to the characteristic landscape.
Modification	Human activities may visually dominate the original characteristic landscape. Vegetation and landform alterations must borrow from naturally established form, line, color, texture, and scale.
Maximum Modification	Management activities may dominate the characteristic landscape, but must present a natural appearing composition when viewed as background.

of Lake Almanor around Prattville. Retention areas are generally designated for the most scenic landscapes around the recreation use areas such as Lake Almanor Campground.

Retention is defined as allowing only those changes not evident to the viewer. Partial Retention is allocated for the undeveloped lands immediately outside the Lake Almanor West subdivision. Partial Retention means that changes are noticed but they do not detract attention from the landscape.

The VQOs for Plumas National Forest lands in the Project area are classified as either Retention, Partial Retention, or Modification (Figures E6-9 and E6-10, Visual Quality Objectives). Retention is prescribed in recreation and scenic areas around Butt Valley Reservoir, although the developed campgrounds are on Licensee-owned lands that are not part of the National Forest. Lands along the North Fork Feather River below Caribou Powerhouse are to be managed for Retention. Modification is assigned to the steep canyon lands leading from Butt Valley Dam to Caribou where the Project roads, transmission lines, and penstocks are visible features of the landscape.

The Forest Service also manages its lands according to its Recreation Opportunity Spectrum (ROS). The ROS classification system defines classes of outdoor recreation opportunity environments for outdoor recreation management of National Forests. ROS is based on a combination of three components: activities, settings, and experience opportunities. Combinations of these components are arrayed on a spectrum or continuum of increasing intensity, starting with Primitive, then Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, and Rural. These land allocations are related to the VQO allocations through common management themes.

The Plumas National Forest Plan further specifies goals and policies for Visual Resources. The plan emphasizes the need to allow certain management activities to dominate the visual landscape, especially those activities on lands committed to intensive timber or other commodity production. In areas frequently used by recreationists, the plan emphasizes the need to maintain high visual quality on these lands that are clearly visible from recreational developments, as well as from major travel routes and other high use areas.

Further specific direction for managing visual resources in the Plumas Plan are to:

- Vary visual quality objectives according to land use;
- Restore high visual quality to lands clearly visible from high-use areas;
- Restore visual quality by planting trees and/or other vegetation where regeneration is feasible if future use or wildfire degrades visual quality below the adopted VQOs;
- Maintain visual quality along the PCT;

- Employ a VQO of Partial Retention in those areas viewed as foreground from the PCT, and allow a VQO of Modification in the middle and background;
- Facilitate hydroelectric development that provides protection of all resources; and
- Coordinate Forest protection requirements with those of the Department of Fish and Game, the State Historic Preservation Officer, and the Regional Water Quality Control Board.

In addition to the Visual Quality Management designations, there are considerations for visual quality related to the federal designation of the Lassen Scenic Byway and Feather River Scenic Byway. SR 89 has also been designated a California State Scenic Highway by the California State Legislature. In addition, there are scenic considerations for portions of these same highways as prescribed by Plumas County (Section E6.3.3).

E6.5.2.2 Lassen and Feather River Scenic Byways

The Lassen Scenic Byway is a 187-mile road loop that circles through the volcanic high country and forests of Lassen National Forest and Lassen National Park. The Lassen Scenic Byway was nominated and designated for inclusion into the National Scenic Byways system in 1993 due to its abundance and quality of historic sites, volcanic and geothermal features, wildlife habitat, and unique scenic vistas. The Lassen Scenic Byway includes SRs 89, 147, and 36 where they form a circle route around Lake Almanor. The Lassen Scenic Byway is managed by the Lassen National Forest Service. The Lassen Scenic Byway is a component of the larger Volcanic Legacy Scenic Byway designated in February 2002. The Feather River Scenic Byway is a 126-mile-long scenic route in the

Feather River Canyon that is managed by the Plumas National Forest. The Feather River Scenic Byway, following SR 70, was designated for inclusion into the National Scenic Byways system in 1990.

The National Scenic Byways Program was established under the Intermodal Surface Transportation Efficiency Act of 1991, and reauthorized in 1998 under the Transportation Equity Act for the 21st Century. Under the program, the U.S. Secretary of Transportation recognizes certain roads as National Scenic Byways or All-American Roads based on their archaeological, cultural, historic, natural, recreational, and scenic qualities. National Scenic Byways possess outstanding qualities that exemplify the regional characteristics of the nation and All-American Roads are considered to be those roads that offer the very best scenery and adventure and are often a destination in themselves. There are 72 such designated byways in 32 states. The Federal Highway Administration promotes the collection as America's Byways.

The National Scenic Byways Program is voluntary. Anyone may nominate a road for national designation, but the nomination must be submitted through a state. There are 15 All-American Roads and 57 National Scenic Byways. Approximately $139 million has been made available to states for planning, development, and protection measures along scenic byways.

A draft management plan for the Lassen Scenic Byway was developed in 1999 and a draft interpretive plan is now being developed. The interpretive plan calls for improved

interpretive facilities at the Lake Almanor Ranger District offices near Chester and at the Lassen National Forest's Almanor Campground pavilion area.

An implementation strategy for the Feather River Scenic Byway was developed by the Plumas National Forest in 1996 (Plumas National Forest 1996). The implementation strategy calls for additional signing along the byway (SR 70), development of a public information brochure, radio transmitters to broadcast information to travelers, and improvements to several existing rest areas along SR 70. Of direct relevance to the Project, the implementation strategy calls for several improvements and changes at the Licensee's Belden Rest Area. The strategy recommends redeveloping the entire facility by adding a new picnic area, enlarging the restroom facility, providing accessible features to all structures, and moving the historic Eby Stamp Mill to the Rich Bar interpretive site, 4.2 miles to the east. The strategy also recommends that the Licensee change the interpretive theme from SR 70 development and history to North Fork Feather River hydroelectric development and history.

E6.5.2.3 California State Scenic Highway Program

The Scenic Highway Program is a part of the California Streets and Highways Code, Section 260 et seq. The goal of the California Scenic Highway Program is to preserve and enhance the natural beauty of California. A nominated highway is evaluated by the extent to which the natural landscape is seen by passing motorists and the extent to which visual intrusions (e.g., buildings, unsightly land uses, noise barriers) affect the "scenic corridor." The more pristine routes with few visual intrusions are more likely to qualify as scenic. The extent to which intrusions, rather than the natural landscape, dominate

views from the highway determines the significance of their impact on the scenic corridor.

A scenic corridor is the land generally adjacent to and visible from the highway. A scenic corridor is identified using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon. Jurisdictional boundaries of the land managers are also considered. Scenic highway status places no restrictions on making improvements to scenic highways, nor does it preclude development. Caltrans does, however, work with appropriate agencies to coordinate transportation proposals and maintenance activities and to ensure the protection of scenic corridors to the maximum extent feasible. In the Lake Almanor area, SR 89 has been designated a state scenic highway and corridor management is shared with Plumas County through its planning policies (see Section E6.3.3 Plumas County General Plan).

The Plumas County zoning regulations help to guide the types and extent of development within the SR 89 highway within a 100-foot-wide corridor along the route. The protection measures include control of outdoor advertising (including a ban on billboards), control of the extent and type of earthmoving and landscaping, and attention to design and appearance of structures and equipment. It should be noted that the portion of SR 89 that crosses Canyon Dam is not considered part of the state scenic highway. Portions of SRs 36, 70, and 147 are also listed as eligible for designation within the state scenic highway program.

E6.5.3 Assessment of Visual Contrast Between the Project Components and the Surrounding Landscape

As described in Section E6.5.2, the Project area VQOs fall into three categories. Lands within the southwest shorelines of Lake Almanor, above the Butt Valley Reservoir and along Caribou Road have the Retention designation and the highest scenic values. The lands within Partial Retention near Lake Almanor West and below Canyon Dam contain a diversity of landscapes common to the local area. The lands in the Modification allocation contain the least variety, with few outstanding scenic values in each localized area.

To provide a basis for systematic evaluation of aesthetic resources at the Project, a set of key viewing points (KVPs) has been identified. These viewing areas are intended to provide a representative sampling of the views of each landscape unit that are affected by the Project's development and which are seen by the most people. The selection of these areas was based on evaluation of the aesthetic characteristics of the landscape units; its use patterns; aesthetic sensitivity; and the plans, regulations, and policies affecting its alteration of appearance. The KVPs chosen are presented in Table E6-4, Key View Points and on Figures E6-11 and E6-12, Key View Points.

At the upstream end of the Project, Canyon Dam creates Lake Almanor, which is the main feature of the landscape. Lake Almanor provides the scenic foreground for the vegetation, geologic features, and developments that frame the lake. The reservoir itself has a natural appearance, particularly when at or near full pool. The Project recreation facilities generally blend into the surrounding landscape because there are only minimal

Table E6-4.

Key View Points in the Project Area

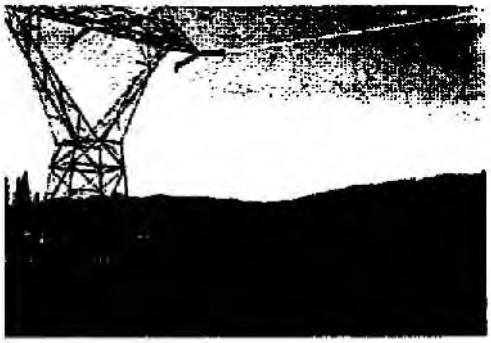
KVP	ORIENTATION	LANDSCAPE PERSPECTIVE
1) SR 36 Causeway	West	SR 36 Causeway bridge on Lake Almanor
2) North Shore Campground	South	Shallow areas of upper Lake Almanor
3) SR 36 Rest Area	Southwest	Wooded view of upper Lake Almanor, Chester and onto Mt. Lassen
4) Little Cove	South	Inside cove looking down into Lake Almanor near Peninsula Village
5) Eastshore Picnic Area	West	Typical wooded view from picnic area
6) Scenic Overlook	Northwest	Canyon Dam and spillway area
7) Canyon Dam Boat Ramp	West	Lower Lake Almanor from developed recreation site.
8) Plumas Pines Resort	Northwest	Resort view of Lake Almanor and Mt. Lassen
9) Almanor Campground Beach	East	Swimming beach at campground
10) Butt Valley Reservoir Cove	Southwest	Upper Butt Valley Reservoir shoreline
11) Alder Creek Campground Boat Ramp	South	Developed recreation site view along Butt Valley Reservoir
12) Lower Butt Valley Reservoir	South	Butt Valley Dam and spillway
13) Seneca Bridge	South	Seneca bypass reach
14) Butt Valley Dam Road	South	Project transmission line with Belden Forebay in distance
15) Belden Forebay	North	Belden Forebay and Oak Flat area
16) Caribou Road Bridge	Northeast	Belden bypass reach
17) Belden Siphon	North	At road crossing on Caribou Road
18) Belden Bypass Reach	Northeast	Along SR 70
19) Belden Powerhouse	Northwest	Pacific Crest Trail crossing and SR 70 corridor at Belden Powerhouse

structures and the sites all well vegetated. The first nine KVPs have views that typify the Lake Almanor landscape. From the reservoir, Canyon Dam is a moderately noticeable feature due to its low evenly graded rock face. The outlet tower with its interesting historic design tends to add more positively to the landscape variety. From SR 89, Canyon Dam is not clearly noticeable as a large dam structure; instead, it appears more like a large raised road bed passing over a river. There are limited views of the North

Fork Feather River below the dam. Eastbound travelers generally have longer views of the river channel below the dam. The Prattville intake structure and nearby abandoned concrete intake structure are generally hidden from shoreline visitors by tree cover in the area. From the reservoir, the active intake structure is a tall and narrow industrial-type building that provides moderate contrast with the adjoining landscape character. The nearby Project support buildings add to the clutter of the area and increase the level of contrast at the Project facilities. The Butt Valley Powerhouse and its associated penstocks are partially visible from a few locations along the Prattville-Butt Valley Road although trees and rough terrain largely obscure these views. The Butt Valley Powerhouse is a fairly hidden structure because it is partially underground, although it is a clearly visible feature to the many anglers who use the good tailrace fishery.

Butt Valley Reservoir appears more natural in appearance than Lake Almanor, particularly because it is undeveloped and experiences only limited lake level fluctuations. There are three KVAs that typify the Butt Valley landscape (KVA 10 to 12). From the water or the Prattville-Butt Valley Road, the Butt Valley Dam is only visible at the eastern end of the reservoir. The dam is a low visibility earthen dam but its concrete spillway and outlet tower increase the overall contrast of the facility. The visual exposure of these structures is limited to the immediate surrounding area.

The Butt Valley-Caribou Transmission line is the most visually intrusive Project feature of the Butt Valley Reservoir area. About 10 large steel-lattice towers are highly evident in the foreground to travelers along the Prattville-Butt Valley Road. From the reservoir, the transmission line and towers provide unnatural contrast to the middle-ground view of the typically uniform green, wooded slopes carpeting the north side of the valley. Because the transmission line runs alongside and within the Prattville-Butt Valley Road corridor, it is highly noticeable to motorists and generally detracts from the natural beauty of the forested hills and blue waters of the reservoir. However, from the campground and day use facilities, the transmission line is less detracting because it is within wooded areas and behind or out of sight of most of the recreation facilities.



The Caribou power conduit structures consist of the underground tunnels and the aboveground penstocks and valve houses. The aboveground structures are visible in a few locations in the steep rugged terrain above the Licensee-owned town of Caribou. The penstocks for the Caribou powerhouses are visible from the single-lane Butt Valley-Caribou Road and can also be seen at the gated entrance to the Caribou Powerhouse. These structures create a high level of

contrast to the immediate area, although the natural visual variety of the area is high due to the presence of natural rock outcrops. The penstocks are on top of terrain with numerous rock outcrops and exposed ridgelines that naturally break up the densely wooded slopes.

The Caribou No. 1 Powerhouse is also fairly concealed from general viewing because it is tucked away within the narrow and winding North Fork Feather River canyon. The old powerhouse structure is a four-story crème-colored industrial building with a historic character. The adjoining Caribou Powerhouse No. 2 blends into the switching yard and fits closely within the industrial character provided by Powerhouse No. 1.

Downstream of the Caribou Powerhouse, the Belden Forebay sits within a narrow rocky canyon (KVA 15). Its waters are often an interesting greenish color made more interesting due to the contrasting areas of differential lighting based on the shading effects of the steep canyon walls and vegetated shoreline. The reservoir appears somewhat natural, although the small concrete and earthen Belden Dam presents an obvious and prominent reminder of its origins. The upper forebay has the look of a large slow moving river. Because its shorelines are steep, the daily fluctuations of up to 5 to 10 feet are hardly noticeable to most viewers. The Oak Flat Powerhouse below the dam is well concealed within the spillway area, almost appearing integral to the dam structure. The instream flow releases of 140 cubic feet per second (cfs) during summer and 60 cfs in winter provide an interesting white plume of

water streaming out of the base of the small powerhouse structure into the North Fork Feather River channel below.

The Licensee town of Caribou is generally an aesthetically pleasing development with its large rustic wood-frame community buildings and uniform bungalow-style homes. As part of the Licensee's proposal for this relicensing, the old clubhouse structure will be maintained to preserve its exterior rustic appearance, and a new interpretive facility will be developed to provide visitor information on the structure's use and history. Several of the houses in Caribou have been upgraded and serve as residences for Licensee employees. Over the new license term, the Licensee has plans to make similar upgrades and occupancies to the other houses. These measures will enhance the scenic characteristics of the village and its setting.

Between Oak Flat Powerhouse and the Belden Powerhouse, the primary visual features of the Project are the Belden Siphon and the Belden penstocks, surge chamber, and valve house connecting into the Belden Powerhouse along SR 70. The Belden Siphon crosses the North Fork Feather River and Caribou Road approximately 1 mile north of the junction of SR 70 with Caribou Road. The siphon, constructed in the 1960s, is a 12-foot-diameter aboveground green pipeline that runs down into and across the canyon supported by large concrete block structures. The facility stands out visually because it crosses directly over Caribou Road close to two campgrounds. The siphon is seen where

it crosses this primary travel route through the area (see KVA 17 on Figure E6-12). During repairs in the early 1990s, the area was revegetated and new concrete footings were impregnated with dark green and brown colors to soften the contrast with the surrounding canyon landscape. Importantly, the terrain around the siphon is rough and undulating and the siphon is only noticeable from certain vantage points near the facility. The canyon bottom vegetation is generally lush around the siphon and provides considerable screening to the large pipe structure.

The Belden Powerhouse, built in 1969, is a partially underground powerhouse with a single vertical Francis generator unit situated alongside SR 70 at the confluence of Yellow Creek and the North Fork Feather River. The facility is nestled into the hillside and has a low profile as seen from SR 70 and the adjoining Licensee-maintained Belden Day Use Area. In contrast, the Belden Powerhouse penstocks are highly visible to eastbound motorists along SR 70; however, most travelers are accustomed to the presence of such facilities because there are numerous other hydroelectric facilities along the route. The penstocks stand out more than other Project facilities because they are easily seen above line of sight of most eastbound motorists. Also, their creamy-white color stands out among the darker earthen tones of the hillside.

From the original Project construction, there are several tunnel spoil disposal sites and borrow pits within the Project area. These sites generally contain rock and gravel spoils

that were derived from excavation of the original tunnels or are the excavation pits resulting from dam construction. Each of these disturbed sites has differing visual effects depending on how well reclaimed the site is and how visible the site is with respect to primary travel routes. Progressing upstream to downstream within the Project area, the spoil sites and borrow pits are as follows (also refer to Figures E6-9 and 10):

- Canyon Dam borrow site,
- Skinner Flat borrow site (below Canyon Dam),
- Benner Creek borrow site (at the base of Butt Valley Dam and spillway),
- Caribou Tunnel 2A spoils site (along the south side of Butt Valley Caribou Road),
- Belden Dam borrow site (below Belden Dam),
- Oak Flat spoils site (an active maintenance site along Caribou Road),
- Belden Tunnel No. 1 spoils site, and
- Belden Tunnel No. 2 spoils site (along Belden-Longville Road).

The Canyon Dam disposal sites were used during the various construction periods at Canyon Dam, as well as during the spillway modifications in the 1960s. These sites are partially reclaimed by sparse groupings of evergreen trees. However, the irregular shape of the ground, lack of dense vegetation, and presence of cobbles are indicators of previous disturbance. The Benner Creek site below Butt Valley Dam also appears to be partially reclaimed. In this area grasses grow in much of the disturbed area and the area has a fairly even texture. Caribou Tunnel 2A is situated on a carved-out bench along the moderately steep Butt Valley Caribou Road. This old tunnel spoil site is fairly large but somewhat hidden by trees from most viewers along Butt Valley Caribou Road. The site

also holds the penstock and associated portal valve house building, thereby reinforcing the industrial nature of the immediate area. The Belden Dam borrow site is mostly concealed by trees off Caribou Road. The Oak Flat site is highly noticeable to travelers along Caribou Road because it is an active disposal site. This site has numerous small rock and debris piles from road and Project maintenance activities. The piles have contrasting colors and textures resulting from differing native soils and rocks being deposited in a single location. The Belden Tunnel No. 1 spoils site is a prominent site that includes a large grayish, steeply sloping bank that can be seen across the canyon from Caribou Road. The Belden Tunnel No. 2 spoils site is only visible to a few viewers traveling along the lower stretches of the Longville Belden Road.

E6.6 COMPATIBILITY OF THE PROJECT DEVELOPMENT WITH SURROUNDING LAND USES AND MANAGEMENT

E6.6.1 Compatibility of the Project Developments with Surrounding Land Uses

Land uses surrounding the project developments are shown in Figures E6-7 and E6-8. Most of Lake Almanor is surrounded by residential, transportation, or commercial uses. Most of the remaining southern half of the Project area is surrounded by undeveloped timberland and open space uses. The residential and commercial developments around Lake Almanor are generally compatible with the hydroelectric project uses because of the presence of the highly desirable 52-mile-long waterfront shoreline. However, during times of low reservoir levels (typically experienced after summer), the desirability and utility of the shoreline decreases markedly. However, the Licensee attempts to maintain high lake levels in the spring and summer months and this helps to ensure this

compatibility throughout the primary recreation use season. In times of drought and high power demands, however, the reservoir may be drawn down at less-than-desirable levels during the summer. While meeting power demands is a priority, the Licensee attempts to maintain high lake levels throughout the summer while meeting all license conditions, flood protection needs, and agricultural contract obligations.

The timberland and open space uses are generally very compatible with the hydroelectric project uses, including their associated recreational developments. There are developed recreation sites along the shores of Lake Almanor, Butt Valley Reservoir, and along the Belden bypass reach. Dispersed recreation uses occur throughout the Project area. The developed and dispersed recreation uses are extremely compatible with timberland and open space use because there are few visitors or residents and therefore few people to experience any excess noise, traffic, and light that might be periodically generated at recreation sites. The recreational uses also are generally compatible with the Lake Almanor residential uses because these areas are not adjacent to the developed recreation sites. However, during relicensing meetings, it was mentioned that there are times when illegal beach fires and late night noise from the Forest Service Almanor Campground and other nearby shoreline areas create a nuisance and potential public hazard for residents of Lake Almanor West subdivision. There are times in the summer when roads such as SR 89 and Almanor Drive West are more crowded due to people accessing the recreation sites, but this is only a short-term nuisance. In general, the presence of high quality developed recreation sites is a benefit to the greater community in the Lake Almanor Basin.

The only use in the vicinity that is not very compatible with recreation uses and is a water quality concern to some local residents is cattle grazing. On the north end of Lake Almanor above the SR 36 causeway, there is evidence of cattle in the area. However, cattle are currently excluded from lands within the Project boundary. Nevertheless, there have been cattle that get through the fencing and the Licensee continues to work with the cattle owners to keep cattle off Project lands. Therefore, this incompatibility is only a temporary concern at best, assuming fences can be maintained better in the future.

All other Project developments are generally compatible with surrounding uses because of the low intensity of uses and low population density within those uses. The Project transmission lines provide a lesser degree of compatibility than other Project uses because these facilities are managed to exclude tall vegetation growth and yet the adjoining timberlands contain tree species that tend to colonize the early successional lands within the transmission corridor. This is a minor problem since vegetation maintenance is a routine part of transmission line maintenance whether or not the facility is near timberlands.

E6.6.2 Land Use Compatibility with Project Operations

Project operations generally affect adjoining uses through water regulation, noise at powerhouses and spillways, air emissions from vehicles, vehicle light reflection, or other aesthetic factors. These Project effects have the potential to influence surrounding land uses.

The Project's generating facilities and dams regulate water in the Project reservoirs and river bypass reaches. The Licensee has its own calibrated elevation datum; however, all lake levels discussed here can be translated into U.S. Geological Survey datum by adding 10.2 feet. Reservoir storage within the Project is used for daily peaking operations. The Belden and Seneca bypass reaches have sustained minimum instream flow releases that are supplemented by springs and other creek and river flowage downstream. The Licensee uses Lake Almanor for peaking operations that also run through downstream powerhouses on the North Fork Feather River. Lake Almanor generally operates between a normal maximum elevation of 4,494 feet and a normal minimum pool elevation of 4,469 feet. The reservoir usually reaches its annual high elevation mark in May or June and is slowly drawn down to its lowest mark by December or January. Some typical lake levels are shown in the photographs on Figures E6-13 and E6-14. In Figure E6-13, the photographs taken on June 27, 2000 are at a reservoir elevation of 4,491 feet. For the photographs taken on October 4, 2000 the reservoir was at elevation 4,482 feet, or 9 feet lower than the early June photographs. For the photograph of June 1, 2001 taken at the end of the Chester Flood Control Channel, the reservoir was at 4,481 feet or 10 feet lower for the photograph taken at the same location on June 27, 2000.

Figure E6-15 presents a graph showing the frequency of Lake Almanor lake levels by month over the 37-year period from 1963 to 2000. In 1963, the Licensee increased the maximum operating level to 4,490 feet, and by 1976 the authorized level was increased to 4,494 feet; however, the lake rarely has been brought up that high. As shown in Figure E6-15, Lake Almanor's average (mean) high annual level occurs in June when the lake

averages about 4,487 feet. The average September lake level is about 4,482 feet, similar to the low lake level photographs in Figure E6-13. Less than 10 percent of the time (90 percentile exceedence line in Figure E6-15), Lake Almanor reaches about 4,492 feet in June. At least 90 percent of the time (10th percentile), Lake Almanor will reach a high of 4,479 feet in June.

Because Lake Almanor is generally a fairly shallow reservoir in a wide basin, a drop of a few feet in lake elevation can expose wide areas of shoreline. When the lake is above 4,482 feet, the exposed shoreline is somewhat beneficial by serving as a beach area for engaging in or staging recreation activities. However, the shoreline can be very rough with fairly jagged volcanic-type rocks that make typical beach activities difficult. Below about elevation 4,482 feet, the exposed shoreline progressively becomes more undesirable to many users and viewers. In steeper shoreline areas along the south portion of the east shore and near Hamilton Branch and the Big Springs area, larger reductions in lake elevation are not noticed as much because the water line remains fairly close to shore. The western shoreline near Chester and the area north of the SR 36 causeway have large areas of brown flat terrain exposed below elevation about 4,482 feet.

The Butt Valley Reservoir fluctuates daily and weekly to match daily output to daily peak needs. It has a normal maximum operating elevation of 4,132 feet and an unregulated minimum operation level of 4,115 feet, although during typical summer operations the reservoir is maintained around 4,129 feet. Figure E6-14 shows the reservoir at a high (4,130 feet) and middle elevation level (4,127) as experienced during the summer of

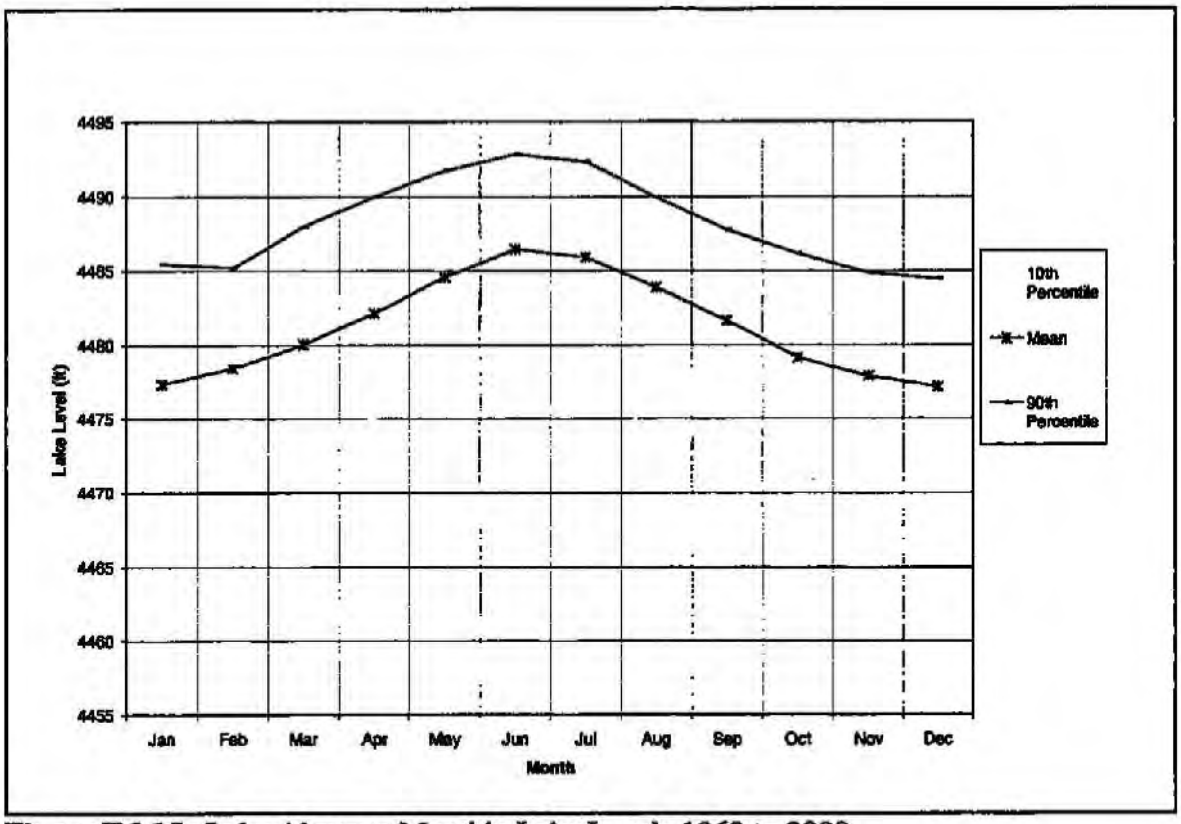


Figure E6-15. Lake Almanor Monthly Lake Levels 1963 to 2000

2001. Typically, Butt Valley Reservoir may fluctuate about 1 foot on a daily basis and between 3 and 5 feet on a weekly basis depending on power system operating needs. Butt Valley Reservoir has a more attractive sand/rock shoreline than Lake Almanor when exposed, and given the amount of fluctuation, visual quality is generally preserved across the range of normal operating levels.

The Belden Forebay fluctuates daily in supplying water to the Belden Powerhouse and to make instream flow releases through the Oak Flat Powerhouse. The forebay reservoir typically fluctuates between 2,973 and 2,960 feet; however, because the reservoir is narrow and deep the fluctuations are only slightly noticeable.

The Seneca bypass reach of the North Fork Feather River is a fairly remote stream reach that is not seen by most of the public, although Plumas County's one-lane gravel-surfaced Seneca Road crosses over the reach. Viewers generally are comprised of the few residents living in the area, including recreational miners, anglers, and other sightseeing enthusiasts seeking off-road experiences. During the 2001 recreation use surveys, a maximum of seven persons at one time were observed at Seneca Bridge. The current year-round instream flow release from Canyon Dam is 35 cfs. During the flow assessment study, up to 700 cfs were released into the Seneca reach to determine preferences for fishing and whitewater boating. The contrast between these higher releases and the typical 35-cfs release is shown in the photographs in Figure E6-14. At the higher flow levels approaching 700 cfs, the river has almost continuous rapids and the flow inundates much of the streamside vegetation. Because 35 cfs does not completely cover the bottom of the river channel, it is likely that a higher continuous instream flow release would improve the visual quality of the area. Increasing the instream flow release to 75 cfs as proposed will provide this improvement.

The Belden bypass reach of the North Fork Feather River is a more accessible river reach because Caribou Road and SR 70 run directly alongside the river throughout its length. From the Belden Forebay, flows between 60 and 140 cfs are released depending on the time of the year. During the fishing season, from mid-April through Labor Day, the release is 140 cfs; the remainder of the year 60 cfs is released. The instream flow releases are sufficient to fill the river channel bottom, and as indicated in the flow assessment study for the Project relicensing, the existing flow regime provides adequate aesthetic

values for most camping, hiking, picnicking, and general recreation uses. There are also numerous streams entering the Belden bypass reach. When the river joins the East Branch of the North Fork, the flows are high enough for the casual observer to not notice any diversion is taking place. The proposed release of a continuous 140 cfs from Belden Forebay will ensure aesthetic values are protected year-round.

There are no known flooding issues with respect to flows in the bypass reaches or in downstream areas. Proposed increases in bypass reach flows are not anticipated to have any adverse effects on shoreline recreation users.

Project operations generate noise from machinery and equipment used within and adjacent to the dams and powerhouses (e.g., generators, turbines, cranes) from operation-related vehicular traffic to and from the Project and other operation-related activities at the Project. Noise from Project operations is buffered from sensitive land uses by large intervening areas of undeveloped open spaces and steep terrain. Because the Project-generating facilities are within deep valleys and canyons, the topography helps to contain noise generated from Project operations. The Licensee has not received any comments or complaints regarding noise generated at the Project and this noise is not in conflict with surrounding uses.

Hydroelectric developments have low air emissions compared to other types of power generation facilities. At the Project, small amounts of emissions are released into the atmosphere from operation-related vehicular traffic and occasional dust from construction and maintenance activities. Most of the Project-related emissions occur from vehicles

passing between Butt Valley and Caribou. In addition to being relatively low in concentration, the air emissions at the Project area are widely dispersed and comprise a very small portion of the vehicle emissions in the region. Air emissions related to Project operations are not in conflict with surrounding uses.

General observations indicate that very little light and glare are emitted by Project operations. Overhead artificial lighting is used at night to perform work at dams, powerhouses, and switchyards and to maintain security. The light generated from the Project sites is small and is sufficiently buffered from sensitive land uses by large wooded areas and rough topography.

E6.6.3 Project Consistency with Applicable Management Plans

This section evaluates the proposed Project operations and maintenance practices for consistency with the land use plans described in Section E6.3.

The use and management of lands supporting continued operation of the Project is generally consistent with applicable land and resource management plans relevant to the area.

For Project lands within the Lassen and Plumas National Forests, the Project will continue to conform with land management policies stated in the Sierra Nevada Forest Plan and the Lassen and Plumas National Forest Land and Resource Management Plans. The primary objective of the Sierra Nevada Forest Plan is to conserve important components of the landscape such as stands of mid-seral and late-seral forests with large trees. The Project's continued operations do not inherently conflict with conservation

provisions, especially regarding forest preservation. The Plan's aquatic, riparian, and meadow conservation strategy focuses on providing clean water, functioning aquatic ecosystems, and environmental conditions that contribute to viable populations of associated species. As stated in the Plan, the aquatic management strategy goals are neither prescriptions nor standards, but endpoints toward which management would address watershed processes and functions, and wildlife habitats, attributes, and populations. The main objective is to provide a broad, comprehensive framework for establishing desired future conditions. The most relevant goal of the plan that relates to Project operations concerns streamflows and achieving, to the extent practicable, the goal of "maintain and restore in-stream flows sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved." The Project's proposed instream flow releases at Canyon and Belden Dams will help to maintain instream flow levels to sustain riparian and associated habitats.

Most of the Project lands are within the Sierra Nevada Framework Plan's urban wildland intermix zone, which is explicitly designed to protect human communities from wildland fires and to design fire treatments that provide a buffer between developed areas and wildlands. The use of National Forest lands for Project operations does not conflict with this management direction and these management designations are fully complimentary to the need to maintain the Project facilities in areas of wildland fire hazard. Importantly, the urban wildland intermix zones do overlap with other Forest Plan designations, such as those with old growth forest emphasis; however, the urban wildland intermix zone fuel

treatment standards and guidelines supercede similar old growth forest guidelines. Continued use of Project lands for Project purposes appear to be consistent with these management standards and guidelines. Continued clearing of vegetation around Project facilities also serves as a fuel reduction measure and the Licensee's continued cooperation with CDF will help to further reduce fuel loading in the area.

Both the Lassen and Plumas Land and Resource Management Plans call for protection of bald eagle nesting along Lake Almanor's southwest shoreline. Specifically, the Plumas plan recommends limiting human activities near the Licensee's Lake Almanor Campground between November 1 and March 1 to minimize disturbance. The Licensee continues to meet this charge by closing the Lake Almanor Campground and gating the entrance to keep users out. Other nearby recreation facilities are also closed and gated in the winter. Additionally, because the portion of Almanor Drive West from Prattville to its junction with SR 89 near Lake Almanor Campground is not plowed in winter, further protection to bald eagle nesting is afforded.

Lastly, the Licensee operates the Project in a manner consistent with Plumas County's General Plan. This consistency is achieved by several factors, including the Plan's expressed need to encourage the use of water for hydroelectric generation to meet the energy needs of the county. For open space and scenic policies, the Project provides protection of the Lake Almanor and adjoining Johnson Fields-North Causeway Scenic Area designations. The proposed resource conservation plan for the causeway area will provide further open space protection. In addition, through the Licensee's shoreline management plan policies, the preservation and protection of open space are prescribed

for many shoreline lands within the Project boundary. The Licensee also assists in ensuring that the number of landfill projects on Lake Almanor shorelines is limited. Further, Licensee's shoreline policies require others adhere to local county development standards, as well as other resource agency requirements, when they are permitted to use Project shore lands.

For proposed Project enhancement measures, however, the proposed development of up to 95-unit Eastshore Campground would not be consistent with the Timberland Production Zone classification for Licensee-owned land in the southern portion of the Eastern Shoreline Area. The Licensee plans to work with Plumas County to change this designation.

E6.6.4 Buffer Zone and Shoreline Policies

Because most of the Project reservoir are on lands owned by the Licensee, buffer zones around the impoundments can be well controlled and are easily maintained for ensuring public access and protecting recreational and aesthetic values. Shoreline policies are in place to manage shorelines in a manner consistent with Project purposes and public needs (Section E6.3.4, Licensee Project Lands). In addition, a comprehensive shoreline management plan is being prepared that will include provisions for protection of cultural resources, important wildlife and aquatic habitats, residential and recreational uses, and shoreline bank stability and erosion.

On each of the three Project impoundments, the Licensee maintains a buffer zone to ensure adequate public access and protection of recreational and aesthetic values. The

ability to maintain such a buffer zone is enhanced because most of the lands are in Licensee ownership or owned by the federal government and managed by the Forest Service.

The public has pedestrian access to all areas of the reservoirs except near intakes, control gates, and other appurtenant facilities. Many areas on the Belden forebay have steep but short banks where access is somewhat difficult; however, numerous informal trails provide pathways to shoreline areas. Several areas along Lake Almanor are accessible by vehicle, particularly at the developed recreation sites. Vehicular access is also possible close to most of the east shoreline at Butt Valley Reservoir and west shoreline of Belden Forebay because the main access road runs alongside each shoreline. Boating is allowed year-round at Lake Almanor and Butt Valley Reservoir.

Under the terms and conditions of the current license, the Licensee has implemented a comprehensive shoreline permitting program to ensure that non-Project uses of the Lake Almanor shoreline do not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use. The permit program also ensures that other uses are consistent with the Licensee's responsibilities to protect the scenic, recreational, and environmental values of the Project.

The shoreline permitting program is implemented through a dock permitting program that began in April 1992. In 1992 the Lake Almanor shoreline policy document was prepared in consultation with local shoreline residents and Plumas County representatives. The 1992 Lake Almanor shoreline policy document contains permit requirements and

restrictions and identifies requirements for the various non-Project, private uses of the reservoir and its shorelines. This policy outlines the requirements and restrictions for permitting docks and buoys as well as other uses such as camping, boating, debris burning, and cleanup activities including rock and stump removal.

The 1992 Lake Almanor shoreline policy document briefly addresses requirements for accommodating commercial recreation uses. However, in 1997 the Licensee created a separate commercial use policy to further address the growing needs of regulating commercial uses. The 1997 Lake Almanor commercial policy document outlines the allowable uses and license requirements for any commercial use of Project shorelines. The 1997 Lake Almanor commercial policy document outlines administrative procedures necessary for approving commercial uses, such as resorts and marinas on Project lands. This policy document also specifies the type of commercial developments that are to be regulated and identifies specific uses within the Project boundary that are prohibited. These include mobile homes, decks, and septic systems.

As the shoreline permitting program evolved in the 1990s, the Licensee further refined the private use shoreline policies in collaboration with local land owners and county officials. In 1998 the Licensee implemented a new boat dock/buoy agreement form that uses a standard permitting instrument for all private landowners applying to place a dock or buoy in Project shorelines. This permit instrument also specifies standard agreement terms and conditions for stairs, docks, walkways, and related facilities and includes requirements for insurance, liability, facility markings, and Licensee inspections.

All of these policies embody the current shoreline management regulations. To date, over 600 adjacent lot owners have dock permits as a result of this shoreline program. As part of the Project relicensing, the Licensee has prepared a comprehensive shoreline management plan that will provide overall guidance for managing shoreline development at Lake Almanor. This plan examined all shoreline areas of the reservoir to identify the potential areas of future development, as well as areas deemed necessary for preservation to protect and enhance environmental values. To the extent possible, this plan integrates existing shoreline management policy and permitting documents into a comprehensive plan for managing Project shorelines over the course of the next license term. The Shoreline Management Plan is intended to be a comprehensive plan to manage the multiple resources and uses of the Lake Almanor shoreline in a manner consistent with license requirements and project purposes.

E6.7 DESCRIPTION OF WETLANDS AND FLOODPLAINS IN THE PROJECT AREA

This section discusses federal and local regulations protecting wetlands and floodplains, and presents an overview of wetlands and floodplains within the Project area. This section also evaluates the potential short- and long-term impacts of the Project on wetlands and floodplains.

E6.7.1 Laws Protecting Wetlands in the Project Area

There are federal laws for protection of wetlands and floodplains. In addition, Plumas County has policies relevant to wetlands and floodplains.

Wetlands are protected under the Clean Water Act of 1972 (amended in 1977). The Clean Water Act was enacted to restore and maintain the physical, chemical, and biological integrity of the nation's waters, in part through regulations of the discharge of fill material into waters of the United States. The U.S. Army Corps of Engineers has regulatory responsibility for streams and wetland resources under Section 404 of the Clean Water Act. In addition, Executive Order 11990 of May 24, 1977 directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. This order applies to actions of federal agencies, including the issuance of licenses by FERC.

At the local level, Plumas County does not have specific wetland regulations but does have a policy of protecting significant fish, wildlife, and vegetation resources.

E6.7.2 Laws Governing Floodplain Protection

Floodplains are explicitly protected at the federal level through Executive Order 11988 (May 24, 1977). This executive order directs federal agencies to evaluate the potential effects of any actions within floodplains to avoid long- and short-term adverse impacts associated with their modification. Determination of floodplain areas is based on the Federal Emergency Management Agency, National Flood Insurance Program maps.

Plumas County regulates development within floodplains in the county. Within the Plumas County General Plan, there is a Flood Hazard element of the Mitigatable Constraints-Public Safety element of the General Plan. The county management concept

for flood hazards combines a program of not allowing building construction in primary flood hazard areas (floodway) and only allowing channelization, land filling, or excavation in secondary flood hazard areas (100-year floodplain) if the changes will not alter historical flood patterns.

Historically, the town of Chester experienced significant floods during high flow events in the upper North Fork Feather River above Lake Almanor. In 1968 Congress approved construction of the Chester Flood Control Project under the Flood Control Act of 1968 (P.L. 90-483). Funding for the project was appropriated in 1972. The Chester Flood Control Project was completed in 1976 and provides flood protection for the community of Chester. The project includes a diversion dam with a fish ladder and a 2.5-mile-long diversion channel that passes high flows around the town of Chester, discharging them directly into Lake Almanor on the southwest shoreline. Flows in excess of approximately 3,500 cubic feet per second are diverted into the channel. Flood flows on the upper North Fork Feather River can be as high as 31,200 cubic feet per second. The diversion channel is capable of passing these excess flows thus avoiding flooding in Chester.

E6.7.3 Wetlands and Floodplains in the Project Area

Wetlands and floodplains in the Project area are presented on Figures E6-16 and E6-17. Wetlands are primarily confined to the shoreline and meadow areas within the Project boundary. During the vegetation cover-type mapping of the Project area, biologists mapped riparian areas along with seeps and other related wet areas.

The Federal Emergency Management Agency, through its National Flood Insurance Program, maps floodplains on non-federal lands throughout Plumas County. These floodplain areas are shown in Figures E6-16 and E6-17. Most of the floodplain areas are along river banks and in the upper western edges of Lake Almanor. The floodplains along the Lake Almanor shoreline are all within the Project boundary. Other than essential Project works, there are no Project facilities within mapped floodplains. Also shown in Figures E6-16 and E6-17 are sensitive eagle nesting territories. The eagle nesting areas are shown in these maps since they represent other natural resource considerations affecting land use. These areas as mapped should receive minimal disturbance during the winter breeding season because most recreation facilities are closed.

E6.7.4 Short- and Long-term Impacts of the Project on Wetlands and Floodplains

A few wetlands associated with the Project reservoirs have developed since the Project was constructed. The distribution of wetlands generally follow shorelines; therefore, the wetland areas that do exist along the Project reservoirs are probably larger than they would be in a natural river condition because the amount of shorelines is greater. Water level fluctuations probably limit the potential development of wetlands; however, man of the existing wetland areas maintain their wetland characteristics during low reservoir periods. Stable instream flows in the North Fork Feather River help to maintain wetted areas along riparian corridors.

Because the Licensee is not proposing any new construction within the floodplain or wetland areas and there are no proposed changes to project operations that would affect

the floodplain hazard potential, no short- or long-term impacts to floodplains or wetlands are anticipated.

E6.7.5 Mitigative Measures to Minimize Adverse Impacts to Wetlands and Floodplains

Because no short- or long-term impacts to wetlands or floodplains are anticipated as a result of continued Project operations, no mitigative measures are needed. Nevertheless, Licensee management policies help to protect and enhance riparian and riverine resources in the Project area. All new recreation developments are planned for areas outside of wetlands as "conservation" lands to minimize future development on these lands.

E6.8 SUMMARY OF PROJECT ENHANCEMENT AND MITIGATIVE MEASURES

This section summarizes Project mitigative and enhancement measures considered in the Report on Land Management and Aesthetics as well as in the Traffic Study. Based on the level and intensity of ongoing visual effects related to Project facilities, three enhancement measures have been identified that can improve visual quality in key areas of public viewing. At the Prattville Intake, it is recommended that the hoist house on the top of the Prattville Intake be repainted in dark green colors similar to the current color scheme. Also, it is recommended that evergreen trees be planted between the existing maintenance buildings near the intake facility and the shoreline to help reduce the clutter and better screen the industrial-type buildings from shoreline users and the boating public. Both of these improvements at the Prattville Intake will improve visual quality in the highly used Prattville area.

At the existing active Oak Flat spoil site along Caribou Road, it is recommended that the spoil piles be graded flat, where possible, and that the site be reconfigured to move the active spoil use area farther from the road shoulder to maximize the viewing opportunity of motorists and other users. In addition, trees can be planted at strategic locations to help conceal the spoil area from Caribou Road viewpoints.

At Caribou Village, the Licensee will be maintaining the exterior of the old clubhouse buildings to maintain the rustic character of the area.

At the Belden Powerhouse, it is recommended that the U.S. Forest Service be consulted on color schemes and textures for any future maintenance or rehabilitation work planned for the Belden Powerhouse penstocks to reduce the visual contrast as seen from SR 70.

For improvements to the Project road system, it is recommended that the lower portion of the Butt Valley-Caribou Road be regraded, as well as from the turnoff near Belden Dam to the beginning of the double one-way road sections. It is also recommended that dust palliatives be applied on this lower road segment to help minimize dust emissions during the summer and fall seasons.

E6.9 REFERENCES

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Report E7

AIR QUALITY

E7.1 AIR QUALITY

By producing hydroelectricity, the Upper North Fork Feather River Project displaces the need for other power plants to operate, primarily fossil-fueled facilities, thereby, avoiding some power plant emissions and creating an environmental benefit. Among the atmospheric emissions of concern are greenhouse gases (GHG), the most important of which is carbon dioxide (National Laboratory Directors, 1997). Continued operation of the Upper North Fork Feather River Project would likely avoid increased carbon dioxide emissions in Western States Coordination Council reliability region. The amount of GHG emissions that are avoided depends on the type of power displaced, which is region specific.

In the region where the Upper North Fork Feather River Project is located, the kind of power generating facilities that would be displaced include predominantly gas-fired generation. Using Oak Ridge Competitive Electricity Dispatch (ORCED) computer model it is estimate the regional carbon intensity factor would be 155 kilograms of carbon per megawatthour (MWh).

The Project would avoid carbon emissions in this region of over 300,000 metric tons per year. The comparable GHG emissions for the total GHG emissions for the total WSCC region are estimated at 74.2 million metric tons for carbon. In terms of the emissions originating from power generating facilities in the entire WSCC reliability Region, carbon emissions would increase by less that one percent if power produced by the Upper North Fork Feather River Project was not available.

Report E8

LIST OF LITERATURE

18CFR § 4.51(f)(7) The report must include a list of all publications, reports, and other literature which were cited or otherwise utilized in the preparation of any part of the environmental report.

A list of all publications, reports, and other literature cited or otherwise utilized in the preparation of the Exhibit E Environmental Report is included at the end of the individual sections of the Exhibit E.

UPPER NORTH FORK FEATHER RIVER PROJECT
FERC NO. 2105

Report E-9

Agency Consultation

UPPER NORTH FORK FEATHER RIVER PROJECT
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Report E-9

Agency Consultation

1. Public and Agency Consultation Listing
2. Agency and Individual Comment Letters on Draft Application for New License
3. Licensee Responses to Agency Comment Letters on Draft Application for New License
4. Agency Study Group and Recreation, Land Use, and Aesthetic Meeting Notes and Handouts

UPPER NORTH FORK FEATHER RIVER PROJECT
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Report E-9

Agency Consultation

1. Public and Agency Consultation

Date	Consultation Description	Additional Information
September 9, 1999	Meeting with Plumas County 2105 Committee	General discussion of importance of project to County
October 27, 1999	Chester Public Meeting	Introduction of the upcoming process to general public.
October 28, 1999	Greenville Public Meeting	Introduction of the upcoming process to general public.
December 14, 1999	Chester Public Meeting	Introduced Relicensing Schedule, Draft Proposed Studies, and identify local issues for preparation of First Stage Consultation Package.
December 15, 1999	Greenville Public Meeting	Introduced Relicensing Schedule, Draft Proposed Studies, and identify local issues for preparation of First Stage Consultation Package
February 2000	First Stage Consultation Package Sent Out For Public Review and Comment	Public reviews and comments on Proposed Relicensing study plans
March 1, 2000	First Stage Consultation document distributed	
April 4, 2000	Oroville Public Issues Scoping Meeting	Public and agencies provided comments and questions
April 5, 2000	Project Tour for Public	
April 6, 2000	Plumas County Water Quality Subcommittee Meeting	Public and agencies provided comments and questions
April 6, 2000	Chester Public Issues Scoping Meeting	Information of the status of work effort provided
June 1 – 3, 2000	First Stage Study Comment Letters Received	Comments received from Plumas County, Forest Service, National Park Service, State Water Resources Control Board, CDF&G, and USF&WS.
June 27, 2000	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Interest groups present recreation, land use, and aesthetic issues to consultants
June 29, 2000	Meeting with USFWS	Discussed the need for a biological opinion prior to performance of the whitewater flow tests.
July 11, 2000	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Discuss PG&E study proposals and first stage consultation Comments.

Date	Consultation Description	Additional Information
September, 14 2000	Detailed Whitewater Study Plan sent out for public review and comment.	
September 30 through October 4, 2000	Whitewater flow assessment on bypassed river reaches, which includes American Whitewater, Chico Paddlers, and Shasta Paddlers participation.	Acceptable and optimum flows on Seneca and Belden Reaches assessed. Includes questionnaires and end of day focus group meetings.
November 16, 2000	Chester study status update meeting: All Resources	Present updates to study plans based on public comments and presented any study results to date.
December 11, 2000	Sacramento agency study status update meeting: All Resources	Present updates to study plans based on public comments and presented any study results to date.Agencies requested collaborative process. PG&E agreed to 2 day meeting each month for five months
January 24, 2001	Draft Visitor, Resident, and Business Recreation Questionnaire sent out of for public review and comment.	
January, 24 – 25, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	These meeting began a series of collaborative discussions with resource agencies on environmental topics.
February 5, 2001	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Recreation Draft Questionnaire and Issue Meeting
February 28, March 1, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	
March 8, 2001	Water Quality Subcommittee	Meeting with USFS to discuss water quality monitoring efforts
March 21, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	
March 27, 2001	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	ADA, recreation impact, and recreation facility condition studies preliminary results presented
April – October 2001	Project Area Recreation Visitor Questionnaire Survey Conducted.	On-site and questionnaire mail back survey at campgrounds, day use areas, boat launches along shores of Lake Almanor, Butt Valley Reservoir, and the Belden Reach.
April 25 & 26, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	
May 11 through May 15 2001	Recreation fishability flow assessment on Project bypass reaches. .	Participation by local users and fishing organization representatives. Includes questionnaires and end of day focus group meetings.
May 30, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	
June 11, 2001	*Lake Almanor West* Shoreline Management Plan Public Issues Meeting	50 to 55 community members attend, plus 2105 Committee members.

Date	Consultation Description	Additional Information
June 12, 2001	*Hamilton Branch* Shoreline Management Plan Public Issues Meeting	12 community members attend plus Bill Dennison
June 13, 2001	*Lake Almanor Country Club* Shoreline Management Plan Public Issues Meeting	36 community members attend, plus 2105 Committee members.
June 14, 2001	*Local Agency/Business* Shoreline Management Plan Public Issues Meeting held in Chester	12 attendees representing, County Public Works and Health, CDF&G, Forest Service, local business, residents, and 2105 Committee.
June 18, 2001	E-mail request for final comments on revised study plans that were placed on Project Web Site.	
May – July 2001	Business Owner questionnaire mailing conducted	Various business locations throughout the and in the Project Vicinity.
August 9, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento.	Updates provided on numerous study areas. Development of Shoreline Management Plan and Issues also discussed.
September – December 2001	Area Resident questionnaire mailing conducted	Lake Almnanor shoreline, Lake Almanor back-lot, and surrounding towns and environs residents targeted.
September 16, 2001	High School Teen Recreation Focus Group meeting in Chester	
September 17, 2001	Boaters, PWC, and Water Skiiers Recreation Focus Group meeting in Chester	
September 18, 2001	Angler Focus Group and Winter User Focus group meetings in Chester	
September 20, 2001	Hunters Focus Group and Seniors/Disabled Recreation Focus group meetings in Chester	
October 2, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	
November 26, 2001	Project 2105 Environmental Studies Group Meeting in Sacramento	PG&E fisheries consultant provided study results.
Jan 10, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Whitewater boating and aquatic biology preliminary study results presented
Jan 16, 2002	2105 Committee meeting in Chico	Plumas County presents County's relicensing goals and objectives to Licensee and FERC representative in Chico.
Jan 28, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Public Access and Focus Group preliminary results presented
January 30, 2001	Project 2105 Environmental Studies Group Meeting	
February 26, 2001	Project 2105 Environmental Studies Group Meeting	Licensee presented Drift Study results and water quality information.

Date	Consultation Description	Additional Information
April 10, 2002	Transmittal of confidential Cultural Resources Reports to FERC and agencies	
April 29, 2002	Transmittal of draft Application for New License to agencies	Comments due by July 29, 2002
May 15, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Licnesse provides summary of recreation, land, and aesthetic study results. Anticipated addition of the Hamilton Branch announced. Participants provide initial feed pack to Draft License Application proposals.
June 14, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Licensee provides written responses to issues identified during previous RLA meeting. Hamilton Branch addition discussed further.
June 19, 2002	Public Shoreline Workshop in Chester	Lake Almanor Shoreline Management Plan components presented to public in an informal setting to encourage discussion.
June 20, 2002	Transmittal of proposed study plans for Hamilton Branch	Addition of Hamilton Branch to UNFFR 2105 license will be an amendment to license.
July 17, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Recreation development alternatives, draft Recreation Resource Management Plan's (RRMP) site development recreation monitory components, and survey methodology discussed.
July 18, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Licensee responds and holds discussion on Plumas County's relicensing goals and objectives and provides handout on resources information relevant to lake levels. Information on June 2002 boat ramp survey also provided.
August 8, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Licensee provides written information/holds discussion responding to 2105 Committee's goals and objectives as well on where relevant information is located in the draft license application. Draft Recreation proposal discussed and additional information on survey methodology provided.
August 9, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Draft RRMP presented and discussed, including draft recreation site development plans.
August 19, 2002	Transmittal of First Stage Consultation information for the Hamilton Branch amendment to the FERC 2105 license.	Addition of Hamilton Branch to UNFFR 2105 license will be an amendment to license.

Date	Consultation Description	Additional Information
August 27, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Survey methodology, water surface hazard marking, road dust abatement, fuel load reductions on Licensee lands, PSEA Camp, beetle tree damage, and lake level relationship to recreation visitation discussed. 2105 Committee submits a lake level proposal to Licensee.
August 28, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Development of Draft RRMP, PAOT capacity of draft recreation proposals, septic leach fields, shoreline erosion, and erosion control options discussed.
September 9, 2002	Project 2105 Aquatic, Wildlife, and Botanical Resources Group meeting in Sacramento.	Licensee responds to and discusses aquatic, wildlife, and botanical DLA comments received from resource agencies.
September 24, 2002	Project 2105 Water Quality and Recreation meeting in Sacramento	Licensee responds to and discusses water quality and recreation DLAcomments received from resource agencies. Whitewater boating issues discussed.
September 25, 2002	Project 2105 Land Management and Aesthetics meeting in Sacramento	Licensee responds to and discusses land management and aesthetic DLA comments received from resource agencies.
September 27, 2002	Recreation, Land Use, and Aesthetic Work Group Meeting in Chester	Licensee senior hydrologist provides overview of Lake Almanor operational goals and constraints and responds to 2105 Committee's lake level proposal. Licensee provides overview of final application recreation proposals based on group's input. Whitewater flow issues discussed. Licensee and 2105 Committee complete agreement status table.
September 30, 2002	Public meeting in Westwood, for Hamilton Branch amendment to 2105 license.	Proposed relicensing amendment study plans presented and discussed
October 1, 2002	Public site visit to Hamilton Branch Project.	

UPPER NORTH FORK FEATHER RIVER PROJECT
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Report E-9

2. Agency Comment Letters on Draft Application for New License

Licensee has received comment letters on the Draft Application from the following agencies or individuals. Copies of the letters are included in this Report E-9. Licensee's responses to the comment letters follow.

Agency	Date of Letter
American Whitewater, et al	July 25, 2002
Anglers Committee Against Artificial Weekend Flow	July 10, 2002
Ryan Beck	July 28, 2002
Susan Braun	June 28, 2002
California Department of Fish and Game	July 26, 2002
Cal Sportfishing Protection Alliance	June 25, 2002
Cal Trout	July 29, 2002
Bob Gans	June 26, 2002
Dennis P. Gomez	July 2002
Greenville Rancheria	July 26, 2002
Greenville Rancheria	Sept 13, 2002
Greenville Rancheria	Sept 30, 2002
Honey Lake Maidu Tribe	July 26, 2002
Dale Knutsen	June 26, 2002
Mountain Maidu	Aug 16, 2002
Fred Muller	July 24, 2002
National Marine Fisheries Service	July 26, 2002
National Park Service	July 15, 2002
Plumas County	July 25, 2002
State Office of Historic Preservation	July 29, 2002
State Water Resources Control Board	July 25, 2002
Susanville Indian Rancheria	Sept. 9, 2002
Trout Unlimited	July 29, 2002
U. S. Forest Service	July 24, 2002
West Almanor Community Club	June 24, 2002
West Almanor Community Club (Petition)	July 22, 2002

American Whitewater, et al letter
July 25, 2002

July 25, 2002

Mr. Randy Livingston
Lead Director, Power Generation
Pacific Gas & Electric Co.
P. O. Box 770000, N11E
San Francisco, CA 94177

AMERICAN WHITEWATER, CHICO PADDLEHEADS, AND SHASTA PADDLERS COMMENTS ON THE DRAFT APPLICATION FOR LICENSING OF THE UPPER NORTH FORK FEATHER RIVER HYDROELECTRIC PROJECT (FERC NO. 2105)

The following comments are based on a review of The Project Resource Summary and Report E5, Recreational Resources, and applicable appendices of the subject document (hereafter referred to as the "Draft").

Need for Collaboration -Throughout the Upper North Fork Feather River (UNFFR) proceeding there has been a tendency for the licensee to deal with resource agencies and non-governmental organizations separately on a issue-driven, ad hoc basis. For example, it seems that the "2105 Committee" has driven Lake Almanor's shoreline management and reservoir recreation agenda while the various resource agencies delved into the environmental and downstream recreation effects for the entire project. Not surprisingly, there are major philosophical divisions among the stakeholders relative to lake level vs. instream flow for environmental and instream recreation purposes. As we approach the Final Application, we appear to be on a collision course that should be corrected immediately. Our view is that the licensee should commit to a comprehensive collaborative effort, which brings all of the diverse stakeholders together to work through these, and other, critical issues.

Study Requests - Prior to the whitewater feasibility study conducted in 2000, requests were made to study ramping rates, macro invertebrate drift, displacement, stranding, and amphibian impacts. To date, these studies remain undone. Data collected from the above mentioned studies would be critical in balancing the demands of recreation, ecosystem health, and power generation. We believe these studies should be completed as soon as possible and prior to license issuance.

Recreation - The needs of whitewater recreation have been totally ignored or misrepresented in this license application. Throughout the draft, applicant attempts to elevate one recreational use over another (angling vs. whitewater recreation). No single recreational use has either more or less value than any other recreational use. Furthermore, contact and non-contact recreation is recognized in the basin plan as a beneficial use of the North Fork Feather River and should be addressed in a fair and

balanced approach. Applicant refers to the possibility of use conflicts on the river reaches of the UNFFR. We believe that one of the most important reasons to undertake a collaborative process is to minimize potential user conflicts in the final license. We feel that within this process representatives of various user groups are the best ones to determine what are potential conflicts and to find solutions to these conflicts. We do not feel that it is applicant's role to be the arbiter of the resource between user groups.

Whitewater Demand - Section 5.2.9.4.1.9. applicant estimates that 30 to 50 boaters per day would use the Belden reach for whitewater recreation and possibly 100 users if a commercial outfitter were operating on the reach. We consider this to underestimate the demand for this resource. In 1999, applicant issued a report on the costs and benefits of recreational flows on the Rock Creek and Cresta Projects. In this report applicant stated " In order to get a rough comparison of costs and benefits, we have assumed the highest reasonable usage: 10 kayaks per day at 800cfs, 30 assorted commercial and non-commercial users at 1200 cfs and a maximum of 60 users per day at 1600cfs". The Rock Creek and Cresta reaches downstream have seen in excess of 200 boaters per day on the releases required under the new FERC license for those projects. Using applicant's user day value of $74, this puts the daily value of one of these whitewater releases at $14,800. We feel that applicant continually underestimates the demand for whitewater recreation. It is also surprising that applicant is not more interested in offering whitewater flows on the Belden reach given that this reach will require about half of the flow (and thus the cost) of providing flows on the Rock Creek reach.

Vegetation - In Section E3.3.5 (Vol. 2) the Licensee asserts that routine operation and maintenance of the UNFFR project has nominal effect on all existing upland and riparian/wetland plant community types found in the project area. This statement is flawed, and reflects a short-sighted review of botanical resources affected by 2105 features and operation. The altered hydrograph for bypassed stream reaches below Canyon Dam and Belden Reservoir has affected riparian species composition and the extent of riparian corridor margins. White alder riparian forest is absent in highly disturbed areas of the project, and from Belden Forebay to Belden powerhouse alder has been replaced by Himalayan blackberry. Blackberry dominates the shrub layer in the Belden reach (page E3.3-7, Vol. 2) displacing native species and encroaching into the active channel. Himalayan blackberry encroachment is directly related to reductions in pulsed and flood flows necessary to maintain bars and banks suitable for native species recruitment. Within the Botanical Resources element (Tab 14, Vol. 2) the Licensee should expand the riparian and wetland vegetation discussion to include discussion of issues related to Himalayan blackberry.

The draft Application contains no proposals for control or eradication of Himalayan blackberry on low-flow stream reaches under project control. Blackberry encroachment in the Belden reach of the UNFFR channel, impairs access (and safety) for contact and non-contact recreational users, and may be a factor in limiting amphibian use of this aquatic habitat. Although eradication of the exotic blackberry may be an unreasonable requirement, a feasibility assessment should be conducted to evaluate potential methods of reducing vegetation encroachment and providing selective access routes to the stream.

Environmentally sensitive approaches to selective blackberry removal and control should be emphasized in the analysis and should include non-traditional alternatives such as herd foraging and/or manual release methods utilizing conservation crews. The assessment should include long-term management strategies for vegetation control within the stream channel. The feasibility assessment and Licensee proposals for Himalayan blackberry encroachment control should be provided in the final Application.

Water Temperature - Discussion at PRS-12 (Vol. 1), suggests the possibility of degradation to coldwater aquatic habitat in Lake Almanor as depletion of the coldwater pool is accelerated and associated coldwater refugia is lost late in August-September should temperature-selective withdrawal modifications be made at the Prattville Intake for delivery of cold water through the Butt Valley-Caribou system to the UNFFR. This discussion is speculative without having final data from the Prattville Intake Modification modeling effort currently being conducted pursuant to the Rock Creek-Cresta Agreement. In addition, the discussion ignores the contribution of sub-surface springs, providing significant inputs to the cold-water pool year-round. The draft Application declares that in-lake sources provide an estimated 200-255 cfs at 8°C during the summer months (E2-392, Vol. 1), but this appears to be a serious underestimation relative to the 375-500 cfs estimates applied as boundary conditions in physical and numerical modeling work being conducted under contract to University of Iowa's Hydroscience and Engineering Department.[1] This inconsistency should be discussed and/or corrected in the final Application. Summary in Volume 1 should be qualified in the conclusions drawn and must be edited to include information regarding the potentially significant areas of coldwater refugia likely to be found within the vicinity of each of the lake's many spring eruptions and in the hypolimnion region surrounding these limnetic oases.

Amphibians - We share applicant 's concern over the protection of amphibian species. We disagree with applicant's flow proposals to protect amphibians in the UNFFR reaches. In our opinion, unnaturally low base flows create amphibian habitat in areas that are detrimental to amphibian survival during natural high flow events. Clearly, a better flow regime would require base flow that are closer to the natural hydrograph and would benefit all aquatic species as well as recreational users.

Hamilton Branch - Section 1.4 states that applicant intends to file an application to include the Hamilton Branch project in Project 2105's license. We are concerned that the study period required by this addition will either delay the current timeline and push the 2105 project into annual licenses or provide inadequate time for needed studies related to Hamilton Branch. Furthermore, there is no mention of evaluating the whitewater resources on the Hamilton Branch project.

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[1] IIHR Hydroscience & Engineering. 2002. *Physical and Numerical Modeling of Cold Water Feasibility Study through Prattville Intake at Lake Almanor in North Fork Feather River.*
(Phase 1 Report, Task N1). Prepared for PG&E, under contract to The University of Iowa, College of Engineering, IIHR – Hydroscience & Engineering. Page 33.

Conclusion - In its current form, we find this draft license application lacking critical information. Furthermore, applicant makes conclusions that lack supporting data.

We would like to thank the applicant for the opportunity to comment on this draft license application. We look forward to constructive dialogue in creating a settlement, which better balances the many demands on our precious public trust resources.

Sincerely,

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John T. Gangemi - Conservation Director, American Whitewater

_____

Dave Steindorf - Conservation Director, Chico PaddleHeads

_____

Kevin L. Lewis - Conservation Director, Shasta Paddlers

Anglers Committee Against Artificial Weekend Flow letter
July 10, 2002

Anglers Committee Against Artificial Whitewater Weekend Flows

Mr. Tom Jereb, Representative
Pacific Gas and Electric Company
Mail Code N11C
P.O. Box 770000
San Francisco, CA 94177

July 10, 2002

Re: Upper North Fork Feather River; FERC Project 2105; Pacific Gas and Electric Company, Licensee; Formal Comments by the Anglers Committee Against Artificial Whitewater Weekend Flows

Via E-mail and First Class Mail

Dear Mr. Jereb:

The Anglers Committee Against Artificial Whitewater Weekend Flows (Anglers Committee) have already advised the Pacific Gas and Electric Company that we are opposed to artificial whitewater weekend flows below Rock Creek and Cresta dams (FERC Project 1962) on the North Fork Feather River. Our opposition to artificial whitewater weekend flows is because of the adverse effects resulting ramping flows to trout and other fish species (all life species) and their habitat; adverse effects to macro invertebrate species (all life stages) and their habitat; and also the adverse effects to public angling.

The Anglers Committee is growing swiftly and is developing into a small army of anglers from various areas of the California, as well as the states of Oregon and Washington.

Specifically the Anglers Committee is opposed to artificial whitewater weekend flows at the Upper North Fork Feather River Project for the following reasons:

1. The Anglers Committee is opposed to artificial whitewater weekend flows below Canyon Dam (Lake Almanor) because of the adverse effects to trout and other fish species (all life stages) and their habitat, macro invertebrate species (all life stages) and their habitat, and public angling. We are also opposed to artificial

whitewater weekend flows because of the significant "cumulative effects" to lake levels at Lake Almanor resulting from whitewater weekend flows below Rock Creek and Cresta dams in the NFFR. Clearly the wading ability of anglers will be adversely effected and dangerous when artificial whitewater weekend flows are released from Canyon Dam into the NFFR. Of course the fishability of the NFFR below Canyon Dam resulting from artificial whitewater weekend flows will be adversely and unreasonably effected denying anglers the opportunity to fish as they have done in past years under the existing FERC license.

2. In addition, we are also opposed to artificial whitewater weekend flows being released from Canyon Dam because of the "cumulative effects" to lake levels and the trout fishery (all life states and their habitat) at Lake Almanor resulting artificial whitewater weekend releases of water also from Rock Creek and Cresta dams on the NFFR. Anglers travel from all over California to fish the waters of Lake Almanor.

3. The Anglers Committee is also opposed to artificial whitewater weekend flows below the Belden Forebay Dam on the NFFR because of the adverse effects to trout and other fish species (all life stages) and their habitat, macro invertebrate species (all life stages) and their habitat, and public angling.

4. We are opposed to artificial whitewater weekend flows below the Belden Forebay Dam in the NFFR because of adverse effects to public camping activities. There are three (3) public campgrounds located below the dam. The public recreate at the three (3) campgrounds to fish, swim, gold panning, and other recreational opportunities. Allowing artificial whitewater weekend flows below the dam in this river reach would also be dangerous and a public safety issue.

5. In addition, we are also opposed to artificial whitewater weekend flows being released from the Belden Forebay Dam because of the "cumulative effects" to lake levels and the trout fishery (all life states and their habitat) at Lake Almanor resulting artificial whitewater weekend releases of water also from Rock Creek and Cresta dams on the NFFR. Anglers travel from all over California

to fish the waters of North Fork Feather River below the Belden Forebay Dam.

6. We are also opposed to the adverse effects to the contents of cold water and the resulting effects to the trophy trout fishery of Butt Valley Reservoir resulting from the "cumulative effects" of artificial whitewater weekend flows being released from Rock Creek and Cresta dams, and also Canyon Dam and the Belden Forebay Dam. It has been reported by an NGO that cold water was withdraw from Butt Valley Reservoir to provide cold water in the NFFR in conjunction with the artificial whitewater weekend flows below Rock Creek and Cresta dams on June 1 and 2, 2002. We presume that will be the case when artificial whitewater weekend flows are released from the dams for the months of July, August, September, and October. This is highly unreasonable because of the effects to the trophy trout fishery of Butt Valley Reservoir. Anglers travel from various areas of California to fish for trophy trout at the reservoir.
7. There has been proposed a cold-water device to extract cold water from Lake Almanor to provide cold water into the North Fork Feather River. Based on our information there is limited cold water in Lake Almanor during the periods of the summer and the fall. Consequently, the contents of cold water at Lake Almanor has the potential to be adversely affected, with a potential significant effect to trout species and other cold water aquatic species of the lake. We are opposed to having the cold-water contents of Lake Almanor adversely affected at the demise of the trout fishery of the lake, and also public angling at the lake.

8. Pond Smelt is the primary food base for the trophy trout fishery of Butt Valley Reservoir. Pond smelt are diverted from Lake Almanor into Butt Valley Reservoir when PG&E diverts water from the lake into the reservoir. There is a possibility that the proposed cold-water device to divert cold water from Lake Almanor may affect the distribution of pond smelt into Butt Valley Reservoir. The elimination and/or significant reduction to pond smelt being diverted into the reservoir will have adverse effects to the trophy trout fishery with a resulting effect to public angling. Before the cold water devise is approved, this must be studies, including mitigation measures.

9. It is clear before the Settlement Agreement for the Rock Creek – Cresta Project 1962 was signed and also approved by FERC that a detailed "cumulative effects" study should have been conducted to determine the "cumulative effects" as noted above resulting from artificial whitewater weekend flows and also other environmental issues. We are formally requesting a detailed "cumulative effects study" be conducted. Include in said recommended study the "cumulative effects" to the loss of power production resulting from artificial whitewater weekend flows.

Please place this letter into the formal records for the relicensing of the Upper North Fork Feather River Project 2105. Also please place the representatives shown below on the e-mail list for all submittal related to the relicensing process for the subject project. Also, please provide all parties with a copy of this letter via e-mail. Thank you

A written response is requested and appreciated. Please forward your response by first class mail and also by e-mail to the following persons:

Bob Baiocchi, Chairman
Anglers Committee Against Artificial Whitewater Weekend Flows
P.O. Box 1790
Graeagle, CA 96103
E-Mail Address: baiocchi@psln.com

Allen Harthorn, Co-Chairman
Anglers Committee Against Artificial Whitewater Weekend Flows
500 Orange Street
Chico, CA95928
E-Mail Address: ahart@harpos.to

Brian Kempkes, Co-Chairman
Anglers Committee Against Artificial Whitewater Weekend Flows
2243 Falcon Drive
Fairfield, CA 94533-2470
E_Mail Address: troutnut@pacbell.net

Thank you for your time and interest in the matter.

Respectfully Submitted

SIGNED BY BOB BAIOCCHI

Bob Baiocchi, Chairman
Anglers Committee Against Artificial Whitewater Weekend Flows
P.O. Box 1790
Graeagle, CA 96103

cc: Anglers Committee Members
Other Interested Parties

Ryan Beck letter
July 28, 2002

July 28, 2002

Mr. Tom Jereb
PG&E
Mail Code N11D
P.O. Box 770000
San Francisco, CA 94177

Dear Tom,

Good morning. As you know, my two sisters and I are the owners of North Shore Campground at Lake Almanor. With the UNFFR Re-licensing project well under way, we are overall pleased with the current proposal to build a public boat ramp by modify the existing North Shore boundaries. Fortunately, Chuck Everett's proposed site modification (Site Modifications Plan 5) succeeded in addressing some of our initial concerns. Although we would prefer that no changes were made, we realize that there is a great need for more public access at the lake, and we are prepared to work with PG&E to meet this need. Undoubtedly there will be more discussion over the proposed boat ramp. However, we thought that we should express our questions and concerns in writing.

- Security of North Shore Campground is our key concern. We are concerned that the improvement of the old highway 36 for access to the boat launch will make it more difficult to maintain control over our park security. Our campers feel safe in leaving out their possessions because we have had virtually no thefts in our park. However, limiting ramp operation to daylight hours and having an onsite operator (collecting fees and monitoring the ramp) will go far in maintaining the safety at North Shore. Furthermore, the proposed fence and vegetative screening as a boundary between our park and the boat launch facility is of dominant importance. Our patrons will need to feel that they have the same amount of security and privacy.

- As stated in the proposal, twenty campsites will be relocated. We assume that in as many respects as possible, these sites will offer the same amenities to our customers (e.g., electrical and water hookups). However, we have a couple of specific questions. Although the plans discussed to date include the planting of trees, the ambience of these new sites will be less desirable because smaller trees will offer less shade: we are interested to know how large of trees we can expect to be planted. We also question the degree to which the land will be extended and built up to accommodate the new sites. These details have not yet been discussed.

- Although the ramp area includes the addition of a boathouse and toilets, we are concerned that boaters may venture into our campground to use our showers and restroom facilities. We pride ourselves on immaculate facilities and campers return every year because of our extraordinary amenities. Once again, the proposed fencing and vegetative screen are essential to maintaining our current operational environment. We are interested to have details of the proposed fence so that we may be assured of its adequacy.

- The current proposal states that "boat slips [will be] relocated by site operator." We assume that we will not have to incur the expense of the relocation, but we question where the slips are to be relocated. If this ultimately means that our boat slips will be eliminated entirely, will we be compensated for our considerable investment in this amenity? Also, if the existing boat launch is removed, we would like to know the details of the boat launch access that will be provided to our customers.

- Improving the access road and installing both the proposed parking lot and boat launch will undoubtedly be a lengthy project. We are concerned that the sites lost in the interim as well as the construction congestion will impact the desirability of our resort. We look forward to discussing

how the construction project will be driven. Clearly, noise abatement and dust control will be necessary.

At the moment, these are our key concerns. We appreciate having the opportunity to express them to you. As you may be aware, we lost our father last year to prostate cancer. Every successful aspect of North Shore Campground was of his doing and he is why North Shore Campground is what it is today. The campground literally extended his life five years. He loved every aspect of the campground and instilled in us kids what it takes to successfully run North Shore. It is our strong desire to continue with his legacy and to provide the best camping experience that Lake Almanor has to offer. I look forward to seeing you and/ or John Mintz at the next meeting on the 8th.

Sincerely,
Ryan Beck

Susan Braun letter
June 28, 2002

June 28, 2002

Tom Jereb
2105 Project Manager
Dear Mr. Jereb

I am writing to you today because I own a vacation home on Lake Almanor and I have been monitoring the relicensing effort. For the most part I'd say PG&E has been a good steward of the Lake. But you could certainly improve access to the lake for the residents of Chester. If you plan more recreation sites on the Lake, I'd suggest you look on 1st St. This is a lovely open area, good for bird-watching, the lake is shallow here. Currently this area becomes an illegal dump. PG&E would do well to improve this area which I believe is land you already own. Check it out.

Thank you for your time,
Susan Brain
Lake Almanor West

California Department of Fish and Game letter
July 26, 2002

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, Governor
DEPARTMENT OF FISH AND GAME
SACRAMENTO VALLEY AND CENTRAL SIERRA REGION
1701 NIMBUS ROAD, SUITE A
RANCHO CORDOVA, CALIFORNIA 95670
Phone (916) 358-2900

July 26, 2002

Mr. Tom Jereb
Pacific Gas and Electric Company
Mail Code N11E
Post Office Box 770000
San Francisco, CA 94117

Dear Mr. Jereb:

COMMENTS ON PACIFIC GAS AND ELECTRIC COMPANY'S DRAFT APPLICATION TO THE FEDERAL ENERGY REGULATORY COMMISSION FOR THE UPPER NORTH FORK FEATHER RIVER PROJECT - FERC NO. 2105

The California Department of Fish and Game (Department) has reviewed Pacific Gas and Electric Company's (PG&E) April 29, 2002 Draft Application to the Federal Energy Regulatory Commission (FERC) for the Upper North Fork Feather River Project (FERC No. 2105). The project is located on the North Fork Feather River (NFFR) in Plumas County near the City of Chester, California. The Upper North Fork Feather River Project (NF Project) is a collection and delivery system presently composed of three reservoirs and five powerhouses which generate 362.3 Mega Watt of electric energy. Operation of the NF Project is coordinated with the operation of other PG&E held projects in the NFFR: Hamilton Branch, Rock Creek-Cresta (FERC 1962), Bucks Creek (FERC 619) and POE (FERC 2107). In total, the Upper North Fork Feather River Project and other coordinated PG&E hydroelectric projects have altered the annual hydrograph and cold water temperature regimes in over 100 miles of streams in the North Fork Feather River watershed.

The Department has reviewed the information presented in the Draft Application, and pursuant to Fish and Game Code Section 700 et seq. which states that fish and wildlife of the State are held in trust for the people of the State by and through the Department of Fish and Game and pursuant to 18 CFR 4.38(c)(6); 18 CFR 16.8(c)(5), the Department now provides second stage consultation comments on the NF Project Draft Application.

Based on a review of information in the Draft Application by Department staff, we respectfully disagree with many of the conclusions and mitigation proposals. Following the deadline for comments on the Draft Application, the Department anticipates meeting with PG&E to discuss additional study needs and project-related mitigation. It is

expected that mitigation measures will be developed through a collaborative process involving all participating agencies as well as all interested non-governmental agencies (NGO's) and interested parties. An agreement to meet collaboratively for the purpose of developing a settlement agreement should be included in the Final Application to FERC. The language of the proposed collaborative process (collaborative) would be similar to the language agreed to by all participants involved in the relicensing of PG&E's POE Project. The collaborative proposal should include two guidance: documents (1) a draft of the process protocols and (2) a paper titled *Ecosystem Attributes- Upper North Fork Project: A Conceptual Model For Determination Of A Flow Schedule for the North Fork Feather River Below Canyon Dam* authored by the U.S. Forest Service (enclosed). This paper addresses issues associated with the NFFR downstream of the Canyon Dam. It is a template of what was used during the Rock Creek-Cresta collaborative, and it is a template of what is presently being incorporated into the POE collaborative. In addition to river issues, it is expected that Lake Almanor issues are to be addressed by the collaborative process as well. Although PG&E implies that the collaborative is already occurring and documents that they have met regularly with resource agency staff, NGO's, local interest groups and the public-at-large to discuss relicensing issues, it is also clear that some parties were consulted independently without notice to all, and that is not consistent with a collaborative effort. Collaborative meetings must be properly noticed and held concurrently with all parties present.

One specific issue in the Draft Application is the mention of the Hamilton Branch Amendment. The Department opposes this Amendment-to-License at this time because the end result will be a delay in the relicensing of the NF Project. There are many environmental issues associated with the operation of the Hamilton Branch Project. The Department will address these issues in a future letter. In the meantime, it is the opinion of the Department that PG&E's notice of the Hamilton Branch Amendment in the NF Project Draft Application does not meet FERC's first stage consultation requirements. [18 CFR 4.38(b)(1)]. Under first stage consultation requirements, the applicant must submit an initial consultation package (ICP) for agency and affected Indian tribes review and comment [18 CFR 4.38(b)(1)(I-vii]. The ICP must include but not be limited to a description of the: (1) project, (2) affected environment, (3) any preliminary resource protection, mitigation, or enhancement plan, and (4) proposed studies and methodologies. In addition, the applicant is required to hold an agency meeting to discuss the project no earlier than 30 days, and no greater than 60 days from the date that the ICP is submitted to the agencies [18 CFR 4.38(b)(2)]. The NF Project Draft Application meets none of these requirements.

The Department has a number of resource management issues that we expect to be addressed under the proposed collaborative process. These issues are discussed as follows:

Hydrology:

I. General Comments on Project Hydrology
The Department's goal under the collaborative is to provide a hydrologic regime that mimics the natural annual hydrograph.

II. The information included within the Draft Application is not sufficient to allow CDFG, FERC, or other interested parties to fully evaluate the hydrologic effects associated with various alternatives to current project operations. Such an evaluation is needed to ensure an optimal balance between hydropower and other beneficial uses of the North Fork Feather River is met. The Department requests that PG&E develop a hydrologic model of the North Fork Feather River watershed based on the full natural flow (e.g. unimpaired hydrology) of project-affected reaches. To the extent feasible, the hydrologic model should be based on a daily time-step, and should be provided to resource agency staff and other interested parties upon request. (Please note that the Department and others have requested that the El Dorado Irrigation District prepare such a model to evaluate various alternatives to current operations of the El Dorado Project – FERC No. 184.)

III. Comments on the Hydrologic Analysis
The Draft Application includes a description of the estimated unimpaired monthly flows for the North Fork Feather River at Canyon Dam, the Butt Valley watershed, and the East Branch North Fork Feather River. It also presents an estimate of the unimpaired mean daily flows for the North Fork Feather River below Belden Dam. However, the current analysis is not sufficient to fully evaluate project impacts. The Department requests that PG&E include in its Draft Application an analysis of the historic full natural flow of all stream reaches affected by the project. The analysis should be based on a daily time-step, and should cover a time period of not less than 25 consecutive years. The specific stream reaches that should be addressed in the analysis include the North Fork Feather River below Canyon Dam, the East Branch North Fork Feather River, the Hamilton Branch, Butt Creek below Butt Creek Dam, and Yellow Creek. The information developed by this analysis should be valuable for the

hydrologic model recommended above, the Indicators of Hydrologic Alteration (IHA) analysis discussed below, and the water temperature model.

To allow for independent analysis, the Department requests that PG&E: (1) provide details on the methods used to prepare the estimates of historic full natural flow. The enhanced description should include the specific equations and algorithms used in the unimpaired flow analysis, as well as their derivation; (2) provide copies of the impaired and unimpaired mean daily stream flows in a common electronic format (e.g. Microsoft Excel spreadsheet, Microsoft Access database, or comma delimited text file); and (3) provide more detail on the regression analysis used to estimate flows in Mosquito Creek during 2000 and 2001. The enhanced description should include the specific equations and algorithms used in the analysis.

IV. Comments on the Indicators of Hydrologic Alteration Analysis (Appendix E2-D) contains an analysis of the impacts of the UNFFR Project on the North Fork Feather River below Belden Dam using the Indicators of Hydrologic Alteration (IHA) software. While PG&E's efforts to analyze project impacts using the IHA software are appreciated, a more comprehensive analysis is needed. The Department requests that the analysis be expanded to include other reaches affected by the UNNFR project, including: the North Fork Feather River below Canyon Dam, the Hamilton Branch (if it continues to be a component of this project), and Butt Creek below Butt Creek Dam. The IHA analyses should be included in the Final Application together with the comprehensive suite of tables and charts generated by the IHA software (Version 5.0).

The Department also recommends that PG&E coordinate with the resource agencies and other interested parties to identify flow management targets for the North Fork Feather River affected by the UNFFR project. Using the available tools (such as the hydrologic model recommended previously), and in coordination with the resource agencies, PG&E should develop and propose a flow regime that meets the management targets and addresses the IHA metrics noted as being significantly impacted by current project operations.

V. Classification of Water Year Types
In classifying water year types in section E2.6.4.2 (page E2-391), PG&E used 25 years of data (1958–1962, 1964, and 1967–1985) measured at the North Fork Feather River gage above Chester. A longer period of record should be used in the assessment of water year types. California Data Exchange Center station 'FPR' sensor '65' contains a record of the full natural flow of the North Fork Feather River below Canyon Dam from 2/1/1905 to 9/1/1992. The Department recommends that PG&E use this information in their classification of water year types.

Water Temperature:

I. General Comments on Water Temperature
The Department's goal under the collaborative is to provide a water temperature regime that mimics the annual temperature regimen or, at minimum, meets the cold water standards defined in the Central Valley Regional Water Quality Control Board's Basin Plan (Basin Plan). At present, average daily water temperatures in the NFFR below Canyon Dam during the spring and early summer months are lower than water temperatures in the NFFR above Lake Almanor. (Table E2.4-2 and E2.4-5.) These artificially low temperatures can slow trout egg development and trout growth rates. Hopefully, by using the upper outlet, the project will be more capable of mimicking background water temperatures found in the NFFR above Lake Almanor.

The collaborative will also have to address water temperatures that exceed the Basin Plan cold water objects. Under the present operation, maximum daily water temperatures flowing into Lake Almanor from the Hamilton Powerhouse can exceed the Basin Plan cold water objectives during the spring (Table E2.4-5.) How warm water from the Hamilton Powerhouse impacts the cold water pool in Lake Almanor will have to be addressed in the Final Application. In addition, the Final Application must more adequately mitigate for the water temperature conditions associated with the Butt Valley Reservoir and Belden Dam complex. Maximum daily water temperatures below Belden Dam often exceed the Basin Plan cold water objectives (Table E2.4-2 and E2.4-5.)

II. Caribou Water temperatures
The Final Application should explain why the Caribou No. 1 Tailrace water temperatures in 1986-87 were generally cooler than the Caribou No. 1 intake temperatures.

III. Lake Almanor Temperature Stratification
The Final Application should more fully explain why high lake levels and warm air temperatures results in stronger thermal stratification. (Page E2-397.) PG&E suggests that under these conditions, low-level releases are cooler than those made under average air temperatures. It is unclear how the addition of energy to the reservoir (i.e. higher temperatures) can result in cooler release temperatures.

Instream Flow

I. General Comments on Instream Flow
Stream flow mitigation measures presented in the Draft Application fall short of achieving the Department's goal. The Department's goal under the collaborative is to provide a hydrologic regime that mimics the natural annual hydrograph and maintains a functioning ecosystem for aquatic and riparian resources.

II. Stream Flow: Fisheries
PG&E proposes to maintain a continuous, year-round, minimum flow of 75 cfs in the NFFR below Canyon Dam, 140 cfs in the NFFR downstream of Belden Dam and no release in Butt Valley Creek below Butt Valley. Not only are these flows conservative based on the PHABSIM results (Figures E3.1.10-8, E3.1.10-9, E3.1.10-10), they also fail to provide for the long term habitat diversity which is needed to maintain a natural functioning ecosystem for aquatic and riparian resources. The PG&E-recommended flatline flows may provide minimal habitat needs for the near future but annual variation in flows along with adequate base flows are needed to maintain long term habitat diversity. The collaborative should work at developing a flow regime that more closely addresses the ongoing need for habitat diversity.

III. Stream Flow: Geomorphology/Channel Maintenance/Habitat Diversity/Riparian Habitat
PG&E proposes no channel maintenance flows. Annual channel maintenance flows are required to maintain the fluvial processes that provide for balanced sediment transport, channel bed material mobilization and distribution, and channel structural stability that contributes to aquatic habitat diversity and healthy riparian habitat. The collaborative should work to develop a flow regime that more closely addresses the on going need for habitat diversity

Fish Population Samples

1. Fishery populations were sampled in 2000 and again in 2001. Since an adaptive management and a post-licensing monitoring program is expected to evolve out the collaborative process, three years of fishery baseline data would benefit post-project evaluations. Therefore, the Department recommends that PG&E sample fish populations again during the fall of 2002.

Thank you for the opportunity to comment. Even though, the mitigation proposals presented in the Draft Application are currently less than that necessary to meet Department goals, I would like to compliment PG&E on the thoroughness of the Draft Application on your willingness to cooperate during the consultation process. Hopefully, the cooperation will continue in the upcoming collaboration. If you have questions about our comments, please contact Mike Meinz, Staff Scientist, at (916) 358-2853 or mmeinz@dfg.ca.gov.

Sincerely,

for Larry Eng, Ph.D.
Assistant Regional Manager

Encloser (1)

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Cal Sportfishing Protection Alliance letter
June 25, 2002

California Sportfishing Protection Alliance

Mr. Tom Jereb, Project Manager
PG&E
Mail Code N 11 D
PO Box 770000
San Francisco, CA 94177

June 25, 2002

Dear Mr. Jereb

The California Sportfishing Protection Alliance (CSPA) has reviewed the Upper North Fork Feather River Project, (FERC 2105) Draft Application for License and has the following comments.

1) CSPA has participated for the past two years on an ad hoc committee providing input to PG&E on relicensing study needs and methodologies and has assisted in development and review of study plans. During that time we have repeatedly commented on the need for study plans to be developed and implemented regarding the potential impacts of flow fluctuations, particularly those which would cause rapid and significant changes in the hydrograph. These include changes for channel maintenance flows as well as boating flows. In reviewing the draft we find that such studies have not been conducted.

We are opposed to post licensing studies to collect this type of information and believe such data must be collected prior to license issuance in order to comply with the California Environmental Quality Act, the National Environmental Policy Act and the Federal Power Act. PG&E's comment that they are not proposing such flows is deceptive when other organizations have made their desires for such flows known and they must be addressed in the Collaborative process PG&E has committed to.

2) Studies have not been conducted to determine appropriate ramping rates. PG&E proposed rates are the same as used on other streams and may not be appropriate because of channel configuration and other factors.

3) Flows proposed by PG&E are not consistent with current thinking regarding seasonal variation. In addition pulse flows for channel maintenance will be necessary.

4) The Draft fails to address temperature problems associated with the high level outlet at Butt Valley Reservoir (Caribou 2). This facility causes temperature increases throughout the system below the Caribou Powerhouses. We have and continue to believe that a second deep-water outlet in Butt Valley Reservoir is necessary. This will remain the single largest cause of water temperature increases once the Prattville Intake problems are solved and adversely affects water temperatures in the NF Feather all the way to Lake Oroville.

Thank you for the opportunity to provide comments.

Jerry Mensch

Jerry Mensch
2553 Stonehaven Drive
Sacramento, CA 95827

Cal Trout letter
July 29, 2002

July 29, 2002

Curtis Knight
CALIFORNIA TROUT
PO Box 650
Mt. Shasta, CA 96067

Mr. Tom Jereb, Project Manager
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San Francisco, CA 94177

CALIFORNIA TROUT COMMENTS ON UPPER NORTH FORK FEATHER PROJECT (#2105) DRAFT APPLICATION

California Trout, Inc. (CalTrout) appreciates the opportunity to comment on Pacific Gas and Electric's (Applicant) Draft Application for new license on the Upper North Fork Feather River Project (FERC #2105). Pursuant to 18 C.F.R. § 16.8(c)(5) CalTrout respectfully submits the following comments and recommendations.

CalTrout is a nonprofit, tax-exempt corporation organized under the laws of the State of California. CalTrout is a statewide conservation organization that was founded in 1971, "To protect and restore wild trout, native steelhead, and the waters that nurture them and to create high quality fishing adventures for the public to enjoy." CalTrout is supported by 6,000 members and approximately 60 affiliate organizations representing approximately another 10,000 members.

Members of CalTrout use the waters affected by Project #2105. Our member's use and enjoyment, as well as sustaining the biological integrity of these waters, are a consequence of these hydropower project operations. Accordingly, the involvement of CalTrout is critical in order to protect its interests and the interests of its members, as well as the public interest generally in ensuring an appropriate allocation of the resources consistent with the Federal Power Act and its 1986 amendments; National Environmental Policy Act ("NEPA"); California Environmental Quality Act ("CEQA"); Clean Water Act, Endangered Species Act; California Constitution; California Fish and Game codes; California water law; other related statutes, and the Public Trust Doctrine embodied in both federal and state laws.

In general, CalTrout promotes a protocol for restoring regulated rivers developed by Stanford et al.[1]. The protocol requires: restoring peak flows needed to reconnect and periodically reconfigure channel and floodplain habitats; implementing baseflow that optimize aquatic habitats for a range of native species; reconstituting seasonal temperature patterns; maximizing dam passage to allow recovery of fish metapopulation structure; instituting a management belief system that relies upon natural habitat restoration and maintenance, as opposed to artificial propagation, installation of instream structures and predator control; and the implementation of an adaptive management program to monitor the success of newly implemented management strategies.

Specifically, CalTrout recommends that new license conditions include the following.

a. Provide for a dynamic flow regime within bypass reaches that mimics the natural hydrograph in relation to magnitude, frequency, duration, timing, and rate of change;
b. Provide minimum flows that optimize the amount of habitat available for all life stages of naturally reproducing rainbow trout and other native aquatic species;
c. Manage hydro operations to the benefit of native species over non-native species;
d. Provide quantitative methods to establish fishery performance criteria throughout the term of the license;
e. Fully comply with California Fish and Game Code 5937 which states in part that "the owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around, or through the dam, to keep in good condition any fish that may be planted or exist below the dam";
f. Full compliance with provisions of the Clean Water Act including but not limited to providing for the maintenance of designated beneficial uses and providing for fish and fish habitat.

Collaborative Process

Applicant should mutually develop and implement a collaborative process with stakeholders. The primary goal of a collaborative effort should be to jointly develop resource management actions for consideration as conditions of the new license. The collaborative process must include independent facilitation. This collaborative approach should reduce the potential for disagreement and reduce the burden on the Applicant. Additionally, the development of a collaborative effort is consistent with Commission policy and practice.

A collaborative process will provide a forum to address the many issues encompassing Project #2105. These include the need to address the #2105 in a watershed manner and specifically how the project influences the Rock Creek Cresta (#1962) and Poe (#(2107)

[1] Stanford, J.A and six others. 1996. A general protocol for restoration of regulated rivers. Regulated Rivers: Research and Management 12:391-413.

projects. Additionally, ecological and recreational issues regarding Lake Almanor need to be addressed in a comprehensive and collaborative way.

Hamilton Branch

CalTrout supports the understanding and mitigating for the impacts of the Hamilton Branch project. We support FERC jurisdiction over the project but have concerns over this project being included within the #2105 process. We are concerned that the inclusion of the Hamilton Branch will disrupt the timeline of the #2105 proceeding. The necessary two-year study period for the Hamilton Branch will take us to 2004, the time of license expiration on #2105. Additionally, moving forward in haste to conduct studies in the Hamilton Branch to fit into the #2105 schedule may compromise the quality and quantity of information needed to determine project impacts.

Coldwater Feasibility Study

CalTrout is concerned about the described temperature changes in Lake Almanor as related to the Prattville intake and meeting the coldwater requirements of Project #1962 Settlement Agreement (Page PRS 11-12). The impacts of changes in the operation of Prattville Intake on water temperature and the fishery in Lake Almanor are hypothetical. The cold water feasibility study, specifically the hydraulic and three-dimensional modeling being conducted by the University of Iowa, should provide useful information in determining any impacts. Until then we suggest leaving conjecture aside to avoid unnecessary conflicts between recreation users of Lake Almanor and those that use the lower river.

Instream Flows

The flows in the Seneca and Belden Reaches should be managed to mimic the natural hydrograph, specifically providing for seasonal fluctuations. The first step toward better incorporating a natural flow regime into the management of river ecosystems is to recognize that extensive human alteration of river flow has resulted in widespread geomorphic and ecological changes in these ecosystems. A large body of evidence has shown that the natural flow regime of virtually all rivers is inherently variable, and that this variability is critical to maintaining ecosystem health and biological diversity. Recognizing the natural variability of river flow and explicitly incorporating the five components of the natural flow regime (timing, duration, magnitude, frequency, and rate of change) into a broader framework for ecosystem management would be a major advance over most present management, which focuses on minimum flows on just a few species (i.e. IFIM).[2]

The Indicators of Hydrologic Alteration (Appendix E-2.D) confirms that the Project impacts all five flow variables in the Upper North Fork Feather River. Minimum and maximum streamflows are significantly altered, the timing of extreme flows has been altered by as much as eight weeks, pulse flows greater than the 75% statistic (1219 cfs)

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[2] Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Prestegaard, B.D. Richter, R.E. Sparks, and J.C. Stromberg. 1997. The natural flow regime: a paradigm for river conservation and restoration. Bioscience 47(11):

no longer occur, and the rate that flows change has been significantly altered. Efforts should be made to provide flows that better match natural conditions.

Seneca Reach

Flows in the Seneca Reach should be managed to coincide with the timing of variable flows in Upper North Feather into Lake Almanor below Chester. Upper North Fork Feather is the major tributary to Lake Almanor representing approximately 50% of the inflow to the lake. Applicant gaging station NF-59 (Page E2-12) recorded flows on the NFFR upstream of Lake Almanor below Chester from 1969-1985. We suggest that this gaging information be used to develop a year round flow schedule in the Seneca Reach.

Increases in baseflows and proposed winter and spring pulse flows in Seneca Reach should not impact Lake Almanor Lake levels. The amount of water coming out of Lake Almanor should be a static amount not influenced by location of withdrawal (i.e., Prattville Intake or Canyon Dam). Any increases in flows in Canyon Dam should come out of the amount PG&E already withdraws resulting in no net change to the amount of water out of Lake Almanor.

Belden Reach

Flows in the Belden Reach are heavily influenced by encroachment of riparian vegetation, notably blackberries and alders. Data provided in the Draft Application suggests that high flows in past years have had little influence on encroaching vegetation. The result has been a narrower channel that impacts aquatic resources and recreation opportunities. Methods for removal of encroaching vegetation should be analyzed and discussed with agencies and other interested parties. Channel restoration efforts on the Trinity River in California have involved the mechanical removal of vegetation. These efforts should be reviewed for potential application on the Upper North Fork Feather River.

Analysis of instream flow needs should take into account the narrower channel. Modeling efforts should attempt to predict channel type without encroaching vegetation. Suspected channel characteristics without encroaching vegetation may include a wider channel with more open gravel bars and a greater number of pool riffle sequences.

Water Temperature

Mean daily water temperatures have exceeded 20°C down river in the Rock Creek Cresta project area for much of the month of July. This is in violation to terms and conditions of the FERC #1962 license. CalTrout, as a member of the Ecological Resources Committee for #1962, has worked to use the Coldwater Feasibility Fund to meet water temperature requirements. However, it must be recognized that temperature in the Rock Creek Cresta area is almost exclusively driven by Project #2105 operations. As such, Project #2105 must ultimately be held accountable for water temperature conditions throughout the entire canyon.

Mean daily average water temperature in Belden reach during summer months is consistently above 20°C (Table 5, Appendix E3.1-1, Vol. 6). Optimal water temperatures for rainbow trout range from 15-17°C[3], with lethal temperatures beginning at 23-24°C.[4] It is disappointing to CalTrout that no changes in summer flows were proposed for the Belden reach considering the above information. CalTrout recommends that operational options, such as utilizing coldwater pool in Butt Valley or increasing summer releases out of Canyon Dam, be considered to meet water temperature standards below a mean daily average of 20° C in the Belden Reach.

Fishability Study

The results of the fishability study (E5.2.8.8.4.1) should be taken into context of recreation and not what is best for the fish necessarily. With this in mind CalTrout has strong reservations regarding the use of flow information presented in Volume 3 Tables E5.2.8-15 and 16 for management purposes. CalTrout recommends that minimum base flows should be based on scientific information, specifically models that show optimum habitat versus discharge relationships, and flows that provide optimal water temperature ranges for native fish. Fishability study data should be used only to indicate how one recreation group may be influenced by a recommended flow regime. But again that recommended flow regime should come from other more quantitative studies.

Angling in the Belden Reach is compromised by riparian vegetation encroachment. This encroachment is a result, in large part, of constant steady flows provided by the Project. Proper management of riparian vegetation (see above under discussion of Belden instream flows) could enhance angling opportunities in this reach of the river.

Conclusion

CalTrout appreciates the opportunity to provide comments on the Draft Application. We look forward to working with the Applicant and other stakeholders through a collaborative process on the final stages of the relicensing process. In its present form, however, CalTrout believes the Draft Application makes conclusions that contradict with the data provided. CalTrout looks forward to a resolution of these and other issues through a developed collaborative process.

Sincerely,

Curtis Knight
CALIFORNIA TROUT

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[3] Bjornn, T.C. and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. American Fisheries Society Special Publication 19:83-138.

[4] Moyle, P.B. 2002. Inland Fishes of California. University of California Press

CC:

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Mr. Kevin Lewis
Shasta Paddlers
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Mr. Bill Dennison
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Chester, CA 95020

Bob Gans letter
June 26, 2002

June 26, 2002

Mr. Tom Jereb
2105 Project Manager
PG & E, Mail Code N11D
PO Box 770,000
San Francisco, CA 94177

Subject: Additional Day Use sites at Lake Almanor

Mr. Jereb:

I have just learned that PG & E is investigating the possibilities of new day use sites at Lake Almanor. One of the locations is Goose Bay adjoining Highway 89. My family and I strongly oppose this location. Goose Bay is small, shallow, full of dead tree stumps and already far too full of boats and all kinds of other watercraft. The serious danger of additional pressure on this small bay should be obvious.

This past fall I personally witnessed five boats hitting submerged tree stumps. All sustained damage. I asked Bill Dennison if a warning buoy could be located at the mouth of the bay but was advised by the sheriff that you couldn't tag all hazards. It is fortunate no one was seriously hurt or killed.

Safety is the key. Any new day use site must have immediate access to the open lake.

Thank you for your consideration.

Sincerely,

Bob Gans and family

Bob, Karyn and Tucker Gans
135 Kokanee Trail
Chester, CA 96020

Ph. 530.259.3671

Dennis P. Gomez letter
July 2002

July 2002

Dennis P. Gomez
185 Slim Drive
Chester, California 96020

Mr. Tom Jereb, 2105 Project Manager
PG&E Mail Code N11D
P.O. Box 770,000
San Francisco, Ca. 94177

Mr. Jereb,

I am writing to you about my concerns with 2105 Recreational Plan. The primary sites that are under consideration are on the mid-West shore of Lake Almanor. The recreation sites that provide for public access to the lake are already concentrated along the East shore and the Southern West shore of the lake. It seems that your preliminary plan is adding facilities to areas that are just North of the areas on the West shore where recreation facilities already exist. It seems that there is a demand for more facilities on the North shore of the lake, particularly in areas that might be adjacent to Chester.

The people who populate Chester do not have ready access to the lake. Their children must travel a mile or more along busy state highways to find places where they can access the lake and find facilities. The closest facilities are in commercial campground areas. Guests who come to Chester and stay with relatives or use the motel facilities do not have ready access to the North end of the lake. There seems to be an unmet need for access to the lake on the North end, where the majority of the population is concentrated.

PG&E are the major landowner between the town of Chester and the North shore of the lake. The former Bidwell Ranch properties adjoin the South end of town and run to the North shore of the lake. Access to area could come from 1st Avenue or from Moody Meadow Road. The land is flat and has good soil. There are areas of trees and meadow and the area has an attractive view-shed in almost any direction.

This land also has some other features that would make it attractive. On the Northeast corner it abounds the North Fork of the Feather River. That waterway could provide access to the main body of the lake and provide recreational values for fishing and family picnics. Improved access to that area would be a boon to the community.

Near the corner of Second Street and Fourth Avenue the two branches of Stover Ditch come together as it leaves town. In the 1940's when the Almanor Railroad was built, two large culverts were installed to carry the flow of Stover Ditch under the railroad tracks and out into the meadow. The stream drained portions of town and irrigated farmlands on the North end of the lake. Due to poor maintenance by PG&E, the water courses across the meadow became

clogged so that the waterway was diverted to run parallel to the railroad tracks and on to the Feather River. This diversion from historical flow was undertaken because the water back-up from PG&E property was flooding the lower end of town. A review of old arial photo's and maps will confirm this change.

What has been a problem in the past could become an opportunity in the future. Stover Ditch has a fairly uniform year around flow and maintains a trout population where it runs through town. A rehabilitation of the flow under the tracks and across the meadow would provide opportunities to reconstruct pools and eddies that could enhance the fishery and provide access and recreation along the creek as it flows across the meadow. This enhancement could be used to provide creek side camping area near the lake. This appears to be a win-win opportunity to improve the drainage from the lower end of Chester, provide some additional trout habitat and create access to the lake along a pretty little stream.

The need for recreation near Chester cannot be denied. PG&E has a unique opportunity to enhance recreation access to the lake for the community as well as for visitors by utilizing land that it already owns that is South of the Almanor Railroad tracks and East of First Avenue. This opportunity should be reviewed as part of the 2105 Plan. The recreation opportunities along the lake and streams of that area would serve geographical and community needs to disperse recreational opportunities around the lake and provide safe access for the youth of Chester.

I would make myself available to you to walk this area and review the great potential that it has to provide additional high quality recreation in the Lake Almanor watershed. Thank you for accepting these comments.

Yours Truly,

Dennis P. Gomez

Greenville Rancheria letter
July 26, 2002

Greenville Rancheria
P.O. Box 279 • 410 Main Street
Greenville, CA 95947
Phone (530) 284-7990
Fax (530) 284-6612

July 26, 2002

Mr. Tom Jereb
Project Manager
Mail Code N11D
P.O. Box 770000
San Francisco, CA 94177

Dear Mr. Jereb:

Enclosed are the Greenville Rancheria comments on the draft application for FERC 2105. We have included comments from the National Park Service supporting an interpretive/cultural center. In addition, a letter from California Indian Basketweavers Association (CIBA) is enclosed listing indigenous plants which are of cultural importance to the Maidu. Lastly, we have included study 16 from PG&E for your reference.

If you have any questions about our comments please contact Pamela Baumgartner at (530) 284-7990.

Sincerely,

Richard Thompson
Tribal Administrator

Cc: SHIPO
FERC
Paul Friedman

Section I
Comments on Draft Application
July 2002

1.1 Consultation Process

Page	***Discussion & Requests***
Section E4	In order to work on collaborative basis the Greenville Rancheria would like to establish a process by which the reliscensing will occur in a collaborative manner to reach decisions regarding proposed license conditions for consideration by FERC. Examples of the different phases of consultation are as follows: 1. We would like a formal commitment on how the collaborative process and the role of participants will be established and conducted during the application process and after. 2. ***Phase I:*** Together review existing record relating to the project, identify additional information needed, and design new studies to obtain information. 3. ***Phase 2:*** PG&E will provide Native American monitors during implementation. 4. ***Phase 3:*** Jointly review study results and interpret data collection. 5. ***Phase 4:*** Together develop cultural resource management plan in order to preserve and protect cultural artifacts. 6. In order to have efficiency we would like to develop a communication protocol to work collaboratively together. Currently we do not feel there is a collaboration process in place. During the past PG&E has made unannounced appearances, which gave the Rancheria little time for preparation. 1. There is no agreement nor is there an understanding of the expected roles of the participants 2. Study results have been developed by PG&E which have not been discussed with the Rancheria. 3. In addition we would like a chance to discuss and comment as an equal party before PG&E finalizes decisions affecting cultural resources and land management.

Section 2
Land Management Plan

2.1 Land Management

Page	*Discussion & Requests*
Section E4	The Rancheria would like to work collaboratively with PG&E to manage the land. Some examples of management activities are as follows: 1. Have monitors routinely monitor lake Almanor during months with out snow. Currently PG&E has proposed to provide an archaeologist to monitor once a month and up to twice a month during summer months. 2. Considering the above 1-2 a month of monitoring during summer months will be insufficient due to the following reasons. a. The Lake caters to tourists and locals, as you know the highest frequency of vandalism, illegal activity and damage to artifacts and sites would be during the weekend. So, we would like to have monitors during the weekend and during the week in the summer season because of increased occupancy due to tourism. 3. In addition we would like monitors during activity proposed by PG&E including but not limited to construction, Timber harvesting, test excavations and removal of noxious weeds. 4. Create an MOU with Plumas county sheriff's department to assist in control and prosecution of individuals who remove artifacts illegally and who are seen disturbing sites. Also, prosecute offenders when driving off road vehicles on the lake. In Cultural Resource Management Plan (CRMP) did not discuss how PG&E was going to implement the control of grazing and off road vehicles. It would be clearer if PG&E stated how enforcement would take place, which should be stated in an enforcement policy by PG&E. 5. We would also like to create an MOU with PG&E on incorporating the Greenville Rancheria in the land management activities and policies. 6. We would like to be involved in commenting on PG&E's policies that affect Lake Almanor.

Section 3
Cultural Preservation

3.1 Cultural preservation

Page	*Discussion & Requests*
Section E-4 & E-6	Due to low lake levels artifacts and sites have been exposed and eroded. To prevent further destruction of our artifacts we would to establish a curation and interpretive center to preserve artifacts that have been uncovered or subject wave action. This center would educate the public in return this would provide them with significant information on the Maidu culture. Once a person is educated then the visitors to Lake Almanor would have more respect for the area. In the past, an Anthropology professor from Chico State University located a Native American burial site and proceeded to take the bones to the university. We would like to get our bones back and store them in the curation center. Currently, there are many sites with cultural remains, which have not been located or tested, in the Hamilton Branch area, which we would like to preserve but this is difficult to do if we do not know where these sites are. Therefore, we request this area to be further surveyed and tested. This past spring lake levels were very low and bones were seen floating in the lake. According to the CRMP it states the Greenville Rancheria opposed test excavations. Unfortunately, we were never asked for our input in this matter. According to archaeologists contacted in our community, these test excavations would not alter the sites dramatically. Unfortunately, these excavations were not performed due to economic reasons even when it would be to the benefit of tribe to preserve and protect our artifacts. If we don't protect and preserve these items erosion will destroy them. Even though economics are important once we loose links to our cultural heritage then our identity has been lost. So, creating a preservation center would be a solution to the erosion and many other problems. The following are requested items to be addressed by PG&E. 1. PG&E has allowed logging & recreation to disturb the artifacts at Lake Almanor. Solution: Better monitoring and designating areas to be restricted to access will limit the disturbance of the artifacts. But monitoring alone will not be sufficient to solve the problem at hand. 2. According Lassen County Times, July 9th edition, residents have complained PG&E have been cutting timber and leaving the debris for land owners to clean up which was PG&E's responsibility under the old license. Solution: PG&E clean up areas of debris in area. 3. According to the State Historic Preservation Office areas of Lake Almanor are eligible for the National Registry of Historic Places. Request: PG&E complete tests need to list these eligible areas in the National Registry of Historic Places. Conduct archaeological surveys and test excavation in the Hamilton Branch. This site has recently been added by PG&E to include in FERC 2105. We object to adding this area at this stage of reliscensing due to inadequate information about the area.

Section 4
Plant Species

4.1 Plant species

Page	*Discussion & Requests*
Plant Species Page 15	According to the application St John's Wort is considered a noxious weed but Native American's consider this species to be an herb. Also, the report does not include a reference to Native American sources in relation to indigenous species used by natives in the Lake Almanor area. Request: PG&E become aware of uses of plant species and preserve them accordingly. Examples of species include willow gray, red, yellow and Manzanita that is used to carve walking sticks.
Basketry	The Maidu practiced ecology in ancient times, which is currently practiced today. Unfortunately, the Maidu are having a difficult time gaining access to these areas. We would like PG&E to provide land for burning maple, cottonwood and willow patches, so a new bunch of chutes would grow the following year or spring. The Maidu need to have access to various chute sizes of willow in order to weave baskets.
Plants	Currently there are many plants without scientific names, which the Maidu use for medicinal purpose, basketry, and arts & crafts. We have included a letter from CIBA (California Indian Basket Association) listing important plant species. 1. We would like PG&E to provide a management and protection plan for these species. In addition we would like funding to conduct research on the indigenous plants. This research has not been conducted and will be beneficial to the Forest service, Plumas corp. and other agencies. If we can not identify the plants we can not manage or protect them.

Section 5
Education

5.1 Future education

Page	*Discussion & Requests*
	1. From prehistoric times up until today Lake Almanor is an important area in our history and culture. In order to educate the public of the importance of the area we would like to establish an interpretive and culture center to inform the community of the importance of Lake Almanor by sharing our history. 2. Educate PG&E staff by incorporating staff training on avoidance and protection of archaeological sites into PG&E's policy and procedures.

Section 6
General comments

6.1 Additional comments

	Discussion & Requests
	1. Clearly demonstrate the impact on cultural resources in the area and provide specific mitigation measures. 2. Address wave action and provide mitigation measures on controlling low lake levels. When referencing Table E4-13 most of the treatment plan of the sites refers to E4-132, which is, supposed to discuss Management of inundated sites/sites subject to wave action. But there is no discussion of sites subject to wave action. Request: Discuss appropriate management plan that addresses the ongoing adverse effect of the inundation/drawdowns and wave action on historic properties. Again this section does not address the effects of wave action or inundation of the sites. Also, management of these effects is not discussed but rather discusses impacts and treatment measures to use during reservoir drawdowns, which result in exposure of archaeological resources eventually destroying the sites. 3. Please discuss the different lake level effects on specific cultural sites. These elevation effects are not addressed in the CRMP. 4. When visitors come to the lake they impact not only the Lakeshore but also areas surrounding the Lake. Requests extend the boundaries 2 miles of FERC 2105 beyond the current APE boundaries. In addition provide mitigation plan for the areas outside the boundaries. 5. In the application the CRMP claims some of the archaeological sites may not be protected during projects such as construction and other activities. Request: Establish specific criteria for determining whether a site can't be protected or not. 6. Some of the references had very little information, which made it difficult to reference the material. Request: Provide resources referenced including Kelsey 1971, Riddell 1949/1958 and Kroeber, A.L. Archaeological survey. 7. The National Historic Preservation Law states cultural resources should be identified, evaluated, and protected. Unfortunately, various sites have not been evaluated i.e. prehistoric sites and the CRMP states all sites are going to be treated as eligible for the National Registry. Request: Comply with the National Preservation law, contact SHPO for compliance, address all effects on the traditional cultural properties and include the Greenville Rancheria in the decision making process. 8. In the CRMP the ethnographic study was not included, therefore, we were unable to comment on the results. Request: Before proceeding forward provide the Rancheria with a copy of the reports. In addition, with insufficient time to comment we are requesting the deadline for

	final comments be extended. 9. Conduct test excavations and surveys of areas eligible for National registry of historic places, which will be available for, comment before the final application is completed. Pursuant to 36CFR800. 10. Once monitoring is completed provided detailed information to the tribe which sites were monitored and what has been observed. 11. The majority of cultural resource properties identified have existing project related adverse effects of various degrees. Many activities that are affecting these resources are ongoing and will continue e.g. wave action. The project has the potential over time, to completely destroy the cultural resources. Study 16 states "where on-going project-related impacts are occurring or cannot be avoided, the following studies will be conducted: 1) evaluation and archival research for NRHP eligibility, 2) preparation of ethnographic, prehistoric & historic overviews, and 3) determination of effects to historic properties and traditional cultural properties." Request: The CRMP recommends that monitoring of sites adversely affected by wave action or inundation be completed. For many of these sites, the proposed monitoring will not provide any new information. The destructive forces are on going in many sites. It is recommended that PG&E follow their study 16 plan which requires site evaluation and effect determinations for cultural resources that are subject to project impacts that PG&E cannot control, e.g. Wave Action. The CRMP does not include public interpretation opportunities. The general treatment measures address indirect and direct effects and protective measures only. 12. Lake Almanor is a major attraction site for the public. The Greenville Rancheria would like an interpretive plan developed for cultural resources to provide interpretive opportunities for the public. Example Interpretive center and curation center.
	13. Accordance with NEPA and other cultural preservation laws, PG&E is Bound by law to have mitigation plans in place during all phases of construction, movement or where there is a possibility that cultural resources could be damaged, stolen or become open to the public domain. 14. With the project in mind and the know facts that are documented, there Evidence that during low water times, in numerous area, cultural resources, sites and artifacts are visible above the water lines and have been stolen or vandalized. It would be in the Greenville Rancheria's best interest to have these areas protected. The Rancheria is requesting PG&E sponsor these programs.

	Provide funding to the Rancheria to be able to hire tribal members or other Native American persons to be stationed in the areas where resources and artifacts are visible, to act as security to keep people out of those areas and protect those resources and sites. Once the water level reaches a safe level to cover these resources. The security personnel will be laid off until the next low water level or if vandalism is a problem. In addition we would like all areas that have been found to have culturally significant sights will be mapped. Request PG&E will provide funding for these areas of cultural significant to be patrolled on an on going basis to insure they are not disturbed, no damage is done to these sites by logging or other activities in those areas. This would also include culturally relevant areas plant species that are still employed for traditional or cultural uses by members of the Tribe(s) in the area of Lake Almanor and Hamilton Branch.

▲ CALIFORNIA INDIAN BASKETWEAVERS ASSOCIATION ▲

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Pamela Baumgartner
EPA Environmental Program
410 Main Street
P.O. Box 279
Greenville, CA 95947

July 19, 2002

Dear Ms. Baumgartner,

I am pleased to be able to provide you with some additional information regarding Native American uses of plants in the Lake Almanor vicinity. I hope this information will be helpful in your efforts to mitigate the impacts to Maidu natural resources during the relicensing of FERC No. 2105.

Although I have not done a field survey of the area, I am quite familiar with this country. I lived in Manton, which is Maidu territory in the foothills of Lassen National Park, for twenty years, and worked for six years as a Forest Service botanist. I have also worked as a botanist in Lassen National Park, and helped the Pit River tribes to do ethnobotanical research on their ancestral lands. Drawing on my experience and the references I have available to me, I was able to put together this list of plants that are of importance to the northern Maidu in the vicinity of Lake Almanor, the former Big Meadows area. Some of these plants are relatively common, while others have become increasingly rare due to fire suppression, dam building and other riparian and wetlands destructive activities, and other forms of development. I don't have Maidu names for most of these plants but included some references at the end of the list that could be helpful to obtain this information.

Please feel free to call me anytime at 530-622-8718 to discuss these issues in further detail or if I can be of further assistance. The California Indian Basketweavers Association wishes you the best of luck in your efforts to protect these plants for the Indian people of this region.

Sincerely,

Vivian Parker

Vivian Parker
Resource Policy Analyst

PLANTS OF IMPORTANCE TO THE NORTHERN MAIDU IN THE BIG MEADOWS AREA

(List compiled by Vivian Parker, California Indian Basketweavers Association, July 2002)

***Note*: When the genus only is given, and no species name provided, then it is expected that all or many species in that genus were used in a similar manner. For example, *Allium* or wild onions occur in over 50 species in California; all were probably used when available for food. Thus, only the genus *Allium* name is given.**

The nomenclature in this list follows the *Jepson Manual* 1993 (Hickman, J. ed., University of California Press). Botanical names are subject to change due to the whims of each generation of scientists, making it very difficult for people doing ethnobotanical research. In many cases the names provided in the original ethnographic literature have been changed three or four times. Whenever possible I provide the old scientific name as it was published originally.

Common Name *(Scientific Name)* *Use—Food, Fiber/Tools, Medicine, etc.*
Non-native species(*) but may have contemporary uses by native people

Alder (*Alnus*) Red dye from bark; medicine
Angelica (*Angelica* species) Early sprouts eaten; root is for medicine
Antelope brush; bitter brush (*Purshia tridentata*) Medicine
Balsamroot (*Balsamorhiza)* Seeds are food; root is medicine
Bay laurel, California; pepperwood (*Umbellularia californica*) Nuts are food
Bear grass *(Xerophyllum tenax)* Used for white fiber in baskets and regalia; must be burned regularly
Bitter cherry (*Prunus emarginata*) Food and basketry
Bitterroot (*Lewisia nevadensis*) Roots eaten.
Blackberry, Raspberry, and Thimbleberry (*Rubus* species; some *) Food
Bluegrass (*Poa* species) Seeds food
Bracken fern (*Pteridium aquilinum*) Root used in basketry
Buckbrush (*Ceanothus cuneatus)* Shoots used for basketry; needs management (fire or coppicing to produce straight shoots)
Buckeye (*Aesculus californica*) Nut is food (after processing); also fish poison
Bulrush (has three angled stem—see Tule for more commonly used tule/bulrush) (*Scirpus fluviatilis*) Basketry
Camas (*Camassia quamash*) Bulb is food
Cane; common reed grass (*Phragmites communis*, now *P. australis*) Used in basketry, and source of sugar
Cats ear tulip; star tulip; fairy lantern; sego lily; mariposa lily (*Calochortus* species) Little bulbs are food
Cattail (*Typha*) Roots are food; stems and leaves are fiber for mats, covers, etc.
Cedar , incense (*Calocedrus decurrens*) Boards and bark used for buildings.
Choke cherry (*Prunus virginiana*) Stems are for basketry and fruit is eaten

Clarkia; farewell-to-spring (*Clarkia* species) Seeds are parched and eaten
Clover (*Trifolium albopurpureum and others;* maybe *T. tridentatum* and *T. wormskioldii* Leaves eaten in early spring
Coffeeberry (*Rhamnus)* Medicine; a laxative
Columbine (*Aquilegia formosa*) Seeds are eaten
Corn lily (*Veratrum californicum*) Medicine
Currant, wild (*Ribes nevadensis* and others) Food (berries)
Death camus (*Zigadenus venenosus*) External medicine; poisonous
Deer brush (Ceanothus *integerrimus*) Berries used (?); basketry warp material from shoots—must be managed
Dogbane; Indian hemp (*Apocynum androsaemifolium, A. cannibinum*) Fiber for string, rope, netting
Dogwood (*Cornus stolonifera*) Food, basketry
Elderberry, blue; and blue-black (*Sambucus neomexica and S. melanocarpa.* Red elderberries are poisonous, but may have had medicinal uses. The blue and blue black are edible berries and the stems are used for clapper sticks.
Fir, Douglas (*Pseudotsuga menziesii).* Pitch, bark, leaves, twigs used in building, medicine, basketry.
Giant chain fern (*Woodwardia fimbriata)* Inner strands of stem are dyed with alder bark and used for red color in twined baskets
Giant rye grass (*Elymus condensatus*; now *Leymus condesatus*) Edible grain, also used for thatching
Gooseberry (*Ribes roezlii*) Berries eaten.
Grape, wild (*Vitis californica*) Grapes eaten.
Grass, California brome (*Bromus carinatus*) Seeds eaten, first parched then ground into flour.
Grass nut (*Brodiaea, Dichelostemma,* and *Tritelliea* species) Bulbs are eaten.
Gumplant (*Grindelia* species) Medicine
Hastingsia alba (formerly *Schoenolirion album*) Root eaten.
Hazel, hazel nut (*Corylus cornuta var. californica*) Nuts eaten; shoots used in basketry warp.
Hound's tongue (*Cynoglossum grande*) Medicine
Huckleberry (*Vaccinium* species) Berries are eaten.
Indian balsam (*Lomatium dissectum*) Medicine
Indian lettuce; miner's lettuce (*Montia perfoliata,* now *Claytonia perfoliata*) Leaves are eaten.
Indian rhubarb (*Darmera peltaphyllum*) Early shoots eaten; also medicine.
Indian rice grass (*Oryzopsis hymenoides*; now *Acnatherum hymenoides*) Seeds eaten.
Iris (*Iris* species) Fiber.
Juniper (*Juniperus* species) Berries eaten for food; branches and roots and bark used for variety of purposes.
Leather root (*Psoralea macrostachya*; now *Hoita macrostachya*) Inner bark used for thread.
Leopard or tiger lily (*Lilium pardalinum*) Bulb was eaten.
Indian balsam (*Lomatium dissectum*) Medicine
Maidenhair fern (*Adiantum* species). Black stems used for basketry.

Manzanita (*Arctostaphylos manzanita, A. viscida, A. patula*) Berries eaten and made into refreshing drink.
Maple, big leaf (*Acer macrophyllum*) Used in basketry and other fiber uses.
Milkweed (*Asclepias speciosa*) Fiber.
Mint (Mentha species, also *Pogogyne douglasii*) Tea
Mistletoe, juniper (*Phoradendron juniperinum*) Medicine
Mistletoe, pine (*Arceuthobium* species) Medicine
Mock Orange (*Philadelphus*) Arrow shafts; must be managed for straight shoots
Mountain balm; Yerba santa (*Eriodictyon californicum*) Tea; medicine
Mountain mahogany (*Cercocarpus*) Armor, spears, digging sticks, etc.
Mugwort; wormwood (*Artemesia douglasiana*) Medicine, Ceremony
Mule's ears (*Wyethia*) Seeds are food
Mullein (*Verbascum thapsus*) * Medicine
Ninebark (*Physocarpus capitatus*) Seeds eaten raw
Nutmeg, California (*Torreya californica*) Nuts eaten, also color for tattooing
Oak, all species but especially black (*Quercus kelloggii*) Acorn meal
Oak, live oak (*Quercus chrysolepsis*) Acorn; also straight shoots used in basketry
Onion (*Allium* species) Bulb eaten for flavoring
Oregon grape; barberry; mahonia (*Berberis* aquifolium and *B. nervosa*) Berries are eaten
Oso berry (*Oemleria cerasiformis*) Fruit is food
Pennyroyal; coyote mint (*Monardella* species) Tea; medicine
Peony (*Paeonia brownii*) Medicine
Pine (*Pinus* species). Roots used for basketry, pitch for glue and other purposes, sugar pine sap was chewed, edible pine nuts obtained from several species especially *P. sabiniana.*
Plum (*Prunus andersonii, P. subcordata*)
Prince's pine (*Chimaphila* species) Medicine
Redbud (*Cercis occidentalis*) Basketry, shoots must be burned or cut regularly
Rose, wild (*Rosa pisocarpa* and others) Food
Rush (*Juncus* species, various) Basketry, fiber
Sagebrush (*Artemesia tridentata*) Medicine
Scouring rush (*Equisetum* species) Polishing material
Sedge (*Carex barbarae*) Basketry
Service-berry (*Amelanchier* species) Berries are eaten
Shasta lily; Washington lily (*Lilium washingtonianum*) Root is eaten
Solomon's seal, false (*Smilacina* species) Food, medicine
Snowbrush; tobacco brush (*Ceanothus velutinus*) Food, medicine, basketry
Soap root (*Chlorogalum* species) Food, medicine, soap, basketry
Sour berry; sumac (*Rhus trilobata*) Food, basketry; shoots must be managed
Spicebush (*Calycanthus occidentalis*) Basketry
Spiraea (*Spiraea douglasii*) Basketry
St. John's wort; Klamath weed (*Hypericum perforatum*) *Medicinal use contemporaneously
Strawberry (*Fragaria* species) Food
Sunflower (*Helianthella, Helianthus) Wyethia* species) Edible seeds

Tarweed (*Madia* species) Also see vinegar weed which is sometimes called tarweed also. Edible seeds.
Tobacco (*Nicotina attenuata or N. bigelovii)* Smoking.
Toyon; California Hollywood; (*Heteromeles arbutifolia*) Edible fruit.
Tule, common (has round stem) (*Scirpus acutus*) Basketry, fiber (mats), roof thatch, cordage; food
Indian potato; arrowhead (*Sagittaria*) Food
Turkey mullein; dove weed (*Eremocarpus setigerus*) Medicine, fish poison
Vinegar weed (*Trichostema lanceolatum*) Medicine, fish poison
Wada; sea-blite (*Sueda depressa*) Food
Watercress (*Rorippa nasturtium-aquaticum*) Food
Whiteroot (see Sedge) Basketry
Willow (*Salix* species) Gray willow, *S. exigua* most common one used in basketry; formerly known as *S. hindsiana, S. fluviatilis*); medicine
Wolf lichen (*Letharia vulpina*) Used to dye porcupine quills used in basketry and other decorations
Yampah; epos; baha; Indian potato (*Perideridia bolanderi, P. gairdneri* and other *Perideridia* species; formerly *Carum* species) Roots are food
Yellow pond lily (*Nuphar luteum* ssp. *polysepalum*) Seeds are edible
Yerba buena (*Satureja douglasii*) Used as tea.

The list should be considered a work in progress!—and is not by any means complete. It should be annotated with the Maidu names for these plants. The following are some references that may be helpful to supply further information about the plants and their Maidu names:

Dixon, Roland 1905. The Northern Maidu. Bulletin of the American Museum of Natural History 17(3):119-346. New York.

Duncan, John W. 1964. Maidu Ethnobotany. Unpubl. M.A. Thesis in Anthropology, California State University, Sacramento.

McMillin, James H. 1963. The Aboriginal Human Ecology of the Mountain Meadows Area in Southwestern Lassen County, California. Unpubl. M.A. Thesis in Geography, California State University, Sacramento.

Shipley, William. 1963. Maidu Texts and Dictionary. University of California Publications in Linguistics 33. UC Berkeley.

Swartz, Benjamin K., Jr. 1958. A Study of the Material Aspects of Northeastern Maidu Basketry. Publications of the Kroeber Anthropological Society XIX. UC Berkeley.

Study 16
Date 2/22/00

UPPER NORTH FORK FEATHER RIVER PROJECT
(FERC 2105)

Study Plan Title: Cultural Resources Study for the Upper North Fork Feather River Relicensing Project, Plumas County, California.

Objective of Study: The Federal Energy Regulatory Commission (FERC) and Section 106 of the National Historic Preservation Act (as amended) require that the potential effects of the Upper North Fork Feather River Hydroelectric Project (the Project) upon all cultural resources and traditional cultural places within the Project Area of Potential Effects (APE) be assessed as part of the relicensing process. This assessment is conducted in continuous consultation with the FERC, the Plumas and Lassen National Forests, the State Historic Preservation Officer (SHPO), and appropriate Native American groups.

Study Methodology: Based on previous cultural resource studies and other documentation of the prehistory and history of the Project area, a cultural resource summary report has been prepared. This report identifies previous surveys, known cultural resource sites, and addresses additional studies to be undertaken for the current relicensing in accordance with Section 106. Field studies include an intensive cultural resource survey of those areas within the Project APE that have either not been recently examined, or where the previous survey strategy is not known or is not up to current professional survey standards. As part of this fieldwork, all known historic and prehistoric sites will be recorded or rerecorded as necessary and all Project-related impacts to these sites will be identified. A qualified individual appointed by the local Native American community will be invited to work on each field survey crew.

Products From Study: Once the entire Project APE has been adequately surveyed and all known sites have been recorded, Three reports will be prepared. These reports are:

1. A report of the results of the archaeological survey and a description of all Project-related impacts;

2. A report that addresses all known Traditional Cultural Places within the Project APE and gathers other important ethnographic information. As part of the research conducted to prepare the report, tribal members and elders will be interviewed.

3. A National Register of Historic Places evaluation of the Upper North Fork Feather River Hydroelectric facilities.

PG&E then proposes to prepare the following Draft documents for the FERC:

4. A Programmatic Agreement (PA) that will manage the majority of the prehistoric cultural resources, treating them as significant historic properties without formal National Register of Historic Places (NRHP) evaluation. No evaluation will be

undertaken in order to avoid the potential ground disturbance associated with archaeological test excavation. All strictly historic-era sites, on the other hand, will be evaluated for their NRHP eligibility;

5. A Cultural Resources Management Plan (CRMP) required by the stipulations of the PA, will call for the avoidance or protection of specified cultural resources and traditional cultural places whenever possible.

In situations where the PA is not applicable or where ongoing project-related impacts are occurring or cannot be avoided, the following studies will be conducted:

1. Conduct the field evaluation and archival research necessary to evaluate the NRHP eligibility of affected prehistoric sites. An individual appointed by the Maidu community will be invited to monitor the work of each archaeological field crew if archaeological test excavation should become necessary;

2. Complete ethnographic, prehistoric, and historic overviews of the project area that will establish a detailed historic context within which the affected sites can be evaluated..

3. Determine potential effects upon all significant cultural resources sites (both prehistoric and historic) and traditional cultural places;

Upon completion of these studies, Licensee will complete the Cultural Resource Management Plan (CRMP) which will identify management recommendations based on the site significance assessments and impact evaluations. This CRMP will remain in effect throughout the term of the new license.

Study Schedule: The cultural resource survey of the Upper North Fork Feather River Project Area of Potential Effects is scheduled for the spring/summer of 2000. If possible, this fieldwork will be undertaken when reservoir elevation levels are at their lowest. A draft report of the results of the study will be completed by the middle of January, 2001, and the final report by the end of March, 2001. The report addressing Traditional Cultural Places/ethnographic information and the evaluation of the hydroelectric Project facilities will also be undertaken at this time. Any additional fieldwork that may become necessary in order to evaluate any potential impacts to specified cultural resource sites will be undertaken in the summer of 2001. The Cultural Resources Management Plan will be prepared following the completion of all fieldwork.

Persons Conducting Study: Alison Macdougall, PG&E Cultural Resources Specialist, will be coordinating all of the cultural resources studies for the Project. Qualified outside contractors will be retained to conduct the three studies.

PG&E Study Contact Person: Alison Macdougall (530) 894-4652
Rob Stiving (415) 973-5697

Study 16
Date 2/22/00

UPPER NORTH FORK FEATHER RIVER PROJECT
(FERC 2105)

Study Plan Title: Cultural Resources Study for the Upper North Fork Feather River Relicensing Project, Plumas County, California.

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undertaken in order to avoid the potential ground disturbance associated with archaeological test excavation. All strictly historic-era sites, on the other hand, will be evaluated for their NRHP eligibility;

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2. Complete ethnographic, prehistoric, and historic overviews of the project area that will establish a detailed historic context within which the affected sites can be evaluated..

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Persons Conducting Study: Alison Macdougall, PG&E Cultural Resources Specialist, will be coordinating all of the cultural resources studies for the Project. Qualified outside contractors will be retained to conduct the three studies.

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Rob Stiving (415) 973-5697

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
600 Harrison Street, Suite 600
San Francisco, California 94107-1372

IN REPLY REFER TO:

JUN 05 2000

L6016(PGSO-PP)

Tom Jereb
Pacific Gas and Electric Company
245 Market Street Room 1103-N11C
P.O. Box 770000
San Francisco, CA 94177

Subject: Upper North Fork Feather River Project Re-licensing (FERC No. 2107) First Stage Consultation Package

Dear Mr. Jereb:

The National Park Service submits the following comments on the above project under FERC regulation 18 CFR Section 16.8(b)(4). Under the National Park Service Organic Act (39 Stat. 535), the Outdoor Recreation Act (Pub Law 88-29), the Wild and Scenic Rivers Act (Pub. Law 90-542), Council on Environmental Quality Guidelines (45 FR 59190-59191) and Federal Energy Regulatory Commission Guidelines the National Park Service is authorized to provide technical assistance for recreation planning in the licensing of hydropower facilities. It is the policy of the National Park Service to represent the national interest regarding recreation, and to assure that hydroelectric projects subject to re-licensing recognize the full potential for meeting present and future public outdoor recreation demands while maintaining and enhancing a quality environmental setting for those projects.

Pacific Gas and Electric Company's First Stage Consultation Document describes the setting for the Upper North Fork Feather River project as "endowed with some of the most attractive and popular recreation resources in California." We also note the Highway 70 corridor was historically a popular tourist attraction, especially for sightseeing and fishing. The area is also critically located within several hours' drive of the San Francisco Bay Area, anchored between two National Forests and Lassen National Park.

The First Stage Consultation Document also states that operation of the Project is coordinated with other hydroelectric projects on the North Fork Feather River, and that no change in this operational mode is proposed. Accordingly, we wish to underscore the importance of comprehensively and adequately addressing the full range of recreational issues, along with related local and regional economic concerns, for this hydroelectric

complex. It is our opinion that a comprehensive recreation plan that covers the entire Feather River complex, including the Feather River Canyon above Lake Oroville and Lake Almanor, is needed. We recognize this would require close coordination with Pacific Gas and Electric Company's on-going Rock Creek-Cresta and Poe re-licensing efforts, and particularly with Plumas and Lassen National Forests as well as Plumas County. However, undertaking piecemeal planning for mitigation and enhancements of these extensive projects while giving due consideration to coordinating their operational needs is unacceptable.

Specifically, we recommend assessment of the full range of existing and potential uses of the area, including such activities as fishing, hunting, whitewater and flatwater boating, hiking, picnicking, wildlife viewing, trainwatching, driving for pleasure and sightseeing by plane. Projections for future recreational use should not rely solely upon growth rates for Counties of visitor origin, fishing license sales and historic campground occupancy. Marketing data and the literature of recreation providers for information about recreation trends such as the increasing popularity of water-based activities and family camping should also be reviewed. Given the importance of meaningful information about projected recreational use to developing a reliable recreation plan, and since the summer season is already upon us, we concur with Plumas County that a single year time frame for the Projected Recreation Use study is not adequate.

* The Public Access Assessment should identify areas suitable for recreation but underutilized due to lack of access, adequate facilities or a resource base. A careful look at access issues for private and project-leased lands around Lake Almanor is called for. The question should also be asked - what types of recreational use would occur, or would be enhanced, in the project's Area of Potential Effects with increased flow in the river? Existing and potential recreational use conflicts, e.g. such as those that might arise between fishermen and boaters, should also be identified. Resource impacts from formal and informal uses, such as streambank damage from dredge mining, should also be carefully investigated.

The proposed Whitewater Boating Study should be given ample planning time to identify the most appropriate releases, ramping rates and schedule, and to determine how this study will be fully integrated with the Project's Instream Flow Study. Information about valuations of foregone generation for the Project, which will be essential to determining costs of providing whitewater flows as proposed in the study, should be accessible to study analysts.

In further developing, conducting and analyzing study plans for recreation, Pacific Gas and Electric Company should consult closely with agencies, local residents and interest groups. We also recommend reviewing examples of high quality recreation assessments and recreation plans from other projects, including those prepared by other applicants in other parts of the country. We have enclosed, for your information, copies of the *1997 Recreational Assessment for Dells Pond and the Chippewa River* (FERC No. 2670) and the 1998 *Recreation Plan for Project Lands and Reservoirs of the Wisconsin Valley Improvement Company.* We would also refer you to Idaho Power Company for their

work on the Hells Canyon complex, including project-related land planning, and to Chelan County, Washington for information about recreation planning on the Columbia River projects.

Finally, because the area is so rich in natural and cultural history, and has recently the added attraction of a Scenic Byway designation, we believe the comprehensive recreation plan should have a strong interpretive component. First Stage Consultation studies should include investigation of potential themes for development of an interpretive plan for the corridor, for example the life of the region's indigenous cultures, Canyon history including development of the hydroelectric projects themselves, as well as the area's unique geologic features.

We appreciate the opportunity to provide input to the First Stage Consultation document and we plan to participate in this or future phases of the re-licensing effort as needed and helpful. Please contact Linda Stonier at (415) 427-1450 for further assistance or questions.

Sincerely,

John J. Reynolds
Regional Director, Pacific West Region

Enclosure

cc:
Hon. David Boergers, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426
Superintendent, Lassen National Park
Jane Goodwin, Lassen National Forest, Almanor Ranger District, PO Box 767, Chester, CA 96020
Sharon Stohrer, State Water Resources Control Board, 901 P Street, Sacramento, CA 95814
Tricia Humphreys, Plumas National Forest, 875 Mitchell Avenue, Oroville, CA 95965
Bill Dennison, Supervisor, Plumas County; District 3, P.O. Box 1519, Chester, CA 96020
Leah Wills, Plumas Corporation, 550 Crescent Street, P.O. Box 3880, Quincy, CA 95971
Dave Steindorf, Chico Paddleheads, 179 Valley Ridge Drive, Paradise, CA 95969
Patricia Sanderson Port, Regional Environmental Officer, San Francisco

Greenville Rancheria letter
September 13, 2002

Greenville Rancheria
P.O. Box 279 • 410 Main Street
Greenville, CA 95947
Phone (530) 284-7990
Fax (530) 284-6612

September 13, 2002

Pacific Gas & Electric Co.
Alison Macdougall
Cultural Resource Specialist
350 Salem Street
Chico, CA 95928

RE: FERC No. 2105 Comments on the Draft Traditional Cultural Properties Report

Dear Ms. Macdougall,

The Greenville Rancheria is please to have received the Traditional Cultural Properties Report (TCP), prepared by Albion Environmental. The Greenville Rancheria, (GIR), would like to support some of the suggestions Albion proposed in the study. See below comments (1-3).

1. Where Albion recommends that PG&E review its operation policy to ensure the right of access by adding necessary changes formally in order for Maidu to gather traditionally important plant resources within the project boundary.
2. PG&E will remove any restrictions to the APE, except for safety concerns, if such restrictions are formalized as policy. The Greenville Rancheria requests consultation when modifying PG&E policy and formulating guidelines regarding access to APE for collecting plant materials, education and cultural practices. Also, we request these final policies and guidelines be submitted the Greenville Rancheria for review.
3. PG&E will review policy concerning management of archaeological properties. The GIR would like to support any enforcement of laws protecting antiquities. In the past, we suggested an MOU with the Plumas sheriff's office but we would like to add a possible MOU could be developed with the Forest Service to help monitor archaeological sites on Forest Service Land. PG&E has suggested this could be a possibility once other efforts have failed but we suggest an MOU be formulated as soon as possible to prevent delays in the future if other monitoring efforts have failed. Again the GIR would like to be involved in formulating realistic changes to current PG&E policies.

4. In the TCP Indian Valley was listed with no description. Request; Include important areas of Indian Valley such as "Indian Head"
5. The GIR would like PG&E to address concerns of the Maidu people documented in the TCP report.
   A. Provide areas for gathering among the Maidu for ceremonies, education, and plant gathering.
   B. Provide Seasonal Passes or relinquish fees for the Maidu folks in order to access recreational areas.
   C. Designate an area with favorable environmental conditions for reintroducing Native Plant Species, i.e. willow.
   D. A request for additional studies in relation to pertinent plant species among Native Americans. The GIR would like to formulate a study with California Indian Basketweavers Association, and other interested parties. The study would consist of additional plant species including identifying favorable habitat among these species.
   E. Include color photographs of plant species listed in the TCP report. Which could be used as an educational model for generations to come.
   F. Provide detailed maps of current vegetation growth in the APE.

GIR believes educating the Native American youth is pertinent in order to preserve the culture among the Maidu. As time goes on only documents of the past can be used as reminders of the history of our ancestor's therefore, we would like PG&E to address the following:

1. Include the Dorothy Hill Special Collection, photo's etc in the TCP study.
2. In addition to the 9 interviews, complete additional interviews among the Maidu who did not participate.
3. The TCP addressed Indian Allotments and to provide a complete picture of the significance of Lake Almanor the GIR would request PG&E provide a map of Indian Allotted land prior to the flood of 1913 in the TCP study.
4. The GIR would also like access to the various documents presented in the bibliography of the TCP.

We appreciate the opportunity to participate in the FERC Reliscensing Project 2105. We look forward to working with FERC and PG&E in addressing our concerns to protect and provide continued existence of Maidu resources.

Sincerely,

Richard Thompson
Tribal Administrator

Cc: Tom Jereb, PG&E Project Manager
Paul Friedman, FERC Archaeologist
SIR Environmental Protection Department
SIR Tribal Chairperson

Greenville Rancheria letter
September 30, 2002

Greenville Rancheria
P.O. Box 279 • 410 Main Street
Greenville, CA 95947
Phone (530) 284-7990
Fax (530) 284-6612

September 30th, 2002

Ms. Alison Macdougall
Pacific Gas and Electric Company
Cultural Resource Specialist
350 Salem Street
Chico, CA 95928

RE: FERC No. 2105 relicensing project

Dear Ms. Macdougall:

Over the last couple of months the Greenville Rancheria has spoken with the Susanville Rancheria, PG&E and FERC personnel regarding several issues pertaining to the FERC No. 2105 project. It has come to be our understanding, in regard to cultural resources and the protection of those resources, that PG&E will designate all sites within 2105 boundaries as "potential prehistoric and historic archaeological sites". In speaking with yourself and FERC representative Paul Friedman, this would cause all lawful protections to be put in place as if those sites were in fact, designated by SHPO as protected sites. The designation would also remove the need for test excavations of these sites. In speaking directly with representatives from Susanville Rancheria and listening to other concerned Indian Groups, this would be satisfactory to them as well as the Greenville Rancheria. Our main concern was the on-going and enforceable protection of these sites and resources.

This statement does change the intent of the initial written comments that were sent to Pacific Gas and Electric Company and FERC in Section 8 General Comments in July 2002.

In the last Cultural Resources meeting held here in Greenville with the various Indian representatives, Paul Friedman, Tom Jereb and you, it was stated that all written comments would be addressed directly to the party commenting, as well as in the draft report. This question was asked of Mr. Jereb directly by one of the Indian representatives. We now understand comments will only be addressed in the document itself, contrary to statements made.

While it may cause some time and preparation issues for you and your organization to answer these comments individually, I believe you will find it will also contribute to the working relationship with the Indian Organizations involved if you fail to do so. I believe the process would lose much of the positive support within the Indian communities if not followed through on.

I look forward to reading comments sent the Greenville Rancheria. If you have any questions regarding this or any other matters, please do not hesitate to contact me at (530) 284-7990.

Sincerely,

Richard D. Thompson
Tribal Administrator
Greenville Rancheria

Cc: Tribal Council
Susanville Tribal Council
Tom Jereb-PG@E
Paul Friedman-FERC
File

Honey Lake Maidu Tribe letter
July 26, 2002

Honey Lake Maidu Tribe
1101 Arnold Street
Susanville, CA 96130

Mr. Tom Jereb
Project Manager
Mail Code N11D
P.O. Box 770000
San Francisco, CA
94177

July 26, 2002

Dear Mr. Jereb,

I represent the Honey Lake Maidu Tribe and the lineal descendants of those aboriginal to Big Meadows/Lake Almanor. I am writing to express our dissatisfaction with the manner in which PG and E has gone about complying with Section 106 of the National Historic Preservation Act of 1966 in regards to project P-2105.

The Act requires federal agencies to protect and mitigate the loss of archaeological properties or those properties of cultural significance. The sites at Lake Almanor that are consistently robbed, eroded and trampled are of cultural significance to me, my people, and my relatives. Implementing the National Historic Preservation Act involves inventorying such properties or sites, evaluating them and them coming up with a plan for mitigating damage to them. We have found the evaluation efforts of Pacific Gas and Electric to be extremely poor. Poor evaluation leads to poor mitigation and we are duly concerned about this state of affairs!

Lake Almanor is a heavily used lake whose waters rise and fall and areas up to a mile from its shores get impacted by visitors. Further, wave action alone degrades our sacred sites and cultural resources along the shoreline. We have spoken with representative s of both the Lassen and Plumas National Forests who agree with our concerns and agree that the sites in the vicinity of Lake Almanor are being adversely effected as the situation stands. Conditions will only grow worse over time. We ask (and are prepared to demand) that careful, thorough evaluation of these sites take place, including test hole digging.

Next, careful, thorough mitigation designs should be drawn up. We believe that this is *the only way* that our patrimony will be protected.

To reemphasize: the situation of our burials and other sites of cultural significance is quite dire. Test-hole digging and in depth evaluation of these sites are necessary because of the adverse effects they have already experienced and will continue to experience. These evaluations need to be made so that these sites can be protected for future generations.

We would also stress that not only the Forest Service, but the Greenville Rancheria agrees with us on these issues. We would also like to formally put our support behind the Maidu Culture and Development Group, which needs to have its issues with the PG and E inventory – and treatment of non-Recognized Native peoples – addressed.

Thank you for your time.

Sincerely,

Ronnie Morales

Ron Morales, Tribal Chairman

Dale Knutsen letter
June 26, 2002

361 Osprey Loop
Chester, California 96020
26 June 2002

Mr. Tom Jereb
Project 2105 Manager
Pacific Gas & Electric Co.
Mail Code N11D
P.O. Box 770,000
San Francisco, CA 94177

Mr. Mark Robinson
Office of Hydropower Relicensing
FERC
888 First Street NE
Washington, DC 20426

Encl: (1) Existing Lake Almanor Recreation Sites
(2) Potential Sites - Chester Recreation Area

Gentlemen:

Having reviewed Pacific Gas & Electric (PG&E) Company's draft relicensing application for the Project 2105 (Lake Almanor) area in northeastern California, I would like to offer some feedback on one of the topics covered in that package. My remarks are focused on the subject of shoreline area recreation facilities, specifically on PG&E plans for new or expanded day use facilities.

Public input for the initial part of this effort included data gathering via both questionnaires and focus groups. During that process it should have become apparent to the study analysts that there was a longstanding need for some kind of shoreline recreation site to serve the population of Chester at the northwestern end of Lake Almanor. It only takes a quick glance at a map of the existing recreation sites (enclosure (1)) to observe that most of the current facilities are located many miles from town.

The most beneficial improvement to local recreation facilities would be the addition of a day use site adjacent to Chester. Such a site should be within easy bicycling distance of downtown, and should be located such that young people could get to the site without having to expose themselves to the dangers of highway traffic. These criteria rapidly narrow attention to the northwestern part of the lake shore.

Local residents well understand that the northwestern portion of Lake Almanor is a very shallow area with large fluctuations in shoreline location as water levels rise and fall. Nevertheless, that region is the only conveniently accessible area for Chester residents, especially those who might want to walk or bicycle to the site. Chester boaters would certainly benefit from a public boat ramp at the Northshore Campground area, but that site does not seem attractive for general day use purposes since it would expose pedestrians and bicyclists to highway traffic on the narrow Hwy 36 causeway east of town.

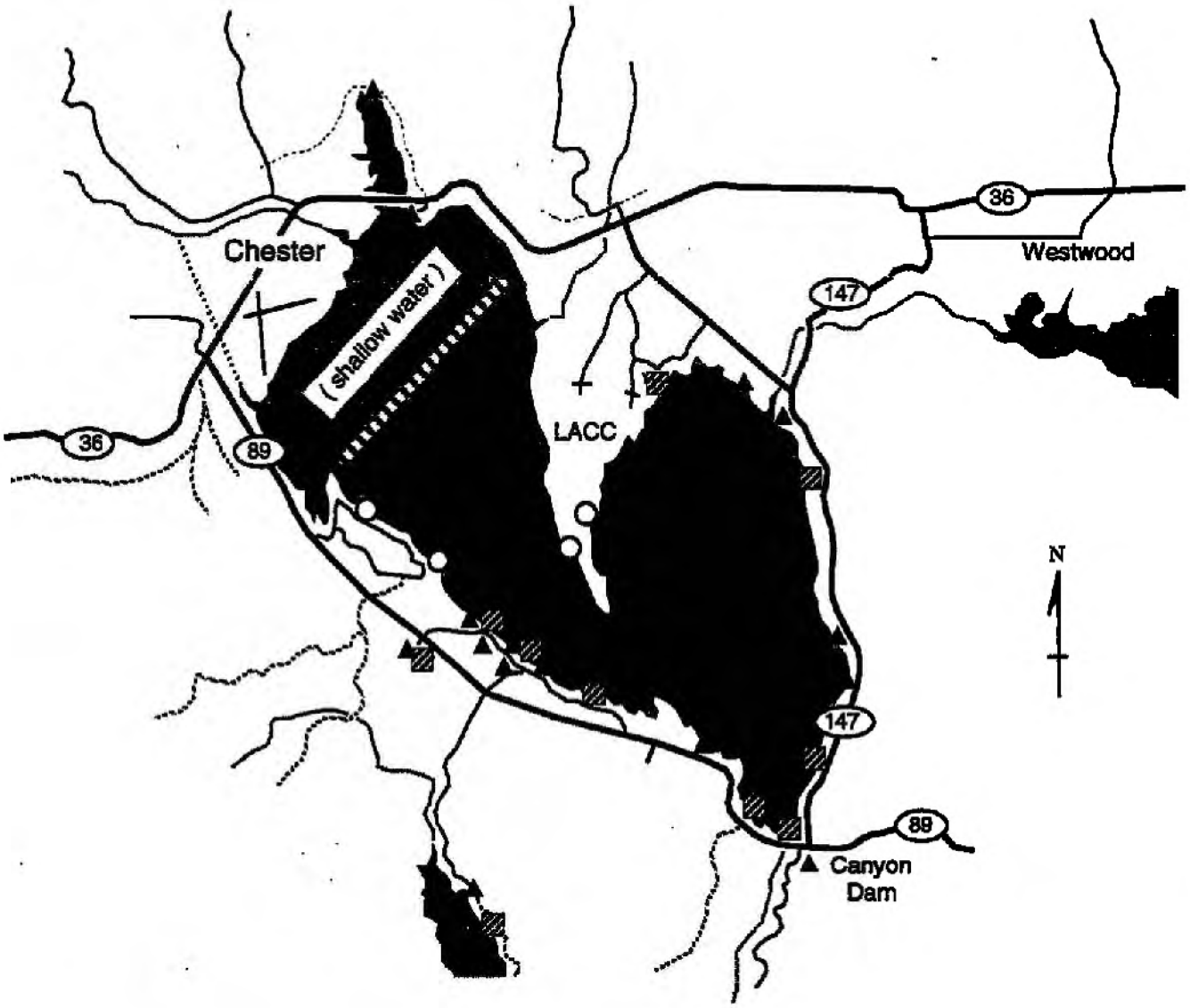
Better choices for a new day use facility are found along 1st Avenue and are illustrated in enclosure (2). The northern site would be at the point where the Feather River empties into Lake Almanor; this location would ensure the availability of flowing water even when lake levels are down. The southern possibility would be near the end of 1st Avenue, which is where the Forest Service has proposed a trailhead for a paved walking/bicycling route that would wend its way west around the airport area.

Either of these two alternatives would be a major improvement to the existing, rather dismal shoreline recreation situation at the north end of Lake Almanor. Close proximity to downtown Chester would enhance safe access by all recreationists, most especially young people. I therefore urge PG&E to seriously consider the 1st Avenue alternatives and to set aside alternative sites that are more than a mile from downtown Chester or that require highway travel for access.

Sincerely,

Dale Knutsen

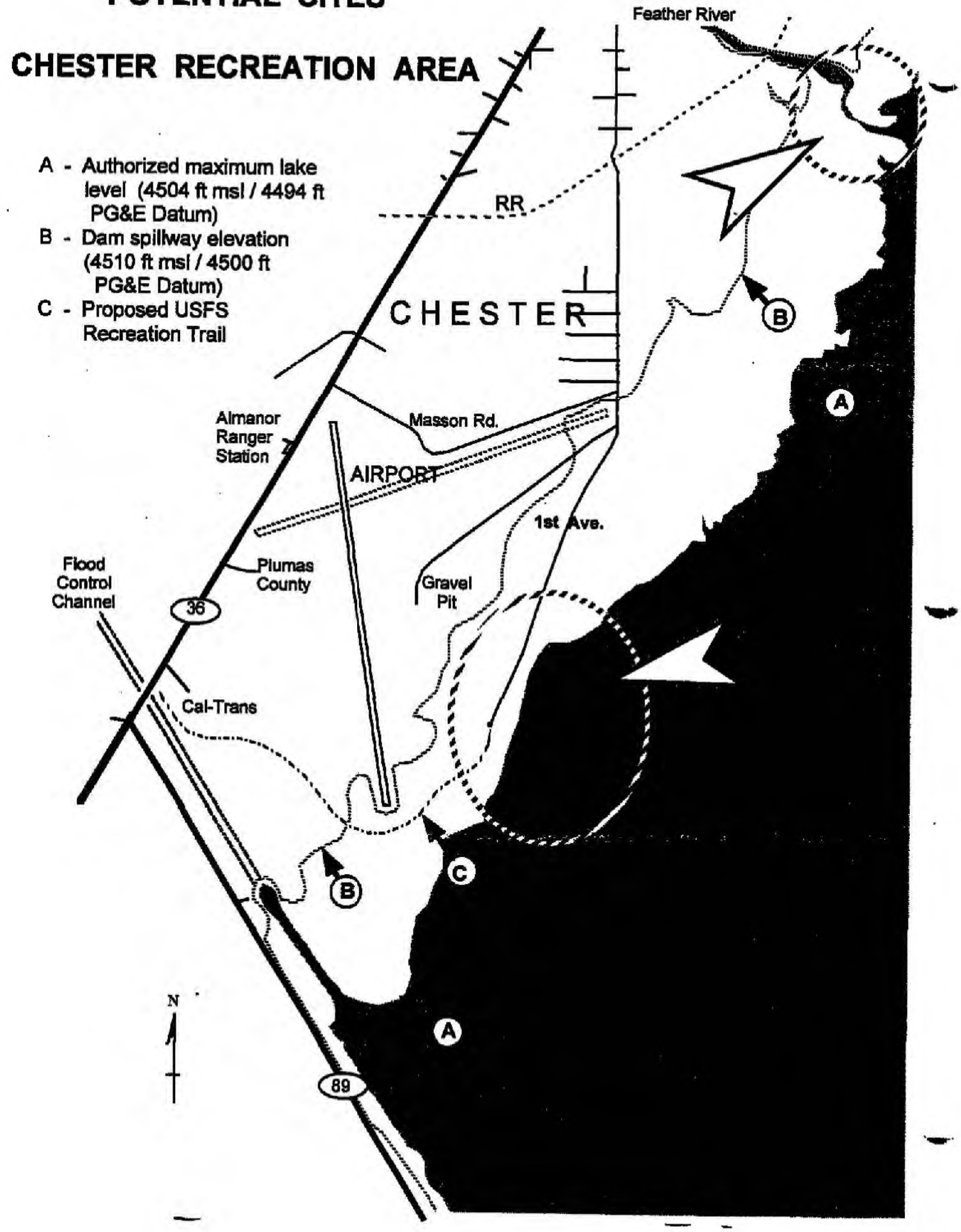
EXISTING LAKE ALMANOR RECREATION SITES



▲ - Campground / RV park
▨ - Public access day use area
○ - Private day use facility

POTENTIAL SITES

CHESTER RECREATION AREA



Mountain Maidu (Hand delivered note)
August 16, 2002

Mountain Maidu Goals
As Part Of The Federal Energy Regulatory Commission's (FERC)
Relicensing of:

Pacific Gas and Electric (PG & E) Company's Upper North Fork Feather River Relicensing Project (FERC 2105)

- **Any NA graves that become or exposed, due to low lake levels, must be protected by PG & E and notification given to the Maidu people.**

- **No human remains are to be willfully removed for any reason; and, this includes all funerary objects.**

- **Past recovered NA human remains from the lakes must be returned to the Mountain Maidu for repatriation. PG & E must take the lead in this repatriation process and ensure the Mountain Maidu that all NA human remains along with any funerary objects will be returned to them for repatriation.**

- **The PG & E must document, as part of the FERC Relicensing process, this responsibility for the protection of all grave sites and any Mountain Maidu cultural sites (villages sites included) that are either known of or become aware of as lake levels may affect these site.**

- **The same protection must be extended to the areas of exisiting campgrounds and including any future construction of facilities.**

- **The Mountain Maidu must be ensured that that the afore mentioned concerns will be protected by documentation to be included in this Relicensing of the Project: FERC 2105 .**

- **Such documentation must be included in any transaction involving new ownership.**

- **Because this is a Federal process, might there be cause for the Native American Graves Protection and Repatriation Act (NAGPRA) to be applied ?**

Fred Muller letter
July 24, 2002

24 July 2002

Mr. Tom Jereb
2105 Proj. Mgr.
PG&E Mail Code N11D
P O Box 770,000
San Francisco, CA 94177

Dear Mr. Jereb:

I recently learned of PG&E's various proposed locations on Lake Almanor for increased day use facilities, and offer you my comments. I have resided at Almanor West since 1991, chaired the WACC Architectural Committee, served on the WACC Board for four years, participated with Rotary on a number of local projects, and as a result have gained a sense of the area and community recreational needs.

Dealing first with the location immediately south of Almanor West, this is about 1.5 miles from the existing boat ramp at Almanor Campground; it would be an unnecessary duplication. Also, the Forest Service bicycle/hiking trails now provide a forest exposure for a number of enthusiasts.

The location immediately north of Almanor West and extending to the flood by-pass entry is still too remote from the Chester population center. It now provides a fine waterfowling experience which would be eliminated with a recreation facility.

Close to Chester, and easily accessible, is an area along 1st Avenue extension. This place floods regularly, but a raised access extending onto the lake shore and connecting two or three constructed "island" areas at differing elevations to meet the fluctuating water levels would provide access to the Lake throughout the year. It would provide much needed entry to the Lake for water craft and swimmers alike.

An extension of the Northshore Campground area is another possibility, though remote from the town itself.

My vote would be for the 1st Avenue site to provide Chester with much needed waterfront access. If I can assist with conceptual layouts or other related matters, please come back to me as I'm very much interested in regional enhancement with preservation of the fine facilities we now enjoy.

With best regards,

Fred Muller
305 Manzanita Dr.

National Marine Fisheries Service letter
July 26, 2002

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

JUL 26 2002

Mr. Tom Jereb
Project Manager
Pacific Gas and Electric Company
Mail Code N11D
P.O. Box 770000
San Francisco, California 94177

Dear Mr. Jereb,

The National Marine Fisheries Service (NOAA Fisheries) received the April 2002 Draft Application for New License at our Sacramento office on June 11, 2002. The Pacific Gas and Electric Company's license will expire in 2004 for the Upper North Fork Feather River Project (Project) Federal Energy Regulatory Commission (FERC) #2105, consisting of three reservoirs connected by tunnels and penstocks. The Project is located on the Feather River in northern California. The Feather River "was renowned as one of the major salmon-producing streams of the Sacramento Valley" (Yoshiyama et al. 2001). The draft application agrees that "the NFFR was considered a major anadromous fish system with spawning migrations of salmon being able to ascend in to the upper reaches of the river" (E3.1-2).

Historically, California produced the most biologically diverse and productive salmonid fisheries in North America. Its 60 major watersheds include over 20,000 miles of rivers and streams.[1] California's coastal river systems once had annual runs of adult steelhead numbering more than one million. However, water development has taken its toll on the salmon and steelhead resources of the state. Dams and diversions were constructed in all but a dozen of the state's major drainages. Today, dams greater then 25 feet in height number over 1,200.[2]

Hydropower, flood control, and water supply dams of the CVP, SWP, and other municipal and private entities permanently block or hinder salmonid access to historical spawning and rearing grounds. Clark (1929) estimated that originally there were 6,000 miles of salmon habitat in the Central Valley system and that 80 percent of this

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[1] Forest and Rangeland Resources Assessment Program. 1988. California's Forests and Rangelands: Growing Conflict Over Changing Uses. California Department of Forestry and Fire Protection. Sacramento, CA.

[2] California State Lands Commission. 1993. California's Rivers: A Public Trust Report. Sacramento, CA 334 pp.

habitat was lost by 1928. Yoshiyama *et al.* (1996) calculated that roughly 2,000 miles of salmon habitat was actually available before dam construction and mining, and concluded that 82 percent is not accessible today. Clark (1929) did not give details of his calculation. Whether Clark's or Yoshiyama's calculation is used, only remnants of their former range remain accessible today in the Central Valley (CDFG 1998).

In general, large dams on every major tributary to the Sacramento River, San Joaquin River, and Delta block salmon and steelhead access to the upper portions of respective watersheds. On the Sacramento River, Keswick Dam blocks passage to historic spawning and rearing habitat in the upper Sacramento, McCloud, and Pit rivers. On the Feather River, Oroville Dam and associated facilities block passage to the upper Feather River watershed. Nimbus Dam blocks access to most of the American River Basin. On the San Joaquin River, water development projects in the 19th century eliminated fall-run chinook salmon that spawned in the mainstem of the river. Friant Dam construction in mid-1940's eliminated most of spring-run chinook salmon in the San Joaquin River upstream of the Merced River (DOI 1999a).

Hydropower development and related water management activities have drastically altered natural hydrologic conditions and aquatic habitat in the Feather River, resulting in substantial reductions in salmonid abundance. Aside from simply blocking access to historic habitat, hydropower development adversely affects fish populations in other ways: migration delay resulting from insufficient flows or habitat blockages; stranding of fish caused by rapid flow fluctuations; significant habitat alteration which reduces the carrying capacity for salmonids and their forage species and increased mortality resulting from alterations in ambient water temperatures thus exacerbating water quality impacts (Palmisano 1993). In several listings of Pacific salmonids under the Federal Endangered Species Act, NOAA identified impacts associated with hydropower development as factors in the decline of these species (62 FR. 43,937, 43,942).

The Licensee proposes to include the Hamilton Branch Project (# 2627) as part of the Upper North Fork Feather River Project (# 2105). The project description and maps provided in the First Stage Consultation Package for Project 2105 (circulated March 14, 2000) and the Licensee's representation of Project 2105 during the subsequent 26 months of resource study are inconsistent with the proposal to include Project 2627. We believe that this proposal should not be accepted.

NOAA INTEREST IN THIS PROCEEDING

The NOAA is responsible for protecting and managing a variety of marine animals, including Pacific salmon, sturgeon, lamprey, groundfish, halibut, and marine mammals and their habitats under the Federal Endangered Species Act (ESA)(16 U.S.C. §§ 1531 *et seq.*),

Federal Power Act, Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (16 U.S.C. 1801 et seq.), Reorganization Plan Number 4 of 1970, and other laws. Specifically,

Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery and Conservation Act set forth a number of new mandates for NOAA, regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NOAA, are required to delineate "essential fish habitat" (EFH) for all managed species. Federal action agencies that fund, permit, or carry out activities that may adversely impact EFH, are required to consult with NOAA regarding the potential effects of their actions on EFH, and respond in writing to our recommendations. In addition, NOAA is required to comment on any state agency activities that would impact EFH.

Endangered Species Act

The purpose of the ESA is to conserve endangered and threatened species and the ecosystems upon which they depend. To this end, the ESA provides for prohibitions on the "take" of endangered and threatened species. Section 7 of the ESA establishes a policy that all federal agencies will seek to conserve listed species by using their authorities to carry out conservation programs for such species. Furthermore, federal agencies must ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species. When listed salmon or steelhead may be affected by a federal action, the federal agency must consult with NOAA.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.) is the foundation of modern American environmental protection in the United States and its commonwealths, territories, and possessions. The implementing regulations for NEPA require that federal action agencies must analyze the direct and indirect environmental effects and cumulative impacts of project alternatives and connected actions.

Indirect Effects

Increased diversions associated with the construction of increased screening capacity is an "Indirect Effect" of the proposed action. The California Environmental Quality Act (CEQA) regulations under 40 CFR 1508.8 (b) defines indirect effects as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include human population growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosysytems".

Cumulative Impacts
Cumulative impacts are those combined effects on quality of the human environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Connected Actions
The CEQA regulations require "connected actions" to be considered together in a single Environmental Impact Statement (EIS). See 40 CFR §1508.25 (a)(1). "Connected Actions" are defined, as actions that: (i) automatically trigger other actions which may require environmental impact statements; (ii) cannot or will not proceed unless other actions are taken previously or simultaneously; (iii) are independent parts of a larger action and depend upon the larger action for their justification."

The Licensee's operation and maintenance of its Project and resulting land use practices meet the above criteria for "Indirect Effects" "Cumulative Impacts" and "Connected Actions". For instance, the Licensee's facilities and operations are inextricably intertwined concerning the impoundment, release from storage, conveyance, and use of the waters of the upper North Fork Feather River.

Federal Power Act (FPA)

Section 18 of the FPA
Section 18 of the FPA expressly grants to the Department of Commerce and the Department of the Interior (Departments) exclusive authority to prescribe fishways. Section 18 states that the Commission must require construction, maintenance, and operation by a licensee at its own expense of such fishways as may be prescribed by the Secretary of Commerce or the Secretary of the Interior. Fishways prescribed under Section 18 by the Departments are mandatory upon the Commission. Within the Department of the Interior, the authority to prescribe fishways is delegated from the Secretary of the Interior to the FWS Regional Directors. Within the Department of Commerce, the authority to prescribe fishways is delegated to the NOAA Regional Administrators.

Section 10(j) of the FPA
Under Section 10(j) of the FPA, licenses for hydroelectric projects must include conditions to protect, mitigate damages to, and enhance fish and wildlife resources, including related spawning grounds and habitat. These conditions are to be based on recommendations received from federal and state fish and wildlife agencies. The Commission is required to include such recommendations unless it finds that they are inconsistent with Part I of the FPA or other applicable law, and that alternative conditions will adequately address fish and wildlife issues. Before rejecting an agency recommendation, the Commission and

the agencies must attempt to resolve the inconsistency, giving due weight to the agencies' recommendations, expertise, and statutory authority. If the Commission does not adopt a 10(j) recommendation, in whole or in part, it must publish findings that adoption of the recommendation is inconsistent with the purposes and requirements of Part 1 of the FPA or other applicable provisions of law, and that conditions selected by the Commission adequately and equitably protect, mitigate damages to, and enhance fish and wildlife, including related spawning grounds and habitat.

Section 10(a)(1) of the FPA

Resources agencies may also recommend conditions under section 10(a)(1) of the FPA. However, the Commission may accept, modify, or reject those conditions under the comprehensive development standard of Section 10(a)(1) without attempting to resolve inconsistencies or making the findings required by section 10(j).

Authority to Recommend Studies During Relicensing

The Code of Federal Regulations (CFR) at 18 CFR 16.8(b)(4) direct interested resource agencies to provide a potential applicant with written comments. The NOAA has identified studies that are necessary to assess the environmental and social consequences of the proposed relicensing. Under 18 CFR each interested resource agency and Indian tribe must provide a potential applicant with written comments:

i) identifying its determination of necessary studies to be performed or information to be provided by the potential applicant;

ii) identifying the basis for its determination;

iii) discussing its understanding of the resource issues and its goals and objectives of these resources;

iv) explaining why each study methodology recommended by it is more appropriate than other available methodology alternatives, including those identified by the potential applicant pursuant to paragraph (b)(1)(vi) of this section;

v) documenting that the use of each study methodology recommended is a generally accepted practice; and

vi) explaining how the studies and information requested will be useful to the agency or Indian tribe in furthering its resource goals and objectives.

SPECIES DESCRIPTION AND STATUS

Central Valley spring-run chinook salmon (*O. tshawytscha*) are listed as threatened under the ESA (September 16, 1999, 64 FR 50394). This ESU consists of spring-run chinook salmon occurring in the Sacramento River Basin. Designated critical habitat for CV spring-run chinook salmon includes all river reaches accessible to listed chinook salmon in the

Sacramento River and its tributaries in California, except for reaches on Indian tribal lands. Also included are river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. This critical habitat designation includes all waterways, substrate, and adjacent riparian zones. Excluded are: (1) areas above specific dams identified in the Federal Register notice; (2) areas above longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years); and (3) Indian tribal lands (February 16, 2000, 65 FR 7764).

Central Valley (CV) steelhead (*O. mykiss*) are listed as threatened under the ESA (March 19, 1998, 63 FR 13347). This ESU consists of steelhead populations in the Sacramento and San Joaquin River Basins in California's Central Valley. Designated critical habitat for CV steelhead includes all river reaches accessible to listed steelhead in the Sacramento and San Joaquin rivers and their tributaries in California, except for reaches on Indian tribal lands. Also included are river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay westward of the Carquinez Bridge, and all waters of San Francisco Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge. Excluded are: (1) areas above specific dams identified in the Federal Register notice; (2) areas above longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years); (3) Indian tribal lands; and (4) areas of the San Joaquin River upstream of the Merced River confluence (February 16, 2000, 65 FR 7764).

Following are descriptions of the general life histories and population trends of listed species that may be directly or indirectly affected by the proposed action.

Chinook Salmon

General Life History

Chinook salmon historically ranged from the Ventura River in southern California north to Point Hope, Alaska, and in northeastern Asia from Hokkaido, Japan to the Anadyr River in Russia (Healey 1991).

Of the Pacific salmon, chinook salmon exhibit arguably the most diverse and complex life history strategies. Healey (1986) described 16 age categories for chinook salmon, 7 total ages with 3 possible freshwater ages. Two generalized freshwater life-history types were described by Healey (1991): "stream-type" chinook salmon reside in freshwater for a year or more following emergence, whereas "ocean-type" chinook salmon migrate to the ocean within their first year.

Chinook salmon mature between 2 and 6+ years of age (Myers *et al.* 1998). Freshwater entry and spawning timing are generally thought to be related to local water temperature and flow regimes (Miller and Brannon 1982). Runs are designated on the basis of adult migration timing; however, distinct runs also differ in the degree of maturation at the time of river entry, thermal regime and flow characteristics of their spawning site, and actual time of spawning (Myers *et al.* 1998). Spring-run chinook salmon tend to enter freshwater as immature fish, migrate far upriver, and finally spawn in the late summer and early autumn. Fall-run chinook salmon enter freshwater at an advanced stage of maturity, move rapidly to their spawning areas on the mainstem or lower tributaries of the rivers, and spawn within a few days or weeks of freshwater entry (Healey 1991).

Central Valley spring-run chinook salmon adults are estimated to leave the ocean and enter the Sacramento River from March to July (Myers *et al.* 1998). Spring-run chinook spawning typically occurs between late-August and early October with a peak in September. Spawning typically occurs in gravel beds that are located at the tails of holding pools (USFWS 1995). Eggs are deposited within the gravel where incubation, hatching, and subsequent emergence takes place. The upper preferred water temperature for spawning adult chinook salmon is 55° F (Chambers 1956) to 57° F (Reiser and Bjornn 1979). Length of time required for eggs to develop and hatch is dependant on water temperature and is quite variable. In Butte and Big Chico creeks, emergence of spring-run chinook typically occurs from November through January. In Mill and Deer creeks, colder water temperatures delay emergence to January through March (CDFG 1998).

Post-emergent fry seek out shallow, nearshore areas with slow current and good cover, and begin feeding on small terrestrial and aquatic insects and aquatic crustaceans. In Deer and Mill creeks, juvenile spring-run chinook usually spend 9-10 months in their natal streams, although some may spend as long as 18 months in freshwater. Most "yearling" spring-run chinook move downstream in the first high flows of the winter from November through January (USFWS 1995; CDFG 1998). In Butte and Big Chico creeks, spring-run chinook juveniles typically exit their natal tributaries soon after emergence during December and January, while some remain throughout the summer and exit the following fall as yearlings. In the Sacramento River and other tributaries, juveniles may begin migrating downstream almost immediately following emergence from the gravel with emigration occurring from December through March (Moyle, *et al.* 1989; Vogel and Marine 1991). Fry and parr may spend time rearing within riverine and/or estuarine habitats including natal tributaries, the Sacramento River, non-natal tributaries to the Sacramento River, and the Delta.

Chinook salmon spend between one and four years in the ocean before returning to their natal streams to spawn (Myers *et al.* 1998). Fisher (1994) reported that 87 percent of returning spring-run adults are three-years-old based on observations of adult chinook trapped and examined at Red Bluff Diversion Dam between 1985 and 1991.

Adult Sacramento River winter-run chinook salmon leave the ocean and migrate through the Sacramento-San Joaquin Delta to the upper Sacramento River from December through June. Spawning generally occurs between mid-April and July, and occasionally into early August. The majority of winter-run chinook salmon spawning occurs upstream of Red Bluff Diversion Dam in the vicinity of Redding, California. The eggs are fertilized and buried in the river gravel where they incubate and hatch in approximately a two-month period.

Emergence of the fry from the gravel begins during early July and continues through September. Fall and winter emigration behavior by juveniles varies with streamflow and hydrologic conditions. Most juveniles redistribute themselves to rear in the Sacramento River through the fall and winter months. Some winter-run chinook salmon juveniles move downstream to rear in the lower Sacramento River and Delta during the late fall and winter. Smolting and ocean entry typically occurs between January and April.

Population Trends - Central Valley Spring-run Chinook Salmon

Historically, spring-run chinook salmon were predominant throughout the Central Valley, occupying the upper and middle reaches of the San Joaquin, American, Yuba, Feather, Sacramento, McCloud, and Pit rivers, with smaller populations in most other tributaries with sufficient habitat for over-summering adults (Stone 1874; Rutter 1904; Clark 1929). The Central Valley drainage as a whole is estimated to have supported spring-run chinook salmon runs as large as 600,000 fish between the late 1880s and 1940s (CDFG 1998). Before the construction of Friant Dam, nearly 50,000 adults were counted in the San Joaquin River (Fry 1961). Following the completion of Friant Dam, the native population from the San Joaquin River and its tributaries was extirpated. Spring-run chinook salmon no longer exist in the American River due to the existence and operation of Folsom Dam.

Natural spawning populations of Central Valley spring-run chinook salmon are currently restricted to accessible reaches in the upper Sacramento River, Antelope Creek, Battle Creek, Beegum Creek, Big Chico Creek, Butte Creek, Clear Creek, Deer Creek, Feather River, Mill Creek, and Yuba River (CDFG 1998; USFWS, unpublished data). With the exception of Butte Creek and the Feather River, these populations are relatively small ranging from a few fish to several hundred. Butte Creek returns in 1998 and 1999 numbered approximately 20,000 and 3,600, respectively (CDFG unpublished data). On the Feather River, significant numbers of spring-run chinook, as identified by run timing, return to the Feather River Hatchery. However, coded-wire-tag information from these hatchery returns indicates substantial introgression has occurred between fall-run and spring-run chinook populations in the Feather River due to hatchery practices. Additional historical and recent published chinook salmon abundance information are summarized in Myers *et al.* (1998).

Steelhead

General Life History

Steelhead exhibit perhaps the most complex suite of life history traits of any species of Pacific salmonid. They can be anadromous or freshwater resident. Resident forms are usually called rainbow trout. Winter steelhead generally leave the ocean from August through April, and spawning occurs between December and May (Busby *et al.* 1996). The timing of upstream migration is generally correlated with higher flow events and associated lower water temperatures. Unlike Pacific salmon, steelhead are iteroparous, or capable of spawning more than once before death (Busby *et al.* 1996). However, it is rare for steelhead to spawn more than twice before dying; most that do so are females (Busby *et al.* 1996; Nickelson *et al.* 1992). Iteroparity is more common among southern steelhead populations than northern populations (Busby *et al.* 1996).

Steelhead spawn in cool, clear streams featuring suitable gravel size, depth, and current velocity. Intermittent streams may be used for spawning (Barnhart 1986; Everest 1973). The length of the incubation period for steelhead eggs is dependant on water temperature, dissolved oxygen concentration, and substrate composition. In late spring and following yolk sac absorption, alevins emerge from the gravel as fry and begin actively feeding in shallow water along perennial stream banks (Nickelson *et al.* 1992).

Summer rearing takes place primarily in higher velocity areas in pools, although young-of-the-year are also abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Productive steelhead habitat is characterized by complexity, primarily in the form of large and small wood. Some older juveniles move downstream to rear in larger tributaries and mainstem rivers (Nickelson *et al.* 1992). Juveniles feed on a wide variety of aquatic and terrestrial insects (Chapman and Bjornn 1969), and emerging fry are sometimes preyed upon by older juveniles. Juveniles live in freshwater from one to four years (usually two years in the California) (Barnhart 1986), then smolt and migrate to the sea from February through April. Although some steelhead smolts may outmigrant during the fall and early winter months.

California steelhead typically reside in marine waters for one to two years prior to returning to their natal stream to spawn as three- or four-year olds (Busby *et al.* 1996).

Population Trends - Central Valley steelhead

Central Valley steelhead once ranged throughout most of the tributaries and headwaters of the Sacramento and San Joaquin basins prior to dam construction, water development, and watershed perturbations of the 19th

and 20th centuries (McEwan and Jackson 1996; CALFED 2000). In the early 1960s, the California Fish and Wildlife Plan estimated a total run size of about 40,000 adults for the entire Central Valley including San Francisco Bay (CDFG 1965). The annual run size for this ESU in 1991-92 was probably less than 10,000 fish based on dam counts, hatchery returns and past spawning surveys (McEwan and Jackson 1996).

At present, all Central Valley steelhead are considered winter-run steelhead (McEwan and Jackson 1996), although there are indications that summer steelhead were present in the Sacramento River system prior to the commencement of large-scale dam construction in the 1940's (IEP Steelhead Project Work Team 1999). McEwan and Jackson (1996) reported wild steelhead stocks appear to be mostly confined to upper Sacramento River tributaries such as Antelope, Deer, and Mill creeks and the Yuba River. However, naturally spawning populations are also known to occur in Butte Creek, and the upper Sacramento mainstem, Feather, American, Mokelumne, Calaveras and Stanislaus rivers (CALFED 2000, McEwan 2001). It is possible that other naturally spawning populations exist in Central Valley streams, but are undetected due to lack of monitoring and research programs. The recent implementation of new fisheries monitoring efforts has found steelhead in streams previously thought not to contain a population, such as Auburn Ravine, Dry Creek, and the Stanislaus River (IEP Steelhead Project Work Team 1999).

Additional historical and recently published steelhead abundance are summarized in the NMFS west coast steelhead status review (Busby *et al.* 1996) and DFG assessment of current monitoring for Central Valley steelhead (McEwan, D. 2001).

Feather River steelhead are currently listed under the ESA, but anadromous runs are currently blocked at Oroville. At this time NMFS has listed only the anadromous life form of *Oncorhynchus mykiss*.The Feather River Project (# 2100) at Oroville and the Poe Project (# 2107) just upstream are currently in relicensing proceedings. Steelhead are native to the north Pacific Ocean and in North America are found in coastal streams from Alaska south to northwestern Mexico (Moyle 1976; Busby *et al.* 1996).

Life History and Biological Requirements

Steelhead spend from one to five years in saltwater, however, two to three years are most common (Busby *et al.* 1996). Some return as "half-pounders" that over-winter one season in freshwater before returning to the ocean in the spring. The distribution of steelhead in the ocean is not well known. Coded-wire tag recoveries indicate that most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986).

The timing of upstream migration is correlated with higher flow events, such as freshets or sand bar breaches, and associated lower water temperatures. The minimum stream depth necessary for successful upstream migration is 13 cm (Thompson 1972). The preferred water velocity for upstream migration is in the range of 40-90 cm/s, with a maximum velocity, beyond which upstream migration is not likely to

occur, of 240 cm/s (Thompson 1972; Smith 1973). There are two types of steelhead, summer steelhead and winter steelhead. Summer steelhead return to freshwater during June through September, migrate inland toward spawning areas, overwinter in the larger rivers, and then resume migration to natal streams and spawn (Meehan and Bjornn 1991). Winter steelhead return to freshwater in autumn or winter, migrate to spawning areas, and then spawn in late winter or spring. Upstream migration of winter steelhead occurs from September through May with the peak run occurring in February (CDFG 1997). Most spawning takes place from January through April. Steelhead may spawn more than once before dying (iteroparity), in contrast to other species of the *Oncorhynchus* genus. Repeat spawning rates typically range from 13-24 percent in California coastal streams.

Because rearing juvenile steelhead reside in freshwater all year, adequate flow and temperature are important to the population at all times (CDFG 1997). Generally, throughout their range in California, steelhead that are successful in surviving to adulthood spend at least two years in freshwater before emigrating downstream. Emigration appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year with the largest numbers of age 0+ and yearling steelhead moving downstream during spring and summer. Smolts can range from 14-21 cm in length.

Steelhead spawn in cool, clear streams featuring suitable water depth, gravel size, and current velocity. Intermittent streams may be used for spawning (Barnhart 1986; Everest 1973). Reiser and Bjornn (1979) found that gravels of 1.3-11.7 cm in diameter and flows of approximately 4 cfs were preferred by steelhead. The survival of embryos is reduced when fines of less than 6.4 mm comprise 20-25 percent of the substrate. Studies have shown a higher survival of embryos when intragravel velocities exceed 20 cm/hr (Phillips and Campbell 1961; Coble 1961). The number of days required for steelhead eggs to hatch is inversely proportional to water temperature and varies from about 19 days at 15.6°C to about 80 days at 5.6°C. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986).

Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is extremely important in determining distribution and abundance, with more cover leading to more fish (Bjornn and Reiser 1991). Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, they become inactive and hide in any available cover, including gravel or woody debris.

Water temperature influences the growth rate, population density, swimming ability, ability to capture and metabolize food, and ability to withstand disease of these rearing juveniles (Barnhart 1986; Bjornn and Reiser 1991). Rearing steelhead juveniles prefer water

temperatures of 7.2-14.4°C and have an upper lethal limit of 23.9°C. They can survive up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

Dissolved oxygen (DO) levels of 6.5-7.0 mg/l affected the migration and swimming performance of steelhead juveniles at all temperatures (Davis *et al.* 1963). Reiser and Bjornn (1979) recommended that DO concentrations remain at or near saturation levels with temporary reductions no lower than 5.0 mg/l for successful rearing of juvenile steelhead. Low DO levels decrease the rate of metabolism, swimming speed, growth rate, food consumption rate, efficiency of food utilization, behavior, and ultimately the survival of the juveniles.

During rearing, suspended and deposited fine sediments can directly affect salmonids by abrading and clogging gills, and indirectly cause reduced feeding, avoidance reactions, destruction of food supplies, reduced egg and alevin survival, and changed rearing habitat (Reiser and Bjornn 1979). Bell (1973) found that silt loads of less than 25 mg/l permit good rearing conditions for juvenile salmonids.

Pacific Lamprey

Pacific lamprey (*Lampetra tridentata*) are found from Hokkaido Island (Japan) through Alaska, and down to Baja California, and have been observed in Deer Creek, approximately 440 km from the ocean (Moyle 2002). Lampreys are also called eels, and are an important cultural species to native Americans. The Eel River derives its name from a large run of lampreys. Lampreys are presumed to migrate upstream between February and June, although migrations in the Mokelumne river can occur outside of this window. Lampreys are an important component of riverine ecosystems, and along with salmon can bring scarce nutrients from the marine environment. Lampreys are at risk of extinction (Close et al 2002).

PROJECT IMPACTS ON ANADROMOUS FISHES

Salmonids require cool, clear, running water to support their freshwater life history stages (Bjornn and Reiser 1991). Incubating salmon eggs require clean gravel substrates. Juvenile habitats typically consist of free-flowing streams providing a complex of alternating shallow, swift riffles and low-velocity pools with abundant cover in the form of woody debris, boulders, and undercut banks. Dams convert natural stream habitats to artificial pond environments.

Habitats for salmonids are adversely affected by Project facilities because dams change stream flow patterns, reduce habitat diversity, diminish water quality, and create barriers to the natural instream movements of salmonids. Dams can also enhance the quality of habitats for species that are predators of juvenile salmon and steelhead.

NOAA RESOURCE GOALS AND OBJECTIVES

Resource Goals

1. Protect, conserve, enhance and recover native anadromous salmonids and their habitats by providing access to historic habitats and by restoring fully functioning habitat conditions.

2. Identify and implement measures to protect, mitigate or minimize direct, indirect, and cumulative impacts to, and enhance native anadromous salmonid resources, including related spawning, rearing, and migration habitats and adjoining riparian habitats.

Resource Objectives

If passage for anadromous fish is made available into the upper Feather River, some or all or the following objectives may be promoted to facilitate the protection, mitigation, or enhancement of anadromous fish species, and their associated terrestrial ecosystems. Other objectives may be promoted as new information and legislation becomes available.

1. ***Flows*** - Implement scheduled flows in the North Fork Feather River and regulated tributaries to the benefit of native anadromous salmonids and their habitats. This includes providing a range or schedule of flows necessary to: a) optimize suitable habitat; b) stabilize flows during spawning and incubation of ingravel forms; c) facilitate the efficient migration of spawning adults, safe and timely emigration of smolts, and movement of rearing juveniles between feeding and sheltering areas; d) ensure redd placement in viable areas; and e) perserve channel forming processes, riparian habitat protection, and maintenance movement of forage communities. This also includes impacts of flood control, irrigation, or other project structures or operations that act to displace individuals or their forage or destabilizes, scours, or degrades physical, chemical, or biological quality of habitat.

2. ***Water Quality*** - Modify project structures or operations necessary to mitigate direct, indirect, or cumulative water temperature and quality impacts associated with project structures and operations or enhance water temperature and quality conditions in salmonid habitat.

3. ***Water Availability*** - Coordinate operations with other projects, programs or initiatives, and/or use water transfers, water exchanges, water purchases or other forms of agreements to maximize potential benefits to anadromous salmonids that are affected by limited water supplies.

4. ***Fish Passage*** - At such time as access is provided for anadromous fish to the Upper North Fork Feather River, NOAA may find that passage to historic spawning, rearing and migration habitats within or near the project is necessary to complete their life cycles and utilize seasonal

habitats necessary to contribute to the recovery of chinook salmon, steelhead and other species of concern. Access into the Project may include passive or active structures or devices which provide upstream and/or downstream passage. Passage within or near of the Project boundary may include modifications to project facilities and operations necessary to ensure the safe, timely, and efficient passage of upstream migrating adults, downstream passage of emigrating juveniles, and passage necessary for juveniles to access habitat necessary for the seasonal movement of rearing juveniles to feeding and shelter habitats.

5. ***Channel Maintenance*** - Implement flow regimes and non-flow related measures necessary to mitigate and minimize direct, indirect, and cumulative impacts of project facilities and operations on sediment movement and deposition, river geometry, and channel characteristics. This includes impacts on stream competence, capacity, flood plain conductivity, bank stability and extent, duration, and repetition of high flow events. In addition, this includes impacts to habitat diversity and complexity such as pool riffle sequencing and instream cover.

6. ***Hatchery Operations*** - Minimize and mitigate the impact of hatchery facilities and/or operations (e.g. fish stocking) on native, anadromous salmonids. This includes the direct, indirect, and cumulative impacts of hatchery product on anadromous salmonids and the direct, indirect and cumulative impacts of hatchery facilities and operations on salmonids and their habitats.

7. ***Predation*** - Minimize and mitigate the impact of Project structures or operations that either have in the past or continue to introduce predators, create suitable habitat for predators, harbor predators, or are conducive to the predation of native anadromous salmonids.

8. ***Riparian Habitat*** - Protect, mitigate or minimize direct, indirect, and cumulative impacts to, and enhance riparian habitat and habitat functions necessary to mitigate and minimize direct, indirect and cumulative impacts of project facilities and operations.

9. ***Flow Ramping*** - Modify project structures or operations necessary to minimize impacts of flow fluctuations associated with increases of decreases in project discharges. Flow modifications may be necessary to provide passage at artificial or natural barriers (e.g. Seneca Falls, a partial barrier for salmonids at low flow).

10. ***Coordination*** - In developing alternatives for relicensing, include a full range of alternatives for modifying project and non-project structures and operations to the benefit of anadromous salmonids and their habitats, while minimizing conflicts with operational requirements and other beneficial uses. This includes developing alternatives for greater coordination with other stakeholders and water development projects to ensure that, at a minimum, project structures and operations are consistent with on-going and future fishery restoration efforts and potentially enhance these efforts.

SPECIFIC COMMENTS FOR THE DRAFT APPLICATION

Section

E3.1.6 **Barrier Identification:** The draft application does not identify major project features in its analysis. Table E3.1.6-1 does not identify Lake Almanor Dam or Belden Dam (at Caribou Afterbay) in its list of Potential Barriers Identified on Maintstem NFFR, and are only tangentially mentioned in the accompanying analysis. These dams are major features of the Project and significant passage barriers, constructed on historic anadromous salmonid habitat.

According to this analysis, Butt Creek contains small man-made barriers not considered "definate" (Class 1-2), leading to the conclusion that Butt Creek was also historic anadromous salmonid habitat. Butt Valley Dam should also be considered. The exclusion of the Hamilton Branch Project (# 2627) from this analysis and others further demonstrate that the Licensee's proposal for its inclusion into Project # 2105 is ill-considered. (see Figs. E1-5, E4-D-1, etc.).

E3.1.4 **PCB Analysis:** Review of Table 3.1.4-1 and results presented in Appendix E3.1-2 (Vol. 6) show that Total PCB's exceed the Maximum Toxic Residue Levels (MTRLs) for 10 of the 15 fish sampled. Further study of this issue should be initiated to determine the effects upon fisheries and wildlife downsteam of the Belden PCB spill.

E3.1-10 **IFIM Report:** The draft Application provides data and findings from an instream flow study conducted on the diverted stream reaches of the UNFFR and lower Butt Valley Creek (IFIM Report, Appendix E3.1-10, Vol. 7). In comparing habitat availability and observed habitat use, PHABSIM data indicates that adult rainbow trout and Sacramento suckers use deep-water habitat in higher proportions than predicted, and exhibit a greater proportional use of higher velocity water (Figs. 19 and 22, Appendix E3.1-10). The HSC curves developed for this project may not adequately represent this preference for deep, fast habitat because of 1) the ptoentially restrictive range of available habitats at the lower range of flows where fish were observed, and 2) the removal of data points representing fish observations in deep, fast water for the 'Adjusted-Use/Availability" HSC curves (Appendix E3.1-11, Vol. 7). The potential for bias from these sources should be explored, and corrected at higher stream flows when the full range of habitats would be available.

Licensee-proposed bypass flows of 75 cfs to the Seneca reach and 140 cfs to the Belden reach are not consistent with IFIM study findings for providing optimum weighted usable area for species and life stages evaluated (Appendix E3.1-10, Vol. 7). The flow releases are also not great enough to achieve coldwater temperatures throughout the Belden reach that would be protective of salmonid species during summer months of all water year types (Appendix E2-H). The final Application should present a discussion of criteria used in determining proposed flow release levels. In addition, the Licensee would benefit from establishing a collaborative team involving praticipation by resource agencies responsible for managing and protecting aquatic resources, NGO's and other interested parties that could assist in developing a flow regime for the controllable Seneca and Belden reaches.

ADDITIONAL STUDIES AND INFORMATION REQUESTS

The Licensee should provide a model of the genetic stucture and gene flow for rainbow trout/steelhead. This analysis should focus on the potential for North Fork Feather River (and tributary) populations to contain characters which may now or in the future incease the vigor of the wild Central Valley rainbow trout/steelhead gene pool.

In coordination with the Feather River Project relicensing (Project # 2100), the Poe Project relicensing (Project # 2107), the Rock Creek/Cresta License (Project #1962) and other current or former licensing or relicensing efforts as appropriate, study the feasibility of reintroducing anadromous salmonids into their historical Feather River basin habitat above Oroville (Feather River) dam. This study should include a quantitative, but reasonably limited analysis of available spawning, holding and rearing habitat. All potential fish passage devices should be considered, and a GIS-based decision tool created to enable resource agencies and relicensing participants to consider the appropriateness of individual methods for upstream and downstream passage at each Project.

Similarly, in coordination with other Feather River projects, an analysis should be conducted of the potential for the Project to affect water temperature through the North Fork Feather River and to the Thermalito Afterbay outlet. A mathematical model which demonstrates this potential in years of high precipitation and in drought conditions would benefit fisheries mangers in their analysis.

The Project 2105 Application should include additional analysis of historic or potential historic anadromous fish habitat in the North Fork Feather River and its tributaries upstream from the confluence with the East Branch of the Feather River. Analysis products should include GIS-based maps of these habitats. Data collected for the IFIM analysis should be analyzed for applicability to spring chinook salmon, and additional data should be collected if needed.

An analysis of the potential to restore habitat on the basis of increased flow into the Seneca and Belden reaches should be performed, particularly with respect to control of Himalayan Blackberry and other exotic species.

The Licensee should survey available literature and newspaper reports to establish the historical migratory extent of Pacific lamprey in the North Fork Feather River. Future fisheries studies should take into account that landlocked forms of Pacific lamprey occur in several California locations, so that careful discrimination between Pacific and river lamprey can be made.

CONCLUDING COMMENTS

NOAA wishes to ensure that any actions taken by the Licensee would neither limit nor preclude alternatives for the successful reintroduction of anadromous salmonids to historical habitat or other habitat that could be used for protection, mitigation and enhancement measures. If the Licensee wishes to explore these actions, the Licensee should ensure that discussions are held with NOAA and other agencies in a timely manner.

As requested by other resource agencies, a true collaborative effort should be initiated to assist the Licensee in developing protection, mitigation, and enhancement measures for inclusion in a final Application for License of project 2105. The collaborative setting should allow for representation by state and federal resource agencies, local agencies and governing bodies, NGO's and interested user groups, shoreline landowners, and the public at large. The collaborative development of PM&E's and a flow regime that balances the beneficial uses of water bodies affected by operation of Project 2105 will provide a final document that bests meets the needs of all user groups invested in this region and leads to a successful and timely relicensing of the Project.

Information obtained from reviews of existing information related to anadromous salmonid history, status, habitat, and limiting factors will be used along with information on the effect of Project operations to describe direct and indirect effects of existing Projects on anadromous salmonids and their habitat in the Feather River. Information related to Project operations will be developed from the results on hydrology studies. Information on existing effects of the Projects and proposed Project alternatives will be used with information obtained from other projects in the basin to assess cumulative effects on anadromous salmonids and their habitats.

At such time as fish passage is implemented on the Feather River, NOAA reserves all authorities to have further anadromous fisheries and environmental studies performed, to have physical or computational models constructed, and to have devices installed or operations implemented which will accomodate anadromous fishes. If you have specific questions or comments concerning this letter please contact Mr. Eric Theiss, at 916-930-3613, or Eric.Theiss@NOAA.GOV.

Sincerely,

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National Park Service letter
July 15, 2002

United States Department of the Interior

NATIONAL PARK SERVICE
California Hydro Program
801 "I" St., Suite 156-B
Sacramento, California 95814

IN REPLY REFER TO:

July 15, 2002

Mr. Tom Jereb
Mail Code N11C
Pacific Gas & Electric Co.
P. O. Box 770000
San Francisco, CA 94177

Subject: Draft Application, Upper North Fork Feather River (UNFFR), FERC # 2105

Dear Mr. Jereb:

The National Park Service (NPS) submits the following comments on the subject document under FERC regulations 18 CFR Section 16.8(b)(4). Under the National Park Service Organic Act (39 Stat. 535), Outdoor Recreation Act (Pub Law 88-29), the Wild and Scenic Rivers Act (Pub. Law 90-542), Council on Environmental Quality Guidelines (45 FR 59190-59191) and Federal Energy Regulatory Commission Guidelines the NPS is authorized to provide technical assistance for recreation planning in the licensing of hydropower facilities. It is the policy of the NPS to represent the national interest regarding recreation, and to assure that hydroelectric projects subject to re-licensing recognize the full potential for meeting present and future public outdoor recreation demands while maintaining and enhancing a quality environmental setting for those projects.

The following comments are based on a review of The Project Resource Summary and Report E5, Recreational Resources, and applicable appendices of the subject document (hereafter referred to as the "Draft").

- **General Comments:**

  - Need for Collaboration -Throughout the UNFFR proceeding there has been a tendency for the licensee to deal with resource agencies and non-governmental organizations separately on a issue-driven, ad hoc basis. For example, it seems that the "2105 Committee" has driven Lake Almanor's shoreline management and reservoir recreation agenda while the various resource agencies delved into the environmental and downstream recreation affects for the entire project. Not surprisingly, there are major philosophical divisions among the stakeholders relative to lake level vrs. instream flow for environmental and instream recreation purposes. As we approach the Final Application, we appear to be on a collision course that should be corrected immediately. Our view is that the licensee should commit to a comprehensive collaborative effort which brings all of the diverse stakeholders together to work through these, and other, critical issues. This approach worked well on both Rock Creek/Cresta Settlement and works

well for the ongoing Poe proceeding. We think that same model should be employed on this project. We recommend that a collaborative be established as soon as possible so that we can begin the process of conflict resolution and reaching agreement on Protection, Mitigation, and Enhancement measures.

- Watershed Approach - Generally, the licensee controls the North Fork Feather River watershed from its headwaters to its terminus at Lake Oroville. The primary project features (Lake Almanor and Butt Valley) and operational regime have a direct influence on all downstream river reaches. The prospect of the Hamilton Branch amendment to UNFFR following this proceeding extends this sphere of influence further. We believe that the Draft fails to adequately address the affects of UNFFR (e.g. critical parameters such as instream flow and water temperature) on the overall system. We recommend that a more comprehensive, watershed approach be adopted for UNFFR which adequately identifies and addresses the totality of the project's affects.

Specific Comments:

- Section 1.4 states that PG&E intends to file an application to include the Hamilton Branch project in Project 2105's license. Along with most of the other agencies and stakeholders in this project, NPS strongly objects to including Hamilton Branch in this proceeding at this time. There has been no first-stage consultation or scoping for Hamilton Branch and we will not comment on any aspect of that project in this response.

- Section 1.2 - NPS supports the modification of Prattville intake area to achieve selected withdrawal of cooler water into the Prattville Tunnel and subsequently cooling of downstream reaches of the NFFR. The maintenance of a cold-water fishery is a stated objective for water quality.

- Section 3.2 – PG&E proposes to increase year-round minimum instream flow to 75 cfs on the Seneca Reach. It is stated that "one group of recreational users (i.e anglers) indicated a preference for higher instream flow than what the Licensee is proposing, others have indicated a preference for lower flows". I remind you that the whitewater user group indicated a preference for considerably higher flows (250-400 cfs) to provide boatable recreation on the Seneca reach. These higher flows would be seasonal and could be intermittent to support boating on summer weekends, similar to what is being done on Rock Creek/Cresta directly downstream of the project.

- Section 3.2 – PG&E proposes to increase year-round minimum instream flow to 140 cfs on the Belden Reach. Again the preference of a significant user group, whitewater boaters, was ignored. The whitewater boating study which PG&E conducted in 2000 demonstrated that there was a consensus for flows of approximately 850 cfs for optimal boatability. Again, these higher flows would be seasonal and could be intermittent to support boating on summer weekends, similar to what is being done on Rock Creek/Cresta directly downstream of the project.

  For both the Seneca and Belden Reaches, whitewater boaters' stated preferences were not mentioned. We recommend that the licensee revisit the

results of the whitewater boating study (Section E5.2.8.) and accurately incorporate the findings in Section 3.2. It is also disturbing to see repeated references to Foothill Yellow Legged Frogs (FYLF) as a criteria/rationale for limiting instream flow. This is in conflict with the fact that the species has not been observed in these reaches, habitat has been characterized as poor to moderate, and PG&E's own amphibian biologist has indicated that the species doesn't appear to populate regions at this elevation. FYLF is not currently listed as threatened or endangered, so the "taking" issue is fairly moot.

- Section 3.2, Pulse Flows – We are disappointed with your conclusion that intermittent/seasonal pulse flows will not be made and that they would have minimal benefit if they were. Pulse flows in the Spring and early Summer would serve to mimic the natural hydrograph for the NFFR and mobilize sediment and gravel. In as much as Lake Almanor's authorized maximum water surface elevation is six feet below the spillway crest, we question your statement that pulse flows (ostensibly caused by spill) have occurred since the dam was constructed. Other project dams are also unlikely to spill. Again the reference to FYLF seems irrelevant.

- Section E5.1.1.1. - Objectives of the Study – It is stated that the focus of this study was on the Project's most popular recreational water-based and land-based activities. We agree that these activities are primarily concentrated on Lake Almanor and Butt Valley Reservoir.

- Section E5.1.1.4.1 – Town of Tobin is southwest of the Project on Hwy 70, not north.

- Section E5.1.1.4.2 – Dam releases for whitewater boating were provided for in the new FERC license for Rock Creek/Cresta projects and began on June, 2002. As a license condition, these will continue. So in addition to "intermittent"/ seasonal spill, scheduled flows are occurring on these reaches.

- E5.1.1.4.4.2, Reservoir Based Recreation – I believe that there are considerably more developed campsites on Lake Shasta than exist at Lake Almanor.

- E5.1.1.4.5.4., Estimates for Future Demand – You should define "Non-motorized boating". Does this include kayaks and rafts? Since the focus of the recreation report is on reservoirs, it could be construed as applying only to row boats and canoes (flat-water crafts). Most literature separates these categories and the demand for the two is quite different.

- E5.1.1.4.5.1, Existing Demand – Based on Tables E5.1.1.5 and E5.1.1.6, it may be concluded that respondents are generally opposed to changing anything about the recreational developments in the Project. Only the addition of shower facilities in campgrounds approaches any type of majority consensus for additional facilities and services.

- E5.1.1.4.5.4, We question the use of the existing demand figures for California in Table E5.1.1-7, based on the 1997 CA Opinion and Attitudes for Outdoor Recreation conducted by DPR, as representative of the project area. Kayaking, canoeing and rafting have consistently been shown to be among the fastest

growing activities in the state and was cited in the Poe Project Application as being very popular on the NFFR. Despite the national and region trends cited in Table E5.1.1-9 showing rafting/floating to be the highest projected activity (at 47%) that activity is summarily discounted throughout the Draft.

- E5.1.1.4.5.4, We would argue that beach use, picnicking, camping, and biking are facility-dependent. Whether at the reservoirs or stream reaches, these activities are concentrated around developed sites. A great deal of the biking takes place on the Lake Almanor Recreation Trail (LART), a Class 1 bike trail on Lake Almanor's west shore.

- E5.1.2.3, Methods – The Pacific Crest Trail is a National Scenic Trail. National Recreation Trails are a different classification, an example being the LART which is a candidate for this designation. We suggest the more generic term "Designated National Trails and Rivers".

- E5.1.2.3.2, Facility Condition – What was the level of response from private recreation facility owners/managers? Private facilities constitute a significant percentage of opportunities on the Project and it is important to fully characterize their contribution.

- E5.1.3.4.2.2, Vehicle Access to Shoreline – We view the prolific, uncontrolled expansion of vehicular access as being a leading reason for the multitude of dispersed day use and camping sites within the project. These dispersed areas are where most of the resource degradation is occurring along shorelines and river reaches. This problem is compounded in drought years (i.e. 2001) when lake levels are low. We recommend that more use be directed at developed sites and that unauthorized access roads be methodically barricaded and scarified. This is a clear instance where management action may be effective.

- E5.1.3.4.2.13, ORV Use – Off Highway Vehicle (OHV) is a more common/contemporary term. OHV's have a deleterious affect on the Lake Almanor shoreline, particularly in the Southwest section. This has been especially prevalent during periods of low lake level, as was the case the year the surveys were conducted. Although OHV use is not permitted below 4494 ft. elevation, it occurs commonly. OHV use around Lake Almanor should be restricted, if necessary by placing physical barriers at popular access points.

- E5.2, Existing and Potential Recreation Use and Needs Analysis – The Whitewater Boating Study's controlled flow study was conducted in 2000, not 2001.

- Table E5.2.1-1, Questionnaire Survey – The surveys were conducted, for the most part, during 2001, a critically dry year with extremely low lake level. It is questionable if survey responses, especially those conducted with water-based recreationists (i.e. reservoir boat users), are representative for normal years. Your conclusion that "these conditions likely contributed to negative visitors responses" implies that survey results may negatively biased. Given that, it may be that only the residential users would have a broad/experienced perspective sufficient enough to reflect on conditions under more normal lake levels.

Additional surveying may be necessary in a normal water year to gain more representative perspectives from reservoir users.

It would be beneficial to know where visitors were coming from (place of residence). The question is not asked in the Recreation Visitor Survey unless the respondent agreed to the followup mail out interview. It is unclear whether or not that information was pulled off of the optional followup section of the survey, compiled, and reported in the Draft.

- E5.2.1.3, Overall Survey Study Area - The study area was restricted to an area of .25 miles from the project boundary. Some of the developed sites and many of the dispersed sites and "overflow areas" around the reservoirs and river reaches are beyond .25 miles. You would be unable to determine the number of visitors displaced by crowding without sampling these outlying areas. We are in agreement with USFS contention that the study area should have been expanded to at least one mile in order to capture the full range of project-related affects on recreation facilities, opportunities, and use.

- E5.2.1.4.2.4, Survey Comparison – The level of stratification based on day of the week for the Lake Almanor Visitor Survey is questionable. Sampling only 1 non-holiday weekday, out of 14, and that was a Friday. Friday's are not typically viewed as being representative of weekdays. Some 86% of the surveying was conducted on one day of the week, Saturday. This conflicts with the level of randomness and stratification described in Study Plan #11 and reiterated in the Draft.

- E5.2.1.5.2 , Area Resident Survey – The licensee did not achieve the intended 40% of the 1,625 surveys mailed out? The 19% response from Chester and surrounding towns is particularly troublesome. There is no qualitative information regarding recreational use (participation) included in this survey. Area residents represent the bulk of reservoir users, yet very little is known about their recreational preferences and profiles. Therefore, this important user group's recreational interests are not adequately understood or represented.

- E5.2.1.6, Private Business Owner Survey, Methods – There was no query for qualitative information regarding recreational use (participation) included in this survey. Several businesses on Lake Almanor dominate the resorts and marina/service sectors and their participation/views would be significant indicators of recreational use and trends. But only one such business owners/operators was solicited, and they didn't respond. We can think of no better source of anecdotal and qualitative information regarding reservoir boating activities on the Lake. While we understand that resort owners were also invited to the shoreline management public meetings, their input is not captured (and therefore their perspective is not reflected) in the Draft. Feedback from these specific businesses would have been a valuable source of information, especially when combined with the literature/data review (USFS and Licensee use data), and visitor use survey in the interest of validating findings and conclusion.

- Table E5.2.1-1, "Survey Sample Schedule and Frequency" is referenced, but was omitted from the section. This is a critical table that would likely answer some of the noted concerns. Communications with the licensee's consultants

have served to clarify the schedule and frequency somewhat. It does appear that Butt Valley and other areas were surveyed on a more stratified basis.

- **Conclusion on Survey Effort**– We obviously have serious concerns with the Questionnaire Survey results and conclusions. Section E5.2.1 does not adequately reference applicable Appendices for supporting information. Without a user-friendly method of navigating between the two documents it is very difficult to determine the extent to which Study #11, Questionnaire Survey, was followed. There is little level of detail regarding methodology in the Draft's text. Therefore, we are left with a number of unanswered questions including:

  - What were the size of the target populations and sample sizes?
  - What were the response rates for the various surveys? (EDAW subsequently furnished summaries of response rates)
  - What was the method of random selection (why were 86% of visitor surveys for Lake Almanor conducted on Saturdays if this was truly "random" surveying)?
  - Why was only one resort/marina owner/operator solicited on Lake Almanor, and none ultimately surveyed?
  - What is a consensus of preferences and concerns of users from Chester and other surrounding towns?

  We believe that the licensee should consider conducting an additional visitor use survey season (probably 2003) for the following reasons:

  - Surveys were conducted in an abnormal, unrepresentative year in terms of lake level and visitation.
  - The study area should extend beyond .25 miles from shorelines and river reaches because it does not accurately take into account the full affect of project-related use and impact.
  - Survey methodology was not adequately stratified as described in the Study Plan #11 for Lake Almanor visitors in which data for non-holiday weekday use data was not collected.

- E5.2.2.6, Summary of Recreation Use – We reiterate that the 2001 survey season was not representative of a normal recreation summer on the project. In addition to the licensee's traffic counts and observations, we would like to see historic use data, provided by the USFS, integrated into these findings to balance out the effect of the off-season. We agree with the observation that the developed campgrounds on the Belden Reach have inadequate capacity. On any given summer weekend the three campgrounds will be filled to capacity, forcing campers into adjacent dispersed sites.

- E5.2.3.3., Methodology for Assessing Boating Use Levels – Again, any conclusions drawn from the Reservoir Boating Study must be tempered by the low lake level conditions. And, again, the limitations of survey frequency (exclusively on Saturdays and holidays) coupled with the limited observation time periods (1:00 – 3:00 PM) compromise the value of these finding for making general conclusions. There are over 1,000 private homes, most of which have private boat docks, and a preponderance of retired people on the Lake. These

people use the Lake throughout the week at all hours. Most are engaged in fishing which is typically done in the morning or late afternoon (not between 1:00 and 3:00 PM). This represents an important user group which may not have been contacted or surveyed. A broader time frame, including weekdays and prime fishing periods of the day, should be used in subsequent surveying efforts to adequately capture the use levels and characteristics of resident boaters.

- E5.2.3.4.1.1., Accident Statistics - Table E5.2.3-2 indicates that accidents, injuries, and deaths have declined to a point that boating safety on Lake Almanor wouldn't appear to be an issue. In two historical critically dry years (1991 & 1994) there were relatively high accident rates. Yet in 1992, another critically dry year, there were none. In the critically dry survey year, 2001, there was 1 accident with no injuries or deaths. For a lake this size and given the level of use, that is an astonishing statistic. It can be surmised that boaters have successfully adapted to low lake levels over time. Plumas County law enforcement officials did not find the boating safety issue important enough to comment on. In view of all of this, it is surprising that focus group interviews identified boating safety as a "primary concern".

- E5.2.8, Whitewater Boating Study – We commend the licensee for conducting this study under controlled flow conditions. The study was well organized, designed, and executed. The level of participation was more than adequate to provide for a range of skills and different types of craft under different flow regimes.

- E5.2.8.1.1, Again, the Whitewater study was conducted in Fall of 2000, not 2001. This is a recurring error throughout the Draft.

- E5.2.8.4.1.1, Belden Reach Results – Post run preference for flow levels was 850 cfs for the majority of boaters. A vast majority (75%) of the boaters reported that they would probably, or definitely, return at that flow. As stated in the comment on Section 3.2, this conflicts with the licensee's contention that "only one group indicated a preference for higher base flows than what the licensee is proposing".

- E5.2.8.4.1.2, Seneca Reach Results – Post run preference for flow levels was 410 cfs for the majority of boaters. Virtually all of the boaters reported that they would probably, or definitely, return at that flow. Again, this conflicts with the licensee's contention that "only one group indicated a preference for higher base flows than what the licensee is proposing".

- **Conclusion on Whitewater Boating** – The Whitewater Boating Study consultants concluded that "the variation of the hydrograph through the year would provide a greater diversity of high quality recreation than current regimes". Based this conclusion and on our assessment, we recommend that the licensee reconsider it's position of denying increased flows for recreation. PG&E should work collaboratively with the resource agencies (including NPS) and boating organizations to fashion an agreement that accommodates whitewater boating. Whitewater boating has repeatedly been shown to be in high demand in the region and supporting it on the UNFFR project expands opportunities for boating in the NFFR complex. It should also be noted that the Class IV/V opportunities

on the Seneca reach complements similar sections of the Rock Creek-Crest project while the Belden reach offers much-needed opportunity for Class III boaters. We view this as an opportunity to complement the recreational opportunities being offered downstream.

- We are unaware that the "whitewater community" has been approached this year to discuss the advantages and disadvantages of providing recreational flows in the Seneca and Belden Reaches as is envisioned on page E5-1096. We would agree that additional consultation is needed before a final decision is made on providing recreation flows.

- E5.2.0., Recreation Needs Analysis – The conclusions in this section should be tempered by the fact that the Visitor Surveys (use and impact) were conducted in a critically dry water year and corresponding low lake levels.

- E5.2.9.4.1.6., Overall Trail Needs – Although we question the feasibility of a bicycle trail which circumnavigates Lake Almanor in it's entirely, we fully support the need for connecting the trail from the town of Chester to the Canyon Dam boat launch.

- E5.4, Recreation Proposals – We find these proposed PM&Es to be insufficient and unacceptable for the following reasons:

    - The vast majority of proposed developments and/or improvements would occur only if certain use thresholds are met and, even then, during the final decade of the new license (2025-2035). For example, the only significant proposal in capital investment terms ($4 million), the Southeast Zone campground, is projected for the last decade of the license term.

    - Less than 1% of the projected capital improvements will occur on river reaches. While it is understood that Lake Almanor and, to a much less extent, Butt Valley Reservoir constitute the majority of use on the project it would seem appropriate to invest something in the river reaches most affected by the project. In view of the level of use documented in the Belden Reach in USFS campgrounds there would seem to be a need to invest in that area. Investment might include the removal of riverine bramble on the Belden Reach, by hydrological or mechanical means, to afford access by boaters and anglers.

    - Considerable credit is taken throughout this section for meeting ADA standards. It is likely that within the expected 30-year license term that virtually all facilities would require major maintenance or replacement which will require the licensee to meet these standards anyway.

To date, the Recreation Resource Management Plan (RRMP) remains an "annotated outline", buried in Volume 8. We look forward to its completion prior to the release of the Final Application so that we can review and respond to it appropriately and in a timely manner. We also look forward to the responses from the U. S. Forest Service, other agencies with mandatory authority, and stakeholders to specify more substantive and appropriate PM&E measures to be included in the Final Application.

We appreciate the opportunity to provide input to this Draft and intend to stay fully engaged in this project throughout it's proceeding. Please contact me at (916) 414-2355 for further assistance or questions.

Sincerely,

Harry Williamson
Northern California Hydro Coordinator

cc:
Magalie R. Salas, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426 (efiled)
Sharon Storher, State Water Resources Control Board, 901 P St., 3rd Floor, Sacramento, CA 95812 (email)
Mike Meinz, California Dept. of Fish and Game, 1701 Nimbus Rd., Rancho Cordova, CA 95670 (email)
Bill Dennison, Plumas County Board of Supervisors (email)

Plumas County letter
July 25, 2002

BOARD OF SUPERVISORS

COPY

July 25, 2002

Mr. Tom Jereb
Mail Code N11C
Pacific Gas & Electric Co.
P. O. Box 770000
San Francisco, CA 94177

Subject: Draft Application, Upper North Fork Feather River (UNFFR), FERC # 2105

On January 8, 2002 the 2105 Committee presented their goals and objectives to PG&E for inclusion in the Draft Application. The Committee has always maintained consistency in relation to the core values:

- Water Level Operations Agreement
- Water Quality Monitoring Program
- Comprehensive Recreation Plan
- Public Access
- Erosion
- Public Safety
- Incremental Improvements Plan

The duly elected Board of Supervisors recognizes this new license will have a significantly profound effect on Plumas County's ability to build and maintain recreational infrastructure in Plumas and neighboring Lassen County for 30 or 40 years.

The failure of the Draft Application to address these core issues in an orderly and concise manner diminishes the 2105 Committee's ability to collaborate on master planning issues and engage the community. It is our request that PG&E revisit the intent of our goals and objectives for the new license application FERC Project 2105.

520 MAIN ST., ROOM 309 • QUINCY, CALIFORNIA 95971 • (530) 283-6170 • FAX (530) 283-6288

What is the 2105 Committee?

The 2105 Committee is a committee appointed by the Plumas County Board of Supervisors. When the Relicensing of Project 2105 was initiated, the Board of Supervisors was acutely aware that the economic vitality and social life of the County would be seriously impacted. Furthermore, the four major elements of the Project 2105 are in their entirety within Plumas County:

1) ***The Headwaters of the North Fork Feather River***
2) ***Lake Almanor***
3) ***Butt Lake***
4) ***Belden***

This relationship to the local community thus established, the 2105 Committee is a volunteer advisory counsel to assist and advise the Board on matters pertaining to Lake Almanor and FERC relicensing. Through the intimate connections that bind a community together, and from the vast intellectual resources of the members, this committee refutes many of the findings of PG&E, and finds most of the conclusions represented in the Draft Application to be in conflict with local needs and the philosophy of the ***Electric Consumer Protection Act.*** These items will be discussed later in this submittal.

Lets Look at PG&E's 72 Year Record

In an effort to learn from the past before we are condemned to repeat it, we cite the disappointing condition of current facilities[1], the meager provisions for the current needs of the community[2], failure to incorporate growth analysis in future planning,[3] and inadequate cost analysis for build-out projections.[4]

We would particularly like to draw attention to the concentration of facilities at the West Corner of Lake Almanor; such land use-planning fails to address the current and future centers of population, ultimately making the Almanor experience one of frustration and disappointment.

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[1] Upper North Fork Feather River Project FERC 2105: 2002, PG&E Application for New License; ADA Accessibility Report, Appendix E5-G

[2] Upper North Fork Feather River Project FERC 2105: 2002, PG&E Application for New License; Recreation Needs Analysis: p. E5-1032

[3] Upper North Fork Feather River Project FERC 2105: 2002, PG&E Application for New License; p. 78

[4] The current cost analysis attempts to "explore" possibilities; and, grossly misrepresents operations and maintenance costs as capital improvements. Upper North Fork Feather River Project FERC 2105: 2002, PG&E Application for New License; Table E5.5-1, p. 1196-1209

In addition to the inadequacy of the application as it pertains to the Board's direct concerns, we have serious doubts that the Relicensing timeline can be met with the proposed inclusion of Hamilton Branch project in Project 2105's license. There has been no official consultation or scoping at any level for Hamilton Branch and we will not comment on any aspect of that project in this response.

The Plumas County Board of Supervisors finds that the proposed "Hybrid" application development process being used does not really allow for community participation in the creation of the new license. In order to give the residents of Plumas County a realistic involvement in its development, we respectfully request that PG&E consider the FERC preferred collaborative process prior to submitting the final application.

We look forward to working with you,

Sincerely,

Robert A. Meacher

Robert A. Meacher, Chairman
Plumas County Board of Supervisors

Lake Level Operations		
Volume 3, p. E5-22	The projected operations of Lake Almanor are minimized: 4,474 feet minimum elevation prior to September 15 is unacceptable. Further Licensee maintenance target of 4,466.7 is inadequate for recreational activities. Plumas County demands an operations plan that safeguards recreation May-September.	
	The primary goal of the 2105 committee is to procure an operations agreement, and to that end, • We request a hydrographic feasibility study to review the maximum physical drawdown (per day under the 1976 Operations Agreement) vs. the water rights certification • Apply to a range of lake levels during the recreation season for dry, normal and wet years	**Water Rights Application #28468**
p. PRS-45	"While the Licensee must reserve the flexibility to vary Lake Almanor Reservoir levels in response to customers electric demands, the licensee will continue the past practices of evaluating each water year and communicating with the Lake Almanor community the licensees anticipated Lake Almanor reservoir water withdrawal plans for that year." • 1976 operation guidelines are not expected to change • This violates the intent of a NEW LICENCE AGREEMENT	
Graph E5.2.3-2	Junxtaposition of other large lakes in California minimizes the economic reality of drawdown to the deadpool prior to Labor Day. Admittedly, Lake Almanor is the third largest lake in California at 500 TAF, but the analysis fails to illustrate the 10% drop in rentals (5/8/02: Linda Pohlar); Incidental costs to move buoys and docks, increased safety hazards, etc.	

Water Quality		
Volume 5, Appendix E2-C **Station BC-1**	In the absence of a location map clearly delineating the sampling points and depths, it is impossible to verify the sampling locations as appropriate for the desired constituent: • Background at Butt Creek above Butt Valley Reservoir lists 500 colonies for total coliform. What is the proposed source at this location? • A spike of 900 colonies at station NF8 with a corresponding Fecal Colony count of <2 seems incredible.	
Station NF1B	Coliforms in near shore waters pose a safety issue for contact recreation, but the sampling point and depth can't be verified with the current data.	
HB2 **NF2-4**	Turbidity criteria are based on the background NTU's, waters with a turbidity reading of 0-5 shall not exceed a change of 1 NTU. • What management practices are contributing to the exceedance between Station HB2-Hamilton Branch Powerhouse and station HB1-Hamilton Branch at Highway A13 (April) of 2.8 NTU's? • Station NF2 to Station NF4 in April, June and September?	**Basin Plan**
Upper North Fork Feather River Project: Study 38. p. 1	Aluminum is a know toxin to fish and highly probable in the soils around Lake Almanor. Is there a sampling plan for aluminum (with a corresponding pH and temperature value taken concurrently)?	The pH values in the hypolimnion indicate a probability of dissolved metals
Volume 5 Appendix E2-C	To complete the VOC suite, submit annual sampling plan for Lake Almanor **and** Butt Lake for VOC 3 year study	**EPA Method 502.2**

HB-1	Nitrate runoff form station HB1-Hamilton Branch at Highway 13 clearly shows an urban runoff condition in August and September. • Provide a sampling plan targeting leachate from the East Shore and Hamilton Branch • Golf Course drainage patterns?	
Volume 6, Appendix E3-1.2	DWR reports 0.37 u/ml mercury in fish tissue samples in small mouth bass, in exceedance of the USEPA numeric criteria and California Maximum Tissue Residue levels: • Please reconcile the methodology of both data sets (DWR and PG&E) from those values contained in volume 6 of 8 for a comprehensive analysis.	**US EPA Primary Drinking Water Standards California Toxics Rule**
	In those areas where total heavy metal values exceed reporting limits, what are the total vs. dissolved values?	
Volume 8, Section E6-E, page 1-14 and 5-14	PG&E cites the Clifford deed as proprietary right to erode, in direct conflict with CEQA and Section 404 of the Clean Water Act, and with possible significance to Section 1603 of the Fish & Game Code: • Please provide the court ruling and the California State Legislation that would exempt PG&E from erosion mitigation by decree	**Mandatory Findings of Significance Section 15065:**"Have possible environmental effects that are individually limited but cumulatively considerable when viewed in connection with past, current and future projects"
Plumas County General Plan,1997: Build-out projections **Volume 3 p. E5-83**	Population growth and development of improved, expanded recreational facilities will require acquisition of land by Licensee to address sewerage issues: • Please provide an inventory of types of landuse and documentation of the foot elevations of septic systems since 1963 where inundation occurs. Plumas County will provide access to their files. • Correlate this information to lake levels over a 15 year period (monthly)	**When the Dam was retrofitted in 1963, PG&E failed to address impacted landowners for septic systems that would no longer meet the 100' setback requirements.**

Recreation Management Plan		
Volume 3, Appendix E-ST	The Recreation Plan was due in 1982 under Article 42 amendment: • By providing the Recreation plan at such a late date in the relicensing phase, the usefulness of stakeholder participation is reduced. • At the PG&E meeting of May17, 2002 the USFS Prattville plan was eliminated as a source of further facility development on the West Shore due to Bald Eagle Protection Issues. o Please provide a comprehensive plan that includes all potential options for dispersed use of the shoreline. o Provide Butt Lake Recreation Trail construction plans o Add construction dollars to Almanor Bike trail extension	
	Inspection done by SF FERC office in 1992 stated that Licensee would submit Recreation Plan with Draft Application	
	Draft Procedure submitted in Draft Application was not completed nor was it modified since August 13,2001	
Volume 3 Table E5.5-1, p. 1196-1209	The operations and management costs are buried in the capital improvements plan; • Please re-evaluate maintenance, ADA improvements and long range capital expenditures separately.	
	Facility density is already to great on the West Shore between Lake Almanor West and Canyon Dam launch ramp, yet more are proposed for the future. Facilities need to be dispersed around the other 52 miles of Lakeshore.	
Volume 3, p E5-374	Reference to **x** and **y** activity available at any particular site (24 of them around the Lake), countered by the mention of limited or no access: Crossing private property, scaling down cliffs, long arduous walks and out-running big rigs on Highway 89, in addition to low water trespass issues and lack of	

	ADA, do not constitute access.	
Volume 3 **E5-84, E5-1051`**	The NFFR user surveys contradict known needs for the current and future populations of the Lake Almanor Basin. The surveys were conducted in a marginal year, and fails to address future desirable conditions.	
Volume 3 **p. E5-510** **Volume 3,** **p. E5-536,616**	Repeated mentions of the "abnormal" experiences of recreation users due to drought operations and ISO demands would suggest to the reader that PG&E has little or no control of water levels from Memorial Day to Labor Day. Referring to the drought severity index for index for **April 14, 2001** when DWR and PG&E forecast operations suggests a **"near normal"** water year: drought has several stages, 2001 was not a critically dry year, yet the public ramps were out of the water by July 20,2001. • Repair and upgrading of the ramps is deemed as necessary and a high priority, PG&E has failed to provide accurate and factual information on lake level operations and the effect on the ramps. • Include Butt Lake ramp	
Volume 3 **p E5-69,70** **E5.5-1(p. 1196)**	Extensive comparisons to other resorts are distracting and a vain attempt to illustrate the adequacy of the facilities; language that is in direct conflict with the table which shows almost every facility high on the priority list and not meeting existing need, especially ADA.	

Volume 3 **p. E5-366**	Interview of the Focus Teen group cited "access to Project recreation sites was limited simply because of transportation difficulties": If there was a park/beach easily accessible by walking or riding a bike, teens wouldn't need a car/ride to the County Club. The 2105 committee specifically requested service to this group for a variety of reasons, economic strife being the primary obstacle of most teens and the under-employed in Chester.	**Articles 14 & 17 of the current license**

Shore Line Management Plan		
E-6E	Erosion	
	Erosion based on 47-65 year old permits ignores the current standard of environmental stewardship.	
	FERC has indicated that higher standards for erosion control are in place – environmental erosion control in place of rip-rap.	
	A policy that is based on "The SMP will not , however, contemplate changing property ownership rights as recorded in land titles or property deeds" is arrogant and diametrically opposed to the Licensee's position on the Red River Deed issue. In that case they see no need for the 1,000s of property owner who have the RRD to need the rights secured by that instrument and "Therefore, this issue is not discussed further in this SMP.	
	The "permissive" agreement that Licensee relies upon to erode many miles of private and public land is only partially addressed in the draft SMP. What the Licensee doesn't continue on to discuss is that the deed provision that permit erosion clearly states the document's intent: Not to encourage erosion but to eliminate it when it incidentally occurred …."said water elevation shall as soon as practicable thereafter be lowered by second party (Licensee) to said contour lines." This wording shows that the **intent** of the parties in 1956, not knowing then that the lake elevation would be permanently restricted to a lesser level (4494') in 1974, intended to limit erosion immediately not as the Licensee proposes in the Draft Application, *that erosion will stop when the erosion affects have extended to the maximum and no more is possible.*	
5.2.18	Licensee suggests in 5.2.18 that for APO action, vegetative planting are preferred, followed by geotextile fabric installations…". Yet Licensee was requested by the FERC licensing director to work with APOs, starting as far back as 1997, and has not initiated or responded to any requests to move forward on this method for Licensee caused erosion.	
	Licensee has a legal obligation, through an out of court settlement in 1975, to remove diseased, dying and dead trees from the shoreline and has only sporadically done so. The settlement and the License terms also provide that all slash, limbs and timber will be removed by the Licensee. This has not been the practice since more that a decade ago. Slash and trimming is left for the APO to clean-up.	

Permits and Red River Deed	
	Licensee has no publicly, easily accessible permitting process. They have no office in Plumas County with responsibility for APO relations for Lake Management and therefore APO's have to find the right resource to gain approvals.
	Licensee has no permitting standard available locally to guide APOs in obtaining approvals.
	The 2105 Committee's complaint about uneven handling of permits was not about inconsistencies in APO behavior but about inconsistencies in Licensee's representatives granting or denying approval based on other than established guidelines.
	Licensee sees no need to include the Red River Deed mention in the SMP. Yet the deed provides APO with enforceable rights in California Courts. The history of permitting over the past 11 years shows the value of the RRD. o In 1991, the Regional Land Supervisor unilaterally suspended the rights to install new docks and buoys. o In 1992, Licensee formed a Community Committee to work with Licensee to develop standard for access to the Lake, including: a) docks and buoys, b) shoreline access and use, c) resorts and marinas and common area uses and, d) water quality and fish habitat. This Committee, with 50 members, put in over 500 hours to develop guidelines for these measures. o Licensee subsequently released new guidelines without discussing them with the Committee. o On March 5, 1993, the Chairman of the Committee wrote Licensee to inform them that Licensee had submitted permits to APOs that represented that the Committee had approved the form of the permits. The Chairman, Plumas County Supervisor Paul Simpson, asked Licensee to resume meetings to work out the differences brought about by the unilateral imposition of the terms of the dock and buoy permits. No response was ever given.

	o In 1997, Licensee began demanding that APOs sign new permit form of face removal of their docks and buoys by September of that year. o A committee was formed with more than 450 APOs contributing over $27,00 to cover attorney costs to negotiate with very unwilling Licensee representatives to gain acceptable terms in a new permit form. o After fruitless efforts to get reasonable terms incorporated, the U.S. Congressman serving the area came to California with the FERC licensing director and the liaison representative between FERC and the House of Representatives to mediate the disagreement. In late fall of that year the issue was finally settled with the same terms included in the new agreement that the local Committee had initially sought. The disputes with local resort owners went well beyond time and the ultimate outcome was much the same. Terms were initially sought.
	Recent problems have caused APOs that have sold their property to have escrow held up because the dock and buoy agreements could not be assigned according to the Licensee. These agreements were on the old pre-settlement form. While it is true that the Licensee permited conversion to the new form without cost for a short time after the new agreement was negotiated, some of the Licensee's representatives also told APOs that the old form was "fine" and there was really no need to convert. Added to that was an effort by the Licensee to represent that the information being circulated during the negotiations was inaccurate
	In summary, the need for the RRD is clear, Licensee has demonstrated, over a long period of time, arrogance around the issue of permits that should be corrected in the Recreation Plan with provisions for strong controls and a method to provide clear community service. It is the RRD that has kept the rights of the APOs clear and provided a rallying point for over 700 lake front owners

Safety		
	• Licensee's current safety plan fails to consider public safety on the lake on the same terms that it covers hazards to Licensee's property. o Publish Bathometric Survey's for public safety campaign	
	• Refer to 2105 Committee's position on Public Safety.	
Volume 8 Appendix E6-A	• Please outline the forest practices pertaining to maintenance of project lands. Conditions of the forest have changed over the years, and a catastrophic wildfire originating on PG&E facilities would degrade water quality, economic viability and recreational values. • Evaluate land within one mile of project area for Fire Safe Counsel Policies	
	• Accident reporting is haphazard and incomplete. The Licensee has no mechanism for adequate accident reporting, to include: o Marinas o Sheriff o Homeowners Associations o USFS o Boat repair shops	
Volume 2 E3.1-472	Removal of brambles in Belden reach for recreational access	

Cultural Resources		
Appendix E4-B	The determinations made for MOU for the Traditional Cultural Properties Consultation will determine the feasibility of certain components of the Recreation Plan and the Lake Level Agreement. Plumas County is not listed on the distribution list for the non-confidential report, and this is an oversight considering the import of Tribal Consultation and the ramifications to master planning.	
PG&E 106 Consultation on July 23, 2002	Plumas County interests are unified and support the Collaborative process; The use of 106 consultation to divide and conquer is not appropriate in this rural county where the Board of Supervisors has the duty to support the Rancheria and the Maidu Cultural Group in their resource protection goals	
Native Species Protection		
Volume 8 Appendix E3.3-1 **Volume 2 E3.1-472**	Several non-native noxious weed species are located in the project area, and on other project lands within one mile of the boundary: • Present an Integrated Management Plan with appropriate timelines and methodology • Expand the project boundary to relative associated project lands • Restoration plan for Alder Creek • Restoration plan Belden Reach	

List of Appendices
FERC Project 2105
7/23/02

1. Letter: United States Dept. of Interior; June 5, 2000
    a. Subject: Recreational Improvements to Lake Almanor Region

2. Letter: State of California Dept. of Water Resources; June 3, 2002
    b. Subject: Water Quality Degradation

3. Environmental and Public Use Inspection Report: FERC; June 21,1993
    c. Subject: Summary of Findings, Project 2105

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
600 Harrison Street, Suite 600
San Francisco, California 94107-1372

IN REPLY REFER TO:

JUN 05 2000

L6016(PGSO-PP)

Tom Jereb
Pacific Gas and Electric Company
245 Market Street Room 1103-N11C
P.O. Box 770000
San Francisco, CA 94177

Subject: Upper North Fork Feather River Project Re-licensing (FERC No. 2107) First Stage Consultation Package

Dear Mr. Jereb:

The National Park Service submits the following comments on the above project under FERC regulation 18 CFR Section 16.8(b)(4). Under the National Park Service Organic Act (39 Stat. 535), the Outdoor Recreation Act (Pub Law 88-29), the Wild and Scenic Rivers Act (Pub. Law 90-542), Council on Environmental Quality Guidelines (45 FR 59190-59191) and Federal Energy Regulatory Commission Guidelines the National Park Service is authorized to provide technical assistance for recreation planning in the licensing of hydropower facilities. It is the policy of the National Park Service to represent the national interest regarding recreation, and to assure that hydroelectric projects subject to re-licensing recognize the full potential for meeting present and future public outdoor recreation demands while maintaining and enhancing a quality environmental setting for those projects.

Pacific Gas and Electric Company's First Stage Consultation Document describes the setting for the Upper North Fork Feather River project as "endowed with some of the most attractive and popular recreation resources in California." We also note the Highway 70 corridor was historically a popular tourist attraction, especially for sightseeing and fishing. The area is also critically located within several hours' drive of the San Francisco Bay Area, anchored between two National Forests and Lassen National Park.

The First Stage Consultation Document also states that operation of the Project is coordinated with other hydroelectric projects on the North Fork Feather River, and that no change in this operational mode is proposed. Accordingly, we wish to underscore the importance of comprehensively and adequately addressing the full range of recreational issues, along with related local and regional economic concerns, for this hydroelectric

complex. It is our opinion that a comprehensive recreation plan that covers the entire Feather River complex, including the Feather River Canyon above Lake Oroville and Lake Almanor, is needed. We recognize this would require close coordination with Pacific Gas and Electric Company's on-going Rock Creek-Cresta and Poe re-licensing efforts, and particularly with Plumas and Lassen National Forests as well as Plumas County. However, undertaking piecemeal planning for mitigation and enhancements of these extensive projects while giving due consideration to coordinating their operational needs is unacceptable.

Specifically, we recommend assessment of the full range of existing and potential uses of the area, including such activities as fishing, hunting, whitewater and flatwater boating, hiking, picnicking, wildlife viewing, trainwatching, driving for pleasure and sightseeing by plane. Projections for future recreational use should not rely solely upon growth rates for Counties of visitor origin, fishing license sales and historic campground occupancy. Marketing data and the literature of recreation providers for information about recreation trends such as the increasing popularity of water-based activities and family camping should also be reviewed. Given the importance of meaningful information about projected recreational use to developing a reliable recreation plan, and since the summer season is already upon us, we concur with Plumas County that a single year time frame for the Projected Recreation Use study is not adequate.

The Public Access Assessment should identify areas suitable for recreation but underutilized due to lack of access, adequate facilities or a resource base. A careful look at access issues for private and project-leased lands around Lake Almanor is called for. The question should also be asked - what types of recreational use would occur, or would be enhanced, in the project's Area of Potential Effects with increased flow in the river? Existing and potential recreational use conflicts, e.g. such as those that might arise between fishermen and boaters, should also be identified. Resource impacts from formal and informal uses, such as streambank damage from dredge mining, should also be carefully investigated.

The proposed Whitewater Boating Study should be given ample planning time to identify the most appropriate releases, ramping rates and schedule, and to determine how this study will be fully integrated with the Project's Instream Flow Study. Information about valuations of foregone generation for the Project, which will be essential to determining costs of providing whitewater flows as proposed in the study, should be accessible to study analysts.

In further developing, conducting and analyzing study plans for recreation, Pacific Gas and Electric Company should consult closely with agencies, local residents and interest groups. We also recommend reviewing examples of high quality recreation assessments and recreation plans from other projects, including those prepared by other applicants in other parts of the country. We have enclosed, for your information, copies of the *1997 Recreational Assessment for Dells Pond and the Chippewa River* (FERC No. 2670) and the 1998 *Recreation Plan for Project Lands and Reservoirs of the Wisconsin Valley Improvement Company.* We would also refer you to Idaho Power Company for their

work on the Hells Canyon complex, including project-related land planning, and to Chelan County, Washington for information about recreation planning on the Columbia River projects.

Finally, because the area is so rich in natural and cultural history, and has recently the added attraction of a Scenic Byway designation, we believe the comprehensive recreation plan should have a strong interpretive component. First Stage Consultation studies should include investigation of potential themes for development of an interpretive plan for the corridor, for example the life of the region's indigenous cultures, Canyon history including development of the hydroelectric projects themselves, as well as the area's unique geologic features.

We appreciate the opportunity to provide input to the First Stage Consultation document and we plan to participate in this or future phases of the re-licensing effort as needed and helpful. Please contact Linda Stonier at (415) 427-1450 for further assistance or questions.

Sincerely,

John J. Reynolds
Regional Director, Pacific West Region

Enclosure

cc:
Hon. David Boergers, Secretary, Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, DC 20426
Superintendent, Lassen National Park
Jane Goodwin, Lassen National Forest, Almanor Ranger District, PO Box 767, Chester, CA 96020
Sharon Stohrer, State Water Resources Control Board, 901 P Street, Sacramento, CA 95814
Tricia Humphreys, Plumas National Forest, 875 Mitchell Avenue, Oroville, CA 95965
Bill Dennison, Supervisor, Plumas County; District 3, P.O. Box 1519, Chester, CA 96020
Leah Wills, Plumas Corporation, 550 Crescent Street, P.O. Box 3880, Quincy, CA 95971
Dave Steindorf, Chico Paddleheads, 179 Valley Ridge Drive, Paradise, CA 95969
Patricia Sanderson Port, Regional Environmental Officer, San Francisco

STATE OF CALIFORNIA -- THE RESOURCES AGENCY
GRAY DAVIS, Governor
DEPARTMENT OF WATER RESOURCES
NORTHERN DISTRICT
MAIN STREET
[illegible]OFF, CA 96080-2398

June 3, 2002

Mr. Tom Hunter
Director of Public Works
1834 East Main Street
Quincy, California 95971

Dear Mr. Hunter:

Christi Goodman provided a copy of your Proposition 13 Watershed Protection Funding Proposal for my review. The proposal stresses the need for public education for pollution prevention, centralized watershed planning, establishment of a basin wide monitoring program, and development of a waste water receiving station.

My Department, in cooperation with the Plumas County Water Quality Committee, has been monitoring water quality in Lake Almanor for several years. Results from this monitoring support the need for an educational program to inform local residents as well as recreational visitors of means to reduce contaminant loading. We have identified high coliform bacteria levels in the lake at several areas of intense housing development, which supports the need for improved septic system maintenance. Though we have developed water quality data for Lake Almanor, basin wide environmental monitoring has not been conducted. The ever increasing development in the basin could have far reaching impacts, including degrading water quality in the reservoir. Your Proposition 13 proposal would provide much of the information and improved infrastructure needed to protect the environmental resources in Plumas County.

If you have questions or need further assistance in support of your Proposition 13 application, please call me at (530) 529-7326.

Sincerely,

Jerry Boles

Jerry Boles, Chief
Water Quality and Biology Section

ENVIRONMENTAL AND PUBLIC USE INSPECTION REPORT

FEDERAL ENERGY REGULATORY COMMISSION
San Francisco Regional Office

Logistics.

Licensee Pacific Gas and Electric Company **Project No.** 2105-CA

Project Name Upper North Fork Feather River
Lassen and Plumas National Forests
Location North Fork Feather River, Butt Creek Plumas CA
(waterway) (county) (state)

License Issued Nov. 1, 1954 **Expires** October 31, 2004 **Type** Major

Recreation and Environmental Amendment Date(s) November 22, 1991

Previous Inspection Date(s) September 1988

FERC Inspector Antonia Lattin **Date** June 21 to 24, 1993

Licensee Representatives Mr. Bill Zemke, Civil Engineer, San Francisco; Mr. Mike Drury, Real Property Agent, Chico; Ms. Joy Vandell, Land Department, Sacramento; Mr. Bob English, Senior Planner, San Francisco; Mr. Kent Karge, Hydrographer, Storrie; Mr. John Oscamou, Superintendent, Storrie; Mr. Larry Kashur; Mr. Jim Davis; Mr. Kevin Kennelly, Environmental Coordinator, Chico; and Mr. John Wheat, Powerhouse Foreman, Storrie (not all representatives attended all days of the inspection)

Other Participants On Thursday: Mr. Charlie Brown, Resource Officer, Quincy Ranger District; Mr. John Heavin, Supervisor's Office, Quincy; and Mr. Jack Horner, Oroville Office; all of the Plumas National Forest

Weather Conditions Partly cloudy

Summary of Findings.

See Page 2.

Submitted

Antonia Lattin
Environmental Protection Specialist

cc's:
Mr. Shan Bhattacharya, Manager
Hydro Generation
Pacific Gas and Electric Company
201 Mission Street, Room 1012
P. O. Box 770000, P10A
San Francisco, CA 94177

Mr. Charlie Brown, Res. Officer
Quincy Ranger District
Plumas National Forest
39696 Highway 70
Quincy, CA 95971

Summary of Findings.

There is no recreation plan for this project, although recreation development is extensive, especially at Lake Almanor reservoir (see Section B.1). The number of days at or over capacity at five project camping areas increased to 55 days in 1992 (see Section B.1.c). However, the licensee has no plans for additional development until it formulates a recreation plan as part of a new license application, due by the year 2002 (see Section B.1.a).

A new dock permit program applies to individual property owners (see Section B.1.a). Control of commercial uses is needed (see Sections B.1.b and D). The majority of private resorts around Lake Almanor reservoir have no agreements with the licensee. Proposed new private development may affect Lake Almanor reservoir (see Section D).

Recreation maintenance deficiencies have been corrected (see Sections B.1 and C). Two areas are being used by employees of the licensee or private individuals for recreation while the public is excluded (see Section B.1.b and D). Recreation revenue and expenses reported on the Form 80 are inaccurate based on licensee information (see Section B.1.b).

Cultural sites exist along the transmission line; these were avoided when the line was constructed (see Section B.2).

The licensee is complying with minimum flow requirements established to protect fisheries (see Section B.3.b). Facilities to protect resident trout include a rough fish barrier (see Section B.3.a).

The licensee accomplished several pollution control improvements after the inspection, including secondary containment modifications or new structures and oil detection systems at powerhouse sumps (see Section B.4). The Chester sewage treatment plant needs additional capacity to avoid summertime discharges of effluent to Almanor Reservoir (see Section B.4.b). Tunnel spoil piles are not revegetated (see Section B.4.a).

New public safety features as a result of the inspection include a safety barrier at the Gansner Fish Barrier Dam, warning buoys or markers to improve the visibility of windbreak barriers in Almanor Reservoir, and repaired fencing (see Section C). The licensee has installed an innovative sudden water fluctuation warning sign with large before and after discharge photographs (see Section C.1).

A. General Description of the Project

1. Project Area Description.

The project is located in northeastern California in the Sierra Nevada Mountains about 70 miles (110 km) east of Red Bluff, California. State Highway 70 provides access to the project area. It parallels the North Fork of the Feather River from Jarbo Gap to Belden, California. State Highway 36 also connects Red Bluff with the northern portion of Lake Almanor reservoir.

Gently rolling terrain and coniferous forest characterize the shoreline of the main reservoir: Lake Almanor. Terrain at Butt Valley Reservoir is generally steep. Belden Forebay also has mostly steep shorelines.

The Pacific Crest Trail passes close to the Belden Rest Stop along State Route 70 (see Exhibit 1).

2. Description of the Development.

The project includes the 27,000-acre (108.00 x 10^6 m^2) Lake Almanor reservoir, formed by Canyon Dam, at an elevation of 4,504 feet (1,378 meters), PG+E datum (see Photo 1); the 1,600-acre (6.4 x 10^6 m^2) Butt Valley Reservoir at an elevation of 4,142 feet (1,263 m)(see Photo 2); the 42-acre (0.17 x 10^6 m^2) Belden Forebay at an elevation of 2,985 feet (910 m)(see Photo 3); over 13 miles (21 kilometers) of tunnel; and five powerhouses with 8 units and a total installed turbine capacity of almost 341 Megawatts (see Exhibit 1 and Photos 4 and 5). There are two interchangeable runners at the Oak Flat Powerhouse: one for releases of 60 cfs (1.7 m^3/s) and the other for releases of 140 cfs (4.0 m^3/s) (see Photo 6). It takes a crew of three, 8 hours to change the runner.

The Butt Valley Powerhouse tailrace discharges into Butt Valley Reservoir. The Caribou Nos. 1 and 2 Powerhouse tailraces discharge into Belden Forebay (see Photo 7). The Oak Flat Powerhouse tailrace discharges into the North Fork of the Feather River at the toe of the Belden Dam. And the Belden Powerhouse tailrace discharges into the nonproject Rock Creek Reservoir (part of FERC Project No. 1962)(see Photo 8). Additional FERC-licensed projects downstream include the Poe Project, FERC Project No. 2107, and the Feather River Project, FERC Project No. 2100 (main reservoir is Oroville).

Water quality at the project appears excellent, with the possible exception of Lake Almanor Reservoir. The Chester Sewage plant discharges effluent into Almanor Reservoir (see Photo 9). Other shoreline developments use septic systems. The state fishery agency was concerned about maintaining temperatures not

exceeding 20° C and dissolved oxygen not less than 7 parts per million below the Oak Flat Tailrace prior to the plant's construction. The SFRO has no record of CDFG communications indicating problems at this site after the plant became operational.

Lake Almanor is the main storage reservoir of the project. Other project reservoirs can also store water, although the licensee operates the smaller ones by passing water released from Lake Almanor through its series of powerhouses, where inflow approximates outflow.

Extensive development at Lake Almanor reservoir has made an elaborate permit system and licensee overview of nonproject uses of project lands and waters essential (see Section B.1).

B. Project Resources and Facilities

1. Public Use Resources and Facilities.

a. Description of Facilities.

Recreation activities include boating, fishing, water skiing, camping, picnicking, swimming, wading, floating, hiking, and sightseeing. Public use facilities at the project provided by the licensee or the Forest Service include over 350 overnight camping units, 14 group campgrounds, over 10 boat launching ramps, and about 20 private resorts and marinas. The majority of these facilities is located at Lake Almanor reservoir (see Exhibits 2 and 3 and Photos 10 through 50). Camping facilities are generally open from Memorial Day to September, October, or November.

In addition to these facilities, there are extensive private developments around Lake Almanor reservoir. These include 1,050 lakefront lots, from 400 to 500 private docks, the Almanor Country Club development, which has a guard posted at a gate on the only road into the area (the peninsula between the Hamilton Branch and the Last Chance Creek arms of Lake Almanor Reservoir), and the 3,000-lot, two-golf-course Bailey Creek Subdivision development proposed to be located near the country club (see Photo 40). The licensee's representatives reported that any buildable lot owner may have the right to build a boat dock (see Section D).

The lack of a recreation plan at this large project with such extensive recreation development results in poor control over and almost no planning of facilities, especially the private developments. The licensee's dock permit program--initiated in April 1992--attempts to control increasing encroachments into project waters. At the time of inspection, the permit program

was voluntary, with about 200 permits in the process of being issued. The program also does not yet apply to commercial uses. The licensee's representatives reported that one full-time seasonal employee will conduct inspections for permit compliance. The licensee's representatives also explained that of the approximately 20 private resorts, 7 have an agreement or lease and the other 13 have no agreement with the licensee.

The permit program institutes a fee of $250/permit. It also sets standards for docks, buoys, and anchors, including the prohibition of corrodible barrels and drums, dry rather than in-the-water repairs to avoid pollution, and only fully encased styrofoam to ensure it does not erode into the reservoir. Photo 51 shows the conforming dock that received Permit No. 1. The permit agreement also requires maintenance of the facilities in an environmentally compatible, safe, and reasonable manner and compliance with the terms and conditions of the license and Commission Order No. 313, requiring the uses not to endanger health, create a nuisance, or otherwise be incompatible with overall project recreation use.

Although the pace of bringing structures into compliance may seem slow, the licensee has done extensive work coordinating with the community, political officials, and public agencies in the development of the permit program to date. In addition, the licensee is participating in an Almanor Basin Management Plan to cover the area out to two miles (3 km) from the maximum water surface elevation of Lake Almanor Reservoir. It should be formulated by 1995.

The Commission requested that the licensee produce a recreation plan based on the level of use and complexity of management issues at the project. The licensee's response requested that a plan not be required until filed with the new license application (a delay until 2002, two years before the current license expires). The licensee's representatives have stated that they have no plans for expansion of recreation facilities until after a recreation plan has been filed. As described above, private development planned near the reservoir is extensive (see Section D).

b. Compliance with Requirements and Exhibits.

License Article 14 requires free public access to project lands and waters. The licensee restricts access to the areas described in Section C to assure public safety. The SFRO referred inappropriate uses of project lands to the DPCA. These uses include the campground located adjacent to Camp Connery Group Camp, but only accessible to the licensee's Divisional staff to the exclusion of members of the public and the Plumas Pines Resort, where trailers occupy waterfront sites through the

entire season or year, therefore precluding public use (see Photos 26, 27, 45, and 46).

Facilities operated by the licensee's contractors appear to be reasonably maintained. Recreation maintenance deficiencies observed during the inspection were described in the post-inspection letter dated July 9, 1993, and have since been corrected. These included sealing an abandoned well at the Eastshore Picnic Area at Lake Almanor (see Photo 23); pumping out the vault toilet at the Ponderosa overflow camping area at Butt Valley Reservoir; removing loose gravel from the Alder Boat Ramp at Butt Valley Reservoir (see Photo 52), and removing debris and brush piles from camping units at the Cool Springs Campground at Butt Valley Reservoir (see Photo 49).

Maintenance at the shoreline facilities of the private marinas and resorts is shoddy at some locations; some facilities appear to be well maintained (see Photos 27 to 38). The licensee is developing a management program to control these uses of project lands and waters. The July 9, 1993, post-inspection letter directed that the licensee address adequate maintenance at these facilities in the commercial uses management program now being developed. The SFRO also directed that the licensee address certain safety and resource protection concerns immediately. These included docks in various states of disrepair, some of which were floating loose on the reservoir or at the boat launching ramps, debris along the marina shorelines, questionable materials storage practices, and unknown fuel storage and spill prevention measures at the marinas/resorts occupying shoreline project lands and project waters.

The safety concerns have been and are being addressed (see Section C). In addition, the licensee is working with recreation operators around Almanor Reservoir to resolve the resource protection concerns (see Section B.4).

The project is subject to Part 8 requirements. The licensee posted the sign away from the reservoir at the pullout along Highway 89 (see Photo 53). As a result of the inspection, the sign was relocated to the main licensee-provided facility of Almanor Campground.

Use reported on the 1990 Form 80 appears reasonable, although the statistics do not include visitation at the Forest-Service managed Almanor Campground. The form reports three times as much revenue from recreation facilities as cost for operation and maintenance at the Lake Almanor recreation facilities ($120,000 versus $40,000) and almost 1-1/2 times as much at Butt Valley recreation facilities ($52,000 versus $35,000).

After discussion during the inspection regarding the possibly excessive level of fees, the licensee provided regional operating and maintenance (O & M) costs for the Sacramento Valley

Region (defined as including FERC Project Nos. 1962, 2105, and 2107, but also including PG&E's other numerous and extensive hydro projects in the Sacramento Valley Region). For the region, using the licensee's statistics, the ratios of revenue to expenses are:

0.99 ($438,034 revenues / $443,344 operation and maintenance (O & M) costs)
or
0.34 if major maintenance costs are included ($438,034 revenues / $443,344 O & M + $839,048 major maintenance)

The only project-specific data provided by the licensee for Project No. 2105 is major maintenance costs. For 1990, these totaled $489,400. These are not reported on the 1990 Form 80.

c. Adequacy of Public Resources and Facilities.

A recreation plan for the project has not been produced and is needed. The licensee is slowly putting together a set of information and coordinating local, governmental, and public entities in preparation of such an effort. The plan will most likely include a water surface management plan, possibly with a target Boats-At-One-Time (BAOT) capacity. A recreation plan should also address the need for a sewer system around the heavily developed Lake Almanor reservoir.

The DPCA sought a more timely filing of a recreation plan for the project, but has apparently accepted the licensee's proposed schedule with a filing deadline of the year 2,002 to coincide with the filing of the new license application.

Recreation facilities provided by the licensee are inadequate to meet the overnight demand, as documented by use statistics submitted by the licensee during the inspection. They show that the licensee's facilities are frequently at or over capacity as follows.

Number of Days At or Over Capacity

Year	Almanor Campground	Almanor Overflow	Last Chance Campground	Ponderosa Campground	Cool Springs Campground
1990	18	0	0	1	5
1991	0	1	0	14	0
1992	17	9	2	25	2 *

* No data submitted for June 22, 1992, to August 9, 1992, for Cool Springs Campground.

In addition to these family campground data, the Camp Connery Group Camp/Bunkhouse complex has been occupied every summer weekend for the past three years.

Overnight facilities could be expanded at the licensee-operated Almanor Campground into an area south of existing facilities owned by the licensee (see Photo 54). The Camp Connery Group Camp facilities could be expanded by using the adjacent area now occupied by the employee campground to the exclusion of the public (see Photo 46). The licensee may consider conversion of the Eastshore Picnic Area to overnight use. A recreation plan should also consider expanded boat-and-trailer parking capacity at Lake Almanor reservoir boat launching ramps.

2. Cultural Resources and Facilities.

a. Cultural Resources.

Three known archeological sites exist along the transmission line right-of-way.

b. Compliance with Conditions and Orders.

License Article 37 requires consultation with the State Historic Preservation Office (SHPO) and possible mitigation to avoid impacting any discovered cultural resources. The licensee cited transmission poles to avoid alteration, disturbance, or loss of the three known sites.

License Article 44, issued as part of the amendment of license authorizing the Oak Flat Development, requires halting construction, consulting with a qualified archeologist, and coordinating with the SHPO and Forest Service, should previously unrecorded resources be discovered during construction. No sites were discovered during the construction of the Oak Flat Development.

c. Adequacy of Cultural Resources Plan and Facilities.

There is no cultural resources management plan and none is required. Article 44 should provide adequate cultural resource protection until a new license is issued based on a complete application, including an assessment of cultural resources.

3. Fish and Wildlife Resources and Facilities.

a. Description of Resources and Facilities.

License mitigations include minimum flows, a rough fish barrier for the benefit of resident trout, and retained snags at Butt Valley Reservoir for both fish and wildlife (see Photo 55).

Other fish species in the reservoirs and rivers include bass, sunfish, and other warmwater species. Wildlife species include deer, bear, coyote, raccoon, eagles, hawks, quail, and smaller bird species.

b. Compliance with Conditions and Orders.

There is no fish and wildlife plan for the project and none is required.

Ordering Paragraph (B) of the November 22, 1991, order requires that the licensee notify and consult with the California Department of Water Resources, the California Department of Fish and Game, and the Forest Service if the Belden Powerhouse is off-line from March 1 through October 31 and water is to be delivered from storage to Lake Oroville reservoir. This requirement resulted from an event where releases increased substantially. A release plan has not yet been required under this provision since it became effective.

Ordering Paragraph (C) of the 1991 order required a transmission line raptor protection plan for the Butt Valley Powerhouse to the Caribou No. 2 Powerhouse. The licensee filed the plan on March 23, 1989. The line does not present a hazard to raptors (see Photo 56).

License Article 26 requires nine actions. Item (a) requires the release of 25,000 acre-feet/year (30×10^6 m^3/year) below Almanor Dam and flushing flows of 1,000 acre-feet (1.2×10^6 m^3) excluding spills as measured at the Big Meadows Gage and per a schedule from the California Department of Fish and Game (CDFG) (see Photo 57). The CDFG has prescribed a uniform year-round release of an average of 35 cfs (1.0 m^3/s), with variations as allowed in Item (c) below. Records submitted after the inspection show compliance from October 1, 1991, to July 6, 1993. Gage NF-2 records flows at this location.

Item (b) requires 64,000 acre-feet/year (77×10^6 m^3/year) be released below Belden Diversion dam, excluding spills, as measured at the NF-70 Gage (see Photo 58). Flows are to be allocated at 60 cfs (1.7 m^3/s) from Labor Day to the last Friday in April and 140 cfs (4.0 m^3/s) from the last Friday in April to Labor Day, with variations as allowed in Item (c). Records submitted after the inspection show compliance from October 1, 1991, to July 11, 1993. The licensee added the Oak Flat Development to generate power using these fish flow releases.

Item (c) allows variations of 5 percent or 5 cfs (0.14 m^3/s) (whichever is larger) in the required flows. It specifies uniform releases if no schedule is received from CDFG. It also stipulates that flushing flows are to be released within 30 days

of notice but are not to occur if the downstream plant is out of service. Compliance is discussed above under Items (a) and (b).

Item (d) specifies payment for fish improvements, including a rough fish barrier, natural and artificial spawning areas, and resting and cover improvements. It also specifies not over $3,000 by spent for operation and maintenance of the facilities. The licensee has provided the funds to the CDFG.

Item (e) requires cooperation with various agencies on survey plans for the North Fork Feather River from Belden Dam to Gansner Bar. This was accomplished.

Item (f) requires confining flow in the North Fork Feather River to a single channel at flows of 75 cfs (2.1 m^3/s) in portions visible from the road between the confluence with the East Branch and with the Belden Diversion Dam. As reported in the EPUI submitted January 3, 1989, the channel was reworked.

Item (g) required cooperation with CDFG to aid in the eradication of rough fish within five years of project completion. This was accomplished, as reported in a 1972 letter from CDFG.

Item (h) required a rough fish barrier at Gansner Bar. Apparently the rough fish barrier was reconstructed after the 1986 floods. Photo 55 shows the overflow structure. The SFRO directed the installation of safety barrier (see Section C).

Item (i) requires, at CDFG request, payment for stocking 5,000 pounds (2,270 kg) of catchable trout/year between the East Branch and Belden Diversion Dam. The licensee's representative reports that PG+E receives from and pays to the CDFG a bill every year for these fish. The cost is usually about $10,000.

License Article 28 requires fish screens if prescribed by the Commission. None have been prescribed.

License Article 29 requires normal operations to avoid the sudden release of large flows into channels where control is reasonably possible except during emergencies. The licensee is complying with this article.

c. **Adequacy of Fish and Wildlife Resources and Facilities.**

Facilities, measures, and operations appear adequate.

4. **Miscellaneous Environmental Facilities/ Resources/Requirements.**

a. **Description of Other Resources.**

The licensee provided copies of the spill prevention control and countermeasure (SPCC) plans for the Butt Valley, Caribou No. 1, Caribou No. 2, and Belden Powerhouses. The licensee also provided a copy of its Bulletin No. 53 on Oil Contamination of Reservoirs and Waterways and SPCC Plans. The Bulletin establishes policies and procedures for prevention, reporting, and clean-up of spills.

Oil in various systems or storage facilities at the powerhouses includes quantities as follows.

Butt Valley Powerhouse:	over 23,000 gallons (87,055 liters)
Caribou No. 1 Powerhouse:	over 42,000 gallons (158,970 liters)
Caribou No. 2 Powerhouse:	over 27,000 gallons (102,195 liters)
Belden Powerhouse:	over 23,000 gallons (87,055 liters)

All four powerhouses are equipped with sumps that receive floor drain water. The licensee also provides secondary containment structures at the switchyards, although some of the capacities are less than adequate according to the SPCC plans.

At the remotely operated Butt Valley Powerhouse, the licensee installed an oil-sensitive electrode system to avoid automatic pumping of liquid from the sump to the river when contaminants are present. At the switchyard, the secondary containment areas are defined as under-capacity for the operating equipment and for the main transformers in the SPCC plan (see Photo 59). The licensee has scheduled new secondary containment construction at the excitation transformer in mid-May, 1994. The SPCC plan states that modifications at the main transformers will be installed as budgeting and resources allow.

At Caribou No. 1 Powerhouse, the sump can contain only about 500 to 600 gallons (1,893 to 2,271 liters) of oil. It is equipped with a specific gravity float that activates pumping. The licensee's representatives explained that the disk floats at the oil-water interface. The system also includes an oil skimmer that operates on a timed basis (see Photo 60). The SPCC plan submitted at the end of 1992 states that the licensee is investigating improvements to this system to assure that any oil spills within the powerhouse do not reach the forebay. Concrete curbs, gravel blotters with a French drain to an oil retention pond, and a double-pipe overflow system provide secondary containment at the switchyard (see Photo 61).

At Caribou No. 2 Powerhouse, the sump can retain up to 16,000 gallons (60,560 liters) of oil, a capacity deemed adequate

in the SPCC plan. The float that activates the pump is a specific gravity disk. Berms and an oil retention pond with a gate valve provide secondary containment at the switchyard.

At Belden Powerhouse, the sump system includes oil-sensitive electrodes. Concrete dikes provide two secondary containment areas at the switchyard. Each has a normally closed, manually operated gate for the release of oil-free rain water. Each area also has a floor drain that discharges to the powerhouse sump pit.

The small Oak Flat Powerhouse has an oil-water separator that receives drainage from the switchyard (see Photo 62).

A new, double-walled fuel tank supplies the stand-by generator at Belden Forebay Dam. The hydraulically operated sluice gate mechanism at Belden Forebay includes a storage tank (see Photo 63). At SFRO request, the licensee provided a covered secondary containment structure at this site to assure that any spilled fluid will not flow into the reservoir.

The licensee has installed new double-walled Convault fuel tanks at the nonproject service center on project lands near Camp Connery. The tanks are equipped with sensors to detect fuel leaks.

In addition to project facilities, private resorts have or had the capacity to store over 10,000 gallons (37,850 liters) of fuel in tanks on project lands without secondary containment as follows. The licensee has worked with the resorts to accelerate the installation of resource protection measures.

Resort	Fuel Tanks	Status
Plumas Pines	1,000 gallons (3,785 l) 2,000 gallons (7,570 l) Both tanks underground	Replacement this year, including secondary containment and improved piping
Lassen View	1,000 gallons (3,785 l) Underground	Tank removed; may not be replaced
Little Norway	2 1,000 gallons (3,785 l ea) Both tanks aboveground	Replacement, including secondary containment and improved piping by 1996

Knotty Pine	550 gallon (2,082 l) 1,100 gallon (4,163 l) Both tanks aboveground	Replacement this year, including secondary containment and improved piping
Big Cove	2,000 gallons (7,570 l) 500 gallons (1,892 l) Both tanks underground	Tanks removed; will install double-walled tank above the high water line and provide secondary containment for piping and hoses

b. Compliance with Requirements and/or Conditions.

There was no license requirement to revegetate the tunnel adit spoil piles that resulted from the project's original construction. License Article 7 states that the location and condition of spoil disposal areas is subject to the approval of the land-administering agency. Most of the piles occupy National Forest land. Forest Service representatives have not requested additional measures at the spoil disposal sites according to SFRO records. In addition, Forest Service representatives attending the inspection did not believe any such request had been made. The areas remain mostly devoid of vegetation. The toe of one pile extends to the North Fork Feather River (see Photo 64). Erosion has occurred upslope of the pile at the Belden tunnel adit (see Photo 65).

License Article 10 requires clearing and keeping clear the reservoirs except per an approved clearing plan filed on April 22, 1971, for the Butt Valley Reservoir that includes retention of snags for enhanced fish and wildlife habitat. I observed no dead trees along the Lake Almanor Reservoir shoreline.

I observed shoreline erosion at the location of a jetty built adjacent to Kokanee Resort on Lake Almanor Reservoir (see Photo 38). Construction included soil which was washing into the reservoir with the combination of winds and high water. Litigation over the jetty is ongoing. The licensee informed the SFRO that resolution should occur by the fall of 1994, at which time the licensee intends to meet with the developer and the state fishery agency to determine repair and/or other needed actions at the site. Subsequent licensee communications indicate that erosion is not now occurring since the reservoir is and will remain drawn down below the high water level that was observed during the inspection. The licensee will provide additional information to the SFRO by September 1, 1994.

In 1984, the Caribou No. 1 penstock failed. Reconstruction of the project included tying back the hillside (see Photo 66).

The Commission authorized the nonproject use of project lands at the Chester sewage treatment plant by Order Dated January 18, 1978. The approval allowed expansion of the sewage treatment plant and construction of a drainage canal from the plant to Almanor Reservoir for the discharge of treated effluent. The lease agreement states that the use of the land shall not endanger health, create a nuisance, or otherwise be incompatible with recreation use. It also states the Chester Sanitary District is to exercise all necessary precautions and means to prevent water pollution or contamination.

Ordering Paragraph (A) required that the use comply with the lease agreement, and meet four additional requirements. Item (1) requires that material dredged from the canal be evenly distributed along the edges at a depth of not over 12 inches (30 cm). As shown in Photo 9, this has been done. Item (2) required that all disturbed areas be revegetated. This appears to be completed. Item (3) required an increased width of easement to allow the distribution of dredged material. Item (4) requires that the lease not extend beyond the license term.

Apparently releases of treated sewage effluent are made in the summer across project lands, even though a court order directs that no such releases occur during the summer. The operator at the facility believes discharges are necessary for about two to three weeks in the summer to avoid overtopping the treatment ponds.

At the request of the SFRO, the licensee provided additional information on what actions will be taken to assure adequate measures to avoid pollution at this site. The licensee spoke with the California Regional Water Quality Control Board (CRWQCB) and reported that the agency's basin plan calls for no discharges from sewage treatment facilities into recreational waters during the summer months. The CRWQCB representative would like to see the facility expanded to accommodate all inflow without having to make summer discharges. The licensee is negotiating with the Chester PUD for the use of 29 acres (0.12×10^6 m^2) of project lands for expansion of the Chester Treatment Plant; the licensee understands that any potential transfer must be per Commission requirements, including compliance with License Article 42 (land use conveyances and conditions).

c. Adequacy of Miscellaneous Facilities/Resources.

As described above in Section B.1.a, the licensee's dock permit program should reduce styrofoam and other pollution from nonconforming structures at Lake Almanor reservoir. Water quality at Almanor Reservoir will continue to be degraded until

the Chester Sewage Treatment Plant is expanded to accommodate summertime inflows without discharge to the reservoir (see Section B.4.b above). The powerhouse and other improved pollution control structures provide better resource protection. The lack of site restoration at the tunnel adit piles might not be allowed under a newer set of standard license articles if there were no land-administering agency involved.

C. Public Safety.

1. Description of Facilities.

Safety features include fencing, warning signs, trash racks, debris barriers, and handrails at the powerhouses and intakes (see Photos 7, 67, 68, and 69). The licensee maintains safety barriers at the Butt Valley Powerhouse tailrace, the Butt Valley Reservoir spillway, and the Butt Valley Powerhouse intake at Lake Almanor reservoir (see Photos 2, 5, and 70). Of particular note is the warning sign at the Caribou Powerhouses at the beginning of the fishing access trail. The licensee's representatives reported that a traditional sudden water discharge warning sign was routinely ignored by the public until it was modified to include large before and after photos of the unit off and on line (see Photo 7).

The licensee places "thin ice" warning signs at Lake Almanor and Butt Valley Reservoirs in the winter. Safety barriers remain in place year-round.

2. Compliance with Requirements.

The licensee filed a Public Safety Plan on December 3, 1992. It was accepted on January 6, 1993. As a result of the inspection, the licensee made public safety improvements and filed an updated plan on October 29, 1993.

The log booms placed around marinas and the log-boom safety barrier in Butt Valley Reservoir float low in the water and represent a potential boating hazard due to poor visibility (see Photos 2, 29, 31, 32, 34, 35, and 42). At the request of the SFRO, the licensee installed warning buoys upstream of the Butt Valley barrier. In response to the SFRO's concern, the licensee also initiated a log boom safety and visibility program at Lake Almanor reservoir. Sixteen marina owners/operators received a letter requiring that the outline of their log booms be marked with reflective buoys, high visibility markers, or other devices to warn boaters of the barriers' presence both day and night. The licensee's first follow-up inspection revealed seven marinas had complied. By December 1993, the licensee's representative reported that all of the marina booms still in the water had been made more visible (some were removed for the winter).

Recreation maintenance deficiencies affecting safety were corrected after the inspection at the request of the SFRO. These included the removal of loose gravel from the Alder boat launching ramp (see Photo 52), increasing the visibility of the warning sign at the Canyon Dam boat launching ramp, removal of a broken water pump and sealing of the well at Lake Almanor picnic area (see Photo 23), removal of brush and debris at several Cool Springs Campground sites (see Photo 49), removal of free-floating dock debris at marina launching ramps (see Photos 31 and 35), removal of shoreline debris at recreation areas (see Photo 29), and repair of erosion at boat launching ramps (see Photo 71).

The post-inspection letter dated July 9, 1993, required the installation of a safety barrier at the overflow Gansner Bar Fish Barrier Dam (see Photo 55). The dam is located just downstream of the nonproject Gansner Bar Campground. The licensee installed a safety barrier at this location.

The post-inspection letter also required the repair of fencing at the Belden tunnel adit (see Photo 72) and an additional submerged hazard warning sign at the Forest Service Almanor Campground boat launching ramp. Both have been accomplished.

The inspection revealed that the licensee had posted sudden fluctuation warning signs below Belden Diversion Dam at some but not all points of public access along the river. The post-inspection letter required either that additional signs be installed so that all points of public access included warnings, or, if a study of project operations revealed that signs were unnecessary, that the existing signs be removed. The licensee responded that spill releases occur infrequently and only when the licensee decides to route water around Belden Powerhouse, that the gates do not operate automatically, that the licensee sends staff on-site to warn people prior to spills, and therefore that the existing signs are not needed and would be removed.

Warning signs and protective devices are generally in good condition.

3. **Adequacy of Public Safety Measures.**

The transmission line running along the Butt Valley shoreline has limited clearance (see Photo 56). The licensee has posted a warning sign at the Alder Boat Launching Ramp that limits boat masts to no higher than 30 feet (9 m) (see Photo 73). Clearance under the line near the powerhouse is adequate (see Photo 5).

There are no barriers at the Lake Almanor spillway and Belden Forebay; none are required. The licensee's representative reports that Almanor Reservoir has not and does not spill. The

licensee's representatives also reported that Belden Forebay gates are only operated with staff on-site after confirming that no recreationists are present near the gates and that spill occurs at significant depth under the water surface at the gates.

With the improvements accomplished after the inspection, public safety measures appear adequate.

D. **Recommendations and Follow-up Actions.**

The SFRO sent a post-inspection letter dated July 9, 1993, that requested additional information, relocation of the sign satisfying Part 8 requirements, recreation maintenance improvements, marina and resort oversight improvements, public safety modifications and additional protective devices, and additional secondary containment and pollution control measures at powerhouses and fuel storage areas (see Sections B.1 through B.4 and C). The licensee continues to work diligently to address these issues. Inspection-related correspondence from the licensee includes letters dated August 13, 1993; September 29, 1993; October 29, 1993; December 30, 1993; January 6, 1994; March 1, 1994; and March 31, 1994. Additional inspection-related SFRO correspondence includes letters dated January 25, 1994, and March 17, 1994.

A proposed development to be located off project lands but adjacent to Almanor Reservoir (between the existing country club and the highway, see Exhibit 1) has the potential to affect the project reservoir, recreation opportunities, and public access at Almanor Reservoir. The licensee's representative indicated that buildable lot owners in the new development may have the legal right to build a boat dock in Lake Almanor reservoir. This proposed "Bailey Creek Subdivision" development would include 3,000 lots and two golf courses. The licensee may be unable to control these new uses under the new dock permit program described above in Section B.1. The lack of a project recreation plan also makes control of these future uses more difficult.

The license may need to be amended, or prior Commission approval may be required, for the sewage treatment plant improvements at Chester described in Section B.4.

The SFRO referred inappropriate uses of project lands to the DPCA for possible action (see Section B.1.b).

E. **Photographs and Exhibits.**

State Office of Historic Preservation letter
July 29, 2002

STATE OF CALIFORNIA – THE RESOURCES AGENCY
GRAY DAVIS, *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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July 29, 2002

REPLY TO: FERC920131A

Alison Macdougall, Cultural Resources Specialist
Pacific Gas & Electric Company
350 Salem Street
CHICO CA 95928

Re: Upper North Fork Feather River Hydroelectric Project, FERC No. 2105, Plumas County.

Dear Ms. Macdougall:

Thank you for submitting to our office, on behalf of the Federal Energy Regulatory Commission (FERC), your April 10, 2002 letter, your May 30, 2002 letter and five cultural resource evaluation reports regarding the Upper North Fork Feather River Hydroelectric Project (FERC No. 2105) in Plumas County. The titles of the reports submitted for this undertaking are contained in the two letters. The Pacific Gas & Electric Company (PG&E) has prepared the documentation to supplement its application to FERC for re-licensing of the Upper North Fork Feather River Hydroelectric Project. PG&E has hired PAR Environmental Services Inc., (PAR) to conduct a cultural resources inventory, preliminary National Register of Historic Places (NRHP) assessments of archeological sites and architectural evaluations of the project area. The current archeological testing was conducted to formally evaluate the National Register significance of 33 historical archeological resources, four sites with primarily historic components and one Pacific Service Employee Association (PSEA) camp identified during 2000 and 2001 archeological inventories.

The properties identified in the report include the following:

- The PSEA camp (Camp Almanor or Camp Prattville) located at Prattville, Plumas County;
- The PSEA camp known as Camp Caribou;
- Two remaining structures at the PSEA camp known as Camp Canyondam;
- The Upper North Fork Feather River Hydroelectric System and its components;
- 33 strictly historic-era archeological sites and four historic archeological sites containing prehistoric components.

FERC has authorized PG&E to seek our comments on its recommendations of the eligibility of the aforementioned properties for inclusion on the NRHP in accordance with 36 CFR 800, regulations implementing Section 106 of the National Historic

Preservation Act. Our review of the submitted documentation leads us to concur on the following eligibility recommendations:

- The two remaining structures located at Camp Canyondam (the Canyondam House and the Canyondam Cabin) are eligible for inclusion on the NRHP at the level of local significance under Criterion C as defined in 36 CFR 60.4. Both structures have retained high degree of integrity of design, materials, setting, feeling, and association with their historic periods of significance and are good examples of the California Company Camp architectural style.

- Camp Caribou is eligible for inclusion on the NRHP under Criteria A and C as defined by 36 CFR 60.4. The property has strong associations with the construction of the Upper North Fork Hydroelectric System and the ongoing operations of the Caribou Hydroelectric Generation Unit and is an outstanding example of the California company camp. The property has retained its integrity of design, materials, setting, and feeling associated with its historical period of significance (1919 – 1951). All structures within Camp Caribou are contributing elements to the Historic District.

- Camp Almanor (Camp Prattville), though associated with the development of hydroelectric systems in the region, does not retain sufficient integrity of design, materials, workmanship, and feeling associated with its historic period of significance (1926 – 1930) to be considered eligible for inclusion on the NRHP as a historic district. In addition, the property is not the oldest, most architecturally elaborate, or intact of the PG&E hydro-related camps. Despite this determination, we do concur with the recommendation that the Tender's House, a single architectural property within the boundaries of the Camp, is eligible for inclusion on the NRHP under Criterion C as a representative example of the California camp architectural type. PG&E continues to use the property as a tender's house.

- The Upper North Fork Feather River Hydroelectric System, as a whole, is ineligible for inclusion on the NRHP as a historic district. The Almanor Dam has already been determined, by consensus, to be eligible for inclusion on the NRHP. We concur with FERC's determination that the following previously unevaluated properties associated with the Upper North Fork Feather River Hydroelectric System are eligible for inclusion on the NRHP under applicable NRHP criteria:

  - Lake Almanor under Criterion A for its association with the development of California's hydroelectric infrastructure and its position as the world's largest man-made reservoir when it was completed in 1913.

  - The intake tower at Almanor Dam under Criterion A and C for its association with the Dam and as the only remaining example of the original intake tower style in the system. The structure retains sufficient integrity of location, design, materials, setting and feeling associated with its historic period of significance.

All other architectural and engineering properties evaluated in the two reports submitted for this undertaking would not be eligible for inclusion on the NRHP under any of the criteria established by 36 CFR 60.4. The properties have no strong

associations with significant historical events or persons and are not examples of outstanding architectural or engineering design or function.

Regarding the 33 archeological properties, we acknowledge that FERC may assume, for the purpose of the present undertaking that CA-Plu-334/H, CA-Plu-1245H, CA-Plu-1743H, P-32-001716-H, and P-32-001766-H are eligible for inclusion in the National Register, and we do not object to the agency's assumption.

We concur with any finding by FERC that

CA-Plu-1029H	CA-Plu-1188H	CA-Plu-1190H
CA-Plu-1192H	CA-Plu-1195H	CA-Plu-1196H
CA-Plu-1211H	CA-Plu-1236H	CA-Plu-1265H
CA-Plu-1496H	CA-Plu-1711H	CA-Plu-1713H
CA-Plu-1715H	CA-Plu-1726H	CA-Plu-1727H
CA-Plu-1734H	CA-Plu-1736H	CA-Plu-1739H
LA-01/H	LA-07-H	LA-17/H
LA-21-H	LA-35-H	LA-48-H
P-32-001206-H	P-32-001722-H	P-32-001723-H
P-32-001724-H	P-32-001740-H	P-32-001741-H
P-32-001742-H	P-32-001744-H	

are *not* eligible for inclusion in the National Register.

By and large, we believe your effort to identify historic properties was reasonable. However, We would suggest that PG&E exercise caution in regard to ground disturbance since a 4 – 6 inch thick layer of decomposing debris or duff overlays the surface of mineral soils in the APE.

Thank you again for seeking our comments on your project. If you have any questions, please contact staff historian Clarence Caesar at (916) 653-8902 or ccaes@ohp.parks.ca.gov or Mike McGuirt at (916) 653.8920 or mmcguirt@ohp.parks.ca.gov, or Hans Kreutzberg at (916) 653.9107 or hkreu@ohp.parks.ca.gov.

Sincerely,

Dr. Knox Mellon
State Historic Preservation Officer

State Water Resources Control Board letter
July 25, 2002

State Water Resources Control Board

Division of Water Rights
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Division of Water Rights: http://www.waterrights.ca.gov

ıston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

July 25, 2002

Mr. Tom Jereb, Project Manager
Pacific Gas and Electric Company
Mail Code N11D
P.O. Box 770000
San Francisco, CA 94177

STATE WATER RESOURCES CONTROL BOARD COMMENTS ON THE DRAFT APPLICATION FOR LICENSING OF THE UPPER NORTH FORK FEATHER RIVER HYDROELECTRIC PROJECT (FERC NO. 2105)

The State Water Resources Control Board (SWRCB) has received the April 2002 draft Application for New License on the Upper North Fork Feather River Project (draft Application), prepared and distributed by Pacific Gas and Electric Company (PG&E). The SWRCB has regulatory authority over diversion and use of surface waters in the state of California (California Water Code and CCR Title 23) and has the U.S. Environmental Protection Agency-delegated authority to issue Section 401 Water Quality Certifications pursuant to the federal Clean Water Act (CWA). Under this authority SWRCB staff submitted written comments on the First Stage Consultation Document (FSCD) (letter dated 6/1/00), and now provides comment on the draft Application, as directed at 18 CFR §16.8(c)(5).

PG&E will be required to make application to the SWRCB for Water Quality Certification pursuant to Section 401 of the CWA (33 USC §1341[a][1]). Section 401 Water Quality Certification (401 Certification) can be issued if it is determined that the activities of the project are consistent with federal and state water quality standards. Adequate data must be provided to determine compliance with water quality objectives and protection of the beneficial uses identified in *The Water Quality Control Plan* (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region (RWQCB). Beneficial uses designated for the North Fork Feather River (NFFR) include municipal and domestic supply, power generation, contact recreation, non-contact recreation, cold freshwater habitat, cold water spawning, and wildlife habitat. Beneficial uses designated as specific to Lake Almanor include power generation, contact recreation, cold freshwater habitat, warm freshwater habitat, warm water spawning, and wildlife habitat. Numerical and narrative water quality objectives define the least stringent standards that will apply to regional waters in order to protect these beneficial uses. PG&E's scientific data must be adequate to demonstrate that beneficial uses on all water bodies affected by the FERC No. 2105 project will be protected with normal operation and maintenance of the project. Should a determination be made that project-affected waters do not meet appropriate state and federal water quality standards and factors to remedy are controllable, the SWRCB may prescribe effluent limitations or other measures necessary to achieve compliance

with water quality standards (33 USC §1341[d]), in addition to a monitoring and reporting program to ensure compliance, as conditions of the 401 Certification.

General Comments

The Licensee owns and operates a series of hydroelectric projects on the NFFR, including the upstream Hamilton Branch Project (unregulated by FERC), the Upper North Fork Feather River (UNFFR) Project (FERC No. 2105), and the downstream Rock Creek-Cresta (FERC No. 1962), and Poe (FERC No. 2107) projects. Project No. 2105 features include Lake Almanor with a maximum storage capacity of 1,142,251 acre-feet (af) and Butt Valley Reservoir with a 49,891 af storage capacity. These controlling features of Project No. 2105 dictate the coordinated operation of all projects within the NFFR drainage. Storage and release of surface flow from the upper watershed directly affect water quality and seasonal availability of water in all downstream NFFR reaches. In FSCD comments, SWRCB staff requested that studies conducted for the UNFFR project be adequate to provide data that would demonstrate Project 2105 effects on the beneficial uses of the entire lower drainage as hydrologic regime is altered for hydropower uses. The draft Application focuses primarily on Project 2105 lakes and on the Seneca and Belden reaches of the NFFR, providing limited data on effects in any reach of the NFFR below Belden. For purposes of the CWA, the National Environmental Policy Act (NEPA), and the California Environmental Protection Act (CEQA), the potential cumulative effects of Project 2105 on the physical, biological and chemical conditions of the NFFR watershed must be analyzed.

In Volume 1, page PRS-6, the Application states that the Licensee proposes to file an application to include the Hamilton Branch Project (non-jurisdictional FERC Project No. 2627) as a Project 2105 facility. Agency Consultation to consider resources affected by the Hamilton Branch Project, as required under 18 CFR §16.8, has never taken place. Evaluation of the merits of integrating the Hamilton Branch project into the currently licensed UNFFR Project should be considered as a separate action (license amendment), independent of the ongoing Project 2105 relicensing process. Assessment of hydrological, thermal, and water quality effects of the Hamilton Branch project on beneficial uses of the waters of Lake Almanor and the NFFR system must be evaluated. As PG&E explores the possibility of amending a final Application for License of Project 2105 (18 CFR §4.35) with Hamilton Branch features, consideration should also be given to an alternative that would decommission the existing Hamilton Branch Powerhouse and construct a new generation facility that could utilize flows released at the Canyon Dam outlet to the NFFR.

Under Tab 20 (Vol. 4), the Licensee provides a list of public and agency consultation events. As stated under the December 11, 2000 entry, *Agencies requested* [a] *collaborative process.* Although entries in the table appear to indicate the willingness of PG&E to meet with resource agency staff, non-governmental agencies (NGOs), local interest groups and the public at large to discuss issues related to relicensing of the project, it is clear that each entity was consulted

independent of the others. This should not be construed as a collaborative effort – true collaboration requires that all parties representing various positions on an issue be convened together to discuss the matter at hand. Because there may be competing uses of surface water affected by Project 2105, it is critical that all user needs and positions be put forward and considered openly. As requested by the resource agencies, a true collaborative effort should be initiated to assist the Licensee in developing protection, mitigation and enhancement (PM&E) measures for inclusion in a final Application for License of Project 2105. The collaborative setting should allow for representation by state and federal resource agencies, local agencies and governing bodies, NGOs and interested user groups, shoreline landowners, and the public at large. The collaborative development of PM&Es, including flow regimes, that balances the beneficial uses of water bodies affected by operation of Project 2105, will provide a final document that best meets the needs of all user groups invested in this region and leads to a successful and timely relicensing of the project.

To assess the project's effect on ecological resources of the North Fork Feather River watershed and all designated beneficial uses of that drainage, it is essential that data collected from the resource studies be analyzed accurately and conclusions provided in the final Project 2105 License Application. In considering the adequacy of information presented in the draft Application, SWRCB staff offers the following specific comments:

Specific Comments

The acronym "ABC" has been used in various sections of the draft Application, including as a qualifier for "tunnel" on page E2-19 (Vol. 1). This is not a universally recognized term, and should be defined in the Application Glossary.

Hydrology/Geomorphology

The draft Application presents Licensee Proposed Measures (Section 3.1.13.1, Vol. 1) that would establish a steady-state flow regime of 75 cubic-feet per second (cfs) in the Seneca reach and 140 cfs in the Belden reach year-round. Sierran stream ecosystems have evolved under dynamic hydrologic conditions, with typical high flow events occurring during spring runoff and a declining hydrograph through the summer months and into fall. Effects of a flat-lined hydrograph on the overall health of Seneca and Belden stream reaches and their aquatic biota have not been discussed. The current state of knowledge on geomorphology and the proper functioning of healthy stream systems does not support steady-state flows on controlled rivers, and replication of a more natural flow regime must be considered. If this rejected method of river management continues to be proposed by the Licensee, the final Application should provide a discussion on the ecological effects of steady-state flow in mountain streams; this discussion should consider geomorphologic impacts, alterations to aquatic and riparian habitat and species composition, effects on water quality parameters and other biotic and abiotic impacts that may occur with reductions in the natural pattern of flow fluctuations.

Although summary discussion provided at PRS-19-20 (Vol. 1) suggests a natural 6-7 year recurrence pattern for flows in excess of 700 cfs in the Seneca Reach of the NFFR, the flood frequency curve derived from 85 years of Prattville data indicates this return interval to be no greater than 4 years for this stream reach (Figure E3.1.11-2, Vol.2). Summary statements in Volume 1 of the draft Application are misleading and should be edited to bring them into consistency with statistical data.

The biotic composition, structure, and function of aquatic, wetland, and riparian ecosystems depend largely on the hydrologic regime. A full range of intra- and inter-annual streamflow variation is essential for sustaining river ecosystem and geomorphologic integrity; streamflow targets should be based on ecological information.[1] The Licensee has conducted an IHA analysis, as requested by resource agencies. The IHA provides frequency, magnitude, and duration of flows in the UNFFR under pre-project conditions (synthesized), and compares these parameters to flow conditions in the system post-project (Appendix E2-D, Vol. 5). Pre-project data indicate that seasonal low flows of 387 cfs were expected to occur in the UNFFR reaches during August at least 50% of the time. Pre-project data for high flows indicate that 1219 cfs pulses were expected to occur approximately 7 times during the season for a duration of about 14 days. The pre-project data gives an idea of how the river would function without the dam. Data demonstrates that post-project hydrology is significantly altered from the unimpaired condition. SWRCB staff recognizes the importance of developing a hydrologic regime for Project 2105 waters, and recommends that a collaborative team be convened to develop a hydrologic schedule for this controlled system. The hydrologic regime should be dynamic in nature and tend toward mimicking a more natural hydrograph. As described by Richter, this regime should include a full range of streamflow variations, and should target critical ecosystem attributes, including: Channel-forming processes, sediment transport, water temperature, wetland and riparian vegetation, hyporheic zone, nutrient distribution, fish habitat, fish passage, fish spawning and rearing, amphibian habitat, amphibian spawning and rearing, and woody transport.

Rainbow trout substrate preferences for spawning gravel range from 4.5 – 5.4 cm (Figure 8, Appendix E3.1-11, Vol. 7). Using composite curves from incipient motion studies on the Seneca and Belden reaches of the NFFR, it appears that flows ranging from 700 – 1000 cfs (Seneca) and 1000 – 1100 cfs (Belden) are required to mobilize these gravels for recruitment to downstream spawning habitat (Figures 16 & 17, Attachment E2-A, Vol.5). The IHA (Appendix E.2-D, Vol.5) provides flow frequency and duration data for high pulses of 1219 cfs and low pulses of 469 cfs for the UNFFR. Although these flows bracket the range of flows required to initiate particle motion for spawning gravels, resource agency staff will need additional information specific to unimpaired frequency and duration of 700 - 1000 cfs flows in the UNFFR. The final Application should present IHA runs that determine frequency, duration, monthly distribution, rise rate, fall

[1] Richter, B., Baumgartner, J., Powell, J. 1996. *A Method for Assessing Hydrologic Alteration within Ecosystems*, in Conservation Biology, Vol. 10; pp. 1163-1174.

rate, and number of reversals for a flow of 700 cfs in the Seneca reach and for a flow of 1000 cfs in the Belden reach.

Inflow to Lake Almanor occurs year-round, with the greatest volume to storage during snowmelt runoff in the spring and early summer months of normal water years. Lake level potential is dictated for the most part by NFFR inflow (Fig. E2.6-1, Vol. 1), with estimated subsurface spring contributions of 200 - 255 cfs (E2.392, Vol. 1) providing the greatest amount to storage in months of August – December. Waters of this state belong to all citizens of the state and beneficial uses designated for each water body must be protected. To fully exercise the beneficial uses of contact and non-contact recreation on Lake Almanor, lake levels must be adequate to provide vehicular access for launching of water craft and safe entrance and exit from recreational areas. The Application must present data to demonstrate lake level requirements for use of boat ramps and docks for flat-water boating and other recreational uses of the water body. This information should be included in the recreation assessment section of the final Application and must provide discussion and graphical description of daily average storage and corresponding water surface elevations; a map should be prepared with minimum lake levels and launching facilities plotted to clearly demonstrate water storage requirements for use of boat access facilities.

Section E3.1.2.1 (Vol. 2) indicates that current operations at Lake Almanor target a lake level of 650,000 af (elevation 4,474 feet) prior to September 15th. However, this allows for seasonal fluctuations in water elevation that may vary by up to 27 feet. Changes in shoreline access, beach surface conditions, and the quality of nesting and foraging habitat for avian species including the Greater Sandhill Crane are all expected to be effects of dramatic seasonal drawdown in lake level with subsequent shoreline exposure. The draft Application should include a discussion of these impacts and must present proposals for managing lake levels to protect the recreational and wildlife habitat uses designated for Lake Almanor.

The draft Application presents a stream channel classification report (Section 4.0, Appendix E3.1-12, Vol. 7) for drainages of the UNFFR project. On page 4-8, the report references a map (Figure 4-1) and longitudinal profiles (Figure(s) 4-2); however pages 4-9 through 4-11 cannot be located within the report. Photographs of stream stations represented at Figures 4-4 through 4-25 are useful when reviewing methods and conclusions, however the value of these figures could be increased with a designation of flow rate captured in each photograph. The final Application should include all referenced figures and edits to the title line on stream photos to provide flow in cubic-feet per second.

Prior to project development the average monthly unimpaired runoff in the Butt Valley watershed ranged from 53 – 204 cfs, with seasonal peak flows significantly higher, providing the natural dynamic of channel maintenance (page E3.1-460, Vol. 2). Under current operation of the project no flow releases are made from Butt Valley Reservoir dam. A Geomorphic Classification of the lower Butt Valley Creek was conducted, using Level II Rosgen (1996) methodology (Section 4.0,

Appendix E3.1-12, Vol. 7). Bed materials measured using the Wolman pebble count indicate an increased presence of fine sediments (Appendix 4-C of Appendix E3.1-12). Conclusions in this report attribute the high percentage of fines in channel bed materials to reductions in peak flow at Butt Valley Reservoir and the resulting decrease in stream competence (page 4-52, Section 4.0). In assessing impacts to this diverted reach it is important to review a comparison of the relative change in hydrologic regime between pre- and post-project conditions. SWRCB staff requests that information on the unimpaired peak and pulse flows be provided for the Butt Valley Creek drainage. In the final Application the Licensee should provide an IHA analysis of the lower Butt Valley Creek, including all 32 parameters as presented for the NFFR (Appendix E2-D, Vol. 5).

In Section E3.3.5 (Vol. 2) the Licensee asserts that routine operation and maintenance of the UNFFR project has nominal effect on all existing upland and riparian/wetland plant community types found in the project area. This statement is flawed, and reflects a short-sighted review of botanical resources affected by 2105 features and operation. The altered hydrograph for bypassed stream reaches below Canyon Dam and Belden Reservoir has affected riparian species composition and the extent of riparian corridor margins. White alder riparian forest is absent in highly disturbed areas of the project, and from Belden Forebay to Belden powerhouse alder has been replaced by Himalayan blackberry. Blackberry dominates the shrub layer in the Belden reach (page E3.3-7, Vol. 2) displacing native species and encroaching into the active channel. Himalayan blackberry encroachment is directly related to reductions in pulsed and flood flows necessary to maintain bars and banks suitable for native species recruitment. Within the Botanical Resources element (Tab 14, Vol. 2) the Licensee should expand the riparian and wetland vegetation discussion to include discussion of issues related to Himalayan blackberry.

The draft Application contains no proposals for control or eradication of Himalayan blackberry on low-flow stream reaches under project control. Blackberry encroachment in the Belden reach of the NFFR channel, impairs access (and safety) for contact and non-contact recreational users, and may be a factor in limiting amphibian use of this aquatic habitat. Although eradication of the exotic blackberry may be an unreasonable requirement, a feasibility assessment should be conducted to evaluate potential methods of reducing vegetation encroachment and providing selective access routes to the stream. Environmentally sensitive approaches to selective blackberry removal and control should be emphasized in the analysis and should include non-traditional alternatives such as goat herd foraging methods. The assessment should include long-term management strategies for vegetation control within the stream channel. The feasibility assessment and Licensee proposals for Himalayan blackberry encroachment control should be provided in the final Application.

Water Quality

In Section E2.5.3 (Vol. 1, page E2-199) of the draft Application, water resources of the NFFR system are described as "suitable" for all beneficial uses identified in the Basin Plan. While the Licensee suggests that water quality may be suitable, the SWRCB will, prior to issuance of a

water quality certification, be required to make its determination using the more rigorous standard of whether the project operation is protective of all designated beneficial uses.

Sections E2.5.1.5 and E2.5.3 (Vol. 1) and Appendix E2-C (Vol. 5) provide water quality sampling data and discussions. Although sampling sites are identified in text and on a schematic diagram (Figure E2.5-1, Vol. 1), no map has been provided to show the distribution of sampling stations and the relationship between sites and project features or other sources of influence in the drainage area. The final Application should include a detailed map with topographic features, project features, major recreational sites, and water quality sampling stations clearly plotted.

Throughout the project, water column samples have been collected seasonally plus monthly during the summer, as requested by resource agencies. Metals data for all sampling events have been reported as total recoverable values (page E2-126, Vol. 1) as used when comparing to human health based regulatory criteria. Although Basin Plan objectives and both California Toxics Rule (CTR)[2] Criteria and U.S.EPA Ambient Water Quality Criteria for freshwater aquatic life protection are expressed as dissolved metals, dissolved fractions have not been provided in the data set. Because total values may falsely indicate constituent exceedances when compared to these regulatory criteria, SWRCB staff recommends that both total and dissolved values be provided whenever possible. Because analytical methods have not produced dissolved values, it is suggested that total values for priority pollutant metals be converted to dissolved values, and both be presented in the final Application. Calculations may be obtained, using Conversion Factors and specific guidance with appropriate inclusion of hardness factor into the equation, found at 40 CFR Part 131 (Federal Register /Vol. 65, No. 97/May 18, 2000). This method is specific for calculating the dissolved fraction for Cadmium, Copper, Chromium (III), Lead, Nickel, Silver and Zinc.

In Appendix E2-C, Table 1 (Vol. 5), analyte levels from waters sampled in the UNFFR project are compared to regulatory criteria. In this table, a number of edits should be made, including:

- A column titled U.S. Environmental Protection Agency (U.S.EPA) regulatory criteria should be displayed in Table 1.
- The appropriate comparison for arsenic data is made to the U.S.EPA's Primary Maximum Contaminant Level (MCL) of 0.01 mg/L, this criterion should be included in the column titled U.S.EPA regulatory criteria.
- The typographical error indicating a Basin Plan objective for arsenic comparison to the arsenic values collected at Station HB1 should be deleted.
- CTR criterion for alkalinity should be corrected to read ≥20 mg/l (rather than <20 mg/l).

[2] U.S. Environmental Protection Agency. 2000. *Federal Register*, Volume 65, No. 97 (Thursday, 18 May 2000); pp. 31682-31719.

- A correction should be made to indicate that mercury (inorganic) criteria for freshwater aquatic life protection (4-day Continuous Concentration and 1-hour Maximum Concentration) are established in the U.S.EPA's *Ambient Water Quality Criteria* documents (rather than the CTR); these criteria should be included in the U.S.EPA column.
- The CTR Human Health Criteria of 0.00005 mg/L (0.05 µg/L) for inorganic mercury in Drinking Water Sources (consumption of water and aquatic organisms) and 0.000051 mg/L (0.051 µg /L) for Other Waters (consumption of aquatic organisms only) must be included in the set of criteria against which project water values are compared.
- The Basin Plan objective for specific conductance should be qualified with a < symbol.
- A correction should be made to indicate that chloride criteria for 4-day Continuous Concentration and 1-hour Maximum Concentration are established in the U.S.EPA's *Ambient Water Quality Criteria* documents (rather than the CTR).
- All criteria presented in the CTR columns for Station NF2 should be correctly aligned with the appropriate analytes on that data page.
- Fecal coliform lab values and regulatory criteria have been overlooked on this comparison table; this parameter should be displayed in the final Application presentation of Table 1.
- Text for footnotes number 5 and number 6 should be reversed to correctly associate metals with the hardness factor and ammonia with the pH and temperature factors.

Laboratory methods used to analyze the environmental level of organic and inorganic constituents must be sensitive enough to detect those constituents at levels below the criteria thresholds established by U.S.EPA, SWRCB, RWQCB, and Department of Health Services (DHS). Although the draft Application states on page E2-127 that Table E2.5-2 (Vol. 1) presents method detection limits used for project waters and compares these values with the various regulatory criteria, the comparison is not provided. To more clearly demonstrate that methods adequately sensitive for analyses of project waters have been used, the final Application should include a regulatory criteria column in Table E2.5-2; in this column, hardness-dependent criteria should be displayed as values adjusted to a factor no greater than 25 mg/L $CaCO_3$ and should be properly footnoted.

Although standard methods dictate that the water hardness factor be applied to specific metals for each sampling event at each individual site, the Licensee has elected to summarize all seasonal data by site, then apply the Median site-specific hardness value for analysis (footnote 6, Table 1, Appendix E2-C). Using a measure of central tendency to select and apply a hardness factor for comparison to regulatory criteria is inappropriate. As can be seen with Station NF7 data where hardness ranges from a minimum of 54 to a maximum of 79 mg/L and Station LA1 (bottom) where hardness values range from <10 up to 46 mg/L, buffering capability may fluctuate widely at any individual location. If a single measure of hardness is to be used in analyzing metals data collected at each site, one must take a prudently protective approach, applying the most conservative value found in the water column at that site – this requires that any summary

analyses include regulatory criteria calculated using the minimum hardness value collected at each site during all seasons of sampling.

Applying the minimum hardness value measured for each sampling station to applicable priority toxic pollutants (CTR), then comparing each reported constituent with appropriate regulatory criteria, SWRCB staff note the following concerns regarding constituent values reported for project waters in Tables 1 and 2, Appendix E2-C:

- Sampling at the Caribou 1 powerhouse tailrace (CARB1) in July 2000 detected a copper level that exceeds CTR criteria; however, samples collected from source waters at the intake structure in Butt Valley Reservoir (BV2) for the same time period indicate no elevation in copper levels. To evaluate controllable factors, and fully understand potential sources of this exceedance, SWRCB staff will consider maintenance or other sources for introduction of copper products to flow during conveyance through the tunnel, penstock, or turbines. The Licensee should provide a discussion of any maintenance or treatment processes that were conducted in the Caribou 1 tunnel and generating system during the months of April through July 2000.

- Butt Valley Reservoir (BV2) surface water data for July 2000 shows levels of inorganic mercury in the water column that exceed the CTR criteria for human health (both Drinking Water Sources and Other Waters). The water column-based criterion of 0.051 µg/L (0.000051 mg/L) for "consumption of aquatic organisms" has been exceeded ten-fold by values of 0.00051 mg/L detected in Butt Valley Reservoir. Butt Valley Reservoir supports a smallmouth bass population and is renowned for its brown trout angling opportunities, which raises concern for human health exposures to mercury that may bioaccumulate as methyl-mercury in fish tissues. The final Application must provide data adequate to assess human health risks from fish tissue mercury levels for the typical harvest species found in Butt Valley Reservoir. The Licensee must conduct tissue analysis to determine mercury concentrations in edible portions of representative fish. Sampling and laboratory methods for fish tissue analyses should be conducted in a manner consistent with the SWRCB's Toxic Substances Monitoring Program, and acceptable to the Office of Environmental Health Hazard Assessment (OEHHA), Department of Fish and Game (DFG), and the RWQCB.

- Based on data displayed in Tables 1 and 2 (Appendix E2-C, Vol. 5) and methods discussed in Table E2.5-2 (Vol. 1) it appears that laboratory methods used to measure mercury in water column samples throughout the UNFFR rely on detection limits that are not sensitive enough to determine whether this metal exists at concentrations that exceed the CTR criteria of 0.05 µg/l. The U.S.EPA's Lab and Field Methods 1631/1669 must be used to sample and analyze water column mercury levels down to an appropriate and more sensitive detection limit. Mercury monitoring using this "ultra-clean" method must be conducted at all established Project 2105 water quality sampling stations once each in spring, summer and fall

seasons. Should mercury levels be detected in excess of the maximum allowable level for public health, a program for fish tissue monitoring will be considered following consultation with the agencies listed above (Butt Valley Reservoir mercury issue).

- Detection limits of Methods 7470A and 6010B are not sensitive enough to demonstrate that lead levels in project waters remain below CTR criteria continuous concentration thresholds established for waters with a hardness value measured below 55 mg/L $CaCO_3$. Lead is moderately toxic to aquatic organisms and is a known human reproductive toxicant. Accumulation of heavy metals behind impoundment structures may increase concentrations with subsequent exposure to aquatic organisms, or compromise the quality of waters metered downstream and used for municipal and domestic purposes. The following UNFFR monitoring stations have measured minimum hardness values that fall below 55 mg/L and thus require lead analysis with a detection limit more sensitive than that presented: HB1, HB2, LA1 (surface & bottom), NF2, BV1, BC1, BV2 (surface & bottom), CARB1, CARB2, NF5, NF7, EB1, NF8, YC1, and BD2. Additional sampling must be conducted once each season in spring, summer and fall; SWRCB staff suggests that EPA Method 6020/200.8 be used for analyzing lead at a detection level adequate to draw sound conclusions. Data, as available should be included in the final Application.

- Lake Almanor waters near Canyon Dam (LA1) (bottom) show an elevated arsenic level in September (Table 2). Although data exceed the U.S.EPA MCL for drinking water, the reported value remains below the CTR aquatic life protection levels. Because designated beneficial uses of Lake Almanor do not include municipal and domestic supply this value does not exceed applicable criteria. However, waters released at Canyon Dam supply the diverted Seneca reach of the NFFR, which does have designated municipal and domestic supply uses. Year 2000 data reported for Station NF2 (NFFR below Canyon Dam) do not exceed MCLs, but this analyte must be considered when developing PM&Es and evaluating seasonal use of the low-level intake structure for releases to the NFFR.

- EPA Method 7470A and 6010B detection limits for silver (0.36µg) are adequate to analyze waters with a hardness down to approximately 27 mg/L $CaCO_3$ however the low minimum hardness values at the bottom of Lake Almanor (>10 mg/L) and the NFFR at Chester (17 mg/L) suggest re-sampling using a more sensitive lab method. Station LA1, Table 1 (E2-C, Vol.5) indicates silver detected at a level of 0.44 µg in Lake Almanor, but Table 2 shows that this particular sampling event had a concurrent hardness value of 39 mg/L, maintaining a safe buffer and allowable water level for silver. However, with positive hits for silver in the water column, concern is raised for the potential occurrence of false negative results (reported in the form of NDs) for periods when a low hardness condition occurs and sampling methods were insufficiently sensitive to detect to levels that might exceed the hardness-dependent criteria. PG&E does have an active cloud seeding program in the UNFFR project area and potential for introduction of silver into the aquatic ecosystem does

exist. Because silver is highly toxic to aquatic organisms, SWRCB staff request that additional sampling for silver be conducted at stations NF1B, LA1 (bottom), and at NF2 immediately downstream of Canyon Dam. Sampling must include one sample at each station in spring, summer and fall seasons, and EPA Method 6020/200.8 is recommended for analysis. Sampling should be conducted in consultation with SWRCB staff.

- PG&E conducts an active cloud seeding program using silver iodide vaporization practices in the UNFFR project vicinity. In winter seasons 1999-2000 and 2000-2001 cloud seeding activities were implemented for 1,517 hours and 3,808 hours respectively resulting in an aerial application of 70 pounds and 176 pounds of the silver compound to this region (Table E2.5-24, Vol. 1). The Licensee initiated a water sampling program in 2000 and repeated the program in 2001 in an attempt to assess potential impacts of silver application in the upper watershed. Lab methods used in this program did not provide detection limits sensitive enough to adequately determine the presence of silver concentrations at hardness levels below 27 mg/L $CaCO_3$ (2000 analysis) or below a hardness value of 50 mg/L (2001 analysis). As stated in discussion above, hardness values must be site- and time-specific to the constituent sampling event, or a conservative approach must be taken and the minimum hardness value recorded at the site will be applied for analytical purposes. Reported non-detect (ND) findings are inconclusive. In spite of lab method limitations, an elevated silver concentration was recorded on August 8, 2001 at NF2A-38 (0.25 miles downstream from Canyon Dam) (Table E2.5-26, Vol. 5). While below the Title 22 drinking water MCL, the 3.0µg environmental value exceeds the calculated regulatory criteria of 0.74µg for aquatic life protection. Because of its low solubility and tendency for adsorption to sediments and organic matter bioavailability levels are unknown, however, detection of silver at this level in water column samples raises concern. The Licensee should edit tables E2.5-25 and E2.5-26 to reflect regulatory criteria (FALP standards) adjusted for the minimum hardness values recorded at each station. Conclusions drawn in sections E2.5.8.2 and E2.6.5.3 regarding water column silver should be qualified to reflect discussion above. SWRCB staff will continue to consult with RWQCB to determine steps to be taken on this issue.

- Butt Valley Reservoir (BV2)(bottom) summary data in Table 1 is inconsistent with ammonia reporting limits presented for Station BV2 (bottom) in Table 2. It would be impossible to conclude that levels detected were less than 0.0013 mg/L when reporting limits of the laboratory are confident only to a 0.1 mg/L level. In the final Application this inconsistency should be corrected.

The draft Application provides screening-level coliform data from NFFR and tributary stations and from one station each in Lake Almanor and in Butt Valley Reservoir (Table 2, Appendix E2-C, Vol. 5). In written comment on the UNFFR FSCD, SWRCB staff stated that in addition to single-event screening for coliform bacteria throughout the UNFFR waters, a program that includes a total of 5 fecal coliform sampling events within a 30-day period, as required in the

Basin Plan, must be carried out at all water quality stations on both Lake Almanor and Butt Valley Reservoir. This was re-emphasized by e-mail correspondence (3/16/01) when SWRCB staff again stated the need for coliform data collection to "cover the bre[a]dth of the human impact areas (recreational, waste water treatment discharge zone, etc.)." Although Table E2.5-1 (page E2-112, Vol. 1) provides a listing of the *primary monitoring stations* for UNFFR water quality, fecal coliform monitoring for human impact areas of Lake Almanor and Butt Valley Reservoir have not been designated. The draft Application provides only one data set from a location near the Canyon Dam Campground that meets this need (E2.5-16, Vol. 1). For adequate assessment of the potential risks of bacterial contamination to recreational waters of the project, the final Application must contain data sets for various sampling locations on both Lake Almanor and Butt Valley, including representative locations sampled near-shore in the vicinity of day-use areas, boat docks, vault toilet facilities, resort beaches and campgrounds. The Licensee should consult with SWRCB and U.S. Forest Service staff to determine the appropriate number and locations for fecal coliform monitoring stations.

Figure 4 of Attachment E2-B (Vol. 5), provides a map that depicts shoreline landuse prior to PG&E's recent 4-foot vertical increase in the reservoir's maximum water storage capacity, to the current 4494-foot surface elevation. Although this 1974 map clearly indicates the presence of a substantial number of resort, summer home, campground and landfill features adjacent to the Lake Almanor shoreline at the time PG&E raised the dam, there is no discussion regarding the location of septic systems associated with these structures. Likewise, other reports and summary information in the draft Application appear to make no mention of the potential influence of pre-existing leach field and landfill leachate plumes on water quality of the lake as the high-water line was raised, encroaching on previous setback zones. The final Application should include a Stage-Area Capacity Curve that provides a relationship between storage volume and surface water elevation. To determine potential risks for project-associated bacterial introduction to surface waters, the Application should also provide an inventory of septic and solid waste facility locations and the linear footage between these facilities and the high water line. A full discussion and companion map should be included to provide background useful in developing a relationship between water level and proximity of leach field, portable toilet and abandoned landfill features.

The Lake Almanor Shoreline Erosion Study (Attachment E2-B, Vol. 5) remains silent on Canyon Dam history during the period from 1914 through 1963. Information under General Hydrology of the Aquatic Resources section (page E3.1-337, Vol. 2) states that the last major resizing of the dam took place in 1926. Documents on file with the SWRCB, Division of Water Rights, Complaints Section suggest that from 1926 until 1963, storage in Lake Almanor was limited to a maximum surface elevation of 4474 feet, with a capacity of 650,000 acre-feet, due to structural limitations of Canyon Dam[3]. In October of 1963, structural rehabilitation of the dam was

[3] Pacific Gas and Electric Company. 1988. *Hydroelectric Power Development, North Fork of the Feather River, 1902-1965*. Jackson Research Projects, Davis, CA.

completed, allowing the lake to safely fill to a 4490-foot surface elevation. The final Application should provide a brief discussion on project history during this era. This discussion should include an explanation of any ongoing impacts to water quality that may have been initiated with vertical change in storage during the winter of 1963.

In FSCD comments submitted by the SWRCB, a request was made to conduct fish tissue sampling for PCBs in waters of Belden Forebay and on the NFFR downstream to assess risks to human health. This request specified that sampling protocol and tissue analysis be coordinated with the DFG Water Pollution Control Laboratory and the SWRCB. In reviewing Table E3.1.4-1 (Vol. 2) and results in Appendix E3.1-2 (Vol. 6) SWRCB staff was alarmed to see Total PCBs that exceed the Maximum Toxic Residue Levels (MTRLs) for edible tissue in 10 of the 15 fish sampled. However, reading further staff notes that discussion on field collection and laboratory methods used for conducting fish tissue analyses for silver, mercury and PCBs on samples from the Belden reach indicates that whole fish samples (dry weight) were analyzed (Section E3.1.4, Vol. 2). Although whole fish analysis is appropriate for evaluating risks to wildlife, human health risks are based on edible (filet) tissue. The SWRCB's Toxic Substances Monitoring Program MTRLs are compared only to filet or edible tissue samples (wet weight) and should not be compared to whole body or liver samples.[4] To accurately interpret the human health risks of PCB bioaccumulation in aquatic organisms on project waters, SWRCB staff will compare fish tissue data to the 5.3 µg/kg MTRL for PCBs. Because there is no correlation factor that may be applied to convert whole tissue data to edible tissue data, additional fish tissue sampling must be conducted on Belden Forebay and waters of the NFFR downstream of the PCB dredge spoils pile. Appropriate coordination with SWRCB staff and the DFG Water Pollution Control Laboratory should be initiated in a timely manner to allow for inclusion of suitable PCB data and analysis in the final Application and for 401 Certification needs.

As with all sound monitoring programs, all additional sampling requested by SWRCB staff on the UNFFR project must meet appropriate sampling protocols, technical standards and chain of custody practices must be strictly adhered to for all water quality sampling and analyses.

Water Temperature

FERC Project No. 2105 is the uppermost licensed project in the articulated system of hydroelectric facilities located on the NFFR drainage. Operation of Project 2105 is completely integrated with the downstream power projects. The large storage capacity of Lake Almanor allows it to function as the controlling feature for delivery of flow and stream temperatures to the Rock Creek, Cresta, and Poe reaches of the NFFR system. An evaluation to determine potential impacts of Project 2105 features and operation on coldwater resources is not complete without including all project-affected stream reaches. The draft Application does provide stream

[4] State Water Resources Control Board. *Toxic Substances Monitoring Program 1994-95 Data Report.*

temperature data for the Seneca, Belden and Butt Valley Creek reaches and their major tributaries and temperature profiles for Lake Almanor, Butt Valley Reservoir and Belden Forebay. From these data, longitudinal temperature profiles have been generated at various flows and ambient conditions for the Seneca stream reach, the Belden reach and the Butt Valley Creek reach (Appendices E2-H, I, and J, Vol. 5). However, a complete final Application should include stream temperature modeling plots and analyses of the effects of various stream flows on water temperature in the Rock Creek, Cresta and Poe reaches. It would be reasonable to expect that a 10-15 year adaptive management program might be designed and implemented to determine coldwater attainability in all reaches of the NFFR, while quantifying actual coldwater pool depletion in Lake Almanor under various release scenarios.

The Hamilton Branch powerhouse delivers an estimated 20-25 percent of the annual surface inflow to Lake Almanor, diverted from the Licensee's shallow Mountain Meadows Reservoir upstream (page E2-16, Vol. 1). Temperatures monitored in 2000 and 2001 near the point of delivery to the powerhouse indicate summer daily mean water temperatures that range from 10.5°C (September) to 19.1°C (July), with a 23.1°C maximum hourly average temperature recorded in June of 2000 (Appendix E2-B, Vol. 5). July and August maximum hourly temperatures from the powerhouse in both 2000 and 2001 continue to exceed levels that would be protective of cold freshwater species, while water temperatures measured for flow in the Hamilton Branch natural stream channel during the same period remain significantly lower and well within the protective range for both mean (11.5°C-12.1°C) and maximum (15.2°C-16.1°C) daily temperatures. The Licensee has complete control over operations of the Hamilton Branch Project; in the final Application, a discussion should be presented on thermal benefits that may be achieved in Project 2105 waters making seasonally selective use of the Hamilton Branch power facility.

An estimated 50 percent of the annual surface flow entering Lake Almanor is derived from NFFR sources originating on the slopes of Mount Lassen (page E2-15, Vol. 1). Daily mean temperatures measured on the NFFR above Lake Almanor during summer months (June, July, August, September) of water years 1986, 1996,1997, 2000 and 2001 indicate flows entering the lake remain between 10.8°C and 15.2°C (Tables E2.4-2 and E2.5-4, Vol. 1). This natural background water temperature provides habitat protective of the cold freshwater requirements of trout and other aquatic species. Influence from warm flows entering the UNFFR system during operation of the Hamilton Branch in summer months may compromise the ability to maintain suitable lake temperatures and coldwater temperatures for delivery from Canyon Dam and Butt Valley Reservoir to NFFR reaches downstream. Temperature Model simulations for alternative Project 2105 operation scenarios must be run to allow examination of not only the existing operation condition at Hamilton Branch but also 1)- operation at the Hamilton Branch powerhouse during all months excluding June, July and August, and 2)- a hypothetical "without-powerhouse" condition, allowing flow from previous diversions at Mountain Meadows Reservoir to be metered to the natural stream channel at various flow rates throughout the year.

Coordination with SWRCB, USFS, DFG and other appropriate resource agency staff is recommended prior to initiating modeling efforts to allow for discussion and concurrence on the range of alternative flow simulations needed.

Discussion at PRS-12 (Vol. 1), suggests the possibility of degradation to coldwater aquatic habitat in Lake Almanor as depletion of the coldwater pool is accelerated and associated coldwater refugia is lost late in August-September, should temperature-selective withdrawal modifications be made at the Prattville Intake for delivery of cold water through the Butt Valley-Caribou system to the NFFR. This discussion is speculative without having final data from the Prattville Intake Modification modeling effort currently being conducted pursuant to the Rock Creek-Cresta Agreement. In addition, the discussion ignores the contribution of sub-surface springs, providing significant inputs to the cold water pool year-round. The draft Application declares that in-lake sources provide an estimated 200-255 cfs at 8°C during the summer months (E2-392, Vol. 1), but this appears to be a serious underestimation relative to the 375-500 cfs estimates applied as boundary conditions in physical and numerical modeling work being conducted under contract to University of Iowa's Hydroscience and Engineering Department.[5] This inconsistency should be discussed and/or corrected in the final Application. Summary in Volume 1 should be qualified in the conclusions drawn and must be edited to include information regarding the potentially significant areas of coldwater refugia likely to be found within the vicinity of each of the lake's many spring eruptions and in the hypolimnion region surrounding these limnetic oases.

Discussion of temperature simulations presented in Section E2.6.4.2 (Vol. 1) contemplate depletion of the Lake Almanor coldwater pool early in the summer season, and reduced ability to draft cold water to the lower project and river during heat-critical months of July and August. These simulations consider different environmental conditions, existing and modified structure scenarios at the Prattville diversion feature, and various flow releases from Canyon Dam. However, it appears that simulations have not considered alternatives to the current rate of diversion at the Prattville Intake for power generating uses (ie: flexibility in scheduling operation vs. non-operation periods). It is also unclear as to whether selective use of the low-level outlet or continuous use of this outlet at Canyon Dam has been assumed. Modeling efforts must include the scenario option to exercise the use of the low-level outlet at Canyon Dam only in months of July and August thereby conserving colder hypolimnion water for use when temperatures in NFFR reaches most require it. Reduced diversion rates at the Prattville Intake under certain conditions must be examined to truly predict the adequacy of the cold water pool and its ability to temper stream water warming in NFFR reaches controlled by Project 2105.

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[5] IIHR Hydroscience & Engineering. 2002. *Physical and Numerical Modeling of Cold Water Feasibility Study through Prattville Intake at Lake Almanor in North Fork Feather River.* (Phase 1 Report, Task N1). Prepared for PG&E, under contract to The University of Iowa, College of Engineering, IIHR – Hydroscience & Engineering. Page 33.

As described in Section E2.6.4.2 (Vol. 1), stream temperature modeling simulations have relied on meteorologic data recorded at Chester and at the Canyon Dam weather stations, both located at elevations above 4500 feet. Data generated from the model is intended for use in predicting water temperature as flow travels downstream to reaches of the NFFR, including the Belden reach where elevation is measured at 2395 feet and as far downstream as the Poe powerhouse located below the 1000-foot elevation. It is expected that ambient conditions will change with elevation and drainage orientation, this must be reflected as model input. In FSCP comments, SWRCB staff requested that a second meteorologic station be sited below the Belden reach to collect empirical data for the lower end of the UNFFR project. The final Application should clearly state assumptions and describe how changes in ambient temperature, humidity, precipitation and solar radiation have been accounted for in the longitudinal modeling efforts.

Predictive modeling of stream temperatures that may be achieved in the Seneca reach from releases at Canyon Dam and stream temperatures that may be achieved in the Belden reach from waters delivered to storage at Belden and released are presented in Appendices E2-H and J (Vol. 5). These longitudinal temperature profiles indicate a steady reduction in water temperatures as flow releases are increased from 35 cfs up to 150 cfs. The cooling benefits appear to decrease at flow releases of 300 cfs. However, coarseness in the range of target flows evaluated limits a clear understanding of what point in the synthesized curve should be considered the point of diminishing benefits. To better identify the flow at which stream temperature reduction ceases, the final Application must include additional model runs for both the Seneca and Belden reaches, providing longitudinal temperature profiles for flow releases of 200 cfs and 250 cfs.

Temperature profiles for Butt Valley Reservoir (pages E2-305-308, Vol. 1) include data sets collected for thermal gradient at 3 stations. Station locations are distributed in a linear pattern through the body of the reservoir, and are representative of the deepest portion(s) of the water body which include the Caribou 1 intake draw zone. Data has not been plotted to demonstrate thermal conditions in the shallow inlet where the Caribou 2 intake structure is located. Appendix E2-C (Table 1, Vol. 5), displays maximum temperature data from monitoring stations located in the tailraces of both powerhouses, the disparity is obvious: Caribou 2 (24.5°C) and Caribou 1 (19.5°C). In addition to recognized thermal differences between the two intake sources, it should be noted that the Caribou 2 flow capacity of 1,464 cfs allows for delivery of flow to the Belden streamreach at a rate 24% higher than the Caribou 1 (1,114 cfs) structure. The final Application should include temperature profile plots that provide a comparison of data collected from stations in the shallow inlet region of the reservoir with thermal gradient documented in the deeper areas of the lake. Potential options for varied usage of the Caribou 2 and Caribou 1 during heat storms should be explored and presented as proposed PM&Es, as should proposals for modifications to the Caribou 2 intake structure that will allow cold water access to provide moderating effects on stream temperatures in the NFFR reaches downstream of the powerhouses.

The draft Application discusses water temperature for the Belden reach and provides maximum daily temperatures for June, July, August and September ranging from 20.1°C – 23.9°C, recorded on the NFFR at Gansner Bar (NF7) in 2000/2001 (Appendix E2-B, Vol. 5). In addition, mean daily temperatures of 20.4°C – 22.2°C occur in July, August and September 2001, at station BD2, reflecting daily means from Belden Forebay to the NFFR. It appears that summer water temperatures consistently exceed the 15°C - 17°C [6] optimal temperatures for growth that would be protective of the cold freshwater habitat needs of wild trout populations identified in the Belden reach (Table 5, Appendix E3.1-1, Vol. 6). In spite of scientific data, the Licensee gives no reference to water temperature in the Belden reach when discussing minimum instream flows under *Anticipated Impacts of Continued Operation* (pages E3.1-507-508, Vol. 2), nor are any changes in Belden summer flows proposed (E3.1.14, Vol. 2). The river reach temperature effects discussion for Belden suggests only possibilities of thermal reduction resulting from anticipated modifications at the Prattville structure (pages E3.1-156–157). To achieve the coldwater temperatures in Belden reach that will adequately supply both the Rock Creek and Cresta diverted reaches with flow that does not exceed 20°C (Rock Creek-Cresta Settlement Agreement), PM&E measures must be effective enough to maintain Belden water temperatures well below 20°C. SWRCB staff recommends that the Licensee explore the feasibility and effectiveness of modifications to the Caribou 2 intake to deliver cooler water through that powerhouse in summer months, for delivery to the Belden reach. In addition, staff proposes that increases in instream flow released from Canyon Dam during summer months be implemented as an interim measure to protect the cold water beneficial uses in the Belden stream reach until such time as modifications of the Prattville Intake structure are implemented and the adequacy of those features to achieve compliance with Basin Plan standards is demonstrated.

Fishery and Other Aquatic Resources

Section E3.1.7.1, Vol. 2 (and Appendices E3.1-5, Vol. 6) provides information on tailrace sampling conducted by the Licensee to evaluate potential impacts of entrainment at four of the five powerhouses in the UNFFR project. Kodiak trawl net surveys were conducted at Butt Valley, Caribou 1, Caribou 2, and Belden powerhouses in 2000 and 2001, with findings that are unsupported. This section states that in year 2000 efforts it was detected that the trawl net sampled "an adequate cross-sectional area of the Butt Valley, Belden, and Caribou 2 powerhouse tailraces," and continues by recognizing the questionable reliability of sampling at the Caribou 1 tailrace. However, discussion (page E3.1-181) indicates widely variable collection of discharge amounts through the nets from tailraces sampled. In 2001 a gear efficiency evaluation was conducted (page E3.1-186) using marked fingerlings (3-5" trout) passed through the turbines to quantify trawl net recovery rates. Results of net fishing efficiency indicate recovery rates from a low of 0% to a high of 11.5% at the four tailrace configurations. Based on this low level of confidence in field methods used, SWRCB staff suggests that summary statements on page

[6] Moyle, Peter B. 2000. *Inland Fishes of California*. University of California Press; page 276.

E3.1-195 are extremely misleading. Conclusions based on benefits of pond smelt entrainment at Butt Valley and Caribou 1 powerhouses are short-sighted and do not acknowledge the inconclusive nature of sampling methods used. SWRCB staff recommends that summary statements on page E3.1-195 (Vol. 1) be revised to indicate that results are inconclusive due to a low confidence level in field method recovery rates. Additional discussion with agencies responsible for management of fish and wildlife and the beneficial uses of the NFFR system should take place and alternative study methods implemented as determined necessary to evaluate project impacts of entrainment on aquatic species.

The native fish assemblage reported to occur in the UNFFR (Tables E-3.1.3-1 & E3.1.5-1, Vol. 2) includes hardhead, a California Species of Concern and Forest Service Sensitive Species. Fish population surveys and PHABSIM evaluation conducted for Project 2105 fail to consider hardhead or discuss the absence of this species. However, hardhead presence was documented in the Belden reach during Entrainment Studies (E3.1-193, Vol. 2). The final Application must provide a discussion of hardhead occurrence in the UNFFR project area, including a detailed description of habitat suitability requirements for various life stages and the extent of suitable habitat noted within the project boundaries. This discussion should present either a justification for disregarding this sensitive species in fishery evaluation and/or proposals for future assessment of the species and considerations that will be made to ensure that the health of this population is protected with continued operation of the project.

Manmade structures that act as barriers to fish movement within the project boundaries are described in section E3.1.6.1 (Vol. 2). This inventory should be qualified as "small structure barriers " in light of the fact that discussion omits any reference to the major dam structures at Belden Reservoir, Butt Valley Reservoir, and Lake Almanor which unquestionably act as impediments to fish passage. In this brief discussion, there is inconsistency between text (abandoned gage NF-47) and Figure E3.1.6-1 (abandoned weir NF-9) identification of the weir on lower Butt Valley Creek. SWRCB staff support the Licensee's proposal for removal of the concrete weir on lower Butt Valley Creek (page PRS-23, Vol. 1). Discussion of alternatives for fish passage and decisions on possible removal of other structures must be made based on scientific data, and should be part of a collaborative effort which includes representatives from fish and wildlife trustee agencies, water quality agencies, angler groups and other interested stakeholders.

Both the Seneca and Belden reaches of the NFFR support naturally reproducing populations of rainbow trout. The upper reach of Yellow Creek, tributary to the NFFR in the Belden reach, is designated as a wild trout stream (E3.1.2.6, Vol. 2) and may provide substantial recruitment to the mainstem. Biological requirements of rainbow trout include thermal limitations for all life stages. Bell concluded, "generally, all cold-water fish cease growing at temperatures above 68°F because

of the increased metabolic rate." [7] The Basin Plan designates all reaches of the NFFR as cold freshwater habitat and under this beneficial use designation waters must be maintained in a condition that will support healthy coldwater ecosystems. The final Application should propose measures that will ensure the protection of coldwater habitat throughout the Seneca and Belden stream reaches.

The draft Application provides data and findings from an instream flow study conducted on the diverted stream reaches of the UNFFR and lower Butt Valley Creek (IFIM Report, Appendix E3.1-10, Vol. 7). In comparing habitat availability and observed habitat use, PHABSIM data indicates that adult rainbow trout and Sacramento suckers use deep-water habitat in higher proportions than predicted, and exhibit a greater proportional use of higher velocity water (Figures 19 & 22, Appendix E3.1-10). The HSC curves developed for this project may not adequately represent this preference for deep, fast habitat because of 1) the potentially restrictive range of available habitats at the lower range of flows where fish were observed, and 2) the removal of data points representing fish observations in deep, fast water for the "Adjusted-Use/Availability" HSC curves (Appendix E3.1-11, Vol. 7). The potential for bias from these sources should be explored, and corrected if necessary by developing "high flow" HSC curves using fish observations collected at higher stream flows when the full range of habitats would be available.

Licensee-proposed bypass flows of 75 cfs to the Seneca reach and 140 cfs to the Belden reach are not consistent with IFIM study findings for providing optimum weighted usable area for species and life stages evaluated (Appendix E3.1-10, Vol. 7). The flow releases are also not great enough to achieve coldwater temperatures through the Belden reach that would be protective of salmonid species during summer months of all water year types (Appendix E2-H). The final Application must present a discussion on criteria used in determining proposed flow release levels. In addition the Licensee would benefit from establishing a collaborative team involving participation by resource agencies responsible for management and protection of aquatic resources, NGOs, and other interested parties that could assist in developing a flow regime for the controllable Seneca and Belden streamreaches.

Benthic Macroinvertebrate (BMI) surveys were conducted during 2000 and 2001 in an attempt to obtain baseline information on health of the NFFR aquatic community. However, year 2000 sampling was inadvertently conducted two weeks after the Licensee conducted controlled flow releases for assessment of whitewater recreation opportunities (E3.1.9, Vol. 2). The draft Application acknowledges potential alterations that may have occurred in BMI community structure during flow and velocity fluctuations, and thus infers that year 2000 data is not be

[7] Bell, M.C. 1986. *Fisheries Handbook of Engineering Requirements and Biological Criteria.* Fish Passage Development and Evaluation Program, U.S. Army Corps of Engineers, North Pacific Division, Portland Oregon.

considered baseline information. SWRCB staff concurs that the 2000 data may not be considered baseline, however potential short-term effects caused by flow may simply be evaluated against the baseline or long-term condition reflected in the 2001 data. Use of the baseline condition is important in temporal trend analysis, however longitudinal trend analysis is valuable in looking at perturbations that may be manifested below diversion structures. In comparing 2000 and 2001 data sets it must be noted that in spite of the potential for confounding short-term effects, long-term effects are evident in the longitudinal trends as demonstrated by: 1) increase in Intolerant Organisms with distance downstream from Canyon and Belden Dams, 2) increase in Taxonomic Richness with distance downstream from both diversion structures, and 3) increases in EPT Index and Sensitive EPT Index with distance downstream from both dams (Appendix E3.1-8, Vol. 7). Data collected in the 2000 and 2001 UNFFR BMI surveys clearly support the robust character of the CSBP as a bioassessment tool. It is recommended that BMI samples be collected on the UNFFR in the fall 2002 index period in conjunction with other NFFR sampling (as requested by SWRCB letter to Eugene Geary, PG&E, dated May 8, 2000) for strength in the data set for ongoing Rock Creek-Cresta (FERC #1962) monitoring and for future use on Project 2105.

Recreation

At PRS-40 (Vol. 1) the Licensee discusses a Recreation Resources Management Plan (RRMP), however a draft comprehensive RRMP has not been provided for review. Although numerous studies have been conducted to evaluate recreational resource opportunities at Lake Almanor, Butt Valley Reservoir, and the Seneca and Belden reaches of the NFFR, a RRMP that proposes measures to meet the needs of competing interests on these waters has not been developed. This fundamental document is at the heart of providing protection for contact and non-contact recreational uses throughout the project and should have been provided for review during the draft Application review period. The RRMP must be developed based on the broad range of recreational demands for recreational uses of surface waters controlled by the operation of Project 2105. Because of the comprehensive character of the RRMP, SWRCB staff recommends that this document now be developed in collaboration with resource agencies, local government, NGOs, shoreline landowners, and representatives from all recreational use groups that will be affected. The RRMP should establish operational practices that provide for scheduled availability of water at storage sources and receiving reaches within the control of UNFFR operations, and should include established seasonal lake levels to protect Lake Almanor and Butt Valley Reservoir recreation opportunities, plus a program of defined releases for instream uses on river reaches downstream of Lake Almanor. With participation from all interest groups and from the regulatory agencies it is anticipated that an appropriate RRMP can be prepared that will propose a means of operating the project to best optimize water resources for multiple uses.

Potential user conflict is not a valid reason to disregard the balancing of beneficial uses designated for surface waters under the control of the project. These decisions are left to the state and federal regulatory agencies, rather than Licensees. Flatwater recreation, whitewater recreation, angling and non-contact water recreation activities are all recognized and legitimate

beneficial uses of waters within the NFFR watershed. Likewise, power generation is a designated beneficial use of subject waters. In considering the potential issuance of a new license for hydropower generation on the upper reaches of the NFFR, a reallocation of water resources may be made. All beneficial uses of the water must be evaluated and a balancing of those uses made prior to issuance of a 401 water quality certification. SWRCB staff suggests that language in the draft Application summary (page PRS-32, Vol. 1) be tempered, and conclusions be drawn from data related to the resource issue.

In Section 3.7 (page PRS-32, Vol. 1) the Licensee concludes that whitewater boating is economically and ecologically undesirable, and makes clear its position that recreational flow releases should not be provided in Seneca and Belden reaches of the NFFR. SWRCB staff questions the casual dismissal of river recreation opportunities and emphasizes that data collected in white water controlled flow release studies do not support this position (E5.2.8 of Report E5, Vol. 3 and Appendix E5-Q, Vol. 8). Survey results indicate that, compared to other boating opportunities throughout the state the Belden and Seneca reaches are not exceptional, however the majority of boaters stated that they would return for whitewater recreation in the Belden reach with flows of 600-850 cfs (Table E5.2.8-5, Vol. 3) and 89-101% of boaters surveyed said that they would return for flows of 325-410 cfs in the Seneca reach (Table E5.2.8-8). Whitewater recreational opportunities in late summer and early fall are limited on river reaches of Northern California (Table E5.2.8-10, Vol. 3), addition of selected river segments of the NFFR to this short list would fill a seasonal void in meeting this recognized demand. Although the Licensee appears to have taken an unreasonably narrow view on recreation demand in the UNFFR project area, authority and responsibility for balancing of all beneficial uses on these water bodies remains with state and federal agencies. SWRCB staff recommends that the Licensee reconsider its position on recreational flow releases in the Seneca and Belden reaches of the NFFR. In a collaborative forum that includes recreation experts, resource agencies, local user groups and stakeholders, a comprehensive RRMP should be developed that acknowledges all beneficial uses of UNFFR waters, and provides opportunity to meet the variety of recreational needs that have been identified without compromising ecosystem health. As with the adaptive management effort being conducted for flows in the Rock Creek and Cresta reaches downstream, it would be expected that a monitoring program be included in the RRMP.

Based on responses to 2001 surveys from Lake Almanor recreationists (pages PRS 44-45, Vol. 1), users felt that aesthetic values were compromised with lake levels of ≥4482. Likewise, non-contact water recreation and both swimming and boat launch access are impaired at Lake Almanor under low lake level conditions. However the draft Application does not provide data specific to lake level requirements for boat launching capabilities. To appropriately evaluate lake level requirements for protection of shoreline and flatwater recreational opportunities at Lake Almanor, additional assessment should be conducted. The Licensee should provide an inventory of all boat-launch facilities, and specific data on minimum lake levels necessary for full use of these access features. The final Application should include the water craft access information

requested and a discussion of proposed project operations that will protect recreational uses of the reservoir through the peak recreational season extending mid-May through mid-September.

Recreational surveys conducted in 2001 may not be representative of the typical range of lake resource users, in light of the fact that 1) storage practices were altered in this critically dry water year, and 2) 12 of the 14 survey dates were selectively set for Saturdays (Table E5.2.1-2, Vol. 3). With early seasonal drawdown of Lake Almanor and numerous other lakes throughout the state during drought conditions of 2001, and heightened sensitivity of user groups to the energy crisis portrayed by media, there is risk for interviewing bias on responses to questions regarding actual lake level needs. In addition, visitation surveys intended for development of recreational user profiles should be conducted using a stratified randomness approach that includes selection of both weekday and weekend sampling dates; with data collected primarily on one weekend day local users are potentially under-represented. The Lake Almanor, Butt Valley Reservoir and Belden reach of the NFFR are important recreation areas and should be appropriately assessed for user satisfaction. We strongly urge the Licensee to design and implement an additional recreational survey for the UNFFR project.

Data that has been provided by recreation surveys at Lake Almanor and Butt Valley Reservoir indicate a visitor demand for restrooms and fish cleaning stations (Table E5.1.1-6, Vol. 3). Increased use of shoreline areas for angling, swimming, picnicking and other contact and non-contact recreational activities increases the risk for nutrient and bacterial contamination of surface waters. SWRCB support the Licensee's effort to identify and quantify facility needs adequate to prevent the introduction of bacteria and biostimulatory substances to water bodies controlled by Project 2105.

In reviewing Figure E5.1-1 (Vol. 3), it is clear to see that developed recreational sites and public access to Lake Almanor are concentrated in the Southwest Access Zone, and that Butt Valley Reservoir facilities and access are focused at three sites on the northeast shoreline. These features are primarily campgrounds and boat launch facilities, with limited day-use access described. When comparing dispersed sites represented on Figure E5.1-2, it is obvious that these areas have been selected along the north and west shoreline as alternatives to the existing Lake Almanor features, and along upper Butt Valley Creek, immediately upstream of the powerhouse. Dispersed use areas are often accessed on ungraded roads and have no sanitation facilities provided. Demand for public day-use in the project area, including shoreline angling, boating, swimming, and beach uses, is projected to increase significantly in the future (Table E5.1.1-10, Vol. 3). As demand increases it becomes more important to focus considerations on meeting the needs of the user groups, and accommodating public access in a manner that is protective of the terrestrial and aquatic ecosystems. The Licensee should consider implementation of developed angler, hiking, and beach access opportunities at both Lake Almanor and Butt Valley Reservoir, including but not limited to potential sites discussed in the development suitability section E5.2.7 (Vol. 3).

River corridor access from Belden Forebay to Belden powerhouse is limited by encroachment of Himalayan blackberry, a direct result of decreased flows below project features. Although this reach offers angling and on-water recreational opportunities, restricted access impairs the ability to fully exercise optimum levels of recreational use of the river (Appendices E5-R & E5-Q, Vol. 8). A feasibility assessment should be conducted to evaluate potential methods of reducing vegetation encroachment and providing selective access routes to the stream, with particular focus on high and medium rated development suitability areas (Figure E5.2.7-11, Vol. 3). The assessment should explore environmentally sensitive methods of vegetation control (see discussion above in Hydrology/Geomorphology) and should provide an evaluation of long-term blackberry management strategies through seasonal channel maintenance flows or other methods. Findings should be provided in report form as an element of the final Application.

SWRCB staff appreciates the opportunity to comment on the draft Application for relicensing of the UNFFR Project. PG&E is to be commended on the tremendous effort put forth for resource data collection to date. SWRCB staff is optimistic that a collaborative approach can be taken to optimize water resources in the UNFFR for multiple uses, and we look forward to working with you on development of PM&Es that will best protect and balance all designated beneficial uses of surface waters in the NFFR watershed. If you have questions regarding these comments please contact me at (916) 341-5397 or e-mail: sstohrer@waterrights.swrcb.ca.gov, or you may contact Jim Canaday, FERC Licensing Team Leader at (916) 341-5308.

Sincerely,

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6069 Hornbeck Lane
Anderson, CA 96007

Mr. Jerry Mensch
CA Sportfishing Protection Alliance
2553 Stonehaven Drive
Sacramento, CA 95827

Mr. Curtis Knight
Cal-Trout
P.O. Box 650
Mt. Shasta, CA 96067

Mr. Steve Wald
CA Hydropower Reform Coalition
2140 Shattuck Avenue, 5th Floor
Berkeley, CA 94704

Mr. Bill Dennison
Plumas County Board of Supervisors
P.O. Box 1519
Chester, CA 95020

Susanville Indian Rancheria letter
September 9, 2002

SUSANVILLE INDIAN RANCHERIA

September 9, 2002

Alison MacDougall
Cultural Resource Specialist
Pacific Gas & Electric Company
350 Salem St.
Chico, CA 95928

Dear Ms. MacDougall,

There are several issues the Susanville Indian Rancheria (SIR) would like to address with regards to the Upper North Fork Feather River Project Re-licensing Application (FERC No. 2015) and the associated Native American Traditional Cultural Properties Identification and Description Report (TCP). These issues include: equal consultation privileges for SIR to those of the Greenville Rancheria with regard to the management of cultural properties important to the Maidu people; the use of test excavations on prehistoric sites potentially eligible for inclusion in the National Register of Historic Places (NRHP); the repatriation of previously removed artifacts and remains; and mitigation for traditional cultural areas destroyed in the project area.

- SIR's Maidu cultural representatives recently met with the Greenville Indian Rancheria to obtain a copy of the TCP for FERC No. 2015 and discuss many of the cultural resource issues associated with the project. SIR and the Greenville Indian Rancheria agreed to form a coalition as the federally recognized tribes in the Area of Potential Effect (APE) for FERC No. 2015 and assume responsibility for Maidu concerns in Lassen and Plumas Counties. We request that PG&E add SIR to the list of entities receiving consultation privileges with regard to the management of cultural sites by incorporating the following changes (in red) into the Final Application for Re-Licensing Upper North Fork Feather River Project FERC No. 2015 Section E 4.4 Management of Historic Properties (CRMP):

  For most sites, the Licensee will apply both short- and long-term treatment measures in a phased effort order to give these sites continued management consideration by the Licensee and the SHPO, in consultation with Lassen and Plumas National Forests, ~~and~~ the Greenville Rancheria of Maidu Indians, and the Susanville Indian Rancheria.

- SIR is concerned with the potential impacts of archaeological test excavation and data recovery associated with determining whether sites in the project area are eligible to be placed on the National Register of Historic Places (NRHP). SIR would prefer that these sites be considered as potentially eligible for inclusion in the NRHP, but remain undisturbed. Wherever possible, preservation, education, and monitoring/patrolling of prehistoric cultural resource sites is the management preference.

SUSANVILLE INDIAN RANCHERIA

- Repatriation of funerary artifacts and remains previously removed from the project area to SIR and GIR for re-burial at the nearest Indian Cemetery (a possibly at Maidu Cemetery near Last Chance area). PG&E assistance with fencing, equipment etc.

- The Traditional Cultural Practices Report (TCP) conclusions and necessary mitigation. The TCP Report conclusions and necessary mitigation for destruction and loss of areas to include:

  Provisions to guarantee access to Indian Cemetery (Shady Grove).

  Provisions for utilization of certain PG&E lands for traditional cultural activities by agreement instruments negotiated between SIR-GIR-PG&E.

  Identification of the "Henry Site" and others identified in the TCP as such a site.

We appreciate the opportunities that PG&E and FERC have provided to comment and consult regarding FERC No. 2015. SIR hopes that PG&E will honor our requests to: summarize. We look forward to working with you in the future to ensure the protection, proper repatriation, and continued existence of important Maidu resources and practices.

Thank you,

Valerie Edwards
Tribal Chairperson

cc: Tom Jereb, PG&E Project Manager
Paul Friedman, FERC Archaeologist
GIR, Tribal Chairperson
GIR, Environmental Protection Department
Allen Lowry, SIR Tribal Liaison Committee Maidu Representative
Marvena Harris, SIR Tribal Liaison Committee Maidu Representative
SIR Environmental Protection Department

DRAWER "U" • SUSANVILLE, CA 96130 • (530) 257-6264 • FAX 257-7986

Trout Unlimited letter
July 29, 2002

Charlton H. Bonham
TROUT UNLIMITED
828 San Pablo Avenue
Suite 208
Albany, CA 94706
(510) 528-4164

July 29, 2002

Mr. Tom Jereb, Project Manager
Pacific Gas & Electric Company
Mail Code N11D
P.O. Box 770000
San Francisco, CA 94177

Re: Trout Unlimited Comments on Draft License Application for Upper North Fork Feather Project, F.E.R.C. License No. 2105

Dear Mr. Jereb:

Trout Unlimited (TU) thanks Pacific Gas & Electric Company (PG&E) for opening the traditional Federal Energy Regulatory Commission (Commission or FERC) consultation process to interested parties beyond state and federal agencies and tribes. Pursuant to 18 C.F.R. § 16.8(c)(5), TU provides comments below on the draft application for new license for the Upper North Fork Feather Project, FERC License No. 2105.

TU is the nation's leading coldwater fisheries conservation organization. TU has approximately 125,000 members nationwide, and is dedicated to protecting, conserving, and restoring North America's native trout and salmon resources. In California alone, TU has over 10,000 members. TU members from California, and other regions of the United States, use and enjoy the Upper North Fork Feather River and its watershed. TU provides comments on PG&E's Draft License Application because this relicensing directly affects TU's mission to protect, conserve, and restore the Upper North Fork Feather's native trout and their habitat. TU comments in four areas: (1) timely relicensing; (2) collaborative relicensing efforts and watershed perspective; (3) Hamilton Branch; and, (4) deficiencies in the Draft Application.

Licensees greatly control the timeliness of relicensing hydroelectric projects.

The Upper North Fork Feather license expires on October 31, 2004. The time period from today to expiration of the present license will likely determine many aspects of this relicensing, including but not limited to timely relicensing and creation of protection, mitigation, and enhancement measures. These examples of crucial aspects of relicensing must be evaluated against the Federal Power Act's directive to give equal

consideration to power and non-power values alike. Making supportable relicensing decisions clearly requires that licensees present adequate and sufficient information to all participating parties and FERC. Responsiveness to federal and state agency and interested parties' concerns, requests for studies and information, and comments throughout the three stages of the FERC traditional relicensing consultation process will contribute to accomplishing two goals: (1) timely relicensing; and, (2) employing sound science to make relicensing decisions that give equal consideration to power and non-power values.

Collaborative relicensing efforts lead to better results for all interested parties, including the licensee.

As you know, collaboration defines a majority of PG&E's California relicensings. The ultimate goal of the FERC three-stage consultation process is to generate sufficient information to make a decision on the merits of the application. Collaborative processes significantly further this goal.

Defining characteristics of collaborative processes include joint participation by all interested parties, an objective framework, and discussion of all positions on a given matter. One intended product of collaborative processes is resolution of study disputes, which if resolved at "pre-filing [of license application] would save about 15.3 months in total processing time."[1] Moreover, resolving study disputes pre-filing of a final license application saves licensees money.[2] Collaborative efforts initiated earlier rather than later can contribute to resolving any possible study disputes.

TU requests that PG&E undertake a collaborative process for the remainder of the Upper North Fork Feather relicensing. Finally, TU requests that this process consider Project 2105's relationship to and impacts on all other downstream PG&E FERC licensed projects. The Upper North Fork Feather is not divided into distinct, divisible segments other than on paper. TU's request speaks to the need for better cumulative effects data. The knowledge level of those parties participating in the 2105 relicensing (and any collaborative process) regarding Upper North Fork Feather watershed issues would greatly facilitate an efficient cumulative effects analysis.

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[1] *Hydroelectric Relicensing and Nuclear Energy: Hearings Before the Subcomm. on Energy and Air Quality, and of the House Comm. on Energy and Commerce*, 107th Congress (June 27, 2001) (statement of Curt Hebert, Jr., Chairman, Federal Energy Regulatory Commission) (visited July 3, 2001) <www.energycommerce.house.gov/107/hearings/06272001Hearing305/hearing.htm>.

[2] *See id.*

TU's support for Hamilton Branch is narrowly defined.

In June 2002, TU (as a member of the California Hydropower Reform Coalition (CHRC)) filed a motion in federal bankruptcy court supporting PG&E's "Motion for Authority to Incur Expenses Related to the FERC License Application for Hamilton Branch Hydroelectric Facility," dated May 31, 2002. That support was and is narrowly tailored. TU only supported the grant of authority to PG&E to undertake environmental studies and publish the resulting report of Hamilton Branch impacts, and to incur the associated expenses. TU expressed no opinion on whether the facility is jurisdictional under Federal Power Act Part I, and, if so, whether the facility will be licensed as part of the 2105 license or in a separate licensing proceeding.

Inclusion of Hamilton Branch in the 2105 license raises numerous concerns. Other parties' Draft License Application comments enumerate those concerns. TU requests that immediately upon creation of a 2105 collaborative relicensing process, all interested parties jointly discuss and determine the preferred method for addressing the Hamilton Branch facility and associated environmental studies.

Specific Draft License Application Comments.

In many instances, TU cannot concur with the Draft License Application's characterization of Project impacts to Project areas and Project-affected areas, or with its data interpretations. Similarly, TU does not support the Draft Application's proposed flow regimes, which would produce a flat hydrograph noticeably lacking in normative, dynamic hydrological conditions. It is simply too early in the relicensing.

- Substantial evidence supports creating a flow regime that is dynamic within Project bypass reaches, and mimics the natural hydrograph in relation to magnitude, frequency, duration, timing, and rate-of-change. Natural variability and seasonality are two additional key components. TU requests development of such a flow regime for Project 2105.
- It also remains to be seen what flow regime optimizes naturally reproducing trout habitat for all life stages, and other native aquatic species habitat. TU requests development of such a flow regime for Project 2105.
- TU requests that such flow regimes provide adequate connectivity between mainstem and tributary stream reaches for aquatic species migratory needs.
- The Belden Reach is characterized by significant riparian vegetation encroachment. Contrary to the Draft Application's assertion, the Reach's altered hydrograph has contributed to this encroachment effect. TU requests development of measures to address this vegetation and geomorphological issue.

- For example, flow analysis must account for the altered channel shape. Modeling efforts should consider pre-encroachment scenarios. A range of remedial measures should be developed and assessed. Other restoration efforts should be analyzed for comparative purposes (see the Trinity River Restoration effort).
- All Draft Application conclusions on Lake Almanor water temperature changes should be withdrawn until completion of relevant coldwater feasibility studies.
- TU requests development of a comprehensive water temperature model of all 2105 project-affected stream reaches, including Rock Creek, Cresta, and Poe.
- TU requests development of additional measures to reduce water temperature for the relevant stream reaches; specifically, utilizing the Butt Valley coldwater pool, or increasing Canyon Dam summer flow releases.
- TU requests additional discussion (in the collaborative process) on means to evaluate project entrainment impacts.
- TU requests additional discussion (in the collaborative process) on possible fish passage alternatives.
- TU requests that fishability study data be used only to indicate angling preferences, not biological and hydrological measures.
- TU requests additional discussion (in the collaborative process) on angling opportunity improvement; specifically, through riparian management measures.

Conclusion

Trout Unlimited thanks PG&E for the opportunity to comment on the Draft License Application for its Upper North Fork Feather Project, and for its effort to date in this relicensing. We look forward to undertaking a collaborative process for the remainder of the relicensing. That collaborative process should allow all parties to meet their respective needs in a mutually agreeable manner.

Please contact me at (510) 528-4164 with any questions.

Sincerely,

Charlton H. Bonham
TROUT UNLIMITED

cc:
Ms. Magalie R. Salas, Secretary, Federal Energy Regulatory Commission

Mr. Steve Edmondson, United States National Marine Fisheries Service
Mr. Gary Taylor, United States Fish and Wildlife Service
Mr. Mike Taylor, United States Forest Service, Plumas National Forest
Mr. Harry Williamson, United States National Park Service
Ms. Sharon Stohrer, California State Water Resources Control Board
Mr. Mike Meinz, California Department of Fish and Game
Mr. John Gangemi, American Whitewater
Mr. Curtis Knight, California Trout
Mr. Kevin Lewis, American Whitewater
Mr. Jerry Mensch, California Sportfishing Protection Alliance
Mr. Dave Steindorf, Chico Paddleheads

U. S. Forest Service letter
July 24, 2002

United States Department of Agriculture

Forest Service

Lassen National Forest
2550 Riverside Drive
Susanville, CA 96130
(530) 257-2151

Plumas National Forest
P.O. Box 11500
159 Lawrence Street
Quincy, CA 95971
(530) 283-2050

File Code: 2770

Date: July 24, 2002

Mr. Tom Jereb, Project Manager
Pacific Gas and Electric Company
Mail Code N11D
P.O. Box 770000
San Francisco, CA 94177

Certified Mail-Return Receipt Requested

Dear Mr. Jereb:

Attached is the response of the Lassen and Plumas National Forests to the Draft Application for New License submitted by Pacific Gas and Electric Company (PG&E) on April 29, 2002 for the Upper North Fork Feather River Project (FERC No. 2105). In some instances, our comments constitute a substantive disagreement with PG&E's conclusions. Because of this disagreement, the Forest Service requests that a meeting be held between PG&E and the Forest Service in accordance with 18 CFR 16.8. The Code states in part that the applicant (PG&E) must hold "at least one joint meeting with the disagreeing resource agency...not later than 60 days from the date of the disagreeing agency's or Indian tribe's written comments to discuss and to attempt to reach agreement on its plan for environmental protection, mitigation, or enhancement measures." After we have an opportunity to consult on the scheduling of the joint meeting we would like a written notice of the time and place of the meeting and a written agenda of the issues to be discussed at the meeting at least 15 days in advance.

The Forest Service has identified a number of management issues of particular interest. These topics have been identified in our attached Chapter II comments but they are enumerated here to highlight their significance:

- The addition of the Hamilton Branch facilities to this licensing effort is untimely as it requires a major diversion of effort at a crucial point in the licensing process. While an amendment to the license application will be filed in 2003 it is necessary to review and comment on Hamilton Branch study plans concurrently with review and comment on the draft license application for the remainder of the project.

- PG&E has conducted meetings with the 2105 Committee as well as with Forest Service, State, and other Federal representatives and Non Governmental Organization representatives in an attempt to keep interested parties informed and to receive comment on relicensing progress. Meetings with the 2105 Committee have been oriented toward

issues on and around Lake Almanor, while meetings with agency representatives and others have focused on biological and physical issues in Lake Almanor, Butt Valley Reservoir, and the North Fork Feather River below Canyon Dam. Meetings initiated by PG&E have not been held concurrently with both groups. A policy of separate meetings at locations up to three hours driving time apart can result in loss of practical solutions to problems due to the absence of some interested parties and could result in inadvertent spreading of erroneous information.

- Although the relicensing process for this Upper North Fork Feather River Project has been described by PG&E as a "hybrid" process incorporating collaboration into the traditional FERC process, the Forest Service disagrees with this characterization. A collaborative or hybrid process typically includes at least an agreement that defines the roles of the collaborative participants and establishes a process for reaching decisions regarding proposed license conditions for consideration by the FERC. In order to be successful, collaborative meetings and discussions must take place with all interested parties at a single location rather than two locations with separate participating parties as is now the case.

- PG&E has conducted a number of detailed recreation studies resulting in numerous and voluminous reports, yet a comprehensive Recreation Resource Management Plan that identifies current available opportunities and specific needs now and in the future will not be available until submittal of the Final License Application. The Forest Service made a request for the plan during First Stage Consultation. This is a serious omission and this draft application cannot be considered complete without a comprehensive Recreation Resource Management Plan. Recreation is a key resource in the project area and recreation uses have significant interactions with other key resources, none of which can be properly evaluated without a comprehensive plan. The Recreation Management Plan should have a strategic focus and include all project-affected areas from Lake Almanor to the mouth of Yellow Creek. Operation and maintenance issues should be included in the Plan only to the extent that they are factored into project costs over the term of the License.

- PG&E proposes that the North Fork Feather River below Canyon Dam be managed under a constant flow regime. While this strategy may benefit some species, it does not address a broader ecosystem based approach founded on the mimicking of natural flows. The Forest Service desires a flow regime that maintains, enhances and restores all life stages of native aquatic species, and that also maintains or restores riparian resources, channel integrity, and fish passage. Aquatic Management Strategy Goals outlined in the January 2001 Sierra Nevada Forest Plan Amendment Project provide a framework for moving ecosystem conditions toward desired conditions.

- Some study results such as water temperature in the Seneca and Belden reaches of the North Fork have been presented in mixed formats making interpretation from reach to reach difficult. Other study plans relating to aquatic mammals, deer migration, and habitat opportunities in the Almanor Causeway area requested in our First Stage

Consultation letter dated June 2, 2000 have not been conducted. Consequently, we do not consider this Draft Application complete.

- The Forest Service provided First Stage Consultation Comments to PG&E on June 2, 2000. No written response to these comments was received.

The Forest Service will provide preliminary 4(e) conditions for the Upper North Fork Feather River Project (FERC No. 2105) in accordance with 18 CFR 4.34(b)(1)(1) when the FERC publishes the Notice of Ready for Environmental Analysis. License articles contained in the Commission's Standard Form L-1 (revised October 1975) issued by Order No. 540, dated October 31, 1975, cover general requirements that the Secretary of Agriculture, acting by and through the Forest Service, considers necessary for the adequate protection and utilization of the land and resources of the Lassen and Plumas National Forests. For the purposes of section 4(e) of the Federal power Act (16 U.S.C. 797 (e)), the purposes for which National Forest System lands were created or acquired shall be the protection and utilization of those resources enumerated in the Organic Administration Act of 1897 (30 State. 11), the Multiple-Use Sustained Yield act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act of the Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Forest Plans prepared in accordance with the National Forest Management Act.

We appreciate the large volume of information that PG&E has assembled to assist in the understanding of the Upper North Fork Feather River Project. Additionally, PG&E has been providing answers and clarification to on-going Forest Service questions which has been very helpful. We also note however, that at times information in the Draft Application is poorly organized and difficult to track. Background information appearing in many of the resource reports is repetitious and only adds to the mass of the application.

If you have any questions, please contact Mike Taylor, Forest Service Upper North Fork Team Leader at (530) 534-6500. We look forward to working with you to resolve these issues.

Sincerely,

EDWARD C. COLE
Forest Supervisor
Lassen National Forest

ROBERT G. MACWHORTER
Acting Forest Supervisor
Plumas National Forest

cc: FERC
RHAT

Chapter I
Introduction

Introduction

This document is the formal response of the Forest Service (FS Response) to the Draft Application for New License for the Upper North Fork Feather River Project (FERC No. 2105) prepared by PG&E (Applicant). This response is in compliance with the Federal Energy Regulatory Commission (FERC) "traditional" relicensing process and timelines as defined in 18 CFR 16.8 (c). The Forest Service submitted First Stage Consultation comments to the applicant on June 2, 2000. No written response to these comments was received.

The Forest Service is responsible for management of portions of the lands underlying the project, and intends to submit Federal Power Act Section 4(e) conditions for inclusion in the new project license at the appropriate time. Prior to submittal of 4(e) conditions the Forest Service will release a "proposed action" to the public for comment, followed by consideration of other alternatives, conditions, and recommendations. The process will follow National Environmental Policy Act (NEPA) requirements. The outcome of a Forest Service decision on this NEPA analysis will be a set of "conditions" and "recommendations". "Conditions" become requirements in the FERC license for operation of the project, and are deemed necessary for the adequate protection of the National Forest System lands (NFSL) affected by this hydroelectric project. These FS mandatory requirements are frequently referred to as "4(e) conditions" as the authority to develop them is provided in section 4(e) of the Federal Power Act. When a direct effect to NFSL cannot be demonstrated, the Forest Service provides "recommendations" for consideration by the FERC for inclusion in the license.

The Forest Service anticipates that the preliminary 4(e) conditions will incorporate Standard Forest Service Provisions as well as protection, management, and enhancement measures (PM&E's) that provide for:

- Instream flow requirements,
- Management of the hydrologic functioning of the riverine system,
- Aquatic and terrestrial species and habitat management,
- Protection of threatened, endangered, proposed for listing, Survey & Manage, and special status species,
- Noxious weed management,
- Recreational and interpretive management and services,
- Transportation system management,
- Fire prevention and protection,
- Maintenance of improvements,
- Public safety,
- Protection of United States property, Cultural Resources, and

- Other relevant protection, mitigation, or enhancement measures identified through analysis.

In most cases, direct effects to NFSL result when project facilities are located within the National Forest. However, if a direct tie to the National Forest can be demonstrated, then 4(e) conditions can be required whether or not the initial action occurs on the National Forest.

The decision made by PG&E to use the FERC traditional licensing procedures for the Upper North Fork Feather River Project has limited resource agency and public participation in the relicensing process. This decision has reduced opportunities for a collaborative approach to developing protection, mitigation, and enhancement (PM&E) measures for the project. While numerous meetings with State and Federal agency representatives as well as representatives of Non-Governmental Organizations (NGO) have been held with PG&E, a structured Collaborative format with process protocols and a charter to reach a settlement has not been proposed by PG&E. Discussions with PG&E have been further complicated by the conscious decision made by PG&E to hold recreation issue oriented meetings in Chester and biological and earth science issue oriented meetings in Sacramento. From the Forest Service perspective, the unstructured dual "collaborative" process has been helpful in understanding the needs and responsibilities of relicensing participants but progress toward reconciliation of differences in opinion and progress toward a settlement satisfactory to all participants has been slowed by the fragmented proceedings. The Forest Service would participate in a collaborative process intended to lead to a Settlement Agreement should PG&E decide to participate.

Draft license application recommendations in essence propose minor changes to project operations or PG&E responsibilities. A number of recommendations could be considered as existing operation and maintenance requirements and not true enhancements or improvements. The Forest Service is not prepared at this time to offer detailed counter proposals. The Forest Service will highlight areas of disagreement and offer a rationale for disagreement.

Forest Service analysis of the draft application has shown that insufficient information has been presented to allow the Forest Service to develop project 4(e) conditions pursuant to the Federal Power Act. These conditions would provide for the adequate protection and utilization of National Forest System lands and ensure that the license will not interfere or be inconsistent with the purpose for which the National Forests were created.

Recent Changes in Management Direction

Hydrology: Hydrologic information contained in the draft license application was reviewed from the point of view of developing project 4(e) conditions that fulfill two goals described in the Sierra Nevada Forest Plan Amendment of January 2001:

- Aquatic Management Strategy Goal #8: "Streamflow Patterns and Sediment Regimes: Maintain and restore in-stream flows sufficient to sustain described

conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved." (FEIS Volume 1, Chapter 2, page 41)

- Watershed Restoration: Restoring Flow Regimes: "During hydropower project relicensing, there would be opportunities to restore, to some degree, the flow regimes of these systems. Adequate consideration of aquatic ecosystems during project relicensing would be one of the most important restoration opportunities in the Sierra Nevada over the next several decades." (FEIS Volume 1, Chapter, pages 43-44)

Aquatic Management: Management of aquatic resources on National Forest System lands has recently been modified by the January 2001Sierra Nevada Forest Plan Amendment Project. Aquatic management has been defined by 9 strategy goals that are neither prescriptions nor standards, but endpoints toward which management will move watershed processes and functions, habitats, attributes and populations. The goals provide a broad, comprehensive framework for establishing desired future conditions for analysis at the river basin, watershed, and landscape scale (ecosystem analysis). Moving ecosystem conditions toward these goals will restore and maintain the physical, chemical an biological integrity of the region's waters as mandated by the Clean Water Act, and will support the Forest Service's mission to provide habitat for riparian and aquatic-dependent species under the National Forest Management Act, Organic Act, Safe Drinking Water Act, Endangered Species Act, and Electric Consumers Protection Act.

Sensitive Plants: The Plumas National Forest Land and Resource Management Plan (LMP, 1988) states as a forest-wide general direction to "maintain viable populations of sensitive plant species." The Plumas National Forest LMP forest-wide standards and guidelines state to "Protect sensitive and special interest plant species as needed to maintain viability. Inventory and monitor sensitive plant populations on a project-by-project basis. Develop species management guides to identify population goals and compatible management activities and/or prescriptions that will maintain viability." The record of decision for the 2001Sierra Nevada Forest Plan Amendment (SNFPA) amends the management direction for the Lassen and Plumas LMP's for Threatened, Endangered, Proposed, and Sensitive Species (TESP) and noxious weed management.

Noxious Weeds: Noxious weeds pose a threat to the economic and ecological functions of ecosystems in the Sierra Nevada (USDA FS Sierra Nevada Forest Plant Amendment 2001, volume 1). The spread of noxious weeds and non-native invasive plant species reduces biological diversity, impacts threatened and endangered species, wildlife habitat, modifies vegetative structure and species composition, changes fire and nutrient cycles, and degrades soil structure (Noxious weed management strategy, Region 5).

Millions of acres of public lands in the West are rapidly undergoing the greatest degradation due to the spread of invasive non-native plants (Stemming the Invasive Tide). Within the last 20 years in California, studies show that yellow star thistle alone has increased from 1 million acres to at least 12 million - about 12 percent of the state's land base (as reported by California Department of Food and Agriculture). Current

inventories indicate that weeds are spreading at an increasing rate within the region (Noxious weed management strategy, Region 5).

Increased public awareness has initiated changes in noxious weed management within the state. Weed Management Areas (WMA's), which coordinate weed management across jurisdictional boundaries, now cover much of the state, recognizing the need for coordinated management and control of noxious weeds. National Forests have become active participants in WMA's. The California Department of Food and Agriculture (CDFA) along with County Agricultural Commissioner Offices have increased their efforts to address the statewide problem of noxious weed spread.

The primary goals of the USFS Region 5 noxious weed strategy are:

1. Increase the understanding and awareness of noxious weeds and the adverse effects they have on wildland ecosystems.
2. Develop and promote implementation of a consistent integrated pest management (IPM) approach. Institutionalize consideration of noxious weeds in all planning and project analyses.
3. Develop strong partnerships and cooperation with private landowners, county governments, state and federal agencies, extension service, universities, and the research community for a consolidated and united approach to managing invasive species.

As listed in the Forest Service Manual, 2080.2 noxious weed management objectives; it is the intention of the USFS to use an integrated weed management approach to control and contain the spread of noxious weeds on National Forest System lands and from National Forest lands to adjacent lands. Specific objectives to be achieved through noxious weed management include:

1. Prevention of the introduction and establishment of noxious weed infestations;
2. Containment and suppression of existing noxious weed infestations;
3. Formal and informal cooperation with state agencies, local landowners, weed control districts and boards, and other federal agencies in the management and control of noxious weeds.
4. Education and awareness of employees, users of National Forest System Lands, adjacent landowners, and state agencies about noxious weed threats to native plant communities and ecosystems.

Forest Service Interdisciplinary team (IDT) Members

Core Team Members:

Name	Expertise	Name	Expertise
Mike Taylor	Team Leader	Gary Rotta	Wildlife
Jane Goodwin	Recreation	Mark Williams	Wildlife
Peggy Gustafson	Recreation	Sue Norman	River Recreation
Steve Markman	Hydrology	Dianne Watts	Archaeology
Michael Condon	Plumas Planning Officer	Kevin McCormick	Archaeology
Ken Roby	Fisheries/Amphibians	Kim Earl	Botany
Tina Hopkins	Fisheries/Amphibians		

Extended Team Members:

Name	Expertise	Name	Expertise
Janie Ackly	Recreation	Jes Bengoa	Engineering
Tricia Humpherys	Recreation	Pete Hochrine	Engineering
Linnea Hanson	Botany	Kathy Turner	Lassen Hydropower Coordinator
Bob Hawkins	Regional Hydro Assistance Team contact		

About This Document

This document is divided into four sections as follows:

Chapter 1: Provides an introduction and background to the overall document.
Chapter 2: Provides specific comments on PG&E's Draft Application
Chapter 3: Discusses the adequacy of completed PG&E studies, and addresses studies not included in PG&E's Draft Application which were previously requested.
Appendix A: Ecosystem Attributes-Upper North Fork Project

Chapter II
Specific Comments on PG&E's April 2002 Draft 2105 Application

Volume 1

PROJECT RESOURCE SUMMARY

3.2 Instream Flows

Page	Discussion
PRS-13 through PRS-21	**Comment:** This section of the draft license application contains a rather lengthy and comprehensive list of mitigations and enhancements. While some alteration in streamflow is proposed for the North Fork below Canyon Dam, the stream will still be dominated by steady flows on a near annual basis that are nearly devoid of biological triggers. In Volume 2, Report E3-Section 3.1, pages E3.1-464, 465, 471, 472, and 473 references are made to the possible impact of existing streamflow management in the North Fork to foothill yellow-legged frog habitat and breeding cues that appear to contradict the desirability of a steady flow regime for the river. Additionally, no proposal has been made concerning management of existing riparian vegetation that overwhelms the river corridor. This vegetation, which is a direct result of both diminished and steady flows, prevents the river from exhibiting dynamic qualities that would create more diverse habitat. ***Request:*** *The Forest Service proposes that PG&E investigate the feasibility of creating a more dynamic river that mimics more natural conditions. Appendix A contains a discussion of ecosystem attributes that the Forest Service believes are necessary for the proper biological and geomporphic functioning of the river.*

3.6 Botanical Resources

Page	Discussion
PRS-25	**Comment:** The USFS agrees that complete eradication of Himalayan blackberry along the Seneca and Belden reaches would be extremely difficult. Also, Himalayan blackberry does provide forage for some native species and to some degree it does armor the riverbank against erosion but it is no substitute for native riparian species such as white alder (*Alnus rhombifolia*), willows (*Salix* spp.), and mule's fat (*Baccharis salicifolia*), which are actively used in biotechnical bank protection regimes. Some streambank erosion would be desirable as a means of providing more diverse

PRS-25	aquatic habitat. Due to the controlled outflow and lack of seasonal disturbance, Himalayan blackberry has grown to such a density in many locations that native plant regeneration is greatly reduced. In addition to habitat reduction, Himalayan blackberry along the Upper North Fork of the Feather River reduces river access thereby reducing recreational opportunities such as fishing, rafting, and hiking. Mechanical removal and application of herbicides are two means of controlling Himalayan blackberry but not the only means. ***Request:*** *The Forest Service proposes that the Licensee in collaboration with the Forest Service design and implement a feasibility study to investigate integrated pest management control and selected mechanical removal tactics for Himalayan blackberry control. Such a study could use goats or other methods of control. Control would be focused on areas where increased biological diversity and river access for recreation use would be most beneficial.*

3.7 Recreation, Land and Visual Resources (Whitewater Boating)

Page	Discussion
PRS-32	**Comment:** The Forest Service believes that the dismissal of whitewater boating as economically and ecologically undesirable is premature. The whitewater study (Volume 3, Report E5: Recreation Resources, E5.2.8) and Additional Results from Recreation Whitewater Study (Volume 8, Appendix E5-Q show that boating is feasible. The Forest Service agrees that the quality of whitewater boating resources found in the Seneca and Belden reaches is not as high as that found elsewhere in the North Fork Feather River watershed. However, the study indicates that there may be sufficient demand to warrant restoring opportunities during certain times of the year when other higher quality opportunities are not available. In addition, there is value to boaters in simply providing some variety in the available opportunities. ***Request:*** *The Forest Service requests that the Licensee do further evaluation of the prospects for whitewater boating.*

EXHIBIT E ENVIRONMENTAL REPORT

Report E2 Water Use and Quality

Page	Discussion
E2.1	**Comment:** The last sentence of the first paragraph refers to lands owned by the Licensee and the U.S. Forest Service. The Forest Service does not hold title to Federal lands.

	Request: *Locate occurrences in the draft license application that refer to ownership of lands by the Forest Service and replace with "National Forest System lands". This error occurs quite commonly in Volumes 5 through 8.*

Report E2-E2.5.1 Monitoring Program Design

Page	Discussion
E2-109	**Comment:** Although the relicensing process for this Upper North Fork Feather River Project has been described by PG&E to be a "hybrid" process incorporating collaboration into the traditional FERC process, the Forest Service disagrees with this characterization. A collaborative or hybrid process typically includes an agreement at least in principle that defines the roles of the collaborative participants and establishes a process by which the relicensing will occur in a collaborative manner to reach decisions regarding proposed license conditions for consideration by the FERC. Additionally, all interested parties would meet collectively rather than at separate locations as is the practice now. ***Request:*** *The Forest Service feels that a truly collaborative process would provide for a better understanding of project concerns and offer an opportunity for all participants to jointly develop appropriate protection, mitigation, and enhancement (PM&E) measures. We recommend that PG&E develop a collaborative process and invite all interested parties to participate.*

Volume 2
Section E3.1- Aquatic Resources

Report E3-Section 3.1.1 Historical Operations and Fish Communities

Page	Discussion
E3.1-3	**Comment:** The description of operations does not include exceptions to the basic operating releases. In 1996 for instances, releases of several hundred cubic feet per second were made from Canyon Dam to provide for winter storage in Lake Almanor during the Butt Lake renovations. Questions raised are: during what other periods (other than tests for this application) have releases into the study reaches been raised, how much were they raised, and most importantly, how did these releases affect aquatic resources of the study reaches? ***Request:*** *Revise description of operations to include departures from the basic flow releases. Summarize any monitoring or observations regarding the impact of these releases on aquatic resources of project area streams.*

Report E3-Section E3.1.2.2 Seneca Reach

Page	Discussion
E3.1-11 and E3.1-12	**Discussion:** The discussion here as well as elsewhere describes trout habitat in qualitative terms such as marginal to good without stating which life stage of the fish is being discussed, what habitat elements (depth, cover, temperature, etc.) are contributing to the quality, and what characteristics constitute "good habitat". The assumption of the reader is that the definitions are based on elements for adult trout. Elsewhere (Volume 2, Section E3.1.12.1 page E3.1-464 for instance) habitat elements for different life stages of foothill yellow-legged frogs are discussed (edgewater, riparian cover, etc.). Discussion of such elements in terms of trout habitat (rearing, etc.) cannot be located. ***Request:*** *Provide a description of habitat elements considered in assessment of habitat condition. Provide definitions of habitat values used to describe habitat condition.*

Report E3-Section 3.1.2.3 Sencea Reach Tributaries

Page	Discussion
E3.1-12	**Comment:** In this section as well as elsewhere, the influence of tributaries on function and condition of the North Fork Feather River is discussed primarily in terms of flow contributed to the North Fork. Access to the tributaries by fish is discussed in Volume 2, Section E3.1.6.2 (pages E3.1-168 through E3.1-171), but nowhere is there a discussion of the value of the tributaries in terms of other processes including production and delivery of bedload for North Fork spawning substrate, large wood, or flushing flows. Given the apparent paucity of spawning habitat in the North Fork, and the description of alluvial barriers at the mouths of several tributaries (assumed by the reader to be tributary bedload no longer transported by the North Fork) more discussion of tributary influences is warranted. ***Request:*** *Provide a discussion of the influence of tributaries on bedload (spawning gravel) production and delivery to the North Fork Feather River. Also discuss the ability of existing flows and proposed flow levels to move and redistribute these materials.*
E3.1-12	**Comment:** The draft UNFFR Habitat Suitability Curve Study (Thomas R. Payne and Associates, 1/25/02) provides a summary of spawning survey results. Density and availability of spawning habitat varies dramatically between the three reaches, with no discussion of explanatory factors.

	Request: *Discuss spawning frequency and distribution, including possible hypotheses for differences between sample reaches. Discuss also the need for augmentation of spawning habitat in the North Fork Feather River.*
E3.1-12	**Comment:** PG&E is currently studying the influence of tributary spawning on the mainstem Feather River, downstream of the project area. Discussion of those results in this report (if only by reference) would assist in informing the reader about the importance of tributary streams in large regulated systems. ***Request:*** *For context, summarize results of studies and monitoring efforts in nearby river/tributary systems, relative to the role of tributary streams in river fisheries.*

Report E3-Section 3.1.2.7 Butt Valley Reservoir

Page	Discussion
E3.1-17	**Comment:** Fish habitat improvement projects installed as part of the Butt Valley Dam Seismic Remediation Project are mentioned, but objectives of the habitat improvement projects and an assessment of the success of the improvement in meeting objectives is not discussed. ***Request:*** *Provide results and discussion of any monitoring of effectiveness of fish habitat improvement projects.*

Report E3-Section E3.1.3.1 General Fish Community

Page	Discussion
E3.1-19	**Comment:** No analysis was completed for the occurrence of *Ceratomyxa Shasta*, whirling disease, anaerobic waterfowl diseases such as botulism, and any other diseases known to occur within the project area. The Forest Service requested in First Stage Consultation comments dated June 2, 2000 that PG&E include the effects of this project on the occurrences of the above diseases. In the Fish Population Report (E3.1-1) "condition" of the fish was determined but the occurrence of diseases was no discussed. ***Request:*** *Determine the presence of aquatic diseases listed above within project affected streams and nearby tributaries. Analyze the effects of the project on the presence of these diseases.*

Report E3-Section 3.1.3.2.2 Seneca Reach Fish Population Studies

Page	Discussion
E3.1-38 through E3.1-55	**Comment:** A wealth of information is provided about the fish communities present in the Seneca reach. These and other reports (especially the spawning survey) however, raise questions about the quality and quantity of

	spawning habitat present in both the Seneca and Belden reaches. Since data is available from both reaches from the population studies and the spawning studies including the number of redds observed, the question occurs as to how the number of spawning adults compares with the number of mature fish in the system. Such a comparison would be an indicator of spawning habitat utilization. Nowhere is this data correlated. ***Request:*** *Compare the number of spawning adults estimated from redd surveys with estimates of the number of mature fish in Seneca and Belden reaches.*
E3.1-40	**Comment:** Draft license application text compares the Seneca reach fishery to other fisheries in California (e.g. 50% production relative to other streams). This type of comparative analysis is helpful, but is limited to this example. The relative production of the Belden reach, and relative recruitment of all reaches is not provided. ***Request:*** *Provide comparison of study area stream fisheries (production and recruitment) relative to other data sources, including that referenced in the report (Gerstung, 1973).*

Report E3-Section 3.1.3.2.5 Belden Reach Fish Population Studies

Page	Discussion
E3.1-61	**Comment:** Same as Seneca reach above. ***Request:*** *Same as Seneca reach above.*

Report E3-Section 3.1.5.1 Sensitive Fish Species

Page	Discussion
E3.1-103	**Comment:** Hardhead are present in Rock Creek Reservoir, and most likely occur in the North Fork upstream to the Gansner Bar fish barrier. Moyle et al (1983) reported collecting three dead hardhead just above the fish barrier during the 1981 chemical treatment of this section of river for the control of non-game fish. No hardhead, however, were collected in any of the fish population surveys conducted in project reservoirs or river reaches during the two years of relicensing studies. The only hardhead documented in relicensing studies were one hardhead that was found entangled on the outside of an entrainment sampling net at Belden Powerhouse and four others that were observed stranded on the tailrace skirt of Belden Powerhouse during the entrainment sampling effort in July 2001. ***Request:*** *Discuss the benefits to the hardhead population from removal of the fish barrier dam located at Gansner Bar. Is there potential for streams*

	tributary to the North Fork to provide spawning and rearing habitat for hardhead and if so, which tributaries? Assess the potential for hardhead spawning and rearing habitat within streams identified as having fish migration barriers including habitat potential if project constructed barriers such a weirs were removed.

Report E3-Section 3.1.12 Impact of Existing Operation

Page	Discussion
E3.1-459	**Comment:** The discussion located on pages E3.1-459 through E3.1-504 is a qualitative cumulative effects assessment. The First Stage Consultation Comments dated June 2, 2000 submitted by the Forest Service contained a request for cumulative watershed effects assessment of the entire North Fork Feather River. This request was made since the impacts of the project cannot be adequately discussed unless the discussion encompasses the other hydroelectric projects located within the basin as well as the effects of Upper North Fork Project downstream of the project area. The effects are not isolated. ***Request:*** *Expand the scope of the cumulative effects analysis to include the North Fork to Lake Oroville. Coordinate the scope and detail of items to be discussed with the Forest Service.*

Report E3-Section 3.1.6 Barrier Identification

Page	Discussion
E3.1-161	**Comment:** The draft application does not mention whether the Prattville-Butt Reservoir Road, the perimeter of Butt Valley Reservoir or portions of the perimeter of Lake Almanor located on National Forest System land were surveyed for potential barriers to fish migration. It is not clear is the "natural" barriers at the mouth of tributaries occurred due to low flow due to the project operations. It is not known whether the identification of barriers was verified by utilization of a predictive model. It has not been stated whether evaluation was made for passage for all life stages of salmonida and amphibians. The definition of Barrier Class 1 has been partially cut from Table E3.1.6-1 Potential Barriers Identified in the Project Area making utilization of the Barrier Class column of the table rather difficult. ***Request:*** *Elaborate on the methodology used to identify barriers. Can it be assumed that all potential tributaries were evaluated and that the barriers listed in Table E3.1.6-1are the only barriers to migration? It would be helpful if streams that are free of barriers to migration to and from the North Fork Feather or project reservoirs were identified. Define Class 1 barriers. Do current river flow regimes and lake management strategies contribute to creation of migration barriers? Discuss the potential benefits of removal of*

	barriers resulting from weirs and roads such as the barrier on Waller Creek.

Report E3-Section 3.1.9.1 Benthic Macroinvertebrates

Page	Discussion
E3.1-225	**Comment:** Reference sites are included in the macroinvertebrate monitoring but compared only in terms of the CSBP metrics. Use of similarity measures (there are many appropriate to the purpose) might be an effective way of illustrating differences between sampling stations, but they were not used in the analysis. Additionally, the East Branch Feather River above Belden has been used as a reference for other FERC relicensing projects, but that data is not included here. As references are scarce, including that data in this report Comparing North fork Feather River reaches to the reference reach data, would be useful. ***Request:*** *Calculate similarities of sampled macroinvertebrate communities for all stations, within and between the Belden and Seneca sample reaches. Include and evaluate data from East Branch North Fork Feather River above Belden in the report.*
E3.1-242	**Comment:** The analysis employs standard metrics utilized frequently in evaluating data collected using the California Dept of Fish and Game Bioassessment protocols (CSBP). Some of these metrics (e.g. richness, diversity) appear to have utility in defining the condition of stream systems regardless of the type of impairment. Others, especially those based on "tolerance" values, are not relevant (and perhaps not sensitive) in describing the impacts of systems with altered flow regimes. The section does not provide the reader with a sense of what types of changes might be expected in systems with altered flow regimes, and the degree to which the monitoring reflects these changes. In other words, which metrics best detect impairment of streams due to changes in flow regime, and what is the value of these metrics in the present case? ***Request:*** *Provide a summary of literature on impacts to macroinvertebrates in systems with altered flow regimes. Derive from this summary appropriate metrics, and interpret data in terms of these metrics.*

Report E3-Section E3.1.10 Instream Flow Study

Page	Discussion
E3.1-276	**Comment:** This study is critical to the consideration of revised flow releases for the license application. It is also complex and lengthy. Given the importance of the data, an independent evaluation of the report is warranted. ***Request:*** *The Forest Service requests an independent review of the methods, assumptions and results from a qualified expert.*

Report E3-Section E3.1.10.2 Instream Flow Study, Methods, Habitat Mapping

Page	Discussion
E3.1-280	**Comment: Comment:** The geomorphic stream reaches are described on page E3.1-280, but are not shown on Figure E3.1.10-1. ***Request:*** *Provide a map showing the geomorphic stream reaches.*
E3.1-308	**Comment:** The suitability curves for rainbow trout (RBT) shown in Figure E3.1.10-2 clearly show that the fish are selecting within a narrow substrate size range for spawning. The depth and velocity curves are much wider. This hypothesis is supported by the high density (relative to other reaches) of spawning in Lower Butt Creek, where depths are lower than those found in the North Fork Feather River. It would appear that utilization of the depth and velocity criteria in addition to substrate clouds the picture and results in a less accurate representation of habitat suitability. ***Request:*** *Explain why depth and velocity are included in addition to substrate size in describing habitat suitability for RBT spawning. The Forest Service may request additional model runs based on results of this request.*
E3.1-312	**Comment:** Figure E3.1.10-4 depicts suitability for adult rainbow trout. Pages 29 and 30 of the draft UNFFR Habitat Suitability Curve Study (Thomas R. Payne and Associates, 1/25/02) contain a discussion of why a depth of 4.0 feet was chosen as the maximum depth for utilization, even though fish were found in deeper pools (but there were very few of these pools). A declining utilization of rainbow trout in deeper habitats conflicts with observation of rainbow trout in nearby streams such as Deer and Mill creeks with such depths and with basic tenants of fish ecology. Dropping the suitability at deeper depths influences modeling. Explanation of this assumption is needed.
	Request: *Provide a rationale for lower rainbow trout suitability at deeper pool depths. The Forest Service may request additional model runs based on the results of this request.*
E3.1-316	**Comment:** Reference is not provided for Gore, et al (2001) on which habitat curves for macroinvertebrate community density are based. It appears that the curves may have been derived in systems much smaller than the North Fork Feather River. What other reason would account for depths greater than 1.4 ft having no suitability? The findings of this reference need to be summarized, and their applicability to the present sites discussed. ***Request:*** *Provide the Gore, et al (2001) reference, and discuss results of this work and applicability to the North Fork. The Forest Service may request additional model runs based on results of this request.*
E3.1-316	**Comment:** Pages 24 and 25 of the draft UNFFR Habitat Suitability Curve Study (Thomas R. Payne and Associates, 1/25/02) contain a discussion of the substantial differences in the densities of fishes observed between reaches, and relates them to large scale factors such as presence of tributaries, etc. that have little to do with the factors considered in development of the habitat

	suitability curves. There is no discussion of the utility and limitations of the modeling effort, given the influence of such large-scale factors. In other words, the model assumes that fish habitat use is based on velocity, depth etc. The data shows that given the same habitats as defined by these characteristics, fish densities are substantially different. ***Request:*** *Provide discussion of the utility of the PHABSIM modeling in predicting quality of habitat, given the apparent divergence from the modeling assumptions in the fish population studies. The Forest Service may request additional model runs based on results of this request.*

Report E3-Section E3.1.10.3 Instream Flow Study, Results, Habitat Index Simulations

Page	Discussion
E3.1-322,323 and 326	**Comment:** The scale of the graphs are too small to accurately read discharges below 500 cubic feet per second (cfs.) and their corresponding Weighted Useable Areas (WUA). This is important because peak WUA, which represents the maximum amount of fish habitat according to the model, frequently occurs below 500 cfs. ***Request:*** *All figures in this section – which are habitat index simulations – should be enlarged or plotted on a different scale to be more readable at discharges less than 500 cfs.*
E3.1-322, 323and 326	**Comment:** Results for the spawning habitat index may not be valid because the values sometimes approach zero. ***Request:*** *Provide a discussion of why the results for the spawning habitat index are so low, as well as a discussion of the spawning habitat that currently exists regardless of the results of the model.*

Report E3-Section E3.1.11 Geomorphology

Page	Discussion
E3.1-331	**Comment:** The text does not give clear descriptions of the Rosgen stream reaches. Photographs would be better than adding text. ***Request:*** *Show a representative photograph(s) of each of the profile reaches in Figure E3.1.11-4 (page E3.1-349).*
E3.1-335	**Comment:** The six years of flow records (January 1908 through January 1914) at USGS gage 11399500 can be used to make inferences about the historic flow regime of the North Fork Feather River. During this time period, the baseflow of the river was generally between 500 and 700 cfs., flows exceeded 1000 cfs. every year, flows exceeded 2000 cfs. six times, and the flow approached 8000 cfs. once. ***Request:*** *Include a discussion under General Project Hydrology (page E3.1-335) of the flow regime of the North Fork Feather River before the*

	construction of Canyon Dam using the six years of flow records (January 1908 through January 1914) at USGS gage 11399500. Discuss the regulation of flow that took place during construction at Canyon Dam and how regulation might have affected timing of flow.
E3.1-337	**Comment:** The statement is made that the flood frequency curve (Figure E3.1.11-2) for the period of record provides an indication of the potential peak flows in the Seneca reach under the project. Figure E3.1.11-2 represents without project conditions. ***Request:*** *Is the text concerning potential peak flows under the project correct or does Figure E3.1.11-2 depict potential flow without the project?*

Report E3-Section E3.1.11.1 Stream Channel Classification

Page	Discussion
E3.1-349	***Comment:*** Figure E3.1.11-4 illustrates the current but not the historical (pre-dam) Rosgen channel classification of the North Fork Feather River. This is discussed in the text, but should be shown on Figure E3.1.11-4. ***Request:*** *On Figure E3.1.11-4, show the current and the historical (pre-dam) Rosgen channel classification.*
E3.1-349	**Comment:** The river reach between Lower Butt Creek confluence and Meeker Bar is described on page E3.1-360, but is not shown on Figure E3.1.11-4. ***Request:*** *Show Meeker Bar on Figure 3.1.11-4.*

Report E3-Section E3.1.11.2 Channel Hydraulic Conditions

Page	Discussion
E3.1-391	**Comment:** There are six years of flow records (January 1908 through January 1914) recorded at USGS gage 11399500 that depicts unregulated and partially regulated North Fork Feather River streamflow. This record does give some picture of the flow regime of the river prior to the construction of Canyon dam. The statement that begins "Given that there is almost no hydrologic data for flow conditions prior to regulation by Canyon dam..." while technically correct paints the available data as irrelevant. The flow record, while of short duration, contains a wealth of insight into pre-project minimum, peak and pulse flows and should not be ignored unless the historic record discounts the accuracy of the measurements.

Report E3-Section E3.1.12.1 Aquatic Habitat

Page	Discussion
E3.1-459	**Comment:** Page E3.1-459 states that project operations have resulted in

and 479	elevated water temperatures in the Seneca reach due to reduced flow levels, while page E3.1-479 states that temperatures in the Seneca Reach in July and August may be cooler than pre-project conditions. ***Request:*** *Clarify or correct the conflicting statements concerning water temperature in the Seneca reach.*
E3.1-460	**Comment:** The discussion of the effects of reduced flows include only reduction in amount of overall habitat, alteration of habitat quality, and encroachment of riparian vegetation. Other obvious influences on aquatic habitats that should be included in the discussion are fragmentation of habitat by barriers, storage of bedload, sediment and large woody material in reservoirs, alteration of temperature regimes, and the lack of flows large enough to reset the system. ***Request:*** *Discuss the above and other relevant impacts of reduced flows. Provide the context for these impacts.*

Report E3-Section 3.1.13.1 Licensee Proposed Measures

Page	Discussion
E3.1-505	**Comment:** The simulation modeling seems to assume a steady state stream flow, and licensee proposed flows provide for static flows. Stream systems and the organisms they support evolved with dynamic flow regimes. The studies and evaluation do not discuss the ecological consequences of static flow regimes versus those with fluctuations and pulses. ***Request:*** *Discuss the ecological consequences of static flow regimes versus those with fluctuations and pulses. Provide the context for these impacts.*

Report E3-Section E3.1.15 Anticipated Impacts of Continued Operation

Page	Discussion
E3.1-506	**Comment:** There is no mention of the impacts of the proposed flow releases on the following resources in the North Fork Feather River and Lower Butt Creek: ▪ Sediment movement in the stream channel, including mid-channel bars. ▪ Composition of the stream channel bottom. ▪ Occurrence and size of large woody debris (LWD). ▪ Occurrence, composition, size, and density of riparian vegetation. ***Request:*** *The impacts to the items listed above should be described.*
	Comment: There is no mention of the following impacts of the proposed flow releases on Lake Almanor: ▪ The elevation of the lake. ▪ The amount of shoreline exposed, as well as the erosion of the

	shoreline of the lake. ▪ Turbidity levels of the lake. ***Request:*** *Impacts to the items listed above should be described.*
E3.1-511 and 512	**Comment:** The discussion of the coldwater pool in Lake Almanor is not clear. Stating values in terms of percentages alone is less informative than stating the actual volumes. The allocation of cold water to downstream commitments and Lake Almanor coldwater fishery needs is likely to place ever increasing stresses on management of Lake Almanor. There is currently insufficient information available to formulate management prescriptions and protocols concerning the coldwater pool in Lake Almanor. Predicted impacts to the coldwater fishery are currently based on minimal knowledge. Additional studies are needed to better define coldwater fishery needs and impacts that may occur from various removal scenarios. ***Request:*** *The volume of the modeled coldwater pool for different flow releases should be stated. This would make the paragraph at the bottom page E3.1-511 clearer.*
E3.1-512	**Comment:** The statement is made that increasing the flow release from Canyon Dam up to 300 cubic feet per second (cfs) does not significantly affect the stream temperature in the Seneca reach of the North Fork Feather River. The temperature profile graphs in Appendix E2-H show a progressive decrease in stream temperature in July and August as the flow increases from 35 to 150 cfs. ***Request:*** *Clarify the statements concerning stream temperature and flow release from Canyon Dam to reflect that stream temperature in July and August decreases up to a flow release of 150 cfs.*

Volume 2
Section E3.2-Wildlife Resources

Report E3-Section 3.2.1 Wildlife Resources

Page	Discussion
E3.2-3 and E3.2-4	**Comment:** Although habitat types are well described (within the botanical section) there are no accompanying maps or location descriptions that provide a picture of the amount of habitat (of each type) or where that habitat is specifically located within the project area. ***Request:*** *Provide a more comprehensive and detailed description of the habitat including approximate acres of each, location of the habitat in relation to the project area, and the importance of the habitat to the species discussed.*

E3.2-3	**Comment:** The document references the Plumas LRMP but does not mention the Lassen LRMP or how the Standards and Guidelines relating to wildlife were modified by the Sierra Nevada Forest Plan Amendment Project.(SNFPA). ***Request:*** *Provide more detail on both the Lassen and Plumas Forest Plans (pertaining to wildlife resources) including changes brought about through the SNFPA. Also discuss regulatory requirements such as the NFMA and ESA specifically those requirements dealing with species viability.*
E3.2-6	**Comment:** The document covers only TES and selected species of interest. The document does not cover Management Indicator Species. ***Request:*** *Describe the Management Indicator Species for both Forests, identify which species would be affected by actions considered under permit, and identify how those species might be affected by the proposed changes in management.*

Report E3-E3.2.2.2 Bald Eagle

Page	Discussion
E3.2-11 through E3.2-14	**Comment:** The bald eagle section appears to base assumptions of effects on the 1988 study with nesting updates. Since the 1988 study was not included it is difficult to follow the logic. Also the area around the lake has changed considerably and the activities noted in 1988 may no longer be valid. The study does not take into consideration that there has been a dramatic increase in recreation and residences in the Lake Almanor area. ***Request:*** *Update the 1988 study and revisit the importance of fish as a main diet of bald eagle particularly any seasonal variation in diet. Consider the effects of long-term growth due to the proximity of Lake Almanor. Propose a method to develop a basin-wide bald eagle management plan incorporating federal and private lands that have nesting eagles within the proximity of the project area.*
E3.2-11 through E3.2-14	**Comment:** The study displays only the existing environment. There is nothing presented that allows for the effects of the proposed action to be evaluated. Items that the proposed action could possibly affect in terms of bald eagles need to be identified and discussed. The same may be said for the other piscivorous species such as the Osprey. ***Request:*** *Correlate eagle occupancy and productivity with monthly lake level figures since 1988 to provide information as to whether eagle productivity could be related to a certain lake elevation. Eagle productivity is listed; provide corresponding lake level information for these periods. Questions that need answering include: What are the effects to eagle and osprey prey base as a result of different lake levels under the proposal? What would be the effect of doubling the outflow of Lake Almanor during the nesting season or during the winter? Lake levels may have no correlation to*

	eagle occupancy and productivity, but this needs to be shown, as it is a perceived potential habitat impact. Osprey production may also be tied to this potential affect to habitat.

Report E3-E3.2.2.3 Osprey Study

Page	Discussion
E3.2-15 and E3.2-16	**Comment:** Similar comment as above for bald eagle. ***Request:*** *Provide osprey productivity data over same time period as bald eagle. This then can be correlated to lake level information in a similar manner as for bald eagles.*

Report E3-E3.2.2.4 American Peregrine Falcon

Page	Discussion
E3.2-14	**Comment:** Table E3. 2-4 as discussed in the narrative pertains to bald eagles, not peregrine falcons. ***Request:*** *Show appropriate data gathered by peregrine study.*

Report E3-E3.2.2.5 California Spotted Owl

Page	Discussion
E3.2-18	**Comment:** No supporting documentation is found for the survey effort described. Also it is stated "Responses were detected only within the two PACs previously identified by the USFS" but later state "No owls were detected during these surveys". Also what do you mean by "immediate vicinity of Lake Almanor"? Were surveys conducted around Butt Lake? ***Request:*** *Provide survey methodologies, maps of survey stations, field outing forms to document survey efforts. Re-word narrative to make clearer (were owls detected or not?) Define "immediate vicinity".*

Report E3-E3.2.2.7 Willow Flycatcher

Page	Discussion
E3.2-19 and E3.2-20	**Comment:** Study 31 states that the products of the study will describe locations and characteristics of each area of suitable habitat, the habitat will be mapped, and the report will discuss the effect of continued project operation and maintenance on each area of suitable habitat, as well as discuss habitat enhancement opportunities. This information is not present. ***Request:*** *Provide the information described in Study 31. Include a map of*

	the suitable habitat, describe the habitat characteristics, and assess effects of fluctuating lake levels and river flows on this habitat.
E3.2-19	**Comment:** The report states that there are no records of this species in the immediate vicinity of Lake Almanor. There is both habitat and documentation of this species adjacent to Lake Almanor. ***Request:*** *Revise and include both habitat and records of willow flycatcher at Lake Almanor and include surveys of suitable habitat. Discuss the effects that current operation of the lake has on maintaining habitat and the potential changes in habitat if reservoir discharge is altered.*

Report E3-E3.2.2.8 Greater Sandhill Crane

Page	Discussion
E3.2-20	**Comment:** Study 32 states that the products of the study will describe the locations and characteristics of each area of suitable habitat, this habitat will be mapped, and the report will discuss the effect of continued project operation and maintenance on each area of suitable habitat, as well as discuss habitat enhancement opportunities. This information is not present. ***Request:*** *Provide the information described in Study 32. Map the suitable habitat, describe the habitat characteristics, and assess effects of fluctuating lake levels on this habitat. Also rate each area of suitable habitat using a qualitative rating system based on available published models of habitat suitability for this species.*

Report E3-E3.2.2.9.2 Great Blue Heron Study Results

Page	Discussion
E3.2-21	**Comment:** Map reference is incorrect. ***Request:*** *Change map reference to Figure E3.2.2*

Report E3-E3.2.2.10. Bat Study Results

Page	Discussion
E3.2-24	**Comment:** In Table 3.2-5, there is a reference several times to "loads of myotis guano". ***Request:*** *Can "loads of myotis guano" be quantified into some relationship that might indicate a measurable quantity that equates with years of use, numbers of individuals over time or some other quantifiable measure? Loads should be defined because it is a relative term. Describe what actions might be taken if the Camp Caribou Clubhouse were to be used and bats "became a nuisance" (pg E3.2-25). Describe how planned operations would change in the future to meet proposed changes in management. Describe the*

	effects to the roost and maternity colonies. Does PG&E have plans to "bat-proof" buildings for health/safety reasons?

Report E3-E3.2.2.11 Forest Carnivores (Sierra Nevada red Fox, California Wolverine, Pacific Fisher, and American Marten)

Page	Discussion
E3.2-33	**Comment:** The records of Pacific Fisher need to be put into context in terms of validity. The Pacific fisher sighting around Taylorsville is somewhat suspect, as it is an unverified account (not seen by a biologist or mammalogist, no photo, no tracks, no scat, no evidence of any kind). The sighting near Westwood is likewise without substantive support or documentation. The findings are based on one sample period of one month. This is not long enough to develop conclusions on the presence of forest carnivores. ***Request:*** *Qualify these sighting by identifying them as unverified sightings. At least the sources of these sightings should be described or cited.*

Report E3-E3.2.2.11.1 Forest Carnivore Study Methods

Page	Discussion
E3.2-33 and E3.2-34	**Comment:** The results need to be put into perspective of habitat surveyed. Based on sample points it would appear the sampling did not meet the protocol requirements in terms of the number of sample points needed (2 per 4 square miles). ***Request:*** *Describe the habitat at each station and correlate habitat to species detected. Increase study duration to at least three years. Add additional stations (ensuring the 2 stations per 4 square mile protocol is met), with sampling taking place preferably in the winter. Outline the project area boundary that served as the basis for sampling. This boundary should be no less than one mile from the actual project site (lake, powerhouse, river, etc).*

Report E3-E3.2.3 Impacts of Existing Projects

Page	Discussion
E3.2-27	**Comment:** The "Impacts" analysis is based on the results of surveys discussed in previous sections and is somewhat speculative. There is no analysis of effects documentation sufficient for any of the species discussed to make the statements that are made in this section, except perhaps for the bat species. Even these impacts are not quantified in terms of habitat loss and significance to non-sensitive bat species.

	Valley Elderberry Longhorned Beetle (VELB): The text indicates that there will be no effect although suitable habitat is available (albeit low). There is no consideration of downstream affects of the project ***Request:*** *Identify/explain why suitable habitat within and downstream of the project area would not be affected by changes in management of the flows. What prevents the plants identified in the report from being occupied in the future? Has current management restricted the development of riparian habitat suitable to support elderberry?*
E3.2-37 and E3.2-39	**Comment:** Bald Eagles: There is no real discussion of the effects of the proposed action on lake levels, prey base, foraging habitat, or nest productivity. A statement is made that the project "will continue to favor expansion of bald eagles in the project area toward the natural carrying capacity of the species". This is a man-made artificial lake that probably has increased the carrying capacity of the Almanor Basin above the "natural carrying capacity " that existed prior to reservoir development. Please discuss this statement. ***Request:*** *Based on fluctuating lake levels that will occur with the proposed action, compare the carrying capacity of Butt Valley Reservoir and Lake Almanor for nesting bald eagles, taking in consideration the carrying capacity for Osprey, as well as the carrying capacity for winter eagles, at minimum pool and maximum pool levels. Display potential differences in carrying capacity, and/or nest site production, at different lake levels. Describe what impact will increases in recreation and other activities attributable to lake management have on the current eagle population. The 1988 study correlated lack of nest success to (in part) organophosphates. Revisit that assumption and describe current inpacts to nesting and roosting habitats.*
E3.2-39	**Comment:** Greater Sandhill Crane and Willow Flycatcher: The statement is made that there is suitable habitat in the causeway arm of Lake Almanor however the presence of suitable habitat is not reflected in the descriptions of study results. A statement is made that "Available habitat in these areas will not be impacted by continued operation and maintenance of the project". Documentation of this analysis has not been located. Where are these habitat areas and what do they look like at high and low lake water levels? Are these sites still suitable habitat at minimum and maximum pool levels that may occur during the nesting season? ***Request:*** *Based on fluctuating lake levels that will occur with the proposed action, compare the carrying capacity of Lake Almanor for nesting sandhill cranes, as well as willow flycatchers, at minimum pool and maximum pool levels that may occur with the proposed action. Show if here is a potential difference in carrying capacity, and/or nest site production at different lake levels. There needs to be consistency in the report as illustrated above. The effects section needs to reflect what is in the study section. Once the study section has been revised the impacts should be addressed accordingly. The analysis needs to include impacts to the species and their habitat and needs*

	to consider both current and planned operations (i.e. changes in flows and lake levels).
E3.2-39	**Comment:** Bats: States no evidence was found of sensitive species of bats yet Section E3.3.3.10.2 states there was probable evidence of Townsend's Big-eared bat. No surveys were reported for the Western Red Bat and this species has been found on the Plumas and Lassen National Forests therefore presence cannot be ruled out. ***Request:*** *Reconsider impacts to bats and at least indicate probable risk to species and habitat.*
E3.2-39	**Comment:** Forest Carnivores: States that "continued operation and maintenance of the project is unlikely to affect the suitability of existing forest carnivore habitat or otherwise impact these species..." however the analysis does not consider (or at least explain) the difference between current condition and the projected management. ***Request:*** *Provide a more descriptive measure in the changes of flows proposed and review how those flows would or would not be an impediment to crossing the Feather River. Describe predicted changes in riparian habitat (if any) and the affect those changes would have on the species of concern.*

Report E3-E3.2.5: Licensee Proposed Measures

Page	Discussion
E3.2-40	**Comment:** Bald Eagle Management: Item 4: It is inferred that non-emergency maintenance of power lines will take place outside the bald eagle breeding season, if possible. Limited Operating Periods for bald eagles will only be waived by the Forest Service during emergencies. Waiver is not likely in non-emergency situations. ***Request:*** *Remove "if possible".*
E3.2-41	**Comment:** Bald Eagle Management: Item 5. This statement is the crux of the entire analysis for this proposed action and this statement applies to this project. ***Request:*** *Analyze the effects of the proposed changes to operations on eagle prey base and foraging habitats.*
E3.2-41	**Comment:** Greater Sandhill Crane and Willow flycatcher Habitat Enhancement: Opportunities for habitat enhancement for these two species is mentioned. The basic study plans asked that the habitat be identified, rated as to suitability, and mapped. Before enhancement opportunities are
	identified, the existing condition needs to be displayed. ***Request:*** *Display and quantify the existing habitat conditions for these two species. This must be coordinated with any recreational plans including hiking trails or recreational facilities.*

Report E3-E3.2.6: Anticipated Impacts of Continued Operations

Page	Discussion
E3.2-42	**Comment:** This section, as with others, appears to assume that the proposed change in flow rates and other management implications would have no affect on the species of concern. Also the section states that "measures will be implemented" for the protection of wildlife species but fails to specify what those measures are. ***Request:*** *Provide an analysis that specifies the changes to habitat and impacts to wildlife that would specifically occur due to the proposed change in flow rates. Also review changes at 45cfs, 55 cfs, and 65 cfs as a comparison (what will happen to lake levels and downstream habitat). Also compare /contrast the impact of changes from pulse flows to steady flows (edge effects, backwater eddy's, prey availability for eagles and osprey).*

Volume 2
Section 3.3 Botanical Resources

E3.3.4 Noxious Weeds in the Project Area

Page	Discussion
E3.3-42	**Comment:** The noxious weed surveys conducted by the Garcia And Associates found 145 occurrences of eight noxious weeds in the project area (Volume 8, pg ii). The following noxious weeds were identified: 1. Spotted knapweed *Centaurea maculosa* A rated; 2. Dalmation toadflax *Lenora genistofolia* ssp. *dalmatica* A rated; 3. Hairy whitetop *Cardaria pubescens* B rated; 4. Canada thistle *Cirsium arvense* B rated; 5. Cheat grass *Bromus tectorum* C rated; 6. Yellow star-thistle *Centaurea solstitialis* C rated; 7. St. John's Wort *Hypericum perforatum* C rated; 8. Bouncing-bet *Saponaria officinalis* C rated. Himalayan blackberry was found throughout the North Fork Feather River Corridor from the Belden Powerhouse to approximately 4200 feet elevation at Butt Valley Reservoir. However, this species was not mapped. The draft License Application contains no proposals for control or eradication of noxious weeds located within or near project facilities. ***Request:*** *Discuss how weeds will be controlled or where feasible, eradicated from project facilities. Include how coordination with other agencies will take place.*

E3.3.5 Impacts of Existing Project

Page	Discussion
E3.3-46	**Comment:** Plant surveys resulted in identification of 114 occurrences of 12 special status plant species. The draft License Application states that occurrences of special status plants should generally not be threatened by the operation of PG&E facilities since no changes in reservoir operating levels are proposed. The statement is also made on page ii of Volume 8, Appendix E.3.3-1 (Special-Status Plant Survey and Noxious Weed Survey) that "special status plants at the Last Chance Marsh area could be threatened by widely fluctuating water levels. A few species could be threatened by noxious weed populations in close proximity and that share the same habitat." ***Request:*** *Define the dependence of special-status plant populations on existing water levels in regard to growth and survival, flowering, seed set, and seedling establishment. How might changes in operating practices that affect lake levels impact plant populations? How sensitive are populations to alteration in operating practices?*
TE3.3-46	**Comment:** The statement is made that noxious weeds could potentially threaten some special-status plant occurrences. ***Request:*** *How are these occurrences of special-status plants going to be protected from the invasion of the noxious weeds?*

E3.3.7 Licensee Proposed Measures

Page	Discussion
E3.3-47	**Comment:** The Licensee proposes to implement a resource management plan for the Causeway area of Lake Almanor for the protection of sensitive biological resources. ***Request:*** *The Forest Service First Stage Consultation Letter dated June 2, 2000 contained a request for an Almanor Causeway Study. How will the proposed resource management plan conform to the requests made in the Almanor Causeway Study Plan?*

Report E4-E4.2.2.2 Project Area of Potential Effects

Page	Discussion
E4-5	**Comment:** The Area of Potential Effects (APE) includes only the FERC project boundary in the vicinity of Lake Almanor and Butt Valley Reservoir. ***Request:*** *Widen the APE on National Forest System lands in the vicinity of Lake Almanor and Butt Valley Reservoir to 1 mile to include cultural resource properties that may be directly or indirectly affected by dispersed*

	recreational use of these reservoirs. The survey would be conducted in and around locations directly or indirectly resulting from project induced activities and would not include general forest areas not impacted by the project.
	Comment: Proposals for project related mitigation fall outside the identified project boundary. ***Request:*** *Identify and discuss all proposed "new" and "future" projects, effects of projects on specific cultural resource sites and mitigation of identified effects.*

Report E4-E4.2.5 Current Project Cultural Resources Studies and Results

Page	Discussion
E4-46	**Comment:** The Traditional Cultural Studies report has not been submitted for review. Proper evaluation the cultural resource effort undertaken by PG&E cannot be completed until the report is available. ***Request:*** *Provide the Traditional Cultural Studies Report for review.*
E4-46	**Comment:** Construction railroad artifacts are located on the abandoned railroad grade approximately one-quarter mile north of the Butt Valley Penstock/Surge Chamber Road crossing of Butt Creek. These artifacts are located within the APE and are composed of materials not usually remaining after railroad abandonment. The most significant artifact has been partially removed by high Butt Creek streamflows. ***Request:*** *Inventory and determine the historical significance of the site. Prepare a plan to conserve the most significant artifact.*
E4-46	**Comment:** The abandoned grade of the construction railroad that accessed the tunnel from Big Valley to Butt Creek can be easily followed from the abandoned stream gaging weir below the tunnel portal to just above the Butt valley Penstock/Surge Chamber Road crossing of Butt Creek. Much of this grade has been unaltered since abandonment. This abandoned grade is located within the APE. **Request:** *Inventory and determine the historical significance of the railroad grade.*
E4-46	**Comment:** A historic trail is located along North Fork Feather River from at least the area of Mosquito Creek to Queen Lilly Campground. Photos taken of the river in 1906 were taken from this trail. Portions of the trail are currently within the zone experiencing dry raveling due to construction and maintenance of the Caribou Road. The area has not been inventoried and is within the APE. **Request:** *Inventory and determine the historical significance of the trail. What is the significance of dry ravel damage to the trail?*

Report E4-E4.2.6 National Register of Historic Places Eligibility and Cultural Values

Page	Discussion
E4-82	**Comment:** Only historic properties have been evaluated for eligibility to the National Register of Historic Places (NRHP). Fifty-seven prehistoric, and an unknown number of traditional cultural properties have not been evaluated to determine eligibility to the NRHP. The report states that these resources will be considered or treated as though they are eligible for the NRHP. ***Request:*** *Evaluate each site and address all effects to historic properties as required by 36 CFR 800.*

Report E4-E4.4.2 General Treatment Measures

Page	Discussion
E4-122	**Comment:** The general treatment measures address direct and indirect effects and protective measures only. The Cultural Resources Management Plan does not clearly include public interpretation opportunities. ***Request:*** *Expand the concept of informational kiosks to include a comprehensive interpretation of the cultural resources and physical setting of the Almanor basin as well as the connection of Lake Almanor to other nearby hydroelectric projects. Interpretative possibilities might include an interpretative center/curation facility, brochures, booklets or other means of public education.*
E4-123	**Comment:** Monitoring/Patrolling is defined as monitoring of the project area once per month and twice per month during reservoir drawdowns by a professional cultural resource specialist. ***Request:*** *Clarify the term project area. Does this include each historic property within the APE?*
E4-132	**Comment:** Monitoring and patrolling are proposed as mitigation measures to protect sites from artifact collection, ATV/SUV use and vandalism. The on-going impact of reservoir fluctuations and wave action and the mitigation of these effects is not mentioned. ***Request:*** *Discuss management measures that could be adopted to mitigate the on-going adverse effect of reservoir fluctuation and wave action on historic properties.*
E4-134	**Comment:** The CRMP does not discuss the effect of different lake levels have on specific cultural resource sites. ***Request:*** *Assess the effect of different lake elevations on cultural resource sites. Elevations of particular interest are 4494, 4485 and 4474 feet in elevation. Discuss specific management measures that might be used to mitigate effects.*

Report E4-E4.4.3 Site Specific Treatment Measures

Page	Discussion
E4-126 through E4-131	**Comment:** The majority of cultural resource properties identified in Table E4-13 have existing project related adverse effects of varying kinds and degrees. Many of the activities or forces such as wave action, that are affecting these resources are on going and will continue. The project has the potential, over time, to completely obliterate or destroy some resources. Page E4-132 of the Cultural Resource Management Plan contains a recommendation that monitoring of sites being adversely affected by wave action or inundation take place on a regularly scheduled basis. Monitoring however will not provide any new information concerning long-term management of the sites. The destructive forces are on going. Study 16 states in part "where on-going project-related impacts are occurring or cannot be avoided, the following studies will be conducted: 1) evaluation/archival research for NRHP eligibility, 2) determination of effects to historic properties and traditional cultural properties." ***Request:*** *The Forest Service recommends that PG&E conduct procedures outlined in Study 16 for site evaluation and effect determinations for cultural resources that are subject to project impacts such as wave action that are out of the control of PG&E.*

Volume 3

E5.1 EXISTING RECREATIONAL OPPORTUNITIES AND FACILITIES

Page	Discussion
E5-8	***Request:*** *Please include the PSEA Camp located at Prattville, and the Caribou Clubhouse/cabins in assessments of use and capacity as requested in the Forest Service First Stage Consultation comments dated June 2, 2000.*

E5.1.1.1.1 Objectives of the Study

Page	Discussion
E5-18	**Comment:** Latent demand also reflects users' willingness to pay, (WTP). A previous camping survey conducted at Lake Almanor documented WTP if additional supply were provided (Simcox 1995, p. 14). **Request:** *Please include a comparison of PG&E's 2001 assessments with the ones undertaken in 1993-1994, and the 1997 DPR survey.*
E5-18	**Comment:** Regional trends and the supply/demand of recreation facilities and opportunities are described in Volume 3, but an area-wide gap analysis is not specifically mentioned. For example, the supply of RV facilities is lacking within the project area given the current use and projections for RV camping to increase. Current public facilities do not reflect user

	preferences. RV hook-ups had the most support (pp. E5-70, E5-71, E5-317-318). Also showers, group sites, marinas, day use sites with beach access, and more single family campsites, etc. There is a considerable gap in availability of these types of services within ten miles of Lake Almanor. ***Request:*** *Please include a summary of available public and private facilities within the Lake Almanor basin.*

E5.1.1.4.1.2 Lake Almanor

Page	Discussion
E5-24	***Request:*** *Please include the Dyer View Day Use Area (Forest Service) and the PSEA Camp and day use beach in the list of facilities provided by the Licensee and Forest Service.*
E5-25	**Comment:** The North Shore Campground is identified as being a private resort yet it is under lease from PG&E and lies within the project boundary. ***Request:*** *Please clarify the status of the North Shore Campground in regard to who owns the facilities and infrastructure.*

E5.1.1.4.2.11 Whiskeytown-Shasta-Trinity NRA

Page	Discussion
E5-49	**Comment:** According to the Department of Water Resources 12/01 report *Comparative Inventory of Recreation Facilities at California's Largest Reservoirs, 2000,* Lake Almanor is the second largest reservoir in California. ***Request:*** *Locate and correct erroneous references to the size ranking of Lake Almanor..*

E5.1.1.4.2.12 Federally-Managed Lands

Page	Discussion
E5-51	**Comment:** The Shasta-Trinity National Forest is not adjacent to the project. ***Request:*** *Remove the reference to the Shasta-Trinity National Forest or specify that it is somewhat removed from the project area.*
E5-51	**Comment:** The Lassen National Forest is composed of three Ranger Districts, Hat Creek, Eagle Lake and Almanor, not campgrounds as stated. **Request:** Correct the reference to campgrounds.
E5-52	**Comment:** The statement that the headwaters of the Plumas National Forest flow into Lake Almanor is incorrect. The headwaters of the North Fork Feather River flow into Lake Almanor. The headwaters of the Middle and South forks of the Feather River are located elsewhere. ***Request:*** *Correct the erroneous reference to 'headwaters'.*
E5-52	**Comment:** Reference is made to camping facilities that include family car

	camp units, RV hookups and remote dispersed campsites. ***Request:*** *Clarify this statement in regard to whether the facilities are located on National Forest System lands, private lands, or both.*

E5.1.1.4.4.2 Reservoir-Based Recreation

Page	Discussion
E5-60	**Comment:** Table E5.1.1-3 provides limited utility as other than acting as a general summary of facilities available at each lake or reservoir, since each is unique in regard to regional location and proximity to urban areas and other attractions. ***Request:*** *Provide a clearer explanation of the utility of this table to the relicensing effort.*
E5-61	**Comment:** While outflow from Lake Tahoe is regulated, it along with Honey Lake are naturally occurring water bodies. The casual observer would not refer to either as reservoirs. The bottom of Lake Tahoe lies below the Carson Valley to the east while Lake Almanor is rather shallow and more like Honey Lake. ***Request:*** *Provide a clearer explanation why reference to other lakes and reservoirs are relevant to the relicensing effort.*
E5-63	**Comment:** According to the Department of Water Resources 12/01 report *Comparative Inventory of Recreation Facilities at California's Largest Reservoirs, 2000* Shasta Lake has more developed camping opportunities than Lake Almanor. ***Request:*** *Please review the accuracy of your statement and correct as necessary.*
E5-63	***Request:*** *Clarify that the two boat launches are public (free) and that there are a number of private campgrounds and resorts with boat launches around Lake Almanor where a launch feet is generally required.*
E5-64	***Request:*** *Please add sunbathing, beach use, and cycling as popular activities at Lake Almanor*

E5.1.1.4.5.1 Existing Demand in the Project Area for Recreation Activities

Page	Discussion
E5-67	***Request:*** *Clarify how many survey questionnaires were distributed, the number completed and returned, and percent response rate.*
E5-70	**Comment:** The attitudes expressed in Table E5.1.1-5 seem to conflict with Table E51.1-7, which shows strong statewide support for the possible developments listed in E51.1-5. ***Request:*** *Please clarify how the information appearing in Table E5.1.1-5 was obtained. How many people were surveyed and where were the surveys conducted?*

E5-70	***Request:*** *Table E5.1.1-5, numerical values should be displayed so the reader can compare the differences, even if subtle.*
E5-71	**Comment:** Item 24 of Table E5.1.1-6 indicates high demand for public access to the shoreline at Lake Almanor. Item 27 indicates a high visitor demand for more parking along roads at the lake and Item 25 show high demand for more restrooms along the Almanor shoreline.

E5.1.1.4.5.3 Existing Statewide Demand for Recreation Activity Settings in the Project Area

Page	Discussion
E5-77	**Comment:** Tables E51.1-9 and E5.2.4-5 (Volume 3, page E5-634) list "Rafting/Floating" as a recreational activity. This category could potentially cover a very wide range of activities over a wide span of stream discharges and conditions. ***Request:*** *Does "rafting/floating" include whitewater boating? If not please provide a discussion of whitewater boating trends. Since whitewater boating is a potential use of the North Fork below Canyon Dam, state regional and national trends in whitewater boating separate from other floating or drifting activities that by their nature require little equipment or skill to safely participate in the activity.*
E5-78	**Comment:** As shown on Table E5.1.1-10, demand for day use activities and camping is expected to increase by 30-50 percent between 2000-2035. The latent demand discussion does not reflect the projected increase for day use and camping. Mean PAOT counts as shown in Table E5.2.2-4 (page E5-422) appear to indicate low utilization of facilities which may be incorrect. ***Request:*** *Please explain the sampling rationale and display times and dates of visitor use used to derive Table E5.2.2-4 appearing on page E5-422. The table should reflect peak use (mid-May to mid-September) not summer mean use. The summer of 2001 was an abnormal year with extremely low lake levels and drought conditions throughout the State. Surveys should be conducted during a typical year and during peak use times which occur between 11:00 and 4:00 pm.*
E5-80	**Comment:** Does "non-motorized boating" include whitewater boating? ***Request:*** *If so, please state or make "whitewater boating" a separate category.*

E5.1.1.4.6 Synthesis of Regional Recreation Supply and Demand Trends

Page	Discussion
E5-84	**Comment:** There is currently high demand and demand is expected increase for sunbathing, swimming, picnicking, hiking, and camping activities surrounding the shoreline of Lake Almanor. This use and increasing

	emphasizes the need for access to the reservoir.

E5.1.1.4.7 Evaluation of Latent Demand

Page	Discussion
E5-85	**Comment:** The conclusion that there is little latent demand for recreation facilities and activities at Lake Almanor is contrary to a previous FS assessment with almost twice the number of people surveyed (Simcox 1995). The Lake Almanor area does provide a variety of recreation activities, but carrying capacity is strained. The demand for upgraded facilities was described in previous sections, and the lack of supply from private facilities is detailed in later sections. Dispersed recreational use and adverse resource impacts are evident, especially along the southwest access zone. Current capacity is inadequate to support the most popular activities (swimming, camping, picnicking, sunbathing) while protecting shoreline values. Area and regional studies indicate use for the most popular recreation activities (all of which are offered at the lake) will increase significantly over the next three decades. ***Request:*** *Explain the rational for the expressed conclusion, provide backup document to support the conclusions and address in the Recreation Resources Management Plan.*

E5.1.1.4.8.1 Comparison of Regional Recreation resources

Page	Discussion
E5-87	**Comment:** Facilities provided on public lands and project lands open to the public are outdated with minimum amenities such as flush toilets, showers, industry standard camping spurs, and roads. These public facilities are concentrated along the southwest shoreline that concentrates use in a small area causing over crowding during peak use. Conversely miles of shoreline and potential access points are undeveloped on the north, and east shore of the project leaving much of the area inaccessible. These areas and opportunities have not had adequate analysis through many of the study plans. The 0.25 mile review beyond the project boundary is inadequate to identify all project related impacts. A key point in future management of Lake Almanor is providing a spectrum of recreation opportunities to meet future needs such as hiking, biking, beach access, camping, and day use. This statement is key when compared to facilities being proposed throughout the draft license. Proposals for development fall short of meeting the above spectrum of apparent needs. ***Request:*** *Validate the statement that highly developed recreation opportunities are available at Lake Almanor. Explain the rational for the*

	expressed conclusion, and address in the Recreation Resources Management Plan.

E5.1.2.1.1 Objectives of the Study

Page	Discussion
E5-91	**Comment:** The objective of the condition inventory is identifying possible public recreation facility improvements. The facility condition ratings on page E5-100 do not reflect current Forest Service assessments. The Forest Service is proposing to reconstruct the Almanor Campgrounds, day use area, boat launch, and amphitheater because of significant deferred maintenance. The Forest Service would not characterize them as being in good condition. Very few Forest Service facilities at Almanor are accessible or reflect current use trends. ***Request:*** *It is proposed that PG&E and the Forest Service complete the matrix together in Table E5.1.2-3. Include the condition assessment form in Volume 8.*

E5.1.2.2 Study Area

Page	Discussion
E5-93	**Comment:** Study Plan 9, Land Use Surveys, 9A, Shoreline Management and Existing Uses does not reference a distance from the project boundary within which inventories will be conducted. The 0.25 mile from project boundary is inadequate to determine recreation development opportunities, access and day use. The area within 0.25 mile of the project area is generally unbuildable shoreline, riparian areas, or sensitive wildlife areas. Many of the features currently provided are well back from the 0.25 mile distance to shorelines or rivers. ***Request:*** *The inventory area to 1 mile outside the project boundary as project induced impacts are found, also to adequately address future recreation opportunities and access concerns, the one mile from project boundary will provide a more reasonable area of consideration for meeting future recreation needs of the Lake Almanor area.*

E5.1.2.3 Methods

Page	Discussion
E5-95	**Comment:** The Lake Almanor Recreation Trail is being proposed as a National Recreation Trail.

E5.1.2.4 Results and Discussion

Page	Discussion
E5-98	**Comment:** The primitive sites referenced in Table E5.1.2-1 at Lake Almanor are overflow sites. ***Request:*** *Please correct the table to indicate 70 overflow sites atLake Almanor.*
E5-98	**Comment:** Please clarify the percentage of public campsites provided by PG&E at Lake Almanor. A statement is made on page PRS-26 of Volume 1 that 61 percent of campsites have been provided by PG&E. The 61percent of campsites is an aggregation and is somewhat misleading since the percent of campsites provided by PG&E varies greatly depending on location within the project area. For example, 44 percent of sites are provided by PG&E at Lake Almanor, 100 percent at Butt Lake, and none on the Belden. **Request:** *Clarify and display this information by area, and percentage provided by each entity, whether PG&E, other private or Forest Service. Also identify, and display the number of campsites located on National Forest System lands within the PG&E Lake Almanor Campground (campsites, host sites, trailer dump, group sites, and overflow).*
E5-99	**Comment:** The Lake Almanor Recreation Trail extends as a linear feature through Almanor Campground N and S, Dyer View Day Use and runs adjacent to the Lake Almanor Campground (PG&E). There is data missing from the table in relation to FS sites and the FS and PG&E facilities condition inventories were not applied uniformly. Data cells were filled in for PG&E sites but not for Forest Service sites. The Belden Rest Stop refers to a boat launch and a car top boat launch. No boat launching facilities are available at this site. The restroom facilities are incorrectly listed as accessible. ***Request:*** *Display the Lake Almanor Recreation trail as a public feature provided by the Forest Service. Display in the table or as a footnote. Correct missing data and correct data entries for the Belden Rest Stop.*
E5-100	**Comment:** There is data missing from Table E5.1.2-3 relative to Forest Service sites. Forest Service and PG&E condition inventories were not applied uniformly. Data cells are filled in for PG&E sites but not for Forest Service sites. ***Request:*** *Make corrections to table E5.1.2-3.*

E5.1.2.4.1.1 Developed Recreation Facilities

Page	Discussion
E5-105 and 106	**Comment:** Almanor North and South campgrounds, Almanor Beach, Almanor Boat Ramp and Almanor Picnic area are operated by the California State University, Chico Research Foundation under a concessionaire Special Use Permit. Almanor Campground South campsites 1-8 are not multiple

	family sites. They are on the National Recreation Reservation System along with the multiple family site 53. ***Request:*** *Reference the campgrounds operated under Special Use Permit to the Chico Research Foundation. Delete all references to the Three Sisters Trail as it has been partially obliterated by the LART.*
E5-107	**Comment:** Discussion concerning the presence of cabins situated between the Almanor South campground and the shoreline of Lake Almanor is incorrect. ***Request:*** *Delete the sentence referencing "these planned improvements would likely require the removal of some leased recreational residences." This statement is not true of the cabins located on the south side of the county road.*
E5-108	**Comment:** The Almanor Overflow site is authorized for use only when the Almanor North and South campgrounds exceed capacity. Once the Almanor Campground is rehabilitated and the New Group Camp facility is constructed, overnight use of the existing overflow and old group camp area will be discouraged or eliminated. ***Request:*** *Delete the statement that more groups could use this area if needed. Future use is not planned for this area.*
E5-109	***Request:*** *Display the number of campsites located on National Forest System lands above an elevation of 4500 feet that are located within the PG&E Lake Almanor Campground. Include campsites, host sites, trailer dump, group sites, and overflow sites.*
E5-109	**Comment:** Portions of the Lake Almanor Campground have been operated under Special Use Permit held by PG&E. ***Request:*** *Clarify status of the expired Special Use Permit which authorizes campsites, host sites, overflow, group sites and the trailer dump facility and steps being taken within this license to initiate a new authorization for this use such as application for Special Use to continue this use of National Forest System lands.*
E5-109	**Request:** Quantify the rate of erosion at the Almanor Campground beach. None of the recreation inventories have identified the presence or size of developed beaches with sand, restrooms, hardened access to water and other beach amenities. Break this information out in areas provided in private (not open to the general public) and public facilities (PG&E/FS). Quantify the size of beaches in square feet.
E5-111	**Comment:** The Almanor Rest Area and Almanor Picnic Beach have been incorrectly referenced ***Request:*** *Reference should be made that the Almanor Rest Area will be changed to the Almanor Picnic Area at the end of the current planning effort. Change Almanor Picnic Beach to Almanor Beach. Include the Canyon Dam Boat Launch/Day Use facility as a Forest Service operated opportunity.*
E5-114	***Request:*** *Change the name of the Canyon Dam Boat Launch facility to Canyon Dam Boat Launch/Day Use facility.*
E5-115	**Comment:** Improvements to the Almanor Boat Launch site are underway.

	When construction is complete the site will have two courtesy docks. In order to function properly, lake level must be no lower than 4483 to 4485 feet in elevation. Lake level in the fall is the only restricting factor for use of this facility during the latter part of the recreation season. The launch facility is open from April 1 through December 1, weather permitting. ***Request:*** *Change the draft application text to reflect the approved improvements, season of use and launch restrictions due to lake level.*
E5-116	**Comment:** The Canyon Dam Boat Launch access is maintained year round. During winter months, the Forest Service contracts with the Plumas County Road Department to plow the access road to the Canyon Dam Boat Launch facility after each major snow event to allow continued fishing access to Lake Almanor. ***Request:*** *Add the above information for season of use at this facility to the draft application text.*
E5-118	**Comment:** The Lake Almanor Recreation Trail (LART) inventory of facilities and condition of facilities is incomplete. Currently there are four improved trailhead/parking areas (3 paved, one gravel), three trailhead kiosks with interpretive trail maps, several benches and bike racks, and nine interpretive panels. The trail surface is in need of heavy maintenance/repairs in over 20 individual locations. ***Request:*** *Edit draft application text to reflect available facilities.*
E5-122	**Comment:** The Canyon Dam Boat launch facility is open year round. ***Request:*** *Correct draft application text.*

E5.1.2.4.1.2 Private Recreation Facilities

Page	Discussion
E5-123	**Request:** *Add Bailey Creek to the list of private facilities and golf courses.*

E5.1.2.4.1.3 Dispersed Undeveloped Recreation Sites

Page	Discussion
E5-127	**Comment:** The area extending out from project features within which dispersed sites were inventoried is inadequate to display the true dispersed use of the area around shorelines. Use extends up to 1 mile from shorelines. Site Ecological Capacity Indicators Form (Volume 8, Appendix E5-D) shows that most of the sites inventoried were directly adjacent to low water pools near the reservoir or within 300 feet of wetlands. The surveyed areas are generally unusable except during low water events. It appears that no survey work was done at a suitable distance from the lake to document activities adjacent to the lake in the tree line. The lack of use data in the areas up to 1 mile from project leaves a substantial gap in the existing use data as displayed.

	There are numerous user created hiking, biking, and OHV trails that are not documented as dispersed use within the project area. Some of these areas are found from the causeway westward to the super ditch and from the causeway eastward to Last Chance, North Shore Campground to Catfish Beach, and the Rest Area at Johnson's grade to the point fishing access. ***Request:*** *Expand survey area to 1 mile from project boundary.*
E5-128	**Comment:** Table E5.1.2-5 lists dispersed recreation sites LA 23 and LA 24. However, the corresponding inventory forms are not listed in Volume 8, Appendix E5-D, Developed Recreation Site Ecological Capacity Indicator Forms. ***Request:*** *Include dispersed recreation site LA 23 and LA 24 survey forms in Appendix E5-D.*
E5-128	**Comment:** Table E5.1.2-5 lists the dispersed shoreline sites. Page E5-170 states vehicle access is not permitted below the 4494 foot elevation. This statement is misleading. Considerable off-road vehicle travel occurs below 4494 ft. on informal roads created by users (page. E5-179). The demand for day use sites accentuates the need to provide appropriate facilities that minimize shoreline, wildlife, and water quality impacts. ***Request:*** *Please add a statement that the off-road restriction below 4494 foot elevation restriction is not necessarily enforced by PG&E*

E5.1.2.4.3.3 Developed Recreation Facilities-Belden Reach

Page	Discussion
E5-141	**Comment:** Access to Belden Forebay is problematic at best and should not be considered as having designated access. ***Request:*** *Clearly state that access to Belden Forebay is undeveloped and that parking and access have not been signed or otherwise designated.*

E5.1.2.4.4.1 National Recreation Trails

Page	Discussion
E5-150	**Comment:** The Heart Lake National Recreation Trail is located on National Forest System lands near the southwest corner of the Lassen Volcanic National Park. The McGowan Lake Cross Country Ski Trail is also designated as a National Recreation Trail. The Lake Almanor Recreation Trail is proposed for National Recreation Trail designation in 2002. Other Nationally designated features in proximity to the project area include: Caribou Wilderness, Bucks Lake Wilderness, and the proposed Deer and Antelope creeks designation as Wild and Scenic Rivers. Some area roads have been designated as a National Scenic Byway route and a recent All American Roads designation, further indicate the scenic beauty of the area and the commitment to the economies of local communities from tourism.

	Request: *Include the above listed trails as appropriate in the discussion of National Recreation Trails.*

E5.1.3.2 Study Area

Page	Discussion
E5-154	**Comment:** The PSEA camp is not included in the list of developed recreation sites and use areas assessed for this project. ***Request:*** *Include the PSEA camp in the list of recreation sites potentially affected by this project. Activities at the camp cannot exist independently of other sites on Lake Almanor.*

E5.1.3.3 Methods

Page	Discussion
E5-155	**Comment:** The recreation and public use impact study is a qualitative assessment based on visual observations of several variables. A more scientific approach such as GPS locating of disturbed areas, taking measurements of vegetative cover and damage, installing silt fences to measure sediment loss, etc. would reduce the subjective nature of these kind of qualitative analyses. The Forest Service understands that more comprehensive studies of beach erosion and water quality are planned.

E5.1.3.4.1.1 Erosion

Page	Discussion
E5-160	**Comment:** It appears that erosion resulting from user defined access to shoreline areas may result in long term and chronic degradation of sites where access is not otherwise controlled since erosion associated with shoreline access has been noted at 63 percent of inventoried sites. It appears that attention to access issues needs to be improved. ***Request:*** *Provide a detailed map of areas where erosion is taking place as documented in Table E5.1.3-1. Suggest possible mitigation measures that could be undertaken to control erosion at shoreline access sites.*

E51.3.4.2.1 Level of Use

Page	Discussion
E5-169	**Comment:** The Forest Service agrees that levels of use at dispersed sites are an indicator of overall demand for a specific type of experience and can indicate where management actions may be beneficial. This kind of use also

	reflects latent demand and the lack of facilities to accommodate dispersed activities.

E5.1.3.4.2.3 Overnight Use

Page	Discussion
E5-172 and 173	***Request:*** *Describe what the low, moderate and high ratings mean under Level of Use in Table E5.1.3-2.*

E5.1.4.1.1 Objectives of the Study

Page	Discussion
E5-186	**Comment:** The ADAAG guidelines apply to PG&E facilities located on National Forest System lands.

E5.1.4.3.1 Review of Existing Literature and Background Considerations

Page	Discussion
E5-191	**Comment:** The Forest Service uses the Built Environment Image Guide (BEIG, USFS 12/01) as well as the Americans with Disabilities Act Guidelines for Buildings and facilities (ADAAG) for new facility construction and alterations to existing facilities in outdoor recreation areas.

E5.1.4.4 Results and Discussion

Page	Discussion
E5-201	**Comment:** The ADA inventory omitted ADA improvements to campsites, picnic tables and paths to restrooms at Almanor North Campground. For ADA purposes, facilities that are partially accessible such as the Belden Rest Stop do not meet the definition of accessible and should not be considered as such. ***Request:*** *Revise Table E5.1.4-2 to reflect the lack of adequate facilities located at the Belden Rest Stop and recent improvements made to Almanor North Campground.*

E5.1.4.4.1.2 Almanor Campground South

Page	Discussion
E5-206	**Comment:** Campsites 1-8 are not multiple family sites. They are however, posted on the National Recreation reservation System along with multiple

	family site number 53. ***Request:*** *Correct text to reflect to status of the campsites.*
E5-206 and 207	***Request:*** *Delete references to the Three Sisters Trail. The trail has been partially obliterated by the LART.*

E5.1.4.4.1.4 Almanor Campground Day Use Picnic Beach

Page	Discussion
E5-211 and 212	**Comment:** The text at the bottom of page E5-211 changes abruptly from references to Almanor Campground Day Use Picnic beach to the Almanor Campground Boat Launch and continues to the next page. The boat launch is also discussed on pages E5-208 through 210 under a separate heading. ***Request:*** *Review the text concerning the Almanor Campground Boat Launch facility and make corrections as necessary.*

E5.1.4.4.5.1 Summary of Accessibility by Activity

Page	Discussion
E5-262	**Comment:** The Forest Service is currently planning ADA facilities improvements in conjunction with the following projects: Almanor North and South campground rehabilitation/reconstruction, Almanor Boat Launch rehabilitation, Canyon Dam Boat Launch DUA rehabilitation, Almanor Group Campground construction, the Canyon Dam Fishing Trail extension and the LART extension.

E5.2.1.1 Overall Introduction

Page	Discussion
E5-277	**Comment:** Due to low lake levels, it is questionable if survey responses, especially those conducted with water-based recreationists are representative for normal years. The conclusion that "these conditions likely contributed to negative visitors responses" implies that survey results are negatively biased. It may be that only the residential users would have a broad or experienced perspective sufficient enough to comment on conditions under normal lake levels. ***Request:*** *Review the adequacy of visitor surveys and resurvey under more normal conditions to gain more representative perspectives from reservoir users where necessary.*
	Request: Please summarize the survey results for each of the four respondent groups listed in Table E5.2.1-1 in another table to display the difference. The Forest Service is especially interested in a further breakdown of the visitors group by "developed sites (public)" and "dispersed sites

	(public)". Responses from visitors at dispersed sites would help the Forest Service focus on opinions for additional developments, especially at Lake Almanor. This same rationale applies to developed site visitors at the lake. Please display and compare the responses between these two visitor sub-groups.

E5.2.1.4. Recreation Visitor Survey

Page	Discussion
E5-287	**Comment:** PG&E states "It is important to acknowledge that when the survey was conducted the pool levels at Lake Almanor were extremely low due to drought conditions and extreme energy demand. These conditions likely contributed to negative visitors' responses related to Lake Almanor pool levels." The Forest Service believes that the survey results do not adequately reflect comments that would have been received under more typical reservoir conditions. Using judgment to expand visitor survey information obtained under less that normal conditions might potentially be flawed. The residential survey results might also be flawed due to the low number of surveys distributed to local residents. It should be noted that local residents comprise a significant portion of day users. ***Request:*** *The Forest Service requests that PG&E arrange for an independent review and validation of resident and recreation user survey methodologies and that particular emphasis be placed on the adequacy of sample numbers, distribution of samples between weekend and mid-week days, and logic for extrapolation of survey results when accounting for the a-typical conditions of 2001. If the sample design is found to be inadequate or results have a great deal of uncertainty due to a low number of samples, the Forest Service requests that PG&E conduct an additional visitor survey in 2003.*
	Request: *Clarify whether Chester, Greenville, and Westwood are "back lot" or "towns and environs"?*
	Request: *How many surveys were sent to Chester, Greenville, and Westwood? How many survey results were received from each community?*
	Comment: Forest Service In responding to Study Plan 11, Public Access Assessment the Forest Service requested that PG&E "Expand scope of survey questionnaire to include all residents of Chester/Lake Almanor Basin, Westwood, Canyon Dam, Prattville and Greenville to determine access trends, satisfaction, future needs, and willingness to pay." ***Request:*** *Was this request incorporated into the study plan methodology?*

E5.2.1.4.3.3 Perceptions of Crowding at Project Area Resource Areas

Page	Discussion
E5-308	**Comment:** One third of the respondents indicated that the number of people present at Lake Almanor detracted a little or a lot from their enjoyment. Some respondents changed their visitation to avoid crowds (p. E5-310). Visitor dissatisfaction is an indicator that carrying capacity is being strained.
E5-309	**Comment:** Survey results on overcrowding and user displacement are potentially flawed as most surveys were conducted on Saturdays. The displaced individuals would not have been present to be surveyed. ***Request:*** *The Forest Service requests that PG&E review the adequacy of the crowding survey and conduct additional surveys as needed to improve the accuracy of survey results.*

E5.2.1.4.3.5 Visitors; Perceptions of Resource, Managerial, and Social Conditions

Page	Discussion
E5-318	**Comment:** Creating more campgrounds was not included as an option in the survey questions listed in Table E5.2.1-22. This is an oversight when one of the most frequent activities engaged in within the project boundary is camping, and does not reflect demand. ***Request:*** *Explain why a question regarding the creation of more campgrounds was not included in the survey.*
E5-318	**Comment:** According to the footnote at the bottom of Table E5.2.1-22, the Support/Oppose scale ranged from 1 to 5 and that the –2 to +2 scale shown at the top of the table was not used. ***Request:*** *Revise the table by deleting the –2 to +2 scale and substitute the footnote scale to avoid confusion.*

E5.2.1.4.3.6 Demographic Information on UNFFR Visitors

Page	Discussion
E5-321	***Request:*** *Please indicate the resident zip codes of visitors to the Lake Almanor, Butt Valley Reservoir and Belden reaches in a table in this section and the percent of respondents from each code area.*

E5.2.1.5.3 Area Resident Survey Results

Page	Discussion
E5-331	**Comment:** It is not clear how many actual responses were received from area residents. Were at least 40 percent of the 1625 surveys mailed out returned? Without knowing the level of response it is difficult to judge the validity of the conclusions. There is no qualitative information regarding recreational use (participation) included in this survey. Area residents represent the bulk of reservoir users, yet many would not have been contacted and surveyed at the locations of the visitor surveys. It is probable that this user group's recreational interests are not adequately understood or represented.

E5.2.1.5.3.4 Residents' Evaluation of Current Developments and Services at Lake Almanor

Page	Discussion
E5-343	**Comment:** Seventy percent of the residents surveyed indicated the amount of public access to the shoreline was a problem. The town of Chester lies at the north end of Lake Almanor, but there is no view of the lake or developed public access. Public access to the Lake Almanor shoreline is an overall need within the project boundary. ***Request:*** *Please summarize the information in section E5.2.1.5.3.4 in a table.*

E5.2.1.6.2.2 Private Business Survey Participant Selection and List of Respondents

Page	Discussion
E5-351	**Comment:** While it is understandable that some businesses owners would be reluctant to participate in the business survey, results obtained from businesses that provide recreation related services does not demonstrate the "whole picture". Many business located in Chester such as restaurants, gift shops, and gas stations would not be in business without the influx of customers attracted by Lake Almanor and associated project facilities. ***Request:*** *How has the lack of response from businesses other than those dominantly focused on recreation oriented activities skewed survey results?*
	Comment: Several businesses on Lake Almanor dominate the resorts and marina/service sectors. There views would be significant indicators of recreational use and trends. These business owners/operators were not among the businesses contacted. There is perhaps no better source of anecdotal and qualitative information regarding boating activities on the lake. Feedback from these businesses would have been a valuable source of

	information, particularly where combined with information from other sources and visitor use surveys.

E5.2.1.7.4 Discussion of Focus Group Interviews

Page	Discussion
E5-385	**Comment:** While the teen group was small, they focused on the need for a sandy beach. Creating pedestrian and bicycle access (as well as vehicle) to the lake near Chester, and a public park and beach would enhance opportunities and choices as well as reduce use as existing facilities.

E5.2.1.8 Discussion of All Surveys

Page	Discussion
E5-387	**Comment:** Section E5.2.1.8.1, the Issues section does not discuss campsites and whether respondents felt there was a sufficient number of them. ***Request:*** *Summarize the information in this section in a table to more clearly display the different responses among the four survey groups. Explain the lack of a campsite discussion as this is one of the most popular recreation activities in the project area.*

E5.2.1.8.2.1 Swimming

Page	Discussion
E5-395	**Comment:** The area resident survey did not ask which specific activities individual participated in while at the project area. This information would certainly add valuable information to discussions such as demand for day use areas and boat launch facilities at a minimum. ***Request:*** *What is the logic for limiting questions concerning specific activities in which area residents participated?*

E5.2.2.1.1 Objectives of the Study

Page	Discussion
E5-401	**Comment:** The Forest Service believes that the study results do not reflect typical reservoir conditions. PG&E acknowledges as much in the following statement made on page E5-287 "It is important to acknowledge that when the survey was conducted the pool levels at Lake Almanor were extremely low due to drought conditions and extreme energy demand." These conditions likely contributed to low visitor use counts, especially in the late season when the reservoir was at lowest. The licensee and their consultants

	were provided historic use counts for Forest Service facilities that clearly show these facilities exceed current capacity during high use and holiday weekends. This historic use data is not displayed nor analyzed in the Existing Recreation Use discussion. ***Request:*** *Please include and display the historic use data provided by the Forest Service in the Existing Recreation Use study and display in a table as you have done for licensee facilities at Lake Almanor. Also reference the occupancy data from the Simcox assessment.*
E5-401	***Request:*** *Use data needs to be displayed by actual season and as peak monthly weekends (June, July August, September) and holidays for all facility types. Reporting of mean or median statistics only tends to mask days when use was approaching capacity.*

E5.2.2.2.1 Lake Almanor

Page	Discussion
E5-403	**Comment:** The Canyon Dam, Almanor Beach and Dyer View Day Use Areas (DUA) are not listed among the day use and picnicking facilities at Lake Almanor. ***Request:*** *Add these sites to the list of day use and picnicking sites.*

E5.2.2.3.4 Data Collection Procedures

Page	Discussion
E5-414	**Comment:** Of the 14 sample days identified for Lake Almanor, 12 occur on Saturdays, one is an early season Friday and the other was Thursday of the Independence Day weekend. This schedule does not follow the schedule identified in the Study Plan Description that states in part "random weekdays and alternating Saturdays and Sundays". Clearly there were no surveys conducted on Sundays or on random weekdays. The Forest Service believes the survey results may be seriously flawed in that a broad spectrum of users were not contacted due to the majority of the surveys being conducted on Saturdays. ***Request:*** *Review the adequacy of the sampling design and resample as necessary. Note comments made concerning page E5-287.*

E5.2.2.3.5 Calibration of Traffic Counter Devices

Page	Discussion
E5-415	**Comment:** Traffic counter error is mentioned but there is no indication of the scale of error. ***Request:*** *Display or discuss the scale of error and the accuracy of traffic*

	counting devices used for this study. What is the reporting range within which traffic counts may actually lie?

E5.2.2.3.7.3 DUA Occupancy Rates

Page	Discussion
E5-419	**Comment:** Many DUA users do not use the picnic tables, or occupy parking spaces provided at the sites, preferring to sit on the beaches where they may have boated, walked or biked in. These users do not appear to be included in the day use counts. The Forest Service believes that the discussion on supply and demand of day use areas might be based on incomplete information and might not be accurate. Not all day use areas have picnic tables. ***Request:*** *Discuss day use area sampling techniques. Were day use areas without picnic tables counted? If so, how many? Were day use area users who arrived by boat, walking or biking counted?*

E5.2.2.4.2 Lake Almanor

Page	Discussion
E5-421	**Comment:** The draft license application states that no visitors were observed at Dyer Day Use Area. If the referenced site is the Dyer View Day Use Area operated by the Forest Service then the statement is incorrect. ***Request:*** *Please describe the "east entrance to Dyer DUA" is this site the Dyer View Day Use Area or another site? Please resolve the apparent conflict between the lack of use at Dyer DUA and the Dyer View Day Use Area that is heavily used on weekends.*
E5-422	**Comment:** Table E5.2.2-4 lists three sites with Dyer in the title. The presumption is that they are physically separate sites. The text on preceding pages does not adequately describe the unique setting of each if indeed they are separate. The sites listed on the table do not correspond to those listed on page E5-403. ***Request:*** *Revise the text to clearly distinguish each of the "Dyer" sites and any other sites with similar names or that lie in close proximity to each other.*
E5-425	**Comment:** The text states that there are 6 spaces at the Almanor Boat Launch. There are actually 58 spaces at that site. ***Request:*** *Correct if necessary the apparent conflict in parking spaces located at Almanor Boat Launch. If an error is found, how does the percent occupancy rate change?*
E5-426	**Comment:** Almanor West DUA is a private rather than public site. ***Request:*** *Correct error in designation of Almanor West DUA as a public site.*

E5.2.2.4.6.5 Campground Occupancy Equal or Exceeded Frequencies-2001 Recreation Season.

Page	Discussion
E5-463	**Comment:** The application states that none of the Lake Almanor area campgrounds were at or above capacity on a weekend at any point during the recreation season. Licensee is also correct in stating that use counts were affected by unusually the low water level at the lake in 2001. ***Request:*** *Please discuss findings from the Simcox assessment, which is more comprehensive and reflects a typical season of use (1993), found on pages 7-8 of the Prattville Management Area Recreation Masterplan (1995). Include a table that displays the differences between the two survey years (1993 and 2001) for the Forest Service campgrounds at Lake Almanor.*

E5.2.2.4.7 Private Resort Occupancy

Page	Discussion
E5-468	**Comment:** There are 17 private resorts at Lake Almanor, but occupancy data is reported for only seven of them. The limited response may skew conclusion drawn concerning use at private resorts. The need for additional public facilities should consider whether the private sector has the capacity to absorb more use. According to Table E5.2.2-27, six of the seven resorts that did respond are at capacity during the peak season, with one approaching capacity. ***Request:*** *Contact the other ten resorts for this same information either via mail, telephone or in-person interview to fill in this information gap.*

E5.2.2.6 Summary of recreation Use Study Findings

Page	Discussion
E5-507	**Comment:** PG&E and their consultants were provided historic use counts for Forest Service facilities that clearly show these facilities exceed current capacity during high use and holiday weekends. This historic use data is not displayed nor analyzed in the Existing Recreation Use discussion. Use of this information would have reduced the error inherent in estimating overnight use. ***Request:*** *Include and display this data in the Existing Recreation Use Study discussion.*

E5.2.3.4.2.2 Developed Recreational Boating Facilities-Lake Almanor

Page	Discussion
E5-530	**Comment:** Approval has been received to replace the courtesy docks at Almanor Boat Launch. Two additional docks will not be constructed. This boat launch is open from April 1 through December 1. ***Request:*** *Correct text to reflect dock replacement not construction of additional courtesy docks.*
E5-531	**Comment:** The paved and accessible fishing access ramp located at Canyon Dam boat launch will be expanded in the near future. ***Request:*** *Edit text to reflect this planned improvement.*
E5-531	**Comment:** Canyon Dam Boat Launch was usable longer than the Almanor Boat Launch in 2001, however, the ramp was dangerous as it did not meet the three foot minimum depth requirement. Boat props and trailers were damaged due to the abrupt drop at the end of both ramps. Canyon Dam Boat Launch is open year round. The launch was not usable, however, from late September 2001 through March 2002 due to low water levels. ***Request:*** *Edit text as necessary for correctness.*
E5-533	***Request:*** *Are the private boat ramps listed on page E5-533 developed launches or merely dirt ramps? In general the private launches have limited parking and are not attractive to day users. Please clarify that the Lake Almanor Country Club, Lake Almanor West Country Club and the Hamilton Branch Homeowners Association are private facilities and are not open to the public. Edit text as necessary.*

E5.2.3.4.2.3 Developed Recreational Boating Facilities-Butt Valley Reservoir

Page	Discussion
E5-535	**Comment:** The slope of the boat launch ramp at the Alder Creek Day Use Area is inadequate for proper launching, the size of the parking area and number of stalls may also be inadequate. ***Request:*** *Verify that the size of the parking area and number of stalls is adequate.*

E5.2.3.4.3.1 Boating Use Level Estimation

Page	Discussion
E5-538	**Comment:** It is assumed from the text on page E5-537 that the survey results reported on Table E5.2.3-6 reflect 2001 surveys. Overall use during 2001 was down resulting in lower than normal counts. The Forest Service believes that recreation related surveys and counts conducted during below normal years are subject to interpretation errors that would not occur if the

	data reflected more typical years. ***Request:*** *Edit the title of table E5.2.3-6 to include the year the date was collected. Review the titles of all tables and clarify when data was collected. It is inefficient to expect the reader to learn basic information about a table from nearby text. Review the appropriateness of extrapolating data from abnormal years to normal year conditions. Conduct additional surveys as necessary to improve the accuracy of predictions concerning visitor attitudes and preferences.*

E5.2.3.4.3.2 Observations of Boating Related Activity Participation

Page	Discussion
E5-542	**Comment:** Observations of shoreline activities indicate considerable vehicle access to the water's edge and use at Lake Almanor. ***Request:*** *Segregate the survey responses for dispersed recreation users to isolate their opinions/needs and demographics. This will assist in focusing on desired facilities to accommodate day use. Thirty-nine percent of visitors supported more day use facilities (p. E5-583).*

E5.2.3.4.3.3 Boating-Related Activity Participation (Self-Reported)

Page	Discussion
E5-556	**Comment:** The frequency of respondents answering yes to a question concerning having to wait to use the boat launch ramp would likely have been higher if surveys were conducted in a typical year. ***Request:*** *How might Tables E5.2.3-18 and E5.2.3-19 change if the questions concerning waiting to launch a boat were asked during a more normal year?*

E5.2.3.4.3.5 Support Facility Use

Page	Discussion
E5-561	**Comment:** There is a critical lack of public boat slips and mooring buoys at Lake Almanor as displayed in Table E5.2.3-22. More information is needed from the resorts that did not respond to the survey to determine if they can absorb the demand.

E5.2.3.4.3.6 Comparison of Use Levels with Lake Almanor Pool Level

Page	Discussion
E5-568	**Comment:** The statement concerning 93 acres per boat is incorrect. The minimum number of acres per boat reported in Table E5.2.3-27 is 87. ***Request:*** *Correct conflict between the text on page E5-568 and Table E5.2.3-*

	27.

E5.2.4 Projected Recreation Use Analysis

Page	Discussion
E5-619	***Request:*** *Discuss the Simcox assessment of Lake Almanor and any other local recreation studies conducted in the past 10 years. Include data from the June 2002 "Central and Northern California Outdoor Recreation Market Analysis" (Forest Service 2002).*

E5.2.4.3.2 Methodology for Assessing Current and Future Demand for Activities Occurring in the Project Area

Page	Discussion
E5-624	***Request:*** *Cite and summarize the different capacity threshold levels used in this analysis. Explain the rationale for the selected thresholds.*

E5.2.4.4.2.2 Projected Recreation Use at Recreation Sites in the Project Area

Page	Discussion
E5-651	**Comment:** The ability of private commercial resorts to absorb additional use should be a consideration in future plans to expand public facilities. ***Request:*** *Update Table E5.2.4-11 after receiving comments from private resorts that have not as yet been interviewed in order to better depict use.*

E5.2.5.3.3 Methodology for Assessing Overall Capacity Levels

Page	Discussion
E5-672	**Comment:** The capacity thresholds for camping stated in Table E5.2.5-1 are perhaps too high reflecting many days/weekends when the campgrounds are at 100% occupancy, resulting in crowding and use at the Almanor Overflow Area. The thresholds appear to be a judgment call made by PG&E and the recreation contractor. ***Request:*** *Please apply the same thresholds for DUA capacity to camping capacity.*

E5.2.5.4.1.1 Licensee and Forest Service Developed Recreation Sites

Page	Discussion
E5-676	**Comment:** The day use site data appearing in Table E5.2.5-2 (page E5-676)

	the and conclusions appearing on page E5-678 do not reflect the considerable amount of day use that occurs at dispersed areas along the Lake Almanor shoreline. It appears that current developed facilities do not meet user needs and therefore people recreate elsewhere. ***Request:*** *State there is a high demand for day use activities that cannot be provided by the current number, location, and configuration of the existing DUAs.*
E5-681	**Comment:** The Forest Service agrees with the statement that a fire in 2000 and drought in 2001 affected use levels. The Forest Service believes that the 1993 Simcox assessment is more reflective of a normal year and use levels at that the time the surey was conducted. ***Request:*** *Review the adequacy of existing survey results and resurvey if inadequate data is discovered.*
E5-683	**Comment:** The reference to "Seasonal Occupancy Rate" found in Table E5.2.5-3 could be somewhat misleading since season will vary from site to site. ***Request:*** *Indicate the season when referring to "Seasonal Occupancy Rate".*

E5.2.5.4.1.2 Private Commercial Resorts (Open to the Public)

Page	Discussion
E5-686	**Request:** Update Table E5.2.5-4 as additional information for private commercial resorts becomes available.

E5.2.6.3.2 Methodology for Public Access Assessment

Page	Discussion
E5-742	**Comment:** The Forest Service typically uses slope criteria of 0-10% for High Public Access, 10-30% for Medium, and >30% for Low. The Forest Service believes the suggested slope delineation is a more likely projection of where public use would occur or could be accommodated in the future. ***Request:*** *The Forest Service wishes to discuss changing the slope criteria found in Table E5.2.6-1 and the corresponding analysis and maps that follow. A change would affect the acreage figures for each category found in later sections (pp. E5-852-853, 877).*

E5.2.6.4.1.3 Seneca Reach

Page	Discussion
E5-772	**Comment:** The statement that National Forest roads in the Seneca reach are open to limited traffic only is incorrect. The roads are open to members of

	the public driving vehicles suitable for the maintenance level of the road. The roads are open to the public but not to all types of highway vehicles. Some roads have been closed to use for resource protection. ***Request:*** *Clarify that the roads are open to the public with vehicles suitable for the condition of the road.*
E5-772	**Comment:** The statement that most of the Seneca reach is privately owned is incorrect. The majority of the reach is composed of National Forest System lands with irregularly shaped parcels of private land centered near the river. See Figures E5.2.6-14 and E5.2.6-15. ***Request:*** *Correct the statement that most of the Seneca reach consists of private land.*
E5-772	**Comment:** The statement is made that the Forest Service is owner and manager of the Plumas National Forest. The Forest Service manages National Forest System land. The Forest Service does not own land. ***Request:*** *Delete the reference to ownership of land by the Forest Service. Correct similar errors elsewhere in the draft license application.*

E5.2.7.2 Study Area

Page	Discussion
E5-841	***Request:*** *Add Almanor Beach, Canyon Dam DUA and Dyer View DUA to the list of public developed recreation sites. The facilities are National Forest sites.*

E5.2.7.3.1 GIS Data Layer Review and Identification

Page	Discussion
E5-844	**Comment:** The constraint to day use access at Lake Almanor caused by the presence of non-licensee private land should not be considered to have the same weight or merit as a constraint caused by a physical or biological attribute. It is entirely possible that private parcels could be purchased or exchanged. Their presence at this time should not be considered as a constraint but as a potential opportunity.
E5-844	***Request:*** *Define biological constraints or reference the portion of the draft application where biological constraints are defined.*
E5-844	**Comment:** The presence of shallow water near day use areas is not necessarily a constraint. Shallow water may constrain boating but not wading. Substrate further constrains or enhances opportunity. ***Request:*** *Define the recreation constraints caused by shallow water. State whether shallow water is a constraint because it limits boating access or causes other undesirable characteristics.*
E5-845	**Comment:** It is not necessary to limit recreation opportunities to areas located within 0.25 mile of project shorelines or riverbanks since facilities

	such as campgrounds and trails do not need to be located on shorelines to be desirable. The area within 0.25 mile of project shorelines is generally unbuildable due to the presence of riparian areas or sensitive wildlife. Many of the features currently provided are well back from the 0.25-mile limit. ***Request:*** *Extend the mapping of recreation development opportunities from 0.25 mile to 1 mile from project shorelines and rivers. Extending the search area will provide a more reasonable area of consideration for meeting future recreation needs within the Lake Almanor area and will allow for identification of other project inducted impacts.*

E5.2.9.2 Study Area

Page	Discussion
E5-1011	**Comment:** The project area of influence probable extends up to one mile from the FERC project boundary. ***Request:*** *See previous comments concerning extension of the area of influence to one mile from the FERC boundary.*

E5.2.9.4 Results and Discussion

Page	Discussion
E5-1020	**Comment:** The scope of the California State University development plan (CSU, 1990) did not extend beyond National Forest System lands. The recommendations made in this plan focus only on National Forest lands, not the entire project. The need for identified facilities exists throughout the project area, not just on National Forest lands. **Request:** *Please utilize and cite the 1995 Simcox assessment.*

E5.2.9.4.1.1 Overall Camping Needs in the Study Area

Page	Discussion
E5-1026	**Comment:** Reporting campground utilization in percent of capacity over the full season tends to give the appearance of campground under utilization. Use was down during the 2000 and 2001 seasons due to nearby major forest fires and low lake levels. ***Request:*** *Display percent capacity over shorter time periods and the peak use season to give a clearer representation of use.*
E5-1027	***Request:*** *Expand the distance searched for physical/spatial capacity limiting factors that may be present near developed campgrounds in the study area.*
E5-1027	**Comment:** Perceptions of crowding are reported as relatively modest. Data used to reach this conclusion did not include resident survey input from the

	communities of Chester, Prattville, Canyon Dam, Greenville, and Westwood. This data gap is critical as the majority of "day use" comes from local residents. Inclusion of the communities would have displayed overuse and crowding more accurately. Perceived crowding was reported as modest at 3.5 on a scale of 9 but the statement was also made that 3.5 is below but approaching capacity. ***Request:*** *Survey local communities to more accurately display Social Capacity. Explain the apparent contradiction in the statement that a rating of 3.5 is modest but approaching capacity.*
E5-1032 and E5-1033	**Comment:** Peak use figures gathered by the Forest Service for Almanor Campground, Almanor Beach, and Almanor Boat Launch show that the facilities are currently at capacity. Current peak use would indicate that facilities are overused and crowded and that current facilities cannot meet demand. Postponing development of new or improved facilities until 2035 is inadequate to meet current and projected project induced recreation. ***Request:*** *Verify the conclusions used to postpone construction of new facilities until 2035.*
E5-1032	**Comment:** The Forest Service believes the threshold indicators for camping are too high and will result in considerable crowding and overflow use before capacity is expanded. ***Request:*** *Use the same thresholds for DUAs suggested on page E5-672.*

E5.2.9.4.1.2 Overall Day Use/Picnicking Needs in the Study Area

Page	Discussion
E5-1037	***Request:*** *Discuss activities such as picnicking, swimming, and sunbathing associated with dispersed use along the Lake Almanor shoreline.*
E5-1040	**Comment:** Use data collected during the 2001 season is inadequate due to extremely low water levels in Lake Almanor and the proximity of major forest fires to the lake. Conclusions drawn from surveys conducted during this time in regard to use may not be valid.
E5-1040	***Request:*** *Validate that Catfish Beach is available for development as a day use opportunity by providing archaeological clearances such as evaluations and mitigations for proposed developments.*
E5-1040	***Request:*** *Consider formalizing existing use along the causeway to provide adequate parking to accommodate shoreline fishing, bird watching, and scenic photo opportunities.*
E5-1043	***Request:*** *Consider implementation of ADAAG guidelines at all facilities.*
E5-1043	**Comment:** Inclusion of the PSEA Camp and beach as a potential day use facility would help accommodate day use needs and growth. ***Request:*** *How might inclusion of the camp and beach meet the need for additional day use facilities?*
E5-1045	**Comment:** The indicated number of launch ramp lanes at Almanor Boat Launch and Canyon Dam is incorrect.

	Request: *Edit text to indicate that Almanor Boat Launch has a two lane ramp and Canyon Dam has a three lane ramp.*
E5-1046	***Request:*** *Specify the lake level at which the Almanor and Canyon Dam Boat Launch ramps reach the 3-foot minimum water depth required at the toe of the ramps by Cal Boating for boat launching.*

E5.2.9.4.1.6 Overall Trail Needs in the Study Area

Page	Discussion
E5-1074	***Request:*** *Reference Forest Service use figures for the Lake Almanor Recreation Trail.*

E5 RECREATION PROPOSALS

Page	Discussion
E5-1168	**Comment:** The Forest Service supports further study of the Southwest Shoreline Access Zone at Lake Almanor. The need for new facility developments at the lake cannot be fully considered and incorporated into development proposals without this study. There is a significant amount of dispersed use occurring along the shoreline with subsequent adverse environmental impacts. The Simcox assessment of 1993 states that recreational use along the south lakeshore is 173 percent of that of the Almanor Beach lakeshore and jetty area (Simcox 1995). Without a complete study of who dispersed site users are, where they come from, what they do at the lake, why they seek undeveloped areas to recreate, what the resource impacts are, adequate mitigation measures cannot be proposed.

E5.7.3.1 Introduction

Page	Discussion
E5-1238	**Comment:** The unusually low lake levels experienced at Lake Almanor during 2001 likely contributed to low visitation levels, low survey response rates, and inadequate sampling of user types. The survey results are probably out of context for typical reservoir conditions. An accurate sample of resident users is critically important since they are the primary day users of Lake Almanor. An analysis based on insufficient data is inherently flawed. ***Request:*** *The Forest Service requests that PG&E adopt the recommendations made concerning Volume 3, page E5-287 of the draft license application and that PG&E confer with the Forest Service concerning additional recreation use sampling.*

E5.7.3.3 Visitation Data

Page	Discussion
E5-1241	**Comment:** The lack of correlation between the level of Lake Almanor and visitor use is an indication of the complexity of factors that drives use at the lake. One fault of the analysis is possibly the lumping of data on an annual basis. Better correlation could perhaps have been achieved by using shorter time periods such as early, mid or late season use and better analysis of out of basin variables influencing visitation. This issue is quite important since intuitively one would expect visitation to follow lake levels. If this is not true it should be clearly articulated. It is unclear how the visitation numbers used in Figure E5.7-1were derived. Which public campgrounds were used? ***Request:*** *Please explain your conclusion as many factors affect visitation levels. There appears to be a difference of opinion between this visitation data, the licensee's statement, and what resort operators are reporting as stated on page E5-1026.*

E5.7.3.4 Local Expenditures

Page	Discussion
E5-1242	**Comment:** The assumption "that the expenditures by local people would take place whether or not the recreational resource were available" is perhaps incorrect. Many local people are "snowbirds" who would not be here spending money or purchasing vacation homes if not for the project induced recreation environment. ***Request:*** *Is it appropriate to exclude part time residents or even permanent residents who are attracted to the area because of the presence of Lake Almanor from the analysis of economic effects?*

E5.8 REFERENCES

Page	Discussion
E5-1259	**Request:** Include the two Simcox assessments referenced in Forest Service comments in the list of references: Simcox, David Dr. 1995. "Prattville Trail System Master Plan." Simcox, David Dr. 1995. "Prattville Management Area Recreation Master Plan."

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E6.3.1.3 Plumas National Forest Land and Resource Management Plan

Page	Discussion
E6-26	**Comment:** Plumas National Forest Land and Resource Management Plan (LRMP) has recently been amended by adoption of the Sierra Nevada Forest Plan Amendment Project. While the amendment did not specifically change the language appearing in the LRMP concerning hydroelectric development, it did reaffirm riparian restoration and management direction. ***Request:*** *Review the Sierra Nevada Forest Plan Amendment Project Record of Decision concerning Riparian Conservation Area management objectives and add language to acknowledge riparian management direction.*

E6.5.1 Visual Characteristics of the Project Area

Page	Discussion
E6-59	**Comment:** The Belden Powerhouse penstock is highly visible partially due to the color of the penstock. ***Request:*** *Investigate techniques that might be used to make the penstock less visible and blend better with the surrounding terrain. Present a proposal for better visual blending of the penstock.*

E6.3.5 Licensee Project Lands

Page	Discussion
E6-38	**Comment:** The discussion of vehicle access along SR 147, SR 89, and SR 36 is misleading. Points along these routes are not signed, improved for vehicle parking, provide any project information and are unsafe for use by the public due to lack of sight distance for access or egress, and there are no designated, harden paths to the project feature. Further these locations provide no developed access to the FERC Project Lands to accommodate the project induced uses of fishing (75% of visitors), swimming (77% of visitors), picnicking/sunbathing (45 and 55% of visitors), hiking (68%) and boating/waterskiing (66%) as stated in Volume 3, Report E-5, Table E5.11-4.
E6-39	**Comment:** Licensee's Public Recreation Policy as described in items 1-3 appears to be in direct conflict with current conditions as access to project lands for project induced activities is very limited. ***Request:*** *Please comment on this apparent conflict between policy and actual access opportunities.*

E6.4.1 Developed

Page	Discussion
E6-44	**Comment:** Currently PSEA Camp, Caribou-cabins and clubhouse are not open to the general public, and are located along prime lakeshore and reaches for the exclusive use by PG&E employees, and their families ***Request:*** *As requested in Study Plan #1, 4, 5, 7, 9, please include all existing facilities within the project vicinity i.e. PSEA Camp, Caribou-cabins, and clubhouse, for consideration of public access to accommodate project induced recreation, day use, fishing, swimming, hiking and boating.*

E6.5.2.1 National Forest

Page	Discussion
E6-67	***Request:*** *Please state that the Lake Almanor Recreation Trail is being proposed as a National Recreation Trail.*

E6.6.1 Compatibility of the project Developments with Surrounding Land Uses

Page	Discussion
E6-84	**Comment:** The comment is made that the desirability and utility of the shoreline decreases markedly during times of low reservoir levels. ***Request:*** *The Forest Services wishes to discuss with PG&E the desirability of maintaining the elevation of Lake Almanor during certain portions of the summer within an elevation range that promotes optimal recreation use of the reservoir within the constraints of management requirements of National Forest System lands located downstream of the lake.*

E6.6.3 Project Consistency with Applicable Management Plans

Page	Discussion
E6-98	**Comment:** Reference is made to the Johnson Fields-North Causeway Scenic Area designation. ***Request:*** *Please describe land use requirements or constraints imposed by this designation*

E6.6.4 Buffer Zone and Shoreline Policies

Page	Discussion
E6-99	**Comment:** The reference to pedestrian access to all areas of Lake Almanor

	is misleading; pedestrian access is very limited. Designated pedestrian access points do not exist except on the west shore along the Lake Almanor Recreation Trail. As a result of limited pedestrian access, crowding and overuse of the west shore is occurring.
E6-101	**Comment:** Areas identified for future development in the Shoreline Management Plan are of great concern to the Forest Service as cumulative effects of proposals could result in resource damage and over use to adjacent National Forest System lands. The consideration of dispersal of use with a variety of opportunities around the entire project is preferred over forcusing more use on the southwest shore of Lake Almanor.

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Attachment E2-A: Sediment Incipient Motion Analysis

Page	Discussion
3	**Comment:** Table E2 shows threshold flows of less than 10 cfs. for very fine gravel and fine gravel, yet Figure 15 does not show flows less than 10 cfs. ***Request:*** *Regraph Figure 15 to show flows less than 10 cfs.*
No page number	**Comment:** Figures 15 and 16 show flows up to 10000 cfs., yet the maximum flow releases for the field study were 700 cfs. at Canyon Dam and 1,200 cfs. at Belden dam. ***Request:*** *A brief discussion is needed that explains why the results can be extrapolated to 10,000 cfs. when the maximum flow releases were 700 and 1200 cfs.*

Attachment E2-B: Shoreline Erosion Study

Page	Discussion
16	**Comment:** The study does not specifically analyze the potential for shoreline erosion at different lake levels, and how this might affect turbidity levels of Lake Almanor. ***Request:*** *The study should be expanded to analyze the potential for shoreline erosion and turbidity levels in the Lake Almanor for lake levels that would result from the following minimum flow releases from Canyon Dam: 35, 75, 100, 150, 200, and 300 cubic feet per second. State if flow releases will consist of water diverted from power production or from a reduction in lake level.*

Appendix E2-A: Water Quality of Late Summer Releases from Canyon Dam

Page	Discussion
	Comment: Appendix A1 does not indicate the flow releases from Canyon Dam. The water quality of the North Fork Feather River is listed for the time period of June 4 through October 5, 1981, but there is no indication of the amount of flow the North Fork Feather River. ***Request:*** *Include the flow releases from Canyon Dam from June 4 through October 5, 1981 for Appendix A1.*
	Discussion: There is no discussion of water quality of the North Fork Feather River at different flow releases and of Lake Almanor at those flow releases. This is important because changes in water quality – pH, conductivity, turbidity, concentrations of metals and nutrients – affect the health of fish and other aquatic organisms. ***Request:*** *Include a discussion of the likely water quality of the North Fork Feather River below Canyon Dam flow for releases of 75, 100, 150, 200, 300, and 500 cfs., as well as likely impacts to the water quality of Lake Almanor.*

Appendix E2-E: Streamflow and Water Regime Information

Page	Discussion
	Comment: There is no analysis of the streamflow record from the USGS gage 11399500 from January 1908 through January 1914, which represents the unregulated flow of the North Fork Feather River just below Canyon Dam. ***Request:*** *Present an analysis of the streamflow record from USGS gage 11399500 from January 1908 through January 1914. This analysis should include:* ▪ *A flow duration curve for that entire time period (all months)* ▪ *A flow duration curve for each month for the entire time period.* ▪ *Seasonal flow duration curves for the following: July – October, November – March, April-June.* ▪ *A narrative discussion of the flow regime, which includes the amount and timing of the low flow period as well as the size and timing of pulse flows.* *The flow records from USGS gage 11399500 from January 1908 through January 1914, both in numeric and graphical form, can be downloaded from the internet at www.usgs.gov.*

Map V-1	**Comment:** Map V-1 references a gaging station designated at 47 on the North Fork upstream of the Caribou Powerhouses. Gage 47 (NF-47?) is not listed on the adjacent page where mean monthly flow rates of various stations are listed. Record from the gage is not shown any of the various flow duration tables on the pages that follow. Was this the abandoned gage just upstream from Caribou Powerhouse or was this the gage at the mouth of Butt Creek? ***Request:*** *Provide the record for NF-47and/or the record from the gage just upstream from Caribou Powerhouse. Provide daily discharges and seasonal flow duration curves. This record will depict accretion below Canyon Dam and the timing and scale of pulse flows provided by the watershed.*
Figure 6-1 through 6-5	**Comment:** It is possible that the timing of streamflow in Butt Creek above the project reflects in some manner the pre-project flow of the North Fork near Prattville. The flow duration information depicted on Figures 6-1 through 6-5 is obviously influenced by diversion from Lake Almanor. ***Request:*** *Provide unreglated discharge of NF-4 for the period of record. Provide daily discharges and seasonal flow duration curves. This information will be helpful in understanding unregulated distribution of streamflow and number and scale of pulse flows.*
	Comment: The arithmetic vertical scale (which shows stream discharge) of the flow duration curves for the East Branch, North Fork Feather River Lake Almanor inflow, and Butt Creek are difficult to read at low flows. ***Request:*** *Present the flow duration curves for the East Branch, North Fork Feather River Lake Almanor inflow, and Butt Creek with a logarithmic vertical axis (which shows stream discharge).*

Appendix E2-H: Longitudinal Temperature Profiles for Seneca Reach

Page	Discussion
	Comment: The graphs would be more meaningful if all flow releases from Canyon Dam were plotted on one graph for a given month for the existing Prattville intake, and on a different graph for the modified Prattville Intake. ***Request:*** *For each month of the year, plot all flow releases from Canyon Dam on one graph for the existing Prattville intake, then duplicate the same graphs for the modified Prattville Intake.*
	Comment: The difference between normal and warm meteorology is not defined. The difference between normal, dry, and wet water years is not defined. ***Request:*** *At the beginning of Appendix E2-H, define normal and warm meteorology, as well as normal, dry, and wet water years.*
	Comment: The modeling of the temperature of the Seneca reach would be more complete if the following additional flow releases from Canyon Dam were included: 200 and 250 cubic feet per second. This is important because the model shows a progressive reduction in the stream temperature

	as flow releases are increased from 35 up to 150 cfs. (in July and August), but no additional stream temperature reduction at a flow release of 300 cfs. Modeling stream temperature at 200 and 250 cfs. will help define the flow at which the stream temperature reduction ceases. ***Request:*** *Include flow releases of 200 and 250 cfs. as part of the stream temperature modeling for the North Fork Feather River.*

Appendix E2-J: Longitudinal Profiles for Belden Reach

Page	Discussion
	Comment: The modeling of the temperature of the North Fork Feather River just above the East Branch would be more complete if the following additional flows were included: 200 and 250 cubic feet per second cfs. This is important because the model shows a progressive reduction in the stream temperature as flow releases are increased from 35 up to 150 cfs., but no additional stream temperature reduction at a flow release of 300 cfs. Modeling stream temperature at 200 and 250 cfs. will help define the flow at which the stream temperature reduction ceases. ***Request:*** *Include flow releases of 200 and 250 cfs. as part of the stream temperature modeling for the North Fork Feather River just above the East Branch.*

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Appendix E3.1-1 Fish Population Report

Page	Discussion
4	**Comment:** The text on page 4 appears to contradict Figure 3 (page 7). Ohio Creek was not mentioned as a survey site on page 4 but is shown as a survey site on Figure 3. There is no explanation of the rationale used to select tributary survey sites. ***Request:*** *Correct any inconsistency between the text on page 4 and survey locations on pages 6 and 7. Discuss the rationale for selection of tributaries as sample locations.*
	Comment: There is no evaluation of the effects of habitat fragmentation and isolation by natural or manmade barriers, and project operations on fish populations.. ***Request:*** *Evaluate the effects of habitat fragmentation and isolation on the salmonid fish population. Determine if there is an opportunity for the adjacent populations to re-colonize the lost or isolated habitats. What opportunities are thereto facilitate fish passage to increase spawning and holding habitats?*

Appendix E3.1-3: Herpetofauna Surveys

Page	Discussion
6	**Comment:** Records of occurrences of mountain yellow-legged (MYLF) on the Plumas National Forest are incomplete. The presence of MYLF has been recorded in the Lakes Basin area, Boulder Creek, Lone Rock Creek, the South Branch of Rock Creek, Pineleaf/Bean Creek area, Pinchard Meadows (3500 feet in elevation, Jennings et al 1996, Howe Flat, and Rowland Creek. An occurrence of either a MYLF or FYLF in Benner Creek adjacent to Butt Lake Dam has also been noted. ***Request:*** *Complete a data search for known occurrences of MYLF as well as a general TES data search. Some data sources are: Plumas and Lassen National Forest databases, CDF&G databases, California Diversity Database, DWR databases, and any additional survey data collected. Locate date information on the Benner Creek Ranid occurrence. This data could possibly be found in the Plumas or Lassen databases.*
6	**Comment:** The life history requirements for MYLF are probably incomplete for the Plumas National Forest. The Plumas has known populations that occur within small streams (Roesgen B&C) ***Request:*** *Review survey reports documenting occurrences within the Boulder Creek, Lone Rock Creek, and South Branch Rock Creek areas for narratives of habitat descriptions and MYLF occurrences. Re-evaluate site assessments to assure that all potential MYLF habitat was surveyed.*

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Appendix E3.1-10: IFIM Report

Page	Discussion
	Comment: Overall, the results from the IFIM study indicate that there is more fish habitat at a flow range of 75 to 300 cubic feet per second (cfs.) than at the historic (pre-Canyon dam) low flow of 500 to 600 cfs. This does not make sense. Part of the reason for the strange PHABSIM results may be that data input into the model was collected at flows far less than the historic low flows of 500 to 600 cfs. For example, most of the fish habitat mapping and velocity/depth data was done at flows less than 150 cfs. in the Seneca reach. ***Request:*** *The Forest Service requests an independent third party evaluation of the IFIM study. The Forest Service would the selection of the third party.*
69 and 71	**Comment:** The size of the graphs in Figures 28 and 29 are too small to accurately read discharges below 500 cfs. and their corresponding Weighted Useable Areas (WUA). This is important because peak WUA, which

	represents the maximum amount of fish habitat according to the model, frequently occurs below 500 cfs. ***Request:*** *Figures 28 and 29 should be enlarged to clearly represent discharges below 500 cfs.*
	Comment: Throughout the relicensing effort, the Forest Service has requested that the IFIM and other related studies be conducted with sufficient sensitivity when measuring cross sections or conducting amphibian and related surveys that estimates of amphibian habitats including shallow water, backwater areas, and side channels for example could be estimated at least in a qualitative manner. It is recognized that these habitats are most likely small, difficult to locate or model and change rapidly with stream discharge. No discussion of amphibian habitat with changes in streamflow has been located. ***Request:*** *The Forest Service wishes to discuss what might be done to better define amphibian habitat/discharge relationships including test flow releases involving and extensive inventory of stream reaches at several stream discharges.*

Appendix E3.1-12: Geomorphic Study

Page	Discussion
	Comment: A number of the Figures showing river conditions do not indicate the discharge of the river. ***Request:*** *Indicate the discharge of the river (if known) for Figures 4-4 through 4-25, 5-4, 5-6, 5-8, 5-10, 5-12, 6-27, 5B-1a, 5B-4a, and 5B-5a.*
4-11	**Comment:** Meeker Bar and the North Fork Campground are discussed in the text, but not shown on Figure 4-2. ***Request:*** *Show Meeker Bar and the North Fork Campground on Figure 4-2.*
	Comment: The locations of the cross-sections in Appendix 4-A, which represent cross-section of the North Fork Feather River, are not described or shown on a map. ***Request:*** *Show the locations of the cross-sections in Appendix 4-A on a map.*
4-11	**Comment:** Figure 4-2 would be more complete if the current and historical Rosgen stream classifications were shown. ***Request:*** *Show the current and the historical Rosgen stream classifications on Figure 4-2.*
6-46	**Comment:** It is agreed that material composting the tunnel spoil pile located at the Belden Adit has a low fluvial entrainment potential. Material raveling from the spoil pile generally does not roll to the bottom of the slope with only larger material reaching the bottom. Material from the tunnel spoil pile at Siphon Portal #2 can reach a nearby stream during moderate runoff events due to improper location of the lower access road to the spoil pile. Tunnel

	spoil resulting from the construction of the original Prattville tunnel is probably being entrained by annual runoff events. Material composing this pile is smaller and less cohesive than material at other spoil piles. ***Request:*** *Survey the spoil pile at the mouth of the Prattville tunnel and determine the size class distribution and volume of material that is entrained by Butte Creek. Suggest methods to reduce the volume of material reaching Butt Creek. Prepare a plan to regrade and better drain the lower access road located in the Siphon Portal #2 spoil pile.*
7-27	**Comment:** The discussion was unclear whether large woody debris is accumulating at the mouths of the larger tributaries. ***Request:*** *Comment on the presence of large woody debris near tributary mouths. Discuss whether debris accumulations, if present, are the result of reduced streamflow due to project operations or some other cause and what discharges might redistribute the debris along the North Fork.*

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Appendix E5-D Developed Recreation Site Ecological Capacity Indicator Forms

Page	Discussion
Title Page	**Comment:** The Appendix title appears to be in error since no development has taken place at any of the listed sites. Additionally, there appears to be no difference other than location within the project area between sites listed in Appendix E5-D and E5-E. ***Request:*** *Verify the accuracy of the title of Appendix E5-D and consider combining or making the distinction between Appendix E5-D and Appendix E5-E more distinct.*

Appendix E5-T Recreation Resource Management Plan (RRMP) Annotated Outline

Page	Discussion
1	**Comment:** In order to work best, the Limits of Acceptable Change (LAC) methodology must be a collaborative effort which must involve resource agencies, private land owners and the public when selecting areas of issues and concerns, defining opportunities classes, selection of indicators. A recurring evaluation and monitoring process is as well critical. ***Request:*** *Consult with the Forest Service prior to implementation of the LAC methodology for concurrence with proposed protocols. Will the LAC process be adapted to address water quality at Lake Almanor? If so, what type of monitoring and evaluation will PG&E provide to protect and maintain water quality?*
4	**Comment:** Existing use and opportunity data collected for the draft license is inadequate to implement LAC as project induced recreation occurs well

	beyond the 0.25 mile survey zone reported in the draft License Application. ***Request:*** *In order to adequately address the recreation use and impacts occurring around Lake Almanor the inventory distance from the project boundary should be expanded to included for project inducted impacts and uses and to identify opportunities occurring within 1 mile of the lakeshore for the LAC process to produce valid and meaningful results. Critical areas are the north and northwest shore of Lake Almanor, First Avenue to the causeway, and the north shore to Bailey Creek*

Appendix E6-A Reported Small Fires Map

Page	Discussion
	Request: *How many fires have started on project lands in the past 30 years? What plans does PG&E have for fuel reduction on company lands along First Avenue and in the area of the Prattville Intake?*

Appendix E6-B Leases and Easements Map

Page	Discussion
	Request: *Has the project boundary changed during the term of the existing license? If so where and what is the connection between the changes and the proposed license boundary?*
2 to 7	**Comment:** Many of the Special Use Permits for improvements such as utility lines located on Lassen and Plumas National Forest lands have expired. ***Request:*** *Submit a timeline for consolidation of all PG&E utility permits into one permit for each Forest.*
7	**Comment:** Permit 2127-08-0192 issued in 1963 for the campground at Lake Almanor has expired. ***Request:*** *Provide a timeline for the beginning the renewal process for a new 20 year permit to cover improvements on National Forest System lands.*
7	**Comment:** Special Use Permits are generally issued for 20 years. Permits with longer terms are issued only under limited conditions. ***Request:*** *Verify the term of Permit 2125-07-0190 and correct the table if necessary.*
	Comment: The Caribou Clubhouse and cabins are located within the project boundary but remain largely unused and appear to be visibly deteriorating. ***Request:*** *The Forest Service wishes to discuss options for utilization or disposal of these structures.*

Appendix E6-D Traffic Study and Road Management Report

Page	Discussion
26	**Comment:** The Siphon Portal #2 Road has recently been graded. Additional drainage is desirable.
26	**Comment:** The Belden Adit Road has recently been graded. There are no rolling dips or breaks in the road grade that would facilitate drainage of water from the road.
28	**Comment:** In Volume 1, page PRS-47 of the draft license application, PG&E proposes to re-grade portions of the Butt Valley-Caribou Road and apply dust palliatives to help minimize dust emissions during the summer and fall season. On page 28 of Appendix E6-D it is stated in the winter that the road can become rutted, leading to somewhat dangerous driving conditions as well as erosion from runoff. Surface materials are mixed with subgrade materials degrading the driving surface. Sediment from runoff clogs the drainage system. During the summer, the lower portion of the road is quite dusty. ***Request:*** *In cooperation with the Forest Service, prepare a road management plan for the Butt Valley-Caribou Road that addresses the issues of dust control during the summer, erosion from the road surface during the winter, rutting of the road during wet weather and surfacing of the road with rock, asphalt, or other material that would control erosion and still provide a safe running surface during winter use. The plan should also address control of drainage from the road to reduce off site water quality impacts.*
29	**Comment:** The Prattville-Butt Reservoir Road is described as having been recently plowed of snow during the winter months. The road is rutted and dusty during the summer except for the portion near Cold Springs Campground that has been paved. No information has been provided concerning the impact of the road to nearby Butt Valley Reservoir. ***Request:*** *Discuss road maintenance needs with Plumas County. It is recommended that portions of the road directly impacting Butt Valley Reservoir be surfaced to reduce erosion and that the road be treated to control dust during the summer.*
31	**Comment:** The Butt Valley Penstock/Surge Chamber Road currently is rutted from winter use and appears to have little surfacing material where the road parallels the Butt Valley Penstock. The road also closely follows Butt Creek. The slope between the road and Butt Creek is sufficiently steep and uniform that it appears that in a number of places, little if any road sediment is able to filter out of road runoff before entering Butt Creek. Additionally drainage from beneath the penstock is directed to culverts running under the road and discharging on to the slope above Butt Creek. ***Request:*** *In cooperation with the Forest Service, prepare a road management plan for the Butt Valley Penstock/Surge Chamber Road that addresses the issues of dust control during the summer, erosion from the*

	road surface during the winter, rutting of the road during wet weather and surfacing of the road to reduce impacts to Butt Creek. The plan should also address control of drainage from the road to reduce off site water quality impacts.
35-36	**Comment:** State Route 89 provides access to several PG&E and Forest Service recreation facilities at Lake Almanor. There is no discussion of the adequacy of road intersections at these access points. The volume of traffic and the current highway speed limit may warrant the construction of turn lanes for safety reasons. ***Request:*** *In cooperation with Caltrans, Plumas County, and the Forest Service, determine whether the volume of traffic is such that construction of turn lanes is justified.*

Appendix E6-E Draft Shoreline Management Plan

Page	Discussion
1-9	**Comment:** There is a great deal of interest in maintaining Lake Almanor at an elevation at or near 4485 feet in elevation during the summer recreation season. The operational difficulties of doing so are recognized. ***Request:*** *The Forest Service requests that PG&E enter into a collaborative process with all interested parties for the purpose of reaching settlement on management of lake levels, recreation facility development and management of biological resources downstream of Canyon Dam.*
1-9	**Comment:** There is little information in the draft license application dealing with recreation opportunities or impediments, shoreline erosion or biological impacts experienced at Lake Almanor at various lake levels. It is therefore not possible to assess conditions that might be experienced under various lake management schedules. ***Request:*** *The Forest Service requests that a condition or opportunity analysis be conducted that displays the effect to recreation opportunities and biological conditions at various lake levels. Include a series of maps depicting the shoreline of Lake Almanor at various lake elevations. This information will be critical to the successful conclusion of the settlement process described above.*
1-10	**Comment:** What was the quantity of water provided in Lake Almanor in 1935 when the Red River Deed was executed? ***Request:*** *How does the PG&E plan to meet water quality intent of the deed?*
1-11	**Comment:** Much of the shoreline access that is "allowed" is not formalized (provided parking, road signs, etc). Access in some cases consists of unauthorized user created roads and trails through National Forest Lands and private lands to get to the water. A lack of formalized access for vehicles and trails is a critical need for the use, enjoyment and protection of project induced resources and opportunities. ***Request:*** *The Forest Service requests that PG&E prepare an access*

	management plan for Lake Almanor in cooperation with the Forest Service and request formal authorization for roads and trails that cross National Forest System lands not currently under permit.
1-13	**Comment:** Has the licensee considered a County Ordinance to gain compliance with shoreline issues, along with an agreement with county sheriffs, and CDF office?
1-13	**Comment:** The Forest Service supports the marking of boating hazards in Lake Almanor and Butt Valley Reservoir. ***Request:*** *The Forest Service requests that PG&E conduct a program of sonar mapping of objects such as stumps, trees and shallow water that became boating hazards as lake levels drop and make maps of these hazardous areas available to agencies and the public. The Forest Service also requests that PG&E annually identify hazards and provide materials for marking hazards.*
1-15	**Comment:** Completion of the Recreation Management Plan will tie all of the various recreation studies into a consolidated proposal for Lake Almanor. The plan is referenced in many places and is not available for review at this time. It is expected that the plan will address specific recreational development necessitated by demand for resources.
1-16	**Comment:** Expanding the scope of recreation inventories from 0.25 to 1 mile beyond the project boundary will allow for better assessment of existing project impacts and identification of recreation opportunities.
1-18	**Comment:** Existing designated uses and informal and unregulated use influence the point where people access the shoreline of Lake Almanor. ***Request:*** *Expand the scope of the Shoreline Management Plan to include uses and activities that focus use on the Lake Almanor shoreline or reference existing inventories of activities that direct use toward the shoreline. Include the PSEA Camp shoreline area in the Shoreline Management Plan as lands within the project boundary managed by the utility or its employees, or associations.*
5-3	***Request:*** *The Forest Service wishes to discuss the modification of the designation the zone between the Dyer View DU and the Fox Farm Point as shown in Figure 5-1 from Conservation to Recreation. This area is currently used for dispersed day use recreation (boat in day use and beach/swimming day use access from LART).*
5-3	**Comment:** The northern and northwestern shoreline of Lake Almanor as shown in Figure 5-1 is depicted as a Conservation zone. This area is currently used as undeveloped day use, shoreline access, and has been identified by PG&E staff as potential development locations (First Ave, Catfish Beach, access at the causeway and dispersed biking and hiking trails). These areas are key for dispersing use and providing access to the lakeshore, and lake open space. When properly planned and mitigated facilities that allow for dispersal of use should be considered in locations such as these. ***Request:*** *Please provide the reference data and logic for designation this*

	area as requiring "conservation" and not available for future development.

Additional Comments and Requests Concerning Items not Contained in the Hydrologic Studies

Comment: The impact of different minimum flow releases from Canyon Dam on the elevation of Lake Almanor is not described in the Application. This is important because the elevation of Lake Almanor greatly affects recreation, water quality, and fish habitat.
Request: *The Forest Service requests the following:*

- *Graphs showing the elevation of Lake Almanor for the following minimum year-round flow releases from Canyon Dam : 35, 75, 100, 150, 200, 250, 300, and 500 cubic feet per second. The previous graphs should be constructed for average, dry, and wet water years.*
- *Maps showing the size and shoreline of Lake Almanor that would result from the following minimum year-round flow releases from Canyon Dam : 35, 75, 100, 150, 200, 250, 300, 500 cubic feet per second. The previous graphs should be constructed for average, dry, and wet water years.*

Comment: The size of the 'cold water pool' in Lake Almanor is not described for different minimum flow releases from Canyon Dam. This is important because the size of the 'cold water pool' affects the amount and quality of fish habitat in the lake.
Request: *The Forest Service requests the following:*

- *Graphs showing the volume of the 'cold water pool' in Lake Almanor that would result* from *the following minimum year-round flow releases from Canyon Dam : 35, 75, 100, 150, 200, 250, 300, 500 cubic feet per second. The previous graphs should be constructed for average, dry, and wet water years.*
- *Graphs showing the length of time in days before exhaustion of the 'cold water pool' in Lake Almanor that would result from the following minimum year-round flow releases from Canyon Dam : 35, 75, 100, 150, 200, 250, 300, 500 cubic feet per second. The previous graphs should be constructed for average, dry, and wet water years.*

The Forest Service has an interest in the management of the Lake Almanor 'cold water pool' in order to meet downstream temperature commitments and provide habitat for coldwater lake fish. In cooperation with the Forest Service and other interested agencies and parties develop a cold water management plan for Lake Almanor.

Comment: The major results from the 12 hydrologic studies, as well as the studies related to fish and recreation, are not discussed together – each study was conducted independently as if they were not connected. This is important because all of the studies are all connected on the ground. For example, increasing the minimum flow release from Canyon Dam alters: a) the stream temperature, other water quality parameters, and fish habitat of the North Fork Feather River, and b) the elevation, exposed shoreline, water temperature, water quality, fish habitat, and recreation of Lake Almanor.
Request: *The Forest Service requests a discussion of what happens to the natural resources and recreation of Lake Almanor and the surrounding area as a result of possible changes in project operations – this will require integrating and analyzing the conclusions from all of the studies relating to hydrology, fish, and recreation.*

Chapter III
Adequacy of PG&E Completed Studies and Proposed New Studies

Additional information requests ("AIRs") are not required until 60 days following the release of PG&E's Final Application in October of 2002. Rather than waiting for that deadline, and to work in a more collaborative spirit, the Forest Service is including a discussion of needed studies, and our reasoning for them in this Chapter.

No formal reply to the Forest Service First Stage Consultation Comments dated June 2, 2000 was received. Without a formal reply, it has been difficult to follow the evolution of a number of study plans. The Forest Service agrees with the collaborative approach that PG&E took to develop many of the project study plans but is concerned with the lack of clear and detailed records of study plan evolution.

The following is a listing of what appear to be the more significant study plan oversights:

- Instream Flow / Habitat Mapping-Study 25: The Forest Service requested that IR orthophotos or photographs be taken of the North Fork at various discharged to assess changes in habitat with changes in discharge. No information was provided on flow timing and levels needed for riparian-dependent species' life history requirements.
- Vegetation Mapping-Study Plan 27: Riparian vegetation was not mapped by using either Holland (1986) or Sawyer, Keeler-Wolf (1995) methods.
- Barriers to Fish Movement on Tributary Streams: PG&E conducted this study but did not include an evaluation of barriers in terms of a predictive model such as "Fish Xing" as requested.
- The wildlife section in Volume 2 does not address the species identified in requested study plans: Study 8.1-Aquatic Mammals, Study 9.1-Deer Migration, Study 10.1-Neotropical Migrant Landbirds.
- The draft license application did not address the requested Study 14.1-Almanor Causeway Study.
- The draft license application does not discuss the benefits if any of migration at project dams as requested in Study 4.1: Barriers to Aquatic Species Movement:Dams

The recommended studies are formatted to address the applicable Study Request requirements in the Code of Federal Regulations at 18 CFR 16.8(b)(4):

1. Identifying its (FS) determination of necessary studies to be performed or information to be provided by the potential applicant – "ID Study".
2. Identifying the basis for its determination – "Basis for Study".
3. Discussing its understanding of the resource issues and its goals and objectives of these resources – "Resource Goals & Objectives".

4. Explaining why each study methodology recommended by it is more appropriate than other available methodology alternatives, including those identified by the potential applicant pursuant to paragraph (b) (1) (vi) of this section – "Study Methodology".
5. Documenting that the use of each study methodology recommended is a generally accepted practice – "Accepted Practice".
6. Explaining how the studies and information requested will be useful to the agency or Indian Tribe in furthering its resource goals and objectives – "Usefulness of Information".

As a point of clarification, additional comments on PG&E Studies are located in Chapter II of this Response. Those comments are specific to a small portion of a study, not to overall inadequacies, as this Chapter addresses.

4.1 Identify Study: BARRIERS TO AQUATIC SPECIES MOVEMENT: Dams

4.2 BASIS FOR STUDY: "During the early period (pre-1909), the North Fork was considered a major anadromous fish system with migrations of salmon moving into the upper reaches of the river" (DWR 1986 in PG&E 1999). Currently, the river is fragmented by a series of dams. Limiting factors also include degraded habitat and populations of fish may have limited recruitment success due to lack of access to tributaries that exist within each reach (between dams). The dams (The Caribou CDF&G Fish Barrier. Oak Flat, Caribou I & II, Butt, and Canyon Dam) block migration and recruitment into and out of the project area. Passage would allow salmonids and other native and desired non-native fish species to migrate upstream into the upper North Fork and it's tributaries for spawning, rearing, and resting habitat.

Connectivity of the fluvial system within the project area has been substantially impacted not only by hydroelectric facilities, but also by construction and maintenance of roads, highways, railroads and other structures. Many of these improvements span channels within and near the project area, and may restrict passage of fish from the mainstem system to tributaries. Given the degraded condition of the mainstem habitat due to water manipulations, access to tributaries may be important to fish. Integration of results from this study with those from Study 1.1 (Barriers to Fish Movement on Tributary Streams) will provide a comprehensive picture of fragmentation of aquatic systems in the Upper North Fork Feather River.

In addition, "it is the position of the Forest Service to support efforts to provide effective upstream and downstream fish passage at non-federal hydropower dams relicensed by FERC (USDA 1999).

4.3 STUDY METHODOLOGY: Assess the feasibility and need for passage on the Caribou CDF&G Fish Barrier, Oak Flat, Caribou I & II, Butt, and Canyon Dams. Determine the significance of these dams as migration barriers to salmonids, other native fish, desired non-native fish and amphibians. Include a study of the downstream recruitment of salmonids into the North Fork. This study could partially be accomplished with the Fish Population Surveys (Study 21), the Sensitive Aquatic Species Surveys (Study 24), and the Fluvial Geomorphology Study (Study 26).

4.4 RESOURCE GOALS & OBJECTIVES:

- Aquatic Conservation Strategy Goal #5 (from Sierra Nevada Plan draft EIS) states: Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically ad biologically unobstructed movement for their survival, migration and reproduction.

- PNF Land Management Plan Forest Goals and Policies and Standards and Guidelines.

Favor riparian dependent resources and limit disturbance in all riparian areas including riparian and aquatic ecosystems, wetlands, streambanks, and floodplains (PNF LMP Standard and Guideline, 4-39).

Protect riparian areas and water quality by limiting disturbance in streamside management zones according to ground slope and stability, stream class, channel stability, fishery, and other beneficial uses, and favor riparian-dependent resources in cases of competing resource demands (PNF LMP Forest Goals and Policies, 9a, 4-7).

Facilitate hydroelectric development that provides protection of all resources (p. 4-49).

- Forest Service National Policy on Fish Passage for Use in FERC Relicensings.

4.5 ACCEPTED PRACTICE: Field evaluation of sites to assess fish passage. Coordinate with USFS, CDF&G, and USF&WS for study design and analysis.

4.6 USEFULNESS OF INFO: Information will be used to assess the cumulative impacts of all developments on the accessibility of fish to historic spawning and rearing habitats. This data will be useful in assessing impacts of the project on fishery resources, and in identifying mitigation opportunities.

8.1 STUDY: AQUATIC MAMMALS: This study is designed to gather baseline information on presence, location and distribution of river otter and mink in the project area and determine effects to habitat as a result of increased/decreased flows and fluctuating lake levels.

8.2 BASIS FOR STUDY: There is occupied suitable habitat for river otter and mink within the project area that may be directly impacted by the project activities. Does the project affect river otter, mink and other aquatic mammals, and if so how? Information needs to be collected to document which species are presently using the existing habitat, what their distribution is, and how the project may affect them.

8.3 STUDY METHODOLIGY: The occurrence of river otter and mink will be assessed by instructing field biologists to record as incidental observations all river otter and mink, or their sign, while conducting other biological and wildlife field studies for the project. Sign will include tracks, scat, latrine/haul-out sites, or obvious den sites. The location of all sightings will be recorded using a GPS unit or field map that will allow subsequent plotting on a GIS-generated map. In addition, a summary will be prepared of the relevant scientific literature pertaining to the known relationship between hydroelectric projects and aquatic mammals.

8.4 RESOURCE GOALS AND OBJECTIVES: National Forest Policy and Forest Plans have directions, and standards and guidelines for management of habitat for all native and non-native desired species. The objectives of the aquatic mammal study are to: 1) determine if and where there is occurrence of river otter and/or mink in the project area through incidental observations of animals and their sign; and 2) evaluate the potential effects of hydroelectric facilities and operations on river otter and mink population viability through a review of the available scientific literature and consultation with known experts on the species. Incidental observations of animals and/or their sign will be recorded where ever they are detected during the implementation of other wildlife studies proposed for the project.

8.5 ACCEPTED PRACTICE: Coordinate with Forest Service, and California Department of Fish and Game for study designs and analysis.

8.6 USEFULNESS OF INFORMATION: The information collected through the study will help to determine if and to what extent these aquatic mammal species are impacted by the project and identify necessary actions to mitigate for impacts. Loss of riparian habitat, and specifically den sites and haul-out sites due to fluctuating flows, could result in direct loss of animals.

9.1 STUDY: DEER MIGRATION: This study is designed to determine and document if there is a relationship between deer migration and Lake Almanor that is contributing to excessive deer mortality (roadkills) along Hwy 36 and possibly 89.

9.2 BASIS FOR STUDY: Currently there is a known problem regarding deer movement/migration occurring at the north end of Lake Almanor across state highways, resulting in extensive deer/vehicle collisions. Does the project result in actions that affect deer movements/migrations? If so, will there be an increase or decrease in potential deer/vehicle collisions? Information needs to be collected to document existing deer/vehicle problem locations, if and how the project may alter migration/movement patterns, and how potential changes in deer movements may or may not affect the deer population and specifically, mortality as a result of road kill. Vehicle/deer collisions are also a concern for human safety.

9.3 STUDY METHODOLOGY: Contact the California Department of Fish and Game unit biologists to identify migration and movement areas, high deep population centers, and herd history. Contact CalTrans for road kill data to determine high use periods. Trap and radio-collar 10-20 does from areas of high road kill to determine daily movement patterns and seasonal migration routes.

9.4 RESOURCE GOALS AND OBJECTIVES: National Forest Policy and Forest Plans have directions, and standards and guidelines for management of habitat for all native and non-native desired species. The objective of the deer study is to identify high use deer activity areas, including migration routes and areas of high deer mortality as a result of road kill by vehicles and evaluate the potential effects of hydroelectric facilities and operations on deer movements through a review of the available scientific literature and consultation with known experts on the species. Potential remedies to reducing potential road kills will be explored.

9.5 ACCEPTED PRACTICE: Coordinate with the Forest Service, and California Department of Fish and Game for study designs and analysis.

9.6 USEFULLNESS OF INFORMATION: The information collected through the study will help to determine if and to what extent deer are impacted by the project and identify necessary actions to mitigate for impacts toward this species. Any activity that could result in changes in deer movements and migration patterns could result in an increase in vehicle/deer collisions.

10.1 STUDY: NEOTROPICAL MIGRANT LANDBIRDS: This study is designed to identify neotropical bird species dependent on riparian habitats, that could be impacted directly by fluctuating riverine flows, and indirectly by habitat modification as a result of sustained increased flows.

10.2 BASIS FOR STUDY: There is suitable habitat for numerous neotropical migrant landbirds associated with riparian habitats within the project area that may be directly impacted by project activities. Does the project cause loss of riparian habitat, or could proposed changes in license conditions induce a loss of habitat; and if so would these losses affect migratory birds and how? Information needs to be collected to document which species are presently using the existing habitat, what their distribution is, and how the project does or may affect them.

10.3 STUDY METHODOLOGY: Refer to survey protocols identified in General Technical Report PSW-GTR-144 and GTR-149 for guidance in conducting surveys. Using aerial photography and vegetation mapping, riparian and meadow habitats suitable for breeding for the following species will be identified: Swainson's thrush, yellow warbler, yellow-breasted chat and bank swallow. Systematic surveys of montane meadows and streamsides with established clumps of riparian deciduous shrubs (willows, aspen, cottonwood, alder, etc.) will be conducted. Birds will be detected visually using binoculars and by song. Surveys will occur twice during June and July to locate and enumerate breeding birds. Surveys will be conducted between 0600 and 1000 hours. Location of nests will be mapped and vegetation around nest sites will be profiled by recording the species and height of vegetation, size of riparian patch, evidence of disturbance (such as grazing, clearing), and other relevant parameters. For bank swallows, suitable bank substrates will be investigated for active and inactive nesting burrows.

10.4 RESOURCE GOALS AND OBJECTIVES: National Forest Policy and Forest Plans have directions, and standards and guidelines for management of habitat for all native and non-native desired species. The objectives of the landbird study are to evaluate the effect of the existing and proposed project operations and maintenance on the riparian vegetation/habitat and bank nesting habitat of the above listed neotropical migrants. Observations of all neotropical migrants will be recorded wherever they are detected during the implementation of landbird surveys.

10.5 ACCEPTED PRACTICE: Coordinate with the Forest Service and the California Department of Fish and Game for study designs and analysis.

10.6 USEFULLNESS OF INFORMATION: The information collected through the study will help to determine if and to what extent these neotropical migrant species are impacted by the project, and identify necessary actions to mitigate for impacts toward these species. Loss of riparian habitat and suitable bank nesting habitats due to fluctuating flows, could result in direct loss of animals and nesting colonies.

14.1 STUDY: ALMANOR CAUSEWAY STUDY: This study was to determine the condition, extent, seasonality, and health of the wetland habitats in the causeway section of Lake Almanor in relation to project operations.

14.2 BASIS FOR STUDY: The causeway at Lake Almanor provides diverse wetland/riparian habitats, which support a large number of avian species, aquatic mammals, and amphibians. Information is needed to determine the condition, extent, seasonality, and health of the wetland habitats around Lake Almanor, and in particular the "Causeway" area in relation to project operations. No information is available concerning the development or loss of wetland vegetation attributed to the project operations. Interpretations of the study results will be used to support Forest Service 4(e) conditions including monitoring, and recommendations.

14.3 STUDY METHODOLOGY: Map existing wetlands and adjacent riparian vegetation zones and vegetation changes caused by fluctuations of lake levels as a result of existing project operations. Identify the location and amount of wet meadow, emergent and submergent vegetation within the Causeway throughout the spring, summer, and fall seasons. Model changes in wet meadow, emergent, and submergent vegetation as a result of reservoir operations. Discuss impacts of reservoir operation on aquatic habitat in the Causeway area and opportunities for improvement of habitat through modification of existing drainage structures located under the highway.

14.4 RESOURCE GOALS AND OBJECTIVES: Meet Land Management Plan objectives for water quality, aquatic and riparian habitat, recreation opportunities, fishing and other dispersed and developed recreation activities, management of TES, survey and manage special status species, sediment routing, channel morphology and dynamics, and aesthetics.

14.5 ACCEPTED PRACTICES: : Coordinate with the Forest Service, California Department of Fish and Game, and the U.S. Fish and Wildlife Service for study design and analysis.

14.6 USEFULNESS OF INFORMATION: Wet meadow, emergent, and submergent vegetation mapping will provide existing habitat information for avian species (neotropical migrants, waterfowl, and special status water birds), aquatic mammals, and amphibians. Information will also be useful in determining the impact of the existing and possible changes in reservoir operation on the health and vigor of these wetland habitats.

Appendix A

ECOSYSTEM ATTRIBUTES
UPPER NORTH FORK PROJECT
A Conceptual Model for Determination of a Flow Schedule for the North Fork Feather River Below Canyon Dam

During settlement negotiations for the Rock Creek-Cresta project, Michael Morse of the Fish and Wildlife Service prepared a document listing a number of physical and biological components or drivers that were thought to be critical to the ecosystem health of the North Fork Feather River. The drivers were presented in tabular form for ease of discussion. At the conclusion of settlement negotiations, a rational report containing, among other thing, a description of flow regime drivers was also prepared to document decision logic and information sources used to make decisions. This concept of crafting a flow schedule based on biological and physical models resulting in a flow schedule that mimics the natural or pre-project hydrograph worked well for Rock Creek-Cresta and has been proposed for the Poe project. The Upper North Fork while contiguous to the lower projects is physically different due to the lack of channel forming flow and tightly confining riparian vegetation. These constraints while daunting do not negate the use of ecosystem drivers to determine a flow schedule.

Goal Statement
Develop river flow and non-flow measures for protection of ecological resources of the North Fork Feather River, Butt Creek, Butt Valley Reservoir and Lake Almanor while providing for other beneficial uses including whitewater recreation and hydroelectric power generation in support of FS issuing 4(e) conditions and FERC issuing a new Project license.

Resource Objectives
One means of organizing information and gauging success in determining critical ecosystem attributes is to enumerate and describe resource objectives. To be most effective, these resources objectives should be quantifiable and directly linked to the existing or potential productivity of the river reach in question. It is recognized that factor's beyond the Licensee's control could affect attainment of these objectives. The objectives should not be discounted however, simply because of uncertainty of attainment.

Some possible Upper North Fork project resource objectives and corresponding information sources are:

- Fishery Objective: Achieve a desired goal of an excellent fishery and functioning ecosystem for all naturally occurring species. *Appendix E3.1-10 IFIM Report, Appendix E3.1-11 Habitat Suitability Criteria*
- Macroinvertebrate Objective: Macroinvertebrate indices (metrics) in the project reach should be comparable to reference reaches located within and outside the

North Fork Feather River drainage. *Appendix E3.1-8 Benthic Macroinvertebrate Assessment, Appendix E3.1-9 Macroinvertebrate Drift Study*

- Natural Hydrograph Objective: Provide a hydrologic regime that approaches the natural annual hydrograph. *Appendix E2-D Indicators of Hydrologic Alteration (IHA) Report, Appendix E2-E Streamflow and Water Regime Information*
- Water Temperature Objective: In order to reasonably protect cold freshwater habitat, maintain a mean daily water temperature of 20 degrees Centigrade or less in the project reach. *Attachment E2-C North Fork Feather River and Butt Creek Stream Network Temperature Models, Attachment E2-D MITEMP3 Model Calibration and Validation in 2000-2001: Lake Almanor and Butt Valley Reservoir, Appendix E2-A Water Quality of Late Summer Releases from Canyon Dam, Appendix E2-B Summary of 2000 and 2001 Hourly Water Temperature Data from NFFR project, Appendix E2-F Lake Almanor temperature Prfiles, Appendix E2-G Butt Valley Reservoir Temperature Profiles, Appendix E2-H Longitudinal Temperature Profiles for Seneca Reach, Appendix E2-I Longitudinal Temperature Profiles for Butt Reach, Appendix E2-J Longitudinal Temperature Profiles for Belden Reach, Appendix E2-K Miscellaneous Temperature Summary Tables*
- Flow Fluctuation Objective: Minimize project-caused flow fluctuations uncharacteristic of the natural hydrograph to protect biota and maintain public safety. *Information provided to date masks short-term fluctuations.*
- Geomorphology Objective: Maintain fluvial processes that provide for balanced sediment transport, channel bed material mobilization and distribution, and channel structural stability distribution that contributes to diverse aquatic habitat and healthy riparian habitat. *Attachment E2-A Sediment Incipient Motion Study, Attachment E2-B Lake Almanor Shoreline Erosion Study, Appendix E2-I Sediment Gradation Data in Belden Forebay, Appendix E3.1-12 Geomorphic Study, Upper North Fork First Stage Consultation Document Volume 2 (Section V) February 2000 Daily streamflow NF-4 Butt Creek Below Prattville Tunnel Portal, NF-47 North Fork Feather River above Caribou Powerhouse, NF-2 North Fork Feather River near Prattville flow duration only*
- Riparian Habitat Objective: Maintain a functioning ecosystem for riparian resources. *Detailed mapping of riparian resources not provided.*
- Threatened, Endangered, and Sensitive Species Objective: Ensure that measures are consistent with any Fish and Wildlife Service biological evaluation for sensitive species or any biological opinion issued under the federal or state Endangered Species Act. *Appendix E3.1-1 Fish Population Report, Appendix E3.1-3 Herpetofauna Survey, Appendix E3.1-4 Mollusc Report, Appendix E3.3-1 Special Status Plant Survey and Noxious Weed Survey, Report E3, Section E3.2 Wildlife Resources*
- Hydropower Operations Objective: Ensure that the project continues to be a competitive source of least cost, reliable, and flexible hydroelectric power generation. *Exhibit B Statement of Project Operation and Resource Utilization*
- Recreation Streamflow Objective: Provide recreation streamflows that address a spectrum of opportunities avoid significant ecological impacts, minimize user and

ecological conflicts, and consistent with hydropower operations, and maintain a high degree of user satisfaction, as determined by user surveys. *Appendix E5-N Recreation Whitewater Survey Forms, Appendix E5-O Recreation Fishing Survey Forms, Appendix E5-Q Additional Results from Recreation Whitewater Stud, Appendix E5-R Additional Results from Recreation Fishability Study*

- Recreation Access Objective: Provide river recreation facilities that are consistent with Recreation Opportunity Spectrum (ROS) class (or equivalent), physical, social, and ecological carrying capacity of the resource and demand levels, with the possibility of adjustment based on user satisfaction.
- Streamflow Information Objective: Provide streamflow information for Project-affected whitewater runs that is available to the general public and is adequate for river recreation use while protecting Licensee's proprietary information.
- Resource Protection Objective: Ensure that recreation and pulse flows do not adversely affect other resources.

Crafting a River Flow Regime

Riverine ecosystems are complex networks of interrelated processes. Study of lotic systems often involves an ecosystem approach drawing from several study disciplines broadly based in both science and engineering. Thus, the ecosystem approach produces large amounts of data from historic and ongoing studies that demand a methodical approach for data collection, organization, analysis and decision making. Ultimately, one of the most important decisions made during relicensing proceedings is the development of a flow regime. Historically flow regimes have been based on a single or limited number of what were believed to be critical fishery attributes. It has been found that fishery issues are only a component of a larger number of factors that determine a riverine ecosystem. The Rock Creek-Cresta settlement resulted in the development of a more dynamic model flow regime than had been available in previous relicensing efforts. It would seen reasonable that a favorable conclusion for the Upper North Fork Feather could be reached by following this model.

The factor examination approach involves evaluation and management of multi-disciplined scientific data. The evaluation includes the following broad categories:

- Seasonal hydrologic flow data
- Geomorphological data
- Water quality data
- Biological data
- Riparian data

Evaluation of the flow regime requires evaluation of scientific literature and study results within each of the broad categories. The data is more easily understood when organized into a matrix enabling examination of important abiotic and biotic flow related parameters referred to as ecosystem "attributes" drivers. From the broad categories listed above, twelve important ecosystem attributes were selected as the components through which flow could be expressed in a healthy North Fork Feather river ecosystem. There

are other potential attributes in addition to the twelve selected as important drivers. These additional attributes are less critical or are represented by the selected attributes. Each selected attribute is a part of a dynamic ecosystem and may have significance on a year round basis or vary seasonally. Table 1 identifies each attribute that is significant in a given month with an "X". Some of these attributes contributing to a healthy ecosystem response may become seasonal limiting factors. These priority attributes are identified in Table 1 with a bold "X". The consolidated annual flow regime that results from development of a flow for each attribute depicts flows varying by season, approaching the natural hydrograph.

Table 1. Dominant Elements for Developing an Instream Flow Regime, Upper North Fork Project

Ecosystem Attribute (1)	Month											
	O	N	D	J	F	M	A	M	J	J	A	S
Channel Maintenance			**X**	**X**	**X**	**X**						
Sediment Transport			**X**	**X**	**X**	**X**						
Water Temperature									**X**	**X**	**X**	**X**
Wetland/Riparian						X	X	X	X	X	X	X
Hyporheic	X	X				X	X	X	X	X	X	X
Nutrient (2)	X								X	X	X	X
Fish Spawning						**X**	**X**	**X**				
Fish Habitat	X	X	X	X	X	X	X	X	X	X	X	X
Fish Passage (3)			X	X	X	X	X	X				
Woody Transport			X	X	X	X	X					
FYF Egg Laying/Rearing							**X**	**X**	**X**	**X**	**X**	**X**
Snowmelt Runoff						X	X	X				

Notes: 1) Bold X indicates primary drivers
2) Nutrient considers both organic and superfine sediment movement
3) Braiding at the mouth of tributary channels can preclude fish passage

Logic For Selection of Dominant Elements

Channel Maintenance: Recent work by Trush, McBain, and Leopold (2000) enumerates alluvial river attributes that are critical to geomorphic and ecological processes. A number of these processes can properly occur only when streamflow approaches or mimics the unregulated annual flow cycle.

Sediment Transport: Reservoirs tend to trap certain sediment size fractions and impair sediment recruitment through a river reach. Effective substrate movement necessitates varying velocities over a range of seasons. Sediment mobilization and movement is

critical to proper riparian function and fish, amphibian and other aquatic organism reproduction and rearing.

Water Temperature: Summer water temperature in the Belden reach frequently exceeds optimum conditions for trout survival and growth. The presence of dams and reduced streamflow prevent trout and other organisms from escaping these high temperatures.

Wetland/Riparian: Proper functioning riparian corridors provide habitat and cover for riparian dependent species, shade to buffer changes in river temperature, large woody debris for fish cover and pool formation as well as a resistant force to relieve the stress of floodflows on streambanks.

Hyporheic: Hyporheic zones are sources of nutrient uptake, algae and aquatic insects that contribute to the overall health of a stream.

Nutrient: The seasonal hydrograph with associated variations in stream velocity and flow rate contribute to nutrient cycling processes.

Fish Spawning: Successful fish spawning and fry rearing are generally dependent on a narrow range of flow conditions occurring during a particular season.

Fish Habitat: Seasonal variations in flow generally are critical for maintenance of access by fish to cool water or spawning gravels, desirable substrate and spawning gravel maintenance, spawning, rearing, and adult habitats. Accessible habitat for all fish life stages is necessary for the maintenance of desirable population levels.

Fish Passage: Access to cool water or spawning gravels provided by tributary streams is often critical to the survival and health of fish populations residing in nearby larger streams.

Woody Transport: Large woody material provides cover for fish, substrate and nutrients for aquatic organisms, variation in aquatic habitat through scouring of the streambed and structure and diversity to riparian corridors. Flow variations contribute to woody transport cycling.

Foothill Yellow-Legged Frog: While foothill yellow-legged frogs have not bee found in the project area, the adopted flow regime should be sufficiently flexible to accommodate egg laying and tadpole development requirements. Successful egg laying and tadpole rearing appears dependent on stable streamflow during critical times of the year.

Snowmelt Runoff: Snowmelt runoff occurring in late winter and into the spring can provide access to tributary streams, stimulate biological triggers, and facilitate germination and survival of riparian vegetation.

Trush, W.J., S.M. McBain, L.B. Leopold, 2000, Attributes of an Alluvial River and Their

Relation to Water Policy and Management, PNAS, October 24, 2000, v97, no. 22, pp.11858-11863

mft 6/17/02

West Almanor Community Club letter
June 24, 2002

West Almanor Community Club
Lake Almanor West Golf Course
P.O. Box 1040 • Chester CA 96020 • (530) 259-4646

June 24, 2002

To: Whom It May Concern

From: [redacted], President WACC

Re: Day Use Facilities Proposed by PG&E

At the Board meeting of June 16, 2002 the WACC Board of Directors reviewed reports that the PG&E 2105 study was considering the possibility of day use facilities to be located at two sites adjacent to Goose Bay or immediately south of our community of Lake Almanor West. The Board received testimony from the community indicating great concern with these locations. It appears that these locations would not meet the defined objective of providing day use facilities for Chester. The Goose Bay locations would be far removed from Lake Almanor in any year when the lake level is low. In addition any of the locations would increase the probability of vandalism for Lake Alamnor West by introducing increased traffic while making no provision for supervision.

Therefore the Board determined to oppose day use facilities at these proposed locations. We further strongly suggest that there be a further review of the potential for locating the facility at a place that would be more easily accessed from Chester and could be easily and safely reached by bicycle and pedestrian traffic.

We are available to provide further information as necessary.

West Almanor Community Club (Petition)
July 22, 2002

West Almanor Community Club
Lake Almanor West Golf Course
P.O. Box 1040 • Chester CA 96020 • (530) 259-4646

July 22, 2002

Mr. Tom Jereb
2105 Project Manager
PG&E, Mail Code N11D
PO Box 770,000
San Francisco, CA 94177

Dear Mr. Jereb:

Enclosed please find *Petition in Opposition to Proposed PG&E Day Use Sites*, which has been signed by 153 residents of Lake Almanor West.

Your consideration of this petition will be greatly appreciated.

Sincerely,

Board of Directors

PETITION IN OPPOSITION
TO PROPOSED PG&E DAY USE SITES

WHEREAS The PG&E 2105 study has reviewed the need for day use facilities for Lake Almanor in the Chester area and;
WHEREAS the draft 2105 study has proposed three day use facilities in the vicinity of Goose Day or south of Lake Almanor West and;
WHEREAS the West Alamanor West Community Club representing the residents of this area has previously acted to oppose such day use sites and;
WHEREAS such facilities will not meet the needs of Chester and;
WHEREAS such facilities on Goose Bay will often be remote from the Lake Almanor water level and;
WHEREAS a facility south of Lake Alamanor West would require a road through difficult terrain;

NOW THEREFORE BE IT RESOLVED that the below signed individuals are opposed to such proposed day use locations and urge PG&E to review potential sites immediately adjacent to Chester.

NAME	ADDRESS	SIGNATURE	DATE
Paul Spangberg	203 LAW		7/6/02
Kathy Spangberg	"		7/6/02
Joan Moore	145 Goose Bay Dr.		7-6-02
Glenn Moore	101 Marion Trail		7-6-02
Tamie L. Moore	135 LAW Dr.		7-6-02
Roger Elmore	137 " "		7-6-02
Dale Moore	101 Marion T.		7-6-02
Marie Soder	101 Marion Tr		7-6-02

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TO PROPOSED PG&E DAY USE SITES

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WHEREAS a facility south of Lake Alamanor West would require a road through difficult terrain;

NOW THEREFORE BE IT RESOLVED that the below signed individuals are opposed to such proposed day use locations and urge PG&E to review potential sites immediately adjacent to Chester.

NAME	ADDRESS	SIGNATURE	DATE
John & Jeanne Dixon	102 Lupine Lane	J Dixon	7-6-02
Carolyn & Mike Wuelkait	253 Osprey Loop	Carolyn Wuelkait	7-6-02
Julie & Bill Aguado	331 Maidu	Julie Aguado	7-6-02
Frank O Noth	264 LAW Dr	Frank O Noth	7/6/02
Tim Southwick / Susan Southwick	130 Kokanee Trail	Tim & Susan Southwick	7/6/02
[illegible]	309 OSPREY LOOP	[illegible]	7/6/02
Jane Tadder	309 Osprey Loop	Jane Tadder	7/6/02

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TO PROPOSED PG&E DAY USE SITES

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WHEREAS a facility south of Lake Alamanor West would require a road through difficult terrain;

NOW THEREFORE BE IT RESOLVED that the below signed individuals are opposed to such proposed day use locations and urge PG&E to review potential sites immediately adjacent to Chester.

NAME	ADDRESS	SIGNATURE	DATE
Beverly Tripp	218 L.A.W.		
Allen Tripp			
Carolyn Dennis	258 LAW Drive	Carolyn Dennis	7-8-02
Daniel Driscoll	258 LAW Drive	Daniel Driscoll	7-8-02

PETITION IN OPPOSITION
TO PROPOSED PG&E DAY USE SITES

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NAME	ADDRESS	SIGNATURE	DATE
Deborah Jones	117 Marion	Deborah Jones	7/5/02
Lyle Culver	363 LAW	Lyle Culver	7/5/02
Lawrence M Mertz	101 Top of the West DR	Lawrence M Mertz	7/6/02
Maria J Munoz	101 Top of the West	Maria J Munoz	7/6/02
Margaret A. Mitzel	344 MAIDA DR	Margaret Mitzel	7/6/02
Henry E. Mitzel	344 MAIDA DR	Henry E. Mitzel	7/6/02
Gordon L. Soltau	335 LAWD	Gordon L. Soltau	7/6/02
Barbara Hester	331 Manzanita	Barbara Hester	7-6-02
Richard Hester	331 Manzanita	Richard N Hester	7/6/02
Kathryn A. Apger	119 Marion Tr.	Kathryn A Apger	7-6-02
Harold R. Apger	119 Marion Tr.	Harold R Apger	7-6-02
Frances Rainwater	308 Raccoon Te	Frances Rainwater	7-6-02

PETITION IN OPPOSITION
TO PROPOSED PG&E DAY USE SITES

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WHEREAS a facility south of Lake Alamanor West would require a road through difficult terrain;

NOW THEREFORE BE IT RESOLVED that the below signed individuals are opposed to such proposed day use locations and urge PG&E to review potential sites immediately adjacent to Chester.

NAME	ADDRESS	SIGNATURE	DATE
Joan O. Cox	940 Long Iron Dr	Joan O. Cox	7/6/02
[illegible]	"	David Cox	7/6/02
Ted Newton	299 Osprey Lane	Ted Newton	7-6-02
Gail Newton	"	Gail Newton	"
Charles Nathanson	Maestas 350 Raccoon	Nathanson	7/6/02
Kay Armstrong	315 Raccoon Trail Chester, CA.	Kay Armstrong	7/6/02
June M. Mackey	200 Law Dr.	June Mackey	7/6/02
John MACKEY	200 LAW DR	John E Mackey	7/6-02
C. Ralle Akeson	339 Maple Dr	C. R[illegible]	7/6/02
KEN FEAZIER	156 LAW DR	K Feazier	7/6/02
S DeMoe	156 LAW Dr	Stephanie DeMoe	7/6/02
Melvin Means	252 LAW DR	Melvin Means	7-6-02

PETITION IN OPPOSITION
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WHEREAS a facility south of Lake Alamanor West would require a road through difficult terrain;

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NAME	ADDRESS	SIGNATURE	DATE
LARRY I. RAINWATER	308 RACCOON TRAIL		7/6/02
Robert Eubanks	186 LAW Dr.		7/6/02
Frank Sulinsky	317 LAW Dr		7/6/02
[illegible]	107 [illegible]		7/6/02
Tom Fullerton	155 Law Dr.		7-6-02
Marsha Fullerton	155 Law Dr.		7-6-02
Morgan Wheeler	327 Maidu Dr		7/6/02
Travis Gantz	185 Swim		7/6/02
[illegible]	324 LAW DR		7/6/02
Dennis Clark	336 LAW Dr.		7/6/02
E.R. Wenkel	201 " "		7/6/02
Renee Winkler	201 LAW Dr.		7/6/02

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NOW THEREFORE BE IT RESOLVED that the below signed individuals are opposed to such proposed day use locations and urge PG&E to review potential sites immediately adjacent to Chester.

NAME	ADDRESS	SIGNATURE	DATE
Ben & Joyce Ayres Ruth Wolf	341 Maidu Drive Chester CA. 96020	Ben W Ayres	7-6-02
RICK & DAR KENDRICK	297 Osprey LOOP	Richard Kendrick	7-6-02
Robert Ross.	323 L.A.W. Dr		7-6-02
Kara + Greg Ferris	219 L AW Dr		7-6-02
BEN JOHNSON	119 Slim Dr.		7/6/02
June Johnson	119 Slim Dr.	June B. Johnson	7/6/02
Barbara + Al Lombardo	165 Slim		7/6/02
	173 L.AW Dr		7/6/02
Cathy S. Webster	173 LAW	Cathy S. Webster	7/6/02
CAROLYN L. PORTEOUS Carolyn L. Porteous	196 LAW Dr.	Carolyn L. Porteous	7-6-02
R & B Carson	353 Maidu	Robert Carson	7-6-02
Susan B. Lodeon	267 Osprey Loop	Sue Bloom	7-6-02

PETITION IN OPPOSITION
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NAME	ADDRESS	SIGNATURE	DATE
PHIL SPRINGFIELD	193 LAKE ALMANOR WEST CHESTER 96020	P-S	6 JULY 02
ARNIE QUEVEDO	118 SLIM DR		6 JULY 02
BILL BAKER	301 CAW		7/6/02
CURT RHINE	329 LAW		7/6/02
J CALLO	350 MAIDU		7/6/02
L GIBBS	310 L.A.W		7/6/02
Julie Gibbs	310 LAW	Julie Gibbs	7/6/02
Yvonne Bonfante	175 Law	Yvonne Bonfante	7/6/02
Lloyd Bonfante	175 Law	Lloyd Bonfante	7/6/02
Cathleen Roberts	970 Long Iron Dr	Cathleen Roberts	7/6/02
Jane Henderson	133 LAW Dr.	Jane Henderson	7-6-02
Ed Henderson	133 LAW Dr	Ed Henderson	7-6-02

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NAME	ADDRESS	SIGNATURE	DATE
Franci Free	221 LAW	Franci Free	7-06-02
Scott Free	221 LAW		7-0602
John Stark	305 March		7-6-02
Judy Stark	305 March	Judy Stark	7/6/02
Alvie Wonacott	184 Slim Dr	Alvie Wonacott	7-6-02
Elaine Grossberg	103 Slim DR.	Elaine Grossberg	7/6/02
Arnold Grossberg	103 Slim DR.	Arnold Grossberg	7/6/02
Barbara Sheffield	205 Lake Almanor	Barbara Sheffield	7/6/02
Joanne Stark	341 LAW	Joanne Stark	7/6/02
R.C. Shaw	333 MADRONA DR	R.C. Shaw	7/6/02
Frances Eileen Swift	180 Lake Almanor	Frances Eileen Swift	7/6/02
Frank Watts	264 LAW Dr	Frank Watts	7/6/02

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NAME	ADDRESS	SIGNATURE	DATE
Sharon Shaw	260 L.A.W. Dr.	Sharon Shaw	7/6/02
Barbara Ames	337 Maidu		7/6/02
John R. Barron	190 LAW Dr	John R. Barron	7/6/02
M. Barron	190 LAW Dr.		7/6/02
	328 LAW DR		7/6/02
	328 LAW DR		7/6/02
DONNA ROSSI	323 LA-W Dr		7/6/02
John Rossa	181 LAW		7/6/02
BILL HAMON	69 LAW	W. Hamon	7/6/02
Gary Small	364 LAW	Gary Small	7/6/02
Jackie Small	364 LAW.	Jackie Small	7/6/02
	115 Elwin		7/6/02

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NAME	ADDRESS	SIGNATURE	DATE
Linda Mesolich	244 LAW	Linda Mesolich	7-6-02
Cheryl Springfield	193 LAW	Cheryl Springfield	7-6-02
Dave & Sue Bram	943 Long Iron	Dave Bram	7-6-02
Walt Bracy	121 Kokanee	Walt Bracy	7/6/02
Carol Reginbal	116 LAW	Carol Reginbal	7/6/02
Richard L. Byers	137 Slim Dr.	Richard L. Byers	7/6/02
Marcia M. Stallworth	188 Slim Dr	M. Stallworth	7-6-02
Edward P. Cook	123 Kokanee Trl	Ed Cook	7/6/02
[illegible]	937 Long Iron Dr	[illegible]	7/6/02
Charles E. Coy	300 Osprey	Charles E. Coy	7/6/02
SANDRA CORY	12	Sandra Cory	7/6/02
JOHN MORITZ	272 OSPREY	John N. Moritz	7/6/02

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NAME	ADDRESS	SIGNATURE	DATE
KATHI SHENNAN	106 Goose Bay Trail	Kathi Shennan	7-06-02
TOM SHENNAN	106 Goose Bay Trail	Tom Shennan	7-6-02
Georgia D. Knutsen	361 Osprey Loop	Georgia D. Knutsen	7-6-02
BARBARA ODDY	343 MAIDU DR	Barbara Oddy	7-6-02
RICHARD N. ODDY	" "	Richard N. Oddy	7-6-02
Arlene Cary	335 Manzanita Dr	Arlene Cary	7-6-02
Suzanne Elmore	137 Lake Almanor W	Suzanne Elmore	7-6-02
[illegible]	110 FOX Blvd	[illegible]	7-6-02
John A Foss	117 Marian Trail	John A Foss	7-6-02
Marilyn Huggins	119 LAW Dr	Marilyn Huggins	7-6-02
KENT HUGGINS	119 LAW Dr	Kent Huggins	7-6-02
Herold Sinclair	114 Kokanee Tr.	Herold Sinclair	7-6-02

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NAME	ADDRESS	SIGNATURE	DATE
Shirley Friedrich	329 MANZANITA	Shirley Friedrich	7-6-02
George Friedrich	329 MANZANITA	George Friedrich	7-6-02
SHARON AUGE	209 GOOSE BAY VIEW	Sharon Auge	7-6-02
Tom Crewse	214 LAW Dr	Tom Crewse	76-02
Virginia P Crewse	214 LAW Dr	Virginia P Crewse	7-6-02
Lori Sinclaire	114 Fontana Tr.	Lori Sinclaire	7-6-02
Kippi Memmott	325 Manzanita Dr.	Kippi Memmott	6 July 02
Tom Memmott	325 Manzanita	Tom Memmott	6 July 02
Dixie Hayden	939 Long Iron Dr	Dixie Hayden	76-02
John E. Gomes	939 Long Iron Dr	John E. Gomes	7-6-02
KAZ GONET	198 LAW DRIVE	K Gonet	7-6-02
Grazyna Gonet	"	G Gonet	7-6-02

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NAME	ADDRESS	SIGNATURE	DATE
Donna Aberon	339 Maiden Dr.	Donna Aberon	7-6-02
Ed Knapp	218 LAW Dr	Ed Knapp	7-6-02
Beverly Knapp	"	Bev. Knapp	7-6-02
Marlene Shumpert	342 LAW Dr	Marlene Shumpert	7-6-02
Barbara Kendrick	301 Raccoon Trail	Barbara Kendrick	7/6/02
C.R. Winkler	201 Low Dr.	C.R. Winkler	7/6/02
Rene Winkler	201 Lassen	Rene Winkler	7/6/02
Milton L Williams	188 Slim	Milton L Williams	7/6/02
Shirley Haebel	135 Slim	Shirley M Haebel	7/6/02
George Haebel	135 Slim	George Haebel	7/6/02
Carol B Hamon	169 LAW	Carol B Hamon	7/6/02
Bill Hamon	169 LAW	Bill Hamon	7-6-02

Upper North Fork Feather River Project
FERC No. 2105

Report E-9

3. Licensee Replies to Agency Comment Letters on the Draft Application for New License

Licensee has responded to the following letters:

Agency	Date of Letter
American Whitewater, et al	July 25, 2002
Anglers Committee Against Artificial Weekend Flow	July 10, 2002
Ryan Beck	July 28, 2002
Susan Braun	June 28, 2002
California Department of Fish and Game	July 26, 2002
Cal Sportfishing Protection Alliance	June 25, 2002
Cal Trout	July 29, 2002
Bob Gans	June 26, 2002
Dennis P. Gomez	July 2002
Greenville Rancheria	July 26, 2002
Greenville Rancheria	Sept 13, 2002
Greenville Rancheria	Sept 30, 2002
Honey Lake Maidu Tribe	July 26, 2002
Dale Knutsen	June 26, 2002
Mountain Maidu	Aug 16, 2002
Fred Muller	July 24, 2002
National Marine Fisheries Service	July 26, 2002
National Park Service	July 15, 2002
Plumas County	July 25, 2002
State Water Resources Control Board	July 25, 2002
Susanville Indian Rancheria	Sept. 9, 2002
Trout Unlimited	July 29, 2002
U. S. Forest Service	July 24, 2002
West Almanor Community Club	June 24, 2002

American Whitewater, et al letter
July 25, 2002

Licensee Responses

Licensee Response to Comments by
American Whitewater, Chico Paddleheads, and Shasta Paddlers

(Letter dated July 25, 2002)

AW, CP, and SP Comment Page 1, Paragraph 2: Study Requests: *- Prior to the whitewater feasibility study conducted in 2000, requests were made to study ramping rates, macro invertebrate drift, displacement, stranding, and amphibian impacts. To date, these studies remain undone. Data collected from the above mentioned studies would be critical in balancing the demands of recreation, ecosystem health, and power generation. We believe these studies should be completed as soon as possible and prior to license issuance.*

Licensee Response: Licensee is currently conducting the listed studies downstream on its Rock Creek-Cresta Project (FERC No. 1962), as well as other intensive biological evaluations at several of Licensee's other hydro-electric projects (Mokelumne, FERC No. 137; and Pit 3, 4, and 5 FERC No. 233). Due to the complexity and cost of these types of studies, Licensee believes that much useful information can be learned from these other studies and applied, if needed, to this project in the future.

AW, CP, and SP Comment Page 2, Paragraph 2:Amphibians: *We share applicant's concern over the protection of amphibian species. We disagree with applicant's flow proposals to protect amphibians in the UNFFR reaches. In our opinion, unnaturally low base flows create amphibian habitat in areas that are detrimental to amphibian survival during high flow events. Clearly, a better flow regime would require base flow that are closer to the natural hydrograph and would benefit all aquatic species as well as recreational users.*

Licensee Response: Licensee's proposed flow regime was not developed specifically for the protection of amphibians. The Licensee carefully analyzed and weighed all affected resources and believes that its proposal strikes a balance in the publics best interest between the competing power and non-power benefits that the Project provides (see section 3 of Vol. 1).

Licensee Response to Comments by
American Whitewater, Chico Paddleheads, and Shasta Paddlers

(Letter dated July 25, 2002)

American Whitewater et al., Page 2, Paragraph 3. The altered hydrograph for bypassed stream reaches below Canyon Dam and Belden reservoir has affected riparian species composition and the extent of riparian corridor margins.

American Whitewater et al., Request: Within the Botanical Resources element (Tab 14, Vol. 2) the Licensee should expand the riparian and wetland vegetation discussion to include discussion of issues related to Himalayan blackberry.

Licensee Response: Increase in riparian vegetation has occurred over time in both the Seneca and Belden reaches of the NFFR, most likely owing to controlled flow conditions below Project dams, and the mitigating effect this can have on bank scour. The riparian vegetation in this area of the Project has proven to be resilient to high flows experienced in recent years. Nevertheless, riparian vegetation provides protective bank cover and wildlife habitat, as well as contributing to enhanced aquatic habitat by ameliorating summer water temperatures and providing inputs of organic nutrients, invertebrate food items for aquatic species, and a source of aquatic habitat attributes such as under-cut banks and woody debris. Licensee acknowledges that some degree of channel encroachment has occurred, resulting in some aquatic habitat loss. However, Licensee believes that channel maintenance flows sufficient to restore this habitat by eliminating encroaching vegetation are clearly beyond the capability of the Project for both economic and safety reasons.

Heavy bank cover, particularly that involving thorny species like Himalayan blackberry, clearly restricts recreational access to the river's edge. However, a program to eradicate

this vegetation for the benefit of recreationists is both impractical and risks serious damage to other resource values. Licensee feels that a limited and site-specific treatment of Himalayan blackberry in the Belden Reach could be planned to create one or more additional small, maintained angling access pathways to the river.

American Whitewater et al., Page 2, Paragraph 4. The application contains no measures for control or eradication of Himalayan blackberry on low-flow stream reaches Under Project control.

American Whitewater et al., Request: A feasibility assessment should be conducted to evaluate potential methods for reducing vegetation encroachment and providing selective access routes to the stream.

Licensee Response: Heavy bank cover, particularly that involving thorny species like Himalayan blackberry, clearly restricts recreational access to the river's edge. However, a program to eradicate this vegetation for the benefit of recreationists is both impractical and risks serious damage to other resource values. Licensee feels that a limited and site-specific treatment of Himalayan blackberry in the Belden Reach could be planned to create one or more additional small, maintained angling access pathways to the river.

Licensee Response to Comments by
American Whitewater, Chico Paddleheads, and Shasta Paddlers

(Letter dated July 25, 2002)

American Whitewater Comment, Page 3, Paragraph 2. Water Temperature Discussion at PRS-12 (Vol. 1), suggests the possibility of degradation to coldwater aquatic habitat in Lake Almanor as depletion of the coldwater pool is accelerated and associated coldwater refugia is lost late in August-September should temperature-selective withdrawal modifications be made at the Prattville Intake for delivery of cold water through the Butt Valley-Caribou system to the UNFFR. This discussion is speculative without having final data from the Prattville Intake Modification modeling effort currently being conducted pursuant to the Rock Creek-Cresta Agreement. In addition, the discussion ignores the contribution of sub-surface springs, providing significant inputs to the cold-water pool year-round. The draft Application declares that in-lake sources provide an estimated 200-255 cfs at 8°C during the summer months (E2-392, Vol. 1), but this appears to be a serious underestimation relative to the 375-500 cfs estimates applied as boundary conditions in physical and numerical modeling work being conducted under contract to University of Iowa's Hydroscience and Engineering Department.[1] This inconsistency should be discussed and/or corrected in the final Application. Summary in volume 1 should be qualified in the conclusions drawn and must be edited to include information regarding the potentially significant areas of coldwater refugia likely to be found within the vicinity of each of the lake's many spring eruptions and in the hypolimnion region surrounding these limnetic oases.

Licensee Response: For clarification, the sub-surface inflow of 200-255 cfs estimated by MITEMP and provided in the DAL represented a net mass balance of incoming groundwater and surface evaporation losses. Accounting for evaporation losses, the total groundwater inflow is then 375-430 cfs. This total groundwater flow is close to the 375-500 cfs range suggested by SWRCB, which was based on an independent measurement of flow balance obtained in March 13-27, 2001 (the result of which has been shared with Ecological Resource Committee for the Rock Creek-Cresta Project, FERC 1962). Although this difference in how inflow was accounted for was discovered in July 2002 after submission of the DAL, the Licensee expects little difference in the temperature simulation results provided in the DAL because the energy balance was properly simulated.

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[1] IIHR Hydroscience & Engineering. 2002. *Physical and Numerical Modeling of Cold Water Feasibility Study through Prattville Intake at Lake Almanor in North Fork Feather River.* (Phase 1 Report, Task N1). Prepared for PG&E, under contract to the University of Iowa, College of Engineering, IIHR – Hydroscience & Engineering. Page 33.

It should be emphasized that in all modeled scenarios with respect to the modified Prattville Intake, Licensee has made a qualifing statement that "water from an elevation of 4,430-4,445 feet (Pacific Gas and Electric Company datum) can be drafted by the modified Prattville Intake." This remains an assumption and has yet to be confirmed by the physical and numerical modeling work currently being conducted under contract to University of Iowa's Hydro-science and Engineering Department. The assessment provided in the DAL is intended to cover the expected range of conditions (i.e., the existing and the hypothetical optimum).

Presently, the submerged springs (the coldwater refugia) present in the lake that could be identified are from two sources, a 1912 topographic map with burned timber areas identified, and from field observations. The 1912 map identified three springs: 1) Pratt Spring near Prattville Intake; 2) Dotta Spring between Rocky Point and Dakasu Islands (or Fox Island); and 3) 'Bunnel Reservoir' near the western Peninsula directly opposite Prattville Intake. Other spring areas known to the Licensee based on the field observation are Big Spring, located in the Big Cove next to the Hamilton Branch mouth, and 'Grassy Knoll,' located on the eastern shoreline about 2 miles south of Hamilton Branch. The precise location and the total number of erupting springs and the volume of flow are unknown and difficult, if not impossible, to determine. For instance, the Big Spring occurs not as an individual spring but emerges as numerous springs, so dispersed that the springs are extremely difficult to locate and measure.

AW Comment: ***Need for Collaboration*** *-Throughout the Upper North Fork Feather River (UNFFR) proceeding there has been a tendency for the licensee to deal with resource agencies and non-governmental organizations separately on an issue-driven, ad hoc basis. For example, it seems that the "2105 Committee" has driven Lake Almanor's shoreline management and reservoir recreation agenda while the various resource agencies delved into the environmental and downstream recreation effects for the entire project. Not surprisingly, there are major philosophical divisions among the stakeholders relative to lake level vs. instream flow for environmental and instream recreation purposes. As we approach the Final Application, we appear to be on a collision course that should be corrected immediately. Our view is that the licensee should commit to a comprehensive collaborative effort, which brings all of the diverse stakeholders together to work through these, and other, critical issues.*

Licensee Response: At the beginning of the relicensing process the Licensee chose to use the hybrid relicensing process. This process uses the traditional approach and has involved numerous meetings with agencies and stakeholders to discuss study designs, study results, and proposed PM&Es. The Licensee agrees that it is important that agencies and stakeholders are given the opportunities to meet together to discuss common issues, and both local Project area stakeholder representatives and Sacramento-based resource agency stakeholder representatives have been invited to both local and Sacramento meetings. While some local representatives have attended the resource meetings in Sacramento and some resource agencies have attended RLA Work Group meetings held in Chester at the Project, the Licensee has no control over the attendance by stakeholders. Frequently, stakeholders attend meetings on issues that are of most interest to them. Having separate resource and RLA Work Group meetings is common even in a formal ALP collaborative process, so participants can focus on issues of most interest to them.

While some issues affect many stakeholders in the form of tradeoffs, such as lake

level and river flow, the Licensee held DLA comment/response meetings in Sacramento and Chester in late September 2002. Resource agency and local representatives attended both these meetings.

AW Comment: ***Study Requests*** *- Prior to the whitewater feasibility study conducted in 2000, requests were made to study ramping rates, macro invertebrate drift, displacement, stranding, and amphibian impacts. To date, these studies remain undone. Data collected from the above mentioned studies would be critical in balancing the demands of recreation, ecosystem health, and power generation. We believe these studies should be completed as soon as possible and prior to license issuance.*

Licensee Response: See aquatic resources response section.

AW Comment: ***Recreation*** *- The needs of whitewater recreation have been totally ignored or misrepresented in this license application. Throughout the draft, applicant attempts to elevate one recreational use over another (angling vs. whitewater recreation). No single recreational use has either more or less value than any other recreational use. Furthermore, contact and non-contact recreation is recognized in the basin plan as a beneficial use of the North Fork Feather River and should be addressed in a fair and balanced approach. Applicant refers to the possibility of use conflicts on the river reaches of the UNFFR. We believe that one of the most important reasons to undertake a collaborative process is to minimize potential user conflicts in the final license. We feel that within this process, representatives of various user groups are the best ones to determine what are potential conflicts and to find solutions to these conflicts. We do not feel that it is applicant's role to be the arbiter of the resource between user groups.*

Licensee Response: The DLA and follow-on FLA do not ignore or misrepresent the desires or interests of whitewater boaters. In fact, a specific study (68 pages of study results) is dedicated to identifying optimal flow needs for whitewater boating, its regional significance, and potential benefits, use, and economic benefits of providing whitewater flows along the Project's bypass reaches. Similar study result information is also provided for river reach angling. This is not an attempt to elevate

the desires of anglers over whitewater boaters. This is not to say, as study results indicate, that on the UNFFR reaches, flows appropriate for whitewater boating are not appropriate for angling, and vice versa. The Licensee agrees that having user group representatives come together to try to minimize inherent conflicts is highly beneficial. Representatives from both the whitewater and angling communities have been and will continue to be invited to UNFFR relicensing meetings. Licensee appreciates the attendance and input of AW at two of these meetings. This user conflict issue was a specific agenda and discussion item at the September 25, 2002, relicensing meeting, which unfortunately, AW was unable to attend. The Licensee plans to continue to hold relicensing meetings after the submittal of the FLA, and will re-schedule the whitewater river user conflict issue as an agenda item.

*AW Comment: **Whitewater Demand** - Section 5.2.9.4.1.9. Applicant estimates that 30 to 50 boaters per day would use the Belden reach for whitewater recreation and possibly 100 users if a commercial outfitter were operating on the reach. We consider this to underestimate the demand for this resource. In 1999, applicant issued a report on the costs and benefits of recreational flows on the Rock Creek and Cresta Projects. In this report applicant stated " In order to get a rough comparison of costs and benefits, we have assumed the highest reasonable usage: 10 kayaks per day at 800cfs, 30 assorted commercial and non-commercial users at 1200 cfs and a maximum of 60 users per day at 1600cfs". The Rock Creek and Cresta reaches downstream have seen in excess of 200 boaters per day on the releases required under the new FERC license for those projects. Using applicant's user day value of $74, this puts the daily value of one of these whitewater releases at $14,800. We feel that applicant continually underestimates the demand for whitewater recreation. It is also surprising that applicant is not more interested in offering whitewater flows on the Belden reach given that this reach will require about half of the flow (and thus the cost) of providing flows on the Rock Creek reach.*

Licensee Response: Based on input received from AW, the Licensee understands that the AW does not intend to pursue whitewater boating releases on the Seneca Reach. The response below thus focuses only on potential whitewater boating

releases on the Belden Reach.

While the whitewater consultants' report recognizes the inherent difficulty in estimating recreation use in the future, assuming the Belden Reach would attract the same amount of users as the Rock Creek and Cresta reaches is probably an overestimate of use.

From a societal economic perspective, using AW's 200 boaters per day estimate and a boater day value of $40 per person per weekend day (per Whitewater Boating Study estimates), the resulting whitewater benefit still does not offset the lost economic benefits to electrical users. The $75 value AW references is indicative of rivers with a more outstanding whitewater boating opportunity than is potentially provided in the Belden Reach.

In addition, there are additional societal economic benefits that will be foregone by the angling population currently recreating along the Belden Reach during the summer and fall. Unlike the Rock Creek and Cresta river reaches, which receive relatively little angling use, the Belden Reach is one of the most highly fished angling resources in the North Fork of the Feather River. This reach contains three public and one private campground and receives additional visits from day users. Recreation facility relicensing study results show that the public campgrounds are generally full during the summer and generally 60 percent to 70 percent occupied during the month of September. Recreation questionnaire survey results of Belden visitors indicate that fishing and swimming are the primary recreation activities of the Belden Reach. Both of these recreation opportunities would be eliminated during

whitewater flow releases.

Besides the societal impacts to anglers, swimmers, and electric users, there are other issues associated with providing whitewater boating releases, which include:

- To achieve high boating use levels, an environmentally effective means to remove bramble and other shoreline vegetation must be demonstrated. The use of goat herds along is a river shoreline is not supported by the Licensee because this would increase shoreline erosion and introduce animal waste into the river. The FLA, though, is proposing to conduct a feasibility study using mechanical and shading methods to remove the blackberry vines in order to provide improved shoreline access at several locations.

- If boaters and their vehicles, in the 100 to 200 range, are actually attracted to the Belden Reach, this could create a management issue along the relatively narrow Caribou Canyon Road.

- From a potential impact to riverine resources perspective, it is not prudent to release out-of-season pulse flow events, until the potential long-term effects of such flows are better understood. The Licensee is currently studying these effects of summer and fall flow releases on river reaches associated with Licensee's Rock Creek Cresta Hydroelectric Project, Pit3, 4, and 5 Hydroelectric Project, and Mokelumne Hydroelectric Project.

- Whitewater boating and associated facility needs will likely need Forest Service approval, including a Special Use Permit, on the Belden Reach.

In summary, until an effective way to remove bramble has been identified and study results that assess the potential resource impacts of summer and fall whitewater flows have been assessed, the Licensee feels that it is premature to be considering whitewater flows in the Belden Reach.

AW Comment: ***Hamilton Branch*** *– Sect 1.4 states that applicant intends to file an application to include the Hamilton Branch project in Project 2105's license. We are concerned that the study period required by this addition will either delay the current timeline and push the 2105 project into annual license or provide inadequate time for needed studies related to Hamilton Branch. Furthermore, there is no mention of evaluating the whitewater resource on the Hamilton Branch project.*

Licensee Response: Study plans for the Hamilton Branch Development addition to the 2105 Project license application were sent to interested parties, including AW, on June 20, 2002, and then again in August 2002 as part of the First Stage Consultation Document. A Recreation Instream Flow Assessment, including a whitewater boating assessment, is contained in Recreation Demand Analysis Study Plan (HB Study #2).

The Draft Hamilton Branch Development license application amendment is scheduled for public review and comment in January 2003 and will include whitewater boating flow assessment results. The final amendment to the license application is scheduled to be sent to FERC at the beginning of June of 2003.

AW Comment: In its current form, we find the draft license application lacking critical information. Furthermore, applicant makes conclusions that lack supporting data.

Licensee Response: The Licensee feels the FLA contains a very thorough analysis of the whitewater resource at the Project and discussions of the issues associated with

providing whitewater flows. The Licensee's conclusions and recommendations are based on the best currently available data.

Anglers Committee Against Artificial Weekend Flow letter
July 10, 2002

Licensee Responses

Licensee Response to Comments by
Anglers Committee Against Artificial Whitewater Weekend Flows

(Letter dated July 10, 2002)

ACAAWWF Comment Page 1, Number 1: The Anglers Committee is opposed to whitewater weekend flows below Canyon Dam (Lake Almanor) because of the adverse effects to trout and other fish species (all life stages) and their habitat, macro invertebrate species (all life sages) and their habitat, and public angling. We are also opposed to artificial whitewater weekend flows because of the significant "cumulative effects" to lake levels at Lake Almanor resulting from whitewater weekend flows below Rock Creek and Cresta dams in the NFFR. Clearly the wading ability of anglers will be adversely effected and dangerous when artificial whitewater weekend flows are released from Canyon Dam into the NFFR. Of course the fishability of the NFFR below canyon Dam resulting from artificial whitewater weekend flows will be adversely and unreasonably effected denying anglers the opportunity to fish as they have done in past years under the existing FERC license.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 2, Number 2: In addition, we are also opposed to artificial whitewater weekend flows being released from Canyon Dam because of the "cumulative effects" to lake levels and the trout fishery (all life stages and their habitat) at Lake Almanor resulting artificial whitewater weekend releases of water also from Rock Creek and Cresta dams on the NFFR. Anglers travel from all over California to fish the waters of Lake Almanor.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 2, Number 3: The Anglers Committee is also opposed to artificial whitewater weekend flows below the Belden Forebay Dam on the NFFR because of the adverse effects to trout and other fish species (all life stags) and their habitat, macro invertebrate species (all life stages) and their habitat, and public angling.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page21, Number 4: We are opposed to artificial whitewater weekend flows below the Belden Forebay Dam in the NFFR because of adverse effects to

public camping activities. There are three (3) public campgrounds located below the dam. The public recreate at three (3) campgrounds to fish, swim, gold planning, and other recreational opportunities. Allowing artificial whitewater weekend flows below the dam in this river reach would also be dangerous and a public safety issue.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 2, Number 5: In addition, we are also opposed to artificial whitewater weekend flows being released from the Belden Forebay Dam because of the "cumulative effects" to lake levels and the trout fishery (all life states and their habitat) at Lake Almanor resulting artificial whitewater weekend releases of water also from Rock Creek and Cresta dams on the NFFR. Anglers travel from all over California to fish the waters of North Fork Feather River below the Belden Forebay Dam.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 3, Number 6: We are also opposed to the adverse effects to the contents of coldwater and the resulting effects to the trophy trout fishery of Butt Valley Reservoir resulting from the "cumulative effects" of artificial whitewater weekend flows being released from Rock Creek and Cresta dams, and also Canyon Dam and the Belden Forebay Dam. It has been reported by an NGO that cold water was withdraw from Butt Valley Reservoir to provide cold water in the NFFR in conjunction with the artificial whitewater weekend flows below Rock Creek and Cresta dams on June 1 and 2, 2002. We presume that will be the case when artificial whitewater weekend flows are released from the dams for the months of July, August, September, and October. This is highly unreasonable because of the effects to the trophy trout fishery of Butt Valley Reservoir. Anglers travel from various areas of California to fish for trophy trout at the reservoir.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 3, Number 7: There has been proposed a cold-water device to extract cold water from Lake Almanor to provide cold water into the North Fork Feather River. Based on our information there is limited cold water in Lake Almanor during the periods of the summer and the fall. Consequently, the contents of cold water at Lake Almanor has the potential to be adversely affected, with a potential significant effect to trout species and other cold water aquatic species of the lake. We are opposed to having the cold-water contents of Lake Almanor adversely affected at the demise of the trout fisher of the lake, and also public angling at the lake.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

ACAAWWF Comment Page 3, Number 8: Pond Smelt is the primary food base for the trophy trout fishery of Butt Valley Reservoir. Pond smelt are diverted from Lake Almanor into Butt Valley Reservoir when PG&E diverts water from the lake into the reservoir. There is a possibility that the proposed cold-water device to divert cold water from Lake Almanor may affect the distribution of pond smelt into Butt Valley Reservoir. The elimination and/or significant reduction to pond smelt being diverted into the reservoir will have adverse effects to the trophy trout fishery with a resulting effect to public angling. Before the cold water devise is approved, this must be studies, including mitigation measures.

Licensee Response: As discussed on pages E3.1-513 & 514, Licensee does not believe that there will be a significant decrease in the entrainment of pond smelt from Lake Almanor through the Butt Valley Powerhouse due to the proposed modification of the Prattville intake. The statement is made that the proposed modification "...could potentially reduce the number of smelt entrained during the late spring and early summer and consequently impact the trophy fishery in Butt Valley Reservoir." Because of the large numbers of smelt observed near the intake towers to Caribou 1 & 2 and large numbers documented during entrainment studies at these units, Licensee believes that there is also a large population of smelt living in Butt Valley Reservoir, which would probably make up for any short-term seasonal reduction in entrainment from Lake Almanor. The most likely impact on trout would be a shift away from the tailrace to the main reservoir to feed, as now occurs during extended periods when the powerhouse is not operating.

Licensee does not propose to conduct any additional studies of pond smelt.

ACAAWWF Comment Page 4, Number91: It is clear before the Settlement Agreement for the Rock Creek – Cresta Project 1962 was signed and also approved by FERC that a detailed "cumulative effects" study should have been conducted to determine the "cumulative effects" as noted above resulting from artificial whitewater weekend flows and also other environmental issues. We are formally requesting a detailed "cumulative effects study" be conducted. Include in said recommended study the "cumulative effects" to the loss of power production resulting from artificial whitewater weekend flows.

Licensee Response: Licensee acknowledges the Anglers Committee comments.

Anglers Committee Against Artificial Whitewater Weekend Flows Comments

Licensee Response: Responses to Anglers Committee Against Artificial Whitewater Weekend Flows comments are provided in aquatic resources response section. The Licensee generally acknowledges that during whitewater flow releases, the Seneca and Belden reaches would not be fishable and existing anglers use would be displaced.

Ryan Beck letter
July 28, 2002

Licensee Responses

Licensee Response to Comments by
North Shore Campground (Ryan Beck)
(Letter dated July 28, 2002)

North Shore Campground Comment: Security of North Shore Campground is our key concern. We are concerned that the improvement of the old highway 36 for access to the boat launch will make it more difficult to maintain control over our park security. Our campers feel safe in leaving out their possessions because we have had virtually no thefts in our park. However, limiting ramp operation to daylight hours and having an onsite operator (collecting fees and monitoring the ramp) will go far in maintaining the safety at North Shore. Furthermore, the proposed fence and vegetative screening as a boundary between our park and the boat launch facility is of dominant importance. Our patrons will need to feel that they have the same amount of security and privacy.

Licensee Response: Comment acknowledged. This issue will be explored during the future detailed site design phase after issuance of the license.

North Shore Campground Comment: As stated in the proposal, twenty campsites will be relocated. We assume that in as many respects as possible, these sites will offer the same amenities to our customers (e.g., electrical and water hookups). However, we have a couple of specific questions. Although the plans discussed to date include the planting of trees, the ambience of these new sites will be less desirable because smaller trees will offer less shade: we are interested to know how large of trees we can expect to be planted. We also question the degree to which the land will be extended and built up to accommodate the new sites. These details have not yet been discussed.

Licensee Response: Comment acknowledged. This issue will be explored during the future detailed site design phase after issuance of the license.

North Shore Campground Comment: Although the ramp area includes the addition of a boathouse and toilets, we are concerned that boaters may venture into our campground to use our showers and restroom facilities. We pride ourselves on immaculate facilities and campers return every year because of our extraordinary amenities. Once again, the proposed fencing and vegetative screen are essential to maintaining our current operational environment. We are interested to have details of the proposed fence so that we may be assured of its adequacy.

Licensee Response: Comment acknowledged. This issue will be explored during the

future detailed site design phase after issuance of the license.

North Shore Campground Comment: *The current proposal states that "boat slips [will be] relocated by site operator." We assume that we will not have to incur the expense of the relocation, but we question where the slips are to be relocated. If this ultimately means that our boat slips will be eliminated entirely, will we be compensated for our considerable investment in this amenity? Also, if the existing boat launch is removed, we would like to know the details of the boat launch access that will be provided to our customers.*

Licensee Response: Comment acknowledged. . It is the Licensee's general intent to cover the costs associated with the implementation of the improved boat launch at North Shore Campground. These issue will be explored during the future detailed site design phase after issuance of the license

North Shore Campground Comment: *Improving the access road and installing both the proposed parking lot and boat launch will undoubtedly be a lengthy project. We are concerned that the sites lost in the interim as well as the construction congestion will impact the desirability of our resort. We look forward to discussing how the construction project will be driven. Clearly, noise abatement and dust control will be necessary.*

Licensee Response: Comment acknowledged. This issue will be explored during the future detailed site design phase after issuance of the license.

North Shore Campground Comment: *At the moment, these are our key concerns. We appreciate having the opportunity to express them to you. As you may be aware, we lost our father last year to prostate cancer. Every successful aspect of North Shore Campground was of his doing and he is why North Shore Campground is what it is today. The campground literally extended his life five years. He loved every aspect of the campground and instilled in us kids what it takes to successfully run North Shore. It is our strong desire to continue with his legacy and to provide the best camping experience that Lake Almanor has to offer. I look forward to seeing you and/ or John Mintz at the next meeting on the 8th.*

Licensee Response: Comment acknowledged.

Susan Braun letter
June 28, 2002

Licensee Responses

Licensee Response to Comments by
Susan Braun, Lake Almanor West Resident
(Letter dated June 28, 2002)

Susan Bram Comment: I am writing to you today because I own a vacation home on Lake Almanor and I have been monitoring the relicensing effort. For the most part I'd say PG&E has been a good steward of the lake. But you could certainly improve access to the lake for the residents of Chester. If you plan more recreation sites on the Lake I'd suggest you look on 1st St. This is a lovely open area, good for bird watching, the lake is shallow here. Currently this are becomes an illegal dump. PG&E could well improve this area which I believe island you already own. Check it out.

Licensee Response: The Licensee has spent considerable time evaluating options and receiving public input on identifying options to provide improved reservoir access for Chester, including improved access along 1st Ave. The FLA contains several proposals that will provide improved reservoir access for Chester Residents, including:

- A new day-use area with picnic tables and caretaker at Stover Ranch, along the Chester shoreline, in the vicinity of the 1st Avenue site;
- A new boat launch at North Shore Campground;
- An access parking area along the Super Channel; and
- An expanded swim facility at Almanor Beach. The Forest Service is proposing to extend the Lake Almanor Recreation Trail to Chester using a trail easement over Licensee lands. This trail will provide access to the improved Almanor Beach.

California Department of Fish and Game letter
July 26, 2002

Licensee Responses

Licensee Response to Comments by
California Department of Fish and Game (CDFG)

(Letter dated July 26, 2002)

CDFG Comment Page 3, Hydrology Section II. Hydrologic Modeling
The Department requests that PG&E develop a hydrologic model of the North Fork Feather River watershed based on the full natural flow (e.g. unimpaired hydrology) of project-affected reaches. To the extent feasible, the hydrologic model should be based on a daily time-step, and should be provided to resource agency staff and other interested parties upon request.

Licensee Response: The Licensee acknowledges the Department's request for a daily time-step hydrologic model for the Project area, but is unable to comply with the request. PG&E has twice attempted to build such a model as part of its effort to improve water management in the basin. In both cases, the models performed so poorly during the calibration phase that the effort was abandoned. The U.S. Geological Survey, in cooperation with the California Department of Water Resources, has been attempting to build such a model for the last two years. A monthly version of the model is reported to be reasonably accurate at this time, but the daily model is still under development. The monthly model has not been released, and either model will be a challenge to implement because they operate on a Unix-based server and users require extensive training and experience.

CDFG Comment Page 3, Hydrology Section III, Paragraph 1. Hydrologic Record for all Stream Reaches
The Department requests that PG&E include in its Draft Application an analysis of the historic full natural flow of all stream reaches affected by the project. The analysis should be based on a daily time-step, and should cover a time period of not less than 25 consecutive years. The specific stream reaches that should be addressed in the analysis include the North Fork Feather River below Canyon Dam, The East Branch North Fork Feather River, the Hamilton Branch, Butt Creek below Butt Creek Dam, and Yellow Creek

Licensee Response: The Licensee has provided daily time-step data in the DAL for Butt Creek above Butt Valley Dam (NF-4), the North Fork Feather River below Canyon Dam (NF-2), and Butt Creek below Butt Creek Dam (NF-9) for at least a 25-year record, if such record exists. NF-9 has record for only 15 years, 1970-1984. Neither the East Branch North Fork Feather River nor Yellow Creek are affected by project operations, so

these records were not provided. Hamilton Branch and other pertinent streamflow records will be provided as part of the amendment for the Hamilton Branch project.

CDFG Comment Page 4, Hydrology Section III, Paragraph 1. Hydrologic Analysis The Department requests that PG&E (1) provide details on the methods used to prepare the estimates of historic full natural flow. The enhanced description should included the specific equations and algorithms used in the unimpaired flow analysis as well as their derivation; (2) provide copies of the impaired and unimpaired man daily stream flows in a common electronic format (e.g. Microsoft Excel spreadsheet, Microsoft Access database, or comma delimited text file;, and (3) provide more detail on the regression analysis used to estimate flows in Mosquito Creek during 2000 and 2001.

Licensee Response: 1. As documented in Appendix E2.D, Volume 5 of the DAL, the daily unimpaired, or historic full natural, flow at NF-70, the gage downstream of Belden Dam, was synthesized using a mass balance technique. The mass balance procedure takes into account daily streamflow through upstream powerhouses, reach inflow, daily changes in storage in upstream reservoirs, forebays, and afterbays, and other known inflows (springs and side-channel tributaries) and outflows (sinks). The sum of these streamflows and storage changes for each day produces a streamflow record for a specified point that approximates the streamflow that would occur at that point if no Project facilities were in place. The mass balance procedure suffers from several error sources. Daily storage change estimates are based on changes in stage height of the reservoirs, and wind or inaccurate storage/stage height tables can result in errors in the daily record. Daily powerhouse records can also contain errors due to changes in pressure head due to variations in upstream storage and other types of errors. A smoothing process was implemented after the full natural flows were synthesized to compensate for these errors.

The full natural flow below Belden Dam is estimated summing three mass balance equations: the natural flow at Canyon Dam, the natural flow from Butt Creek at its junction with the North Fork Feather River, and the natural flow that is produced in the Belden/Seneca reach. The Belden/Seneca reach is the section of the North Fork Feather River from Canyon Dam to the junction of the North Fork with the East Branch. Flow in the lower half of the Belden reach is approximated by NF70, which is 6.5 miles above the

junction with the East Branch. Each contribution is based on a mass balance equation, as follows:

1. Full Natural Flow at Almanor = daily changes in storage in Lake Almanor + flow through Butt Valley Powerhouse + bypass around Butt Valley Powerhouse + flow released at Canyon Dam plus daily changes in storage in Mountain Meadows Reservoir;
2. Full Natural Flow from Butt Creek = 1.2 * flow at NF-4, where 1.2 is an areal correction to adjust for the portion of the watershed area between NF-4 and Butt Creek's confluence with the North Fork Feather; and
3. Full Natural Flow in the Belden and Seneca Reach = daily flow through Belden Powerhouse minus daily change in storage in Belden Reservoir minus flow at NF-2 (released from Canyon Dam) plus flow at NF-70 minus flow released from Caribou 1 Powerhouse minus flow released from Caribou 2 Powerhouse.

2. Electronic copies of the three full natural flow estimates and the regulated streamflow at NF-2 and NF-70 are available as comma-delimited files from the Licensee, upon request.

3. Streamflow in Mosquito Creek, a tributary to the North Fork Feather approximately 2.6 miles below NF-70, was estimated through field measurements and a regression procedure in WY2000 and WY2001. A water level sensor and a recorder were installed during these summers at both Mosquito Creek and at a benchmarked site on Yellow Creek, a larger drainage 1.6 miles downstream from the bottom of the Belden reach and 8.5 miles downstream from Mosquito Creek. Flow measurements were taken at both streams about four times during the summer, and the interpolated flow record from Yellow Creek was extrapolated to Mosquito Creek via a regression equation. The regression equation was different for each of the two years because there is not a stable control at the measurement sites in either stream. The equations were seasonal and yearly specific, and only served to estimate streamflow associated with the field measurements for the five summer months. No equations will be provided because they are not useful in any way for future predictions. Mosquito Creek is the largest of the four

named creeks (Mosquito, Crablouse, Waller, and Deadwood) that contribute to and alter the streamflow regime in the Belden reach that is provided via the release from Belden Dam.

CDFG Comment Page 4, Hydrology Section III, Paragraph 3. Indicators of Hydrologic Alteration (IHA)
The Department requests that PG&E expand the IHA analysis to include other reaches affected by the UNFR project, including: the North Fork Feather River below Canyon Dam, the Hamilton Branch, and Butt Creek below Butt Creek Dam. The IHA analyses should be included in the Final Application together with the comprehensive suite of tables and charts generated by the IHA software (Version 5.0)

Licensee Response: 1. As documented in Appendix E2.D of the DAL, an IHA analysis was done to compare the daily historic full natural flow with the regulated flow at NF-70, a third of a mile below Belden Dam. Per the Department's request, the Licensee has obtained Version 5.0 of the IHA and performed analyses for both the original point and for the North Fork Feather below Canyon Dam. An IHA for Hamilton Branch will be presented in the license amendment for the Hamilton Branch project. No IHA was done for the 1.8-mile length of Butt Creek below Butt Creek Dam due to the short record (1970 – 85) that exists at NF-9. The IHA User's Manual suggests that a minimum of 25 years of record be available for analysis so that the statistics that are calculated have validity.

The new version of the IHA allows for capture of the 32 plots that illustrate the pre- and post-project regime. Refer to Appendix E2-D, Volume 5, of the DAL for a more complete explanation and critique of the IHA. If adequate record existed, the analysis would assess hydrologic characteristics from the period before the project and compare them against conditions after the project is built. In this case, the same period of record was used, 1970 – 2000, but the unimpaired record was used as the "pre-project" flow, so the flow period for the unimpaired record was relabeled to span the 1930-1960 time period. For each of the two reaches, the five major analysis groups of the IHA are illustrated in the 32 plots that are included at the end of this section. Additionally, three tables (IHA Scorecard, Percentile Data, and Annual Summary Statistics) were produced

for each of the two runs, and they are also included at the end of this section. The results may be summarized in a single table:

CDFG Response, Table 1

"Indicators of Hydrologic Alteration" Results for Seneca/Belden and Canyon Dam Reaches

Group Name	UNNF at NF-70	UNNF at NF-2
Monthly Magnitude		
	Oct-Sep: Pre>Post	Oct-Sep: Pre>Post
Magnitude of Extremes		
	1,3,7,30,90-Day Min: Pre>Post	1,3,7,30,90-Day Min: Pre>Post
	1,3,7,30,90-Day Max: Pre>Post	1,3,7,30,90-Day Max: Pre>Post
	Base Streamflow: Pre=Post*	Base Streamflow: Pre=Post*
Timing of Extremes		
Julian Date Min	Pre=234; Post=299: Different	Pre=235; Post=296: Different
Julian Date Max	Pre= 63; Post=118: Different	Pre= 60; Post= 72: Same
Frequency and Duration		
	No. of Low Pulses: Pre=Post	No. of Low Pulses: Pre=Post
	Length Low Pulses: Pre<Post	Length Low Pulses: Pre<Post
	No. of High Pulses: Pre>Post	No. of High Pulses: Pre>Post
	Length High Pulses: Pre>Post	Length High Pulses: Pre>Post
Rates & Frequency Of Change		
	Rise Rate: Pre>Post	Rise Rate: Pre>Post
	Fall Rate: Pre>Post	Fall Rate: Pre>Post
	No. of Reversals: Pre<Post	No. of Reversals: Pre<Post
	No. of Hydrographic Falls: Pre<Post	No. of Hydrographic Falls: Pre<Post

*Base streamflow is calculated by dividing 7-day minimum by annual mean, and is not meaningful in this case.

In general, the two sets of results are quite similar. The contributing area at Canyon Dam is 493 mi^2, and the contributing area at NF-70 is 612 mi^2 and includes the Butt Creek drainage and at least half of the Seneca/Belden reach. This means that 80% of the drainage is the same source area, so having the IHA results be similar is not surprising. The only difference between the results for the two areas is the Julian date of the

maximum flow per year. These results were explained in more detail in Appendix E.2D, Volume 5, of the DAL

CDFG Comment Page 5, Hydrology Section V, Paragraph 1. Classification of Water Year Types
In classifying water year types in section E2.64.2 (page E2-391), PG&E used 25 years of data (1958-1962, 1964, and 1967-1985) measured at the North Fork Feather River gage above Chester. A longer period of record should be used in the assessment of water year types. California Data Exchange Center station 'FPR' sensor '65' contains a record of the full natural flow of the North fork Feather River below Canyon dam form 2/1/1905 to 9/1/1992. The Department recommends that PG&E use this information in their classification of water year types.

Licensee Response: The Licensee acknowledges that by using a longer period of record, more hydrological cycles could be accounted for, and thus, would better define the water year types. However, the model simulation requires specific input data at specific locations, such as the NFFR at Chester, Hamilton Branch, and various powerhouses; therefore, the data are constrained to the availability of these specific input data. The Licensee believes that the 25 years of data that were used do cover several hydrological cycles and are sufficient for defining water year types.

CDFG Comment Page 5, Water Temperature Section I, Paragraph 1. General Comments on Water Temperature
The Department's goal under the collaborative is to provide a water temperature regime that mimics the annual temperature regimen or, at minimum, meets the cold water standards defined in the Central Valley Regional Water Quality Control board's Basin Plan (Basin Plan). At present, average daily water temperatures in the NFFR below Canyon dam during the spring and early summer months are lower than water temperatures in the NFFR above Lake Almanor. (Table E2.4-2 and E2.4-5) These artificially low temperatures can slow trout egg development and trout growth rates. Hopefully, by using the upper outlet, the project will be more capable of mimicking background water temperatures found in the NFFR above Lake Almanor.

Licensee Response: In reviewing Table E2.5-4 of Vol. 1 for 2000, the average daily water temperature differences between the NFFR above Lake Almanor and the NFFR below Canyon Dam (NF-2) for the late spring (June) and early summer (July) period

were 2.8 and 3.3°C cooler below Canyon Dam for June and July, respectively. In 2001, the average daily water temperature below Canyon Dam was 1.8°C cooler than in the NFFR above Lake Almanor in June, but was 0.5°C warmer in July. The effect of water temperatures on trout egg development and growth rates are well established in the literature, with lower temperatures resulting in longer incubation times and slower growth rates. Embody[1] (1934) reported that the average development time for rainbow trout increased with decreasing water temperatures, and was 19 days at 15°C, 31 days at 10°C, and 80 days at 5°C. Based on this information, the lower temperatures in 2000 would be expected to have potentially delayed egg hatching by about 7-8 days and by about 2 days in 2001 in the river reach below Canyon Dam, assuming that fish were still spawning as late as June or July.

Using site specific data from Licensee's fish population studies conducted in 2000 and 2001, Appendix E3.1-1 of Vol. 6, age 1+ trout at Site 101, located about a half mile below Canyon Dam, had the greatest mean weight and length of all six sites sampled in the Seneca Reach in 2000 and had the second greatest mean weight and length in 2001. Age 2+ trout at this site ranked in fourth place in 2000 and in last place in 2001. Because only two young of the year trout (YOY) were collected in 2000 and none in 2001, it is not possible to make a comparison of weight-lengths between sites for this age class. The low/lack of YOY trout at this site is probably the result of the generally poor quality of spawning and rearing habitat in this river segment below Canyon Dam and the lack of downstream dispersion of YOY blocked by the upstream dam, rather than a result of the slightly lower water temperatures at this site.

However, the Licensee acknowledges the Department's comment and will look into developing appropriate PM&E measures during collaborative meetings.

CDFG Comment Page 5, Water Temperature Section I, Paragraph 2. General Comments on Water Temperature

[1] Embody, G.C. 1934. Relation of temperature to the incubation periods of eggs of four species of trout. Trans. Am. Fish. Soc. 64:281-292.

The collaborative will also have to address water temperatures that exceed the Basin Plan cold water objects. Under the present operation, maximum daily water temperatures flowing into Lake Almanor from the Hamilton Powerhouse can exceed the Basin Plan cold water objectives during the spring (Table E2.4-5.) How warm water from the Hamilton Powerhouse impacts the cold water pool in Lake Almanor will have to be addressed in the Final Application. In addition, the Final Application must more adequately mitigate for the water temperature conditions associated with the Butt Valley Reservoir and Belden Dam complex. Maximum daily water temperatures below Belden Dam often exceed the Basin Plan cold water objectives (Table E2.4-2 and E2.4-5.)

Licensee Response: The Licensee will address water temperature issues for the Hamilton Branch Powerhouse in the Hamilton Branch Project amendment application.

The Licensee acknowledges that water temperature is a critical parameter of water quality and deserves special attention to identify measures for protecting cold water habitat. There is no stated numerical criterion for the Basin Plan cold water objectives. In accordance with the approach specified in the Rock Creek-Cresta Settlement Agreement, the Licensee and the agencies agreed upon a 20°C objective for the daily mean water temperatures in the Upper NFFR Project. Table E2.4-2 shows the range of historical daily mean water temperatures measured during 1985 and 1986 (maximum, minimum, and average). According to this table, daily average water temperatures below Belden Dam exceeded the agreed upon 20°C objective during June, July, and August 1985. In 1986, the 20°C objective was exceeded only in September according to the table. It should be noted that 1985 represents an abnormally warm and low lake level year; thus, unusually warm water temperatures were recorded; however, the monthly average of daily mean water temperatures were below 20°C during three out of four months.

In addition, Table E2.5-4 shows the range of daily mean water temperatures (maximum, minimum, and average) collected for the Upper NFFR Project during 2000 and 2001. Table E2.5-5 summarizes the number of days that the daily mean temperatures at each station exceeded 20°C. According to this table, the 20°C objective was exceeded on a few days in 2000 (1 day in July 2000 and 16 days in August 2000) and more frequently in 2001 (15 days in July 2001 and 30 days in August 2001) while the rest of the summer

period was below the 20°C objective. It should be noted that 2001 represents a warm and low lake level year; thus, unusually warm daily mean water temperatures were recorded.

The Licensee is currently conducting a physical model study with the University of Iowa to determine the feasibility of drafting cold water from Prattville Intake as a mitigation measure, which would benefit Butt Valley, Belden, and all the downstream reaches. Following the testing of the physical model and the implementation and confirmation of the model, the Licensee will consider other mitigation measures.

CDFG Comment Page 5, Water Temperature Section II, Paragraph 1.
Caribou Water temperatures
The Final Application should explain why the Caribou No. 1 Tailrace water temperatures in 1986-87 were generally cooler than the Caribou No. 1 intake temperatures.

Licensee Response: Butt Valley Reservoir has a normal maximum water surface elevation of 4,132 feet (Pacific Gas and Electric Company datum). The lowest sizeable elevation contour in Butt Valley Reservoir is approximately at 4,080 feet, about 52 feet below normal maximum water surface. The invert of Caribou No. 1 Intake is located in a local depression zone at an elevation 4,067 feet (Pacific Gas and Electric Company datum). The Caribou No. 1 Intake temperatures measured in 1985-1986 were recorded with two thermistors, the upper thermistor was located at 4,123.35 feet (Pacific Gas and Electric Company datum) and the lower thermistor was located at 4,104.74 feet (Figure 3.1-33 in the reference document, Pacific Gas and Electric Company 1986a and 1987, of the DAL). The corresponding daily average temperatures based on readings from these two thermistors were provided in Table E2.4-2 (labeled as Caribou No.1 Intake –upper and lower). Both thermistors were located at considerable distances from the bottom of the reservoir (at 4,080 feet); therefore, the temperature values given in Table E2.4-2 reflected the temperature levels of the mid-depth and the surface conditions.

The tailrace temperatures were generally cooler than the mid-depth to surface temperatures due to the nature of selective withdrawal at Caribou No. 1 when Caribou

No. 1 flow is low (see discussion on Page E2-192 in DAL, Volume 1). At low flows, Caribou No. 1 effectively created a condition that caused selective withdrawal under stratification of the lake as evidenced in the 2001 data (Figure E2.5-50 in DAL). It appeared that the same selective withdrawal characteristics occurred in 1985-1986. This is supported by another measurement reported in the same reference document. Figure 3.1-31 of the reference document presented temperature values from recorders mounted on a subsurface buoy near the Caribou No. 1 Intake structure; three thermistors were used to record temperatures at 4,114.8 feet, 4,095.1 feet and 4,086.9 feet. Temperature readings from the buoy were also provided in Table E2.4-2 (labeled as Butt Valley Reservoir Buoy – surface, mid and bottom). The tailrace temperatures were close to the temperatures recorded from the mid to bottom temperature recorders, suggesting the occurrence of selective withdrawal.

It should be noted that Figures E2.5-14, E2.5-15, E2.5-16, and E2.5-17 on pages E2-305 through E2-308 of the DAL were presented with an incorrect vertical axis scale. These figures have been corrected and will be included in the FAL.

CDFG Comment Page 6, Water Temperature Section III, Paragraph 1.
Lake Almanor Temperature Stratification
The Final Application should more fully explain why high lake levels and warm air temperatures results in stronger thermal stratification. (Page E2-397.) PG&E suggests that under these conditions, low-level releases are cooler than those made under average air temperatures. It is unclear how the addition of energy to the reservoir (i.e. higher temperatures) can result in cooler release temperatures.

Licensee Response: Deep reservoirs, such as Lake Almanor, exhibit seasonal thermal stratification. As presented in the DAL in Figures E2.5-6, E2.5-7, E2.5-75, and E2.5-78, Lake Almanor typically exhibited thermal stratification beginning in May and continuing through October. During November and into the winter and early spring months, Lake Almanor was isothermal, completely mixed and of uniform temperature from the surface to the bottom of the lake. The strongest thermal stratification was observed during the summer and early fall months when meteorological conditions were the warmest.

The thermocline is considered a thermal barrier preventing the mixing of the warmer surface waters with the cooler bottom waters (because of a larger buoyancy force); this thermal barrier effect becomes stronger as the air temperatures increase, resulting in less warm water entrainment by the low-level outlet discharge. The water entrainment is a function of the ratio of buoyancy force to the inertial force. When buoyancy force exceeds that of inertial force, warm water entrainment is eliminated and selective withdrawal occurs.

CDFG Comment Page 6, Instream Flow, Section I. Stream flow mitigation measures presented in the Draft Application fall short of achieving the Department's goals. The Department's goal under the collaborative is to provide a hydrologic regime that mimics the natural annual hydrograph and maintains a functioning ecosystem for aquatic and riparian resources.

Licensee Response: Licensee notes Department's comment, and will certainly take it into consideration as the Licensee continues to meet with the agencies and NGOs to address streamflow issues.

CDFG Comment Page 6, Instream Flow, Section II. PG&E proposes to maintain a continuous, year-round, minimum flow of 75 cfs in the NFFR below Canyon Dam, 140 cfs in the NFFR downstream of Belden Dam and no release in Butt Valley Creek below Butt Valley. Not only are these flows conservative based on the PHABSIM results (Figures E3.1.10-8, E3.1.10-9, E3.1.10-10), they also fail to provide for the long term habitat diversity which is needed to maintain a natural functioning ecosystem for aquatic and riparian resources. The PG&E-recommended flatline flows may provide minimal habitat needs for the near future but annual variation in flows along with adequate base flows are needed to maintain long term habitat diversity. The collaborative should work at developing a flow regime that more closely addresses the ongoing need for habitat diversity.

Licensee Response: Licensee notes Department's comment, and will certainly take it into consideration as the Licensee continues to meet with the agencies and NGOs to address streamflow issues.

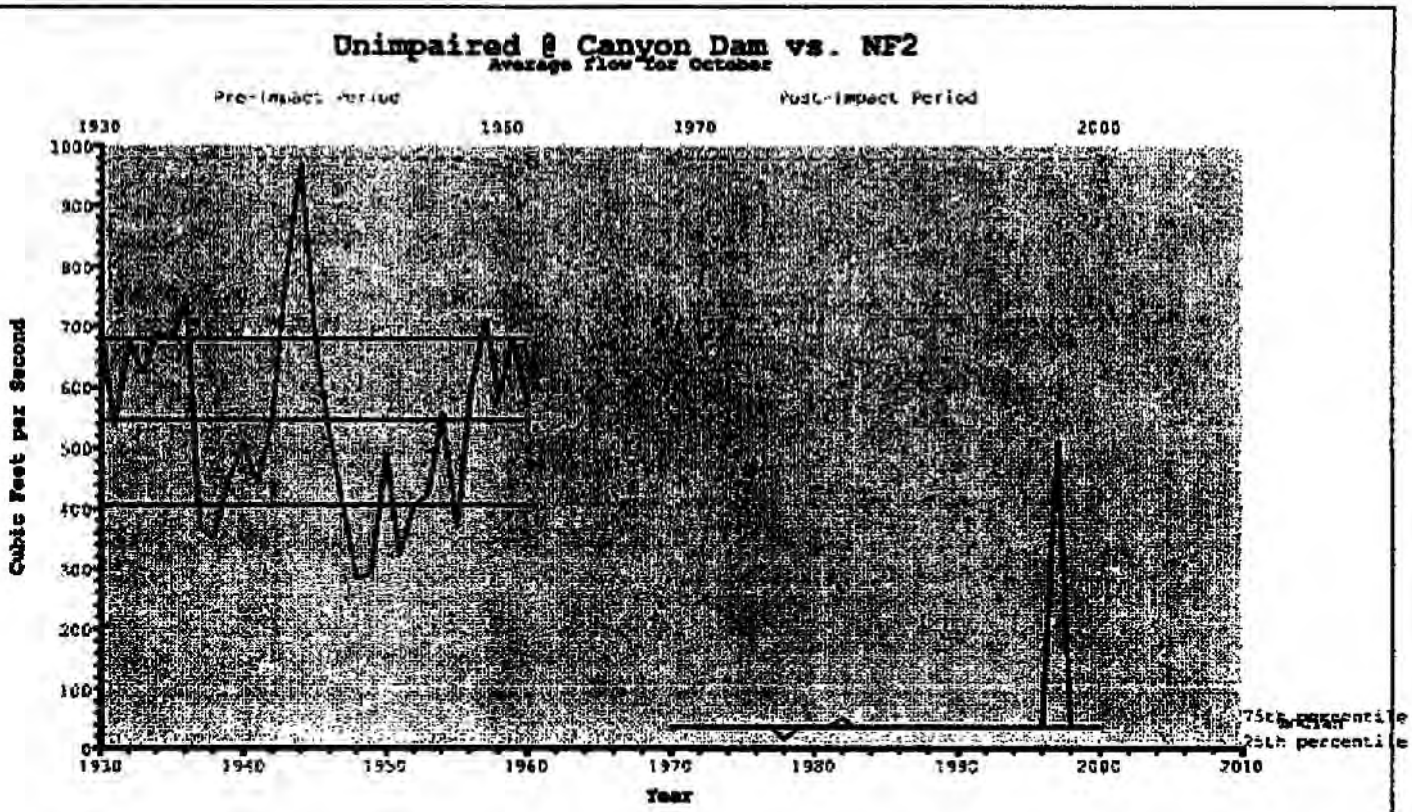
CDFG Comment Page 6, Instream Flow, Section III. PG&E proposes no channel maintenance flows. Annual channel maintenance flows are required to maintain the

fluvial processes that provide for balanced sediment transport, channel bed material mobilization and distribution, and channel structural stability that contributes to aquatic habitat diversity and healthy riparian habitat. The collaborative should work to develop a flow regime that more closely addresses the on going need for habitat diversity.

Licensee Response: Licensee notes the Department's comment, and will certainly take it into consideration as the Licensee continues to meet with the agencies and NGOs to address streamflow issues.

CDFG Comment Page 7, Fish Population Sampling, Section I: Fishery populations were sampled in 2000 and again in 2001. Since an adaptive management and a post-licensing monitoring program is expected to evolve out the collaborative process, three years of fishery baseline data would benefit post-project evaluations. Therefore, the Department recommends that PG&E sample fish populations again during the fall of 2002.

Licensee Response: Although Licensee believes that two years of fish population sampling is usually sufficient for evaluating population levels, Licensee does recognize the added value of collecting a third year of data due to variability that can occur in population levels from year to year. Thus, in this case, Licensee will conduct a third year of stream fish population sampling in 2002 utilizing the same methodology in 2000 and 2001.



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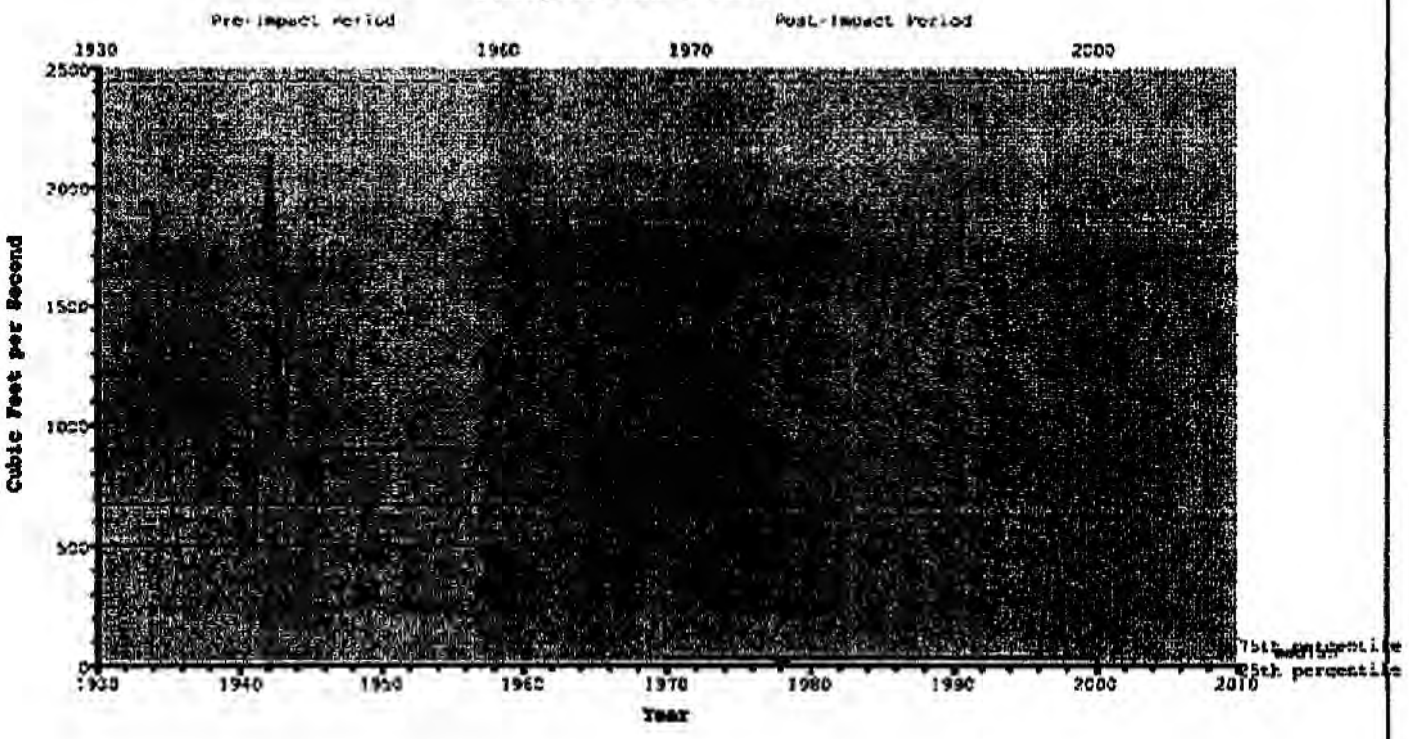

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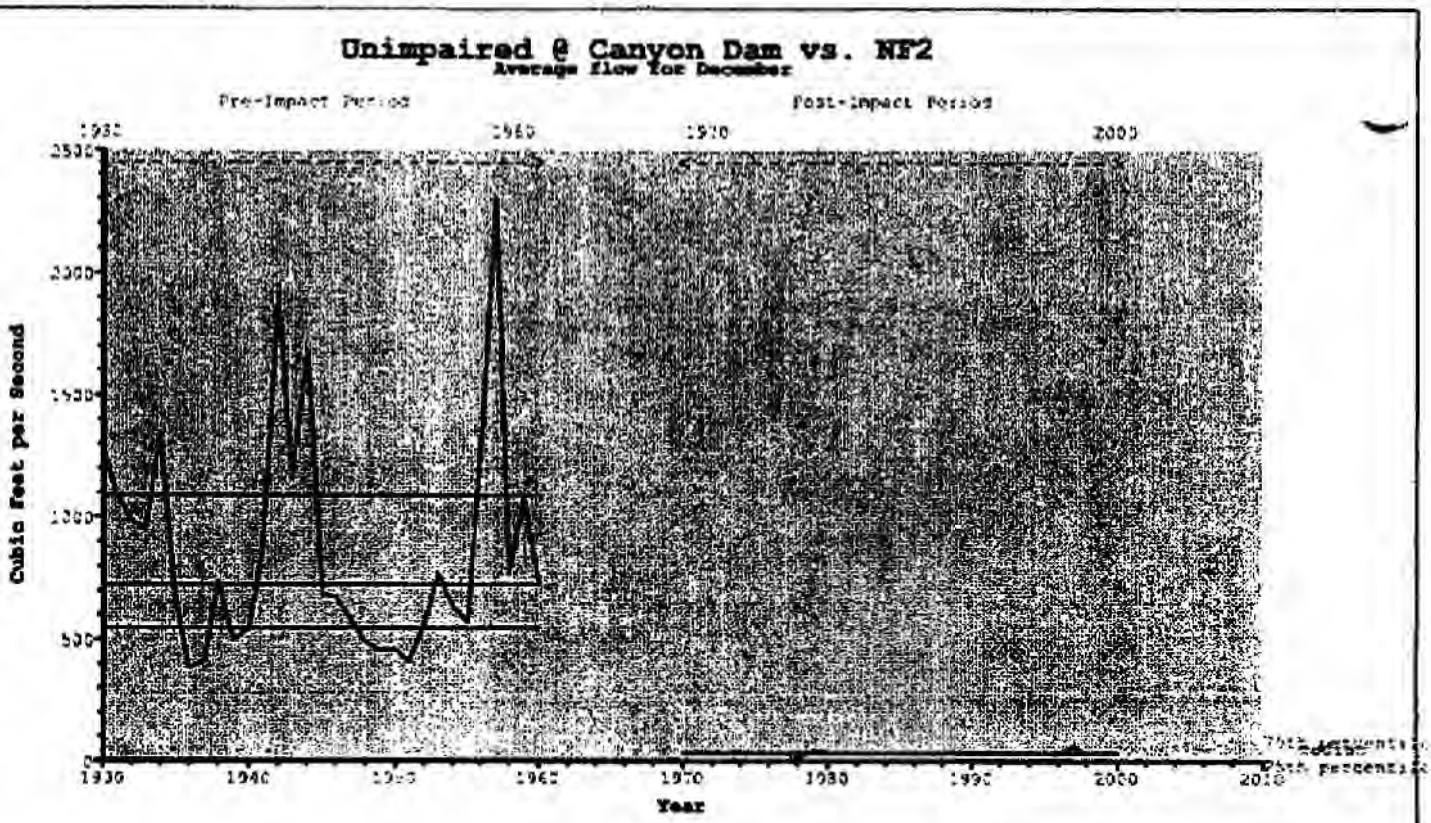

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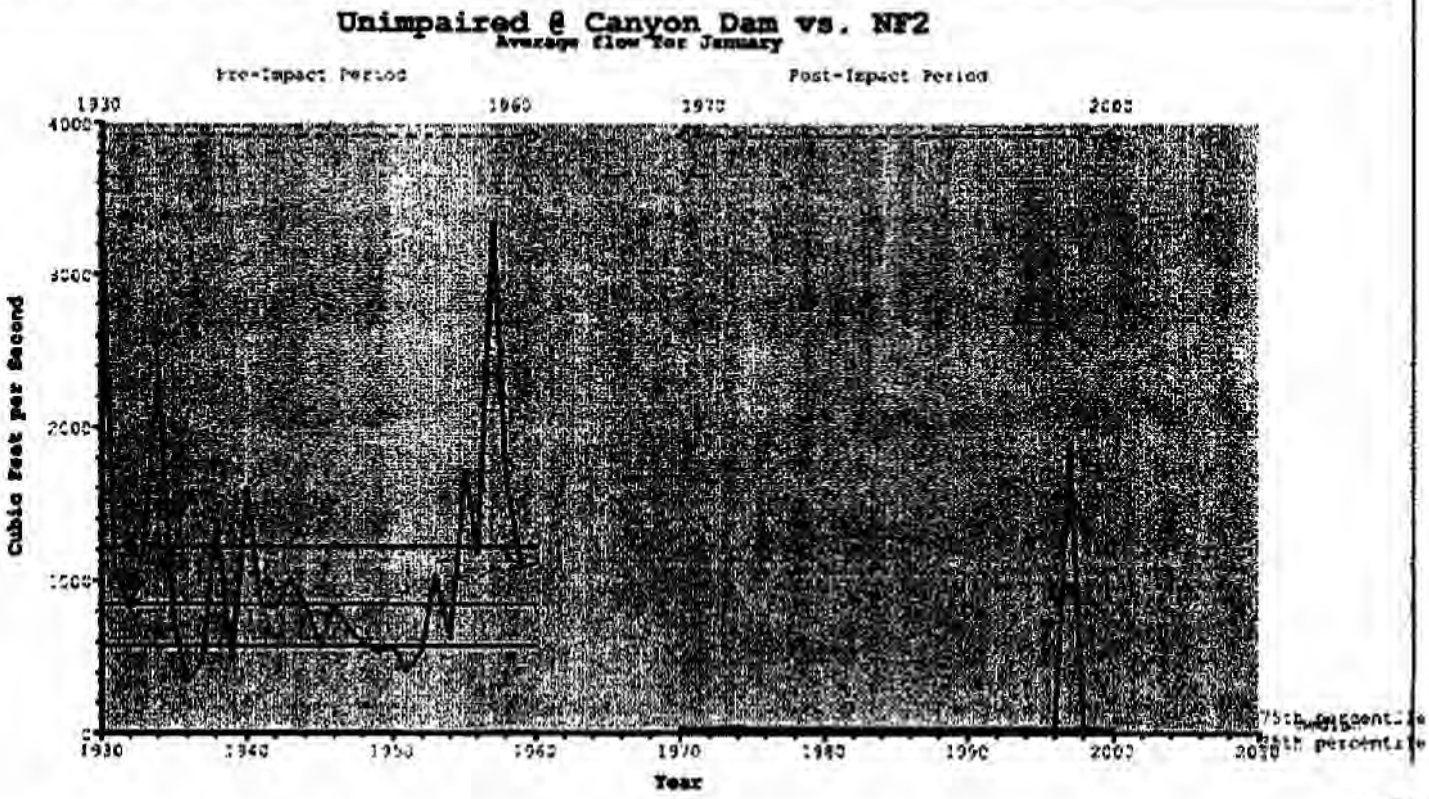

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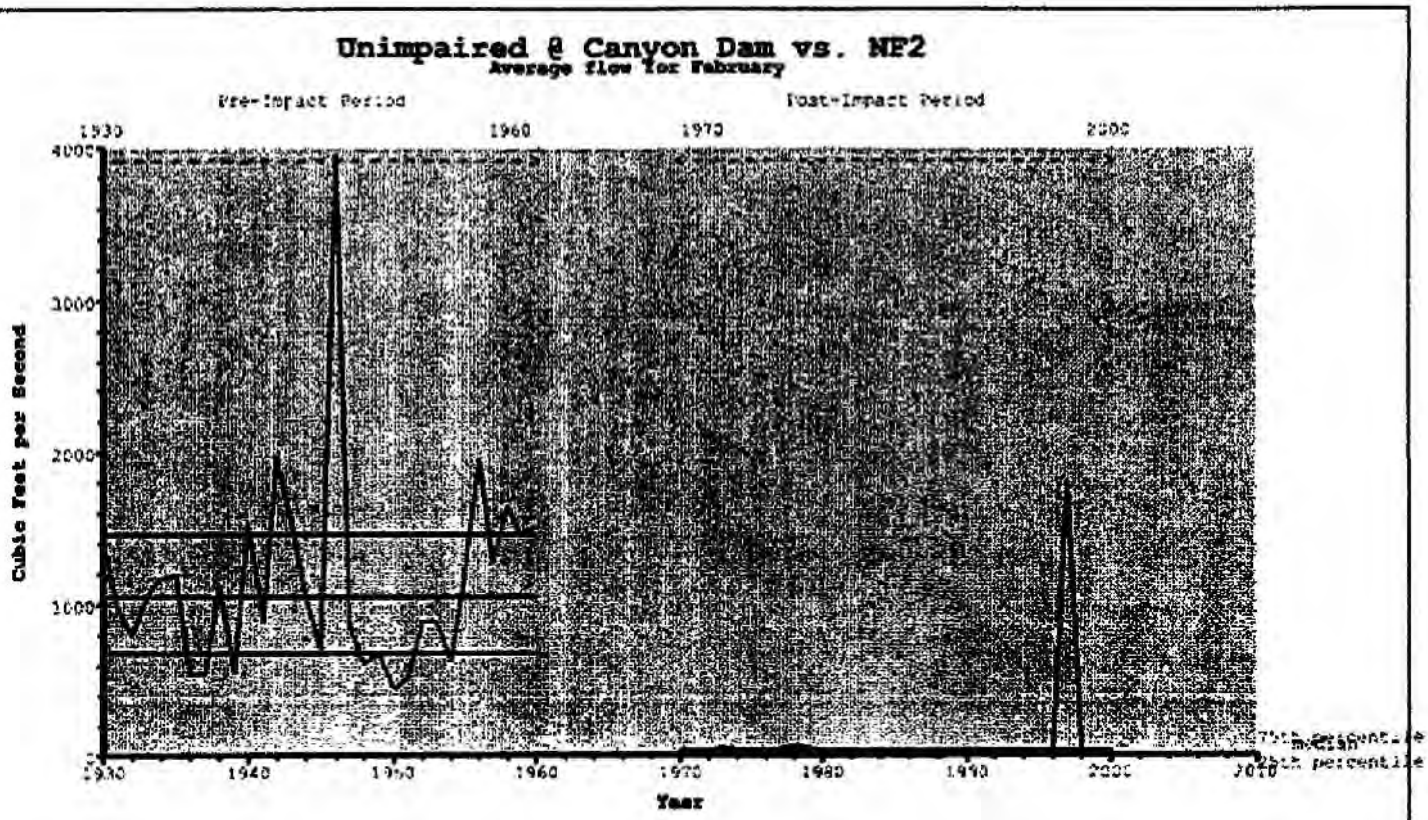

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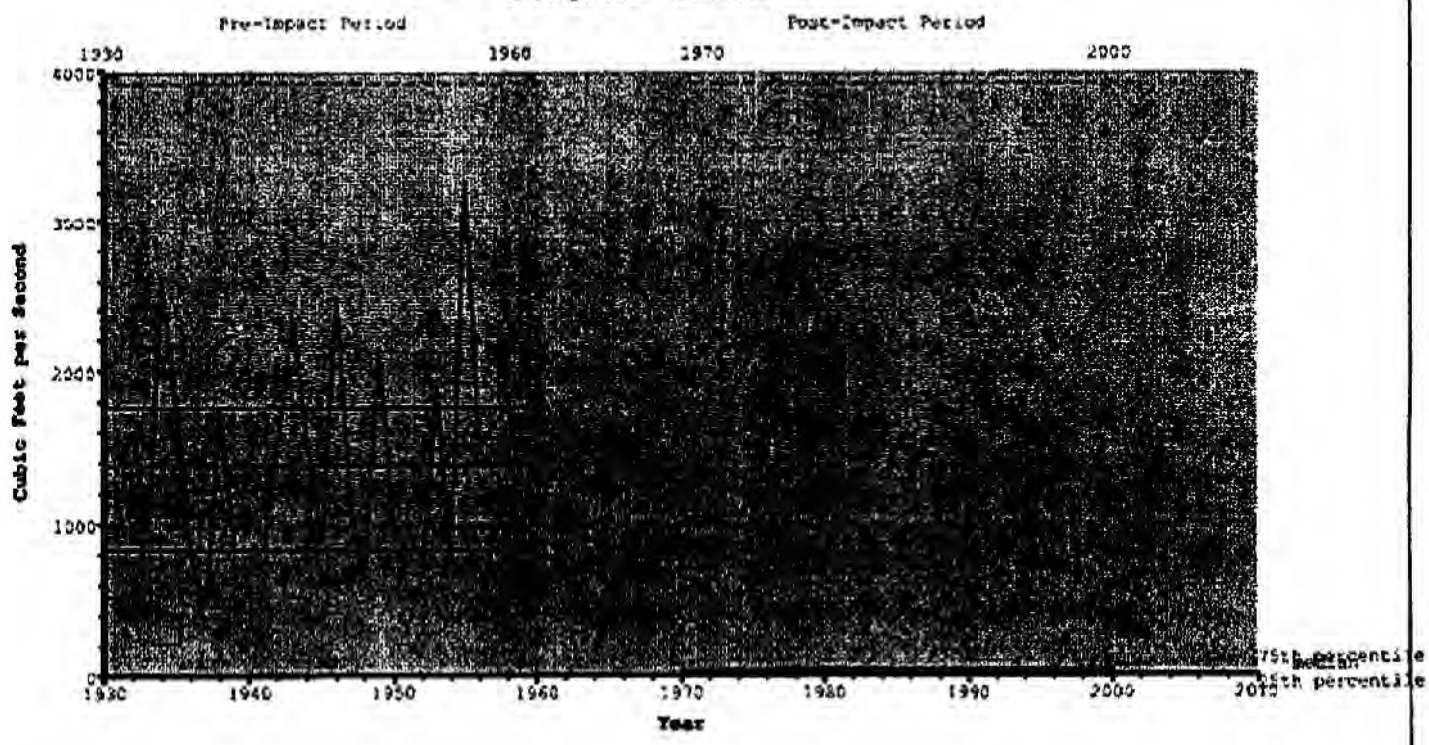

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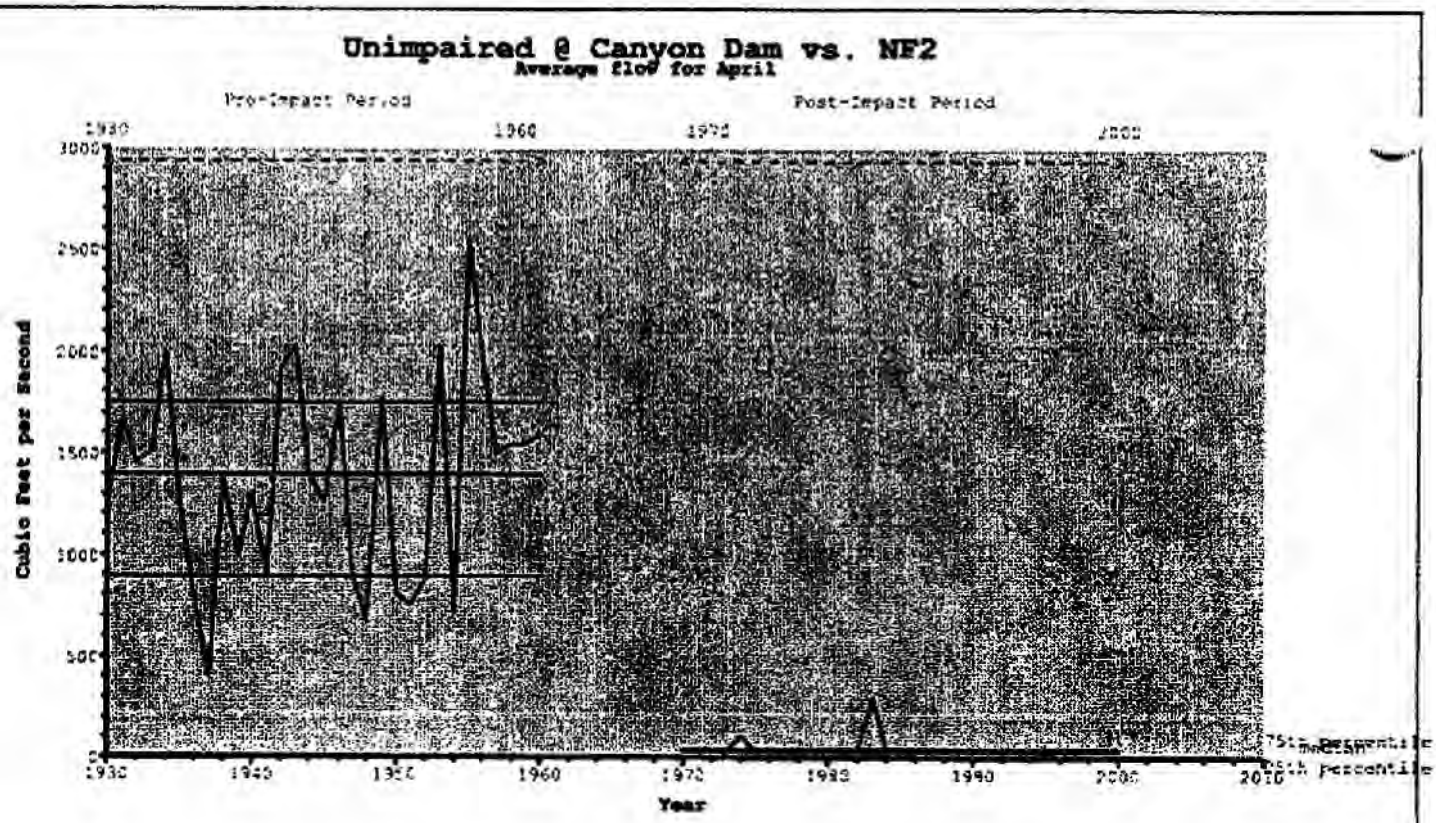

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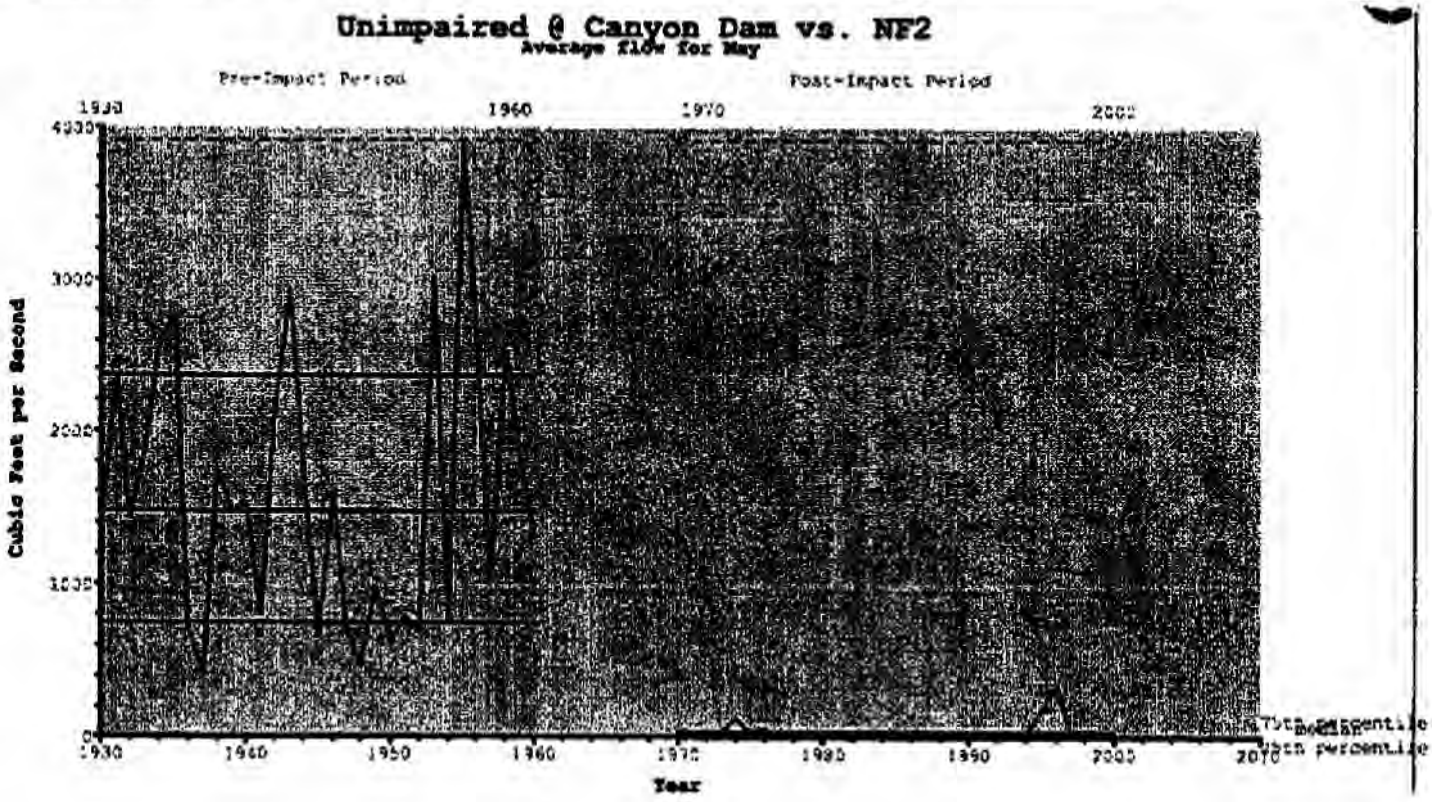

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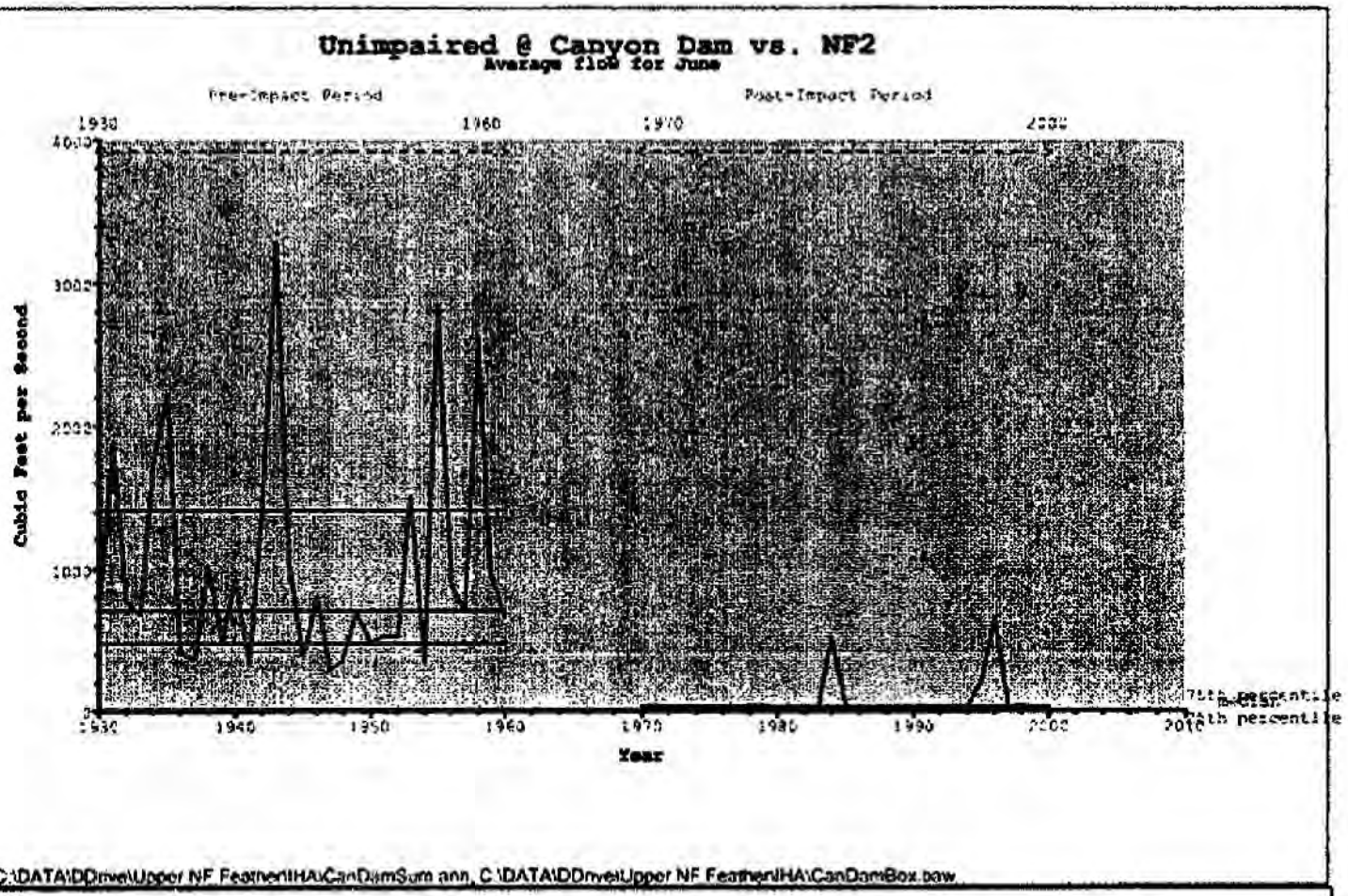

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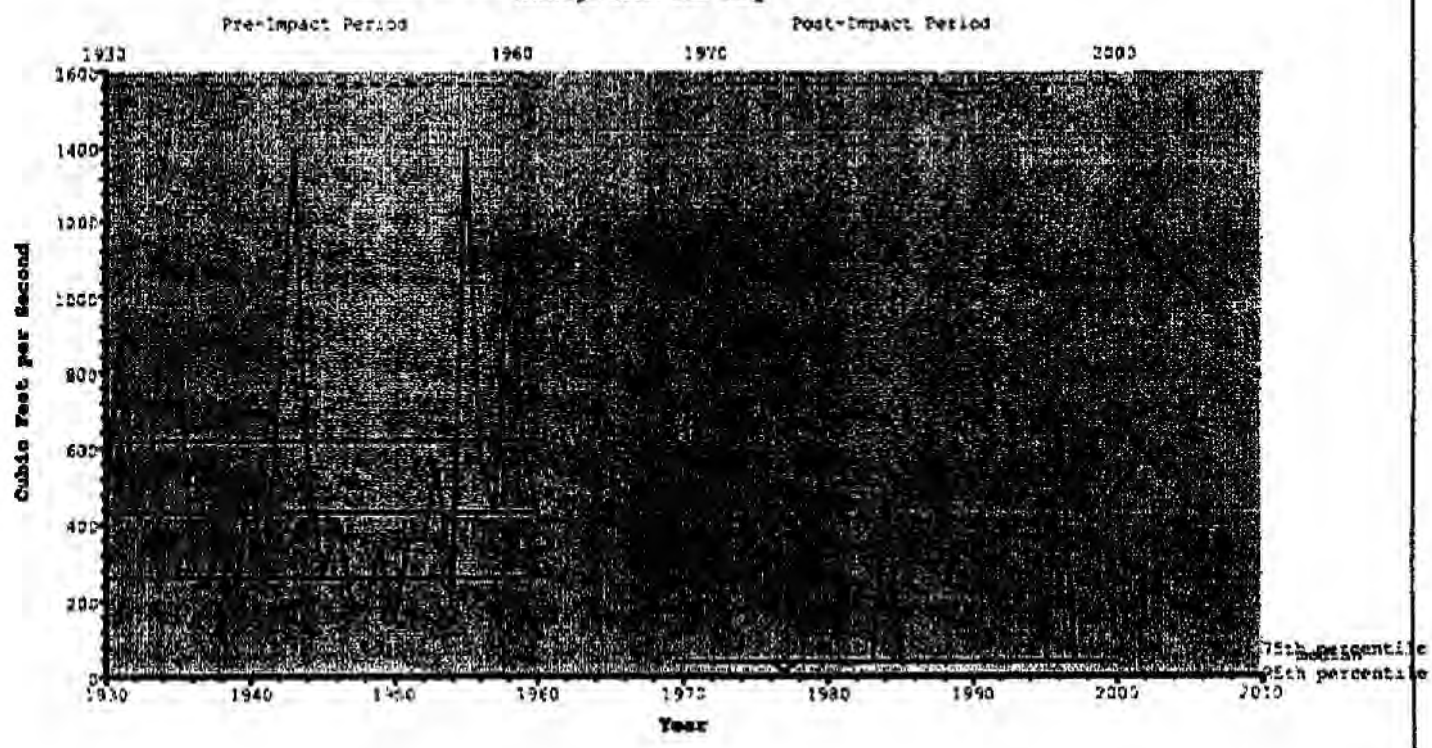

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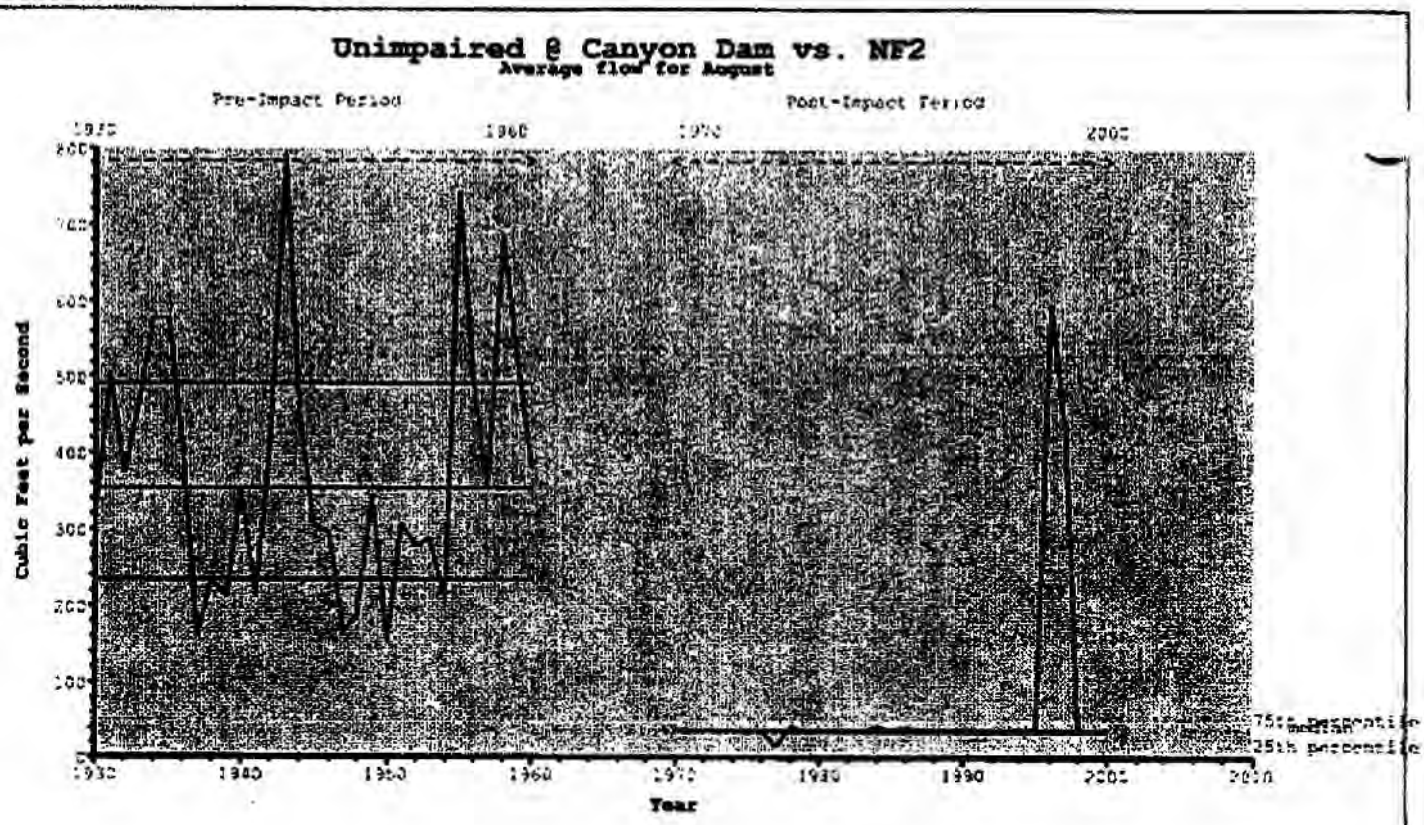

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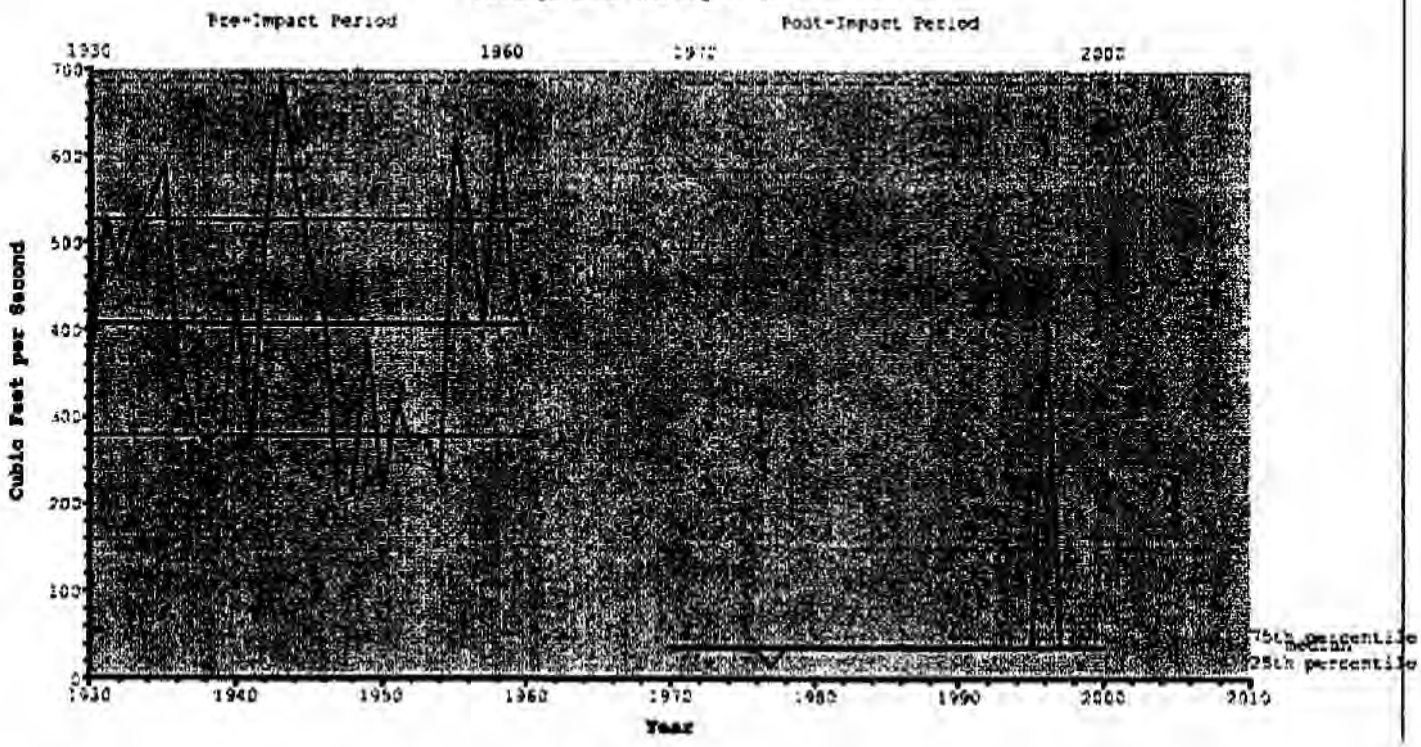

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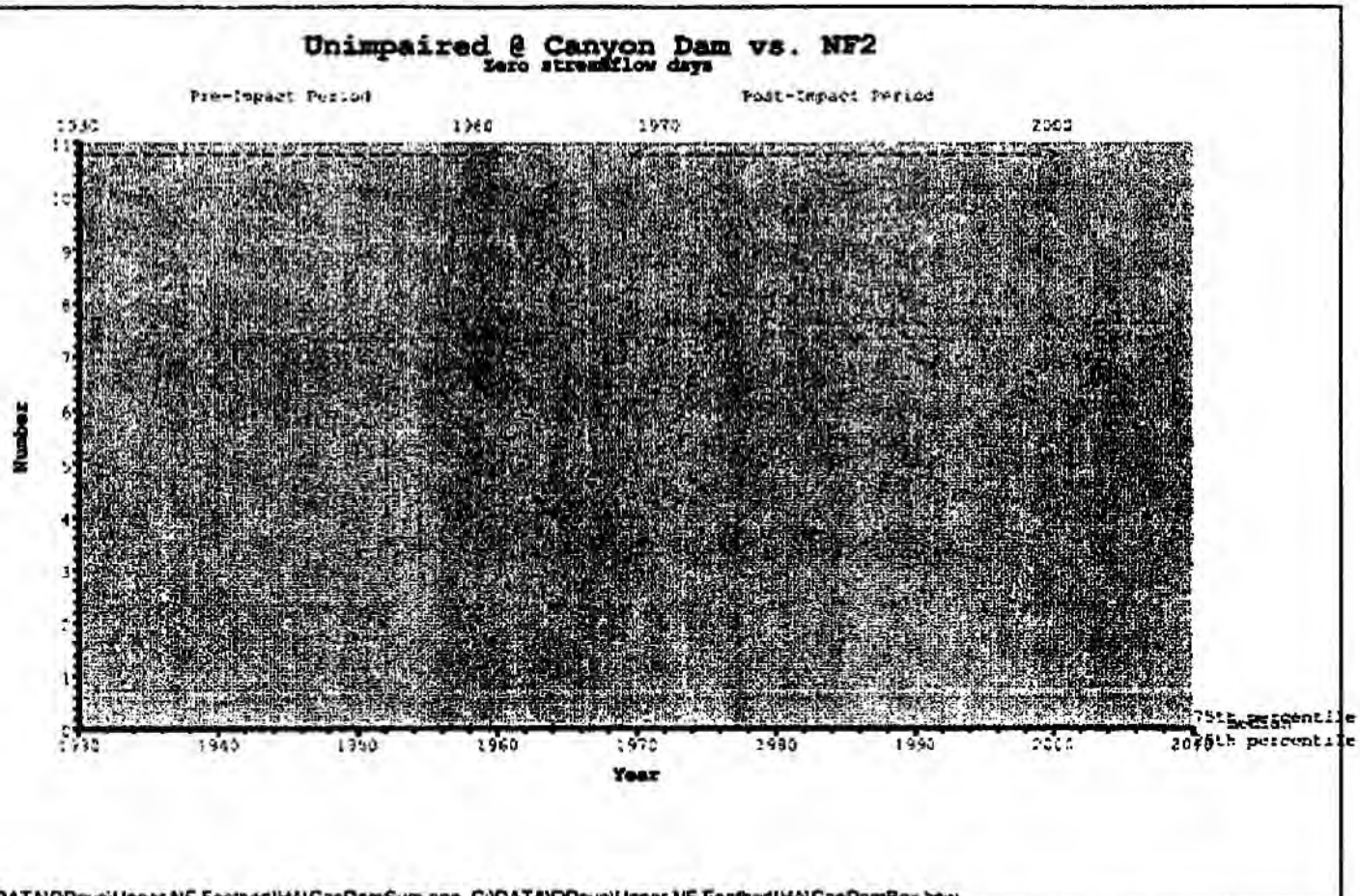

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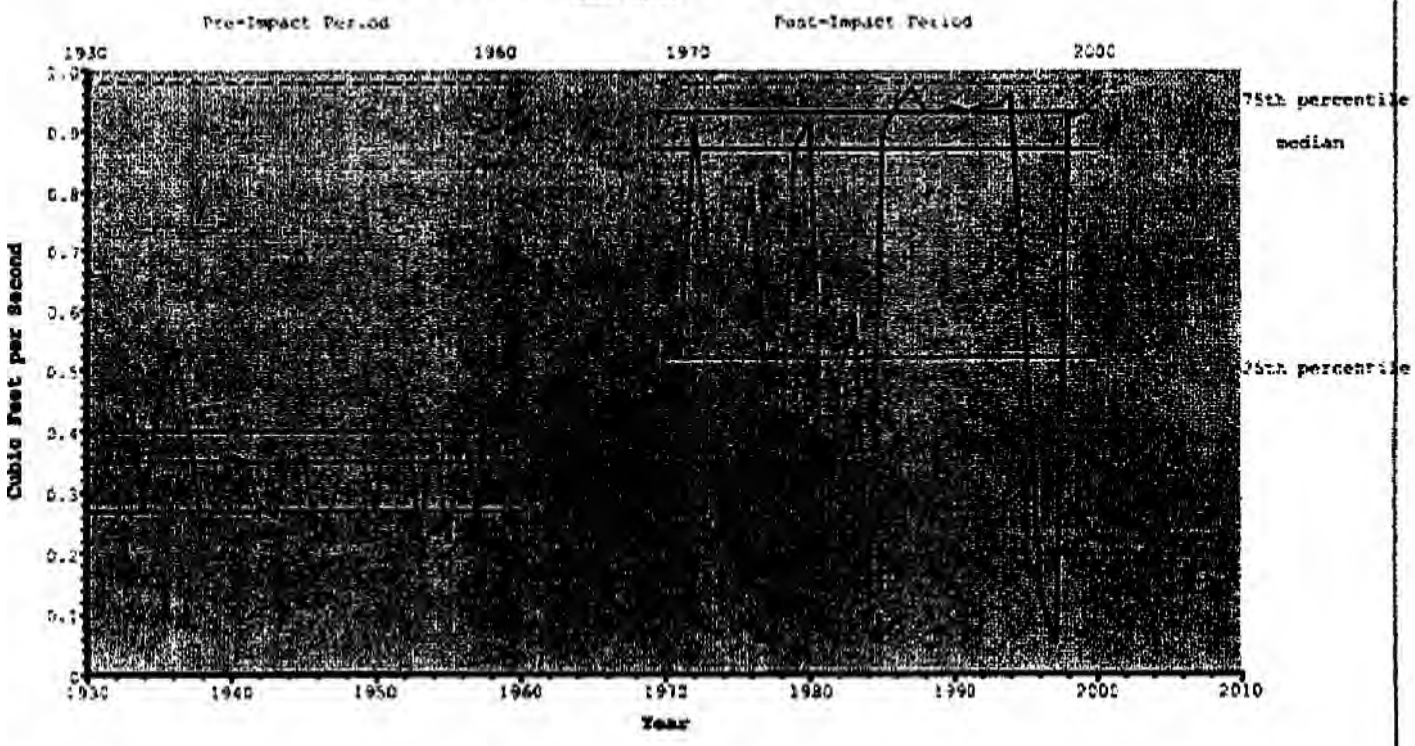

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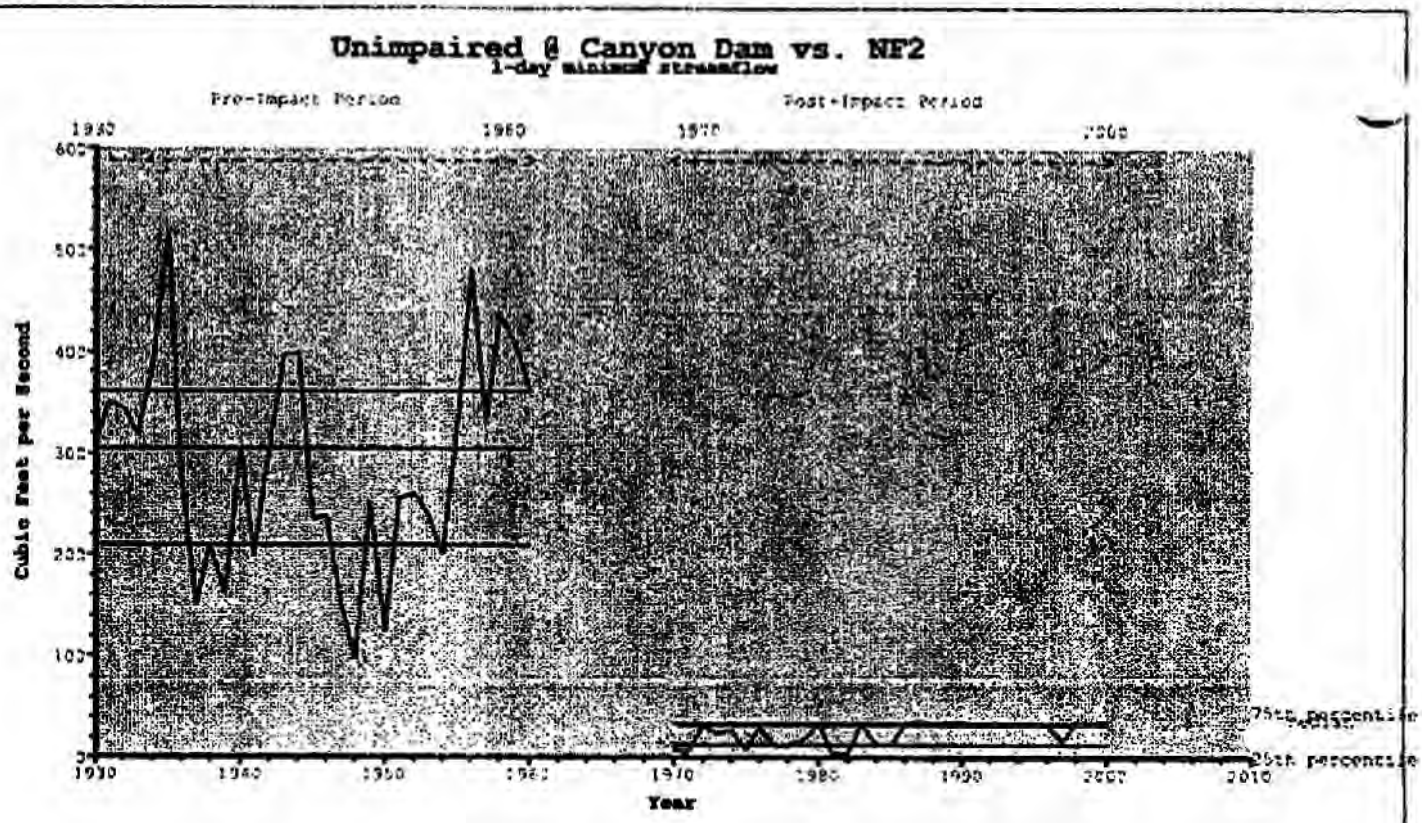

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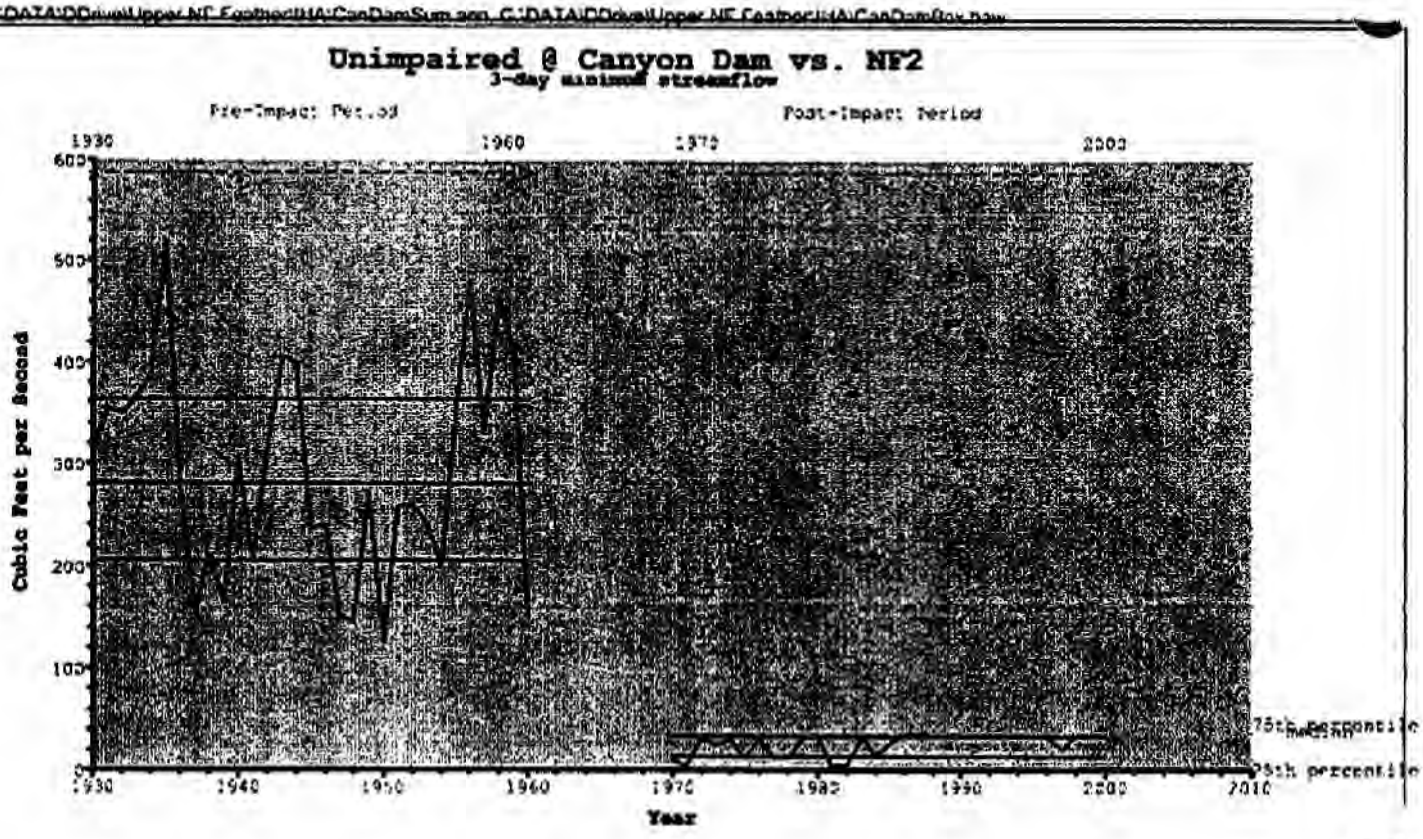

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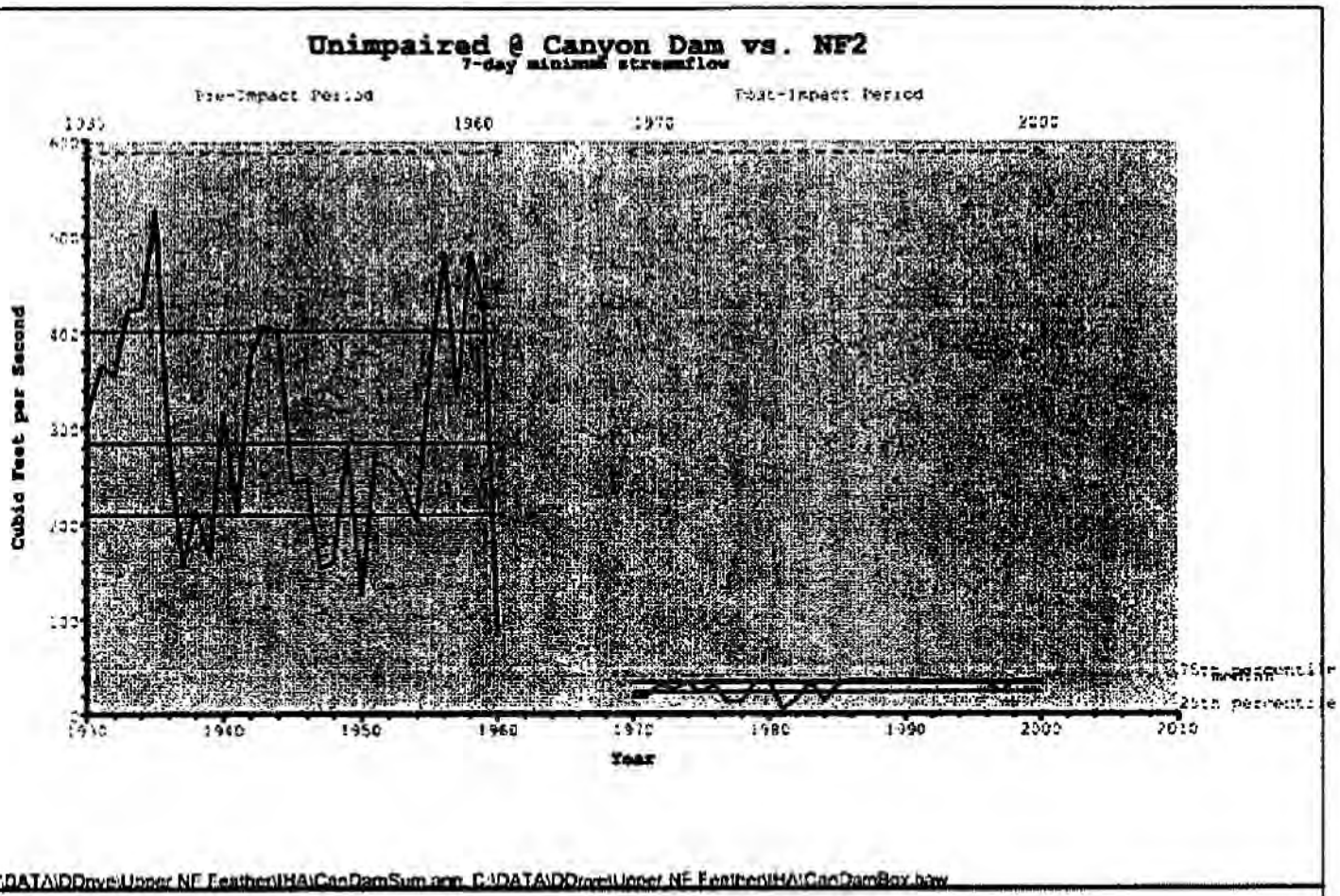

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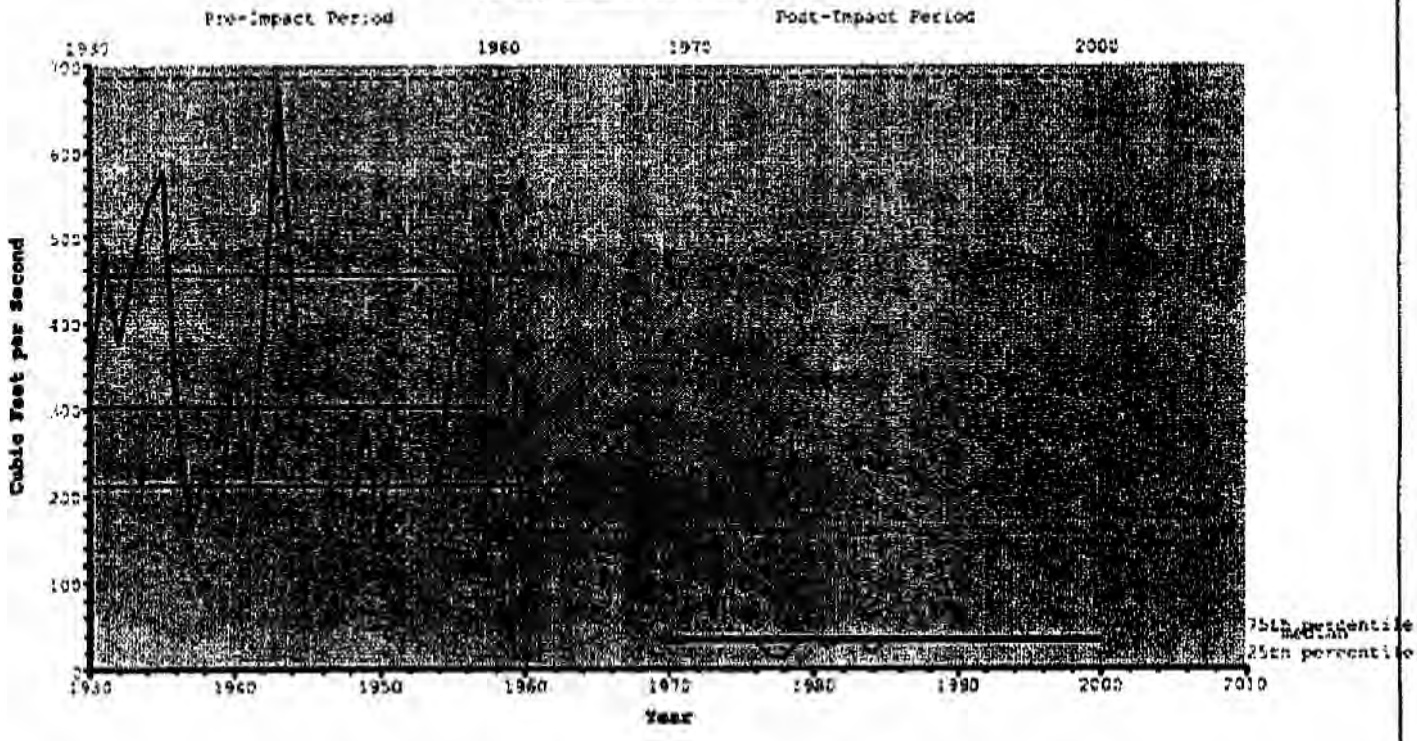

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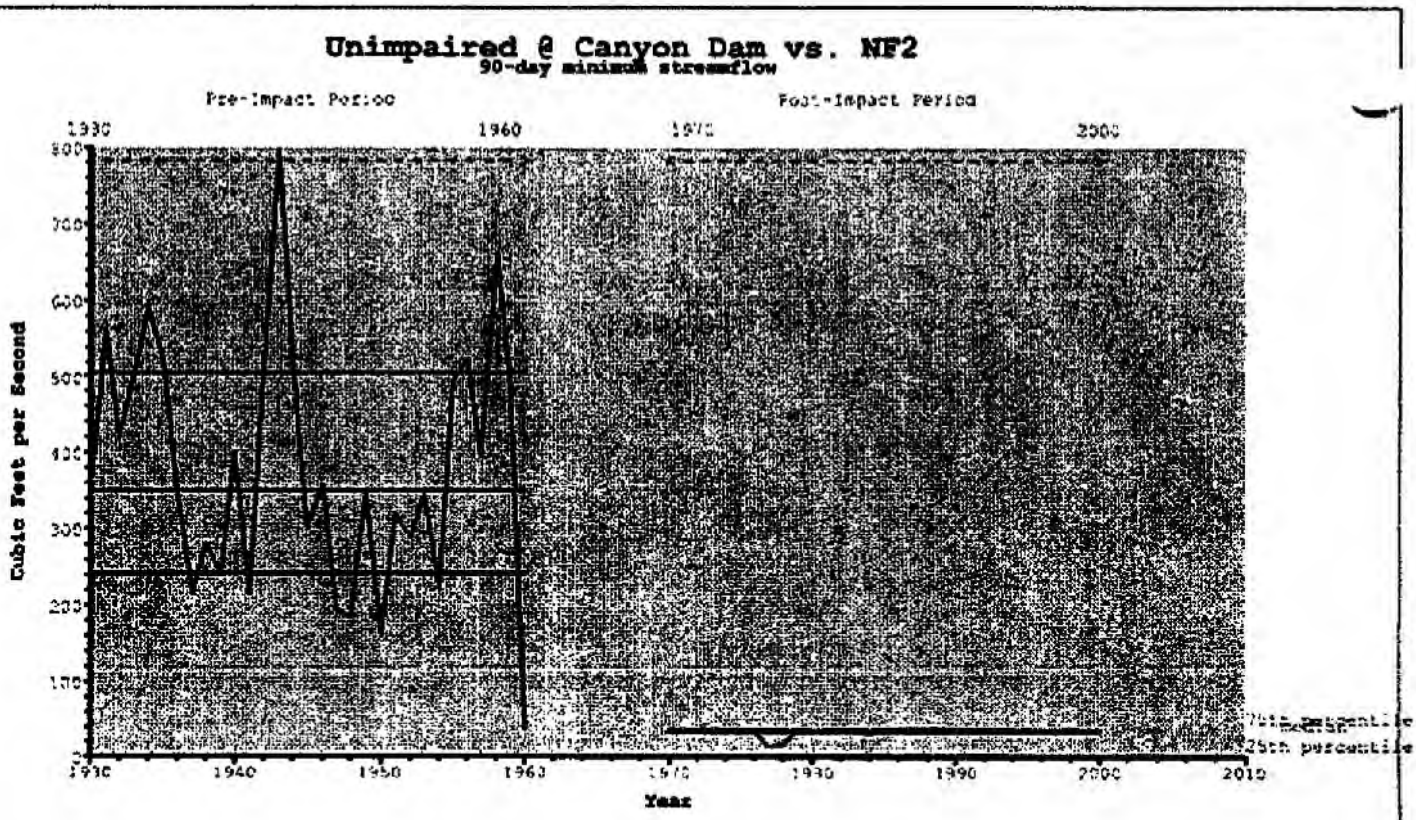

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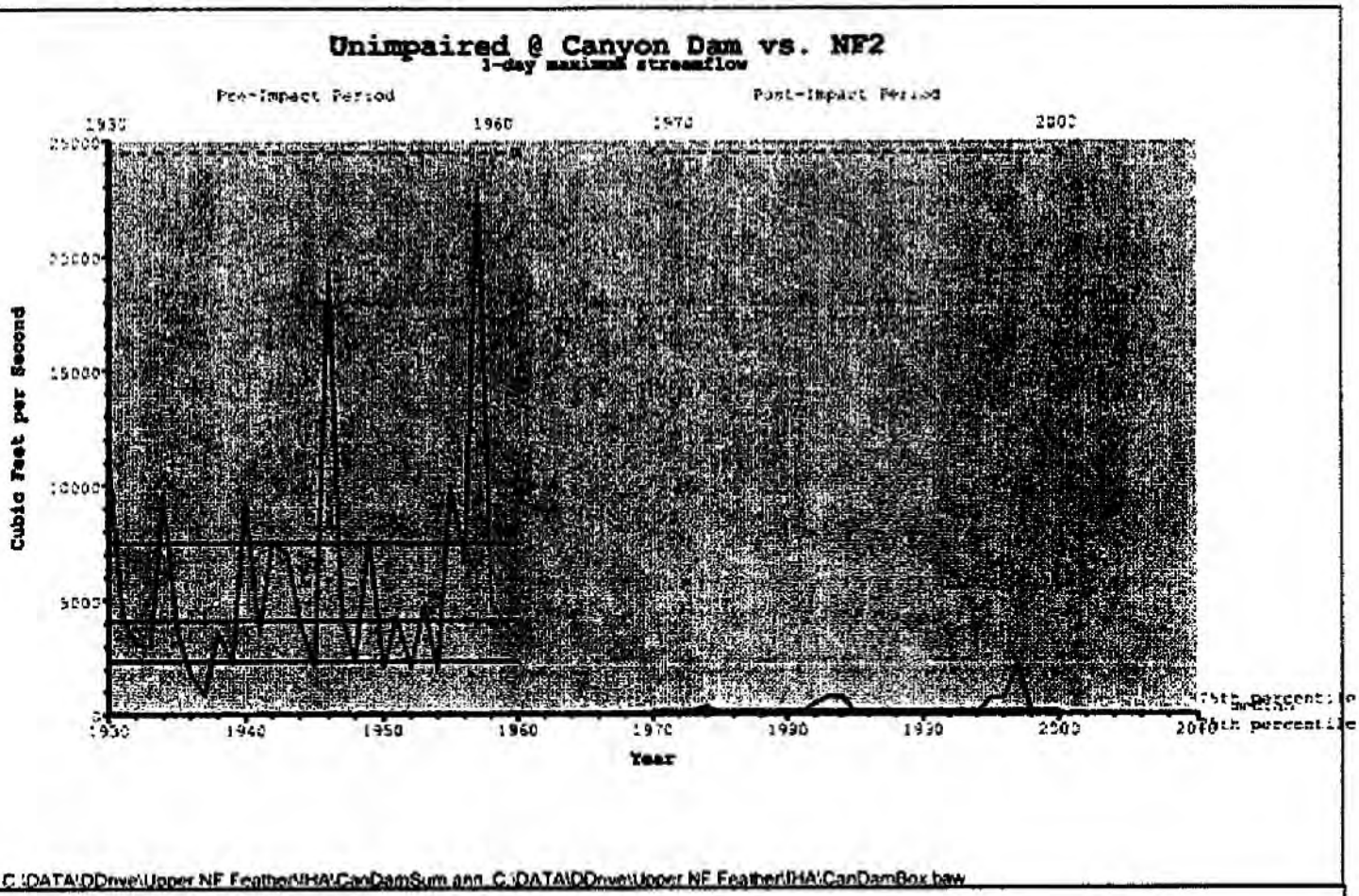

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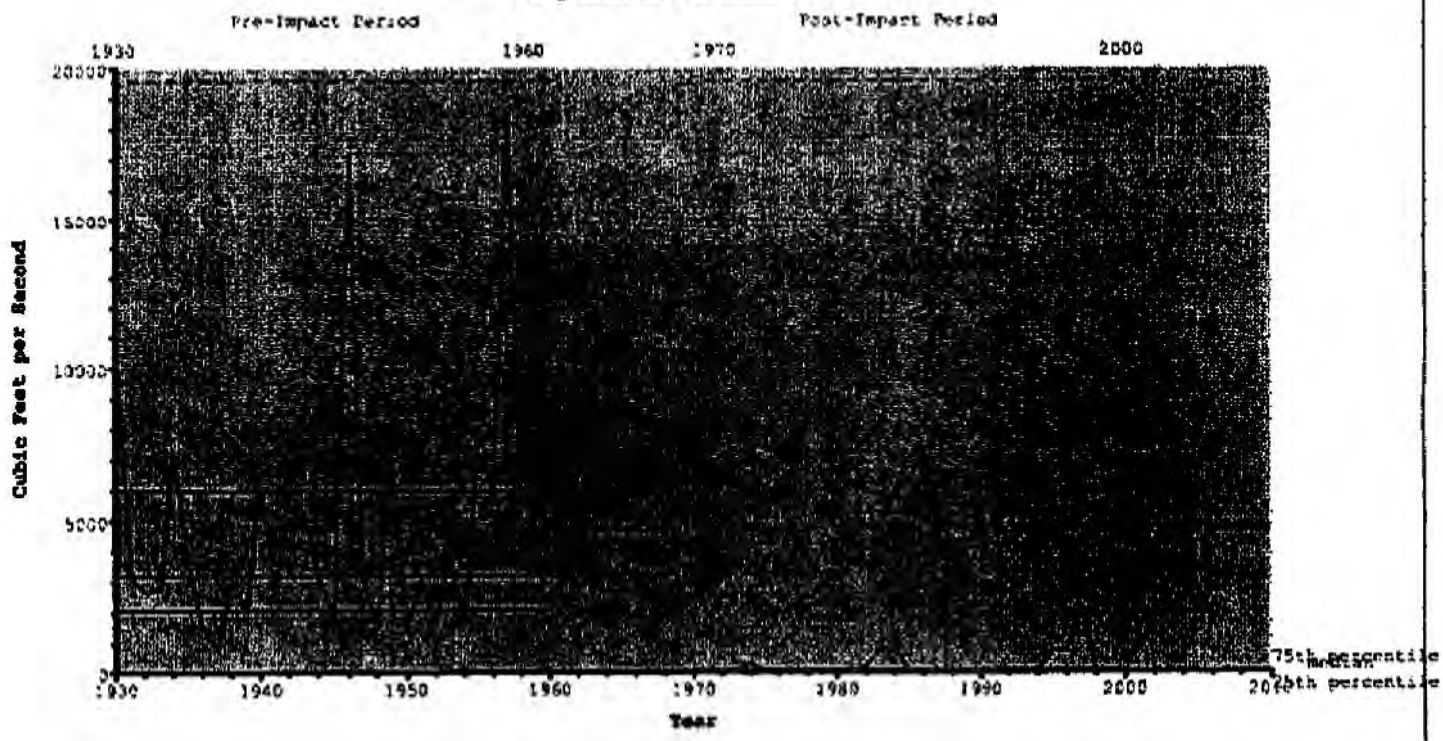

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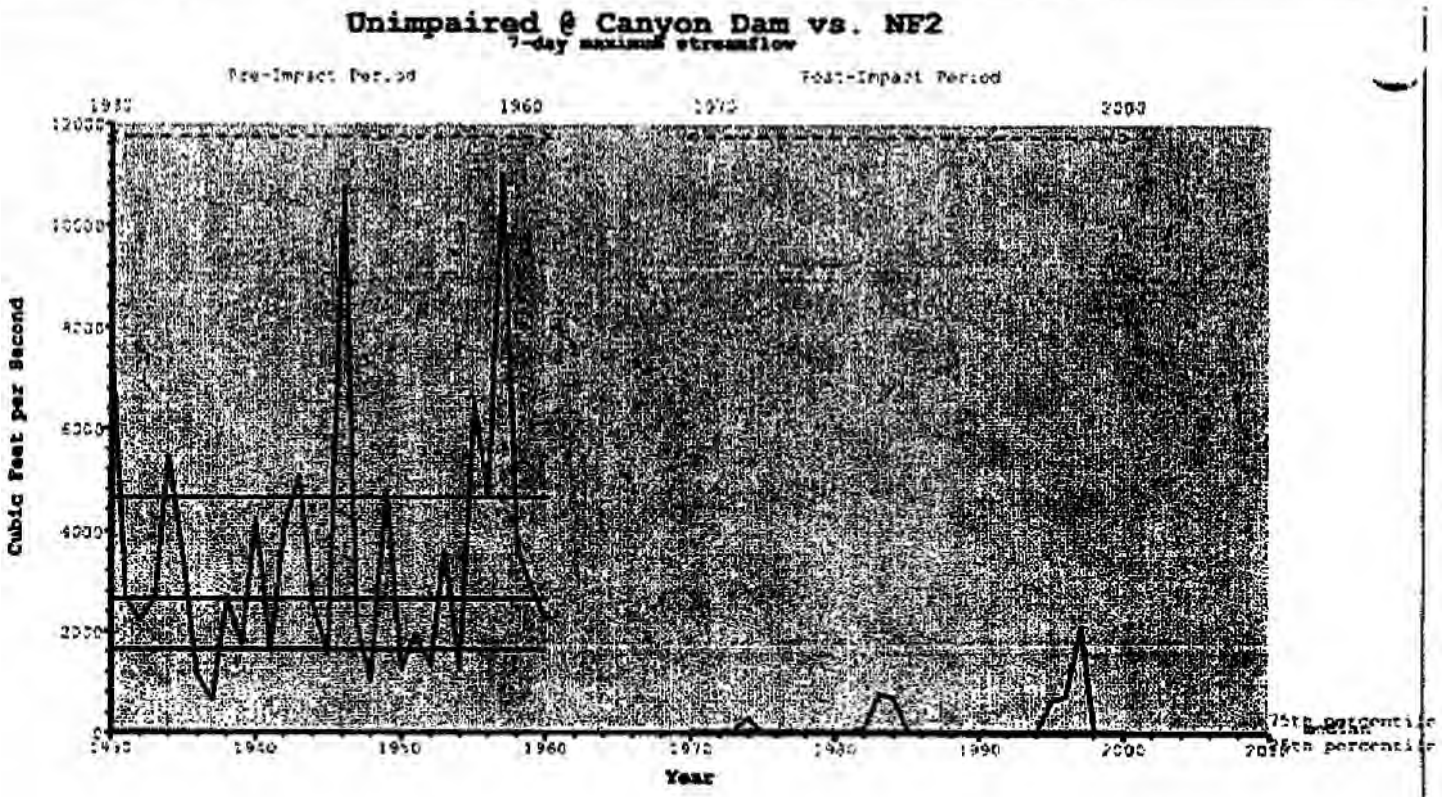

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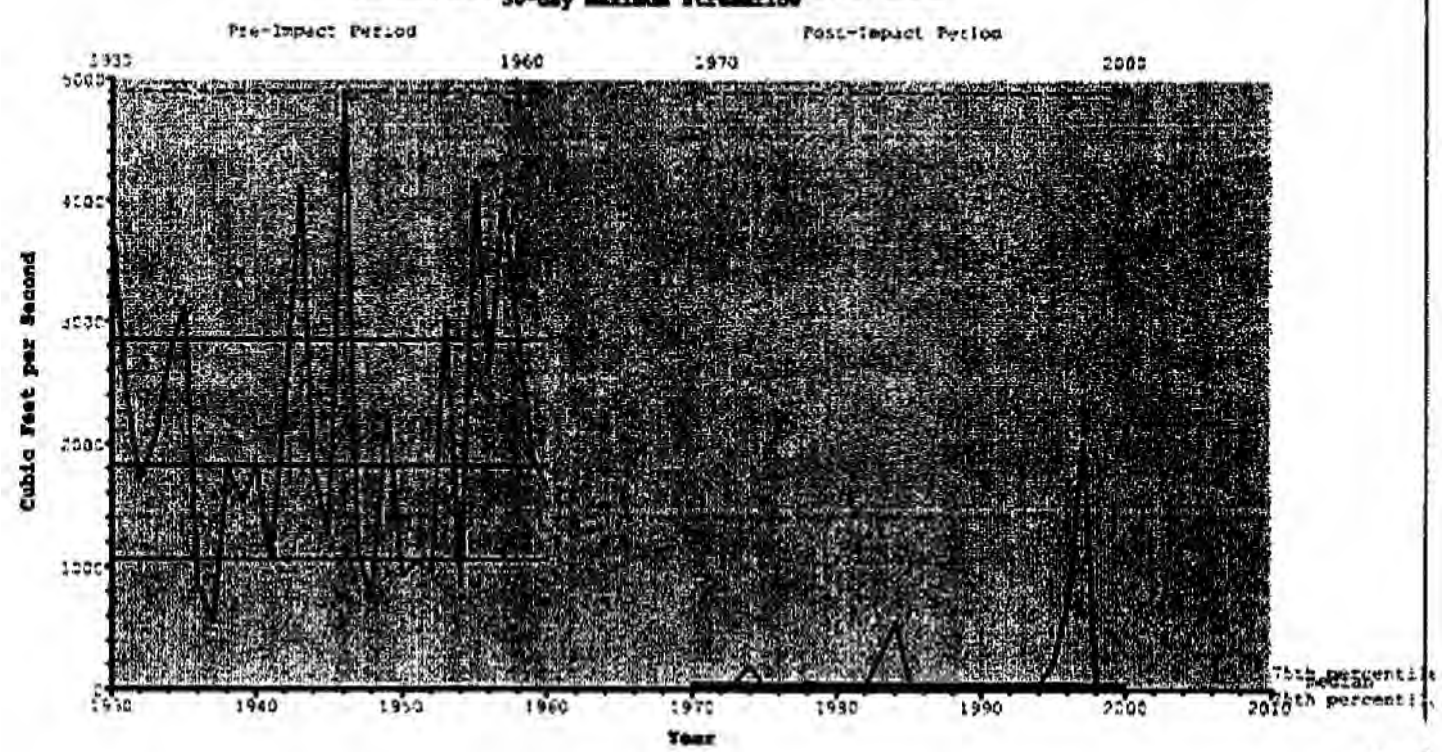

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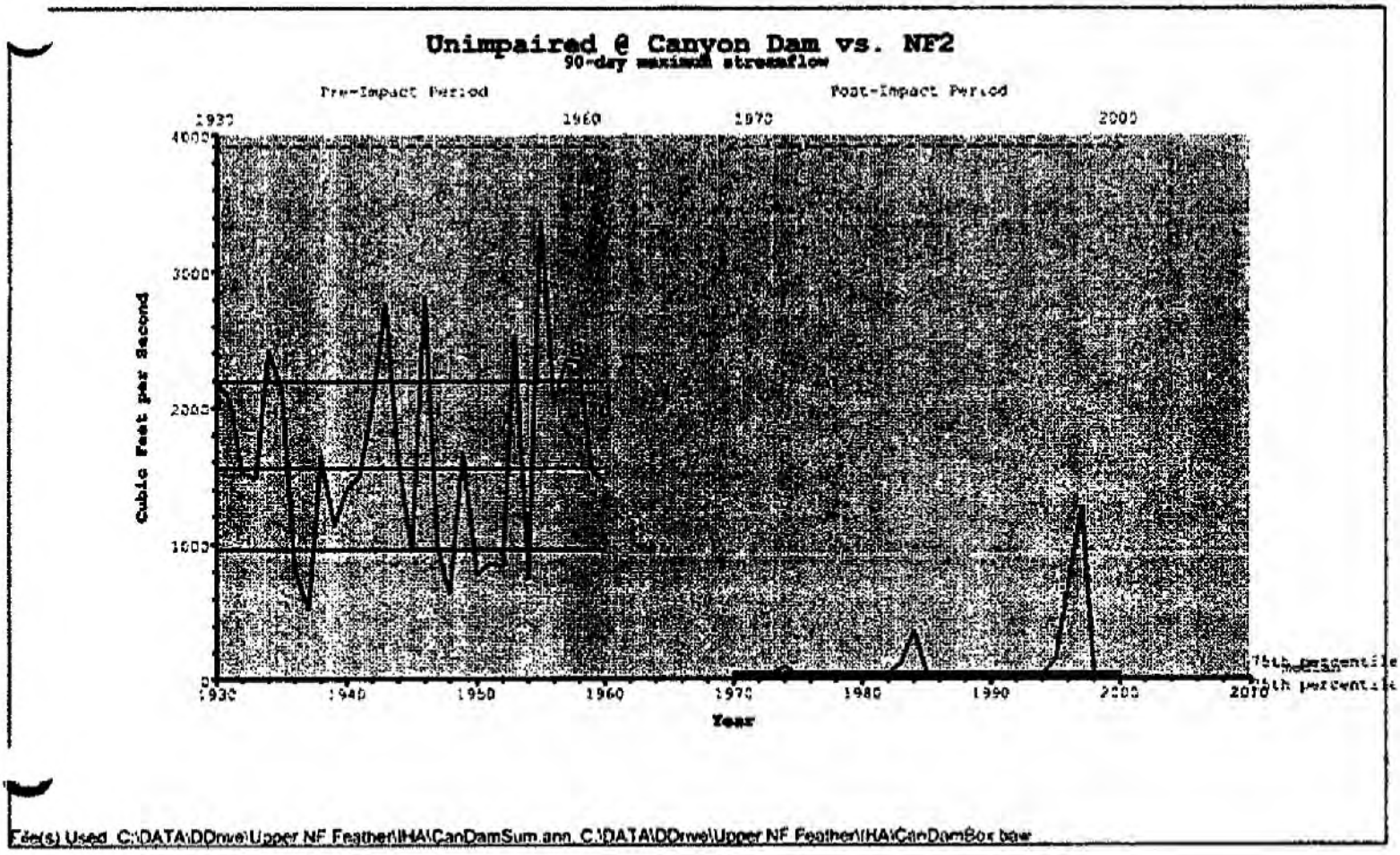
Unimpaired @ Canyon Dam vs. NF2
90-day maximum streamflow
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
4000
3000
2000
1000
0
Cubic Feet per Second
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
median
10th percentile
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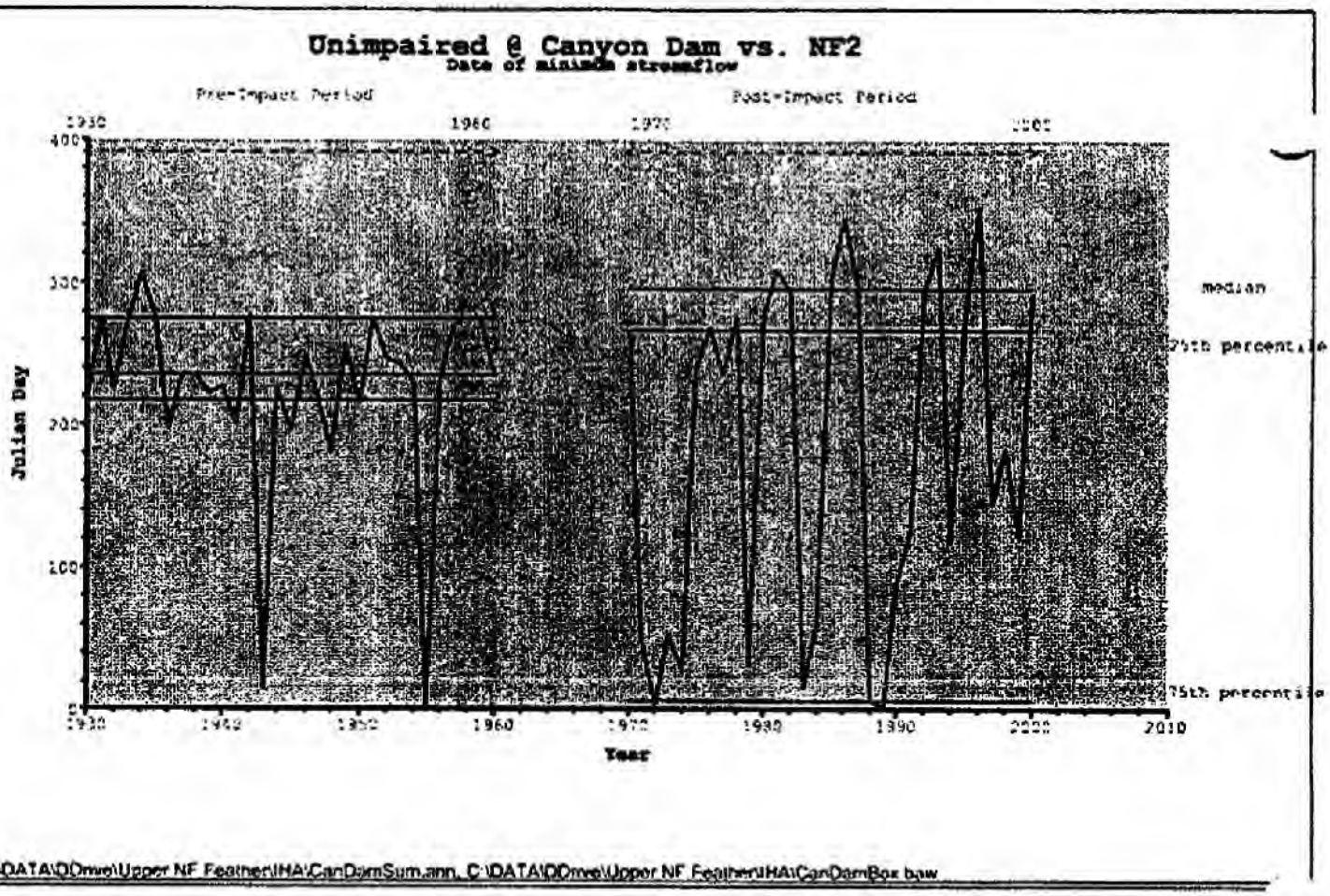

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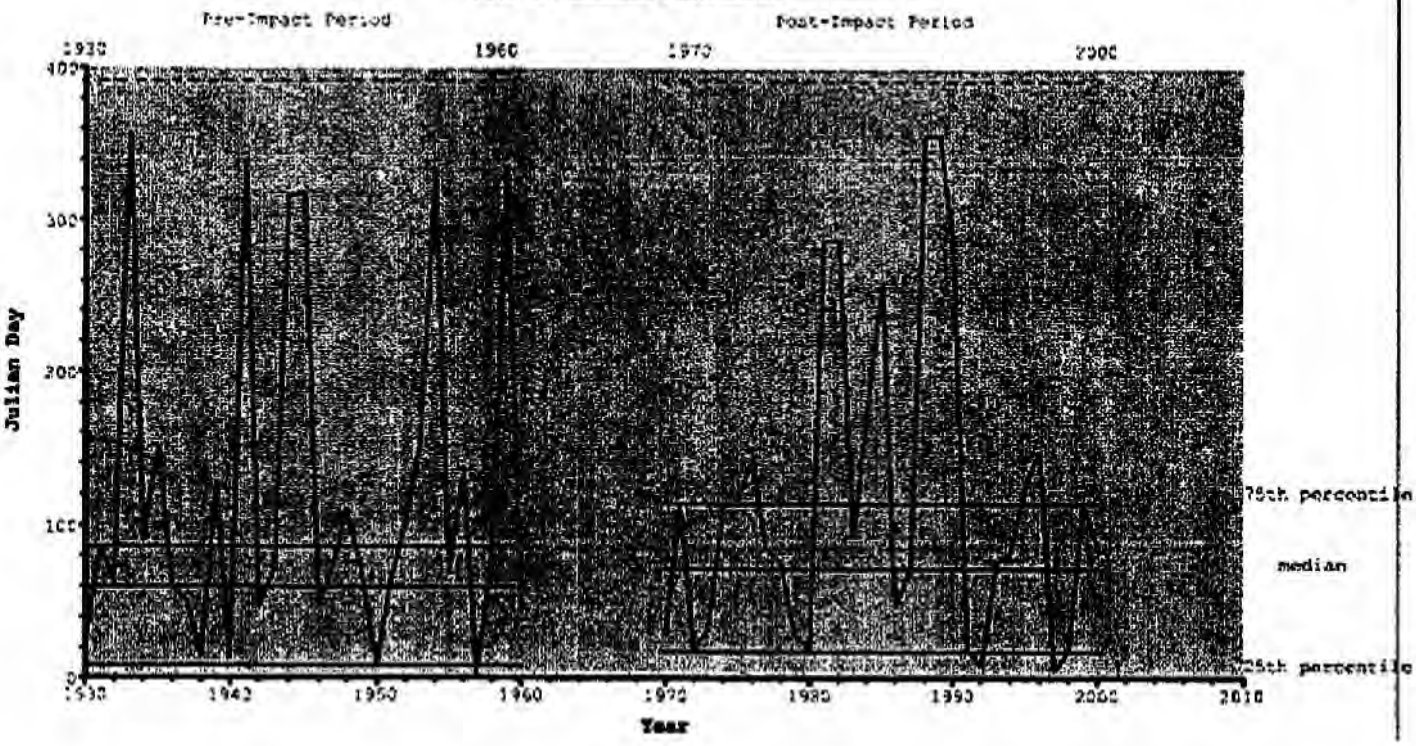

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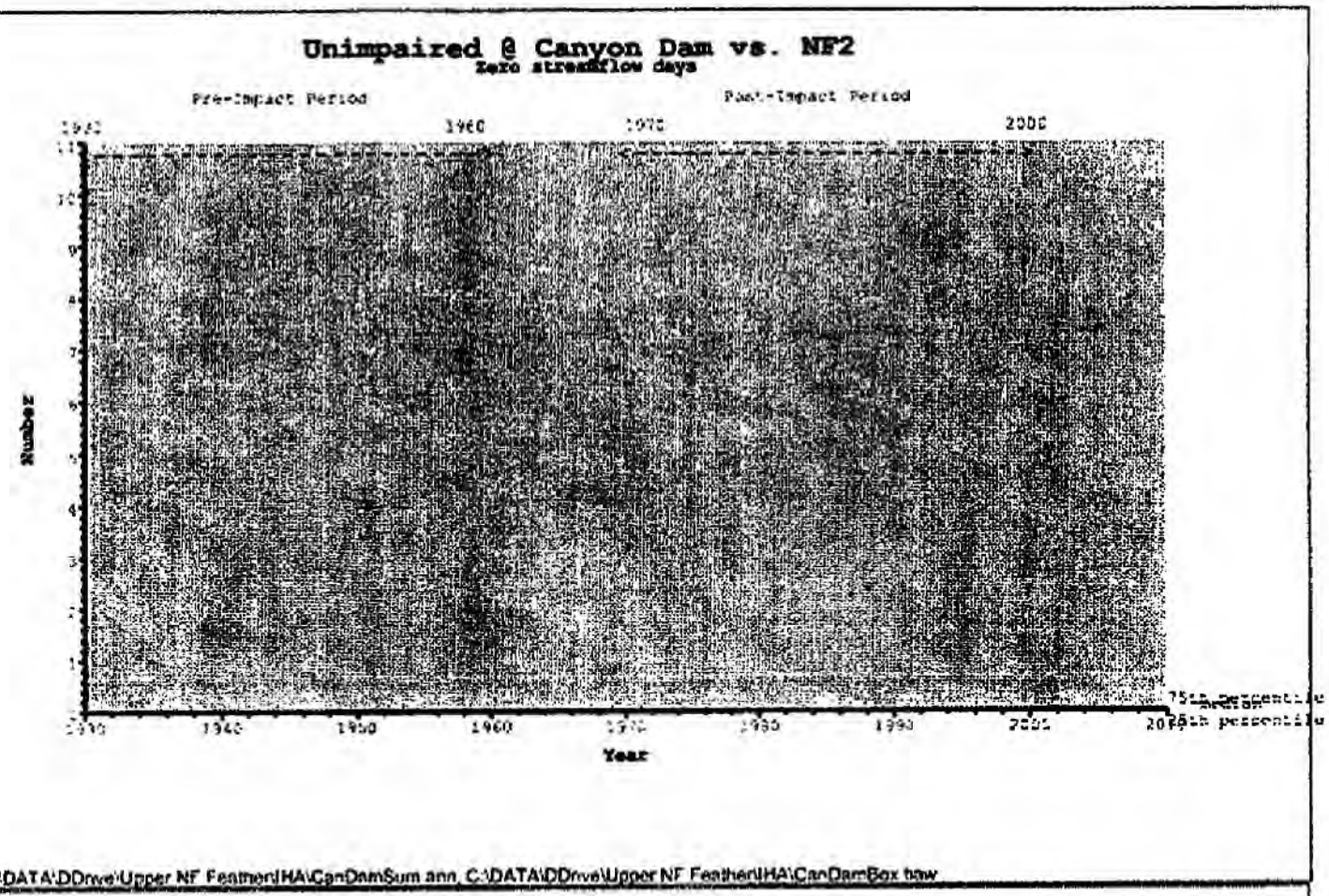

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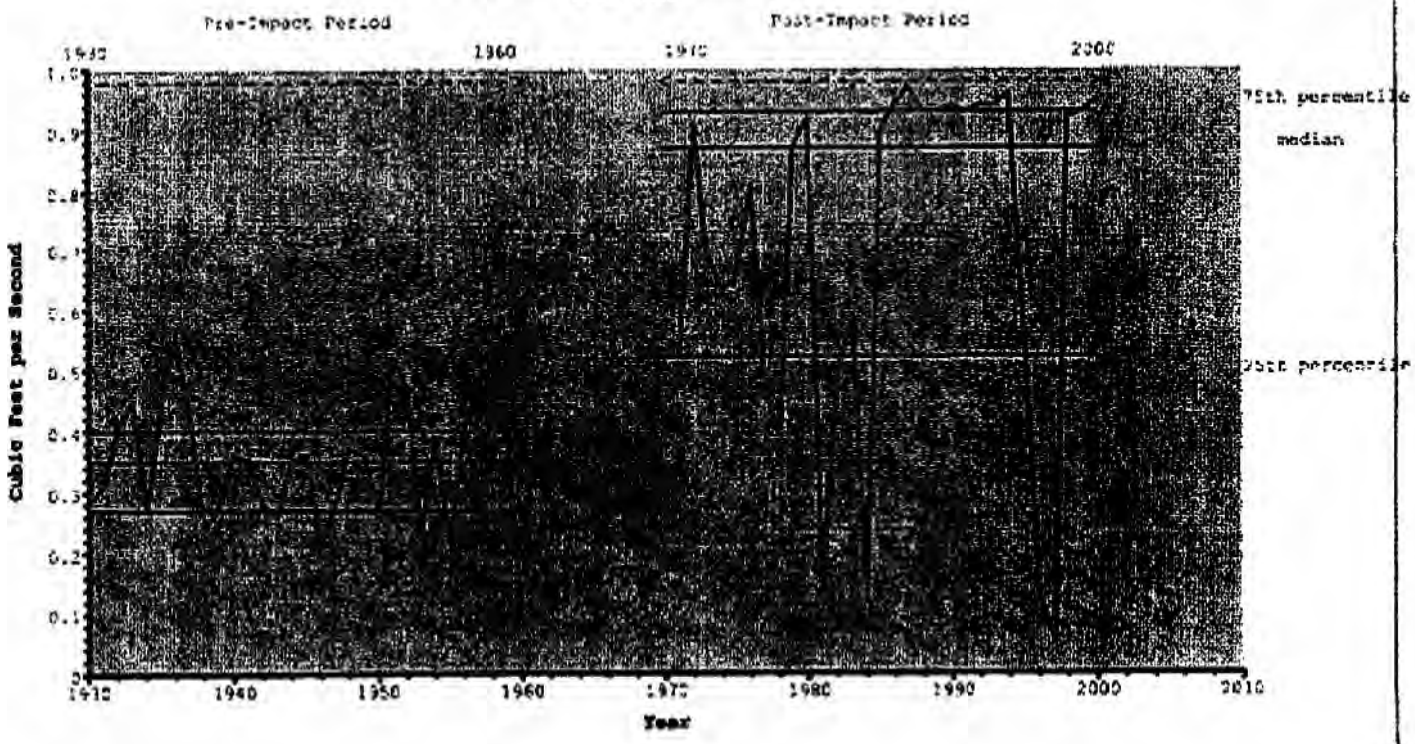

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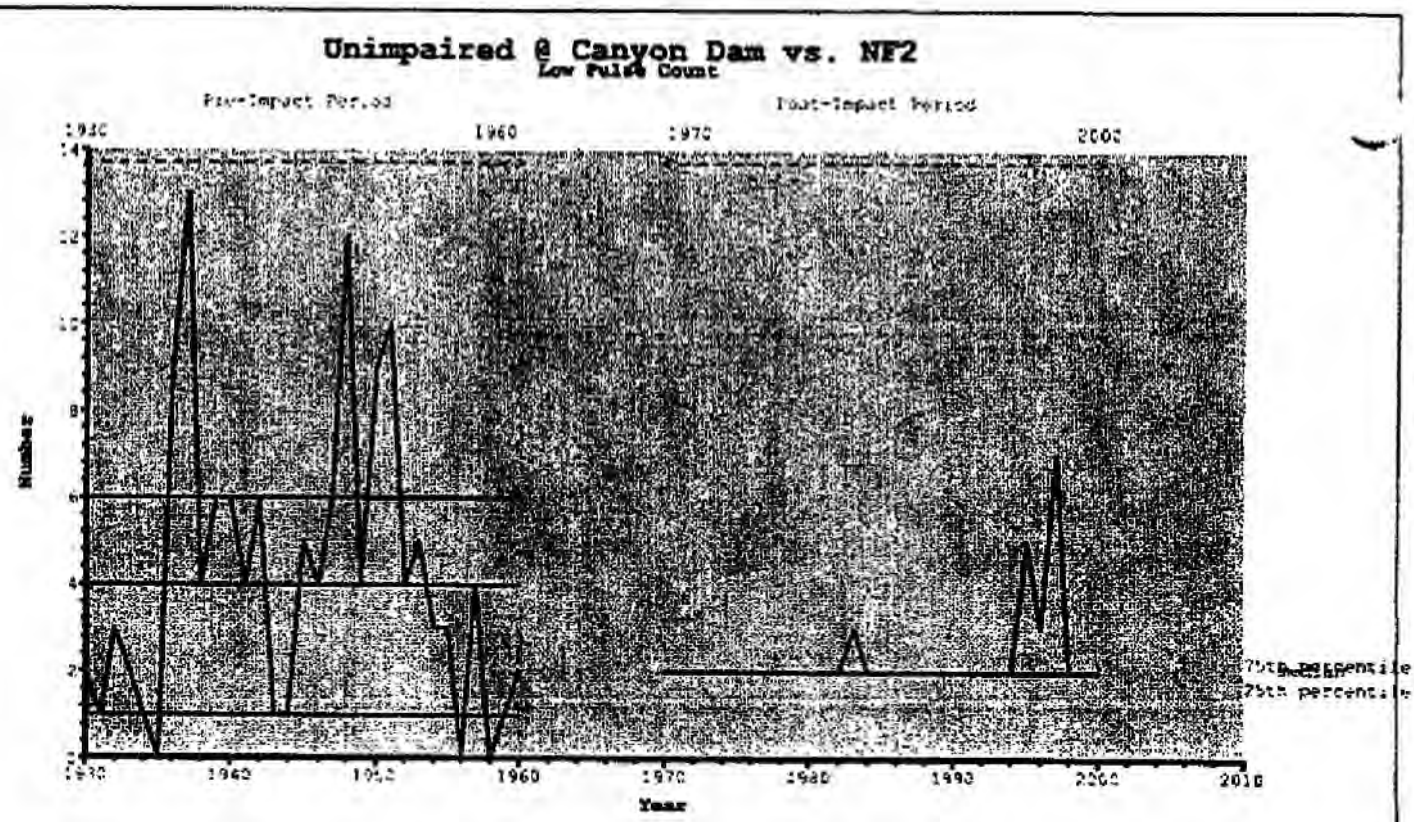

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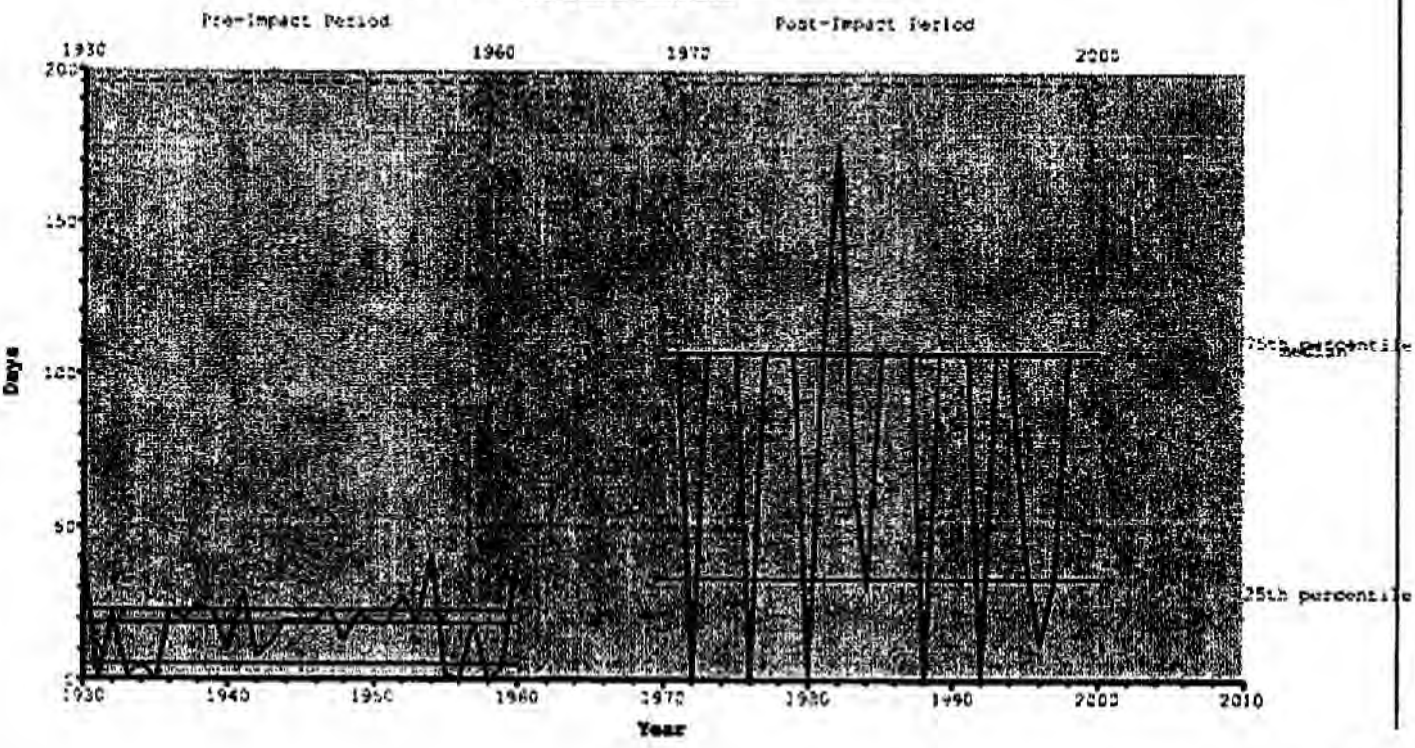

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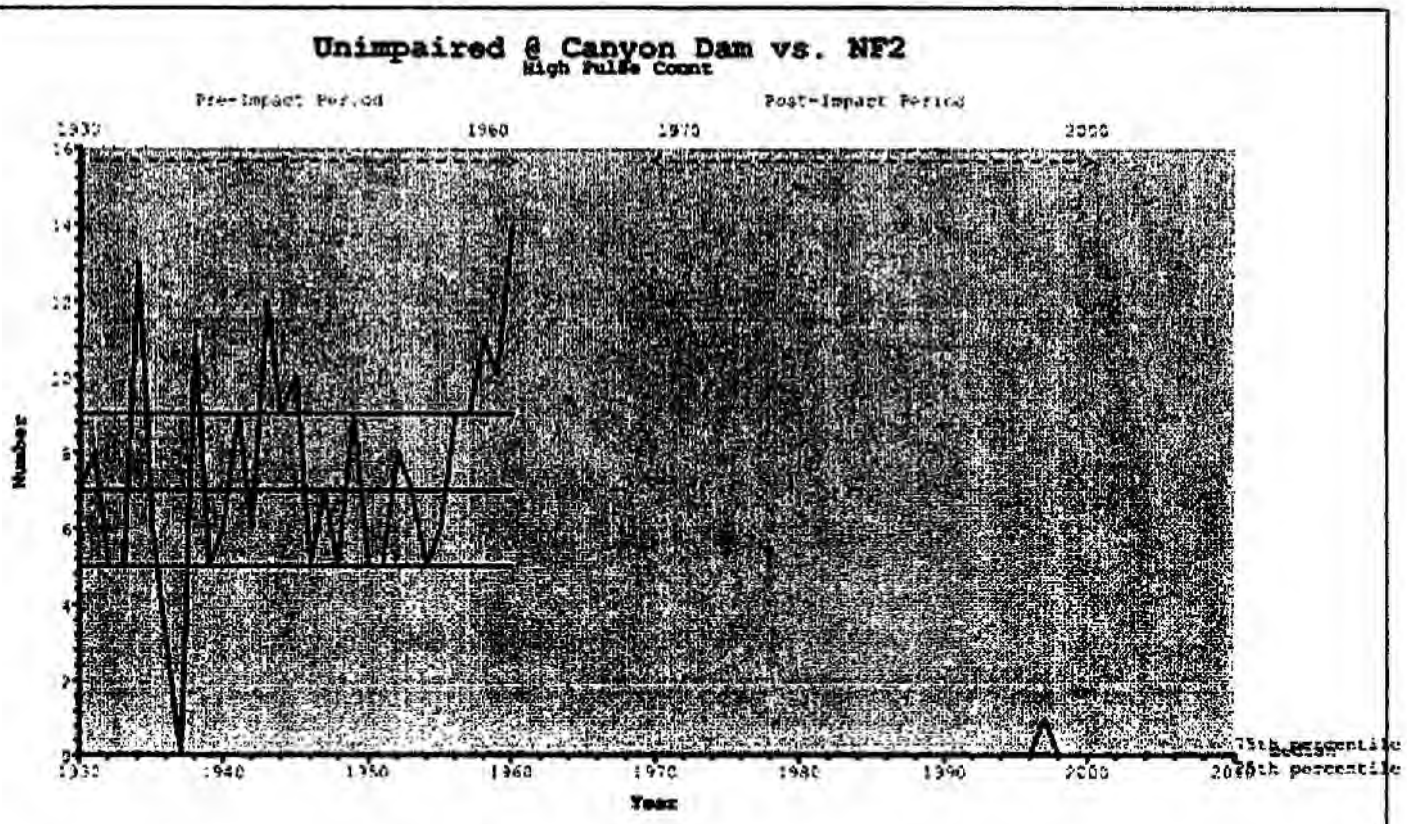

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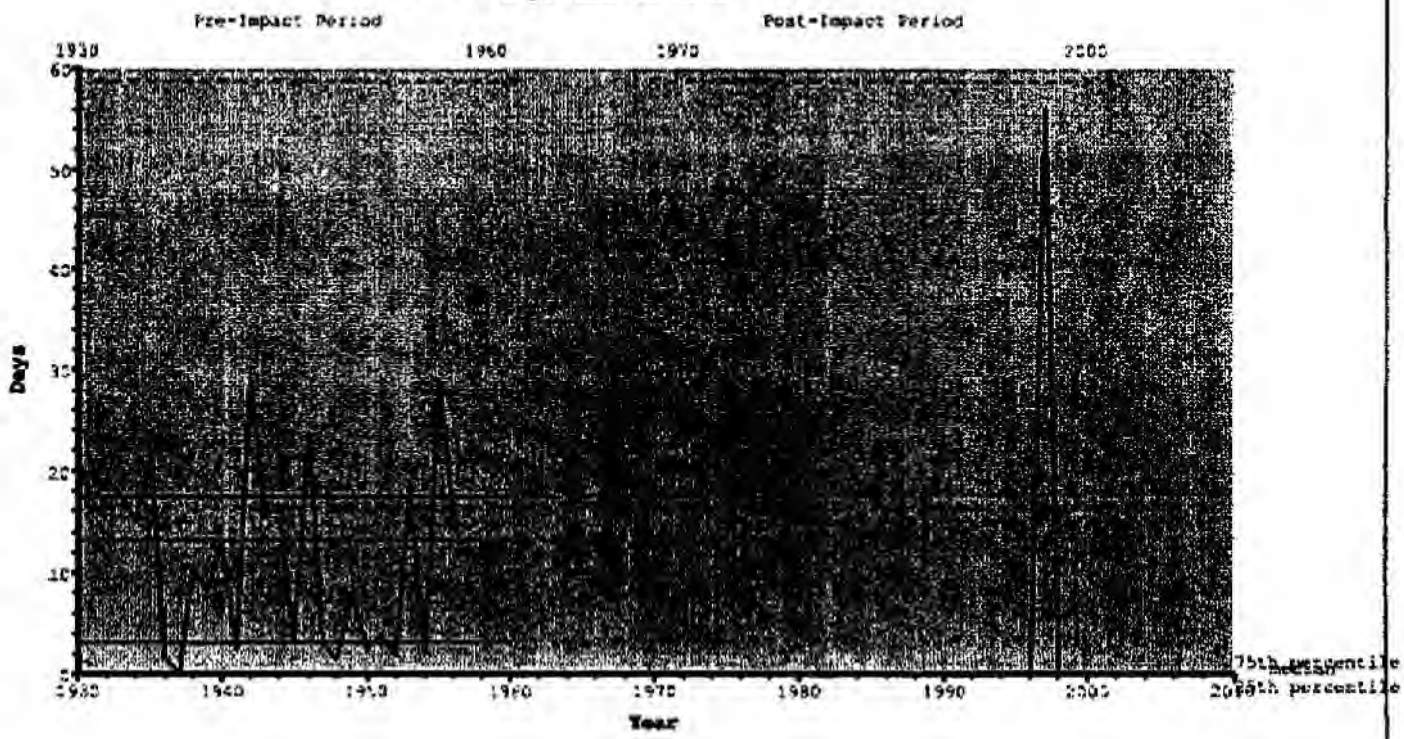

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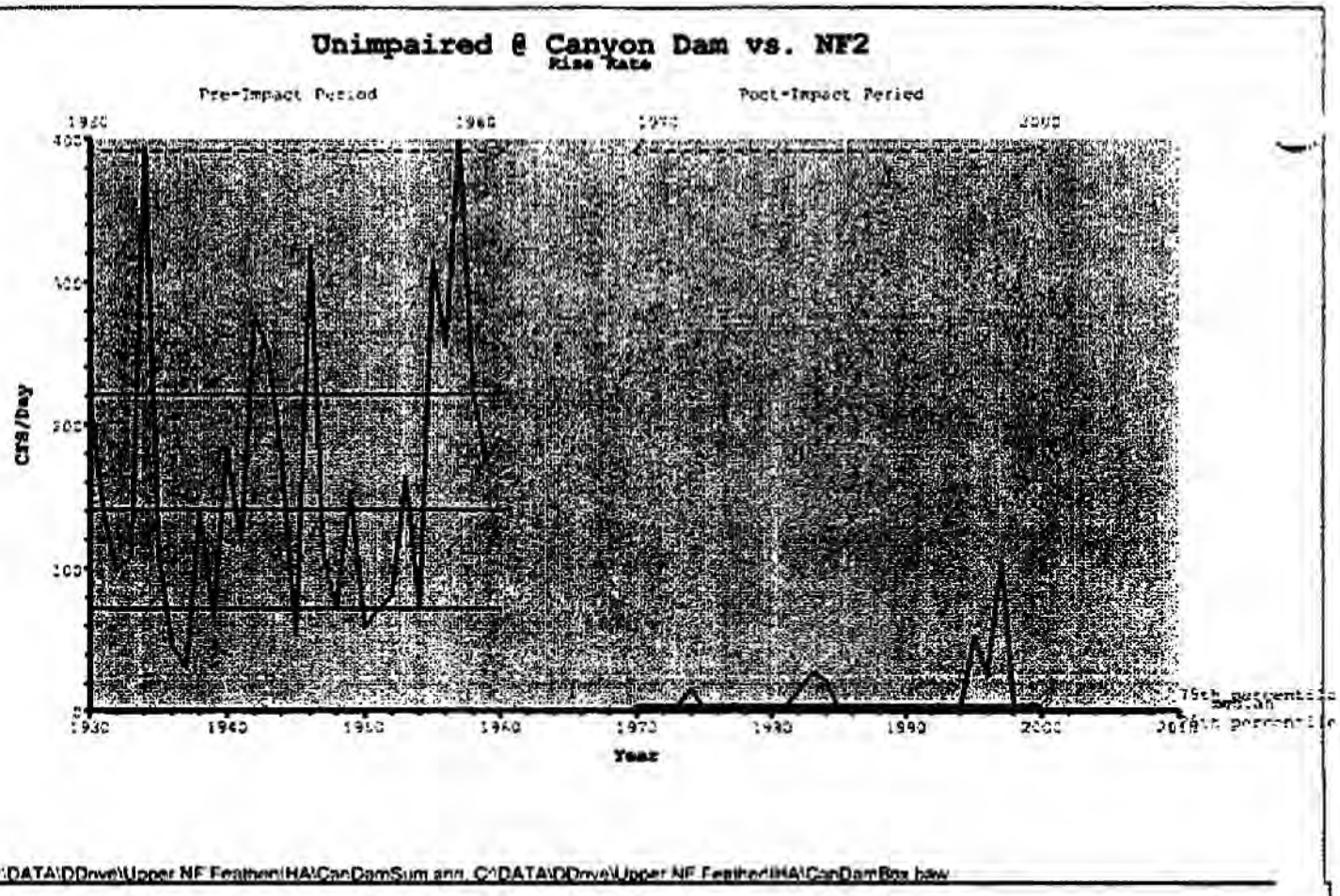

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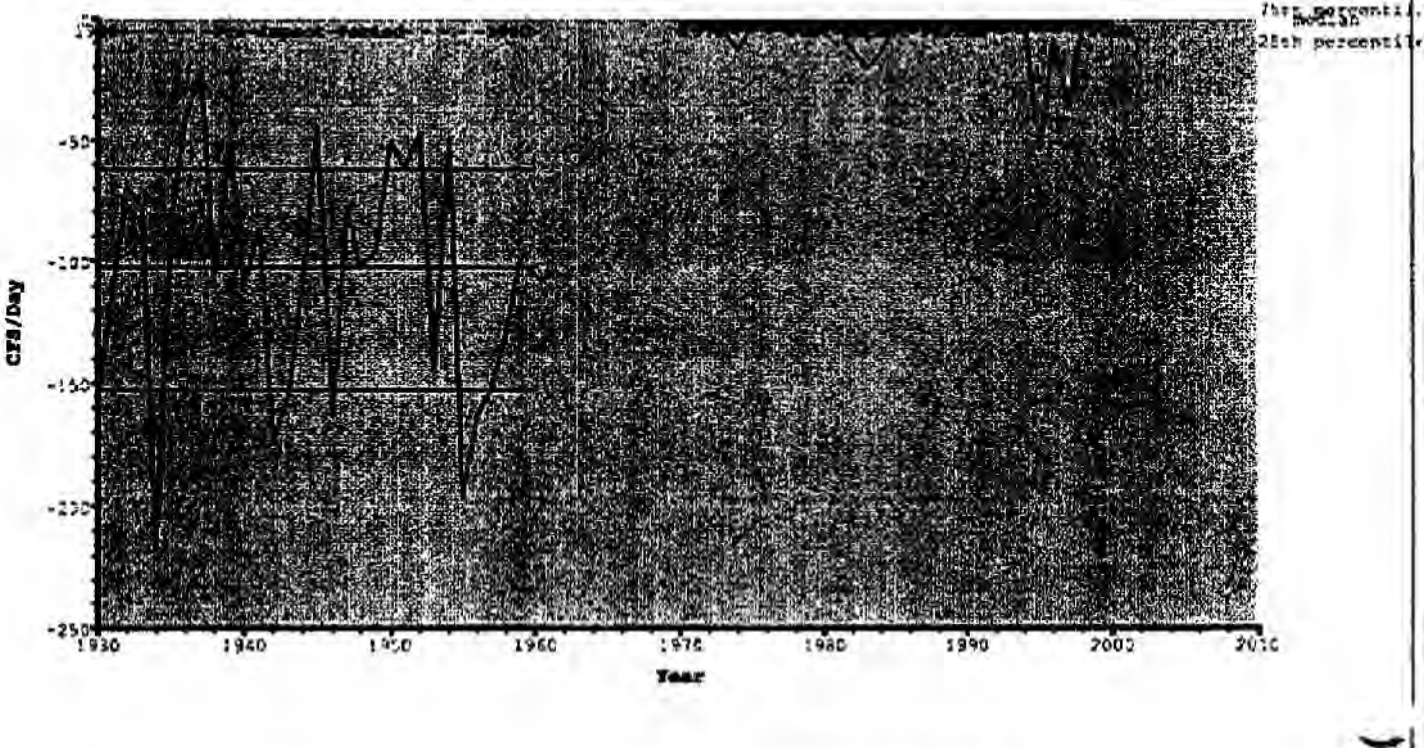

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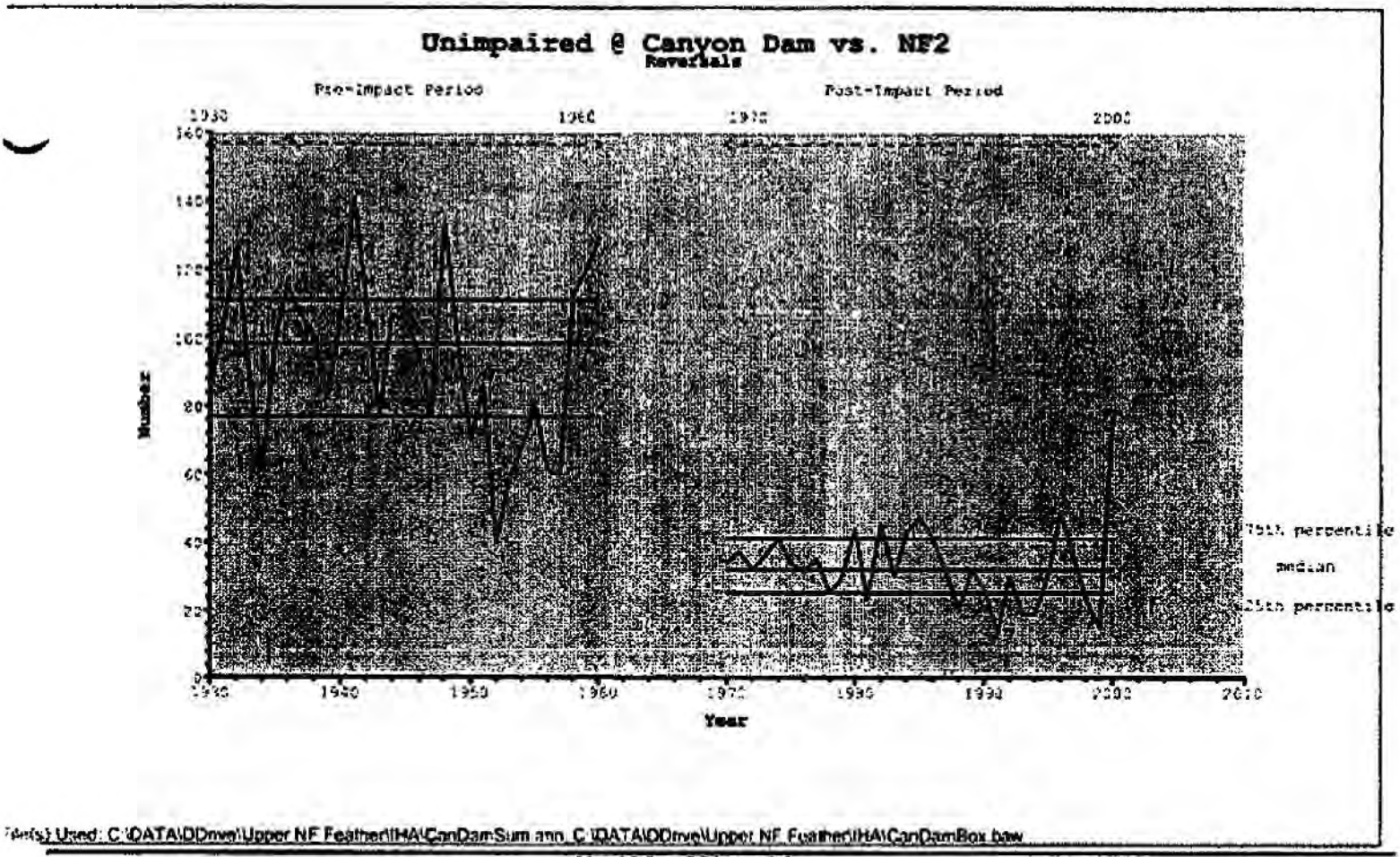

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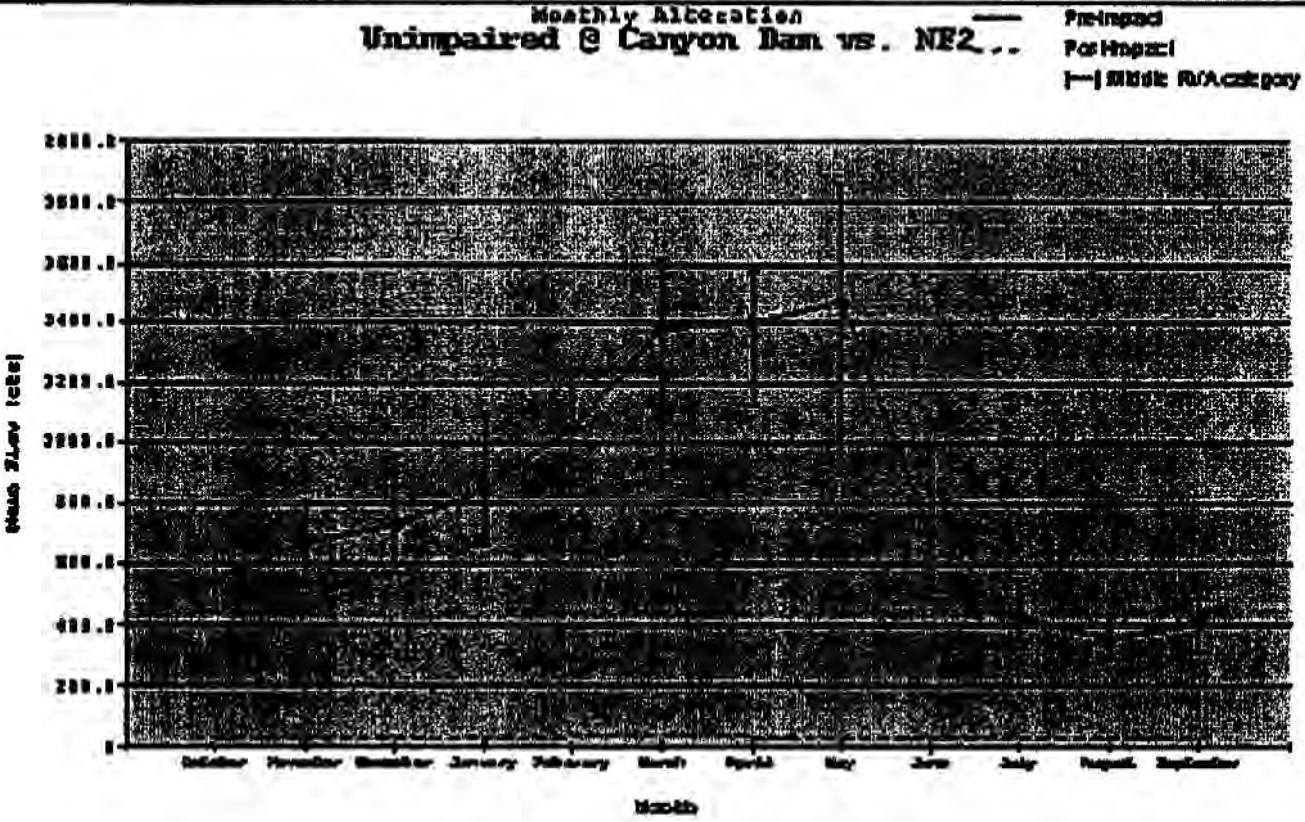


File(s) Used: C:\DATA\DDrive\Upper NF Feather\IHA\CanDam.mta

Non-Par ametric IHA Scorecard

Unimpair ed @ Canyon Dam vs. NF2

Pre-impact perio d: 1930-1960 (31 years) Post-i mpact peri od: 1970-20 00 (31 years)

Watershed area	1	
Mean annual flow	899.56	87.13
Mean flow/area	899.56	87.13
Annual C. V.	0.53	0.01
Flow predictability	0.54	0.87
Constancy/predictabili ty	0.76	0.96
% of floods in 60d per iod	0.38	0.38
flood-free season	45	310

	MEDIANS		COEFF. of DISP.		DEVIATI ON FACTOR		SIGNIFICANCE COUNT	
	Pre	Post	Pre	Post	Medians	C.V.	Medians	C.V.
Parameter	Group #1							
October	546	36	0.5	0.05	0.93	0.9	0.36	0.46
November	674	36	0.59	0.06	0.95	0.91	0.36	0.56
December	725	36	0.75	0.04	0.95	0.95	0.46	0.54
January	846	36	0.76	0.06	0.96	0.92	0.36	0.54
February	1050	37	0.75	0.08	0.96	0.89	0.36	0.64
March	1377	37	0.68	0.05	0.97	0.93	0.46	0.68
April	1396	37	0.61	0.07	0.97	0.89	0.42	0.73
May	1471	37	1.09	0.1	0.98	0.91	0.36	0.53
June	707	37	1.32	0.09	0.95	0.93	0.19	0.29
July	430	37	0.84	0.04	0.91	0.95	0.27	0.36
August	354	36	0.73	0.06	0.90	0.92	0.26	0.37
September	407	36	0.61	0.06	0.91	0.9	0.36	0.45
Parameter	Group #2							
1-day minimum	305	33	0.5	0.61	0.89	0.22	0.46	1
3-day minimum	281	33	0.56	0.61	0.88	0.08	0.46	1
7-day minimum	284.3	34	0.68	0.35	0.88	0.49	0.46	0.97
30-day minimum	303.3	34	0.8	0.1	0.89	0.88	0.36	0.46
90-day minimum	350.9	35	0.75	0.06	0.90	0.92	0.36	0.46
1-day maximum	4127	57	1.24	1.67	0.99	0.35	0.48	0.96
3-day maximum	3200	47	1.21	0.97	0.99	0.2	0.29	0.95
7-day maximum	2636.4	46	1.14	0.76	0.98	0.33	0.16	0.63
30-day maximum	1819.8	41	0.98	0.42	0.98	0.57	0.19	0.47
90-day maximum	1547.7	39	0.8	0.16	0.97	0.8	0.25	0.48
Number of zero days	0	0	0	0	999999	999999	0	0
Base flow	0.4	0.9	0.37	0.47	1.45	0.3	0	0.5
Parameter	Group #3							
Date of minimum	235	296	0.16	0.29	0.33	0.86	0	0.21
Date of maximum	60	72	0.21	0.27	0.07	0.24	0.77	0.44
Parameter	Group #4							
Low pulse count	4	2	1.25	0	0.5	1	0	0.09
Low pulse duration	19	107	0.94	0.69	4.63	0.27	0	0.54
High pulse count	7	0	0.57	0	1	1	0	0
High pulse duration	13.2	0	1.09	0	1	1	0	0
The low pulse thresho ld is	436							
The high pulse level is	1146							
Parameter	Group #5							
Rise rate	141.2	2.2	1.06	1.29	0.98	0.22	0.28	0.88
Fall rate	-102.6	-2.3	-0.88	-1.2	0.98	0.36	0.35	0.81
Number of reversals	98	32	0.35	0.5	0.67	0.44	0.05	0.2

IHA Percentile Data

Unimpaired @ Canyon Dam vs. NF-2

Pre-im pact pe riod: 1930 -1960 (31 years) Post-impa ct peri od: 1970 -2000 (31 yars)

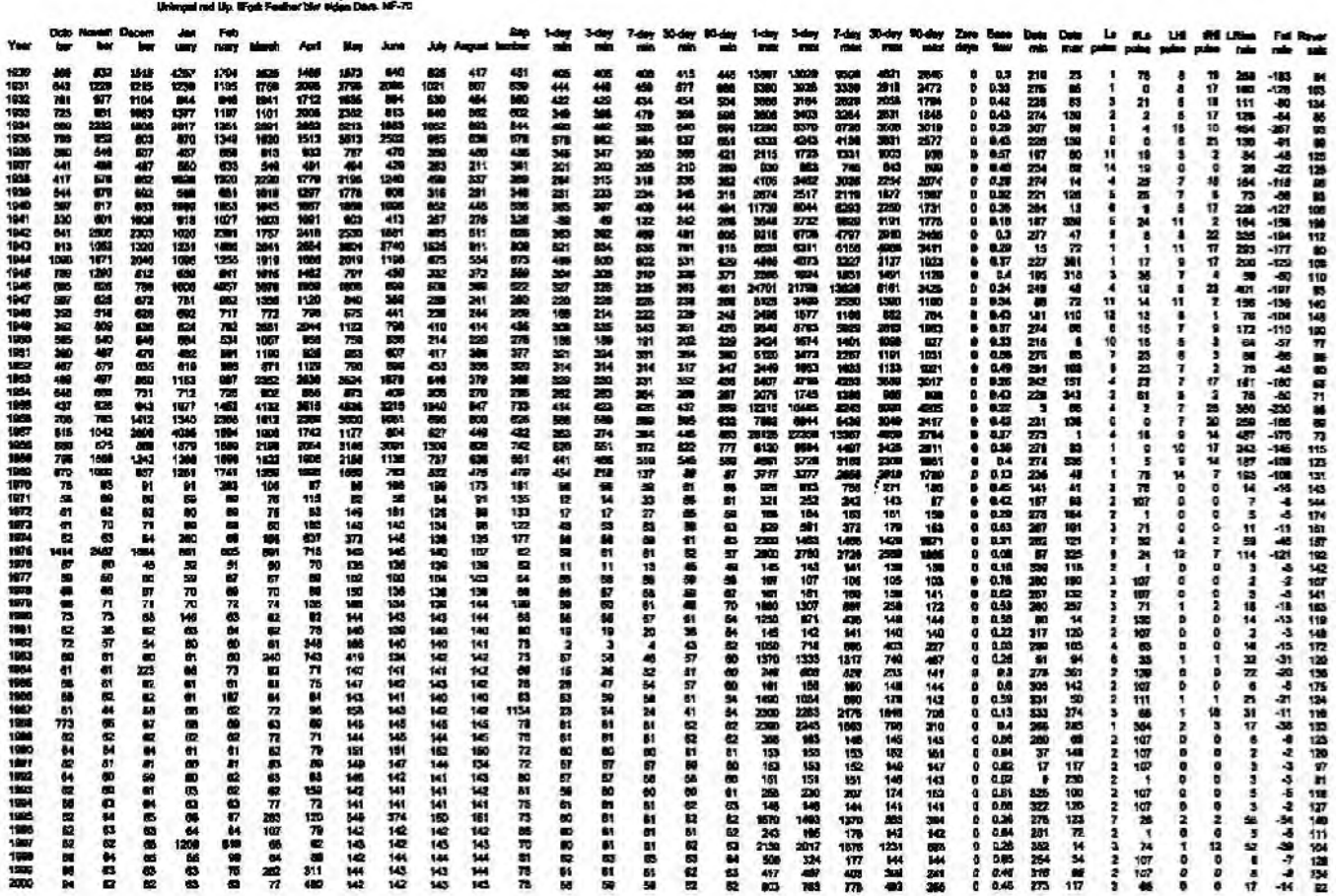
		Pre-Im pact						Post-Imp act				
	10%	25%	50%	75%	90%	(75-25)/50	10%	25%	50%	75%	90%	(75-25)/50
Parameter	Group #1											
October	327	405	546	679	743	0.50	34	35	36	37	39	0.05
November	415	505	673	900	1569	0.59	32	35	36	37	38	0.06
December	415	541	725	1088	1613	0.75	35	36	36	37	39	0.04
January	468	572	846	1217	2241	0.76	35	36	36	38	41	0.06
February	534	673	1050	1464	1890	0.75	34	36	37	39	52	0.08
March	708	831	1377	1765	2460	0.68	35	36	37	38	45	0.05
April	716	893	1396	1750	2019	0.61	35	36	37	38	42	0.07
May	625	748	1471	2358	2868	1.09	35	35	37	39	111	0.10
June	340	474	707	1407	2547	1.32	35	36	37	39	183	0.09
July	212	260	430	622	1117	0.84	35	36	37	38	42	0.04
August	170	235	354	491	666	0.73	34	36	36	38	42	0.06
September	214	278	407	526	614	0.61	33	35	36	37	39	0.06
Parameter	Group #2											
1-day minimum	150	209	305	361	430	0.5	6	14	33	34	35	0.61
3-day minimum	150	205	281	363	453	0.56	6	14	33	34	35	0.61
7-day minimum	153	208	284	401	472	0.68	14	23	34	34	35	0.35
30-day minimum	160	211	303	454	536	0.8	20	32	34	35	36	0.1
90-day minimum	185	243	351	504	583	0.75	30	34	35	36	36	0.06
1-day maximum	1985	2356	4127	7470	11016	1.24	38	41	57	136	744	1.67
3-day maximum	1475	2091	3200	5977	10077	1.21	38	41	47	87	729	0.97
7-day maximum	1150	1641	2636	4655	7502	1.14	38	39	46	74	719	0.76
30-day maximum	843	1057	1820	2848	4104	0.98	38	39	41	56	503	0.42
90-day maximum	757	956	1548	2192	2715	0.8	37	38	39	44	311	0.16
Number of zero days	0	0	0	0	0	0	0	0	0	0	0	0
Base flow	0.22	0.27	0.35	0.4	0.47	0.37	0.14	0.52	0.87	0.93	0.95	0.47
Parameter	Group #3											
Date of minimum	184	217	235	274	275	1	30	266	296	6	53	0.29
Date of maximum	334	8	60	86	138	3	1	17	72	114	147	0.27
Parameter	Group #4											
Low pulse count	0	1	4	6	9.8	1.25	2	2	2	2	3	0
Low pulse duration	0	5	19	22.8	37.8	0.94	1	33.6	107	107	107	0.69
High pulse count	5	5	7	9	11.8	0.57	0	0	0	0	0	0
High pulse duration	2	3	13.17	17.4	23.25	1.09	0	0	0	0	0	0
Parameter	Group #5											
Rise rate	54.7	72.2	141.2	221.4	322.8	1.06	1	1	2	4	27	1.29
Fall rate	-171.8	-152.5	-102.6	-62.0	-45.3	-0.88	-20	-4	-2	-1	-1	-1.2
Number of reversals	60	77	98	111	128	0.35	19	25	32	41	47	0.5

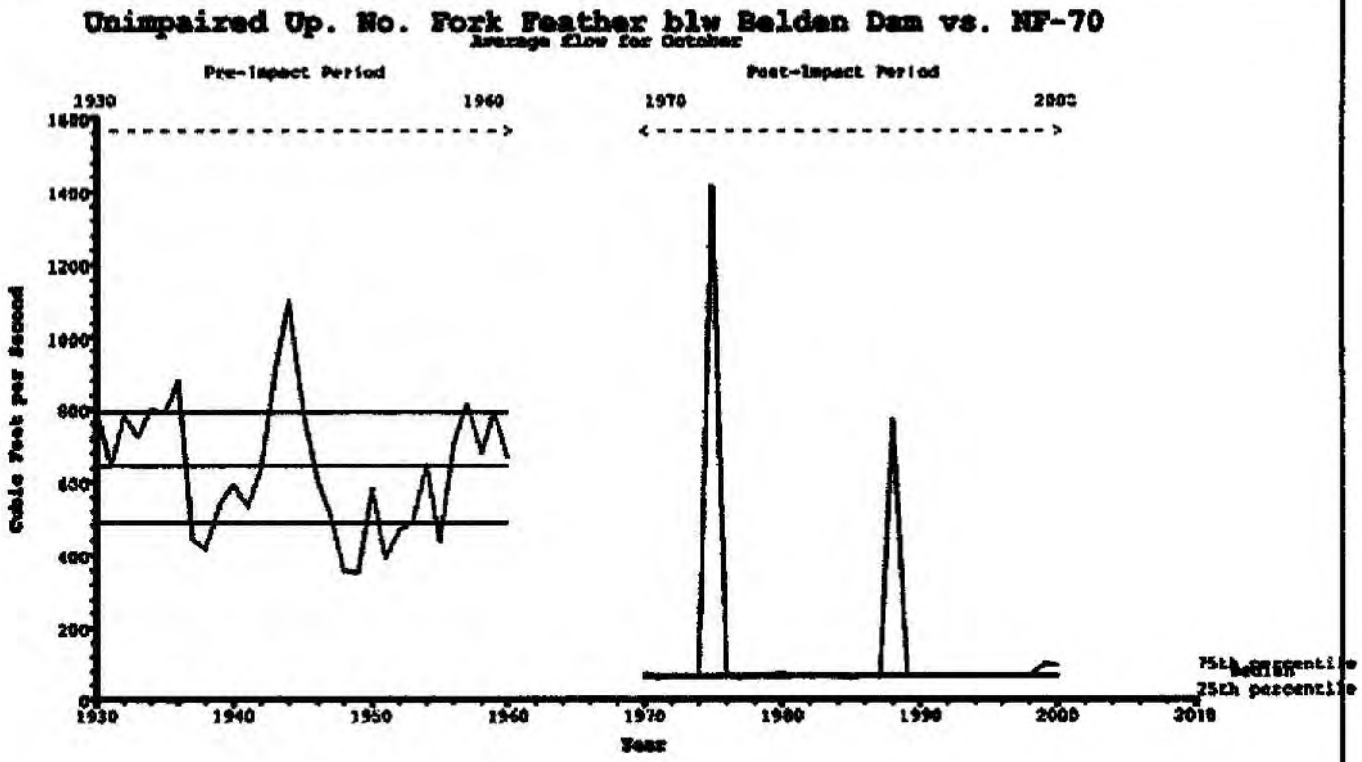
IHA Annual Summary Statistics

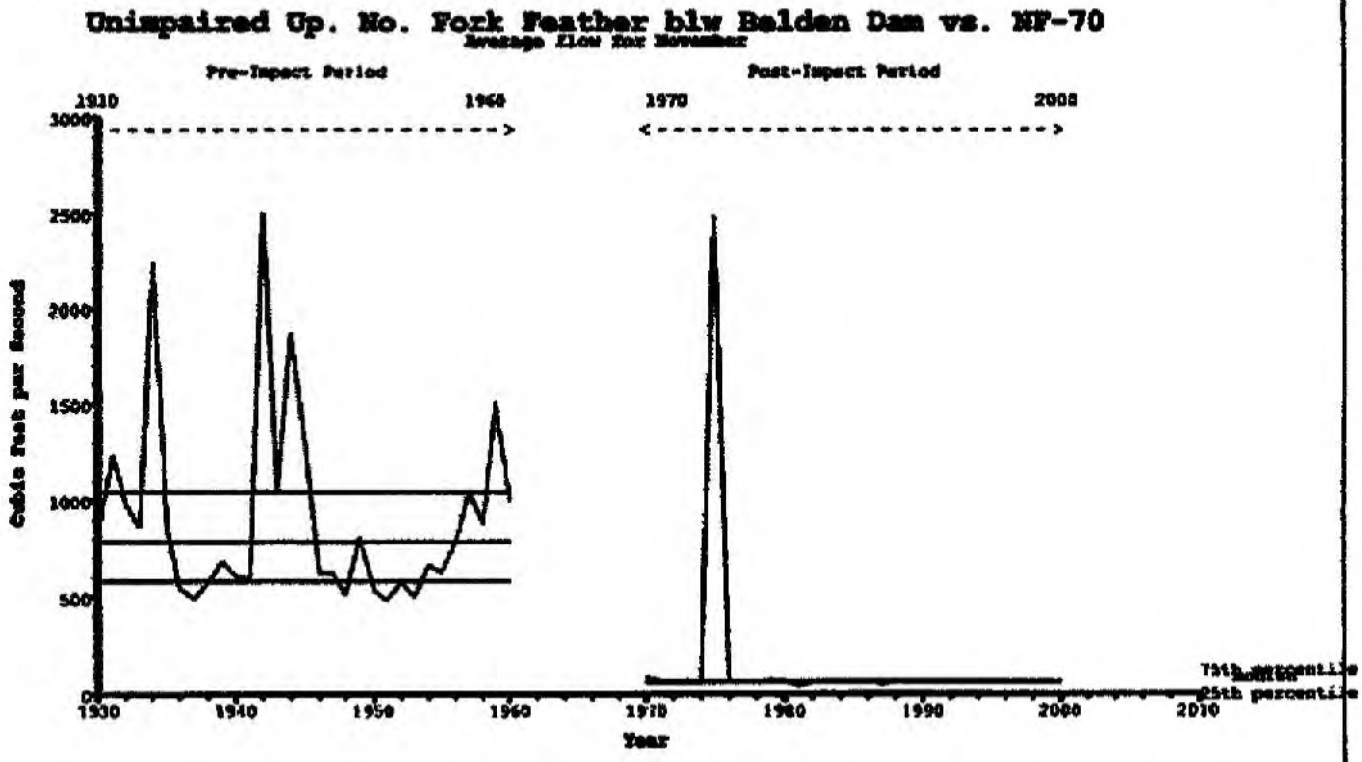
Unimp. flow @ Canyon Dam vs. MP2

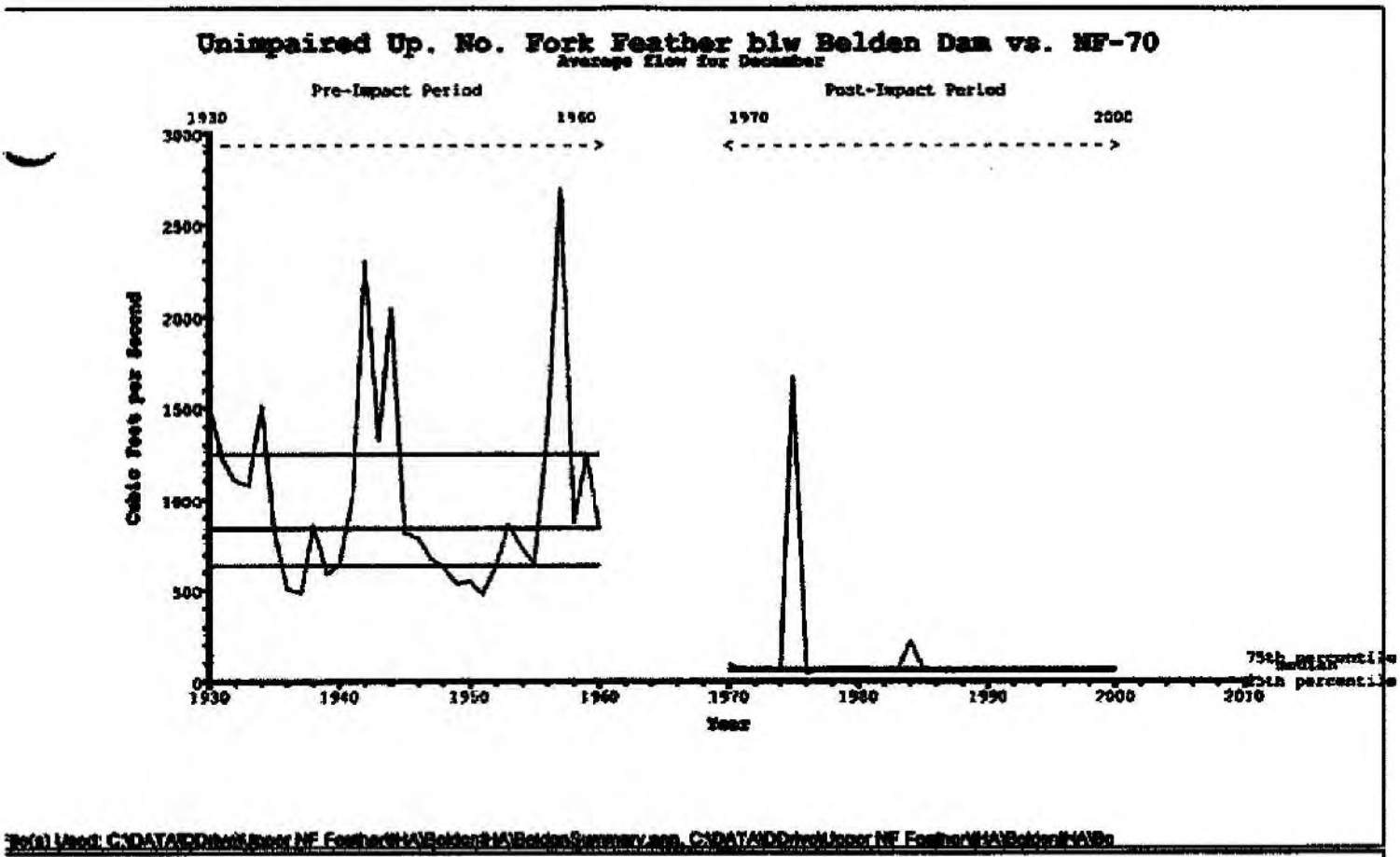
Flow in CFS

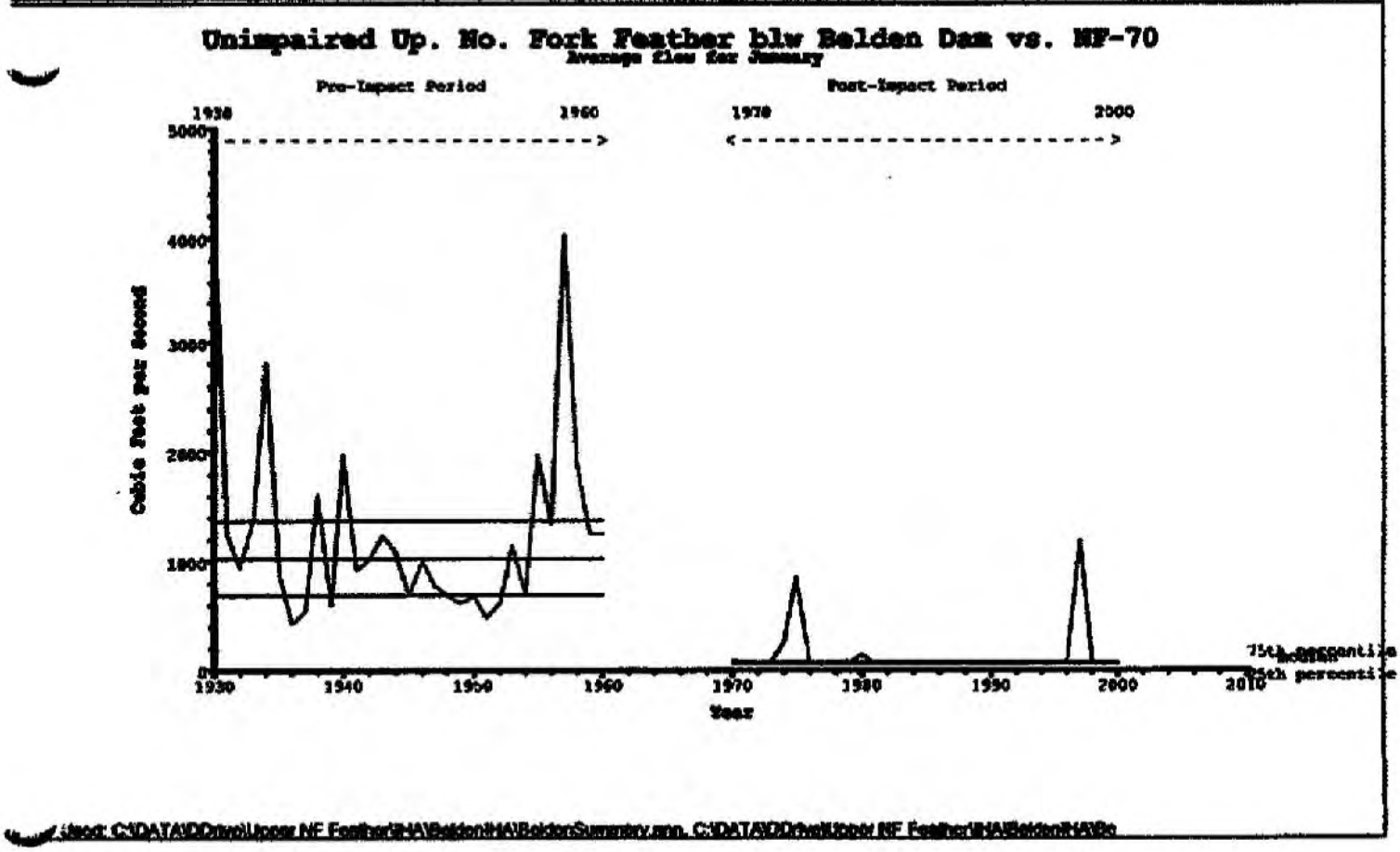
Year	October	November	December	January	February	March	April	May	June	July	August	Sept	1-day min	3-day min	7-day min	30-day min	90-day min	1-day max	3-day max	7-day max	30-day max	90-day max	Zero days	Base flow	Date min	Date max	Lo pulse	#Lo pulse	Hi pulse	#Hi pulse	Rise rate	Fall rate	Reversals
1930	696	720	1257	3461	1427	1384	1258	1362	707	430	322	367	311	311	312	320	361	11280	10673	7747	3783	2192	0	0.28	217	23	2	40	7	21	219	-156	66
1931	536	1092	1006	1084	854	1877	1657	2368	1688	912	803	528	350	356	365	478	681	4180	3880	2647	2410	2059	0	0.31	275	86	1	0	8	17	136	-111	104
1932	477	800	962	808	794	1665	1467	1431	772	438	374	465	344	351	356	373	419	3120	2888	2288	1764	1521	0	0.40	220	65	2	21	4	18	98	-70	126
1933	626	762	946	1217	1067	967	1887	1607	880	626	469	517	318	363	422	464	604	2843	2731	2634	2082	1475	0	0.45	274	167	2	2	5	17	108	-78	87
1934	880	1638	1343	2376	1165	2670	1985	2686	1740	814	676	541	385	386	424	536	868	8880	7187	6474	2737	2411	0	0.27	307	90	1	8	13	18	384	-218	81
1935	679	728	673	741	1150	1787	1230	2767	2224	809	577	580	516	520	528	676	822	3848	3627	3381	3133	2128	0	0.46	276	152	0	0	6	22	111	-81	101
1936	761	412	361	528	832	775	793	708	408	305	406	368	279	281	284	302	361	1812	1476	1138	877	800	0	0.46	187	60	9	23	3	2	45	-41	118
1937	385	410	408	486	541	481	404	448	387	235	180	282	151	153	186	158	215	812	783	644	846	812	0	0.41	236	61	13	30	0	0	30	-22	108
1938	349	499	738	1405	1132	1765	1379	1741	1014	386	235	280	200	212	218	235	280	3087	2880	2036	1867	1839	0	0.34	235	14	4	25	11	11	141	-108	101
1939	446	580	482	479	880	831	884	1471	487	238	212	264	182	185	186	178	243	2240	2091	1740	1832	1139	0	0.28	222	127	4	22	8	8	85	-60	92
1940	610	821	841	1609	1538	825	1397	1832	931	848	364	440	305	308	317	352	402	8230	6877	4218	1820	1089	0	0.35	227	15	6	10	4	13	184	-110	108
1941	430	808	873	848	888	830	885	798	329	215	215	253	188	205	208	211	217	3494	2452	1041	1067	1488	0	0.36	200	308	4	26	8	2	116	-87	141
1942	846	2842	1812	823	8870	1479	1914	2129	1407	784	412	656	308	315	374	383	801	7470	5880	4108	2370	2844	0	0.38	277	47	6	8	8	29	277	-174	111
1943	798	804	1153	1858	3535	2845	2025	2818	2291	1365	782	880	365	405	407	678	787	7070	5183	6058	4120	2764	0	0.25	65	73	1	12	12	15	250	-156	77
1944	870	1625	1091	851	1060	1580	1386	1786	1043	582	452	670	388	400	401	430	624	4080	3323	2845	1777	1942	0	0.35	227	316	1	20	9	17	177	-111	107
1945	675	1136	681	872	707	862	1380	983	370	380	305	478	335	337	341	358	298	2080	1704	1080	1282	886	0	0.36	196	314	5	78	10	5	84	-45	105
1946	605	836	871	641	3046	2480	1760	1565	803	411	287	409	238	238	346	271	389	19400	17185	10784	4082	2815	0	0.21	249	45	4	30	8	24	326	-182	96
1947	390	328	676	687	850	1128	888	706	284	311	167	206	180	181	183	184	185	4380	3200	2180	1140	862	0	0.28	210	73	8	34	7	3	108	-77	77
1948	282	428	488	582	810	634	673	470	287	174	184	212	88	145	158	165	183	2253	1432	1018	722	848	0	0.37	181	110	12	13	6	1	72	-103	134
1949	292	888	462	836	873	2147	1771	888	880	337	344	367	252	272	279	281	348	7770	7080	4818	2280	1808	0	0.38	286	69	4	22	9	5	184	-88	86
1950	481	488	487	888	443	888	885	818	474	147	184	211	125	126	127	137	181	2028	1480	1236	918	781	0	0.27	216	8	9	16	6	2	59	-50	70
1951	321	414	408	406	805	1028	751	788	522	365	320	329	255	258	288	308	320	4287	3031	1863	1046	862	0	0.42	275	64	10	18	5	4	70	-62	86
1952	465	609	881	546	886	780	876	864	525	364	279	286	260	260	280	282	286	2019	1812	1286	967	828	0	0.47	246	103	4	22	4	2	81	-47	40
1953	422	422	788	1806	884	1691	2026	3211	1813	546	288	278	242	241	283	283	345	4782	3882	3383	3040	2531	0	0.22	343	192	5	18	7	18	184	-145	58
1954	565	876	451	818	871	940	785	748	355	237	307	224	200	201	202	208	223	1961	1582	1218	834	781	0	0.39	228	334	3	41	8	2	72	-50	66
1955	367	952	686	1728	1174	3275	2551	3683	2842	1401	741	828	337	363	357	386	465	18034	8886	6525	4188	3380	0	0.22	3	88	3	2	8	29	315	-187	61
1956	586	873	1253	1174	1662	1481	1985	2548	880	888	481	628	480	481	482	480	623	8628	6877	4866	2867	2618	0	0.41	231	136	0	0	9	15	294	-183	61
1957	711	880	2301	3388	1276	1626	1488	1033	684	432	388	407	329	331	332	354	388	23163	18430	11007	4039	2362	0	0.27	280	1	4	19	9	14	300	-152	80
1958	888	771	785	1662	1645	1780	1840	2620	2628	1167	888	628	435	462	482	531	651	4784	4478	3618	2848	2355	0	0.55	276	64	6	0	11	15	221	-128	113
1959	679	1343	1088	1687	1404	1279	1545	1858	880	822	634	480	408	415	430	454	491	4127	3346	2867	1917	1640	0	0.40	274	338	1	-4	10	12	178	-101	119
1960	565	478	725	1118	1613	1082	1688	1303	468	425	381	361	361	150	84	44	37	3286	2862	2248	1838	1481	0	0.08	235	44	2	41	14	7	181	-105	129
1970	32	33	38	41	38	37	38	40	38	37	37	31	9	9	19	30	35	88	81	47	41	38	0	0.53	288	29	2	107	0	0	5	-3	34
1971	30	36	30	33	38	38	37	58	38	37	35	36	5	5	19	30	33	48	42	42	40	38	0	0.62	90	113	2	107	0	0	3	-5	37
1972	35	35	34	39	34	38	38	35	38	38	36	37	32	32	32	34	34	132	88	81	40	38	0	0.91	2	18	2	1	0	0	4	-4	32
1973	37	36	38	38	63	32	32	38	38	38	37	57	24	24	25	32	34	136	87	73	88	43	0	0.88	54	32	2	107	0	0	3	-4	38
1974	37	38	38	48	48	37	111	126	37	37	38	35	27	31	33	34	34	330	320	287	203	93	0	0.53	28	114	2	107	0	0	16	-13	41
1975	36	34	36	36	38	36	37	39	37	34	32	36	9	13	25	32	34	87	48	42	48	38	0	0.55	240	114	2	107	0	0	5	-3	34
1976	35	34	38	35	35	36	45	51	38	38	37	32	30	30	30	32	54	56	58	67	43	44	0	0.61	286	145	2	1	0	0	1	-2	51
1977	36	36	36	38	41	45	35	16	16	15	15	16	13	13	13	14	16	47	47	47	45	42	0	0.47	258	85	2	107	0	0	1	-2	36
1978	17	19	17	33	65	84	33	38	42	43	41	37	13	13	14	15	17	76	75	74	70	60	0	0.38	275	76	2	107	0	0	2	-3	25
1979	37	37	40	58	51	41	39	58	38	38	38	35	18	31	34	34	38	66	66	86	63	44	0	0.87	31	30	2	107	0	0	3	-2	29
1980	34	35	37	41	39	37	38	38	36	38	38	36	34	34	34	34	52	47	47	46	41	39	0	0.82	277	18	2	1	0	0	1	-2	44
1981	36	38	35	38	36	35	36	35	36	36	35	36	6	5	5	26	32	37	37	37	34	43	0	0.14	309	208	2	107	0	0	2	-2	25
1982	80	36	36	38	36	36	38	38	34	38	34	38	6	8	18	32	34	482	220	118	81	41	0	0.40	294	287	2	176	0	0	15	-13	45
1983	35	35	38	36	38	44	280	37	38	38	38	38	34	34	34	34	38	803	880	733	288	425	0	0.66	15	93	3	68	0	0	37	-21	30
1984	34	38	37	38	32	25	38	38	516	484	42	36	14	14	14	18	30	747	708	888	654	253	0	0.12	60	174	2	31	0	0	21	-14	43
1985	36	36	38	38	38	34	37	36	38	36	36	37	14	28	32	34	38	38	38	38	38	37	0	0.90	304	239	2	107	0	0	2	-2	47
1986	38	37	35	38	38	37	38	38	37	37	41	40	34	35	35	36	38	47	48	42	41	38	0	0.94	348	48	2	107	0	0	2	-1	41
1987	37	36	38	38	57	38	38	37	37	37	38	38	38	38	38	38	38	38	38	38	38	38	0	0.97	298	72	2	107	0	0	1	-1	31
1988	38	35	38	37	38	38	38	37	37	38	38	38	34	34	34	36	38	57	46	42	38	30	0	0.85	8	360	2	1	0	0	3	-2	20
1989	37	40	39	38	37	38	38	38	38	38	38	38	35	35	35	38	37	100	66	68	41	38	0	0.88	1	368	2	107	0	0	3	-4	32
1990	39	39	38	37	38	38	38	35	38	38	38	38	36	36	35	35	36	48	40	44	40	38	0	0.94	85	287	2	107	0	0	2	-1	28
1991	38	38	38	38	87	38	38	38	38	38	38	35	33	35	34	38	38	38	38	89	38	38	0	0.80	139	19	2	107	0	0	1	-1	13
1992	35	36	37	37	38	36	37	38	38	39	38	36	34	34	34	38	35	38	38	38	38	37	0	0.94	285	8	2	1	0	0	1	-1	20
1993	38	37	37	38	36	37	38	35	37	37	38	38	34	34	34	35	38	42	43	39	39	37	0	0.84	324	76	2	107	0	0	2	-2	19
1994	35	38	35	38	38	38	35	35	38	36	38	36	33	34	34	36	35	38	37	37	37	36	0	0.96	115	82	2	107	0	0	1	-1	19
1995	38	37	37	37	37	37	37	178	219	37	38	37	34	34	34	35	35	730	729	630	218	146	0	0.84	279	127	6	40	0	0	53	-54	31
1996	37	38	34	38	39	37	38	552	660	698	598	415	33	33	33	34	36	728	728	725	687	665	0	0.13	343	140	3	12	0	0	26	-9	48
1997	510	548	60	1884	1800	163	37	34	37	37	433	39	17	21	23	33	38	2140	2130	2113	2022	1272	0	0.05	144	5	7	34	1	58	104	-58	35
1998	38	37	37	43	38	38	39	43	42	38	36	38	35	35	35	38	37	40	40	43	42	40	0	0.92	183	17	3	107	0	0	1	-2	23
1999	37	37	38	38	38	39	40	36	37	37	37	37	34	34	38	38	38	41	41	41	40	38	0	0.93	121	114	2	107	0	0	1	-1	16
2000	38	36	35	38	57	37	37	38	39	33	38	38	35	35	35	35	38	40	39	39	38	38	0	0.96	282	88	2	107	0	0	1	-1	77

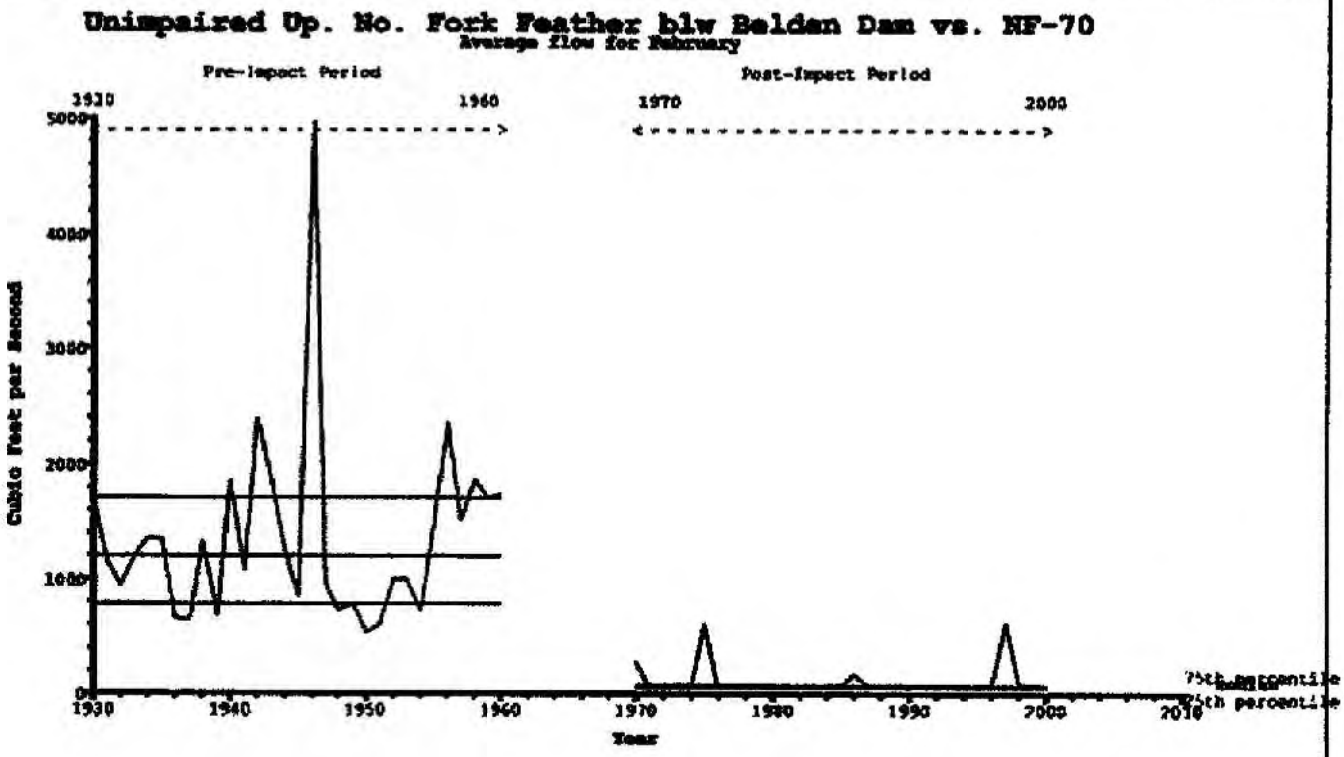

IHA Annual Summary Statistics
Year
October
November
December
January
February
March
April
May
June
July
August
September
1-day min
3-day min
7-day min
30-day min
90-day min
1-day max
3-day max
7-day max
30-day max
90-day max
Zero days
Base flow
Date min
Date max
Low pulses
Low pulse
High pulses
High pulse
Reversals
Reversal rate


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average Flow for October
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Cubic Feet per Second
1600
1400
1200
1000
800
600
400
200
0
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
25th percentile

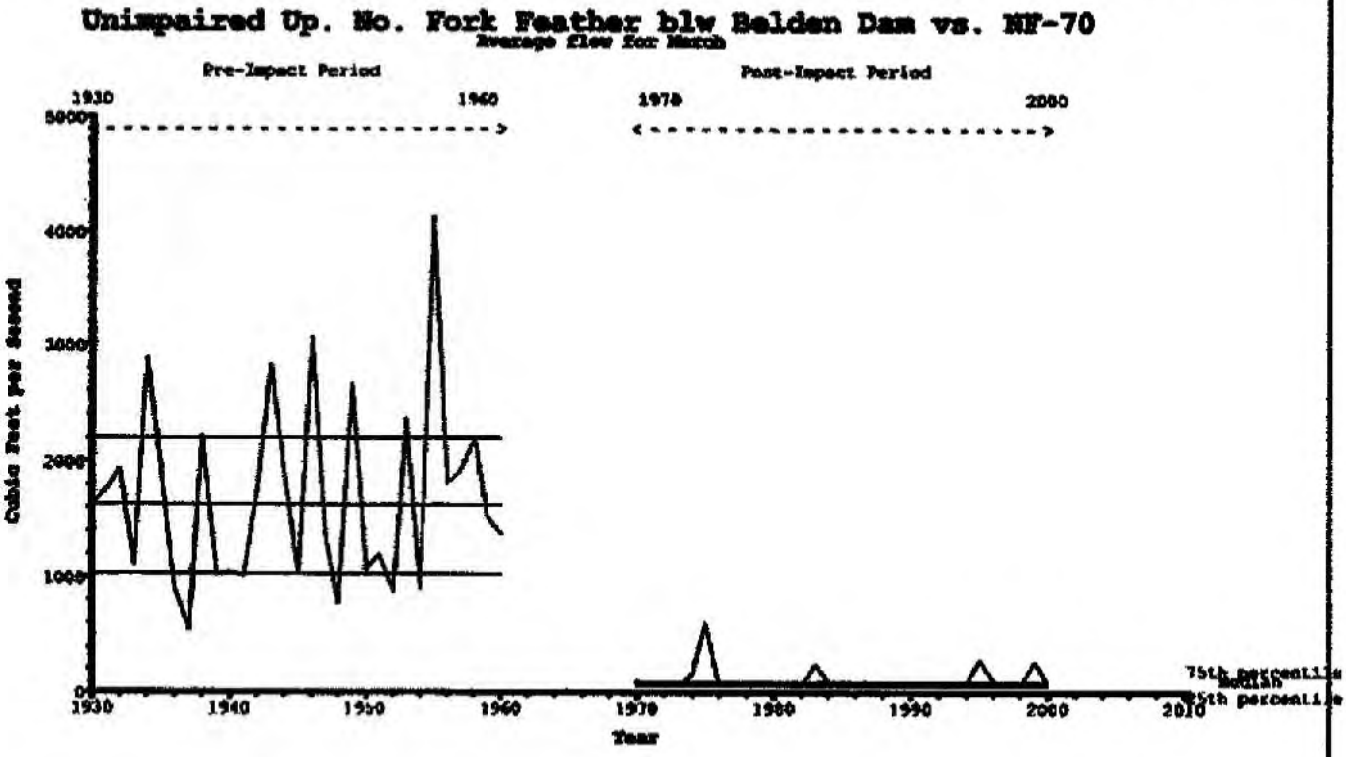

Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average Flow for November
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Cubic Feet per Second
3000
2500
2000
1500
1000
500
0
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
25th percentile


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average Flow for December
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
3000
2500
2000
1500
1000
500
0
Cubic Feet per Second
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
median
25th percentile

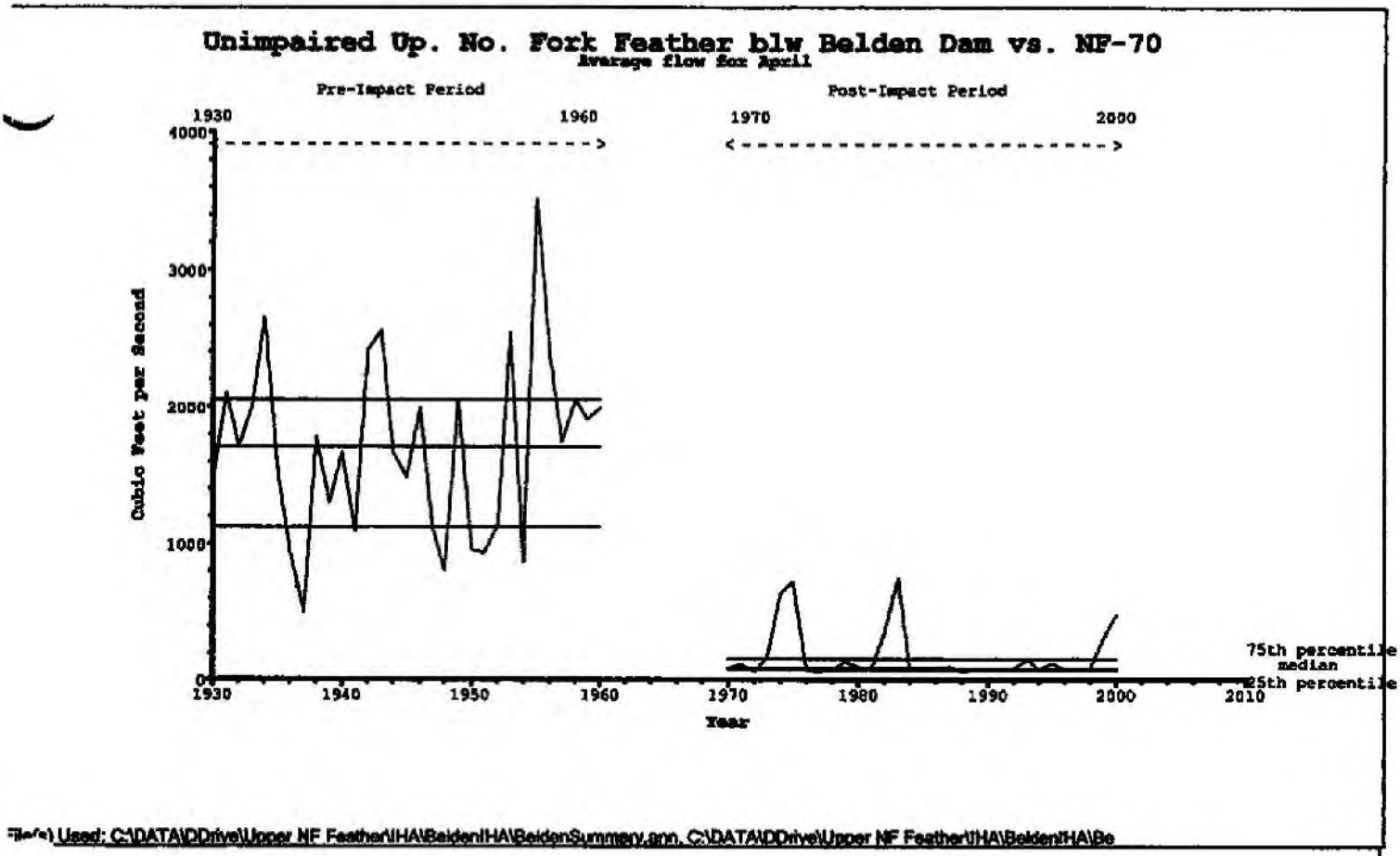

Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average Flow for January
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
5000
4000
3000
2000
1000
0
Cubic Feet per Second
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
median
25th percentile


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average flow for February
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
5000
4000
3000
2000
1000
0
Cubic Feet per Second
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
25th percentile

Input: C:\DATA\DDrive\Upper NF Feather\HA\Belden\HA\BeldenSummary.asp, C:\DATA\DDrive\Upper NF Feather\HA\Belden\HA\Be


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Average flow for March
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
5000
4000
3000
2000
1000
0
Cubic Feet per Second
1930
1940
1950
1960
1970
1980
1990
2000
2010
Year
75th percentile
25th percentile

Input: C:\DATA\DDrive\Upper NF Feather\HA\Belden\HA\BeldenSummary.asp, C:\DATA\DDrive\Upper NF Feather\HA\Belden\HA\Be



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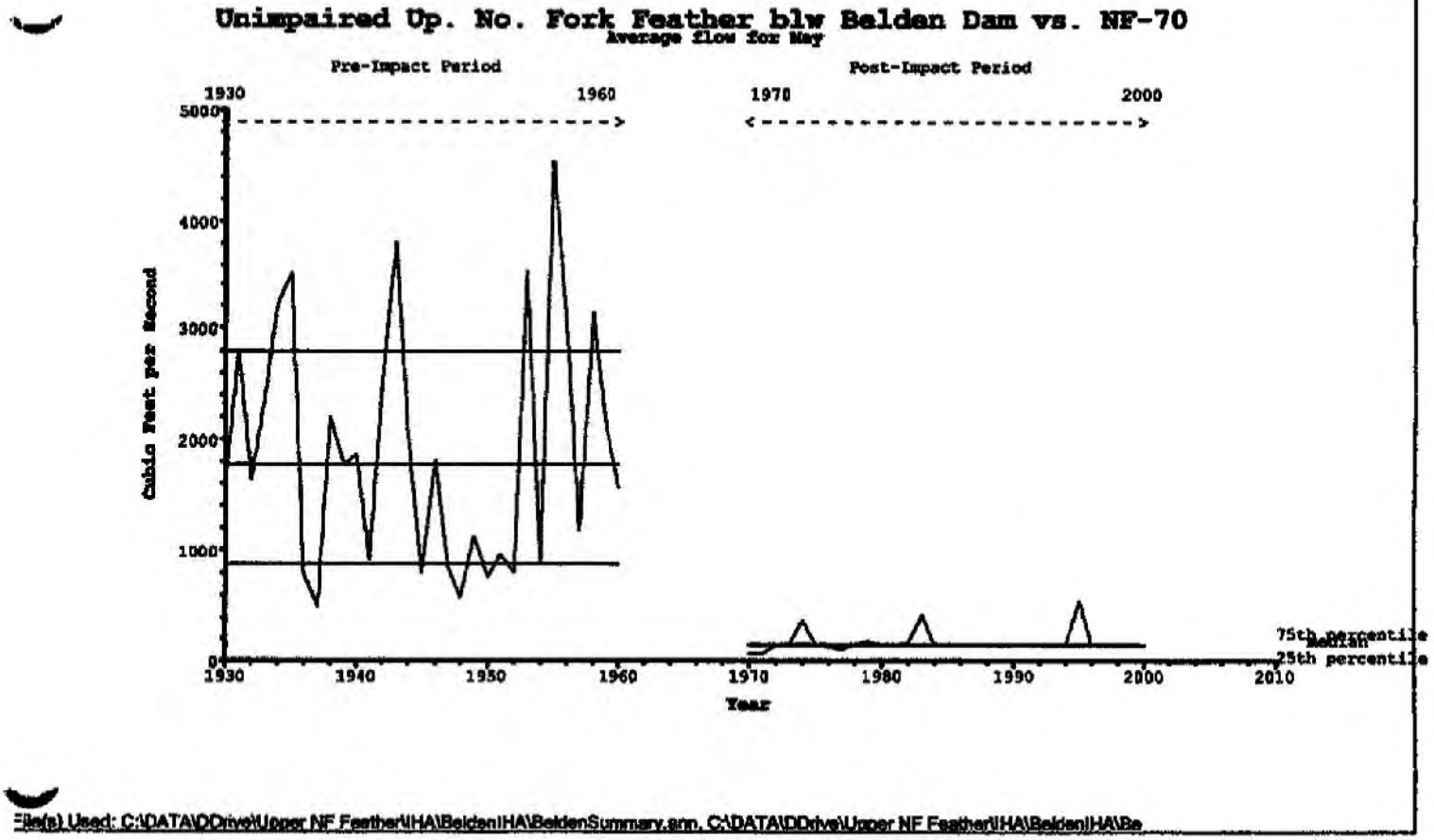

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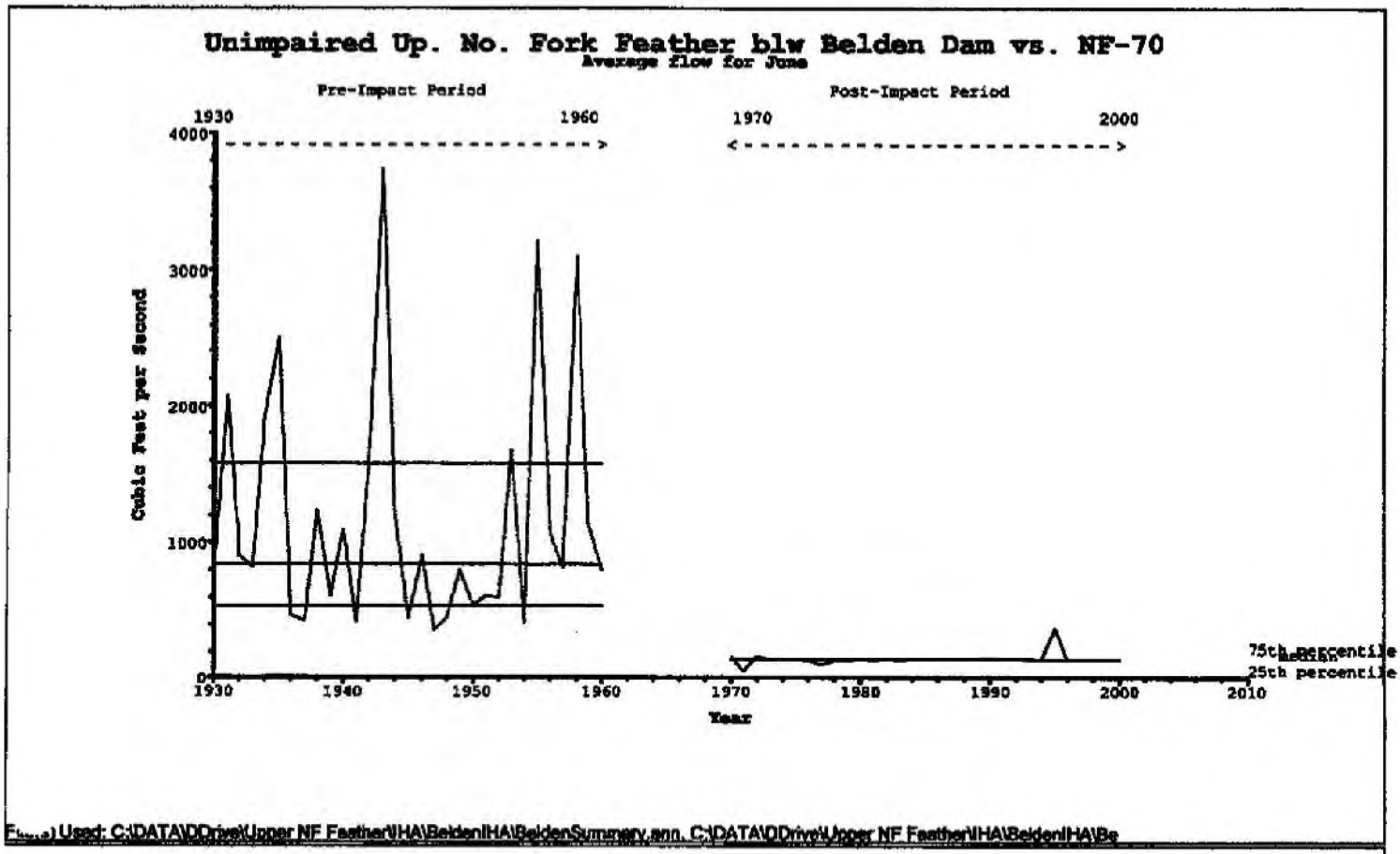

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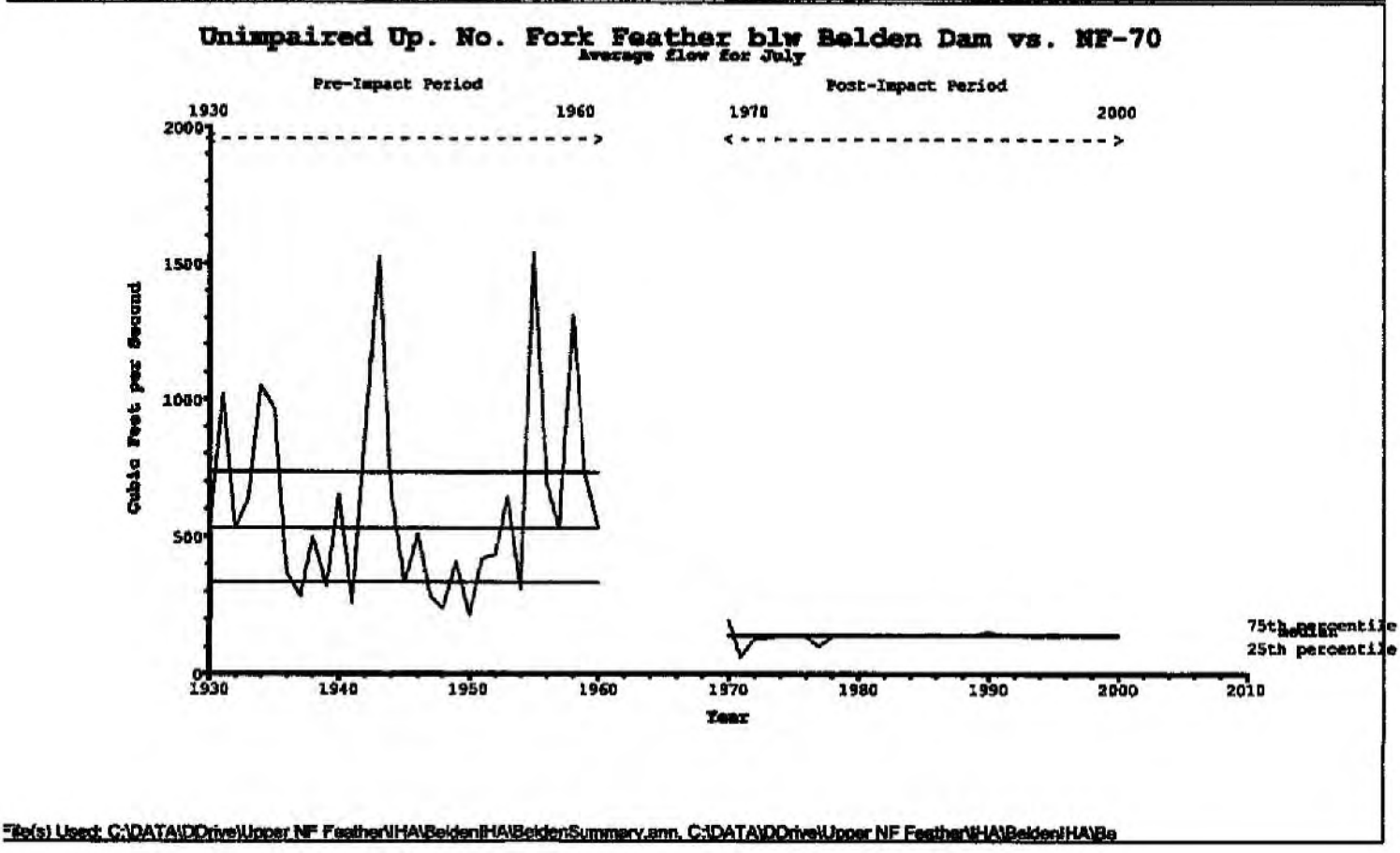

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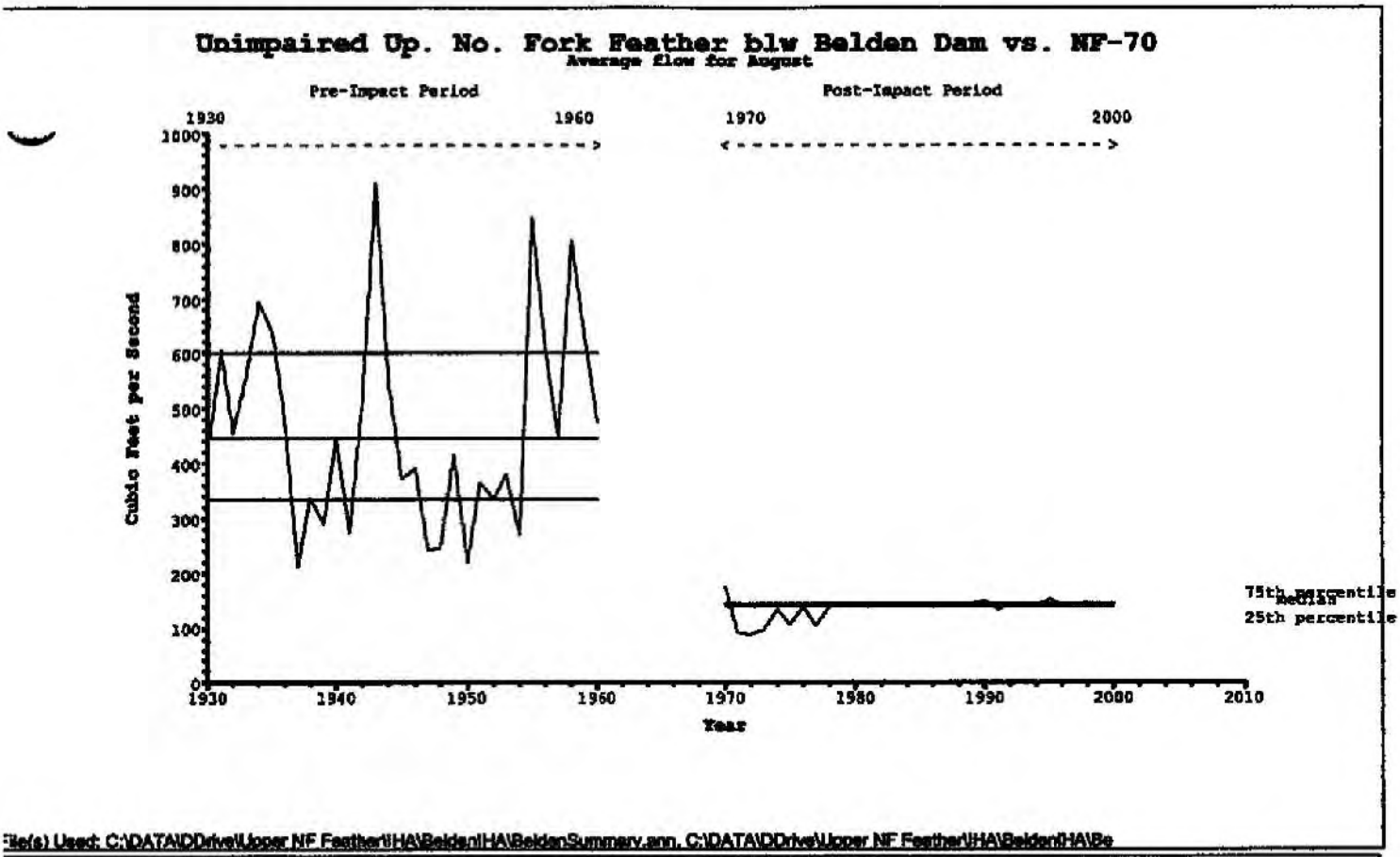

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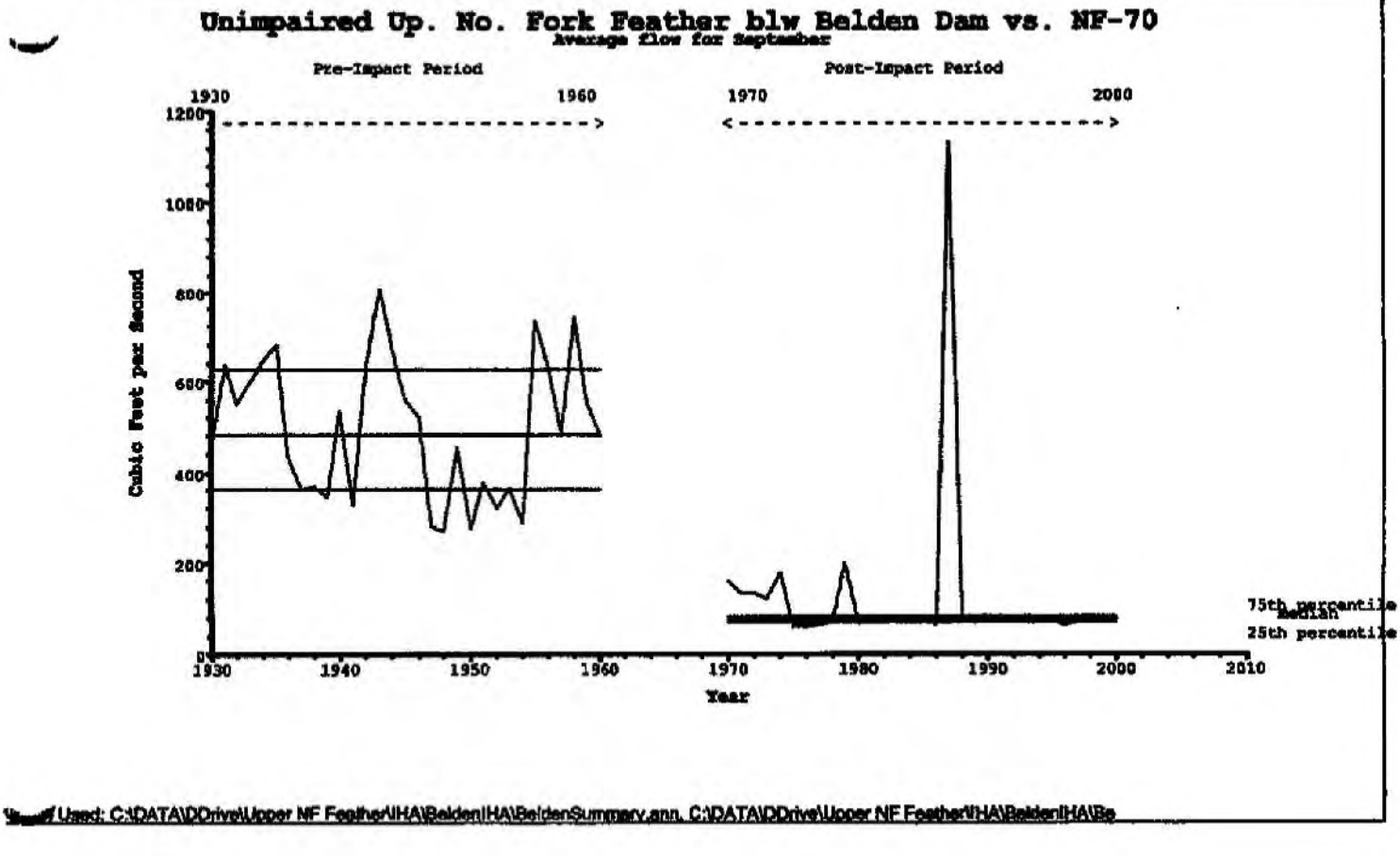

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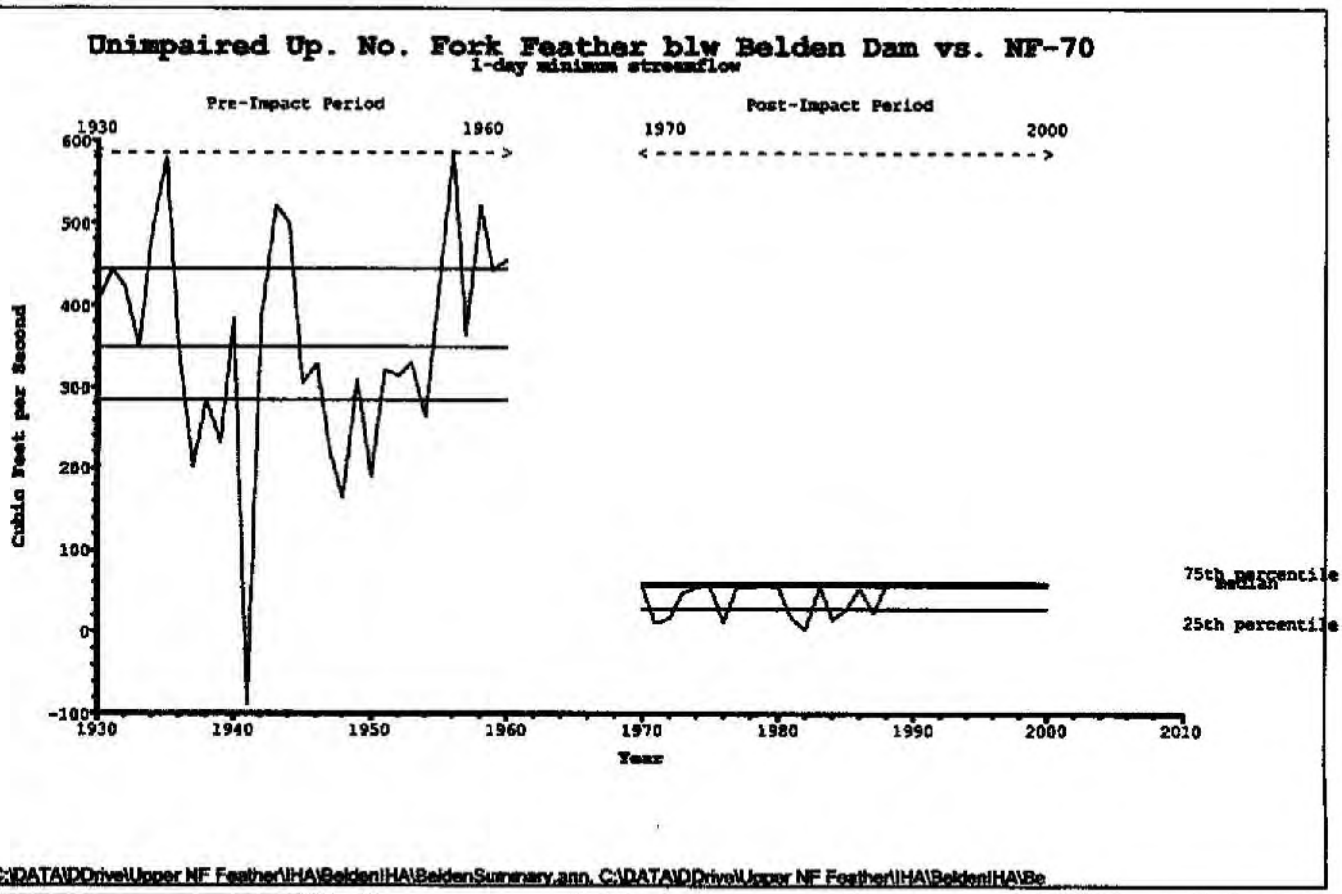

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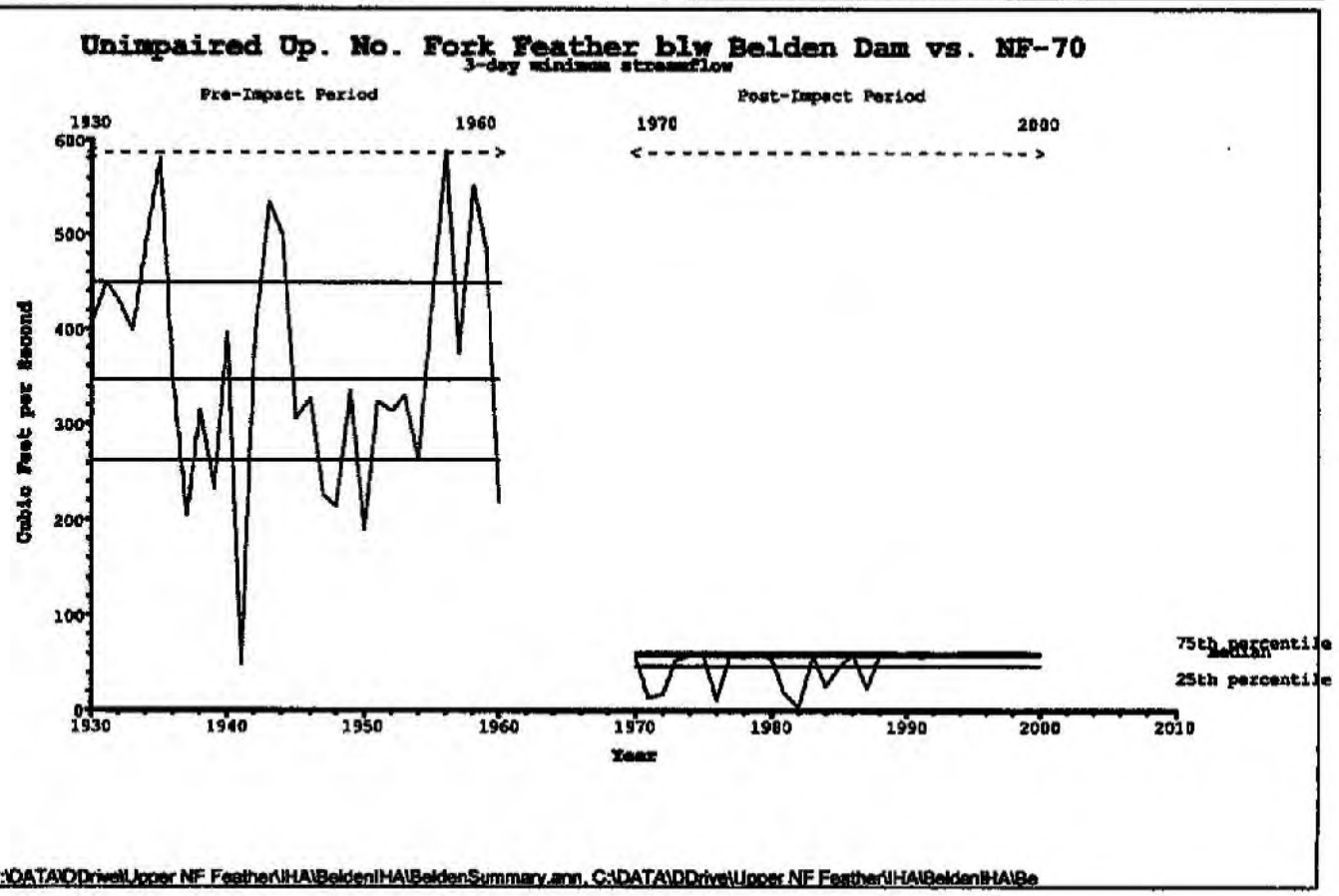

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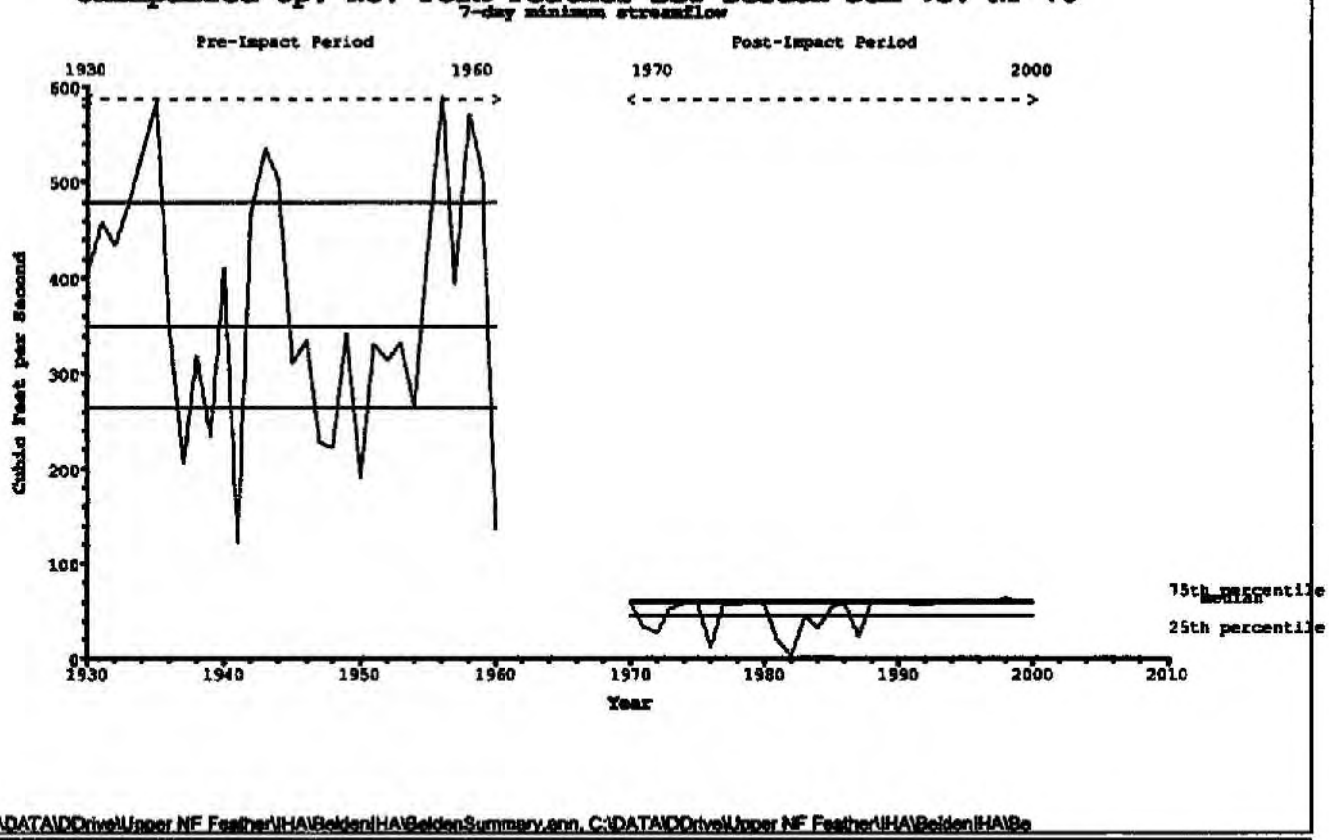
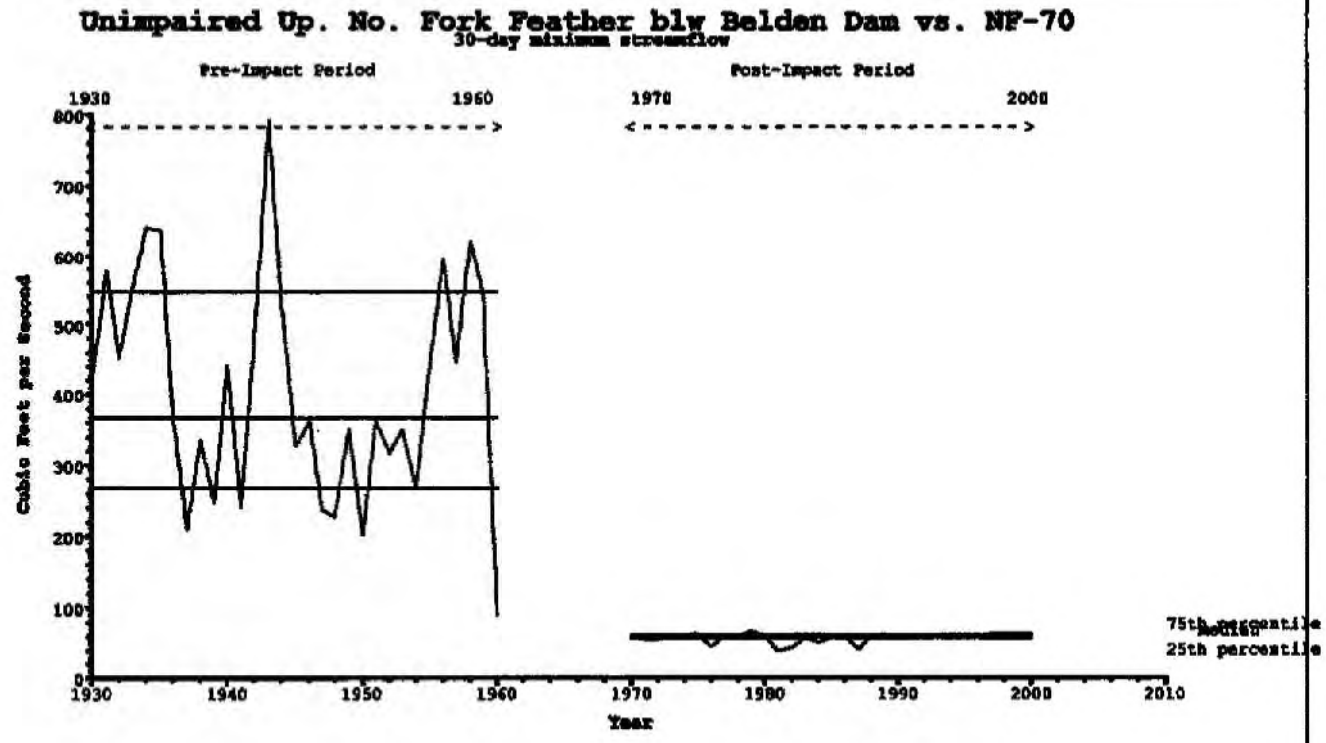

Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
7-day minimum streamflow
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Cubic Feet per Second
Year
75th percentile
Median
25th percentile

Input: C:\DATA\DDrive\Upper NF Feather\IHA\Belden\IHA\BeldenSummary.ann, C:\DATA\DDrive\Upper NF Feather\IHA\Belden\IHA\Be


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
30-day minimum streamflow
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Cubic Feet per Second
Year
75th percentile
Median
25th percentile

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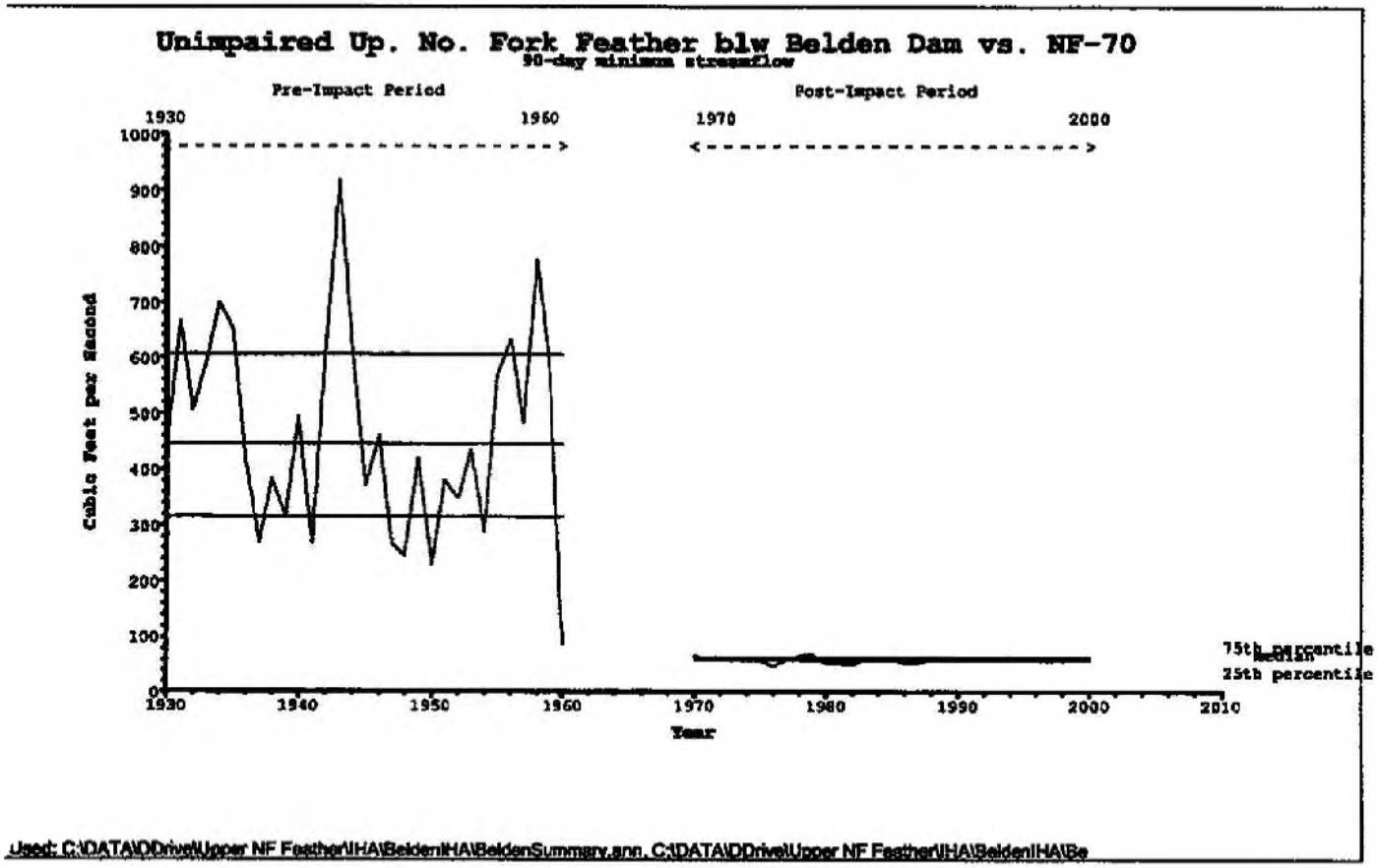

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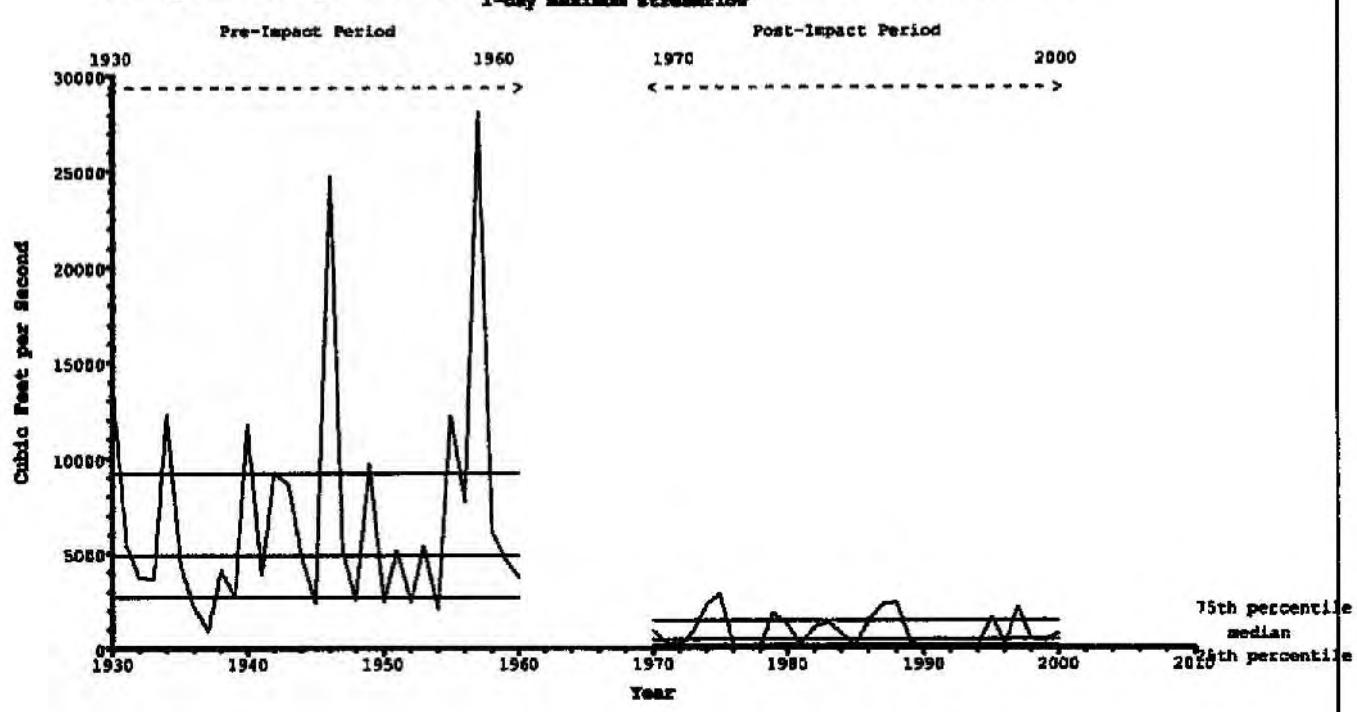

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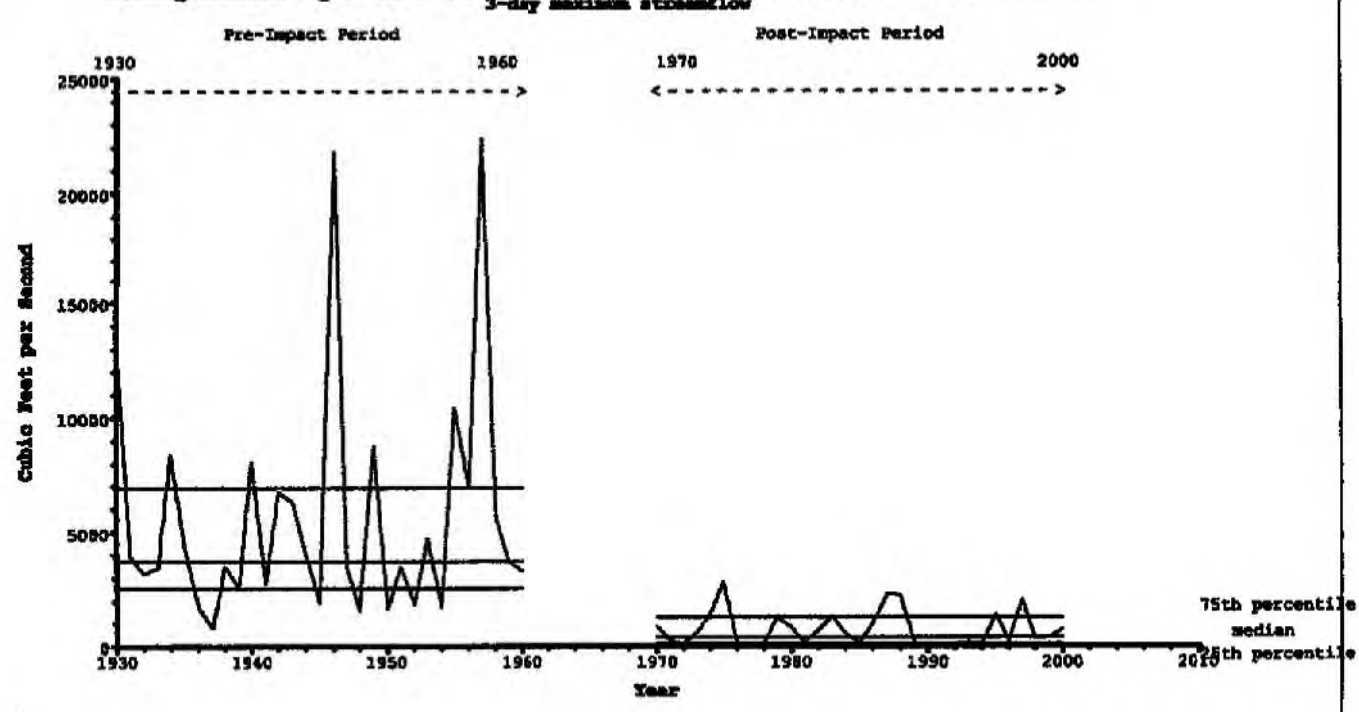

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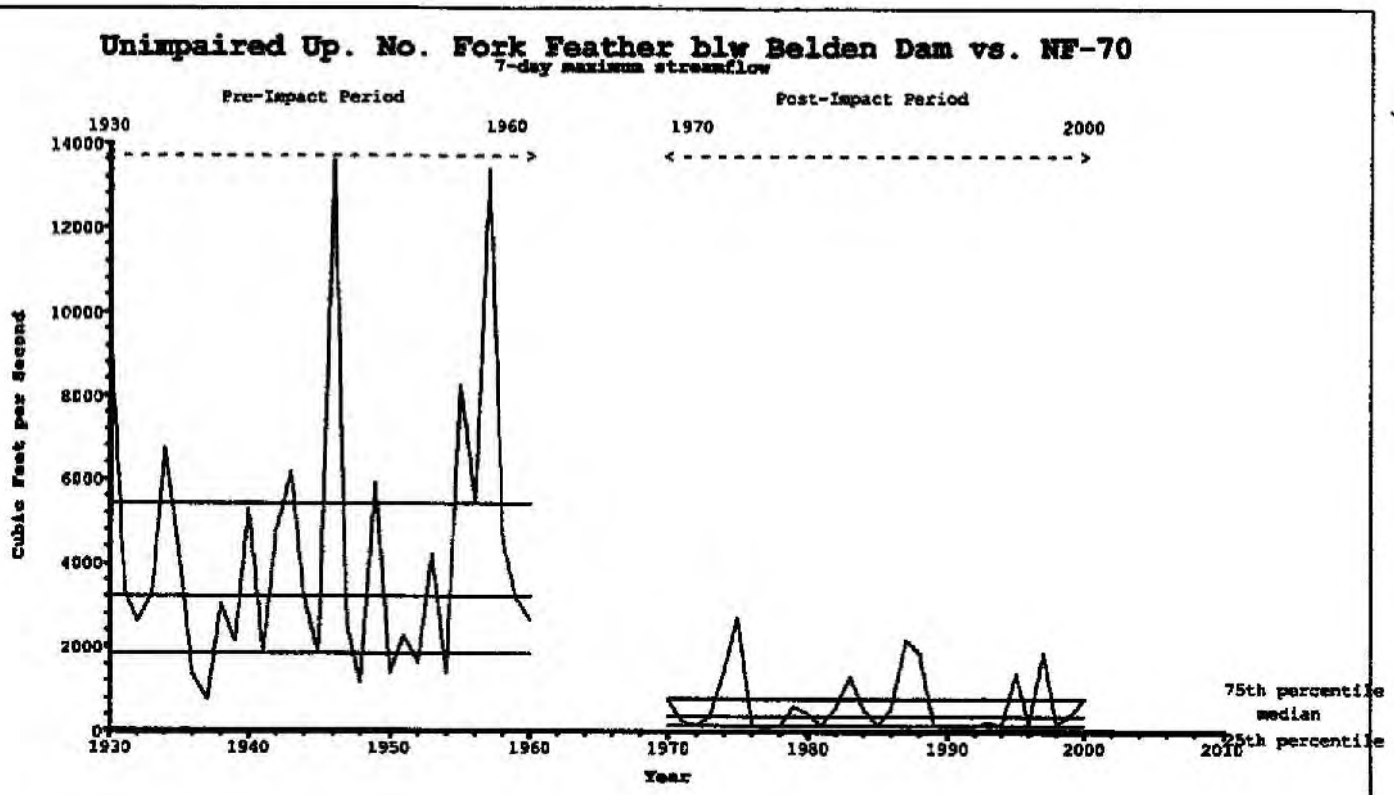

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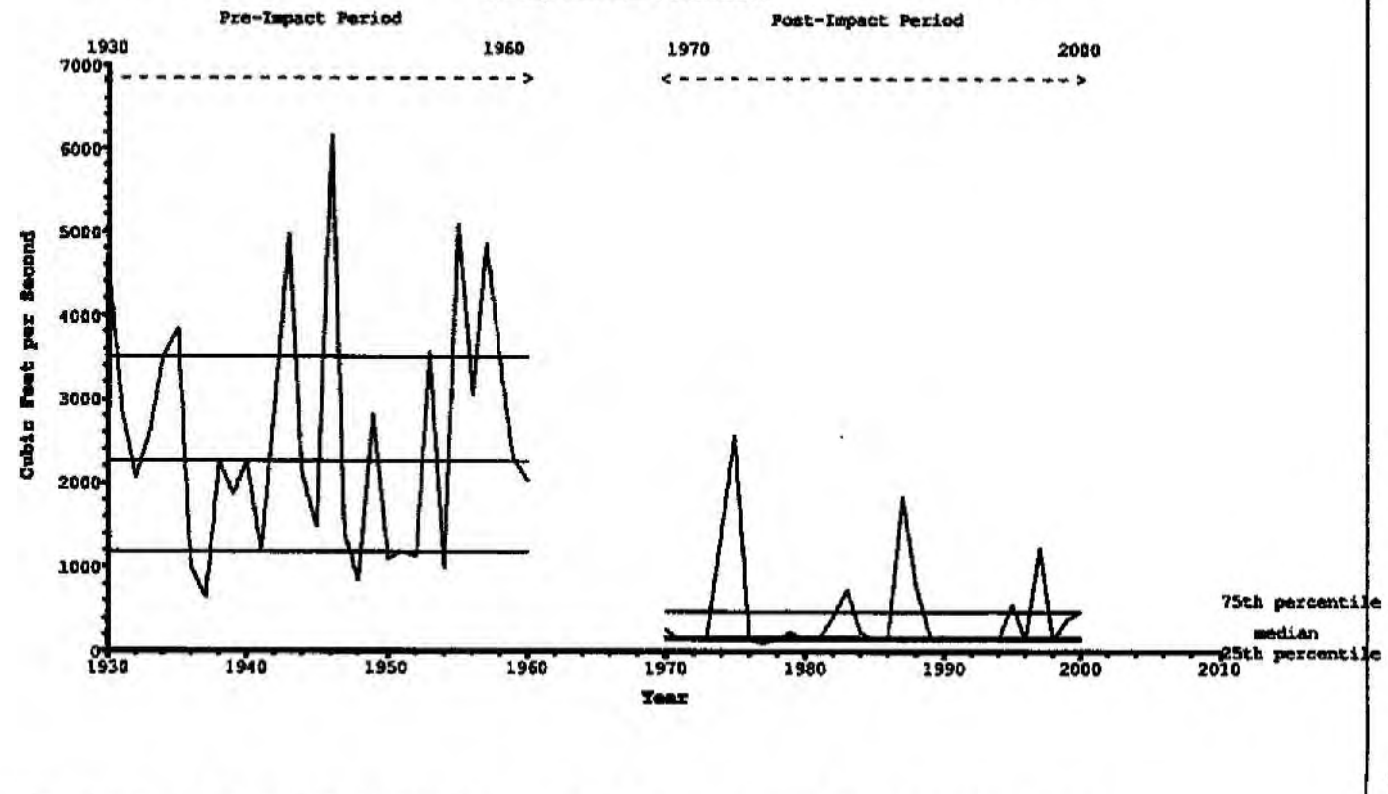

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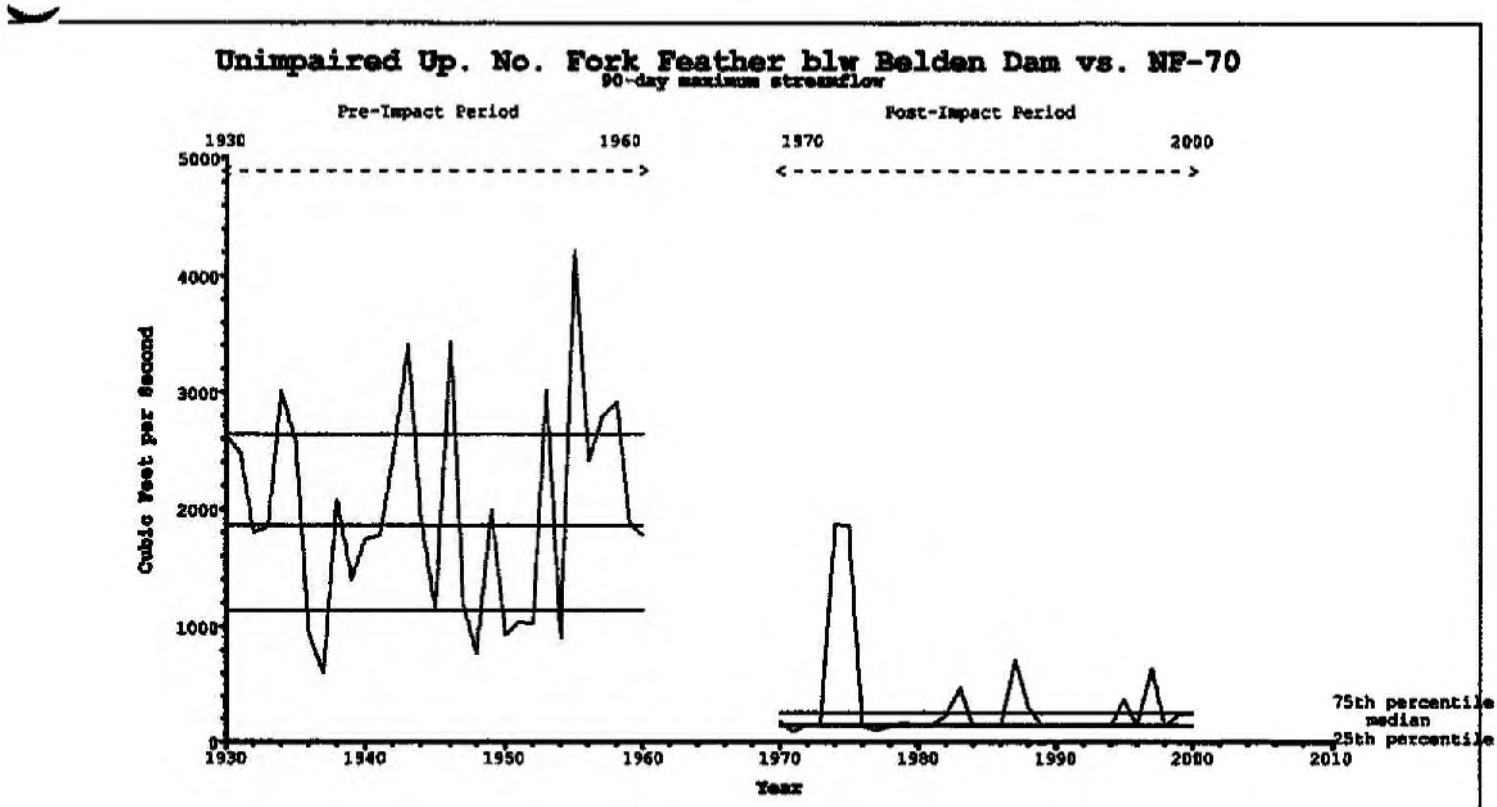

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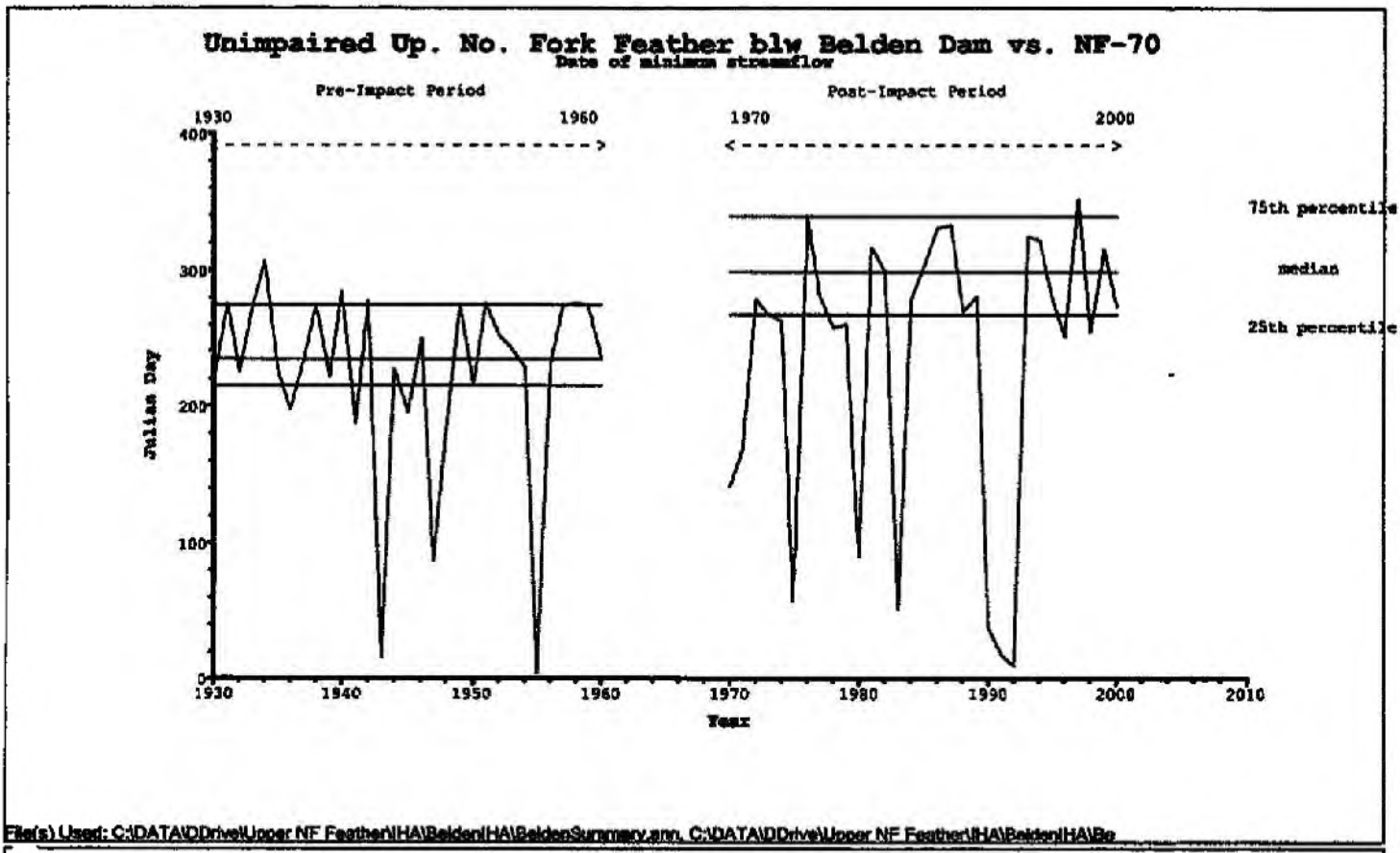

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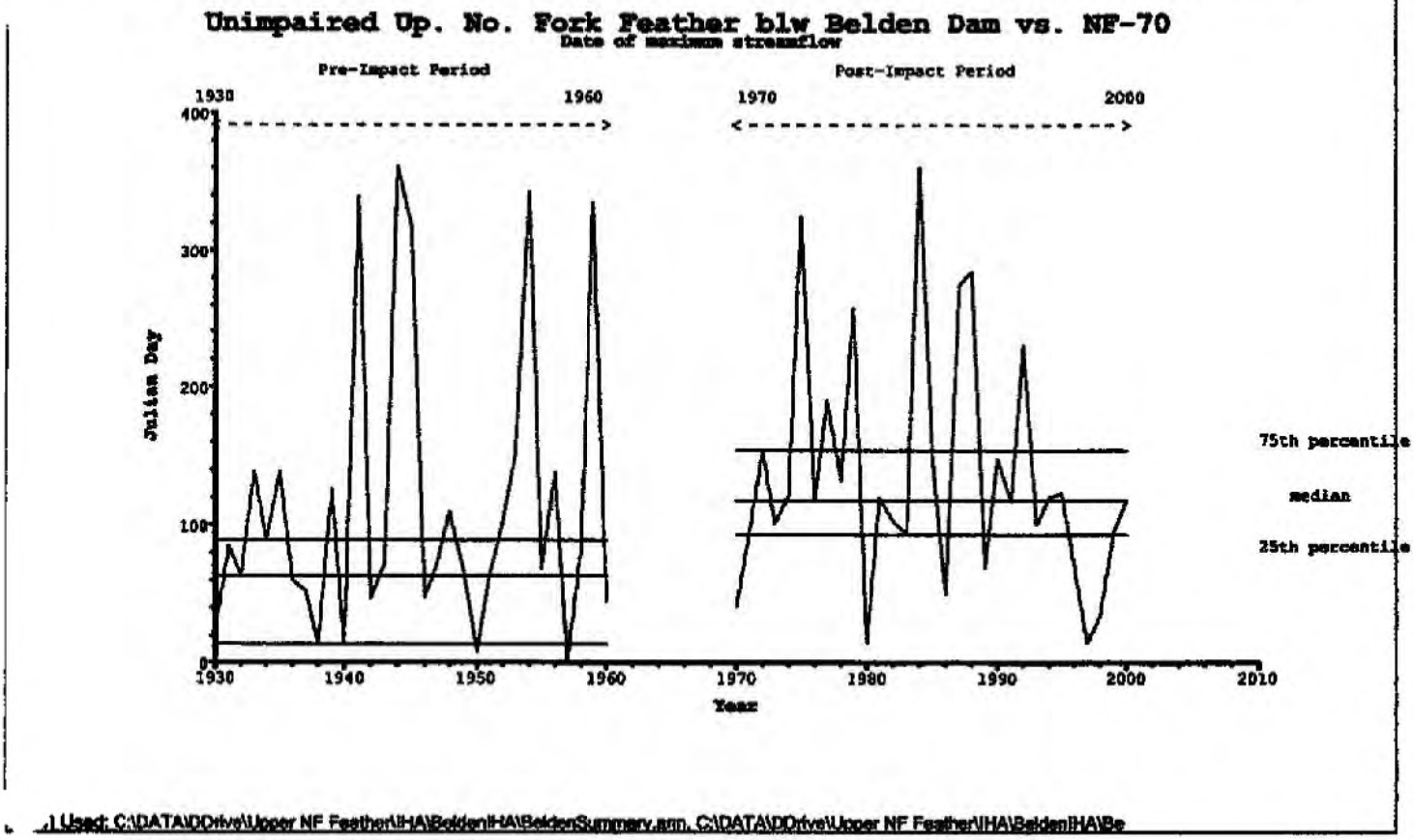

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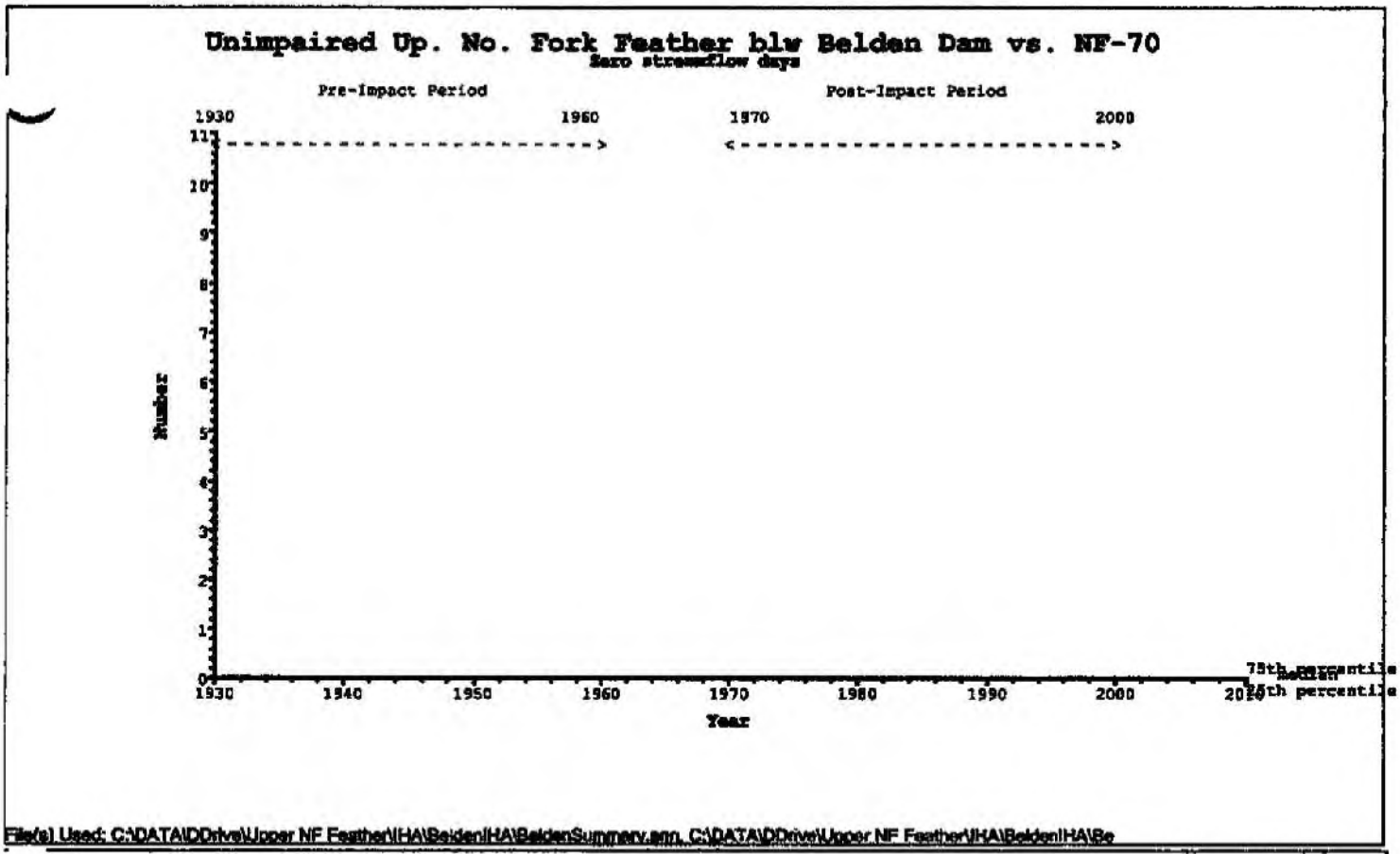

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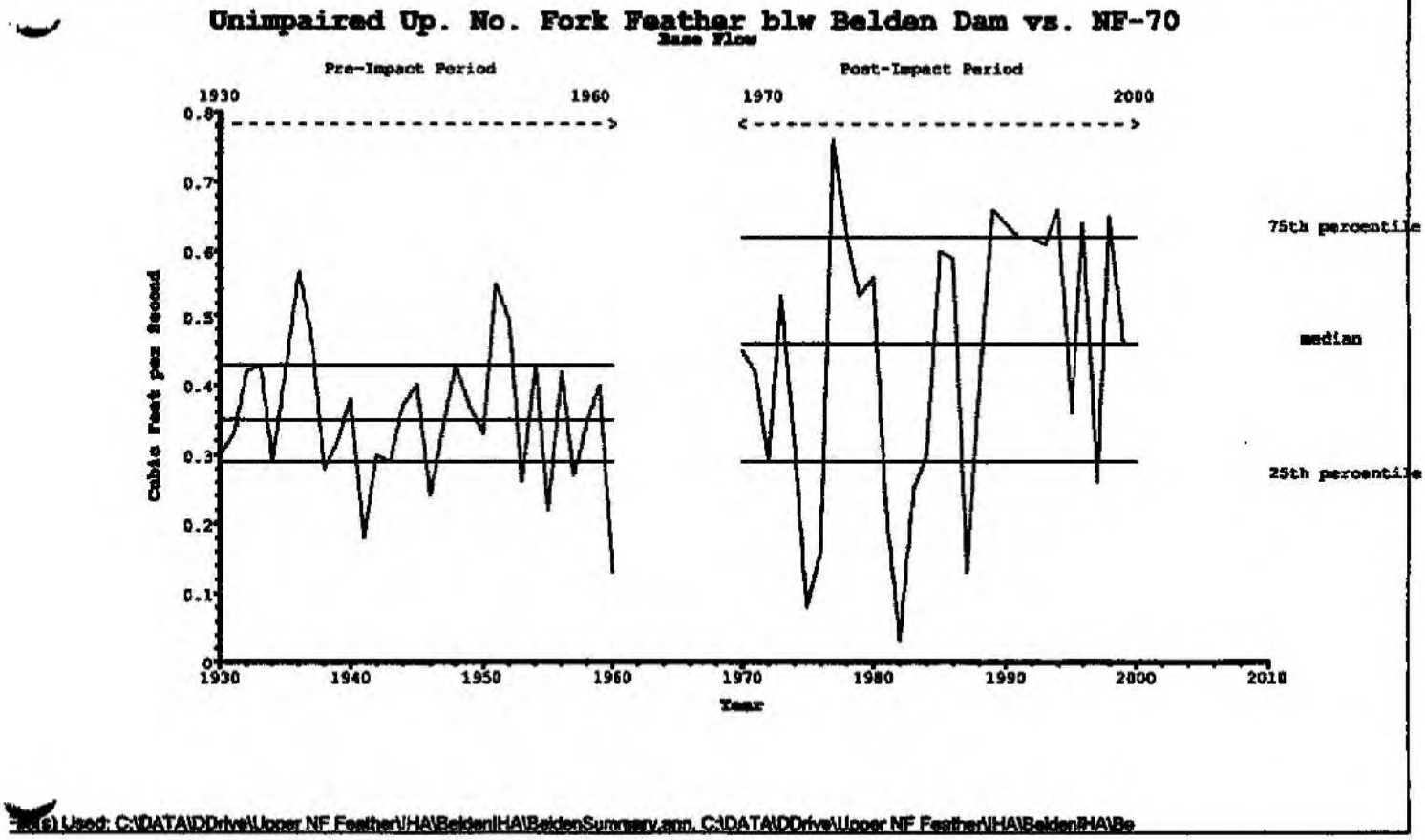

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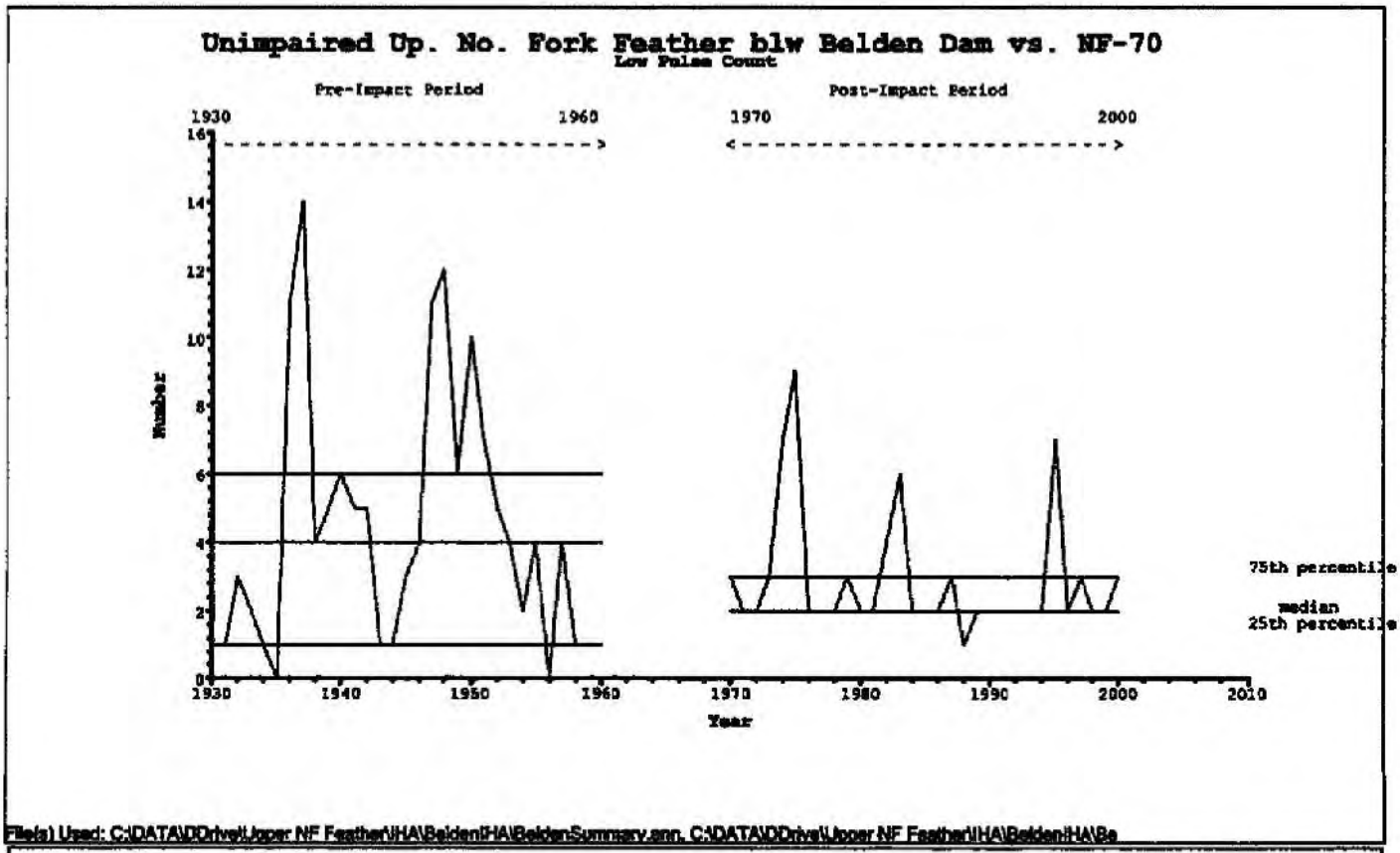
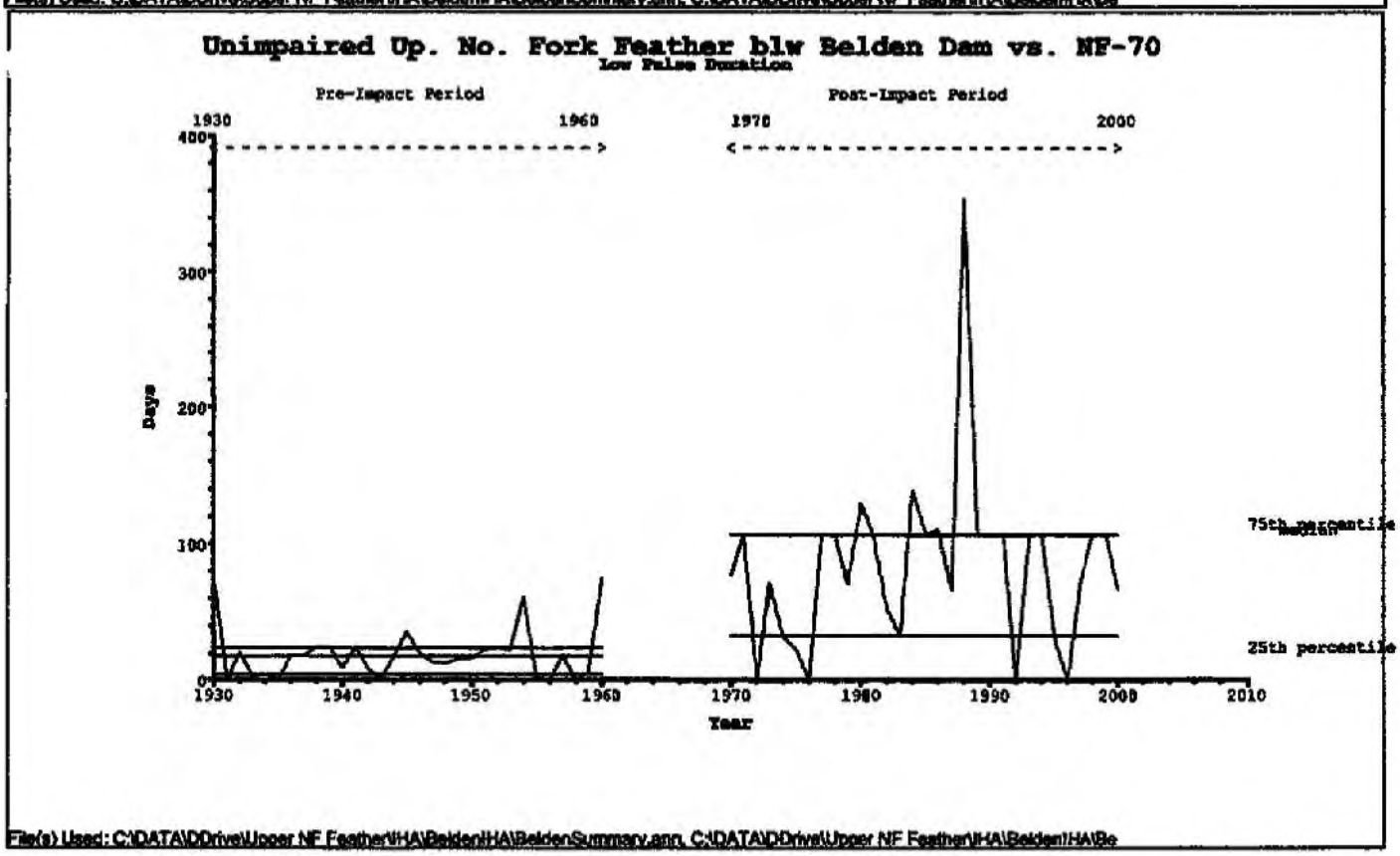

Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Low Pulse Count
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Number
Year
75th percentile
median
25th percentile
File(s) Used: C:\DATA\DDrive\Upper NF Feather\IHA\Belden\IHA\BeldenSummary.ann, C:\DATA\DDrive\Upper NF Feather\IHA\Belden\IHA\Be


Unimpaired Up. No. Fork Feather blw Belden Dam vs. NF-70
Low Pulse Duration
Pre-Impact Period
Post-Impact Period
1930
1960
1970
2000
Days
Year
75th percentile
25th percentile
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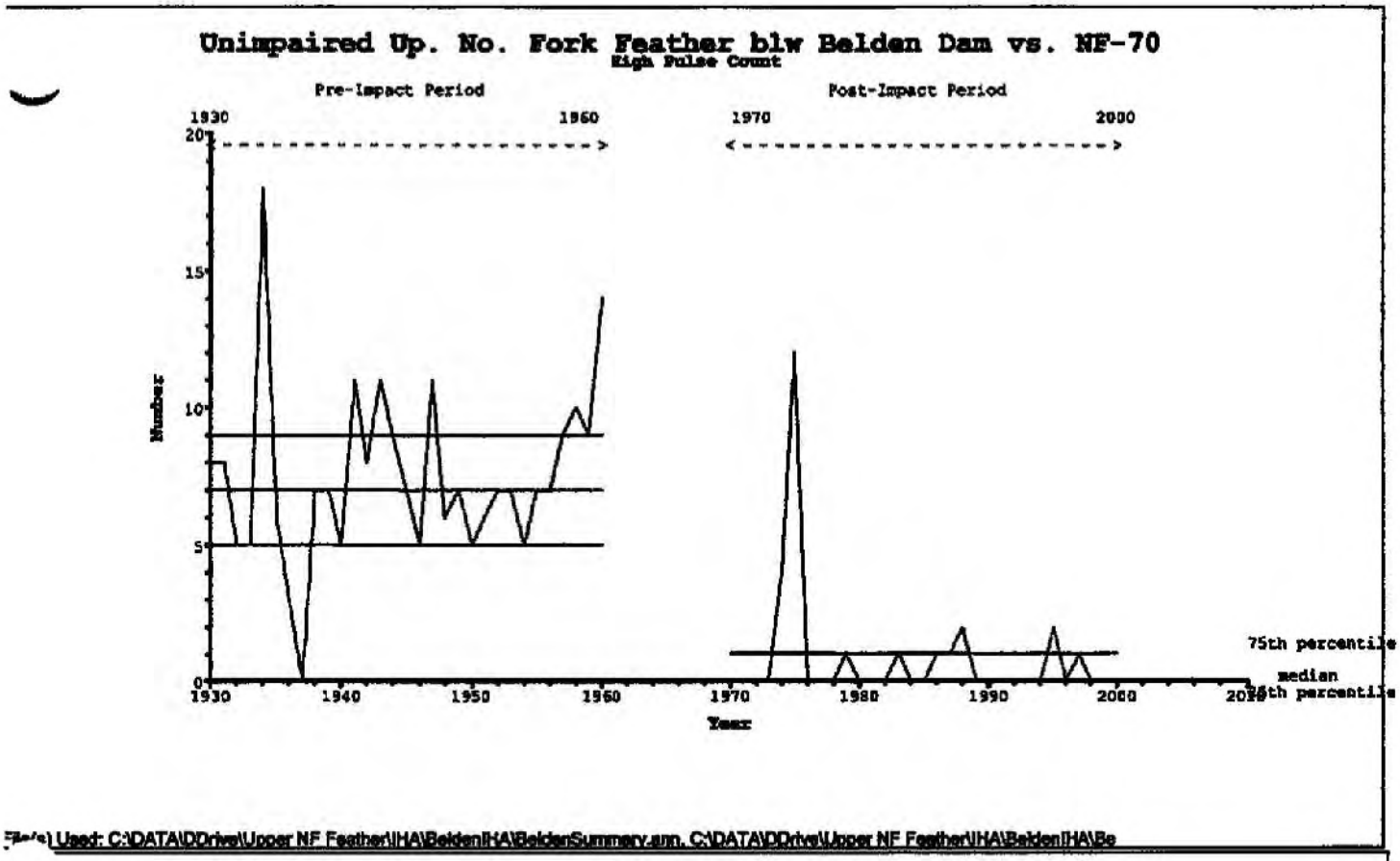

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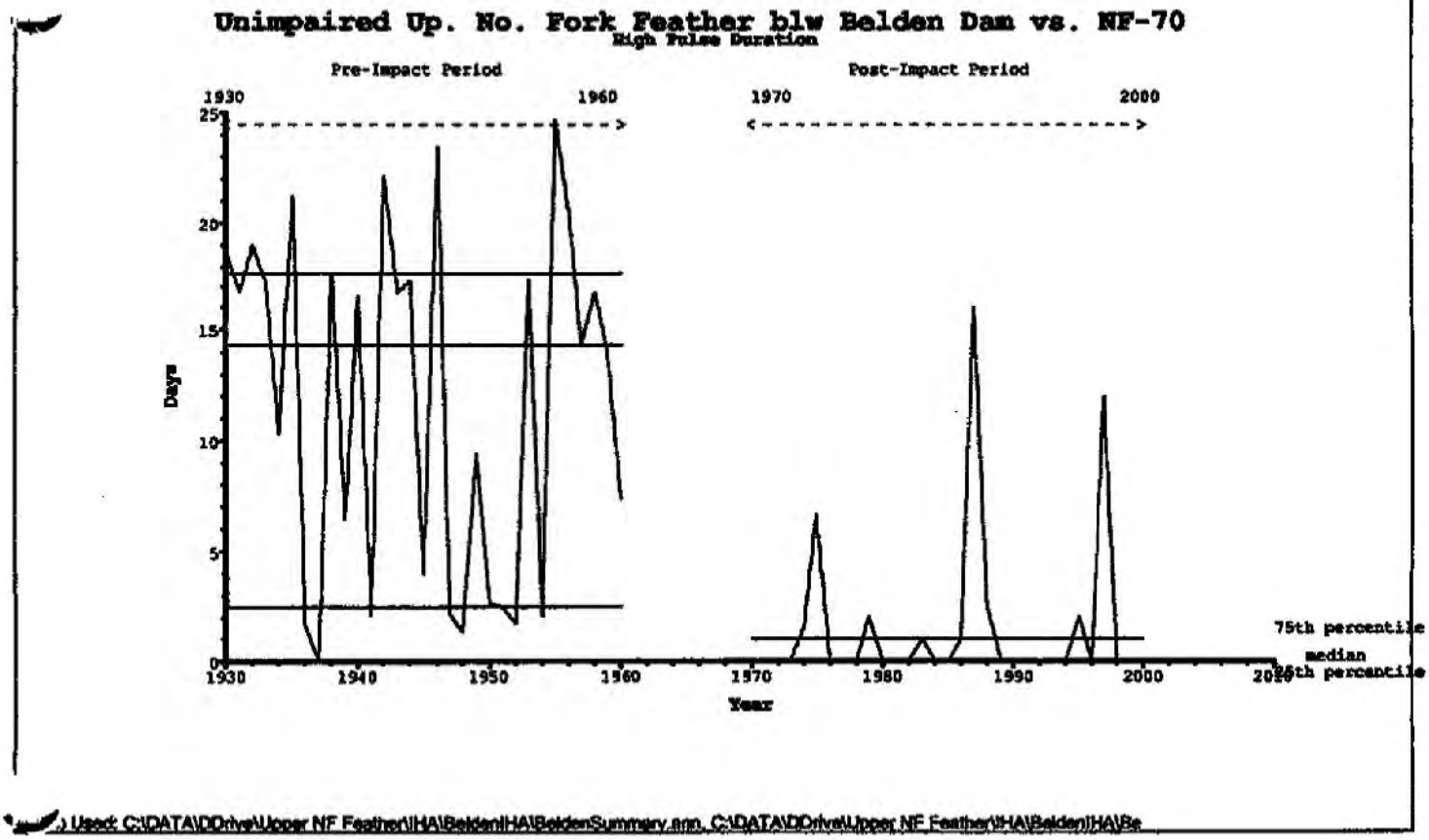

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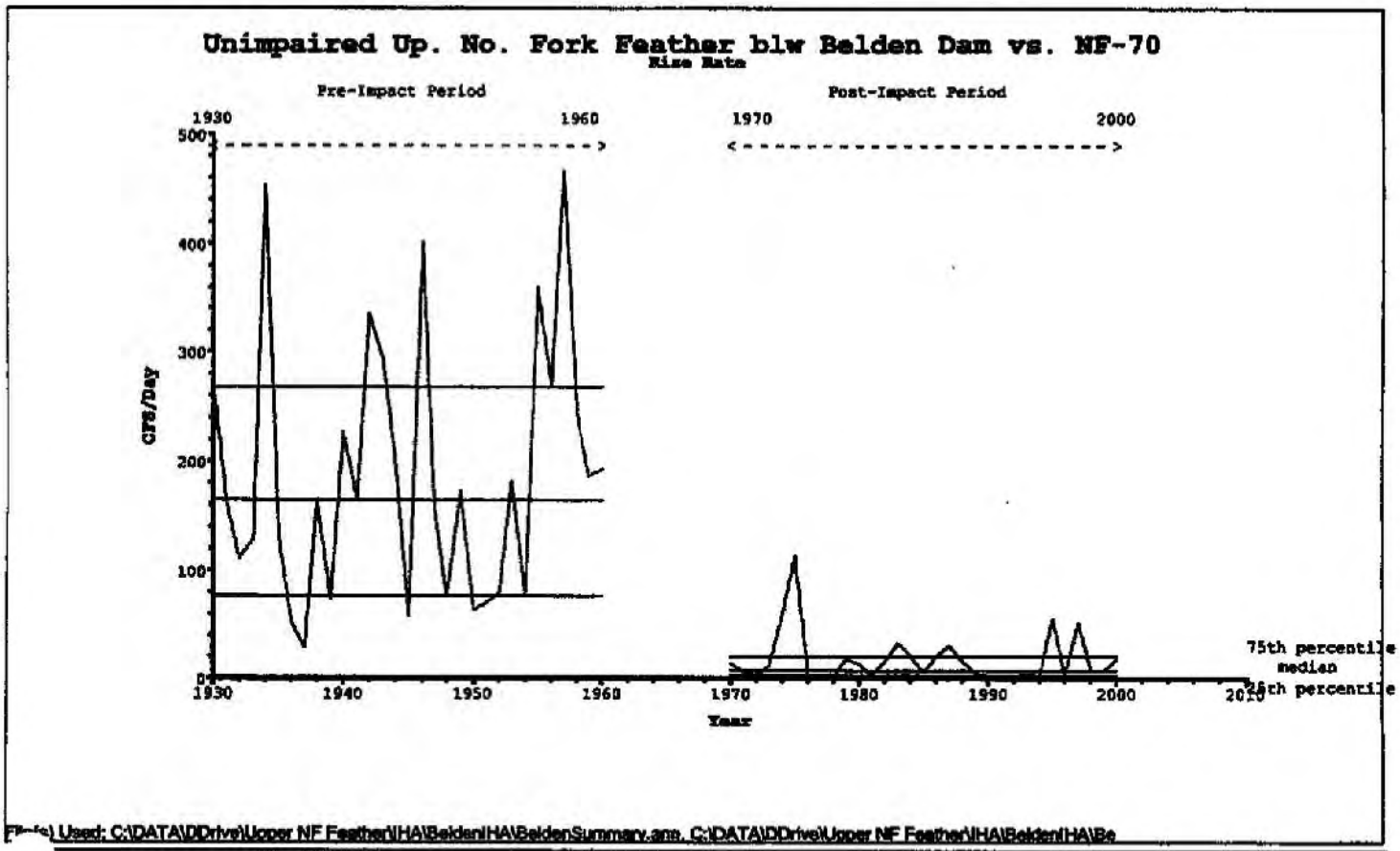

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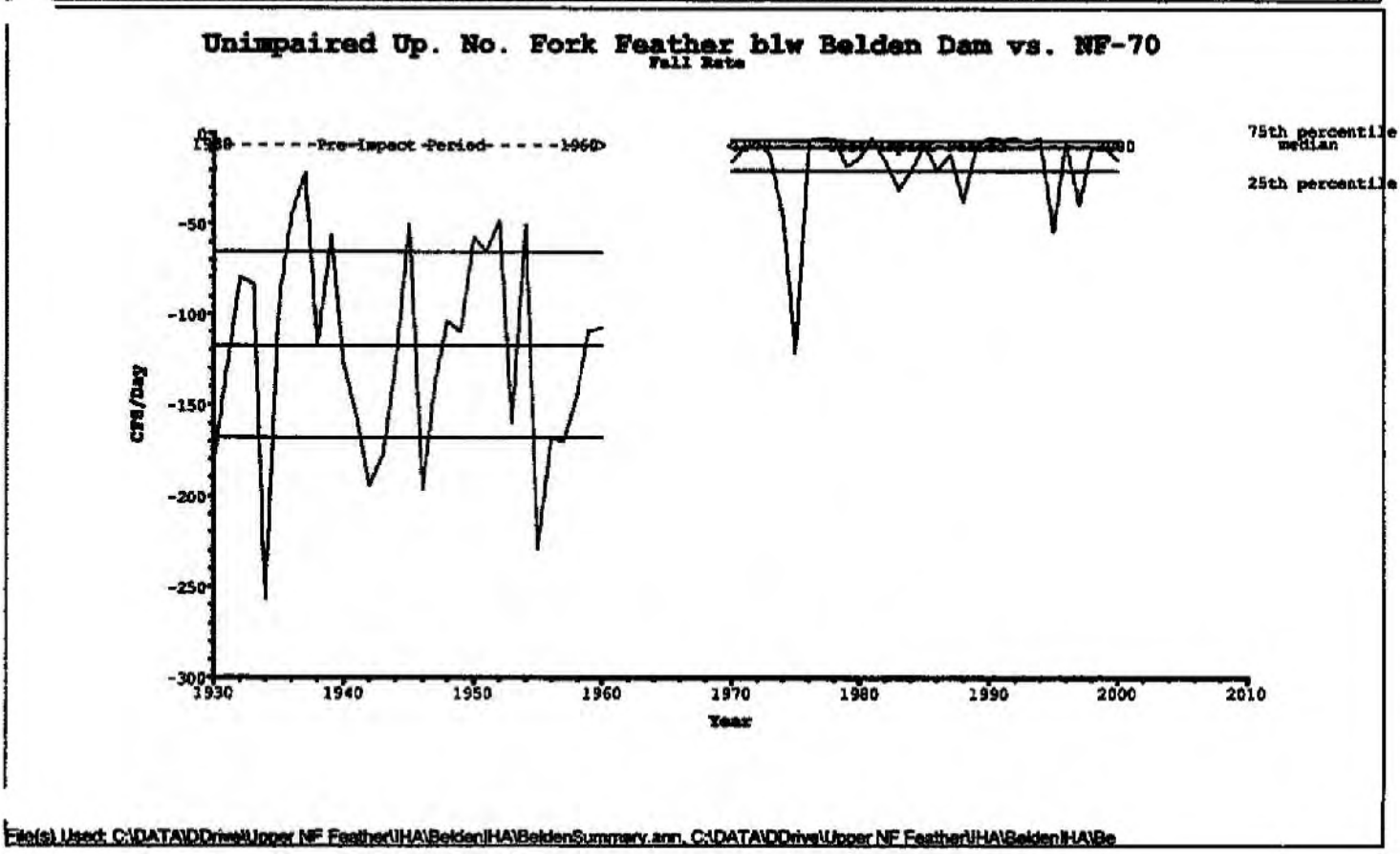

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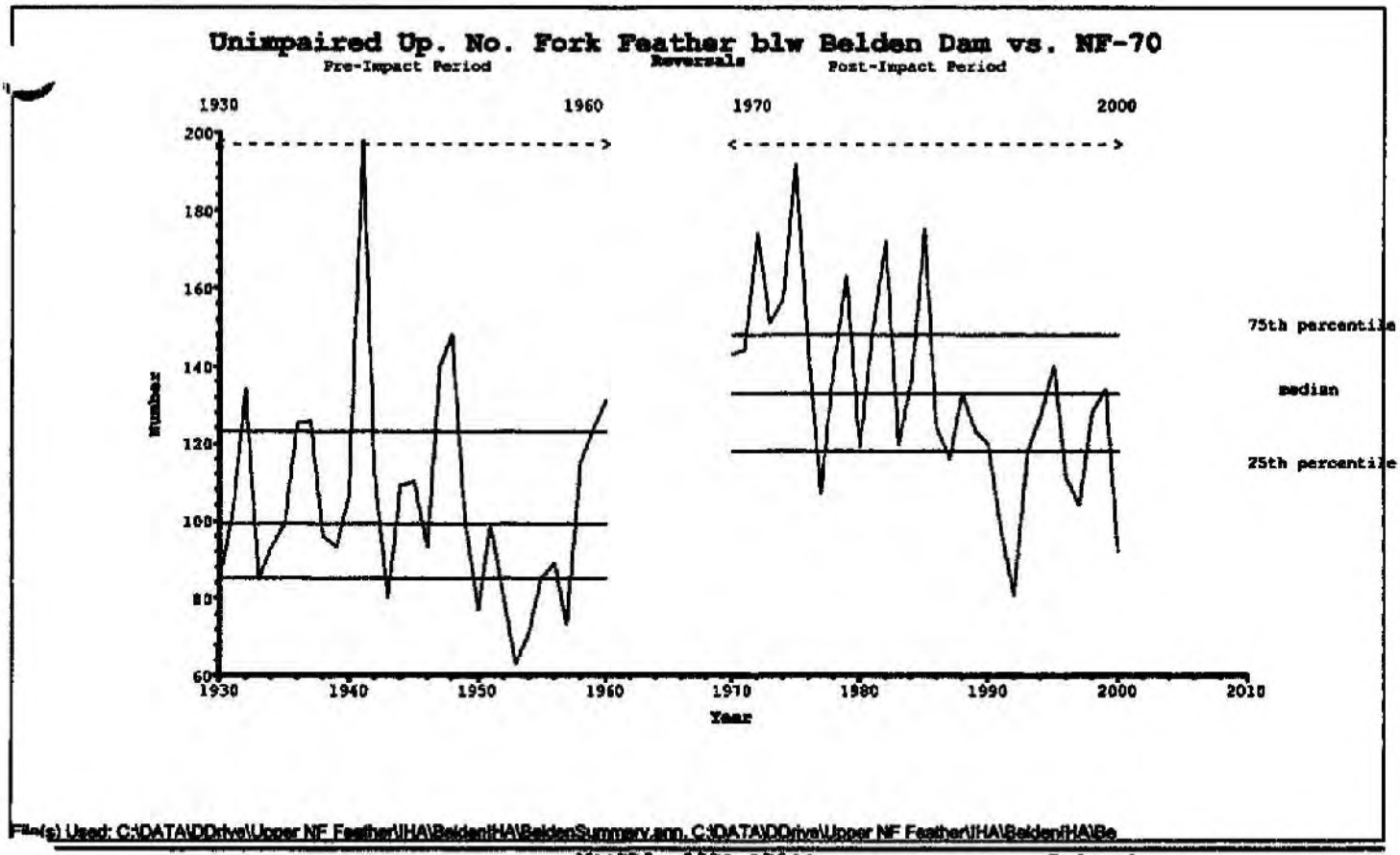

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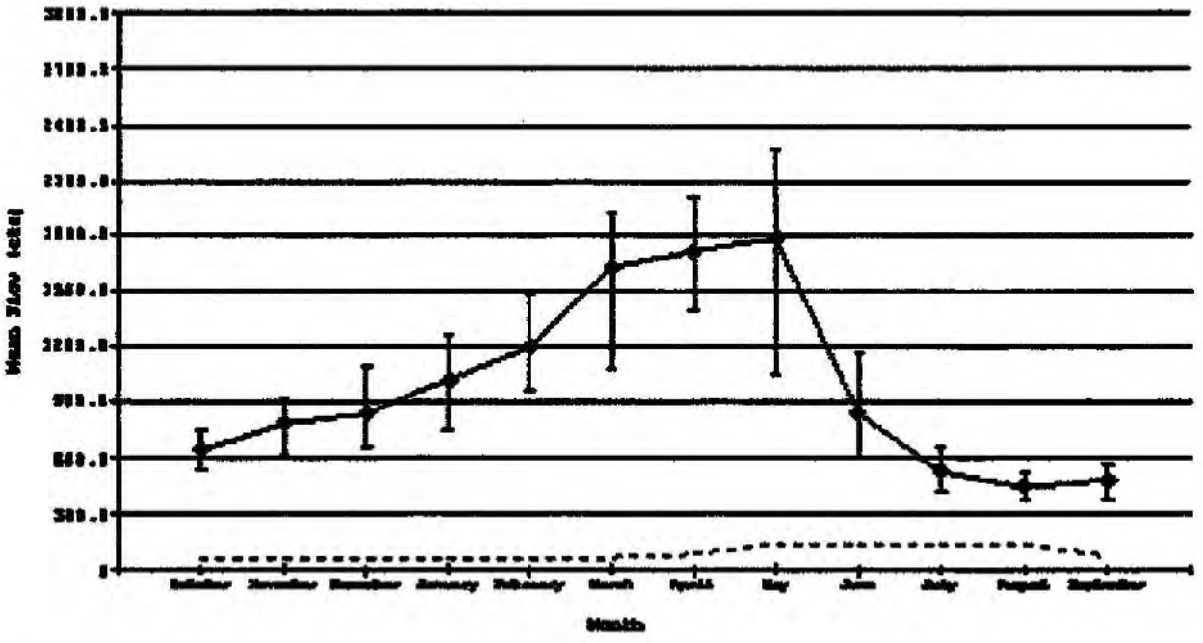

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Non-Par ametric IHA Scorecard

Unimpaired Up. No. Fo rk Feather blw Be lden Dam vs. NF-70

Pre-impact perio d: 1930-196 0 (31 years) Post-i mpact peri od: 1970-20 00 (31 years)

Watershed area	1	
Mean annual flow	1072	166
Mean flow/area	1072.25	165.52
Annual C. V.	0.52	0.43
Flow predictability	0.55	0.7
Constancy/predictabili ty	0.77	0.72
% of floods in 60d per iod	0.4	0.4
flood-free season	55	127

	MEDI ANS		COEFF. of DISP.		DEVIATI ON FACTOR		SIGNIFICANC COUNT	
	Pre	Post	Pre	Post	Medians	C.V.	Medians	C.V.
Parameter	Group #1							
October	642	62	0.47	0.11	0.90	0.78	0.26	0.52
November	783	82	0.59	0.07	0.92	0.88	0.42	0.43
December	837	63	0.73	0.11	0.92	0.85	0.42	0.48
January	1020	63	0.67	0.12	0.94	0.82	0.34	0.4
February	1197	64	0.77	0.16	0.95	0.79	0.34	0.41
March	1625	70	0.73	0.43	0.96	0.41	0.42	0.83
April	1712	87	0.55	1	0.95	0.83	0.18	0.17
May	1778	144	1.08	0.06	0.92	0.94	0.3	0.22
June	840	142	1.24	0.04	0.83	0.97	0.42	0.25
July	528	141	0.77	0.03	0.73	0.96	0.26	0.07
August	446	142	0.59	0.03	0.68	0.94	0.2	0.04
September	482	76	0.55	0.16	0.84	0.71	0.21	0.19
Parameter	Group #2							
1-day minimum	349	57	0.46	0.56	0.84	0.22	0.42	0.85
3-day minimum	347	58	0.54	0.24	0.83	0.55	0.42	0.8
7-day minimum	350	59	0.62	0.26	0.83	0.58	0.52	0.8
30-day minimum	368	61	0.75	0.07	0.84	0.9	0.42	0.39
90-day minimum	445	61	0.65	0.07	0.86	0.89	0.42	0.39
1-day maximum	4865	500	1.34	2.66	0.9	0.98	0.02	0.05
3-day maximum	3728	407	1.19	2.83	0.89	1.38	0.04	0.03
7-day maximum	3227	372	1.12	1.88	0.88	0.5	0.04	0.24
30-day maximum	2254	174	1.03	1.93	0.92	0.88	0.07	0.08
90-day maximum	1861	150	0.81	0.76	0.92	0.07	0.18	0.95
Number of zero days	0	0	0	0	999999	999999	0	0
Base flow	0.4	0.5	0.4	0.71	0.31	0.78	0.01	0.08
Parameter	Group #3							
Date of minimum	234	299	0.16	0.2	0.36	0.22	0	0.85
Date of maximum	63	118	0.21	0.17	0.3	0.2	0.03	0.63
Parameter	Group #4							
Low pulse count	4	2	1.25	0.5	0.5	0.6	0.01	0.16
Low pulse duration	17	107	1.14	0.69	5.29	0.39	0	0.41
High pulse count	7	0	0.57	0	1	1	0.38	0.31
High pulse duration	14	0	1.06	0	1	1	0.08	0.05
The low pulse threshold is	525							
The high pulse level is	1342							
Parameter	Group #5							
Rise rate	163.7	8.5	1.17	2.04	0.95	0.74	0.21	0.14
Fall rate	-117.9	-7.9	-0.87	-2.12	0.93	1.44	0.09	0.07
Number of reversals	99	133	0.38	0.23	0.34	0.41	0	0.1

IHA Perc entile Data

Unimpa ired Up. N o. Fork Fe ather blw Bel den Dam vs. NF-70

Pre- impact pe riod: 1930 -1960 (31 years) Post-im pact pe riod: 1970 -2000 (31 years)

		Pre-Im pact						Post-I mpact					
	10%	25%	50%	75%	90%	(75-25)/50		10%	25%	50%	75%	90%	(75-25)/50
Parameter	Group #1												
October	395	489	642	793	867	0.47		59	61	62	68	96	0.11
November	501	579	783	1042	1799	0.59		57	61	62	65	73	0.07
December	513	633	837	1242	1940	0.73		58	61	63	67	87	0.11
January	559	689	1020	1377	2649	0.67		60	61	63	69	238	0.12
February	638	782	1197	1704	2257	0.77		60	62	64	72	264	0.16
March	877	1018	1625	2198	2881	0.73		61	62	70	92	258	0.43
April	869	1120	1712	2054	2551	0.55		69	72	87	159	606	1.00
May	765	873	1778	2799	3522	1.08		109	141	144	150	335	0.06
June	416	536	840	1581	2973	1.24		134	140	142	145	159	0.04
July	262	332	527	737	1258	0.77		129	139	141	143	149	0.03
August	242	336	448	600	784	0.59		97	139	142	144	149	0.03
September	282	361	482	628	722	0.55		63	69	76	81	174	0.16
Parameter	Group #2												
1-day minimum	191	284	349	444	521	0.46		13	28	57	60	61	0.56
3-day minimum	205	263	347	449	548	0.54		15	47	58	61	61	0.24
7-day minimum	194	264	350	479	565	0.62		20	46	59	61	61	0.26
30-day minimum	214	269	368	545	634	0.75		44	57	61	62	62	0.07
90-day minimum	249	315	445	605	693	0.65		54	59	61	63	66	0.07
1-day maximum	2165	2674	4865	9216	13566	1.34		145	161	500	1490	2300	2.66
3-day maximum	1684	2517	3728	6944	12516	1.19		143	155	407	1307	2198	2.83
7-day maximum	1342	1831	3227	5439	9255	1.12		142	152	372	778	1873	1.68
30-day maximum	989	1191	2254	3508	4960	1.03		141	145	174	482	1389	1.93
90-day maximum	904	1129	1861	2645	3333	0.81		138	142	150	255	691	0.76
Number of zero days	0	0	0	0	0	0		0	0	0	0	0	0
Base flow	0.22	0.29	0.35	0.43	0.48	0.4		0.14	0.29	0.46	0.62	0.66	0.71
Parameter	Group #3												
Date of minimum	105	215	234	274	277	0.16		252	267	299	339	48	0.2
Date of maximum	340	13	63	89	139	0.21		35	93	118	154	283	0.17
Parameter	Group #4												
Low pulse count	1	1	4	6	11	1		2	2	2	3	7	0.5
Low pulse duration	0	4	17	23	56	1		1	33	107	107	126	0.69
High pulse count	5	5	7	9	11	1		0	0	0	1	2	0
High pulse duration	2	3	14	18	22	1		0	0	0	1	6	0
Parameter	Group #5												
Rise rate	59.6	76.4	163.7	267.8	392.9	1.2		2.5	3.4	8.5	20.7	55.1	2.0
Fall rate	-196.4	-168.3	-117.9	-65.9	-48.5	-0.9		-44.9	-20.3	-7.9	-3.5	-2.5	-2.1
Number of reversals	74	85	99	123	139	0		98	118	133	148	174	0