ORIGINAL

Protect Lake Almanor

February 2, 2021

Ms. Kimberly D. Bose, Secretary
FEDERAL ENERGY REGULATORY COMMISSION 888 – 1st Street, N.E.
Washington, D.C. 20426-0001

Subject: Upper North Fork Feather River Hydroelectric Project, FERC Project No. 2105; California SWRCB proposed Certification and Water Quality Conditions

We are writing to the Federal Energy Regulatory Commission as individuals with a keen interest in Lake Almanor and the surrounding communities, and as well, some of the signers are former members of the Plumas County's Project 2105 Settlement Agreement negotiating committee.
Plumas County refused to concur with the SWRCB position that water should be withdrawn from Lake Almanor via the Prattville Intake tower for cooling in the Rock Creek Cresta reach. This stance was based on years of studies conducted to determine the feasibility and environmental soundness of such action. As a result, the Settlement Agreement of 2004 reached no unanimity on this topic.

At the time of the negotiations the focus was on drafting cold water from the lake via a pair of thermal curtains in Lake Almanor and Butt Reservoir. The entire community, and beyond, was involved in resisting this process and campaigned actively, using science and facts to support the opposition. Now, in the proposed Certification, taking much colder water from the deeper trench at the Canyon Dam Intake tower represents no improvement in environmental responsibility over thermal curtains which actually remain in the SWRCB attempted Certification.

Over 20 years have passed since the studies and negotiations began and the issue has languished in the SWRCB hands for nearly 17 of those years. Nothing has been added to the evidence base that supports withdrawing cold water from the lake, either by thermal curtains or from the Canyon Dam Intake tower. In fact, even more evidence has come forward (see Stetson Engineers "Level 3 Report, page ES-3) underlining the unreasonableness of the proposals contained in the disputed SWRCB Certification. This report identified wildly irresponsible financial and fossil fuel burdens to be placed on the customers of PG&E and their environment.

We ask that FERC deny any withdrawal of cold water from Lake Almanor beyond the agreed to amounts listed in the Settlement Agreement (Exhibit C).

In fact, given intervening developments in climate change action plans for both California, AB 32, and considering the Plumas County General Plan Climate Action Plan it may be incumbent upon FERC to re-examine both the Recreational Releases and the Settlement Agreement releases, (Exhibit C - Table 1A) to determine how appropriate are the magnitudes of these releases given today's climate conditions.

Following is a nearly 25-year summary of relevant studies and findings underscoring the folly of drawing cold water from Lake Almanor.

- **Studies regarding the impact on water quality, fisheries and the economy of withdrawing cold water from Lake Almanor have been done by numerous experts over the years and all have clearly predicted damage to the resources of Lake Almanor. No study has concluded that any of the proposed methods of draining cold water are environmentally safe or cost-effective. (See Appendix A for specific studies and summaries).**

    - The most common solution given to mitigate the damage to fisheries is to replant to compensate for fish kill in Lake Almanor, all to make a stretch 30 miles downstream arguably healthier. PG&E studies released in July 2005 concluded that *"the overall benefits of such modest gains in trout habitat are expected to be very limited and not measurable given natural fish population variability. Also, this alternative has a potential for having corresponding effect of reducing cold water fish habitat in Lake Almanor, reducing fish production in Butt Valley Reservoir, and reducing the quality of cold-water fish habitat in the Seneca Reach, resulting in a decrease of the aquatic resources and recreational value in each reservoir and the Seneca Reach" (Rock Creek-Cresta Project FERC1962 ....2005 Final Report, PG&E).*

    - No evidence has been submitted that release of water from Lake Almanor was the best method to enhance the fishery at the Rock Creek Cresta reach nearly 30 miles below Lake Almanor or that any cost-effective method was available, except the Fishery Enhance Mitigation Fund.

    - As early as 1996, during Licensing of Rock Creek-Cresta, project License 1962, the FERC Notice of Availability of Draft Assessment – November 1, 1996 declared that *"...PG&E and CDFG have separately concluded that equal or greater protection and enhancement of NFFR fishery resources would result if PG&E provides funds for fishery enhancement projects....Therefore, CDFG and PG&E have agreed to amend the Agreement by deleting the requirement to modify the Prattville intake structure..."*. Two notes regarding this statement:
        - This is the same department, CDFG with a changed name, now CDFW, that recently wrote FERC supporting the Certifications Conditions imposed by the SWRCB. A complete reversal after signing the Rock Creek-Cresta Agreement. Note that Settlement Agreements require concurrence of all parties to meet and amend the terms. This, unfortunately, is an indicator of whether the State feels bound by their agreements and applies directly to the claim that SWRCB has protections in the "Conditions" which are really based on "good faith".
        - In compliance with the Rock Creek-Cresta Agreement, PG&E established the "Coldwater Habitat and Fishery Mitigation and Enhancement Fund" with an initial commitment of $5,000,000.
    - In other declarations since 1996, both FERC and PG&E have declared that the installation of the Thermal Curtain, or "funding other structures for cooling the waters", in addition to the $5,000,000 funding mentioned above, are recommendations they would not support. (*FERC Draft EIR of 2004, page 361*). FERC has also deemed that any temperature protection of cold-water habitat would have to be "reasonably" done,.
    - Numerous studies funded by PG&E have found no reasonably cost-effective alternatives (*Rock Creek-Cresta Project FERC1962 ....2005 Final Report, PG&E*) In the next section, the Stetson Report will show just how unreasonable the cost for Alternative 3 (SWRCB Condition 6) would be.

- **Unsupportable Cost:**
  - *Stetson Engineers*, in 2009, prepared a study for the SWRCB titled *"Level 3 Report"*. In that report Stetson described the cost of Alternative 3 upon which the SWRCB based their "Conditions" for the Certification. The costs shown for the Alternative 3, when added to the costs already agreed to in the Settlement Agreement - *("Present Day" – Table ES-3 of Exhibit B)* defy the imagination for environmentally unsound and wasteful mandated spending by a government agency.
  - The Settlement Agreement in 2004 contained a table for future releases at Canyon Dam (Appendix B) which contained no clarification regarding the real cost of structure modifications, O&M and lost generation. Those costs were later identified by the *Stetson Report (page E-15)*.

    - Cost to implement the Settlement Agreement releases:
      - $4,894,000 for modifications to the Canyon Dam Intake Tower:
      - $601,000 amortized annually
      - $24,000 for annual operations and maintenance
      - 47,940,000 kilowatt hours of lost generation each year (enough to provide electricity for over 8,500 residences annually at California averages)
      - $3,116,000 cost of lost KWH at 2009 calculations
        - Total Cost, in 2009 dollars of $3,741,000 or, over the life of the license - **$187,050,000 (escalated at 2% = $316,411,500).**

    - Cost to implement the Condition 6 in the SWRCB's attempted Certification, releasing 250cfs during summer months (*"Modify Canyon Dam..."* in Table ES-3, Exhibit B) :
      - The modifications to the intake tower would already be in place to implement the Settlement Agreement
      - 39,600,000 KWH of lost generation (enough to provide electricity for over 7,000 residences)
      - $2,572,500 cost of lost generation
        - Total Cost, in 2009 dollars of $2,572,500 over the life of the license - **$128,625,000 (escalated at 2% = $217,538,000).**

    - Cost to install a thermal curtain if SWRCB decides it is needed after operating under Condition 6.
      - $14,847,000 for Prattville, plus
      - $1,072,000 for Butt Lake (Caribou Intake)
      - $2,896,000 annual amortized cost
      - $235,000 annual operations and maintenance cost for both curtains

  - Total cost, in 2009 dollars of $3,131,000 or, over the life of the thermal curtains (40 years estimated) - **$125,240,000 (escalated at 2% = $189,600,000).**

- The costs above are in 2009 costs, escalating all three alternatives at a conservative 2% annually brings the more realistic cost to **$723,018,000 and enough foregone generation to provide electricity for 15,500 average residences annually.**
  - Energy cost calculations are highly volatile and probably conservative in this case because of when they were done.
  - California is now a state short of electric supply and a state which plans to shut down Diablo Canyon nuclear power plant, which along with its tandem Helms Pump Back Storage hydro plant, make a significant part of PG&E peaking electric supply.
  - The grid will forego the generation and the ratepayer bears the cost in rate increases under all three schemes.

- **SWRCB's Certification Condition 6 is contrary to the Plumas County General Plan's Climate Action Plan provisions as well as California's legislation regarding greenhouse gas emissions GHGs.**
  - *"Climate change is presently thought to be both naturally occurring and induced by increases in the amounts of carbon dioxide (CO_2) and other GHGs in the earth's atmosphere, attributable to the burning of fossil fuels. Evidence has been steadily growing that human activities have helped speed and magnify changes in the global climate. The burning of fossil fuels, mostly coal and oil, is the primary manmade cause of GHGs, a fact that has led to calls for increased energy efficiency and use of renewable sources of energy."* (direct quote from **Plumas County General Plan 2035** adopted 2013).
  - The foregone energy in the Stetson tables refers to renewable, clean peaking energy which is most likely to be replaced with natural gas energy at great cost to the ratepayer and the environment.

For questions or more information please contact Michael Willhoit (cmwill@frontiernet.net or 530-251-7281)

Sincerely,

William M Dennison

Bill Dennison, Chairman – former Plumas County Supervisor/Project 2105 Negotiation Committee Chair 2004

Michael Willhoit, Member – Plumas County Project 2105 Negotiation Committee 2004

Dale Knutson – Member - Plumas County Project 2105 Negotiation Committee 2004

Aaron Seandel – Plumas County Project 2105 Negotiation Committee 2004

Robert Lambert - Plumas County Project 2105 Negotiation Committee 2004/Retired Hydro Engineer

Susan Bryner – President Chester/Lake Almanor Chamber of Commerce

Dr. Gina Johnston by William M Dennison

Dr. Gina Johnston – California State University Chico, retired Professor of Chemistry/Water Sampling 2009-20

Dennis Williams – Former Superintendent of Schools, Plumas County

Tom McGowan

Tom McGowan, Chair, Plumas County Commission

Exhibit A

Feb. 2, 2021

Lake Almanor and the North Fork of the Feather River – Project 2105.

Proposal to damage Lake Almanor water quality, fisheries and local economy by California State Water Resources Control Board.

The entire process of justifying taking cold water from Lake Almanor to cool the Rock Creek-Cresta reaches of the North Fork of the Feather River was based on a specious construction of "facts".

- Removing cold water from Lake Almanor was an issue in 1996 during the Re-licensing negotiations for Rock Creek/Cresta power systems (Project 1962). Simultaneously, fisheries experts told the parties that habitat, not water temperature, was the problem and that is what should be addressed. Below are supporting documents and studies that refute the premise of experimenting with the water quality and fish habitat of Lake Almanor to "benefit" downstream waters.

Following are some, but not all, of the comments contrary to the support of cold-water withdrawal from Lake Almanor regarding the downstream temperature.

- **FERC Notice of Availabiiity of Draft Assessment** – dated November 1, 1996,
  "Based on the results of physical model studies and their projected temperature benefits, PG&E and CDFG have separately concluded that equal or greater protection and enhancement of NFFR fisher resources would result if PG&E provides funds for fishery enhancement projects ...Therefore, CDFG and PG&E have agreed to amend the Agreement by deleting the requirement to modify the Prattville intake structure..." .

- PG&E, under Settlement Agreement 1962 established the "Coldwater Habitat and Fishery Mitigation and Enhancement Fund" with an initial commitment of $5,000,000 .

- **FERC's Draft EIR for 2105** in 2004 (page 361) said,
  "We do not adopt Interiors recommendation to develop a water temperature management plan, fund and construct a modified Prattville intake, and fund other structure(s) to satisfy appropriate water temperature criteria beyond that provided by the Coldwater Habitat and Fishery Mitigation and Enhancement Fund under the relicensing SA for the Rock Creek-Cresta Project"... .

- **Rock Creek-Cresta Project, FERC Project No. 1962 License Condition 4D...Additional Reasonable Water Temperature Control Measures, July 2005** – PG&E commissioned a multi-million-dollar study of all 24 alternatives put forth to lower the temperature of the Rock Creek-Cresta reaches. The conclusion with regard to withdrawing water from the Canyon Dam intake was summarized as,
  "The overall benefits of such modest gains in trout habitat are expected to be very limited and not measurable given natural fish population variability. Also, this alternative has a potential for

having a corresponding effect of reducing cold water fish habitat in Lake Almanor... . All of the alternatives identified and evaluated have substantial costs in the range of tens of millions of dollars which, if implemented, would likely be borne by Licensee's electric customers".

- Lorena Gorbet, representing the Mountain Maidu spoke on several occasions of the need to do river and creek reclamation in the tributaries to return them to their natural state and thus lower water temperatures and make suitable habitat for salmonids on the hottest days. The Maidu, having acquired the Humbug Valley/Yellow Creek lands through the Pacific Lands and Forest Stewardship resulting from PG&E's bankruptcy settlement have embarked on such a demonstration project.
  SWRCB was mute on all proposals to lower water temperatures naturally using environmentally friendly techniques.

- **Project 1962 FERC license Condition No. 4** reads,
  "In order to reasonable protect cold freshwater habitat, Licensee shall maintain daily temperatures of 20 degrees Celsius or less in the Rock Creek and Cresta Reaches, to the extent that Licensee can reasonably (underlines added) do so".
  In the same document the statement was made that the Thermal Curtain was not cost-effective. Even the Canyon Dam alternative exceeds the 2004 cost-effectiveness cited in the Draft EIR cited above.

Failing to find clear historical or scientific backing for a lower temperature in the Rock Creek-Cresta reaches, the SWRCB embarked in a different direction in 2006 – reclassifying the UNFFR as a "temperature impaired body of water" using the 2006 federal Clean Water Act Section 303(d) List of Water Quality Limited Segments For California.

- Work papers for this effort used some curious reasoning. First, this term appears frequently, *"In the absence of necessary data to interpret numeric water quality objectives, recent temperature monitoring data shall be compared to the temperature requirements for aquatic life in the water segment. In many cases, fisheries, particularly salmonid, represent the beneficial uses".* Essentially, the claim was that if the salmonids were in the habitat, the historical record must show that the water was colder; completely ignoring history, the fact that the fish naturally sought colder water during heat spells in the colder tributaries and that railroad and highway alterations to the culverts, as well as blocked migration structures related to the former, were factors altering the health of the salmonids.
  Finally, SWRCB summed up this line of logic with weak evidence: two photographs with one being a 1911 trout catch in baskets and the second of two Maidu women with a string of ("probably") several trout, this from 1915.

- **Association of California Water Agencies** – October 20, 2006 expressed concern about *"the inadequate justification for a proposed listing from temperature impairment on the North Feather River".* It also challenged the agency regarding the propriety of the SWRCB using instantaneous daily maximum temperature exceedances as the basis for temperature listing.

- **California Regional Water Quality Control Board, Central Valley Region (their own agency) - in a letter of December 1, 2005 from the Assistant Executive Officer provided three pages of**

reasons why the UNFFR should not be listed as a temperature impaired water, concluding with this paragraph,
"In conclusion, we do not support 303(d) temperature listing for the NF Feather River based on information we have (including information referenced in the two-page listing summary). We request that you include this letter with your comments to SWRCB on the current proposed listings."

SWRCB then proceeded to list the NFFR as temperature impaired without historical or scientific support. From that point a 14-year delay in the Project 2105 license continued without justification.

Damage to the water quality and fisheries of Lake Almanor and Butt Reservoir has always been in the forefront of the many studies done regarding withdrawing cold water from Lake Almanor.

- **A. Jacob Odgaard, University of Iowa professor**, head of the team that conducted the Thermal Curtain modeling, said in an interview that,
"continuous withdrawal of only cold water could deplete that lake's cold-water supply, resulting in damage to the lake habitat". This was at the very start of the examination of Thermal Curtains.

- **Prattville Intake Modification and Potential Impact to Lake Almanor Fishery Study – Thomas R. Payne and Associates 2004** - summarized water withdrawal through Thermal Curtains...
"Seven percent of the Lake was suitable for salmonids without the curtain and 4% was simulated to have been suitable with a curtain. That is only a 3% difference when compared to the whole lake volume, but a 38% reduction in available salmonid habitat with a curtain as opposed to without the curtain". ..."For August 7, 2000 this method yielded no simulated suitable habitat using the criteria of less than or equal to 20 degrees centigrade and DO concentrations greater than or equal to 5 mg/l under existing conditions."...
..."The existing summertime conditions currently stress the salmonid populations".
..."Dead salmonids have been observed by SCUBA divers in the Big Spring area. Whether this was due to overcrowding during times of severe habitat reduction would require further investigation".

- Later studies, Jones and Stokes, Stetson and others have all recognized the Thomas Payne report but with varying opinions on the severity of the damage to the habitat. None discounted the effect of cold-water withdrawal. All to often the solution for the "minimal damage" to Lake Almanor salmonids was to plant more fish to compensate for those killed in the process of making the downstream reach more healthy; not to prevent fill kill but to grow them larger.

- **Lake Almanor Watershed Group/Sierra Institute** – Has been conducting water quality sampling in Lake Almanor since 2009 under the direction of Dr. Gina Johnston. Dr. Johnston summarizes the current water quality situation and the prospects for safe water in Lake Almanor under Condition 6 of the SWRCB disputed order in her recent statement: "In the Draft Water Quality Certification for P, G & E, the California State Water Resources Control Board is allowing releases of 250 cfs from Canyon Dam at Lake Almanor from June 16 to September 16 to improve water temperature in the North Fork of the Feather River. The removal of cold water from the hypolimnion of Lake Almanor will have negative impacts on the habitat of cold-water fish. It may mix nutrients from the hypolimnion into the overlying metalimnion and promote

algal growth. It will result in the transport of metals and nutrients from the hypolimnion into the downstream waters of the North Fork Feather River. I have been conducting limnological studies of Lake Almanor since 2009. Our studies have shown that key water quality conditions at Lake Almanor have worsened compared to earlier studies. Thermal stratification is established earlier and persists longer. By August there is no oxygen in the hypolimnion and these anoxic conditions last until turnover in late September or early October. In drought years, anoxia will occur even earlier. There is no suitable habitat (in terms of temperature and oxygen) for cold-water fish species in the entire reservoir for most of the summer and early fall. The eastern basin is the only part of the reservoir with cold water and fish tend to congregate there as summer progresses. The removal of cold water from the reservoir from June – September will decrease an already scarce resource and may result in fish kills. Typically, nutrients accumulate in the hypolimnion during the summer, as they are released by decomposition and chemical reactions. Removal of water from the hypolimnion at the rate of 250 cfs will cause mixing of the hypolimnetic water with the overlying metalimnion. This will warm the hypolimnion (further decreasing fish habitat) and will transport nutrients higher in the water column. These conditions may encourage increased algal growth, particular blue-green species. Anoxic conditions allow for chemical reactions at the sediment-water interface to release metals and nutrients into the hypolimnion during the period of thermal stratification. The withdrawal of water from the hypolimnion will result in the transport of a "cocktail" of metals (we have detected elevated levels of aluminum, arsenic, copper, iron, manganese, mercury and zinc), as well as nitrogen and phosphorous compounds, to the Seneca Reach in the North Fork Feather River.

The action of SWRCB is resulting in the deterioration of water quality in Lake Almanor by decreasing cold-water fish habitat, disrupting thermal stratification and nutrient distribution and transporting metals and nutrients into the downstream water. No current data have been presented to show that water withdrawal from Lake Almanor will improve fish habitat in the Rock Creek or Cresta Reaches of the Feather River". (Dr. Gina Johnston, Retired Professor at California State University, Chico).

This letter does not address the metrics of the environmental impact of replacing the foregone power generation with fossil fuel, the CO2 addition to the atmosphere or any costs attendant to that problem. However, in a State with problems currently meeting electric supply and capacity needs, the Conditions of this "Certification" are wildly irresponsible dictates.

In addition to the environmental impact of replacing hydro peaking power with fossil fuel is that the SWRCB's proposed Certification is diametrically opposed to both AB 32 and the Plumas County General Plan's "Climate Action Plan".

The final result of the campaign to remove cold water from Lake Almanor was the disputed "401 Certification" issued by the SWRCB on July 15, 2020. The FERC granted PG&E a Waiver of certification on July 16, 2020. SWRCB appealed the Waiver, action which was denied because FERC took no action on the Appeal within 30 days.

FERC should eliminate the entire order to withdraw water from Canyon Dam and/or install Prattville Thermal Curtains on the basis of the

- Continued failure to show a historical or scientific foundation for cooling the Rock Creek- Cresta reaches;

- Lack of specific studies to determine the impact of the damage to the environment, lake and economy;
- Probable damage to Lake Almanor water quality, fishery and the local economy.
- Unreasonable cost - $725,000,000, or more, over the life of the License is irresponsible;
- Contradiction to California Climate Action Plan (AB 32) and Plumas County General Plan 2035 (Climate Action Plan), adopted in 2013. Both aim to reduce fossil fuels and increase "green" energy specifically wind, solar and hydro.

We support Pacific Gas and Electric's position that cold water not be removed from Lake Almanor via the Canyon Dam Intake beyond that measure agreed to in the Settlement Agreement of 2004.
We urge the FERC to issue the license promptly, 18 years have been more than enough time for the SWRCB to act responsibly.

EXHIBIT B

LEVEL 3 REPORT

ANALYSIS OF TEMPERATURE CONTROL ALTERNATIVES ADVANCED FROM LEVEL 2 DESIGNED TO MEET WATER QUALITY REQUIREMENTS AND PROTECT COLD FRESHWATER HABITAT ALONG THE NORTH FORK FEATHER RIVER

Prepared For

State Water Resources Control Board

September 2009

Prepared By

Stetson Engineers, Inc.

STETSON
ENGINEERS INC.

EXHIBIT B(1)

Table ES-3 Estimated Costs of Level 3 Alternatives

Alternative	Measures	Capital Cost ($)	Annualized Cost ($/year)				
			Amortized Capital (50 years)	Annual O&M	Foregone Power Generation Loss		Total ($/year)
					KWh ×10⁶/ year	$/year	
Baseline	None	-	-	-	-	-	**0**
"Present Day"	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to Those Given in the Partial Settlement	4,894,000	601,000	24,000	[illegible]	3,116,000	**3,741,000**
Alternative 3	Install Prattville Intake Thermal Curtain and Remove Submerged Levees	21,338,000	2,622,000	213,000	0.00	0	2,835,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 250 cfs (in July and August)	4,894,000	601,000	24,000	[illegible]	1,715,000	2,340,000
	* [illegible] INCREASE				[illegible]	3,116,000	3,116,000
	Total [illegible]	**34,952,000**	**4,295,000**	**324,000**	**74.33**	**4,831,000**	**9,450,000**
Alternative 3x	Install Prattville Intake Thermal Curtain and Remove Submerged Levees	21,338,000	2,622,000	213,000	0.00	0	2,835,000
	Operate Caribou #1 PH Preferentially	0	0	0	[illegible]	736,000	736,000
	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	[illegible]	5,146,000	6,515,000
					[illegible]	3,116,000	3,116,000
	Total	**32,040,000**	**3,937,000**	**267,000**	**138.43**	**8,998,000**	**13,202,000**
Alternative 4a	Install Prattville Intake Thermal Curtain	14,847,000	1,824,000	148,000	0.00	0	1,972,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
					[illegible]	3,116,000	3,116,000
	Total	**23,567,000**	**2,896,000**	**235,000**	**47.94**	**3,116,000**	**6,247,000**
Alternative 4b	Install Prattville Intake Thermal Curtain	14,847,000	1,824,000	148,000	0.00	0	1,972,000
	Operate Caribou #1 PH Preferentially	0	0	0	[illegible]	904,000	904,000
					[illegible]	3,116,000	3,116,000
	Total	**14,847,000**	**1,824,000**	**148,000**	**61.85**	**4,020,000**	**5,992,000**
Alternative 4c	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	[illegible]	5,146,000	6,515,000
	Operate Caribou #1 PH Preferentially	0	0	0	[illegible]	736,000	736,000
					[illegible]	3,116,000	3,116,000
	Total	**10,702,000**	**1,315,000**	**54,000**	**138.43**	**8,998,000**	**10,367,000**
Alternative 4d	Modify Canyon Dam Low-Level Outlet to Increase Canyon Dam Release to 600 cfs (in July and August)	10,702,000	1,315,000	54,000	[illegible]	5,146,000	6,515,000
	Install Caribou Intake Thermal Curtain	8,720,000	1,072,000	87,000	0.00	0	1,159,000
					[illegible]	3,116,000	3,116,000
	Total	**19,422,000**	**2,387,000**	**141,000**	**127.11**	**8,262,000**	**10,790,000**

1) Foregone power generation loss is due to increased Canyon Dam releases to those given in the Partial Settlement and commensurate flow reductions through the Butt Valley, Caribou #1, and Caribou #2 PHs.
2) Additional foregone power generation loss is due to the increased Canyon Dam release in July and August under the alternative and commensurate flow reductions through the Butt Valley, Caribou #1, and Caribou #2 PHs.
3) Additional foregone power generation loss is due to the lower turbine efficiency of Caribou #1 PH relative to Caribou #2 PH (by about 15%).

APPENDIX A. Protection, Mitigation, and Enhancement Measures Recommended to be Included in New Project License, Section 4(e) Conditions, and Other Mandatory License Conditions

Section 1. Streamflow Management

1. Minimum Streamflows. For the preservation and improvement of aquatic resources in the Project area, Licensee shall maintain specified Minimum Streamflows and release Pulse Flows below Project dams as measured at gages NF-2 and NF-70 in accordance with the Tables A-1 and A-2 below. The Minimum Streamflows identified are minimum release requirements as per Paragraph 5. The Parties recognize that the SWRCB's 401 Certification may adjust Table A-2 Streamflows in June through September to achieve water temperatures protective of cold, freshwater habitat, as determined to be under reasonable control of Project operation. Minimum Streamflows shall commence within 60 days of the issuance of the New Project License, unless facility modifications are required.

Table A-1. Releases from Canyon Dam

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CD												
Dry												
Normal												
Wet												

Table A-2. Releases from Belden Dam

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CD												
Dry												
Normal												
Wet												

Where facility modification is required to implement the efficient release of Minimum

PLUMAS COUNTY GENERAL PLAN EXHIBIT D

Multiple zoning districts may be consistent with a single General Plan land use classification, as long as the densities and unit types allowed within each zoning district are also permitted in the relevant General Plan category.

B. Spatial Patterns

The Zoning Map should reflect the general pattern of land use depicted on the General Plan Diagram. However, the two need not be identical. The boundaries of land use classifications represented on the Land Use Map are generalized; boundaries on the Zoning Map are usually more precise and parcel-specific.

C. Timing

California State law allows a "reasonable amount of time" for reconciling any inconsistencies between the Zoning Ordinance and the General Plan (See Government Code Section 65860).

Climate Change and the General Plan

Climate change may be one of the greatest challenges facing the Sierra Nevada region in the coming decades. The potential changes will pose challenges to the environment, economies and communities. These challenges have become an increasing concern in California, the nation, and the world. Climate change is presently thought to be both naturally occurring and induced by increases in the amounts of carbon dioxide (CO_2) and other GHGs in the earth's atmosphere, attributable to the burning of fossil fuels. Evidence has been steadily growing that human activities have helped speed and magnify changes in the global climate. The burning of fossil fuels, mostly coal and oil, is the primary manmade cause of GHGs, a fact that has led to calls for increased energy efficiency and use of renewable sources of energy. Since 2005, there have been a number of legislative changes that cover GHG impacts from land use planning decisions.

- Governor Schwarzenegger issued Executive Order **S-3-05** in June 2005, setting GHG emission targets for the State to meet, starting with a reduction to 2000 GHG emission levels by 2010, 10% below 1990 levels by 2020 and concluding with a reduction to 80% below 1990 numbers by 2050. This order directed the California Environmental Protection Agency (CAL EPA), Business, Transportation and Housing Agency, California Air Resources Board (CARB), the California Energy Commission, and the Public Utilities Commission (PUC) to work together to develop a Climate Action Plan and report back on progress on meeting the Statewide targets.
- In 2006, Governor Schwarzenegger signed **AB 32**, which established the first set of limits on GHG emissions for the state of California and put into place the regulatory framework needed to reach those targets. AB 32 set the 10% below 1990 GHG emissions level as a target to be achieved by 2020. In order to meet this goal, the California Air Resources Board has developed GHG emissions reporting procedures.
- In 2008, Governor Schwarzenegger signed **SB 375**, which sets out planning concepts intended to reduce vehicle travel by promoting more compact development; ideas which are incorporated in this General Plan. A goal of SB 375 is to help curb GHG emissions. Taken together, both S-3-05 and AB 32 set the emission targets that Plumas County will eventually be required to attain. While explicit thresholds and requirements have yet to be developed, various state agencies have begun to examine proposed land use plans and specific projects for their potential GHG impacts. Three important steps in helping to reduce potential climate change impacts are the creation of an inventory of existing GHGs and a plan to reduce these emissions.

PLUMAS COUNTY GENERAL PLAN EXHIBIT D

Step 1: GHG Inventory

A GHG inventory will provide the County with the tools to better understand the level of GHGs that are currently being emitted, where these emissions come from, and how they are projected to increase over time. To calculate the level of GHGs a community emits within a given year, data on source production is collected and converted into an equivalent of CO_2. This provides a baseline against which the County can track its progress on lowering GHG emissions. Additionally, by taking into account population and job growth rates, an agency can predict what its GHG emissions will be in the future.

Step 2: GHG Reduction Plan

A GHG Reduction Plan (GHGRP) or Climate Action Plan (CAP) identifies ways in which a city, county, or community can reduce GHG emissions and addresses adaptation to the inevitable effects of climate change. A typical target for a Climate Action Plan is a 15% reduction below 2005 levels by 2020. A Climate Action Plan outlines transportation, land use, energy use, and waste production measures to achieve its target and proposes a timeline for implementation. Climate Action Plans are becoming increasingly popular as a way to spread awareness of climate change, to reduce an area's impact on the environment, and to save money on energy bills. Additionally, when referenced in general plans and environmental documents, Climate Action Plans signify a public agency's efforts to combat climate change.

Step 3: Develop a Strategy for Carbon Sequestration.

Beyond reducing emissions of GHGs, Plumas County's extensive forests will play a role in combating climate change by sequestering carbon—the CO_2 created by the burning of fossil fuels is turned into the structure of the trees themselves and removed from the atmosphere. A report by the United States Department of Agriculture says of forests:

"Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth."

Directing new growth into established towns and communities where opportunities for increasing bike, pedestrian and transit systems where they are more appropriate and realistic, will help lower transportation related GHG emissions. Improving building energy efficiency standards and promoting the use of renewable sources including wind, solar, hydropower, and geothermal will lower emissions as well as consumption of fossil fuels in the County as a whole.

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Planning for climate change provides strategies that can also address other issues that affect community livability and sustainability. With rising energy and fuel costs, plans that direct more compact patterns of development, which encourages and facilitates the placement of employment in close proximity to housing, can significantly reduce miles traveled to work, reducing personal transportation costs and public infrastructure costs. A plan that supports and facilitates locally grown and processed meats and produce can provide less expensive and healthier food options that don't carry the typical associated transportation costs.

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