

Grandsen Hydroelectric Generating Station

First Stage Consultation Package

Application for Exemption for Small Conduit Hydroelectric Facility

August 2011

Prepared by Calleguas Municipal Water District



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Purpose

The purpose of this document is to provide information necessary for agency and public review of the proposed Grandsen Hydroelectric Generating Station (Project or Grandsen Hydro) as part of the first stage of the three-stage consultation process for filing a small conduit exemption application to the Federal Energy Regulatory Commission (Commission).¹ The Commission can issue exemptions for small conduit hydroelectric facilities pursuant to Section 30 of the Federal Power Act.² This exemption process provides a more simplified process than applying for a license for low impact projects that meet all the necessary criteria.

This document describes the key components of the Project, including background, location, general engineering design, general construction activities, analysis of the potential environmental effects, and regulatory requirements.

Background

The Calleguas Municipal Water District (Calleguas) currently successfully operates four small in-conduit hydroelectric generating facilities and is seeking other opportunities to generate power where pressure is reduced in its system. With the relocation and reconstruction of Pressure Regulating Station No. 2 (PRS2) within Grandsen Pump Station (GPS), Calleguas has identified a promising opportunity to construct an additional hydroelectric generating facility.

Project Description

The Project will be located on Calleguas property at the existing GPS, located at 4764 Spring Road in the city of Moorpark, California (Figure 1). The Project will tie into the existing 42-inch Moorpark Feeder upstream of the relocated PRS2. PRS2 currently reduces high pressure in the Moorpark Feeder before delivering water to the lower pressure zones in the Calleguas system. The new hydroelectric generating station will operate in lieu of PRS2, producing electricity while reducing pipeline pressure instead of wasting that energy. When bypassing the hydroelectric generating station, PRS2 will continue to operate as it does now.

Although Calleguas is planning to construct Phase 2 of GPS concurrent with the relocation of PRS2 and the construction of the hydroelectric generating station, this concurrent construction is due to the cost savings and efficiency associated with having a single contractor working on the site and the projects are not dependent on each other. The only new facility necessary for the generation of hydroelectric power is the hydroelectric generating station itself. Therefore, the Project does not include GPS Phase 2.

¹ 18 CFR Part 4, Subpart D, §4.38(b)(1).

² 18 CFR Part 4, Subpart D, §4.30(a)(28).

The components of the hydroelectric station, which include turbines, switchgear, and control units, will be housed within a new building, which will also accommodate the relocated PRS2 and GPS Phase 2 with no additional water supply, intake facilities, or other structures required for the Project.

The source of water is imported water from the State Water Project treated at the Jensen Water Treatment Plant in Granada Hills and delivered to Calleguas by the Metropolitan Water District of Southern California at a connection point in Chatsworth. At times, this imported water may be stored in Lake Bard in Thousand Oaks then re-treated at the Lake Bard Water Filtration Plant before delivery to customers.

General Engineering Design

The following describes the existing PRS2 facilities and the intended design and operation of the hydroelectric generating station.

Existing Facilities

The existing facilities located at the GPS site include Phase 1 of GPS and existing PRS2. Although the facilities are co-located, they are largely unrelated, as shown in the flow schematic in Figure 2. Water from Moorpark Feeder Unit 2 flows through PRS2 to reduce pressure and then is either conveyed to the western portion of the system (lower pressure zone) via Moorpark Feeder or to an aquifer storage and recovery wellfield via the Las Posas Feeder. Figure 3 is a photograph of the existing GPS site, showing the existing location of PRS2 and the planned future location for both relocated PRS2 and the hydroelectric generating station, as well as GPS Phase 2.

Planned Facilities

The hydroelectric generating station will consist of two reverse pump type turbines as supplied by Canyon Hydro, Inc. or approved equivalent with a total of 180 kilowatts (KW) generating capacity. A schematic showing the new hydroelectric generating station relative to the relocated PRS2 and GPS Phase 2 is provided in Figure 4. Once again, the facilities are co-located with GPS Phase 2 and will be housed in the same building but are unrelated operationally. The hydroelectric generating station would operate in lieu of PRS2 to reduce pressures in Moorpark Feeder whenever flow conditions permit. Flow conditions that are either too low or high for the hydro will continue through the relocated PRS2.

The hydroelectric generating station will include flow control in addition to the turbine units to regulate operation. The relocated PRS2 will operate as a bypass to allow continuous flow in Calleguas' water system when the hydroelectric generating station is off-line and during periods of high or low flow that cannot be utilized by the hydroelectric generator. The hydro will rely on a programmable control system for regulating flows to the hydroelectric generating station. The controller will split flow to the individual turbine units based on pressure and flow readings from the system.

Three-phase electrical service from Southern California Edison (SCE) is available within the site and will be used for electrical interconnection. Power generated by the Project will be transmitted directly to SCE at this location.

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The turbines will be sized for maximum efficiency by optimizing the flow and head available at the hydroelectric generating station. Two turbines are planned to be used. When the lower pressure zone average demand is between 30 cubic feet per second (cfs) to 60 cfs, all water in excess of 30 cfs will be delivered through Grandsen Hydro to generate power. One or both units of the Grandsen Hydro will be operated depending on the available flow.

General Construction Activities

The scheduled date for beginning construction of the Project is January 2013 and construction is anticipated to last nearly 2 years. The length of construction and the long lead time before it can begin are due to the fact that the Grandsen Hydro would be designed and constructed as part of GPS Phase 2. Although GPS Phase 2 and Grandsen Hydro are not directly interrelated, they will be located on the same physical property. Therefore, it is both cost effective and logistically practical to have the construction work performed by a single contractor.

All construction activities will be performed within the existing GPS and PRS2 property, although the contractor may also obtain adjacent or nearby properties for staging and storage. The equipment necessary to construct the Project includes backhoes, excavators, cranes, delivery trucks, concrete pump trucks, concrete mixers, forklifts, and personnel vehicles. Work hours will generally be limited to Monday through Friday 7 a.m. – 6 p.m., although extended work hours may be necessary during certain time-critical aspects of the Project, such as connections to existing pipelines requiring service interruptions.

Environmental Review

The following section provides:

- A description of the environmental setting in the vicinity of the facility, including vegetative cover, fish and wildlife resources, water quality and quantity, land and water uses, recreational use, socio-economic conditions, historical and archaeological resources, and visual resources.
- A description of the anticipated environmental impacts resulting from the construction and operation of the Project.³

The following discussion is formatted to be consistent with the requirements of the application for exemption for small conduit hydroelectric projects for review by the Commission.

The environmental impacts of Phase 1 of the GPS were evaluated in the “Final Program Environmental Impact Report for the Las Posas Basin Aquifer Storage and Recovery Project (SCH No. 94091028),” dated April 1995, and the “Moorpark Pump Station Addendum to the Final Program Environmental Impact Report for the Las Posas Basin Aquifer Storage and Recovery Project (SCH No. 94091028),” dated February 2007.⁴ Although both of these documents were prepared to achieve California Environmental Quality Act (CEQA) compliance for GPS Phase 1, they provide relevant background information about

³ 18 CFR, Part 4, Subpart D, §4.92(e)(1) and (2).

⁴ Grandsen Pump Station was previously known as Moorpark Pump Station. The renaming occurred after construction of Phase 1 was completed.

the environmental setting. CEQA documentation for Grandsen Hydro, GPS Phase 2, and relocation of PRS2 is currently being prepared.

Environmental Setting

The Project site is located on the GPS/PRS2 property. The proposed hydroelectric generating station will be located within the existing property within a new building to be constructed on an existing graded pad.

Vegetative Cover

The Project footprint is currently a graded area, as shown in Figure 3. Subsequent to this photograph, a native hydroseed mix was placed for dust and erosion control. The remainder of the property is occupied by buildings, structures, and paving or other hardscape, with limited ornamental landscaping for visual screening purposes.

Fish and Wildlife Resources

Because of the lack of surface water or vegetative cover, there is no fish or wildlife habitat within the Project site.

Endangered or Threatened Plant and Animal Species

The previous CEQA analysis identified the potential for the occurrence of cactus wren at the Site. However, a biological survey prior to construction of GPS Phase 1 did not find any evidence of cactus wren foraging or nests in the vicinity, and the Site does not contain any cactus wren habitat.

Critical Habitats

There is no designated or proposed critical habitat at the Project site.

Water Quality and Quantity

The Project site is located above the channelized drainage (four 36-inch pipes) of the Peach Hill Wash, which drains to the Arroyo Simi just downstream of the site. The subterranean conveyance of drainage will be unaffected by the Project.

Land and Water Uses

The land where the Project will be constructed is owned by Calleguas and operated as a potable water pump station. The Project footprint was graded as part of GPS Phase 1, and is currently unused. It has been designated for use for Grandsen Hydro, relocated PRS2, and GPS Phase 2.

Recreational Use

The Project site is completely fenced on Calleguas property. There are no public recreation facilities on the site or in the immediate area.

Socio-Economic Conditions

There is no housing, commerce, or any other public use associated with the Project site or within the immediate area.

Historical and Archaeological Resources

No archaeological sites have been recorded within the area and no cultural resource artifacts were discovered during construction of GPS Phase 1. No known significant historic buildings or sites were located on or adjacent to the Site prior to construction of GPS Phase 1.

There are no Indian tribes as defined in 18 CFR, Part 4, Subpart D, 4.30(a)(1) that will be directly or indirectly affected by the construction or operation of the Project.

Visual Resources

The existing GPS Phase 1 building is the dominant visual feature at the Project site. The architecture of the building was designed to be complementary to those associated with the Carlsberg Specific Plan, which governs this area of Moorpark. Ornamental landscaping has been planted on the Spring Road side of the property to provide visual screening.

Environmental Impacts

Vegetative Cover

The Project will be constructed on the graded area shown in Figure 3. The existing hydroseed cover will be cleared and grubbed before construction. This was planted by Calleguas for dust and erosion control and therefore its removal would not impact botanical resources.

Fish and Wildlife Resources

Because of the lack of surface water or vegetative cover, there is no fish or wildlife habitat within the Project site and therefore no impacts. Because the Project will be installed on an existing potable water line and does not involve a change to existing operations, there are no potential effects to in-stream flows or aquatic habitat.

Endangered or Threatened Plant and Animal Species

Since there are no fish and wildlife habitat or resources, there would be no impact to special status plant or animal species.

Critical Habitats

Since there is no designated or proposed critical habitat at the Project site, the Project would have no effect on designated or proposed critical habitat.

Water Quality and Quantity

There would be no changes to water availability or quantity as a result of hydroelectric generation. Water in the Moorpark Feeder would continue to be transported and delivered in the same manner as under existing conditions.

The Project will be built on an existing flat graded area. With the implementation of appropriate erosion control measures during construction, no significant effects would occur to water quality during or after construction.

Land and Water Uses

The use of the site for small conduit hydroelectric generation is consistent with Calleguas' current use of the site for GPS Phase 1 and PRS2. The hydroelectric facility would be located entirely within the site in a new building along with the relocated PRS2 and GPS Phase 2.

The hydroelectric facility would be operated consistent with operation of the Calleguas distribution system. There would be no changes to water availability or quantity as a result of hydroelectric generation. Water in the Moorpark Feeder would continue to be transported and delivered in the same manner as existing conditions.

Recreational Use

Since there are no recreational uses on the Project site, no public recreational use impacts would occur.

Socio-Economic Conditions

Since there is no housing, commerce, or any other public use associated with the Project site or within the immediate area, the addition of the hydroelectric generating station would have no effect on local socio-economic conditions.

Historical and Archaeological Resources

Since no archaeological or historic sites have been recorded within the area, no historical or archaeological impacts would occur.

Visual Resources

The new building constructed to house the hydroelectric generating station (as well as GPS Phase 2 and the relocated PRS2) would be architecturally consistent with the existing GPS Phase 1 and therefore with that of the Carlsberg Specific Plan, which governs this area of Moorpark. Additional ornamental landscaping will be planted, as appropriate, to provide visual screening. The Project would not change the visual character of the site and therefore there would be no significant effects to visual resources.

Any Additional Information the Applicant Considers Important

Calleguas already successfully operates four in-conduit hydroelectric facilities. The Project provides an opportunity for Calleguas to develop a renewable energy source within existing infrastructure with minimal or no potential impacts to natural resources. PRS2 currently wastes hydraulic energy when it reduces the pressure on Moorpark Feeder; Grandsen Hydro would enable this energy to be put to beneficial use instead.

Regulatory Requirements

The following section discusses the potential regulatory approvals and processes necessary for implementing the Project.

Small Conduit Hydroelectric Exemption (Section 30 of the Federal Power Act)

The Commission provides an exemption from licensing for projects that are 40 megawatts (MW) or less (municipal projects) and are constructed on an existing conduit that was previously constructed primarily for purposes other than power production. This document provides information for the public

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and local, state, and federal agencies as part of the first stage of the three-stage consultation process for filing a small conduit exemption application to the Commission. Following this first stage of consultation, Calleguas intends to submit an application for conduit exemption to the Commission.

For complex projects, the conduit exemption process allocates time for second and third stage consultation. However, these stages of consultation are only necessary when natural resource issues need to be resolved or additional studies need to be conducted. Because of the lack of potential resource issues associated with this Project, Calleguas will request Commission approval to waive second and third stage consultation pursuant to 18 CFR, Part 4, Subpart D, §4.38(c). This will allow Calleguas to proceed directly to filing of the application for exemption and help facilitate the Commission's review of the Project.

California Environmental Quality Act (CEQA)

CEQA includes a "Small Hydroelectric Categorical Exemption" (CEQA Guidelines Section 15328) for projects at existing facilities that meet certain criteria (e.g., projects with capacities of 5 MW or less and that do not affect in-stream flows or special-status species). The Project meets these criteria. However, because Grandsen Hydro will be constructed as part of GPS Phase 2, Calleguas plans to complete the appropriate CEQA documentation for all the components to be constructed on the site.

Clean Water Act (CWA)

Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (USACE) for any discharge of dredge or fill materials, temporary or permanent, into any waters of the U.S., including wetlands. The Project does not affect surface waters or wetlands and does not require any discharge of dredge or fill materials to waters of the U.S. Therefore, a 404 permit is not required for the Project.

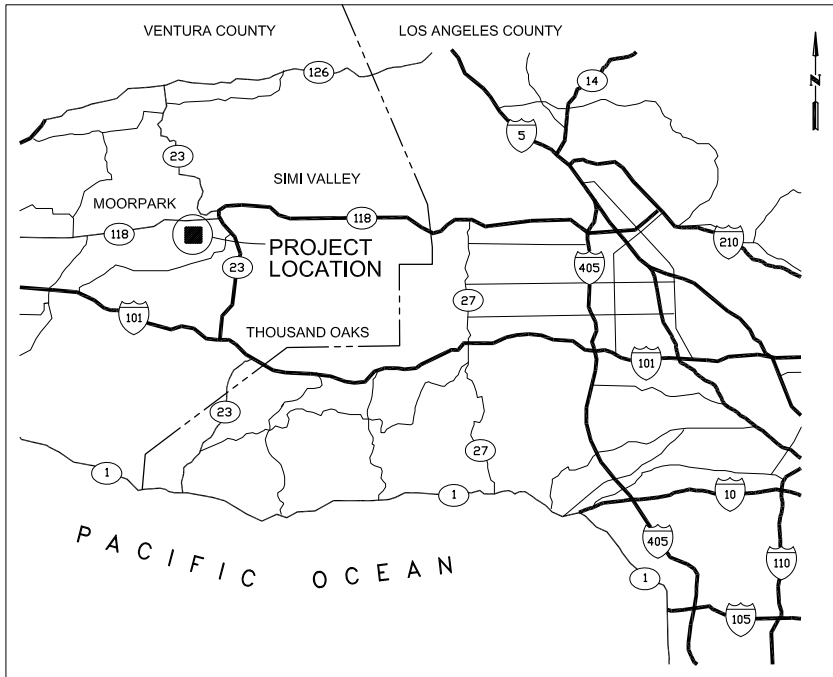
The California State Water Resources Control Board (SWRCB) and the California Regional Water Quality Control Board (RWQCB) implement Section 401 of the CWA. Section 401 requires that a water quality certification be obtained or waived before a federal agency issues a permit for an activity that may result in a discharge into state waters. The Project does not affect surface waters or wetlands and does not require any discharge of dredge or fill materials to waters of the U.S. Therefore, a 401 Water Quality Certification is not required for the Project.

However, Calleguas will obtain any required permits from the SWRCB or RWQCB for discharge of construction stormwater flows or hydrostatic test discharge water.

California Fish and Game Code

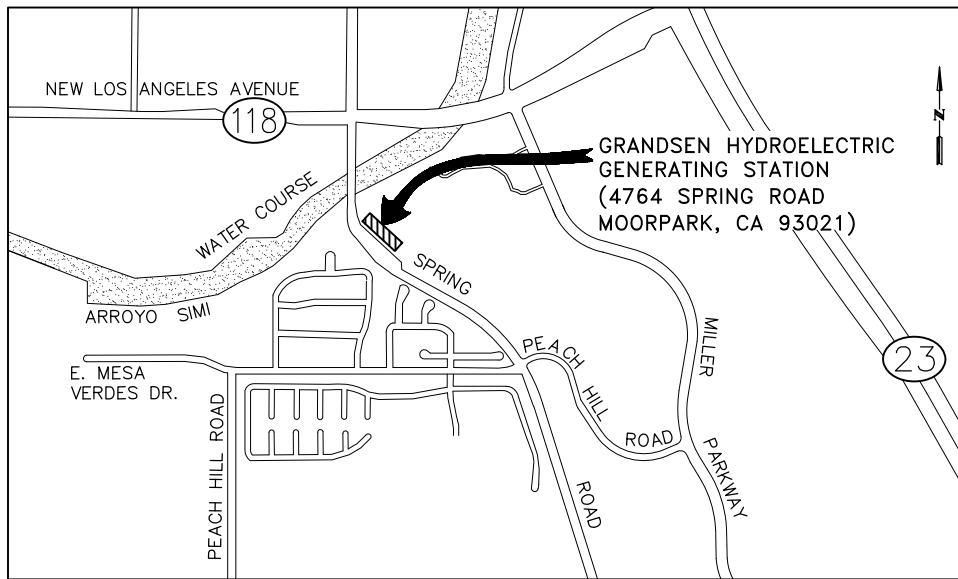
The crossing or encroachment into a pond or lake or stream, either during construction or as a permanent installation, will require the submittal of a Streambed/Lakebed Alteration Agreement (CDFG Section 1602) for approval by the California Department of Fish and Game (CDFG). The primary concern is generally the changes to stream flows, changes to water quality, and physical (habitat) impacts associated with the construction and operation of the Project. The Project does not encroach into a pond, lake, or stream, either during construction or as a permanent installation. Therefore, a CDFG Section 1600 permit is not required for the Project.

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LOCATION MAP

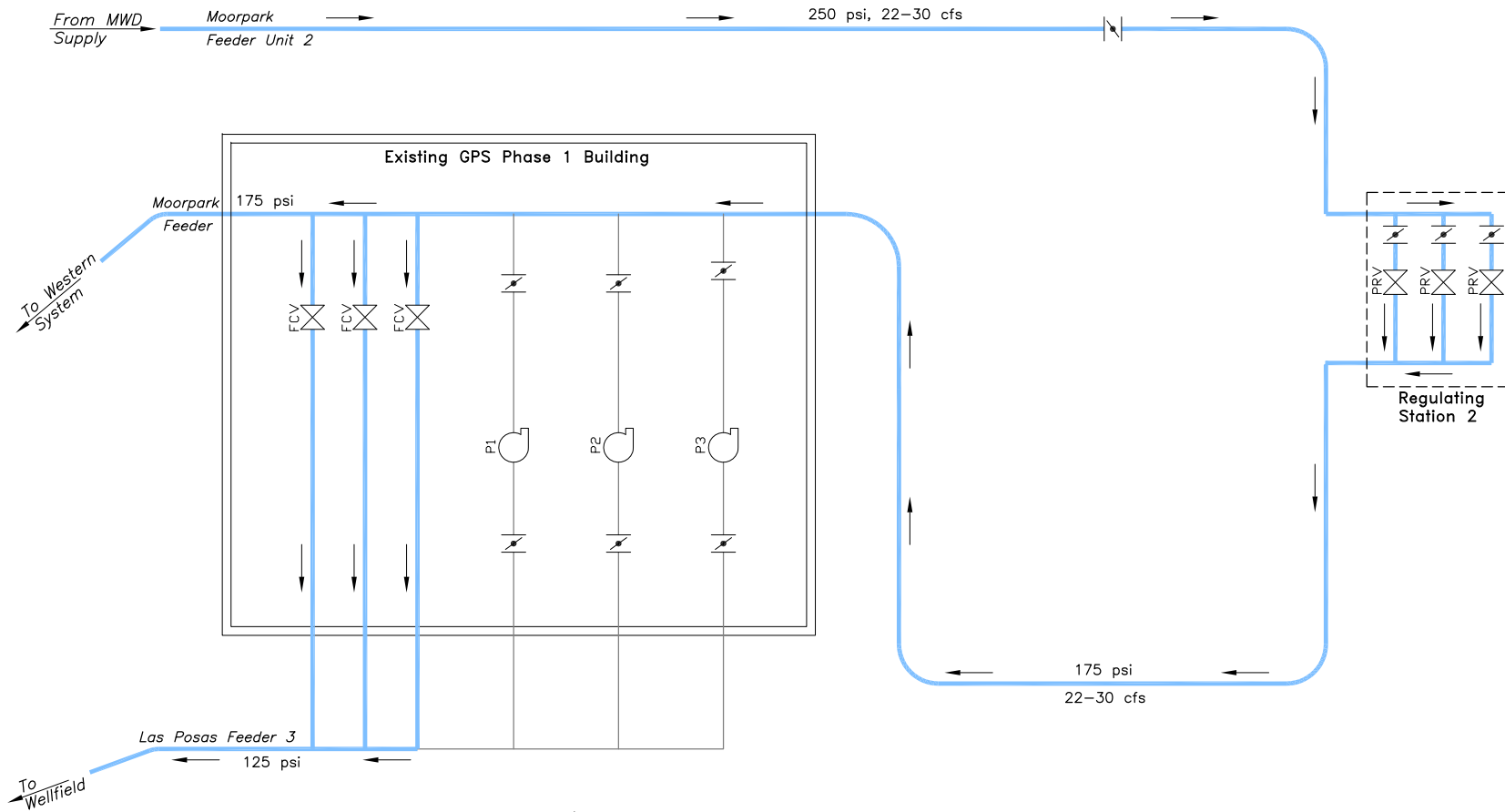
SCALE: 1 IN. = 20000 FT.



VICINITY MAP






SCALE: 1 IN. = 2000 FT.


CALLEGUAS MUNICIPAL WATER DISTRICT THOUSAND OAKS, CALIFORNIA		
GRANDSEN HYDROELECTRIC GENERATING STATION		
LOCATION AND VICINITY MAPS		
DATE APRIL 13, 2011	 PERLITER & INGALSBE CONSULTING ENGINEERS ALTADENA -- CALIFORNIA	FIGURE 1



SCHEMATIC DIAGRAM – EXISTING SYSTEM
NOT TO SCALE

LEGEND:

-  FLOW CONTROL STATION
-  PRESSURE REGULATING STATION
-  PUMP
-  ISOLATION VALVE
-  FLOW DIRECTION

CALLEGUAS MUNICIPAL WATER DISTRICT		
THOUSAND OAKS,		CALIFORNIA
GRANDSEN HYDROELECTRIC GENERATING STATION		
SCHEMATIC DIAGRAM – EXISTING SYSTEM		
DATE	 PERLITER & INGALSBE CONSULTING ENGINEERS	FIGURE
APRIL 21, 2011	ALTADENA -- CALIFORNIA	3



Existing
PRS 2

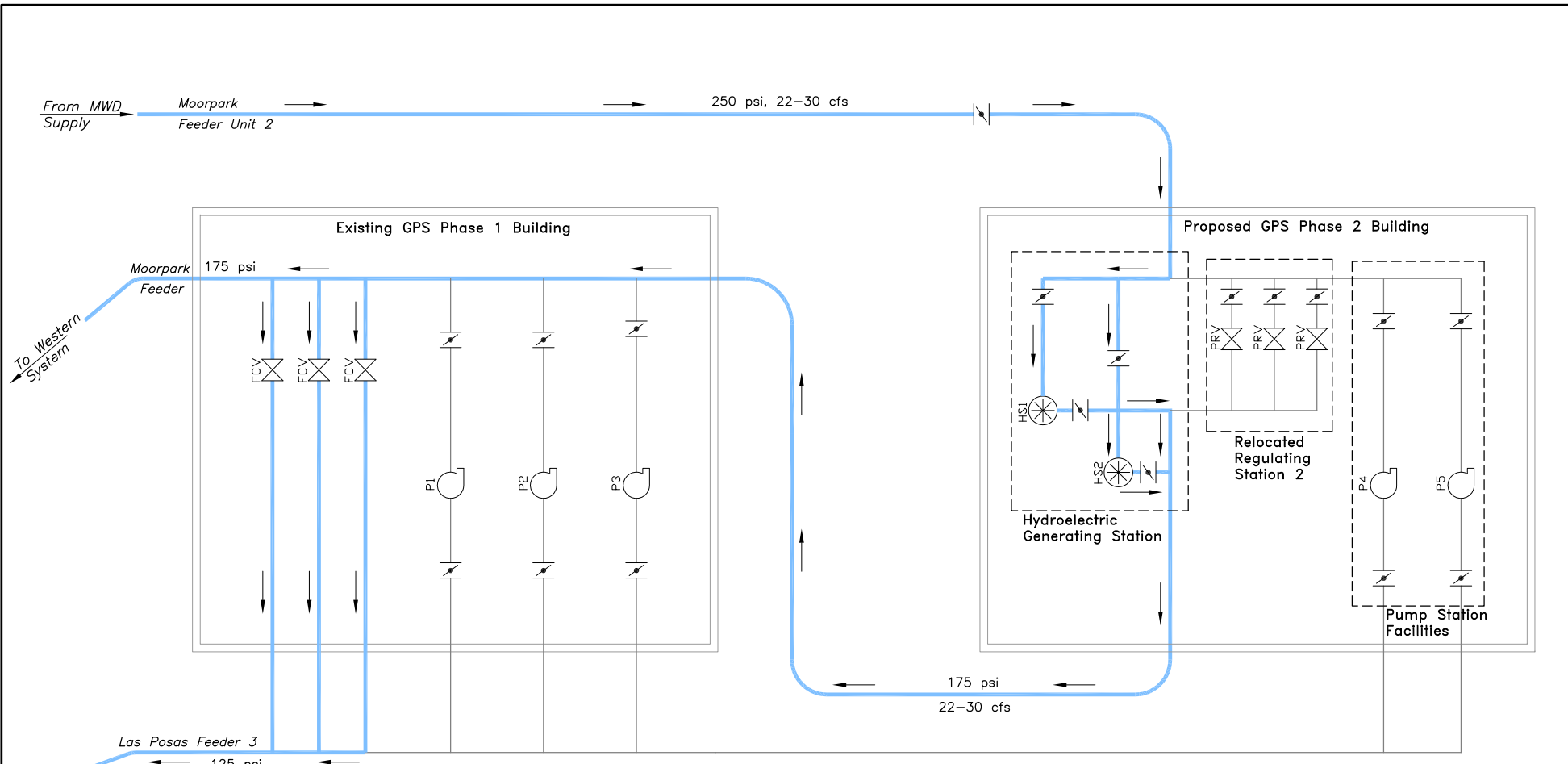


GPS Phase 1

SCE Facilities

Future Grandsen Hydro,
Relocated PRS2, and GPS Phase 2







Figure 3



SCHEMATIC DIAGRAM – HYDROPOWER GENERATION MODE

NOT TO SCALE


LEGEND:

-  FCV FLOW CONTROL STATION
-  PRV PRESSURE REGULATING STATION
-  P1 PUMP (NOT OPERATING UNDER HYDROGENERATION)
-  H1 HYDROELECTRIC GENERATING STATION
-  ISOLATION VALVE
-  FLOW DIRECTION

PROPOSED HYDROELECTRIC GENERATING STATION DATA	
No. of Units	Two (Unit 1 & Unit 2)
Turbine	Cornell Model 10 TR2 Hydro Turbine or Equal
Generator	Induction Type, 190 KW, 1800 RPM, 480 VAC, 60 HZ, 3 PH, Continuous Duty
NOTE: Both hydro power generator units are identical.	

NOTE:

Hydroelectric generating station only operates when pumps are not operating.

CALLEGUAS MUNICIPAL WATER DISTRICT THOUSAND OAKS, CALIFORNIA		
GRANDSEN HYDROELECTRIC GENERATING STATION		
SCHEMATIC DIAGRAM – HYDROPOWER GENERATION MODE		
DATE APRIL 21, 2011	 PERLITER & INGALSBE CONSULTING ENGINEERS ALTADENA -- CALIFORNIA	FIGURE 4