Manual of Standard Special Articles

Federal Energy Regulatory Commission
Office of Hydropower Licensing
Paper No. DPR-4
April 1992

MANUAL OF STANDARD SPECIAL ARTICLES

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Division of Project Review
Office of Hydropower Licensing

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Director's Introduction

In this publication, we discuss the articles the Commission staff may include in preliminary permits, exemptions, and licenses for nonfederal hydropower projects as a result of their engineering, environmental, and economic evaluations. These articles, called standard special articles (SSA's), were developed over the years and recently revised by the Commission's Article Revision Group.

By publishing this manual, the Division of Project Review (DPR) hopes to achieve the following objectives:

(1) explain to developers and consultants, resource and federal land management agencies, conservation organizations, and other entities how and why DPR uses SSA's to require the implementation of specific administrative activities, public safety measures, and environmental mitigation and enhancement;

(2) guide DPR staff members who will be responsible for developing SSA's for licenses and exemptions; and

(3) enable potential hydropower permittees, exemptees, and licensees to gain a better understanding of the measures that they may be required to implement under the terms of their preliminary permits, exemptions or licenses.

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Authors' Statement

Within the Office of Hydropower Licensing, the Division of Project Review (DPR) develops articles to be included in hydropower licenses (as well as preliminary permits and exemptions). After issuance, OHL's Division of Project Compliance and Administration monitors and enforces these article requirements.

We have organized the manual as follows.

- Section 1 presents an overview of our prelicensing procedures and explains the structure, style, and content of SSA's.
- Section 2 discusses articles included in preliminary permits.
- Section 3 explains articles found in exemptions from licensing.
- Section 4 delineates administrative articles included in licenses by DPR's project managers and project engineers. This section also provides an explanation of articles provided by the federal land management agencies pursuant to section 4(e) of the Federal Power Act.
- Section 5 evaluates environmental articles organized by resource area.

We would like to thank: Lula James, who typed this entire manuscript; John Mitchell, who edited it; and DPR staff personnel who contributed text and ideas for the manual, particularly Alan Mitchnick, supervisory wildlife biologist, and Ann Miles, supervisory recreation and land use planner.

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Section 1. Preliminary Procedures and Article Format, Style, and Content

Commission regulations require potential applicants to implement a three-stage consultation procedure. Before filing an application, they must consult with federal and state resource agencies and Indian tribes and conduct environmental and engineering studies necessary to determine the potential impacts of project construction and operation on water quantity and quality, area soils, aquatic and terrestrial resources, cultural sites, land uses, recreational opportunities, aesthetics, and socioeconomic values.

After obtaining any additional information from an applicant, DPR staff conducts independent analyses of:

(1) the safety and adequacy of the proposed facilities;

(2) the project's levelized annual costs and revenues and its resulting economic and financial feasibility;

(3) the benefits of planned recreational facilities and any proposed environmental enhancement measures;

(4) the project's environmental and developmental impacts; and

(5) the project's consistency with relevant state and federal comprehensive plans.

The staff's environmental assessment (EA) or environmental impact statement (EIS) evaluates the recommendations of federal and state resource agencies, any Indian tribes to be affected by project construction or operation, and others concerned.

The staff's assessments of a project's design adequacy and environmental impacts result in recommendations for the inclusion of special license articles, requiring the licensee to implement specific mitigative and enhancement measures.

When a project could cause major resource conflicts that cannot be adequately mitigated, the staff may analyze and ultimately recommend an alternative project design. In some instances, the Commission may decide that a proposed project's potential environmental damage is great enough to justify denying the license.

The articles in this manual are presented in a generic rather than a project-specific form. Thus, names of rivers, plants, and animal species, values for minimum flows and reservoir elevations, dates, and other information that varies by project are indicated by leaving blank space with underlining, or by specifying in parenthesis with underlining the type of information that must be provided.

For example, an article requiring a licensee to send a copy of a report to the Director of the Commission's regional office that has responsibility for conducting periodic inspections of facilities at the project will indicate "the Commission's _____ Regional Office." The actual license article indicates which one of the Commission's five regional offices (New York, Atlanta, Chicago, San Francisco, or Portland) should receive the report.

Articles requiring certain actions:

(1) state whether the article is applicable to a permittee, exemptee, or licensee;

(2) describe the action required, including the Commission's goals and objectives;

(3) indicate when this action should occur; and

(4) provide the names of any resource agencies that must be consulted before the action occurs.

License articles designed to protect or enhance project area resources discuss the affected resources and the Commission's goals and objectives for these resources. When an article requires a licensee to file a detailed mitigative or enhancement plan for an environmental resource based on measures proposed by an applicant before licensing, we usually specify:

(1) those elements that the licensee must include in the plan;

(2) the resource agencies that the licensee must consult with in developing the plan;

(3) that the Commission reserves the authority to require changes to the plan; and

(4) that the licensee must implement the Commission - approved plan before the start of project construction or operation.

We precede each of the SSA's presented in this manual with an explanation of the reasons for its inclusion in preliminary permits, exemptions or licenses. To avoid confusion, we've separated each article from the explanatory text by starred lines, and have numbered each article according to its location by section and subsection in the manual.

Section 2. Articles Included in Preliminary Permits

A preliminary permit, issued under section 5 of the Federal Power Act, requires a permittee to conduct engineering and environmental investigations necessary to determine the feasibility of a proposed nonfederal hydropower project. The primary benefit of obtaining a permit before undertaking site surveys and filing an application to construct and operate a hydropower project is that a developer is assured that during the term of the permit (usually 3 years), a competitor cannot receive a Commission license for a project at that site.

Under a permit, a permittee has the authority to sink test pits and to conduct detailed geologic studies, but he cannot undertake any major land-clearing activities or begin construction of any proposed project facilities. A permittee is expected to install and maintain all stream gages recommended by the District Engineer of the U.S. Geological Survey.

1. Protection of Cultural Resources

After the Commission issues a public notice of an application for a permit, the State Historic Preservation Officer (SHPO) may notify the Commission that a permittee's proposed field surveys could affect one or several historic or archeological sites that are listed on or eligible for the National Register of Historic Places. When the SHPO notifies the Commission regarding potential effects on such sites (or when the staff believes that proposed ground-disturbing activities could affect such sites), we (DPR staff) include the following article in the permit, requiring the permittee to prepare a cultural resources management plan for the SHPO's approval before starting any land-disturbing activities at the project site.

****

Article 2.1. Before starting any land-disturbing or land-clearing activities, the Permittee shall submit a cultural resources management plan to the State Historic Preservation Officer (SHPO). No land-disturbing or land-clearing activities shall begin until the Permittee is notified by the SHPO that the plan is approved. Four copies of the SHPO approval document shall be filed with the Commission.

The plan, at a minimum, shall include:

(1) a list of archeological and historic properties determined to be eligible for the National Register of Historic Places;

(2) the basis for each determination of eligibility;

(3) an assessment of the activities' potential for affecting eligible properties;

(4) the Permittee's strategy for avoiding or mitigating potential project effects;

(5) a schedule for implementing avoidance or mitigation strategies; and

(6) copies of comments and recommendations of each federal agency having managerial authority over any part of the project lands.

****

2. Protection of Federal Lands Managed by the Forest Service

If a permittee proposes to conduct site surveys within a National Forest, we include the following article, requiring the permittee to enter into a memorandum of agreement (MOA) with the Forest Supervisor before undertaking proposed investigative work. The MOA must establish the permittee's measures to protect federal land and facilities during the conduct of field surveys.

****

Article 2.2. Before undertaking any investigative work under the preliminary permit on National Forest land within the proposed project boundary, the Permittee shall consult with the Forest Supervisor, (name of National Forest and address) or his designated representative, as to reasonable requirements relative to field surveys and investigations; shall cooperate with the Forest Service during the term of this permit to develop a plan for National Forest resources insofar as they are affected by any studies and investigations conducted pursuant to this permit, and shall enter into a memorandum of agreement with the Forest Service pertaining to requirements for fire prevention and control, and for alleviating injury to or destruction of Forest Service lands, resources, buildings, bridges, roads, trails, and other improvements on properties of the United States. The memorandum of agreement shall not specify mitigation or enhancement measures that relate to impacts of constructing or operating the project. The memorandum of agreement shall be effective for the term of the preliminary permit and until final Commission action on any application for exemption or license for the proposed project.

Within 90 days from the date of issuance of this order, the Permittee shall file 5 copies of the memorandum of agreement. Four copies of the memorandum of agreement shall be filed with the Commission, and one copy shall be filed with the Director of the Commission's Regional Office in which the project would be located.

****

3. Coordination with the Appropriate District Office - Corps of Engineers

When a permittee proposes to develop hydropower facilities at an existing federal dam and reservoir owned by the Corps of Engineers, we include the following article, requiring the permittee to coordinate his site studies with the appropriate Corps District Office.

****

Article 2.3. The permittee shall coordinate the studies for the proposed project authorized by this permit with the Corps of Engineers' District Office.

****

4. Coordination with the Appropriate Regional Director - Bureau of Reclamation

The following article requires a permittee who proposes to develop a hydropower project at an existing dam owned by the Bureau of Reclamation to coordinate the permittee's planned studies with the appropriate Regional Director of that agency.

****

Article 2.4. The permittee shall coordinate the studies for the proposed project authorized by this permit with the Regional Director of the Bureau of Reclamation, Department of the Interior, for the region in which the proposed project would be located.

****

5. Consideration of Fish and Wildlife Plans Developed as a result of the Pacific Northwest Electric Power Planning and Conservation Act

The following article requires a permittee who proposes to study a potential hydropower site located in Washington, Oregon, Idaho, or Montana to consider the fish and wildlife program promulgated by the Northwest Power Planning Council. The Council's program was developed to implement provisions of the federal Pacific Northwest Electric Power Planning and Conservation Act, passed by Congress in December 1980.

****

Article 2.5. In conducting fish and wildlife studies during the term of the permit, the Permittee shall consider the regional fish and wildlife program developed and amended pursuant to the Pacific Northwest Electric Power Planning and Conservation Act. A demonstration of how the proposed project would take the regional program into account must be included in the Exhibit E to any subsequent development application.

****

Section 3. Articles Included in Exemptions from Licensing

The Commission issues exemptions from licensing for:

(1) small conduit hydroelectric facilities; and

(2) small (5.0 MW or less) hydroelectric power projects. (The formal definitions of these facilities maybe found in the Commission regulations, 18 CFR, section 4.31.)

The Commission must include verbatim in exemptions all articles provided by the fish and wildlife agencies for the protection and enhancement of fishery and wildlife resources in the project area. In addition, the Commission may include one or several of the following SSA's.

1. Erosion Control Plan

An applicant who proposes to construct a project in an area with landslides or other unstable soil conditions may be unable to prepare a detailed plan to control erosion and stabilize slopes prior to the development of final project plans and specifications. We, therefore, include in the exemption from licensing the following SSA, requiring the exemptee, after consultation with appropriate federal and state agencies, to prepare and implement a site-specific plan to control erosion, stabilize area soils, and reduce dust.

****

Article 3.1. At least 90 days before the scheduled start of land-disturbing or land-clearing activities, the Exemptee shall file with the Commission, a plan to control dust and erosion, to stabilize slopes, and to minimize the quantity of sediment and other potential air or water pollutants likely to result from site access, project construction, spoil-disposal, and project operation.

The plan, at a minimum, shall include:

(1) descriptions, functional design drawings, and topographic map locations of control measures;

(2) an implementation schedule; and

(3) provisions for the Exemptee's periodic review and revision of the plan.

The Exemptee shall prepare the plan after consultation with: appropriate federal and state soil conservation, water quality, and fish and wildlife agencies; and each federal agency having managerial authority over any part of project lands.

The Exemptee shall include with the plan documentation of consultation and copies of comments and recommendations. If the Exemptee does not adopt an agency's recommendation, the filing shall state the Exemptee's reasons, including those that are based on geological, soil, and groundwater conditions at the site.

The Commission may require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Exemptee is notified by the Commission that the plan complies with the requirements of this article.

Upon Commission approval, the Exemptee shall implement the plan, including any changes required by the Commission.

****

2. Reporting Requirements Regarding the Transfer of Property Interests in an Exempted Project

The following article requires an exemptee who transfers some or all of his property interests in an exempt project (1) to inform the transferee of the terms and conditions of the exemption and (2) to notify the Commission and the appropriate Regional Director of the transferee's name and address within 30 days of the transfer.

****

Article 3.2. Before transferring any property interests in the exempt project, the exemption holder must inform the transferee of the terms and conditions of the exemption. Within 30 days of transferring the property interests, the exemption holder must inform the Commission and the Regional Director of the identity and address of the transferee.

****

3. Provision of Public Access for Outdoor Recreational Purposes

The following article requires an exemptee to provide public access to project lands and waters for outdoor recreational purposes. In addition, the article (1) requires the exemptee to post signs at major access points to inform the public of the project's recreational opportunities and (2) reserves the Commission's authority to allow public recreational use of any project property.

****

Article 3.3. The Exemptee shall allow public access to the project for outdoor recreational purposes whenever the Exemptee holds sufficient rights in land or project waters to accommodate such uses. The Exemptee shall make reasonable efforts to inform the public of the availability of recreational opportunities at the project. Such efforts shall include the posting of signs at major points of access to the project. The Commission reserves the right to require the Exemptee to allow public recreational use of any project property. The Exemptee may reserve from

public access such portions of the project as may be necessary for the protection of life, health, and property.

****

4. Conformance with the Requirements in Part 12 of the Federal Power Act

The Federal Power Act specifies in Part 12 the Commission requirements for reporting safety-related incidents, maintaining various records regarding project operation and maintenance, developing an emergency action plan, and retaining an independent consultant to inspect project facilities. This article is included in all exemptions.

****

Article 3.4. The exempted small hydroelectric power project is subject to the provisions of 18 CFR Part 12, as it may be amended. For the purposes of applying these provisions of 18 CFR Part 12, the exempted project is deemed to be a licensed project development and the owner of the exempted project is deemed to be a licensee.

****

5. Modification of Project Structures or Operations to Accommodate the Northwest Power Planning Council's Fish and Wildlife Objectives

Hydropower projects in the Northwest may be constructed and operated on a stream that the Northwest Power Planning Council sometime in the future determines to be suitable for the spawning or rearing of Chinook Salmon, steelhead, or several species of anadromous fish. The following article reserves the Commission's authority to require an exemptee to modify project structures (install upstream or downstream fish passage facilities) or alter project operations (decrease water diversions for hydropower generation) to accommodate the Council's plans for anadromous fish restoration or wildlife protection.

****

Article 3.5. The Commission reserves the authority to order, upon its own motion or upon the recommendation of federal and state fish and wildlife agencies, affected Indian Tribes, and the Northwest Power Planning Council, alterations of project structures and operations to take into account to the fullest extent practicable the regional fish and wildlife program developed pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

SECTION 4. Administrative and Engineering License Articles and Articles Provided by the Federal Land Management Agencies

I. ADMINISTRATIVE ARTICLES

DPR's Project Managers may include in each license several administrative SSA's. These articles, numbered consecutively, beginning with article 201, follow.

1. Annual Charges for Administration of the Commission's Hydropower Program

The Federal Power Act authorizes the Commission to recoup the costs of administering its hydropower program by levying annual charges on each licensee, based on (1) the total cost of hydropower administration and (2) the ratio of a project's installed generating capacity to the combined generating capacity of all similar type licensed projects.

We use the following article for licensed projects that do not involve federal lands, federal dams, or water stored in upstream federal reservoirs.

****

Article 4.I.1. The Licensee shall pay the United States an annual charge, effective the first day of the month in which this license is issued, for the purpose of reimbursing the United States for the cost of administration of Part I of the Act, as determined by the Commission. The authorized installed capacity for that purpose is ___ horsepower.

****

2. Annual Charges for the Occupancy or Use of Federal Lands and the Utilization of Water Power at a Federal Dam

In addition to annual charges for the administration of its hydropower program, the Commission collects annual charges from licensees for: (1) the acreage of federal lands either used by the project or occupied by project facilities exclusive of rights-of-way for project transmission lines; (2) the acreage of federal lands occupied by rights-of-way for project transmission lines; and (3) the use of the water power potential or the water storage of an existing federal dam.

We use the following article when a licensed project will (1) use or occupy federal land, (2) be built at a federal dam, or (3) benefit from headwater storage provided by a federal dam.

****

Article 4.I.2. The Licensee shall pay the United States the following annual charges as determined by the Commission, effective the first day of the month in which this license is issued for the purposes of:

(1) Reimbursing the United States for the cost of administration of Part I of the Act. The authorized installed capacity for that purpose is ____ horsepower.

(2) Recompensing the United States for the use, occupancy and enjoyment of ____ acres of its lands [other than for transmission line right-of-way].

(3) Recompensing the United States for the use, occupancy and enjoyment [of ___ acres] of its lands for transmission line right-of-way.

(4) Recompensing the United States for utilization of surplus water or water power from a government dam.

****

3. Back Annual Charges for Formerly Unlicensed Operating Projects

When the Commission issues an original license for a formerly unlicensed constructed and operating project, we use the following article, requiring the licensee to pay back annual charges.

These payments are based on (1) the project's installed generating capacity and (2) the number of years from the date that the Commission notified the unlicensed operator that he must obtain a FERC license until license issuance. This article eliminates any incentive for an unlicensed operator to avoid the payment of annual charges by delaying the submission of an application for license or any required additional information.

****

Article 4.I.3. The Licensee shall pay the United States an amount equal to the annual charges that would have been assessed from _____ to the last day of the month preceding the month in which this order is issued, as if the project had been licensed during that period.

****

4. Provision of Data on Installed Capacity and/or Annual Generation for Formerly Unlicensed Operating Projects

To calculate the annual charges payable by a formerly unlicensed operating project, the Commission staff must have accurate data regarding both the project's installed capacity and its annual power generation since notification of Commission jurisdiction. The following article requires the licensee to provide this information within 90 days of license issuance.

****

Article 4.I.4.A. Within 90 days from the date of issuance of this license, the Licensee shall file with the Commission: (1) a statement which includes the dates and amounts of each change in installed capacity of the project since _____; and

(2) a statement showing the gross amount of power generation for the project in kilowatt-hours for each calendar year commencing _____, in accordance with the provisions of 18 C.F.R. Part 11 of the Commission's regulations.

****

When the Commission staff is certain that an unlicensed operator has not changed a project's installed capacity since notification of Commission jurisdiction, project managers include the following article, requiring the licensee to file data only on annual power generation.

****

Article 4.I.4.B. Within 90 days from the date of issuance of this license, the Licensee shall file with the Commission, in accordance with the provisions of 18 C.F.R. Part 11 of the Commission's regulations, a statement showing the gross amount of power generation for the project in kilowatt-hours for each calendar year commencing _____ , and ending _____.

****

5. Establishment and Maintenance of a Project Amortization Reserve Account by Some Original Licensees

We include the following article in every original license for a privately owned major project. This article requires the licensee to establish and maintain an amortization reserve account after the project has been operating under license for 20 years. Funds that accumulate in this account are usually not available to the licensee.

****

Article 4.I.5. Pursuant to Section 10(d) of the Act, after the first 20 years of operation of the project under license, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves.

The Licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year after the first 20 years of operation under the license, the Licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The Licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The Licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly includible in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

****

6. Establishment and Maintenance of a Project Amortization Reserve Account by Some Relicensed Projects

We include the following article in every new license -- every relicense -- issued for a privately owned major project. The article requires the licensee to set up and maintain an amortization reserve account upon license issuance.

****

Article 4.I.6 . Pursuant to Section 10(d) of the Act, a specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The Licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the Licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The Licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The Licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly includible in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

****

7. Submission of Revised Exhibits

When we expect that a licensee may make changes in the design or location of some proposed project facilities, we include the following special article, requiring the licensee to file revised exhibits that show the redesigned facilities.

****

Article 4.I.7. Within _____ from the date of issuance of this order, the Licensee shall file, for approval, [a] revised Exhibit[s] _____ showing _____.

****

8. Headwater Benefits for Relicenses

The Licensee of an operating hydropower project that benefits from increased power generation, stemming from streamflow regulation provided by an upstream dam and reservoir, may not have been assessed headwater benefits during the term of the original license.

The Commission, in an order issued March 25, 1992, determined that: (1) the Commission has the legal authority to assess a licensee for headwater benefits it received during the term of its original license; and (2) the Commission will limit such retroactive assessments to a 25-year period before the issuance of such assessment.

When there is a need for a licensee to pay for headwater benefits received under an original license, we include the following article in the new license. This article requires the licensee to reimburse the owner of the upstream reservoir providing the headwater improvement for: (1) the assessed benefits received during the term of the original license; and (2) benefits that will be received during the term of the new license.

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Article 4.I.8. If the Licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

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9. Land Use Article - Authority Delegated to Licensees

We include the following land use article in every license issued. This article delegates authority to the licensee to

grant permission, without prior Commission approval, to build or install (1) small, noncommercial piers, landings, and boat docks, (2) embankments, bulkheads, retaining walls or similar erosion control structures to protect the existing shoreline, (3) landscape plantings, and (4) food plots.

The article also permits the licensee to lease or provide easements across project lands for certain utility rights-of-way, without prior Commission approval, provided that the licensee first consults with state and federal fish and wildlife, recreation agencies, and the SHPO.

Land uses in this category include:

(1) maintenance or replacement of existing roads and bridges;

(2) construction of storm drains, water mains, and sewer lines that do not discharge into project waters;

(3) construction of minor access roads, telephone, gas or electric utility distribution lines, and major telephone distribution cables; and

(4) installation of certain water intake or pumping facilities.

The licensee, however, must file with the Commission and the regional director, by January 31 of each year, a report that describes each conveyance made for a utility right-of-way during the preceding year.

Lastly, the article permits the licensee to lease, provide fee title to, or convey easements across project lands for certain uses, if the licensee first consults with the resource agencies and then notifies the Commission of it in writing, at least 60 days in advance of conveying any interest in project lands. The licensee may proceed with his intended conveyance, unless within 45 days of the letter's filing date, the Commission requires the licensee to submit for Commission approval an application for the proposed change in land rights.

This procedure applies to proposed changes in land rights for:

(1) new roads and bridges;

(2) sewer lines that discharge into project waters;

(3) natural gas or other pipelines that cross project lands or waters;

(4) nonproject, overhead, electric transmission lines;

(5) small private or public marinas; and

(6) recreational developments and other land uses that involve five acres or less per conveyance.

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Article 4.I.9. (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the Licensee may grant permission without prior Commission approval are:

(1) landscape plantings;

(2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings;

(3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and

(4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall:

(1) inspect the site of the proposed construction;

(2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and

(3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline.

To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for:

(1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained;

(2) storm drains and water mains;

(3) sewers that do not discharge into project waters;

(4) minor access roads;

(5) telephone, gas, and electric utility distribution lines;

(6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary;

(7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and

(8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. If no conveyance was made during the prior calendar year, the Licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for:

(1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained;

(2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained;

(3) other pipelines that cross project lands or waters but do not discharge into project waters;

(4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained;

(5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina;

(6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and

(7) other uses, if: (i) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

(1) Before conveying the interest, the Licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.

(2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.

(3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values

of the project; and (iii) the grantee shall not unduly restrict public access to project waters.

(4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the Licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

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II. GENERAL ENGINEERING ARTICLES

Project engineers in DPR are responsible for (1) reviewing preliminary project design drawings and engineering data included with each license application, (2) preparing safety and design assessments that discuss each project's engineering, economic, and financial feasibility, and (3) developing license articles that involve engineering considerations.

These articles, which are numbered consecutively beginning with article 301, require a licensee to:

(1) begin construction of project facilities within 2 years of license issuance and complete construction (usually within 4 years of license issuance);

(2) file for Commission approval a project's final contract drawings and specifications, at least 60 days before starting project construction; and

the Licensee may begin transmission line construction at the end of the 60-day period.

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C. No Transmission Line Construction Until Commission Approves Plans

If the staff believes that it will need more than 60 days to review an applicant's transmission line design plan, it uses the following article, which requires the licensee to wait for Commission approval of its proposed transmission line design before starting any transmission line construction.

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Article 5.IV.6.C. At least 90 days before the start of construction, the Licensee shall file with the Commission, for approval, a transmission line design plan, prepared in accordance with the guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines -- the state of the Art in 1981," by Raptor Research Foundation, Inc.

The plan shall consider, at a minimum, the following: (1) adequate separation of energized conductors, groundwires, and other metal hardware; (2) adequate insulation; and (3) any other measures necessary to protect raptors from electrocution hazards. The plan shall include detailed design drawings of the transmission line clearly showing phase spacing, configuration, and grounding practices, and a construction schedule.

The Licensee shall prepare the plan after consultation with the Fish and Wildlife Service, the (state agency), and the (land management agency). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt any recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No transmission line construction shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission. As-built drawings of the transmission line shall be filed in accordance with the requirements of article _____ of this license.

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V. PROTECTION OF THREATENED AND ENDANGERED SPECIES

When a project would be developed in an area that is inhabited by a fish or wildlife species protected by the

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2. Review of Contractor-Designed Cofferdams and Deep Excavations

Construction contractors selected by licensees may determine that certain cofferdams or deep excavations not included in the licensees's final plans are needed at a project site. To ensure that such temporary facilities or measures are consistent with project plans and drawings, we include the following license article, requiring the licensee to (1) review and approve contractor-designed cofferdams and deep excavations, and (2) provide copies of the approved cofferdam construction drawings and specifications to both the Commission and the Commission's regional director.

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Article 4.II.2. Before starting construction, the Licensee shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the Licensee shall submit one copy to the Commission's Regional Director and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

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3. Review of Final Plans and Specifications for Projects with New Dams

Applicants proposing to construct facilities that include a new dam must file preliminary (conceptual) plans and a supporting design report. Project engineers evaluate the preliminary drawings in the engineers' safety and design assessments. Later, licensees or their engineering consultants develop detailed drawings and specifications.

To ensure that a licensee's final plans are consistent with license-authorized project designs, we include the following article, requiring the licensee to provide the Commission and its regional director with final contract drawings and specifications -- together with a supporting design report, consistent with the Commission's engineering guidelines -- at least 60 days before the start of project construction.

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Article 4.II.3. The Licensee shall, at least 60 days prior to the start of construction, submit one copy to the Commission's Regional Director and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the final contract drawings and specifications along with an accompanying supporting design report for pertinent features of the project, such as water

retention structures, powerhouse, and water conveyance structures.

The supporting design report should be consistent with the Commission's Engineering Guidelines. The Commission may require changes in the plans and specifications to assure a safe and adequate project.

If the Licensee plans substantial changes to location, size, type, or purpose of the water retention structures, powerhouse, or water conveyance structures, the plans and specifications must be accompanied by revised Exhibit F and G drawings, as necessary.

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4. **Review of Final Plans and Specifications for Projects Not Involving New Dams**

Before starting construction, licensees of projects that include an existing rather than a new dam (or a new low-head water diversion that creates an insignificant impoundment) also are required to provide the Commission and its Regional Director with final contract drawings and specifications. Unlike licensees who propose to construct a substantial new dam, they do not have to provide a supporting design report.

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Article 4.II.4. The Licensee shall, at least 60 days prior to the start of construction, submit one copy to the Commission's Regional Director and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of the final contract drawings and specifications for pertinent features of the project, such as water retention structures, powerhouse, and water conveyance structures. The Commission may require changes in the plans and specifications to assure a safe and adequate project.

If the Licensee plans substantial changes to location, size, type, or purpose of the water-retention structures, powerhouse, or water conveyance structures, the plans and specifications must be accompanied by revised Exhibit F and G drawings, as necessary.

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5. **Retain a Board of Independent Engineering Consultants**

We include the following article when a proposed project would include a major new dam, would involve unusual design features, or would be constructed in an area with difficult geologic conditions.

The article requires the licensee to (1) retain a board of three or more independent engineering consultants who meet periodically to evaluate and propose solutions for problems concerning project design and construction and (2) submit to the Commission copies of the board's reports, along with a statement

of the licensee's intent to comply with the board's recommendations.

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Article 4.II.5. Before starting construction, the Licensee shall retain a board of three or more qualified independent engineering consultants experienced in critical disciplines such as geotechnical, mechanical and civil engineering, to review the design, specifications, and construction of the project for safety and adequacy.

The Licensee shall submit two copies of a letter with the names and qualifications of the board members (One of these shall be a courtesy copy sent to the Director of the Division of Dam Safety and Inspections) for the Commission's approval of the board, and one copy shall be sent to the Commission's _____ Regional Director.

Among other things, the board shall assess the following:

(1) the geology of the project site and surroundings;

(2) the design, specifications, and construction of the dike(s), dam(s), spillway(s), powerhouse(s), electrical and mechanical equipment, and emergency power supply;

(3) instrumentation;

(4) the filling schedule for the reservoir(s) and plans and surveillance during the initial filling; and

(5) construction procedures and progress.

Before each meeting, the Licensee shall furnish members of the board of consultants the following:

(1) a statement of the specific level of review the board is expected to provide;

(2) an agenda for the meeting;

(3) a list of the items to be discussed with the board;

(4) a discussion of significant events in the design and construction that have occurred since the last board meeting;

(5) drawings of the design and construction features; and

(6) documentation for the details and analyses of the design and construction features to be discussed.

The Licensee shall ensure that the board of consultants has sufficient time to review these items before each meeting.

At the same time as a copy of these items is provided to the board of consultants, the Licensee shall also send two copies to the Commission (one of these shall be a courtesy copy sent to the Director of the Division of Dam Safety and Inspections) and one copy to the Director of the Commission's _____ Regional Office.

Within 30 days after each board of consultants meeting, the License shall submit to the Commission copies of the board's report, and a statement of intent to comply with the board's recommendations or a statement of a plan to resolve the issue(s). The Licensee must provide detailed reasons for any recommendation of the board not implemented. The Licensee shall send two copies of this submission to the Commission (one of these shall be a courtesy copy sent to Director of the Division of Dam Safety and Inspections) and one copy to the Director of the Commission's _____ Regional Office.

The board's review comments shall be submitted prior to or simultaneously with the submission of the final contract drawings and specifications accompanied by a supporting design report required to be filed with the Commission.

Within one year after completion of construction, the Licensee shall file two copies with the Commission (one of these shall be a courtesy copy to the Director Division of Dam Safety and Inspections) of the Board's final report, which shall contain a statement indicating the Board's opinion with respect to the construction, safety, and adequacy of the project structures.

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6. Licensed Projects at Federal Dams Operated by the Corps of Engineers

Under a memorandum of agreement (MOA) with the Corps of Engineers, the Commission includes the following seven articles in licenses for all unconstructed projects at Corps-owned dams (unless the Corps specifically requests their deletion).

A. Corps Approval of the Design and Construction of Certain Project Cofferdams and Deep Excavations

The following article requires the licensee to submit final plans and specifications for cofferdams and deep excavations to the Corps Division Engineers for review and approval, before the

licensee builds any project features that may affect the structural integrity or operation of Corps' facilities.

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Article 4.II.6.A. The design and construction of those permanent and temporary facilities, including reservoir impounding cofferdams and deep excavations, that would be an integral part of, or that could affect the structural integrity or operation of the Government project, shall be done in consultation with and subject to the review and approval of the Corps' Division Engineer.

The Corps' review of the cofferdams will be in addition to the Licensee's review and approval of the final plans, and shall in no way relieve the Licensee of responsibility and liability regarding satisfactory performance of the cofferdams.

Within 90 days from the issuance date of the license, the Licensee shall furnish the Corps and the Commission's Regional Director, a schedule for submission of design documents and the plans and specifications for the project. The schedule shall provide sufficient time for review and approval by the Corps.

If the Corps does not believe sufficient time has been provided, the Licensee, upon request of the Corps, shall meet with the Corps and the Commission's staff to revise the schedule accordingly.

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B. Licensee Review and Approval of Contractor-Designed Cofferdams and Deep Excavations

We use the following article instead of Article 4.II.2 when a project would be constructed at a Corps dam. Article 4.II.6.B requires the licensee to (1) review and approve plans for contractor-designed cofferdams and deep excavations that have not been previously submitted for Commission review and approval, and (2) provide copies of the approved cofferdam construction drawings and specifications to the Commission, the Commission's regional director, and the Corps.

****

Article 4.II.6.B. The Licensee shall review and approve the design of contractor designed cofferdams and deep excavations prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design.

At least 30 days prior to start of construction of the cofferdam, the Licensee shall file two copies with the Commission (one of these shall be a courtesy copy sent to the Director, Division of Dam Safety and Inspections), and submit one copy each to the Commission's _____ Regional Director and the Corps of Engineers, of the approved cofferdam construction drawings and specifications and the letter(s) of approval.

****

C. Access to and Activities on Corps-Owned Property

The following article requires the licensee to enter into a comprehensive agreement with the Corps within 90 days after the license is issued. This agreement must ensure that (1) studies and construction activities for the licensed project do not interfere with Corps operations or damage Corps facilities, and (2) the licensee compensates the Corps for its project-related personnel and construction costs.

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Article 4.II.6.C.[2]/ Within 90 days from the issuance date of the license, the Licensee shall enter into an agreement with the Corps of Engineers to coordinate plans for access to and site activities on lands and property administered by the Corps so that the authorized purposes, including operation of the federal facilities, are protected. In general, the agreement shall identify the facility, and the study and construction activities, as applicable, and terms and conditions under which studies and construction will be conducted.

The agreement shall include, but not be limited to the following items: (1) reasonable arrangements for access to the Corps' site to conduct studies and construction activities, such access rights to be conditioned by the Corps as may be necessary to protect the federally authorized project purposes and operations; (2) charges to be paid by the Licensee to the Corps for (a) technical studies by the Corps that relate solely to the structural integrity or operation of the Corps facility associated with power plant development, (b) review of design (including plans and specifications) and construction inspections based on personnel costs, where such review and inspections are directly related to the structural integrity or operation of the Corps' project; (c) construction costs that may be incurred by the Corps for the specific and sole purpose of accommodating the installation of power facilities at the existing Corps' project; (d) damages to Federal land and structures; and (e) coordinated operating expense; and (3) charges to be paid by the Licensee to

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[2]/ Items (2) and (3) of this article will not be included unless the Corps has requested their inclusion pursuant to section 4(e) of the Act. Where the Corps does not so request, Items (2) and (3) will be deleted ending with the words "normally be provided to the public." In this case the sentence containing Item (1) will delete the phrase "the following items:(1)" and end with "... purposes and operations." The two complete sentences after Item (3) will remain.

the Corps for copies of reports, drawings and similar data based on printing and mailing costs, provided that charges shall not be assessed for information, services, or relationships that would normally be provided to the public.

Should the Licensee and the Corps fail to reach an access agreement, the Licensee shall refer the matter to the Commission for resolution, summarizing the areas of disagreement. Two copies of the final agreement shall be filed with the Commission (one of these shall be a courtesy copy sent to the Director of the Division of Dam Safety and Inspections), and one additional copy shall be filed with the Commission's Regional Director.

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D. Corps Inspection of Licensed Facilities

The following article authorizes the Corps to (1) inspect the construction, operation, and maintenance of any licensed facilities that, in the opinion of the Corps, may affect the structural integrity or operation of Corps' facilities, and (2) order the licensee to stop any activity that may endanger the structural integrity or safety of the Corps' project.

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Article 4.II.6.D. The construction, operation and maintenance of the project works that, in the judgment of the Corps of Engineers, may affect the structural integrity or operation of the Corps' project shall be subject to periodic or continuous inspections by the Corps.

Any construction, operation and maintenance deficiencies or difficulties detected by the Corps' inspection shall be immediately reported to the Commission's Regional Director. Upon review, the Regional Director shall refer the matter to the Licensee for appropriate action.

In cases when construction, operation or maintenance practices or deficiencies may create a situation posing imminent danger to the structural integrity and safety of the Corps' project, on direction of the Corps' inspector, the Licensee shall stop construction, operation, or maintenance activities on the project works. The Licensee shall immediately inform the Commission's Regional Director of the circumstances surrounding the cessation of construction, operation, or maintenance activities.

The Licensee shall not resume construction, operation or maintenance activities until notified by the Commission's Regional Director that the problem or situation has been resolved to the satisfaction of the Regional Director.

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E. Corps Approval of Licensee's Proposed Mode of Hydropower Generation

The following article ensures that reservoir flow diversions during project construction and, subsequently, hydropower generation are compatible with the Corps' project's authorized purposes -- navigation, flood control, recreation, and water quality maintenance. To achieve these goals, the article requires the Licensee to enter into an MOA with the Corps.

The MOA should establish detailed operating procedures for the licensed hydropower facilities, including any restrictions needed to protect the authorized purposes of the Corp's project.

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Article 4.II.6.E. At least 60 days prior to start of construction, the Licensee shall submit to the Corps of Engineers, for approval, an operations plan, describing:

(1) the Licensee's designed mode of hydropower operation at the project;

(2) reservoir flow diversion and regulation requirements as established by the Corps for operation of the Corps' project during construction; and

(3) integration of the operation of the hydroelectric facility into the Corps' Emergency Action Plan.

The Licensee shall file one copy of the operations plan with the Regional Director and two copies with the Commission. In addition, the Licensee, prior to start of power plant operation, shall enter into an operating Memorandum of Agreement (MOA) with the Corps describing the detailed operation of the power facilities acceptable to the Corps.

The MOA shall specify any restrictions needed to protect the primary purposes of the Corps' project, including navigation, recreation, water quality, and flood control. The Regional Director shall be invited to attend any meetings held regarding the agreement.

The MOA shall be subject to revision by mutual consent of the Corps and the Licensee as experience is gained through project operation. Should the Licensee and the Corps fail to reach an agreement, the matter will be referred to the Commission for resolution, summarizing the areas of disagreement.

Two copies of the signed MOA between the Corps and the Licensee shall be filed with the Commission (one of these shall be a courtesy copy sent to the Director of the Division of Dam

Safety and Inspections), and one additional copy submitted to the Commission's _____ Regional Director.

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F. Licensees' Potential Claims Against the United States for Projects at Corps' Dams

The following article prohibits licensees of hydropower projects developed at Corps dams from filing claims against the United States as a consequence of Corps-directed changes in federal structures or operational procedures at Corps' projects.

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Article 4.II.6.F. The Licensee shall have no claim under this license against the United States arising from the effect of any changes made in the structure, operation, or reservoir levels of the Corps of Engineers' project.

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G. Corps Approval of Project Plans before Regional Director Authorizes Construction of Certain Licensed Facilities

The following license article prevents the Commission's regional director from authorizing the construction of certain licensed facilities until the director receives written approval by the Corps of the licensed project's construction plans and specifications, quality control and inspection program, and temporary emergency action plan.

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Article 4.II.6.G. The Licensee shall provide the Commission's _____ Regional Director an original and two copies of all correspondence between the Licensee and the Corps of Engineers. The Regional Director shall not authorize construction of any project work affecting the Corps' facilities until the Corps of Engineers' written approval of the project's (1) construction plans and specifications, (2) quality control and inspection program, and (3) temporary emergency action plan has been received by the Regional Director.

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7. Licensed Projects at Federal Dams Operated by the Bureau of Reclamation

Under a memorandum of agreement with the Bureau of Reclamation (Bureau), the Commission includes the following seven articles in licenses for all unconstructed projects located at Bureau-owned dams (unless the Bureau specifically requests their deletion).

A. Bureau Approval of the Design and Construction of Certain Project Cofferdams and Deep Excavations

This article is the counterpart of the Corps-related article discussed in subsection 6 A.

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Article 4.II.7.A. The design and construction of those permanent and temporary facilities, including reservoir impounding cofferdams and deep excavations, that would be an integral part of, or that could affect the structural integrity or operation of the Government project, shall be done in consultation with and subject to the review and approval of the Bureau of Reclamation (Reclamation).

Reclamation's review of the cofferdams will be in addition to the Licensee's review and approval of the final plans, and shall in no way relieve the Licensee of responsibility and liability regarding satisfactory performance of the cofferdams.

Within 90 days from the issuance date of the license, the Licensee shall furnish Reclamation and the Commission's Regional Director, a schedule for submission of design documents and the plans and specifications for the project. The schedule shall provide for sufficient review and approval time by Reclamation.

If Reclamation does not believe sufficient time has been provided, the Licensee, upon request of Reclamation, shall meet with Reclamation and the Commission's staff to revise the schedule accordingly.

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B. Licensee Review and Approval of Contractor-Designed Cofferdams and Deep Excavations

This article is the counterpart of the Corps-related article discussed in subsection 6 B.

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Article 4.II.7.B. The Licensee shall review and approve the design of contractor designed cofferdams and deep excavations prior to the start of construction and shall ensure that construction of cofferdams and deep excavations are consistent with the approved design.

At least 30 days prior to start of construction of the cofferdam, the Licensee shall file two copies with the Commission, (one of which shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), and submit one copy each to the Commission's Regional Director and the Bureau of Reclamation, of the approved cofferdam construction drawings and specifications and the letter(s) of approval.

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C. Access to and Activities on Bureau-owned Property

This article is the counterpart of the Corps-related article discussed in subsection 6 C.

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Article 4.II.7.C.[1] Within 60 days after issuance of this license, the Licensee shall contact the Regional Director, Bureau of Reclamation (Reclamation), to ascertain the necessary coordination of the plans to conclude a memorandum of agreement (MOA) as required by Reclamation for access to and site activities on lands and property administered by Reclamation, and for construction, operation, and maintenance of the licensed project so that the physical structures and authorized purposes, including operations, safety, integrity and environment of the federal facility or reservation are protected.

In general, the MOA shall identify the facility, the applicable study and construction activities and schedule, and terms and conditions under which the studies and construction shall be conducted.

The MOA shall include, but not be limited to, the following items: (1) reasonable arrangements for access to the federal facility or reservation to conduct studies and construction activities, such access to be conditioned by Reclamation as may be necessary to protect the federally authorized project purposes and operations; and (2) charges to be paid by the Licensee to Reclamation for (a) technical studies conducted by Reclamation that relate to the structural integrity or operation of the federal facility associated with hydropower development; (b) review of designs including plans and specifications and proposed operations; (c) construction inspections based on personnel costs, where such reviews and inspections are directly related to the structural integrity or operation of the federal facility or reservation; (d) damages to federal lands and structures; (e) coordinated operating expenses; (f) copies of reports, drawings and similar data based on printing and mailing costs; and (g) all associated administrative costs incurred by Reclamation, provided that charges shall not be assessed for information or services that would normally be provided to the public.

The Commission's _____ Regional Director shall be invited to attend meetings regarding the MOA, which shall be subject to revision by mutual consent of Reclamation and the Licensee as experience is gained through project operation.

1/ Items (2) and (3) of this article will not be included unless BuRec has requested their inclusion pursuant to Section 4(e) of the FPA. Where BuRec does not so request, Items (2) and (3) will be deleted ending with the words "normally be provided to the public." In this case the sentence containing Item (1) will delete the phrase "the following items:(1)" and end with "... purposes and operations." The two complete sentences after Item (3) will remain.

Should Reclamation fail to reach an agreement with the Licensee, the matter will be referred to the Commission for resolution, summarizing the areas of disagreement. Two copies of the final agreement shall be filed with the Commission (one of these shall be a courtesy copy sent to the Director of the Division of Dam Safety and Inspections), and one additional copy shall be filed with the Commission's _____ Regional Director.

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D. Bureau-Administered Inspection of Licensed Facilities

This article is the counterpart of the Corps-related article discussed in subsection 6 D.

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Article 4.II.7.D. The Licensee's construction, operation, and maintenance of the project works and project investigations related to hydropower development, as determined by the Bureau of Reclamation (Reclamation), must not weaken, damage, or affect the structural integrity or operation of the federal facilities or reservation, or reduce or impair the capability to provide for the purposes and services of the reservation, and shall be subject to periodic or continuous inspections by Reclamation as appropriate.

In those cases when a construction, operation, or maintenance practice or deficiency may result in a situation that would or could endanger the structural integrity, environmental quality, safety, or operational commitment of the federal facility or reservation, on direction by Reclamation, the Licensee shall stop construction, operation, or maintenance activities on the project works.

The Licensee shall immediately inform the Commission's _____ Regional Director of the circumstances surrounding the cessation of construction, operation, or maintenance activities. The Licensee shall not resume construction, operation or maintenance activities until notified by the Commission's Regional Director that the problem or situation has been resolved to the Regional Director's satisfaction.

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E. Bureau Approval of Final Plan and Specifications for Certain Licensed Facilities

This article requires the licensee, before the start of project construction, to obtain the Bureau's approval of the design drawings, specifications, and design computations for all licensed facilities that may affect the structural integrity or operation of the Bureau's project.

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Article 4.II.7.E. The design and construction of those facilities that would be an integral part of, or could affect the

structural integrity or operation of the federal reservation, shall be done in consultation with and subject to the review and approval of the Bureau of Reclamation (Reclamation).

The Licensee shall submit copies of the design drawings, specifications, and design computations to the Regional Director, Reclamation, at a time which allows a sufficient review period prior to construction. The Regional Director, Reclamation, will inform the Licensee of the required number of submittal copies and the Reclamation review period.

Any changes in the design and construction of those facilities that would be an integral part of, or could affect the structural integrity or operation of the federal reservation, must also be approved by Reclamation prior to implementation.

Should the Licensee and Reclamation disagree regarding any of the requirements of this article, the Licensee shall refer the matter to the Commission for resolution, summarizing the areas of disagreement.

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F. Licensees' Potential Claims Against the United States for Project at Bureau Dams

The following article prohibits licensees of hydropower projects developed at Bureau dams from filing claims against the United States as a consequence of Bureau-directed changes in federal structures or operational procedures at Bureau projects.

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Article 4.II.7.F. The Licensee shall have no claim against the United States arising from any future construction changes in the Bureau of Reclamation's project to meet authorized federal purposes, from the effect of any changes made in releases from or operation of the federal facility or reservation, from modifications resulting from dam safety requirements, or from any changes in reservoir levels of the Reclamation project.

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G. Bureau Approval of Project Plans before Regional Director Authorizes Construction of Certain Licensed Facilities

The following license article prevents the Commission's regional director from authorizing the construction of certain licensed facilities until the director receives written approval by the Bureau of the licensed project's construction plans and specifications, quality control and inspection program, and temporary emergency action plan.

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Article 4.II.7.G. The Licensee shall provide the Commission's _____ Regional Director an original and two copies of all correspondence between the Licensee and the Bureau of Reclamation.

The Commission's Regional Director shall not authorize construction of any project work affecting Reclamation's facilities until Reclamation's written approval of the project's:

(1) construction plans and specifications;

(2) quality control and inspection program; and

(3) temporary emergency action plan;

has been received by the Commission's Regional Director.

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III. ARTICLES PROVIDED BY FEDERAL LAND MANAGEMENT AGENCIES

Under section 4(e) of the Act, the Commission must include in every license for a project that will occupy lands within a federal reservation (a national forest, Indian reservation, Corps of Engineers dam project, or Bureau of Reclamation dam project) the conditions provided by the relevant land management agency.

The Forest Service, which manages most of the federal lands affected by the Commission's hydropower licensing program, currently submits 4(e) articles to be included in every license involving National Forest System land. These articles, which are numbered consecutively in the license beginning with article 101, will require the licensee to carry out measures such as the following:

(1) obtain from the Forest Service a special-use authorization, permitting the licensee to occupy and use National Forest System land; [1]

(2) submit to the Forest Service, for approval, final design plans for all project components affecting National Forest lands or facilities, before beginning project construction activities on National Forest System land;

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[1] A Commission hydropower license does not authorize a licensee to perform any land-disturbing activities on federal lands. Consequently, this article requires the licensee to (1) obtain Forest Service special-use authorization within six months of license issuance and (2) file this document with the Director, Office of Hydropower Licensing.

(3) obtain written approval from the Forest Service before changing (a) the location of any constructed project facilities on Forest Service land, (b) a previously approved use of project lands and waters, or (c) any approved exhibits filed with the Commission; and

(4) consult yearly with the Forest Service regarding the need to implement additional measures for the protection of environmental resources.

In addition to the articles just discussed, the Forest Service may provide various project-specific articles. For example, these may require the licensee to:

(1) provide continuous minimum flows in river segments below dams or diversions affected by the removal of water for electric generation;

(2) release stream channel maintenance flows for a certain period during spring runoff; and

(3) develop and implement plans for (a) the control of erosion, stream sedimentation dust, and soil mass movement, (b) the storage of oil and hazardous substances, spill prevention, and cleanup procedures (c) the storage and/or disposal of spoil material (d) the protection of the area's visual resources, and (e) the mitigation of impacts to area plant and animal species that the Forest Service considers sensitive, threatened, or endangered.

The Commission must include section 4(e) conditions in a license order exactly as they are written by a land management agency. When a 4(e) condition lacks information that the Commission needs to enforce the article -- a filing time, a listing of the state and federal agencies that the licensee should consult, or a statement allowing the Commission to require changes to a filing -- the DPR environmental staff provides a companion license article.

For example, the Forest Service files the following condition, requiring a licensee to prepare an erosion control plan.

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"Article 101. Before starting any activities the Forest Service determines to be of a land-disturbing nature on National Forest System lands, the Licensee shall file with the Director,

Office of Hydropower Licensing, an Erosion Control Plan, approved by the Forest Service, for the control of erosion, stream sedimentation, dust, and soil mass movement. This plan must identify requirements for construction, operation, and maintenance measures to meet Forest Service erosion control objectives and standards as identified in the Forest Service environmental assessment on file with the Commission.

The Licensee shall not commence activities the Forest Service determines to be affected by the plan until 60 days after the filing date, unless the Director, Office of Hydropower Licensing, prescribes a different commencement schedule."

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This article does not (1) say when the licensee must file an erosion control plan, (2) list the agencies the licensee must consult with in developing the plan, or (3) give the Commission an opportunity to modify the plan.

Consequently, the DPR staff uses the following companion article.

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Article 402. The Licensee shall prepare the erosion control plan required by article 101 in consultation with the Soil Conservation Service, the U.S. Fish and Wildlife Service, and the state fish and wildlife agency, and shall file the plan with the Commission, for approval, no later than 90 days before starting any land-clearing, land-disturbing, or spoil-producing activities at the project.

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SECTION 5. Articles Included in Licenses for the Protection and Enhancement of Environmental Resources

The environmental staff uses SSA's to ensure that licensed projects do not adversely affect soils, water resources, fisheries, vegetation, wildlife, land uses (including recreation), cultural sites, visual resources, and socioeconomic concerns.

Environmental articles, which are numbered consecutively beginning with article 401, can be placed in the following categories:

(1) articles requiring a licensee to construct or install certain facilities or to operate a project in a specific manner for the protection or enhancement of one or several environmental resources in the project area;

(2) articles authorizing a licensee to implement previously filed mitigative or enhancement plans for specific resources;

(3) articles ordering a licensee to develop and implement detailed mitigative or enhancement plans that are designed to achieve specific goals and objectives, based on previously filed preliminary plans and the staff's environmental assessment and recommended mitigative and enhancement measures; and

(4) articles requiring a licensee to formulate and carryout plans for monitoring the effects of project construction or operation on important environmental resources.

A brief explanation and examples of each of these categories follow.

Among the articles included in category 1 are those ordering a licensee to install upstream or downstream fish passage facilities, to construct specific recreational amenities, to provide specified minimum or average daily flows below a project dam or powerhouse, and to operate a project in an instantaneous run-of-river mode.

Category 2 articles may be appropriate when an applicant, before licensing, develops and files a detailed site-specific plan to protect mitigate or enhance important resources -- a riparian habitat, a wildlife population, an endangered species, a state-designated rare plant, an anadromous fishery, or a cultural

site eligible for listing in the National Register of Historic Places.

The DPR staff often requires applicants to develop and file site-specific mitigative plans before license issuance. If these plans would provide adequate protection or mitigation, the staff includes articles in the license requiring their implementation.

Staff uses category 3 articles when: (1) the applicant, before licensing, has been able to develop an acceptable preliminary plan rather than a final plan; and (2) staff's environmental assessment or EIS has concluded that construction and operation of the project would not produce major unavoidable adverse impacts to important environmental resources.

This class of article mandates that, before the start of project-related construction activities, a licensee must do the following:

(1) consult with appropriate resource agencies;

(2) develop a proposed site-specific plan;

(3) submit the plan to these agencies and allow them at least 30 days to provide comments and recommendations on the plan;

(4) file the final plan for Commission approval, at least 90 days before the start of any land-clearing or land-disturbing activities at the site; and

(5) implement the Commission-approved plan -- the applicant's final plan with the changes required by the Commission.

Category 3 articles always specify the affected environmental resources and the mitigative measures that the licensee must include in the plan. Consequently, these articles may include considerable detail.

Lastly, category 4 articles are used to monitor project impacts on specific environmental resources. If monitoring shows that a project's operational procedures or mitigative measures do not adequately protect or enhance those resources, a licensee may be required to implement supplemental or alternative mitigative measures. A monitoring plan, therefore, establishes (1) specific procedures to measure project impacts on significant resources and (2) contingency measures that a licensee may be required to implement at a later date.

The next part of this section examines project-induced impacts by major resource area and discusses the resulting SSA's the staff includes in licenses to protect and enhance these resources.

I. GEOLOGY AND SOILS

1. Site-Specific Plan to Control Project-Induced Erosion

Excavation, disposal of spoil materials, installation of coffer dams, and other land-disturbing activities at a project site may cause considerable localized erosion, dust, slope instability, and sedimentation. These affects can often be limited to insignificant and short-term impacts if a licensee implements appropriate and timely mitigative measures.

A. Approval of an Erosion Control Plan Filed before License Issuance

When the Commission determines that a site-specific plan filed by an applicant is adequate to protect project area soils and slopes, the Commission approves the plan as part of the license, using the following (Category 2) SSA. To be considered adequate, an erosion control plan must include the following:

(1) descriptions of area soils, hydrology, and vegetation;

(2) a narrative discussion of the applicant's proposed erosion control measures;

(3) topographic map locations and functional design drawings of the control measures; and

(4) documentation that the appropriate resource agencies have reviewed and accepted the proposed plan.

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Article 5.I.1.A. The erosion control plan filed on (date) and consisting of (pages and drawings) is approved and made part of this license and shall be implemented (with the following modifications, if needed). Final drawings and specifications for the plan shall be filed along with plans and specifications required by Article 3XX.[1] The Commission may require changes to the erosion control plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area.

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[1] Construction drawings of project features.

B. Preparation of a Detailed Erosion Control Plan after Licensing

When (1) an application includes sufficient information on project area geology and soils to show that project construction would occur in a stable area where erosion and sedimentation could be easily controlled, and (2) the applicant either has provided general descriptions of its proposed control measures or an erosion control plan that calls for additional post-licensing soils or geotechnical investigations (to finalize the control plan), the staff includes the following (category 3) article, requiring the licensee to prepare and implement a detailed, site-specific erosion control plan.

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Article 5.I.1.B. At least 90 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a plan to control erosion, to control slope instability, and to minimize the quantity of sediment resulting from project construction and operation.

The plan shall be based on actual-site geological, soil, and groundwater conditions and on project design, and shall include, at a minimum, the following four items:

(1) a description of the actual site conditions;

(2) measures proposed to control erosion, to prevent slope instability, and to minimize the quantity of sediment resulting from project construction and operation;

(3) detailed descriptions, functional design drawings, and specific topographic locations of all control measures; and

(4) a specific implementation schedule and details for monitoring and maintenance programs for project construction and operation.

The Licensee shall prepare the plan after consultation with appropriate federal and state soil conservation, water quality, fish and wildlife agencies; and each federal agency having managerial authority over any part of project lands. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission.

If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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2. **Contaminated Sediment Test and Disposal Plan**

Federal and state environmental legislation has stopped or significantly reduced the discharge of toxic effluents into the Nation's rivers and lakes. Nevertheless, some toxic materials, discharged before then, have been trapped in the sediment build-up behind existing dams.

The presence of toxic material in sediments usually does not produce adverse environmental consequences to water quality and fishery resources unless the contaminated sediments are disturbed by dredging or by the construction of bridges, piers or hydropower projects.

Consequently, the DPR staff may require an applicant who proposes to construct a hydropower project at an existing dam located on a river segment that previously received industrial pollutants to (1) conduct tests for the presence of contaminated sediments and spoils and (2) develop and implement measures to avoid the disturbance or to dispose of all disturbed toxic sediments and spoils in the project impact area.

The Commission has recently required applicants to test sediment and file a plan before issuing a license. If an applicant has not completed a sufficiently detailed plan to treat potential contaminated sediments and spoils, the DPR staff includes the following license article, requiring the licensee to develop and implement a plan for the avoidance or disposal of any contaminated sediments and spoils in the project area.

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Article 5.I.2. At least 90 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a plan to conduct tests for, minimize inputs of, and safely dispose of contaminated sediments and spoils.

The plan shall include, but not be limited to:

(1) a description of the methods to be employed in testing bottom sediments for the presence of heavy metals and other toxic substances in the stream bed of the project area;

(2) a description of the Licensee's mitigative measures to minimize inputs of sediment and other potentially toxic substances to the stream;

(3) a description of Licensee's planned measures to avoid disturbing or to safely dispose of disturbed toxic substances and spoils;

(4) an implementation schedule;

(5) monitoring and maintenance programs during project construction and operation; and

(6) provisions for periodic review and revision.

The Licensee shall prepare the plan after consultation with the Environmental Protection Agency, (federal and state fish and game agencies), and each federal agency having managerial authority over any part of project lands. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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3. Removal of Accumulated Sediments

Significant sediment deposit at an existing reservoir may reduce the potential power generation of a hydropower project proposed for construction at the existing dam. Moreover, operation of a hydropower project there may cause accumulated non-toxic sediments to be transported downstream, adversely affecting fish spawning in free-flowing river segments.

Therefore, when necessary, we include the following license article, requiring the licensee to develop and implement a plan for the removal and disposal of accumulated sediment from the project reservoir.

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Article 5.I.3. At least 60 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a plan to remove and dispose of accumulated sediment from the project reservoir. (Insert here the goals and objectives of sediment removal, ie., to restore sufficient reservoir storage capacity necessary for project operation).

The Licensee shall prepare the plan after consultation with the (appropriate agencies) and with each federal agency with managerial authority over any part of project lands. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Any future removal and disposal of accumulated sediment from the reservoir that may be become necessary during the license term shall be carried out in accordance with the plan.

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4. Development of a System to Automatically Detect a Conduit or Penstock Failure

A high-head hydropower project developed in an isolated mountainous area containing unstable slopes and/or highly erodible soil types could cause significant environmental damage, if one of the project's pipelines or penstocks ruptures. To minimize the quantity of water spilled (and resulting damage to area soils, vegetation, wildlife, and water quality) if a pipeline or penstock fails, such a project must include a system for (1) the automatic detection of a conduit or penstock failure and (2) the immediate stopping of water diversion at the project headworks.

If in such cases there is a potential for conduit failure and therefore a need for an automatic mechanism to stop water diversion, we include the following license article, requiring the licensee to design, install, and test an appropriate detection system.

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Article 5.I.4. At least 90 days before the start of project construction, the Licensee shall file with the Commission, for approval, a plan for the design and construction of a system that will automatically detect a conduit or penstock failure and immediately shut off flow in the conduit or penstock at the headworks in the event of such a failure.

The plan, at a minimum, shall include:

(1) design drawings;

(2) a schedule for installation and testing of the system prior to operation of the project;

(3) a schedule for annual testing of the system for the life of the project; and

(4) a description of contingency measures to manually close off the conduit or penstock when the system is not operational.

The Commission reserves the right to require changes to the plan. Project construction shall not begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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5. Mineral Resources Impact Plan

Hydropower projects proposed for development may affect the potential extraction of economically important mineral resources. The Department of Interior's Bureau of Mines usually notifies the Commission if a project could affect existing mineral rights or mining claims. The DPR staff than includes the following license article, requiring the licensee to conduct a field check for mineral deposits at the project, and to prepare and implement a plan that will minimize project impacts on the development and utilization of the area's mineral deposits.

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Article 5.I.5. At least 90 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a plan to minimize project impacts on the development and utilization of mineral deposits.

After consulting with the Bureau of Mines and each state and/or federal agency having managerial authority over any part of project lands, the Licensee shall conduct a field check for mineral deposits at the project, including the transmission line and access routes. The Licensee shall then prepare a mineral resources impact plan based on the results of the field check.

The plan, at a minimum, shall include:

(1) a description of the field check;

(2) a description of mineral deposits and claims at the project;

(3) maps showing their locations; and

(4) the Licensee's strategy for minimizing project impacts.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-clearing or land-disturbing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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II. WATER QUANTITY AND QUALITY

The Commission often requires licensees to provide below dams and powerhouses streamflows that protect or enhance: instream water requirements (flows for irrigated farming, and municipal and industrial water supply); water quality (particularly water temperature and dissolved oxygen (DO) levels); fisheries; riparian habitat; recreational opportunities; and visual qualities.

Consequently, the staff may include license articles that require a licensee to take these actions:

(1) operate a project in a run-of-river mode -- minimizing changes in a project's impoundment surface elevation by providing flows below the project powerhouse that approximately equal reservoir inflow;

(2) operate a project using limited daily changes in reservoir elevation, thus supporting higher generation during hours of peak electricity consumption;

(3) provide river segments between dams and powerhouses -- bypassed reaches -- with continuous minimum flows high enough to sustain existing fish populations and streamside vegetation;

(4) allow enough spillage over existing dams to maintain downstream water temperature and DO levels; or

(5) operate a project at a federal dam in a manner that does not interfere with the authorized purposes of the dam.

Moreover, to ensure that a licensee implements such measures, the staff many employ a companion license article, requiring a licensee to develop and implement a plan for streamflow gaging and monitoring.

1. Run-of-River Operating Mode

Hydropower projects that are operated using a store-and-release mode may adversely affect water quality and fisheries resources in the project impoundment and in the river below the project. Frequent reservoir fluctuations also may cause erosion of shoreline areas and the loss of important riparian habitat. To avoid such impacts, we use the following article, requiring the licensee to operate the project in a run-of-river mode.

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Article 5.III.1. The Licensee shall operate the project in a run-of-river mode (for the protection of fish spawning in the project impoundment during certain months of each year, riparian vegetation below the project, recreational opportunities in the project impoundment) in the (stream name). The Licensee shall at all times act to minimize the fluctuation of the reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoir.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon mutual agreement between the Licensee and the (state fish and game agency). If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

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2. Store and Release Operating Mode

Many constructed hydropower projects operate using a daily or weekly store and release mode, generating during those hours when electricity consumption is greatest. The resulting

reservoir drawdown and fluctuation in downstream releases may have relatively insignificant environmental consequences when the rate does not exceed a certain magnitude -- for example, 6 inches per hour or 2 feet per day.

A. Control Rate of Reservoir Drawdown

When environmental studies show a particular store-and-release operating mode has little effect on water quality, fisheries, recreational opportunities, and visual resources, we include the following license article, requiring the licensee to operate the project -- to control project generation -- to ensure that the project reservoir is drawn down at a specific maximum rate.

****

Article 5.II.2.A. The Licensee shall operate the project so that the project reservoir drawdown rate does not exceed a constant rate of (inches and feet per hour).[1] The maximum rate of change may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for project maintenance purposes, upon mutual agreement between the Licensee and the (state fish and game agency).[2] If the reservoir drawdown rate is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

****

B. Average Daily Flows Downstream of the Project

When we want to ensure that flows below a project dam or powerhouse will be adequate to protect or enhance existing aquatic habitat, riparian vegetation, visual resources, or water quality (particularly DO levels), we include the following article, requiring the licensee to provide specific average daily flows downstream of the project. This article also specifies that the licensee must maintain a specific instantaneous minimum flow for the protection and/or enhancement of downstream resources. The spread between minimum and average daily flows will provide a degree of flexibility in project operation and, therefore, will be less costly than the provision of a continuous minimum flow.

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Article 5.II.2.B. The Licensee shall release from the (_____ Project, or _____ dam) into the _____ River a daily (or some other time period) average flow of _____ cubic

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[1] May include both daytime and nighttime rates. May also be presented in percent per hour.

[2] The article also may specify the gage location for determining drawdown rate (e.g., at the intake to the penstock, spillway crest).

feet per second (cfs), or inflow to the project reservoir, whichever is less, as measured (insert appropriate location), (for the protection or enhancement of fish and wildlife resources, riparian vegetation, aesthetic resources, etc.) in the (bypassed reach of the stream name, or the stream name).

The flow release shall at no time drop below a minimum of (some instantaneous minimum flow, such as 90 percent of the daily average flow, or some other absolute minimum) cfs, or inflow, whichever is less.

This flow requirement may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon agreement between the Licensee and the (state fish and game agency). If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but not later than 10 days after each such incident.

****

3. Continuous Minimum Flows Below a Dam or Powerhouse

The diversion of water from a river or stream segment with a significant coldwater fishery may require a continuous minimum rather than an average daily minimum flow to ensure that at all times, water temperatures and DO levels remain suitable for aquatic resources. In this instance, we include the following article.

****

Article 5.II.3. The Licensee shall release from the (_____ Project, or _____ dam) into the _____ River a minimum flow of ____ cubic feet per second, as measured (insert appropriate location), or inflow to the project reservoir, whichever is less, (for the protection and enhancement of fish and wildlife resources, riparian vegetation, aesthetic resources, water quality, etc.) in the (bypassed reach of the stream name, or the stream name).

This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon agreement between the Licensee and the (state fish and game agency). If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

****

4. Plan to Monitor Downstream Water Quality

Hydropower projects developed at dams with reservoirs that experience chemical and thermal stratification during periods of low streamflow (usually in the summer and early autumn) may affect downstream water quality and fishery resources. Consequently, we may require applicants to perform water quality monitoring to predict the changes in downstream water temperatures or DO levels that would result from project

operation. After determining that minimum flows below a project or in a bypass reach will meet or exceed desired temperature and DO levels, we may want the licensee to monitor these releases to ensure that the predicted levels are realized. We, therefore, include the following article, requiring the licensee to develop and implement a plan to monitor the temperature or DO content of streamflows below a project.

****

Article 5.II.4. At least 90 days before the start of project operation, the Licensee shall file with the Commission, for approval, a plan to monitor (dissolved oxygen (DO) levels, temperature, etc.) of the (stream name) (downstream and/or upstream) of the project.

The purpose of this monitoring plan is to ensure that streamflows below the project, as measured immediately downstream of the project tailrace, maintain a (temperature and/or DO content) of no less than (state the level or levels).

The monitoring plan shall include a schedule for:

(1) implementation of the program;

(2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and

(3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the plan after consultation with the Fish and Wildlife Service, the (state fish and game agency, appropriate agencies, and other interested entities [1]).

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

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[1] If a project affects an Indian fishery resource, staff requires a licensee to consult with the affected tribe. Similarly, if a project affects anadromous salmonids, staff requires consultation with the National Marine Fisheries Service.

The Commission reserves the right to require changes to the plan. Project operation shall not begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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III. FISHERIES RESOURCES

The mitigative measures discussed under erosion control and water quantity and quality also protect fish populations in the project area from many of the potential adverse impacts of building and operating hydropower facilities. Additional measures may be required to do the following:

(1) protect fish against injury or mortality resulting from impingement and entrainment;

(2) prevent the stranding of fish in river segments that experience rapid decreases in flow when a project initiates or stops power generation;

(3) provide bypass facilities needed to guide juvenile and adult fish migrating downstream past dams and project turbines;

(4) enable adult anadromous fish to reach spawning areas located upstream of an existing or proposed dam;

(5) mitigate for the loss of fishery habitat to be inundated by a proposed reservoir; and

(6) monitor fish populations that could be affected by project operation.

Some of these measures are discussed below.

1. Fish Screen or Trashrack Structure to Reduce Fish Entrainment

During project operation, fish may be drawn into an unscreened intake or diversion, resulting in turbine entrainment. Because entrainment may cause significant loss in the fishery resource, the staff may include an article requiring the licensee to install a trashrack structure or a fish screen at the project intake or diversion. The article usually specifies the screen's design criteria -- perhaps the size of the mesh openings or the maximum approach velocity.

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Article 5.III.1. The Licensee, at least 90 days before the start of any land-clearing or land-disturbing activities at the project site, shall file, for Commission approval, detailed

design drawings of the Licensee's proposed (trashrack structure or fish screen) to reduce the entrainment of resident fish, together with a schedule to construct/install the (trashrack or screen) before commercial operation of the project.

This filing shall include, but not be limited to: (1) specifications of the size of the openings between the trashrack bars (not to exceed 1.5 inches); (2) the maximum intake approach velocity (not to exceed 2 feet per second); and (3) a description of the methods and a schedule for installing the trashrack.

The Licensee shall prepare the aforementioned drawings and schedule after consultation with the (Fish and Wildlife Service and the state fish and wildlife agency). The Licensee shall include with the drawings documentation of consultation, copies of agency comments and recommendations on the drawings and schedule after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the Licensee's facilities. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the drawings and schedule with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. Project operation shall not begin until the Licensee is notified by the Commission that the filing is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

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2. Fish Passage Facilities

The construction of a new dam or diversion structure may hinder or prevent the upstream migration of resident and anadromous fish species -- for example, salmon, American shad, trout, or herring -- to spawning areas located above the dam. To facilitate the upstream passage of such fish, the Commission may require a licensee to (1) construct a fish ladder, lock, lift, or elevator at the project dam or powerhouse, and (2) provide the flows necessary for the proper operation of the fishways.

Similarly, the construction of a hydropower project at an existing dam or the construction of a new dam or diversion may hinder or prevent the downstream migration of juvenile anadromous fish. To facilitate their downstream passage, the Commission may require a licensee to construct and operate downstream fish bypass facilities at a project.

During the prelicensing environmental review process, the Commission determines whether there is a need to provide upstream

and downstream fish passage facilities. When the staff believes fish passage should be provided, the Commission requires the applicant to:

(1) prepare functional designs or schematic drawings of the facilities in consultation with the appropriate state and federal fish and wildlife agencies;

(2) provide estimated costs of constructing and maintaining these facilities; and

(3) determine the flows needed to operate the facilities.

Subsequently, any order issuing a license will include the following article.

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Article 5.III.2. At least 90 days before the start of any land-clearing or land-disturbing activities at the project site, the Licensee shall file, for Commission approval, detailed design drawings of the Licensee's proposed (upstream fish passage facilities) together with a schedule to construct/install the facilities before commercial operation of the project.

The Licensee shall prepare the aforementioned drawings and schedule after consultation with the (Fish and Wildlife Service and the state fish and wildlife agency). The Licensee shall include with the drawings documentation of consultation, copies of comments and recommendations on the drawings and schedule after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the Licensee's facilities. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the drawings and schedule with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. Project operation shall not begin until the Licensee is notified by the Commission that the filing is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

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3. **Ramping Rate for Powerhouse Releases**

When a hydropower project is brought on-line or off-line, flow reductions in the affected stream reach may occur so rapidly that fish become stranded in small, shallow pools. During warm days, water temperature in these pools may become sufficiently

high and dissolved oxygen levels sufficiently low to cause mortality to any fish stranded there.

Staff includes the following article when the project's hydraulic capacity is large enough to cause rapid dewatering and resultant fish stranding: (1) in the stream reach below the project powerhouse when the project goes off-line (ceases operation) or (2) in a project's bypass reach when the project is brought on-line (begins operation). This article requires the licensee to prepare and implement a plan to bring the project off-line and on-line in a manner that prevents dewatering and fish stranding in river reaches affected by project operation.

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Article 5.III.3. At least 90 days before the start of project operation, the Licensee shall file with the Commission, for approval, a plan to establish limits on the maximum rate of change in river flow (ramping rate) for the protection of fish resources in the (stream name).

The Licensee shall prepare the plan after consultation with the (appropriate agencies and other interested entities). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

A courtesy copy of the plan shall be filed with the Commission's Regional Office. The Commission reserves the right to require changes to the plan. Project operation shall not begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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4. Monitor the Effectiveness of Project Facilities to Protect Fisheries Resources

To ensure that fish protective devices at a project are effective, the staff includes the following article, requiring the licensee to develop and implement an appropriate monitoring plan.

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Article 5.III.4. At least 90 days prior to the start of project operation, the Licensee shall file with the Commission, for approval, a plan for post-construction studies to monitor

the effectiveness of the project facilities (to reduce entrainment of fish in the project turbines and to allow for downstream fish passage).

The monitoring plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the plan after consultation with the (appropriate agencies and interested entities). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Project operation shall not begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the Commission may direct the Licensee to modify project structures or operations.

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IV. TERRESTRIAL RESOURCES

Hydropower projects may affect vegetation and associated wildlife populations as a result of: (1) clearing vegetation from areas for project facilities-- access roads, dams, reservoirs, canals, penstocks, powerhouses, and transmission lines; (2) operating a project using daily peaking, which produces significant fluctuations in the elevation of a project reservoir; and (3) reducing flows in a bypassed river segment, resulting in the loss of wetland habitat.

Projects also may cause adverse impacts directly to wildlife as a consequence of the construction of: (1) canals, which may cause drownings of certain species; (2) large surface penstocks, which may block the migration of deer, elk, and other species; and (3) transmission lines, which may result in the electrocution of raptors.

Licensee applicants are expected to:

(1) evaluate potential impacts of project construction and operation on wetlands, upland habitat, state-designated rare plant species, and wildlife (particularly species considered important because of their commercial or recreational value, and state-designated rare species);

(2) consult with the Fish and Wildlife Service and the state fish and wildlife agency regarding potential adverse impacts and recommended measures to reduce the severity of these impacts; and

(3) propose to implement appropriate mitigation as part of their project.

1. Revegetation Plan

Revegetation is often needed to (1) expedite the restoration of habitat disturbed by project-related construction activities and (2) minimize adverse, long-term impacts to wildlife.

The following article requires the licensee to formulate, implement, and monitor a detailed revegetation plan. This article is particularly appropriate for (1) projects that require extensive land disturbance, (2) areas that are difficult to revegetate because of soil conditions or climate, and (3) habitats that are unique or sensitive.

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Article 5.IV.1. At least 90 days before the start of any land-disturbing or land-clearing activities at the project, the Licensee shall file with the Commission, for approval, a plan to revegetate disturbed areas with plant species beneficial to wildlife.

The plan shall describe the location of the areas to be revegetated and at a minimum shall include:

(1) a description of the plant species used and planting densities;

(2) fertilization and irrigation requirements;

(3) a monitoring program to evaluate the effectiveness of the plantings;

(4) provisions for the filing of monitoring reports with the Commission;

(5) a description of procedures to be followed if monitoring reveals that the revegetation is not successful; and

(6) an implementation schedule that provides for revegetation as soon as practicable after the beginning of land-clearing or land-disturbing activities within the disturbed area.

The Licensee shall prepare the plan taking into account fully the erosion, dust, slopes, and sediment control plan prepared pursuant to this license, and after consultation with the (appropriate agencies) and with any federal agency with managerial authority over any part of project lands. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons based on project specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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2. Wetland Mitigation Plan

Areas with wetlands or riparian vegetation are relatively scarce and provide important habitat for many wildlife species.

Any mitigative plan for such areas must consider (1) the extended time period required to replace habitat that is lost as a consequence of project construction or operation and (2) the possible reduced diversity of any replacement habitat. To achieve the goal of no-net loss of wetland habitat, a mitigative plan should provide for the development of riparian habitat to replace each acre of affected habitat. Usually, staff requires licensees to replace wetland habitat at a ratio greater than 1 to 1.

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Article 5.IV.2. At least 90 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a wetland mitigation plan to replace, in the vicinity of the project, wetland habitat lost as a result of the project's construction and operation.

The plan, at a minimum, shall include:

(1) details of the final design (of protective measures) to protect the wetlands affected by the project;

(2) a plan for monitoring the effectiveness of the (protective measures) to protect wetlands affected by the project, which includes steps to be taken in the event the (protective measures) are not effective in protecting the wetlands, including, but not necessarily limited to, modifying the (protective measures) or establishing or enhancing additional wetlands;

(3) a proposal to provide recommendations to the agencies and the Commission for alternative wetland mitigation due to project construction and operation, if monitoring indicates that the implemented wetland establishment or enhancement is not successful; and

(4) schedules for establishing or enhancing of wetlands, for filing the results of the monitoring program, and for filing recommendations for alternative wetland mitigation.

The Licensee shall prepare the plan after consultation with the Fish and Wildlife Service (FWS), and (other appropriate agencies). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.
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3. Wildlife Mitigation Plan

The staff often requires licensees to develop and implement a detailed wildlife mitigation plan when (1) there are significant populations of important wildlife species -- deer, elk, raptors, or waterfowl -- in the project area that could be adversely affected by project construction or operation and (2) the application for license does not include site-specific wildlife protective measures.

The plan may address a variety of wildlife-related issues, including:

(1) procedures for the burial and contouring of the project penstock to ensure it does not present an obstacle to wildlife movement;

(2) a construction schedule that avoids disturbance to wintering mule deer;

(3) revegetation of disturbed areas with native plant species beneficial to wildlife as soon as practicable after completion of construction at a particular site and not later than October 15 of a particular year; and

(4) procedures to maintain the transmission line right-of-way for the benefit of wildlife resources.

****

Article 5.IV.3. At least 90 days before the start of any land-clearing or land-disturbing activities, the Licensee shall file with the Commission, for approval, a wildlife mitigation plan.

The plan shall provide for, but not be limited to, the following measures (and also include an implementation schedule and provisions for the plan's periodic review and revision):

- measures to minimize the effect that the above-ground penstock may have on the movement of (or migration of) (species);
- clearing, revegetating, and maintaining the transmission line right-of-way for the benefit of wildlife resources;
- the revegetation of disturbed areas with plant species beneficial to wildlife as soon as practicable after project construction;

mitigation for the loss of (identify specific habitat loss or concern) habitat and shall include, but not be limited to: (1) identification of the type of habitat to be used for replacement; (2) a map showing the location and number of acres of habitat to be used for replacement; (3) a plan to manage the habitat to optimize its value to wildlife; (4) a monitoring program to determine the effectiveness of the plan; and (5) a schedule for filing the monitoring results with the Commission.

The Licensee shall prepare the plan after consultation with (appropriate agencies), each Federal agency with managerial authority over any part of project lands, and other interested entities. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the licensee does not adopt a recommendation, the filing shall include the licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval the Licensee shall implement the plan, including any changes required by the Commission.

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4. Reservoir Clearing Plan

The construction of a new dam or the reconstruction of an existing dam that will flood vegetated areas usually necessitates partly removing or clearing trees and brush from these areas before filling the reservoir. The staff may include the following license article to ensure that removing vegetation and disposing of unused timber, brush, and refuse cause minimum adverse impacts to vegetation, wildlife, and fishery resources.

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Article 5.IV.4. At least 90 days before the start of any land-disturbing or land-clearing activities, the Licensee shall file with the Commission, for approval, a plan for clearing the reservoir area.

The plan, at a minimum, shall include:

(1) topographic maps identifying the location and acreage of lands to be cleared;

(2) descriptions of the vegetation to be cleared;

(3) descriptions of any resource management goals related to fish and wildlife enhancement through vegetative clearing or retention;

(4) descriptions of the disposal methodologies and disposal location of unused timber, brush and refuse, and maps identifying the location of disposal sites; and

(5) an implementation schedule.

The Licensee shall prepare the plan after consultation with (appropriate agencies). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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5. Monitoring Project Impacts on Riparian Vegetation

Reduced streamflows caused by diverting water for project operation may adversely affect the extent and species composition of existing riparian communities. Consequently, a long-term monitoring plan may be necessary to detect any changes to this habitat, and to determine potential measures for the replacement of any lost habitat.

The following article requires the licensee to develop a plan to monitor the condition of all potentially affected riparian vegetation.

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Article 5.IV.5. At least 90 days before the start of commercial operation of the project, the Licensee shall file with the Commission, for approval, a plan to monitor (riparian or other wetland) vegetation on (name of stream or river body) between/along (location of area to be monitored) for the first ___ years of project operation. The monitoring plan shall include a schedule for: (1) implementation of the program; (2) consultation

A. No Impacts to Threatened or Endangered Raptors

This article requires the licensee to (1) consult with appropriate federal and state fish and wildlife agencies about the proposed transmission line design and (2) file drawings of the transmission line within 90 days of its completion. This article does not require a licensee to file the transmission line design before proceeding with construction.

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Article 5.IV.6.A. The Licensee shall design and construct the transmission line in accordance with guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1981," by Raptor Research Foundation, Inc.

The licensee shall consult with the Fish and Wildlife Service, the (state agency), and the (land management agency) in adopting these guidelines, and shall develop and implement a design that will provide adequate separation of energized conductors, groundwires, and other metal hardware, adequate insulation, and any other measures necessary to protect raptors from electrocution hazards.

Within 90 days after completion of construction, the Licensee shall file as-built drawings of the transmission line with the Commission.

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B. Potential Impacts to Threatened or Endangered Raptors

When bald eagles, peregrine falcons, or other threatened or endangered species may be affected by the transmission line, the staff uses the following article, requiring the licensee to file the transmission line design at least 90 days before the start of construction.

This article authorizes the licensee to proceed with transmission line construction 61 days after filing the transmission line design, unless the Commission notifies the Licensee that changes in design are necessary.

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Article 5.IV.6.B. The Licensee shall design and construct the transmission line in accordance with guidelines set forth in "Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1981," by Raptor Research Foundation, Inc. Further, the Licensee, after consulting with the Fish and Wildlife Service, the (state agency), and the (land management agency), and within 90 days of the start of construction, shall file a transmission line design plan that considers adequate separation of energized conductors, groundwires, and other metal hardware, adequate insulation, and any other measures necessary to protect raptors from electrocution hazards. Agency comments on the design plan shall be included in the filing. Unless the Commission instructs otherwise within 60 days after the filing,

(3) file for Commission approval revised exhibits A, F, and G, which describe and show project facilities "as-built".

We also may include one or several articles requiring a licensee to file for Commission approval (1) drawings and specifications of cofferdams and deep excavations and (2) agreements with the Corps of Engineers or the Bureau of Reclamation.

These agency agreements:

(1) establish site access conditions;

(2) schedule construction activities that affect federal dams, locks, and other facilities;

(3) determine fees that a licensee will pay to the federal agency as compensation for the agency's costs of reviewing project plans and specifications; and

(4) establish detailed procedures for project operation and maintenance.

1. Start and Completion of Onsite Construction Activities

We include the following article in every license authorizing the construction of new facilities. Staff uses this article because section 13 of the Act mandates that (1) licensees begin construction within 2 years of the date that the license becomes effective and (2) complete construction within the time period established by the license.

To prevent licensees from "site-banking" hydropower sites -- delaying the start of project construction until land prices, construction costs, long-term interest rates, and energy values become more favorable for hydropower development -- the Act authorizes the Commission to (1) grant licensees only one requested time extension to begin construction and (2) limit the extension to 2 years. If a licensee does not begin construction within the established timeframe, the Commission must terminate the license.

Section 13 of the Act also permits the Commission to extend the date of project completion once construction has begun, but doesn't limit the number of such extensions or their duration.

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Article 4.II.1. The Licensee shall commence construction of the project works within 2 years from the issuance date of the license and shall complete construction of the project within ___ years from the issuance date of the license.

Endangered Species Act, the Commission is responsible for ensuring that project construction and operation would not adversely affect the listed species or its habitat.

Based on the results of site surveys and environmental evaluations, staff biologists (1) determine the mitigative measures needed to protect these species and their habitat and (2) include one or several license articles requiring the licensee to implement these measures. If a required mitigative measure is recommended by the Fish and Wildlife Service or the National Marine Fisheries Service as part of a biological opinion, the staff's article refers to that opinion.

1. **Development and Implementation of Detailed Protective Measures**

When an applicant has developed preliminary protective measures that have been approved by the Fish and Wildlife Service, the staff includes the following license article, requiring the licensee to prepare and implement a detailed plan to protect listed species.

This plan may require some of the following:

(1) a schedule that restricts construction-related activities at certain locations during certain months or seasons;

(2) further preconstruction surveys of areas to be disturbed by project development;

(3) specific mitigative measures to protect listed species;

(4) an implementation schedule for the protective measures; and

(5) a plan and schedule to monitor the effectiveness of the plan's mitigative measures.

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Article 5.V.1. At least 90 days before the start of any land disturbing or land-clearing activities at the project, the Licensee shall file with the Commission, for approval, a plan to protect the federally listed endangered (or threatened) (species common name) (scientific name) and its critical habitat. The plan shall include, but not be limited to, the following:

(1) a project construction schedule, including transmission line construction, to avoid disturbances to (species common name) (activity) between (date) and (date);

(2) the results of a preconstruction survey by a professional (wildlife biologist or botanist) of all areas to be disturbed by development of the project;

(3) measures to protect the listed species;

(4) an implementation schedule for the protective measures; and

(e) a monitoring plan and implementation schedule to evaluate the project's effect on (species common name) (activity) in the project area after start up of project operations.

An initial report on the results of monitoring to determine the effect of project operation on (species common name) (activity) during the first year of project operation, prepared in consultation with the fish and wildlife agencies, shall be submitted to the Commission within 60 days following the end of the first year of project operation. The report shall recommend the need for and schedule for filing reports on the results of subsequent monitoring during the license term.

The Licensee shall prepare the plan after consultation with (appropriate agencies and interested entities). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments and recommendations are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing activities shall begin at the project until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring program show that modifications to the project or its operations are necessary to protect the federally listed endangered (species common name) or its critical habitat, the Licensee shall also file, for Commission approval, recommendations for modifying project operations or other measures, and comments of the consulted agencies on the proposed modifications or measures.

The Commission reserves the right to require changes to the proposed modifications or measures. Upon Commission approval, the Licensee shall implement the proposed modifications or measures, including any changes required by the Commission.

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VI. RECREATION RESOURCES

Commission regulations require licensees whose projects comprise land and water resources with outdoor recreation potential to develop these resources in accordance with area needs (18 Code of Federal Regulations, section 2.7).

Specifically, a licensee must:

(1) include within the project boundary enough land to assure appropriate development of recreation resources;

(2) develop suitable public recreational facilities and provide public access to project lands and waters consistent with safe operation of the project; and

(3) cooperate with local, state, and federal agencies to determine recreational needs in the project area and to provide plans for meeting these needs.

Most applicants for either an initial license or a new license must include a Report on Recreational Resources in the Exhibit E (Environmental Report) of their application. The Recreation Report:

(1) establishes a schedule for the construction and operation of public recreational facilities at the project;

(2) provides cost estimates and schematic drawings of these facilities; and

(3) indicates the entity or entities (the licensee, the Forest Service, or a state or local agency) that will be responsible for constructing and operating existing and proposed facilities.

Any applicant proposing a project that would adversely affect existing recreational facilities or opportunities should propose appropriate mitigation, regardless of the need to file a Report on Recreation Resources.

1. **Implementation of an Approved Recreation Plan**

To ensure that a Licensee implements measures proposed in an approved recreation report, the staff includes a Category 1 article, requiring the Licensee to implement the filed plan.

2. **Provision of Additional Recreational Facilities**

During the environmental review process, the staff may determine that some recreational amenities not included in an applicant's Recreation Report are needed at a project.

The staff then includes the following license article, requiring the Licensee to construct and operate these additional facilities. When included in an original license, the article usually requires the Licensee to construct recreational facilities before the start of project operation. When the article is included in a new license for an operating project, the article is worded to require construction of the facilities within some time period (perhaps 1 year) from the date the license is issued.

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Article 5.VI.2. Before the completion of project construction, the Licensee shall, (in addition to the approved recreational facilities,) construct and provide for the operation and maintenance of (type of facility(s)).

The Licensee shall construct the facility(s) after consultation with (appropriate federal, state, and local agencies, and interested entities). These facilities shall be shown on the as-built drawings filed pursuant to this license.

The Licensee shall file a report with the as-built drawings, which shall include the entity responsible for operation and maintenance of the facilities, documentation of consultation, copies of comments and recommendations on the report after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the report. The Licensee shall allow a minimum of 30 days for the agencies to comment before filing the report with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

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3. **Monitoring Recreational Use of Project Facilities**

The staff may conclude that, during the term of a license, public recreational use of project facilities is likely to increase and eventually exceed the area's capacity. To accommodate potential future recreation demand, the staff then

includes the following license article, requiring the Licensee to monitor recreational use of the project area and, if needed, to prepare and file a plan to accommodate the increased recreation demands.

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Article 5.VI.3. The Licensee, after consultation with the (specify appropriate agencies and entities to be consulted), shall monitor recreation use of the project area to determine whether existing recreation facilities are meeting recreation needs. Monitoring studies shall begin within 5 years of the issuance date of this license. Monitoring studies, at a minimum, shall include the collection of annual recreation use data.

Every 5 years during the term of the license, the Licensee shall file a report with the Commission on the monitoring results. This report shall include:

(1) annual recreation use figures;

(2) a discussion of the adequacy of the Licensee's recreation facilities at the project site to meet recreation demand;

(3) a description of the methodology used to collect all study data;

(4) if there is a need for additional facilities, a recreation plan proposed by the Licensee to accommodate recreation needs in the project area;

(5) documentation of agency consultation and agency comments on the report after it has been prepared and provided to the agencies; and

(6) specific descriptions of how the agencies' comments are accommodated by the report.

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations prior to filing the report with the Commission.

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4. **Maintenance of a Shoreline Buffer Zone**

A hydropower project with a large, irregularly-shaped reservoir, located near a major population center, may experience significant pressure for shoreline development, including vacation and retirement homes, private and commercial boat docking facilities, and marinas.

If uncontrolled, these developments may adversely affect the area's aesthetics, water quality, and public recreational opportunities. Most Licensees of such projects develop and implement land use plans to control the construction of homes and commercial establishments near the project reservoir. These plans almost always incorporate minimum setback requirements to preserve a buffer zone around the reservoir.

When a new license is issued for the continued operation of a project that (1) has a reservoir that could attract significant residential and commercial construction and (2) the licensee does not have a comprehensive land use plan, the DPR staff includes the following license article, requiring the licensee to develop and implement a management plan for the maintenance of a buffer zone around the reservoir shoreline.

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Article 5.VI.4. Before the commencement of project operation, the Licensee shall file with the Commission, for approval, a detailed management plan for the use of shoreline project buffer zone lands. The plan, at a minimum, shall include: (1) allowable uses for the buffer zone lands; (2) conditions to be specified for such allowable uses; and (3) any proposed permit system (with a sample permit).

The Licensee shall prepare the plan after consultation with (appropriate federal, state and local agencies, and other interested entities). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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VII. VISUAL RESOURCES

Excluding applications proposing 1.5 to 5.0 MW of installed generating capacity at an existing dam, all applications for major license must discuss these subjects:

(1) the project area's existing visual resources;

(2) the expected impacts of project construction and operation on these resources; and

The Licensee shall not begin land-clearing or land-disturbing activities, other than those specifically authorized in this license, or resume such activities in the vicinity of a property discovered during construction, until informed by the Commission that the requirements of this article have been fulfilled.

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recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on visual and landscape conditions at the site.

The Commission reserves the right to require changes to the plan. No land-clearing or land-disturbing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

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VIII. HISTORIC AND ARCHEOLOGICAL RESOURCES

As a federal agency, the Commission must implement appropriate provisions of the National Historic Preservation Act (NHPA). To comply with NHPA, the Commission requires each project applicant to do the following, before a license is issued:

(1) consult with the SHPO;

(2) conduct a cultural resources survey of all areas that would be affected by project construction or operation;

(3) assess project impacts to these sites; and, if necessary; and

(4) prepare a management plan for avoiding or mitigating impacts to archeological and historic sites that are listed or eligible for listing on the National Register of Historic Places.

1. Implementation of an Approved Cultural Resources Management Plan

When a project would affect listed or eligible sites, the staff, before licensing, consults with the Advisory Council on Historic Preservation. Later, the staff includes in the license a Category 2 article, requiring the Licensee to implement the approved cultural resources management plan.

2. Post Licensing Obligations Regarding Cultural Resources

During the prelicensing environmental review process, the Commission staff makes every effort to determine whether there are cultural sites eligible for the National Register in the

project area. Still, there is a possibility that project construction activities may lead to the discovery of previously unidentified cultural sites.

Consequently, the staff uses the following article, requiring the Licensee to stop construction activities near any newly discovered site until the Licensee has prepared, and the Commission has approved, a cultural resources management plan for the newly discovered site.

This SSA also applies if and when a Licensee changes the location or design of project features after licensing, because such changes may invalidate the staff's earlier conclusions about the project's cultural resources impacts.

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Article 5.VIII.2. The Licensee, before starting any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in this license, including recreation developments at the project, shall consult with the State Historic Preservation Officer (SHPO).

If the Licensee discovers previously unidentified archeological or historic properties during the course of constructing or developing project works or other facilities at the project, the Licensee shall stop all land-clearing and land-disturbing activities in the vicinity of the properties and consult with the SHPO.

In either instance, the Licensee shall file for Commission approval a cultural resource management plan (plan) prepared by a qualified cultural resource specialist after having consulted with the SHPO. The plan shall include the following items:

(1) a description of each discovered property indicating whether it is listed on or eligible to be listed on the National Register of Historic Places;

(2) a description of the potential effect on each discovered property;

(3) proposed measures for avoiding or mitigating effects;

(4) documentation of the nature and extent of consultation; and

(5) a schedule for mitigating effects and conducting additional studies. The Commission may require changes to the plan.

(3) the applicant's proposed mitigative measures (for example, using special architectural designs, landscaping, painting with earth-tone colors, burying penstocks, or using wooden rather than metal transmission line poles).

When an applicant files an acceptable visual resources management plan prior to licensing, the staff includes a Category 2 license article requiring the Licensee to implement the plan.

1. **Preparation and Implementation of a Visual Resources Management Plan**

When an applicant's proposed measures to protect and enhance visual resources at a project are insufficiently detailed, the staff includes the following license article, requiring the Licensee to prepare and implement a detailed visual resources management plan.

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Article 5.VII.1. At least 90 days before the start of any land-disturbing or land clearing activities, the Licensee shall file with the Commission, for approval, a plan to avoid or minimize disturbances to the quality of the existing visual resources of the project area.

The plan, at a minimum, shall include the Licensee's specific proposals for:

(1) blending the project works into the existing landscape character;

(2) revegetating, stabilizing, and landscaping new construction areas and areas immediately adjacent to the project site disturbed by previous construction or that presently impact the visual resources of the surrounding area; and

(3) grading, planting grasses, repairing slopes damaged by erosion, and preventing future erosion.

The plan also shall include: (1) an implementation schedule; (2) monitoring and maintenance programs for project construction and operation; and (3) provisions for the plan's periodic review and revision.

The Licensee shall prepare the plan after consultation with the (appropriate federal and state agencies and other interested entities). The Licensee shall include with the plan documentation of consultation, copies of comments and