

**LA GRANGE HYDROELECTRIC PROJECT
FERC NO. 14581**

FINAL LICENSE APPLICATION

EXHIBIT F – GENERAL DESIGN DRAWINGS



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Appendix F-2	Supporting Design Report Filed only with the Federal Energy Regulatory Commission as Critical Energy Infrastructure Information (CEII)

EXHIBIT F – GENERAL DESIGN DRAWINGS

The following excerpt from the Code of Federal Regulations (CFR) at 18 CFR § 4.61(e) describes the required content of this Exhibit¹.

Exhibit F consists of general design drawings of the principal project works described under paragraph (b) of this section (Exhibit A) and supporting information used as the basis of design. If the Exhibit F submitted with the application is preliminary in nature, applicant must so state in the application. The drawings must conform to the specifications of § 4.39.

- (1) *The drawings must show all major project structures in sufficient detail to provide a full understanding of the project, including:
 - (i) *Plans (overhead view);*
 - (ii) *Elevations (front view);*
 - (iii) *Profiles (side view); and*
 - (iv) *Sections.**
- (2) *The applicant may submit preliminary design drawings with the application. The final Exhibit F may be submitted during or after the licensing process and must show the precise plans and specifications for proposed structures. If the project is licensed on the basis of preliminary designs, the applicant must submit a final Exhibit F for Commission approval prior to commencement of any construction of the project.*
- (3) *Supporting design report. The applicant must furnish, at a minimum, the following supporting information to demonstrate that existing and proposed structures are safe and adequate to fulfill their stated functions and must submit such information in a separate report at the time the application is filed. The report must include:
 - (i) *An assessment of the suitability of the site and the reservoir rim stability based on geological and subsurface investigations, including investigations of soils and rock borings and tests for the elevation of all foundations and construction materials sufficient to determine the location and type of dam structure suitable for the site;*
 - (ii) *Copies of boring logs, geology reports and laboratory test reports;*
 - (iii) *An identification of all borrow areas and quarry sites and an estimate of required quantities of suitable construction material;*
 - (iv) *Stability and stress analyses for all major structures and critical abutment slopes under all probable loading conditions, including seismic and hydrostatic forces induced by water loads up to the Probable Maximum Flood as appropriate; and*
 - (v) *The bases for determination of seismic loading and the spillway Design Flood in sufficient detail to permit independent staff evaluation.**
- (4) *The applicant must submit two copies of the supporting design report described in paragraph (g)(3) of this section at the time preliminary and final design drawings are submitted to the Commission for review. If the report contains preliminary drawings, it must be designated a “Preliminary Supporting Design Report.”*

¹ 18 CFR § 4.61(e) cross-references Exhibit F requirements published at 18 CFR § 4.41(g).

PREFACE

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) are filing this final application for an original license with the Federal Energy Regulatory Commission (Commission or FERC) for the existing La Grange Hydroelectric Project (Project) located on the Tuolumne River in the Central Valley of California. This Exhibit F, the General Design Drawings of the Final License Application (FLA), is prepared in accordance with 18 CFR §4.61.

The following sections describe the La Grange Project facilities, including elements associated with hydropower generation (Project facilities) and non-Project features which are those operated by the Districts to achieve the primary purpose of the La Grange Project, which is diverting water for irrigation and municipal and industrial (M&I) uses. Hydroelectric generation is a secondary purpose of the La Grange Project. Water diversions at the La Grange Project are not dependent on the issuance of a FERC license and will occur with or without the licensing of the hydropower facilities.

1.0 REQUEST FOR PRIVILEGED TREATMENT – CEII

In accordance with 18 CFR Part §388.113(c)(2) and (d)(i), the Districts are requesting special treatment as Critical Energy Infrastructure Information (CEII) by FERC for the Exhibit F General Design Drawings and Supporting Design Report (SDR). The Districts are requesting that the General Design Drawings and SDR be given special treatment because the drawings clearly show the location of the critical Project features and design information. For this reason, the Districts have filed the Exhibit F General Design Drawings and SDR with FERC as CEII. The CEII information has been filed with FERC in October 2017, concurrent with filing of the public information of this Final License Application (FLA). The duration of the CEII designation should be indefinite, or until such time as the CEII regulations or the Project no longer exists.

In accordance with FERC's CEII Regulations, the following statement regarding access to CEII is provided:

Procedures for obtaining access to CEII may be found at 18 CFR §388.113. Requests for access to CEII should be made to the Commission's CEII Coordinator.

2.0 GENERAL DESIGN DRAWINGS

The General Design Drawings show overall plan views, elevations, and sections of the principal project works in sufficient detail to provide a full understanding of the La Grange Project. The drawings depict the as-built condition of the La Grange Project as described in Exhibit A of this FLA.

As noted above in Section 1.0, these drawings are designated CEII, are included in the version of Exhibit F filed only with FERC as Appendix F-1, and are summarized in Table 2.0-1.

Table 2.0-1. Exhibit F General Design Drawings for the La Grange Project.

Drawing No.	Description
F-1	Dam – Plan and Sections
F-2	Forebay– Plan and Sections
F-3	Penstock Profiles
F-4	Powerhouse – Plan and Elevations
F-5	Conceptual Tailrace Fish Barrier – Plan and Sections
F-6	MID Retired Canal Intake and Gates
F-7	Portal No. 1 Gate
F-8	MID Hillside Discharge – Gate Structure Plan
F-9	MID Hillside Discharge – Gate Structure Section
F-10	MID Hillside Discharge – Gate Structure Sections

3.0 SUPPORTING DESIGN REPORT

Section 4.41(g)(3) requires that an applicant for an original license file a Supporting Design Report (SDR) with the license application. The purpose of the Supporting Design Report is to demonstrate "...that existing structures are safe and adequate to fulfill their stated functions...". The Districts have previously submitted to FERC several documents that will support the SDR, including:

- A Dam Failure and Hazard Potential Analysis Report was submitted on May 22, 2014.
- An Initial Consultant Safety Inspection Report (Part 12 Report) and plan and schedule for additional work were submitted on September 29, 2015.
- Three supporting technical memoranda were submitted on March 28, 2016:
 - La Grange Diversion Dam Stability – Development of the Maximum Credible Earthquake (MCE) and Corresponding Response Spectra, dated March 28, 2016.
 - La Grange Diversion Dam Stability – Potential Failure Mode, Rock Mass/Shear Strength Estimate, and Kinematic Analysis of Left and Right Abutments, dated March 28, 2016.
 - La Grange Diversion Dam Stability – Inflow and Peak Storage Calculations for Inflow Design Flood (IDF), dated March 28, 2016.

On July 7, 2017, FERC's Division of Dam Safety and Inspection's San Francisco Regional Office issued a continued extension of time to complete development of the stability and stress analyses recommended in the 2015 Part 12D Report for the La Grange Project. The extension was requested by Districts to allow FERC time to review and comment on the March 28, 2016 technical memoranda cited above. In the July 7, 2017 letter granting the required extension, FERC reset the pending deadlines, as described below.

- Advancing the analysis that evaluate stresses and sliding stability for static, flood and design earthquake inputs due to be filed with FERC within six months of receiving comments from FERC on the technical memoranda cited above.
- Revise the analysis described in Item 3 within six months of receiving FERC comments on the draft report.

Therefore, the La Grange Hydroelectric Project SDR is still under development and the Districts have provided the completed CEII dam safety filings discussed above in the version of this Exhibit F filed only with FERC as Appendix F-2. CEII Appendix F-2 provides FERC with the finalized and draft components of the required SDR currently under review by FERC's Division of Dam Safety and Inspections at the time of this filing.

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EXHIBIT F – GENERAL DESIGN DRAWINGS

**APPENDIX F-1
GENERAL DESIGN DRAWINGS**

[Note: Per guidance from the Federal Energy Regulatory Commission (FERC), General Design Drawings contain Critical Energy Infrastructure Information (CEII) and have therefore, been omitted from general distribution in the Final License Application. This information has been filed with FERC with a CEII designation under separate cover as part of the Final License Application submittal. Procedures for obtaining access to CEII may be found at 18 CFR § 388.113. Requests for access to CEII should be made to the Commission's CEII coordinator.]

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**APPENDIX F-2
SUPPORTING DESIGN REPORT**

[Note: Per guidance from the Federal Energy Regulatory Commission (FERC), the Supporting Design Report (SDR) contains Critical Energy Infrastructure Information (CEII) and have therefore, been omitted from general distribution in the Final License Application. This information has been filed with FERC with a CEII designation under separate cover as part of the Final License Application submittal. Procedures for obtaining access to CEII may be found at 18 CFR § 388.113. Requests for access to CEII should be made to the Commission's CEII coordinator.]