

## Hydraulic System outline specifications

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The following is an outline for the replacement of hydraulic equipment for the Leland Dam:

### General information:

The existing system is comprised of two pumps and motors, each operating a Parker Model 3H hydraulic cylinder, for a total of two Cylinders, to operate the dam gates.

The cylinder has a Bore of 7", Stroke 58", and a rod of 3"

The specification of the Cylinders is attached

The current system operates both pumps simultaneously, with each pump operating one of the cylinders.

Photos of the existing system are attached.

The objective is to replace the existing hydraulic system with new pumps, motors, piping and appurtences,

Replace the existing 20 year old system with a new system.

The system shall be designed so that each of the two pumps be able to operate both cylinders simultaneously,

The pumps shall alternate operations, either by both automatic or manual control.

Either pump shall be able to be removed and serviced while maintaining dam operations

Either cylinder shall be able to be removed and serviced while maintaining dam operations

Provisions shall be made for connection of an external hydraulic pump should the system be unable to operate.

Sufficient valves and gages shall be provided to provide operations and monitoring of system

The hydraulic fluid tank shall have secondary containment

The hydraulic fluid shall be appropriate for the use specified.

Provide and install one new cylinder

Rebuild the 2 existing cylinders, one to be installed, the second as a spare

Electrical:

The electrical system shall be upgraded to provide for the above operation of the system.

### Provide:

Operations Manual (3 copies)

Schematic Plan, for approval prior to assembly of system

Final plans for approval prior to construction

Results of system testing

On-site system start up.

Spare Parts:

The following spare parts shall be provided:

Valve seals and valves

Spare Pump

Certified Spare pressure gauges

Spare hoses

Spare cylinder

Spare cylinder seals