June 18, 2008

GROSS RESERVOIR HYDROELECTRIC PROJECT NO. 2035-030
PROPOSED LICENSE AMENDMENT

DENVER WATER'S PRE-APPLICATION DOCUMENT

The City and County of Denver, acting by and through its Board of Water Commissioners (Denver Water) received a license in 2001 from the Federal Energy Regulatory Commission (FERC) to generate 5 MW of hydroelectric power at Denver Water's Gross Reservoir, located in Boulder County, Colorado. On October 1, 2004, the FERC issued an order amending the license after Denver Water applied for a capacity increase and a new design/location for the powerhouse. The powerhouse is now constructed and can generate a total of 7,598 kW with a generator nameplate capacity of 8,100 kW.

As are all Denver Water's reservoir facilities, Gross Reservoir is operated for water supply purposes, with generation of hydroelectric power being an ancillary benefit resulting from such operations. In other words, the reservoir is never operated for the sole purpose of generating hydroelectric power. Rather, the reservoir is operated to meet water supply needs, with hydroelectric power being generated only when water supply operations require releases from the reservoir.

To increase its water supply, Denver Water is applying to the U.S. Army Corps of Engineers (Corps) for a Clean Water Act section 404 permit that will allow Denver Water to construct a project. The Corps is currently drafting a Draft Environmental Impact Statement (DEIS) that analyzes alternatives enlarging Gross reservoir. Denver Water will provide a draft FERC amendment application when the DEIS is released, referencing the DEIS as Exhibit E to the draft amendment application. Because the Corps is analyzing the impacts of enlarging Gross Reservoir for purposes of a §404 permit, the information required for Exhibit E of the application will be found in that document. Therefore, Denver Water is providing general information in this document about the options for amending its FERC license associated with an enlargement of Gross Reservoir.

After the FERC license amendment consultation process, Denver Water will ultimately be seeking FERC approval for an enlarged Gross Reservoir. This enlargement will require that certain facilities within the FERC Project Boundary get relocated, including roads, trails and other recreation facilities. Additionally, Denver Water is exploring hydroelectric generation opportunities that an enlarged reservoir might provide. Therefore, an amendment proposal might include increased hydroelectric generation. At a minimum, an amendment will be seeking an enlarged reservoir size, with any necessary modifications to the project boundary, and relocation of inundated facilities.

The information outlined in this document is requested from an amendment applicant in the first stage of consultation, in compliance with FERC regulations at 18 CFR § 4.38(b). While it is Denver Water's goal to have the project impacts addressed within the Corps DEIS so that the FERC may adopt the Final EIS, Denver Water will consult with the stakeholders and agencies to determine what information may be needed

for the FERC amendment application in addition to what is provided in the Corps' DEIS, if necessary.

Additionally, since Denver Water received its FERC license at Gross Reservoir in 2001, many of the plans required under that license were recently developed in coordination with stakeholders and agencies and are still being proposed for implementation for all future activities at Gross Reservoir within the FERC project boundary. For example, Denver Water will adhere to the types of facilities and maintenance under the 2001 license's Recreation Management Plan. Section VI describes these requirements.

At this time, the stakeholders and agencies are asked to review the information in this document. Denver Water will hold informational meetings about the proposed modifications as well as a site visit at Gross Reservoir as follows:

July 29, 2008: Optional site visit at Gross Reservoir 9:30 to 11:30 a.m.
If interested in the FERC project boundary site visit please RSVP to Joe Sloan, 303-628- 6320, joe.sloan@denverwater.org

Open House 1:00 to 2:00 p.m., public meetings 2:00 to 3:00 p.m. Coal Creek Canyon Community Center – 31528 Highway 72,

Open House 6:00 to 7:00 p.m., public meeting 7:00 – 9:00 p.m.
Spice of Life Event Center, 5706 Araphoe Avenue, Boulder, CO

July 30, 2008: Open House 6:00 to 7:00 p.m., public meeting 7:00 to 9:00 p.m.
Trinity Methodist Church, 1820 Broadway (Downtown Denver)
Denver, Colorado 80202

The public or interested agencies only need to RSVP for the optional FERC site visit.

Comments to Denver Water regarding the proposed modifications to the FERC license at Gross Reservoir are due by or before Monday, August 18th. Comments should a) identify issues, b) identify information needs, and c) request studies with regard to the proposed modifications to the FERC license at Gross Reservoir. The opportunity to comment on the Moffat Project and the Corps Draft EIS will be provided when the Corps releases its Draft EIS in the Fall of 2008 (comments on that document should be provided to the Corps). Please address comments on this document to Travis Bray at Denver Water, 1600 W. 12th Ave., Denver, Colorado 80204 or to travis.bray@denverwater.org by August 18th.

PROJECT INFORMATION

I. MAPS

Detailed maps showing the current project boundary and locations of the powerhouse, transmission lines, and any other appurtenant facility are provided in Attachment 1, General Design Drawings and Project Boundary Map.

II. CURRENT ENGINEERING DESIGN

The following description is the general engineering design of the current engineering design.

A. Powerhouse

The hydroelectric powerhouse building site is located approximately 440 feet downstream of the existing valve house. The powerhouse contains two horizontal turbines, two generators, and associated mechanical and electrical equipment. The power house is approximately 45 feet wide, 95 feet long, and 35 feet tall. It is constructed of concrete and was designed to compliment the architectural features of the existing dam and valve house structures. There is a small parking area south of the powerhouse.

A 66-inch diameter penstock pipe supplies water to the turbines. The penstock alignment follows the gravel roadway. Isolation valves are installed between the penstock and the valve house piping.

The powerhouse contains electrical and mechanical equipment necessary to operate and maintain the turbines and generators. Major powerhouse equipment includes electrical distribution equipment, HVAC equipment, generator control and protection equipment, generator grounding equipment, a DC battery system, a bridge crane, a hydraulic pressure unit, a lube oil system, penstock piping and turbine inlet valves.

B. Turbines and Generators

The powerhouse holds two horizontal Francis turbines, designed for a rated output of 3799 kW each, and two synchronous generators, rated at 4500 kVA. The total hydraulic capacity is 7598 kW (7.6 MW). The turbine maximum efficiency point is 91.45% at 320 ft. and 125 cfs for a turbine rating of 3094 kW. The corresponding generator output is approximately 2995 kW at a 0.9 PF and 3328 at a 1.0 PF. The generator full load rating is 4050 kW at a 0.9 PF or 4500 kVA. During turbine operations, a minimum flow of 5 cfs is released through the valve outlet house to maintain stream flow in the river between the valve house and the powerhouse.

C. Tailrace Flumes

Turbine tailraces and weirs are included in the draft tube discharge. The tailraces are an integral part of the powerhouse with the discharge into South Boulder Creek.

D. Switchyard

The switchyard is upstream and adjacent to the powerhouse. The switchyard includes an overhead power line take-off structure, 25 kV switchgear, two main power transformers, two neutral grounding reactors, a powerhouse transformer, 5kV switchgear and underground duct banks to the 25 kV transmission lines, caretaker's residence, powerhouse, and valve outlet house. The switchyard has cast in place concrete walls around it and transformer oil containment curbs.

E. Transmission Lines

25 kV overhead transmission lines feed power to the site from the electric utility (Xcel energy). The lines are upslope of South Boulder Creek and align the East end of Gross Reservoir to the Xcel Energy point of interconnection. Poles are approximately 45 feet tall and were designed in conformance with raptor protection guidelines.

III. PROPOSED ENGINEERING DESIGN

Denver Water's Moffat Project, which is in the permitting process by the Corps, proposes to enlarge Gross Reservoir and dam by one of four various heights (different enlargement sizes depend on whether the enlargement is a component of a project alternative or the entire solution). This document will describe the lowest Gross Reservoir raise and the largest raise to explain the range of changes that could occur within the FERC project boundary.

A. Dam

<u>Proposed Reservoir Enlargement Range: 40,700 acre-feet to 72,000 acre-feet</u>

Denver Water's Moffat Collection System Project is currently exploring five project alternatives in the DEIS, all of which propose enlarging Gross Reservoir and dam. Therefore, a range of reservoir enlargement sizes is described in this document to indicate the range of options and impacts associated with the different proposed reservoir enlargements. The proposed reservoir enlargements would range in size from the smallest addition of 40,700 acre-feet, to the largest addition of 72,000 acre-feet.

Expansion of the reservoir would be accomplished by raising the present 340 feet dam height and extending the dam footprint downstream of the existing dam. The smallest enlargement raises the dam height approximately 85 feet, inundates approximately 240 acres of land, and increases the existing storage capacity from 41,811 acre-feet to approximately 82,500 acre-feet. The largest proposed alternative would raise the dam approximately 125 feet, inundates approximately 400 acres of land, and increases the storage capacity to nearly 114,000 acre-feet (see Attachment 2).

The current FERC project boundary would need to be expanded for all project alternatives. Denver Water proposes to amend the current FERC project boundary to include the entire reservoir footprint. With the largest enlargement, Denver Water would

propose moving the FERC project boundary in three locations, including both private and federal lands.

In utilizing an enlarged Gross Reservoir, Denver Water would continue to operate the existing collection system (Fraser and Williams Fork Collection Systems) and conveyance facilities (South Boulder Canal and South Boulder Creek) for delivery. None of the enlargements require improvements or construction of new or additional water collection or delivery infrastructure.

The State of Colorado's dam safety standards have changed since the original construction of Gross Reservoir and now include a requirement for the construction of a new emergency spillway if upgrades are made to an existing dam structure. Denver Water will design a new spillway for any size enlargement of the reservoir and dam.

B. Powerhouse and Penstock

In 2007, Denver Water completed construction of a hydroelectric plant, which has a hydraulic capacity of approximately 7.6 megawatts (MW) and an electrical capacity of 8.1 MW. During power plant construction, the existing penstock was bifurcated to allow Denver Water the ability to run water through the hydroelectric plant for power generation or to bypass water through the existing outlet works. With the range of reservoir enlargements, Denver Water proposes the following change to the powerhouse:

Enlargement Range	Proposed Change	Generation Capacity
All Enlargements	Install upstream pressure reducing valve (PRV) to bring the net head condition back to the current design. The PRV could be installed in the existing penstock valve vault.	8.1 MW

Denver Water does not propose adding a new powerhouse and associated equipment with any of the enlargements. An additional powerhouse and additional units would not be economically feasible.

C. Turbine and Generator

The range of enlargements could offer the following options for Denver Water to propose in its draft FERC amendment application:

Enlargement Range	Proposed Change	Generation Capacity
All Enlargements	No changes to the turbines or generators	8.1 MW
	Existing hydro turbines would be evaluated for operation at higher head and if economical, turbines would be modified to allow some additional energy production. Existing generators have a maximum output capacity of 8.1 MW and would not be modified for any enlargement size	8.1 MW

D. **Tailrace Flumes**

With any of the enlargements, Denver Water would utilize the existing tailrace flumes. No changes are proposed.

E. **Switchyard**

With any of the enlargements, Denver Water would utilize the existing switchyard. No changes are proposed.

F. **Transmission Lines**

With any of the enlargements, Denver Water would utilize the existing transmission lines. No changes are proposed.

IV. PROPOSED OPERATIONAL MODE

Annual energy production will vary depending on the dam raise and the modifications to the existing penstock, and turbine. The existing configuration (turbine and generator) captures 90% of the potential energy if an upstream pressure reducing valve (PRV) is installed. The upstream PRV would either be a cone valve or metal seated butterfly valve and both would be installed in the existing penstock valve vault. If a cone valve is used, the existing butterfly valve vault would have to be expanded. The addition of a PRV would not change the generating capacity (8.1 MW) of the existing generators.

Another option, which is still being evaluated, is the possibility of modifying the turbine equipment to operate at a higher head with the same maximum outflow (315 cfs). The existing generator (8.1 MW capacity) would not be modified. Alstom, the hydro equipment manufacturer, is presently evaluating the technical limitation of the existing turbine and the associated cost of any modifications. A preliminary analysis shows that the additional energy generated by installing the PRV and modified turbines would be two to three million kwh's per year. Furthermore, the annual energy generated would vary depending on the weather, demands on the water system and other operational variables.

V. AFFECTED ENVIRONMENT

A. Analysis of the enlarged reservoir construction and operation

The Corps and its consultant have identified the environment to be affected by the proposed enlargements of Gross Reservoir. Denver Water will reference the Corps' DEIS when it, concurrent to the release of the DEIS, releases the draft FERC amendment application to the agencies and stakeholders for review. For purposes of the FERC license amendment, the relevant portions of the Draft EIS will be those sections discussing the impacts associated with the changes within the FERC project boundary (and the expanded boundary). The DEIS will substitute for Exhibit E in the draft FERC amendment application. The DEIS will describe impacts associated with changes within the FERC project boundary to:

1. Aquatics
2. Wetlands
3. Threatened and Endangered and Sensitive Plant and Animal Species
4. Visual Impacts
5. Noise
6. Water Quality
7. Wildlife

B. Additional Analysis proposed by Denver Water

Denver Water is proposing to supplement the information available in the DEIS to include the following information in the FERC amendment application:

1. **Tree Removal Technique**

Denver Water will propose the range of methods and analyze the range of impacts associated with the process of removing trees where the enlarged reservoir will inundate the land. At this time, Denver Water has identified the methods available to remove trees around the reservoir (see Attachment 3).[1]

[1] The tree removal plan has incorrect information related to the size of each vegetation type being removed. However, the methods proposed for removal should remain the same.

2. Relocation of Existing, Planned, and New Recreation Facilities

Denver Water developed a Recreation Management Plan (RMP), prescribing construction and maintenance of recreation facilities, pursuant to a condition under the current FERC license. Development of the RMP was a collaborative effort with stakeholder and agency input. Therefore, Denver Water is proposing to adhere to the types of facilities and level of management desired by the participants under that plan. Denver Water's consultant recently analyzed relocation of those recreation facilities and proposed a plan that provides the same amenities along with the possibility of some additional facilities. The majority of facilities would need to be relocated even with the smallest enlargement. This plan demonstrates where facilities would be relocated with the largest enlargement (see Attachment 4). Denver Water will determine the associated impacts with the relocation and construction of new facilities in the FERC amendment application.

3. Relocated Roads and Associated Reservoir Facilities

Denver Water will analyze the impacts of any temporary or permanent roads that are not included in the DEIS, if any, that may be determined necessary with the enlargements.

4. New Hydropower Facilities and Operations, If Any

Denver Water will analyze the impacts of any new facilities or structures, and operations of additional hydropower generation.

COMPLIANCE WITH CURRENT LICENSE ARTICLES

Denver Water is proposing to adhere to the applicable articles under the current license with regard to the project modifications. The articles described below prescribe Denver Water's requirements at Gross Reservoir. These articles require specific plans that were developed and approved in coordination with stakeholders and agencies involved in the recent FERC re-licensing of Gross Reservoir. The articles provided below pertain to resources and environmental protection that is to occur during the term of the license. Generally, these articles provide:

ARTICLE NUMBER	ARTICLE REQUIREMENT
401	Erosion control plan
402	Dissolved oxygen and temperature monitoring
403	Ramping rates
404	Ramping rate monitoring
405	Rehabilitation and restoration of project lands disturbed by unmanaged recreation
406	Weed management plan
407	Forest management plan for insect

	infestations and wildfires
408	Transmission line compliance with raptor protection guidelines and dates
409	Recreation signs and gate installation
410	Rare and sensitive species plan
411	Payment under Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin
412 & 413	Platte River Basin Endangered Species Recovery Implementation Program participation
414	Visual resource protection plan
415	Discovery of archeological or historic sites
416	Recreation management plan
417	Recreation monitoring
418	Recreation safety and enforcement
419	Use and occupancy of lands in the project boundary
420	Public access plan

With the exception of the relocation of facilities within the RMP, Denver Water is not proposing modifications to these plans and requirements.

VI. STREAMFLOW AND WATER REGIME

Streamflow and water regime information, including drainage area, natural flow periodicity, monthly flow rates and durations, mean flow figures illustrating the mean daily streamflow curve for each month of the year at the point of diversion or impoundment, and including the location of the stream gauging station, the method used to generate the streamflow data provided, and copies of the records used to derive the flow data used in Denver Water's engineering calculations will be provided in the DEIS (substituted for Exhibit E of the FERC amendment application). Gross Reservoir is operated for water supply purposes and generation of power is an ancillary benefit as water is released. Denver Water's streamflow and water regime information is solely determined by operation of Denver Water's water supply system, which is not changed or affected by this proposed amendment, or by generation of power on any of Denver Water's facilities, in general.

VII. NO PURPA BENEFITS SOUGHT

Denver Water will not be seeking benefits under section 210 of the Public Utilities Regulatory Policies Act (PURPA).

VIII. PROPOSED STUDIES

As described above, Denver Water is proposing the following studies to further analyze the impacts associated with an enlarged Gross reservoir, including the relocation of facilities and the addition of hydropower generation:

A. Impacts associated with tree removal within and around the inundated area.
B. Impacts associated with relocation of roads, structures and facilities, and recreation facilities.
C. Impacts associated with increased hydropower generation.

Studies associated with the construction and operation of an enlarged reservoir were conducted by the Corps' consultant and will be addressed in the DEIS, which will be substituted for Exhibit E in the draft FERC amendment application.

REVIEW PERIOD AND CONCLUSION

A. Comments

Agencies and stakeholders have 60 days to review this information and provide comments to Denver Water. Comments are to be provided to Denver Water regarding the information contained in this document.

B. Waiver

Under FERC regulations, an agency or stakeholder can agree to waive their participation in the rest of the pre-application consultation process. This waives the requirement that the agency and stakeholder review and comment on the draft FERC amendment application. If an agency or stakeholder believes this step can be waived by them because the public review of the DEIS and the information and studies proposed in this document are sufficient to meet the needs and interests of the stakeholder or agency, Denver Water would appreciate a statement from the agency or stakeholders by the end of the comment period indicating that interests are met by the studies proposed and conducted in the DEIS and in Denver Water's FERC amendment application. If consultation is waived by a stakeholder or agency, the stakeholder or agency will be able to review the Final FERC amendment application. The stakeholder or agency will also be able to review and comment on the DEIS through the Corps' process.

Denver Water appreciates your review and cooperation, and we look forward to hearing your comments or your determination that your interests are addressed through the DEIS and the proposed studies under this document, waiving your participation in the rest of the consultation process.