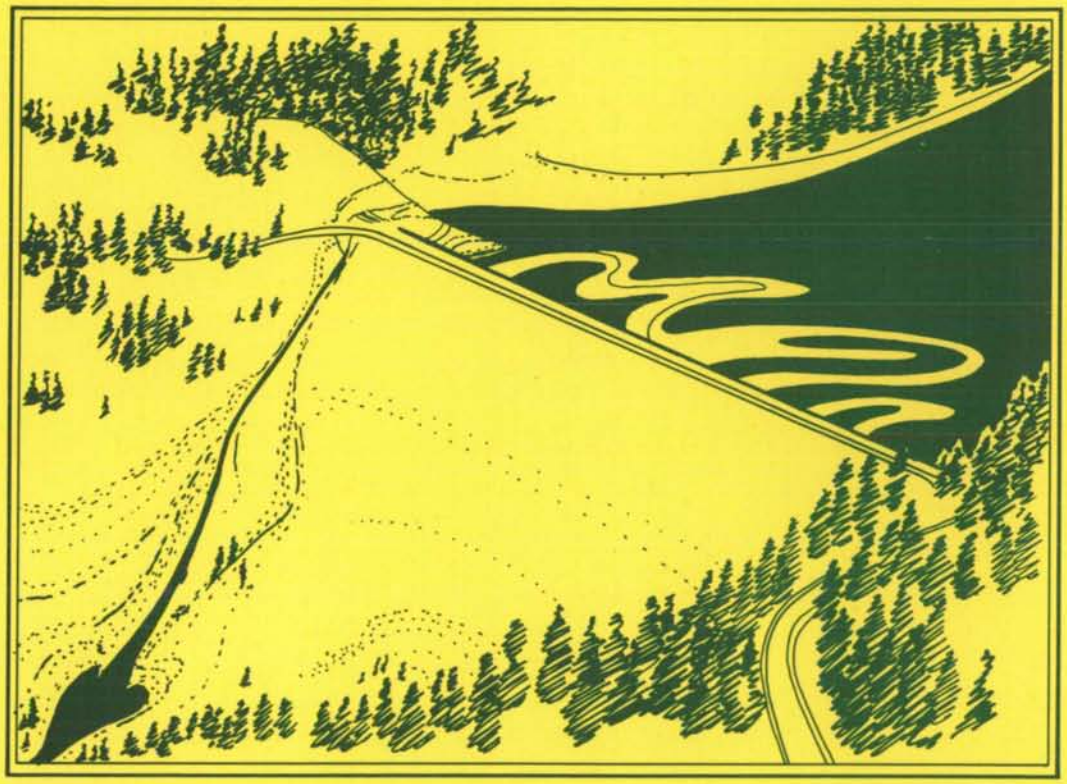
LEMON DAM PROJECT

FEASIBILITY REPORT



NOVEMBER
1985

FOR:
COLORADO
WATER RESOURCES
AND POWER
DEVELOPMENT
AUTHORITY
AND
FLORIDA
WATER CONSERVANCY
DISTRICT

BY:
HARRIS WATER ENGINEERING
DURANGO, COLORADO 81301

VOL. II - APPENDIXES

LEMON DAM PROJECT

Feasibility Report

Volume II - Appendixes

December 1985

For: Colorado Water Resources and Power Development Authority

and

Florida Water Conservancy District

By: Harris Water Engineering
954 Second Avenue
Durango, Colorado 81301
(303) 259-5322

APPENDICES

The technical data, calculations and drawings are contained in Volume II - Appendices.

Appendix	Description
A	FERC License Application
B	Bureau of Reclamation As-built drawings of Lemon Dam
C	Hydraulic Calculations - Head loss, Water hammer, Cavitation
D	Power Plant Production - methodology for estimating production; computer output showing head, flow, eff, and kWh. for each day of 1971-1982 model period
E	Flow below Lemon Dam with and without the turbine - computer output showing actual daily releases from 1971 to 1982 and releases if turbine had been in place
F	Construction cost details and financial evaluation options.
G	Copies of correspondence from involved agencies.
H	24 inch x 36 inch drawings showing: 1) the turbine and generator in the gate chamber and 2) the electrical wiring diagram

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR A SHORT FORM LICENSE

FOR A

MINOR WATER PROJECT

by the

FLORIDA WATER CONSERVANCY DISTRICT

for

HYDROELECTRIC POWER DEVELOPMENT

at

LEMON DAM

LA PLATA COUNTY, COLORADO

Submitted December 1985

HARRIS WATER ENGINEERING
54 Second Avenue
Durango, Colorado 81301
(303) 259-5322

Steven C. Harris, P.E.

December 3, 1985

Kenneth Plumb
Secretary
Federal Energy Regulatory Commission
825 N. Capital Street, N.E.
Washington, D.C. 20426

Dear Mr. Plumb:

Attached is a Short Form License Application for the Lemon Dam Hydropower Project. This application is submitted by the Florida Water Conservancy District who operates Lemon Dam and who holds the Preliminary Permit (#7830). The Permit expires in February of 1986.

We would greatly appreciate your assistance in processing and issuing the License by January of 1987. This would allow construction in 1987; if the License is issued later the construction could not occur until 1988.

Please address any questions or needed changes to me. I am at your disposal in this regard.

Thank you for your help.

Sincerely,

Steven C Harris

Steven C. Harris, P.E.
Liaison Officer

SCH:ts

Attachments

TABLE OF CONTENTS

TABLE OF CONTENTS - continued

TABLES

FIGURES

BEFORE THE FEDERAL ENERGY REGULATORY COMMISSION

APPLICATION FOR A SHORT FORM LICENSE

FOR A

MINOR WATER PROJECT

INITIAL STATEMENT

(1) The Florida Water Conservancy District applies to the Federal Energy Regulatory Commission for a license to construct and operate the Lemon Dam Hydropower Project. The project number is 7830.

(2) The location of the proposed project is:
State: Colorado
County: La Plata
Nearby Town: Durango
Stream: Lemon Dam and Reservoir on the Florida River

(3) The name and address of the applicant is:
Florida Water Conservancy District
P. O. Box 1157
Durango, Colorado 81302

(4) The name and address of authorized agents for the applicant in this application are:
Loyd N. Hess, President
P. O. Box 1157
Durango, Colorado 81302

Lawrence McDaniel, General Counsel
P. O. Box 1157
Durango, Colorado 81302

(5) The Florida Water Conservancy District is a public agency and political subdivision of the State of Colorado established under the Water Conservancy Act of Colorado, adopted in 1937. Under legislation passed by the Colorado General Assembly and signed into law by the Governor of Colorado in 1981, the applicant has the authority to sell electric energy at wholesale or for use by the applicant for operation of its own works.

(6) The hydroelectric power plant would involve installation of one turbine and generator on the existing 8 inch bypass pipe through the gate chamber of Lemon Dam. The dam was constructed in 1963 by the Bureau of Reclamation. Presently the bypass pipe is used in the winter months when only 9-13 cfs is required below the dam. With the turbine in place, water would pass through the pipe to the turbine year round. The generator would produce a peak of about 110kW when the

reservoir is full and one-half of that amount at low reservoir water levels.

The generator would be interconnected with the power grid at the entrance to the elevator shaft on the crest of the dam. The District would use some of the power to operate the dam and heat the dam superintendent's home near the dam. Colorado Ute Electric Association would purchase the remaining power.

The only new facilities to be constructed above ground will be a 6 ft. x 8 ft. x 3 ft. transformer near the shaft house and 1200 ft. of 7.2kv distribution line to the dam superintendent's home.

There will not be a new diversion from the river so a water quality, Section 401, Certificate is not needed.

(7) Land of the United States affected (shown on Exhibit K) are under the jurisdiction of the Bureau of Reclamation, withdrawn from the San Juan National Forest. The power plant, interconnection, and distribution line to the dam superintendent's home are all on the land under Bureau of Reclamation's jurisdiction. The jurisdictional land area is about 114 acres in size, and is unsurveyed.

(8) Construction of the power plant is planned to be performed concurrently with repairs to the main outlet gates of the dam. The gate repair work must be performed in October and November because of the water release schedule from the dam and the weather. The earliest construction date would be October 1987, assuming the license is issued prior to January 1987. If the license is issued later than that date or other problems arise, then October 1988 would be the likely construction period. The power plant can be installed in 4 to 5 months, i.e., August-November 1987. Please refer to Exhibit A for a detailed description of the relationship between the power plant and gate repairs.

(9) Attached is:

- o Exhibit A - Project Description
- o Exhibit K - Project Lands and Boundaries
- o Exhibit L - Project Drawings
- o Environmental Report
- o Agency Coordination Summary

(10) State of Colorado)
) ss.
County of La Plata)

Loyd N. Hess, being duly sworn, desposes and says that he is the President of the Florida Water Conservancy District which is the license applicant; and that the contents of this application are true to the best of his knowledge or belief. The undersigned applicant has signed this application this 27th day of NOVEMBER, 1985.

Loyd Hess

Loyd Hess, President

STATE OF COLORADO)
) ss.
COUNTY OF LA PLATA)

The foregoing was acknowledged before me this 27th day of NOVEMBER, 1985, by Loyd Hess.

My commission expires JUNE 30, 1989.

Witness my hand and official seal.

Catherine L Beatty

Notary Public

LEMON DAM HYDROPOWER PROJECT

EXHIBIT A - PROJECT DESCRIPTION

1. Introduction

The Lemon Dam Hydroelectric facility is described in this Exhibit. The dam was constructed by the Bureau of Reclamation in 1963 for irrigation, flood control, recreation, and fishery purposes. The hydroelectric power plant will consist of one, 110 kW unit and will be installed in the gate chamber of the dam which will utilize the existing bypass pipe through the chamber as a penstock. The unit will be interconnected to the power system at the crest of the dam where an existing 12.7 kv distribution line provides power to the dam. A new 1200 foot distribution line will be constructed from the interconnection point to the Dam Superintendent's home so that the home can utilize electricity from the power plant.

2. Existing Facilities

Lemon Dam is a 215 foot high earthfill dam that creates a 40,100 acre-foot (af) reservoir. The dam is located on the Florida River about 14 miles northeast of the City of Durango. The drainage area above the dam is 68 square miles with elevations varying from 8,000 ft. to 13,000 ft. The average yearly inflow is about 57,000 acre-feet. The spillway and outlet works are located on the right hand side (looking downstream) of the embankment. The spillway is ungated with the crest at elevation 8,148 feet. The intake structure for the outlet works is also located on the right hand side of the dam and has an inlet elevation of 8,005 feet. Water enters a five foot diameter vertical pipe through the intake structure; the 5 ft. diameter pipe makes a 90 degree vertical to horizontal bend and then expands to a 8.5 ft. diameter pipe which conveys water 900 ft. to the gate chamber/outlet control gates.

Releases through the outlet works are controlled by two pairs of outlet gates each capable of releasing 455 cfs at maximum water surface. Below the gates is a nine foot high horseshoe shaped, unpressurized tunnel which daylights to the river channel below the dam. The outlet gates are operated in the gate chamber which is on the center line of the dam.

The outlet gates are used primarily when releases are 50 cfs or greater, which occurs from late April until mid-October. The releases provide water for irrigation, which is the primary purpose of the reservoir. Flood control, fishery and recreation are also project purposes.

During the winter months water is released for water rights senior to the dam and for the fishery in the river. The primary senior water user below the dam is the City of Durango which can divert up to 8.9 cfs. The winter releases are made through a

small 8 inch bypass pipe which begins upstream of the main gates and exits 26 feet below the gates.

The gate chamber has a 23 foot horizontal diameter and is 16 feet high at the crown. Access to the gate chamber is through a 7.5 foot diameter vertical access shaft 80 feet to the right of the gate chamber. The shaft is about 200 feet high with a gate house at the top and a chamber similar in size to the gate chamber at the bottom. The bottom of the shaft and the gate chamber are connected by a 50 foot long, 7 foot high tunnel. A ventilation system brings air from the gate house, down the shaft, to the gate chamber.

An elevator and staircase are installed in the shaft for access. The horizontal dimensions of the inside of the elevator are 1.9 feet by 3 ft. The elevator has a travel distance of 210 feet and a live load capacity of 1000 lbs.

3. Penstock Configuration

The penstock configuration to be used involves about 14 ft. of 8 and 10 inch diameter pipe. The selected configuration has the least friction head loss; $0.1352Q^2$ in the inlet and $.0508Q^2$ in the discharge for a total of $0.2139Q^2$ including 15% contingency. The head loss at 13 cfs is 36 feet and at 9 cfs it is 17 feet. Figure A shows the penstock and turbine.

This configuration requires that the concrete block encasing the first 90 degree upward bend be removed so that the bend can be removed and the pipe extended. The concrete is an approximate two foot cube which will probably have to be jack hammered out. Care will be required so that neither the chamber nor the pipe in the concrete is damaged. The bend will be cut off and an 8 inch to 10 inch reducer will be welded to the existing pipe. The concrete block cannot be removed unless the outlet works is dewatered, as will occur to repair the gates; for this reason the gate repair work is briefly described and the environmental impacts are addressed.

A new 10 inch gate valve will be installed after the reducer, followed by an upward "T" for the bypass pipe. Butterfly valves will be on each downstream leg of the "T". The butterfly valves will be automatically operated. The bypass pipe will loop over the top of the turbine and will be used if the turbine is shut down. The automatic valves will direct water through the bypass, which is included because releases must be made to downstream water users if the unit is not operational.

4. Turbine Selection and Output

The turbine (one unit) for Lemon Dam must meet the following four criteria: 1) the turbine and generator must physically fit in the space available in the gate chamber, 2) the turbine and generator must fit in the elevator shaft for transport to the gate

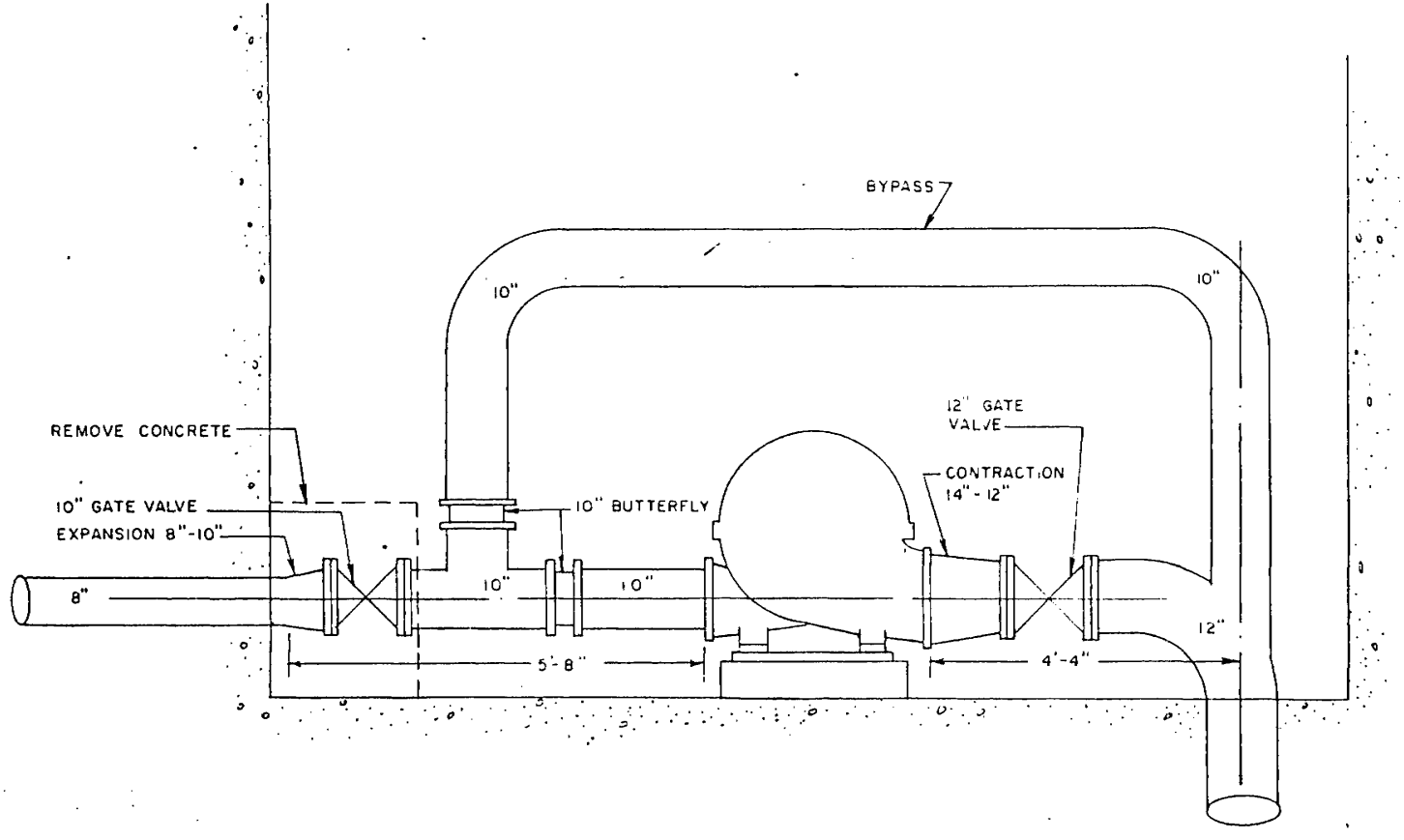


FIGURE A

LEMON DAM PROJECT

HYDROELECTRIC FACILITIES

NO SCALE

chamber, 3) performance curves on the turbine operation must be available to evaluate the unit output, and 4) the RPM of the unit must be about 1,200 or less to avoid cavitation.

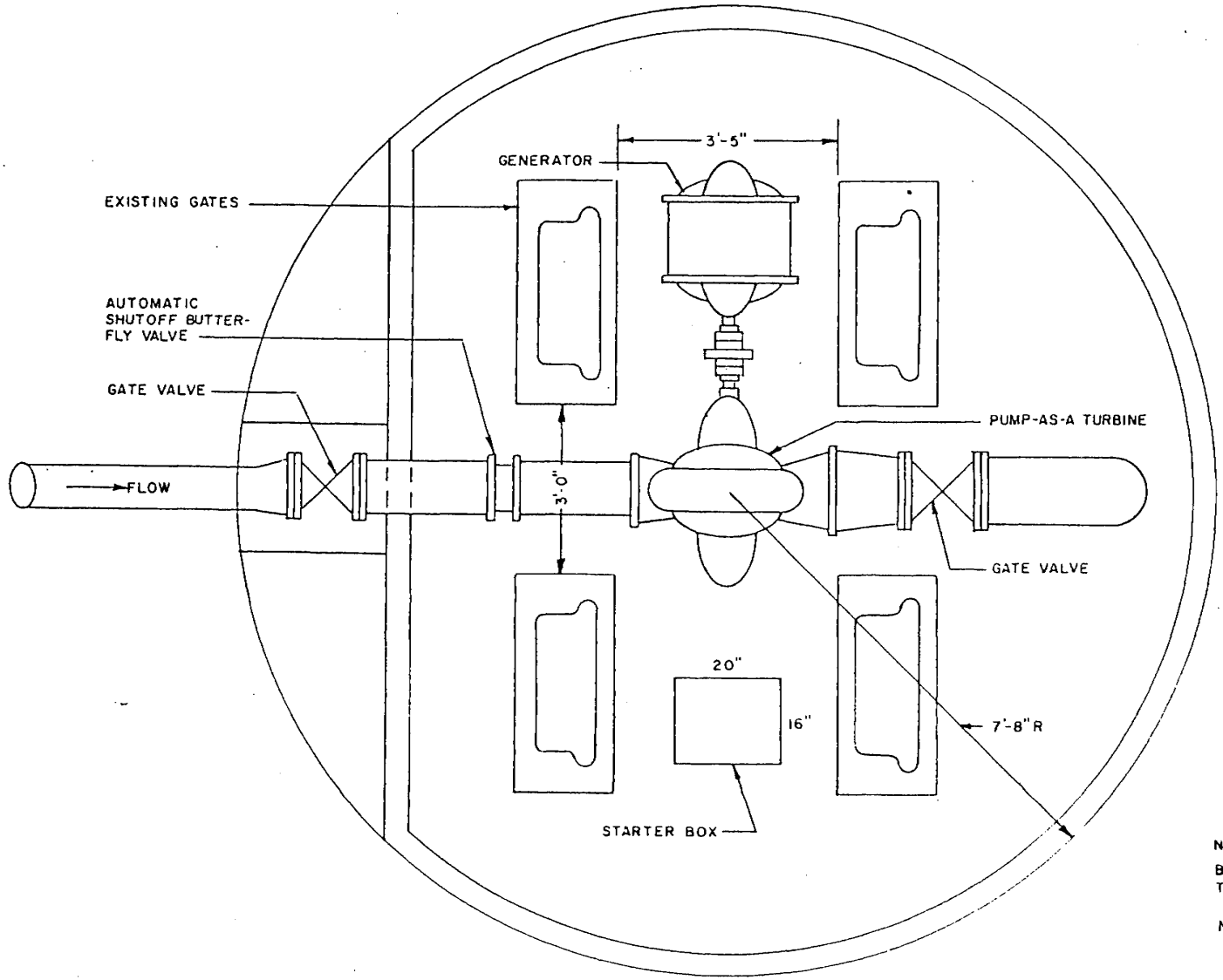
The only unit which meets all four criteria is a Worthington pump-as-a-turbine. The Worthington unit that was selected is the Model 10LNT14A horizontal pump that operates at 1210 RPM attached to a 110kw generator. The top of the scroll case, the bottom of the case, and the impeller would be moved to the gate chamber separately and reassembled. The unit, installed in the chamber, is shown in Figure B.

This unit will maintain the winter flows, below the dam, between 9 and 13 cfs, which are the historical releases. The releases will not be exactly as they would have been with the existing orifice, but they will be very similar. The minor difference in releases will not measurably change the reservoir water level nor the flow in the river below the dam. Releases will also be made through the turbine during the summer concurrently with large releases through the main gates.

The kW and Kw-hr. output of the unit is dependent upon the head and flow available at the turbine. The flow is dependent upon the water level in the reservoir, the performance curve of the unit, and the friction loss through the penstock. The friction loss reduces the head available at the power plant by nearly 20% so it is a major factor in the unit output. The gross head at the turbine is estimated by subtracting the reservoir water level from the tailwater elevation (7950 feet).

A daily simulation model was made of the turbine operation from 1971 to 1982, a period of 12 years that included very wet and dry years. The model calculates the flow through the turbine based upon the daily reservoir water level, the turbine performance curve, and the friction loss. The gross head available at the turbine was calculated by subtracting the tailwater elevation, 7950 feet, from the reservoir water level.

The computer model estimated the net head, flow, and efficiency from the gross head and the performance curves. These values are used to calculate the kw-hr. production for each day of the model period. Table 1 shows the kw-hr. production and peak kw output for each year of the model period. The unit produces a yearly average of 757,000 kw-hrs. with a peak year of 910,000 kw-hrs. and a minimum year of 579,000 kw-hrs.



NOTE:
BYPASS PIPE, ABOVE TURBINE, IS NOT SHOWN

NO SCALE

FIGURE B

LEMON DAM PROJECT

HYDROELECTRIC FACILITIES

GATE CHAMBER PLAN VIEW

TABLE 1

Power Plant Output

Year	Kilowatt-Hours	Maximum Kilowatt Output
1971	847,000	105
1972	752,000	103
1973	820,000	105
1974	624,000	95
1975	712,000	105
1976	823,000	105
1977	579,000	90
1978	583,000	105
1979	735,000	105
1980	832,000	105
1981	873,000	105
1982	910,000	105
Average	757,000	N/A

5. Electric Equipment

The power plant is small so large expenditures for exotic equipment are not justified. Furthermore, it will be unattended except for starting, stopping and maintenance, so that simplicity of operation is desirable. A facility using an induction generator best fits the requirements for this particular installation.

The facility will use about 2.5% of the generated power for station use and to supply the dam attendant's residence with electricity for domestic purposes, primarily heating. The majority of the power will be sold to an electric utility.

The specific requirements of Colorado Ute Electric Association, the interconnect utility, for this facility are:

1. Isolation
2. Circuit breaker
3. Surge arrestors
4. A dedicated transformer
5. Protective relaying to provide the following functions:
   a. Short circuit protection
   b. Isolation protection

An induction generator is basically a standard induction motor. However, by virtue of the turbine driving the motor shaft slightly over its synchronous speed, electric power is generated back into the utility power grid. Because the electro magnetic excitation comes from the power grid, an induction generator can only produce when paralleled or connected to the grid.

By using an induction generator, the ancillary equipment can be simplified both in operation, cost and maintenance. It is estimated that the induction generator will be supplied in a 445 TS frame size and will be rated for 110 kw, 1210 RPM and for use on a 480 volt system.

The generator sizing is based on turbine efficiency, motor efficiency and water head and flow data. It is expected that the design ratings will be encountered 20% of running time. The balance of the running time is less than the design rating except for extraordinary water conditions when throttling of the flow may be required by the inlet valve.

The motor is a 480 volt, 150 horsepower, 115% service factor unit. Special attention will be required by the vendor for design and balancing for possible double rated speed and 8100 ft. elevation. In addition, a mechanical modification will be required to couple and mount a centrifugal speed switch device on the outboard shaft. Surge voltage protection consisting of a MOV arrestor and capacitor will be mounted at the terminals of the induction generator.

The application of an induction generator permits the selection and use of a standard combination, full voltage, magnetic motor starter. This type of controller already contains many of the protective functions required by the utility as well as the facility.

The turbine valve and 10 inch bypass valves are to be hydraulicly operated by the water pressure. The actuators will be controlled by electric solenoid pilot valves. When voltage is applied to the turbine solenoid pilot valve, the water pressure is directed to the actuator to open the turbine valve. Conversely, when voltage is removed from the solenoid pilot valve it has a spring return action. This then redirects the pressure to the actuator to close the turbine valve.

The timing of the turbine valve closing and bypass valve opening will be adjustable to minimize water hammer and at the same time minimize turbine generator overspeed. Water hammer would not be a problem if the valve closing time is three seconds or greater.

The operators control panel will include instruments such as a voltmeter, ampmeter, kw meter, KVAR meter and an elapsed time meter. The voltmeter will indicate the value and presence of utility voltage before actuating the turbine generator. The ampmeter indicates a measure of the thermal loading on the generator while the kw meter will indicate the power out of the generator. The KVAR indicates the excitation flow and can be used to determine the power factor. The elapsed time meter indicates the running time and is useful in establishing maintenance procedures.

An indoor dry type transformer and primary fused switch are to be installed to supply the existing load at 208/120 volts. This equipment is necessary since the optimum voltage for the generator and the rest of the associated apparatus is 480 volts.

The 12,470 volt distribution power line will be connected to a pad mount outdoor transformer to step down the voltage to 480 V. Three fused cutouts on the pole will serve as complete disconnection provisions for La Plata Electric. Primary metering will be at the 12,470 volt level as well as the fused cut-out feeding a single phase 7,200 volt line to the dam keeper's home. Lightning arrestors will be located at the riser pole and also at a 25 KVA transformer for the dam superintendent's home. About 1200 ft. of 7.2 kv line will be installed to connect the home to the power plant.

Metering for the power-in and power-out will be by the utility at the primary 12.47 KV level. Demand metering for plant load factor, if required, will be by the utility.

6. Operation Criteria

All generator protective functions, if actuated, will result in shut down of the turbine generator system. Manual restart by the operator is required after determining the cause. Certain failures will require the operator to correct the cause and reset protective devices.

Short circuit, ground fault, overload and centrifugal overspeed will require manual reset. The other protective functions will automatically reset upon re-energizing of the utility line if they were the cause of the shutdown. The time delay reclosing of the utility will not start up the turbine generator although the appropriate protective devices automatically reset.

Normal starting will be manual. The operator will press a momentary contact start button. If all of the protective devices are enabled then a "run" relay will close and seal itself. Contact of this relay will energize pilot solenoid valves that hydraulically allow the 10 inch turbine inlet valve to open and a 10 inch bypass valve to close. The converse will occur by pressing a stop button.

The turbine will accelerate and when it reaches approximately 99% speed of operating speed the induction generator will be connected to the power system. The operator will be advised of the connection by observing an indicating ampmeter, wattmeter and varmeter. The proper speed will be sensed by a centrifugal speed switch coupled to the shaft of the generator on the outboard end. This centrifugal speed device will also incorporate an adjustable overspeed (manual reset) set of contact for a backup protective function previously described.

7. Description of Construction Activities

The construction activities for the Lemon Dam Hydropower Project involves equipment installation inside the dam, as well as the installation of a pad mount transformer, interconnection equipment, and 1200 ft. of 7.2 kv line above ground. Access for the work inside the dam will be from the shaft house at the west end of the dam crest. There is a road across the dam crest for vehicle travel but it is closed to public use.

The only evidence of the work inside the dam will be small crews of electricians, welders, and mechanics going in and out of the shaft house.

The pad mount transformer will require that a small concrete pad be constructed and appropriate wiring be installed from there to the power line, 10 ft. from the transformer. La Plata Electric Association will install the interconnect equipment and the power line to the home. The new power line will begin at the toe of the dam and extend across the toe of the dam to the home. This equipment will be typical for power service to an individual home. Construction will require that several poles be installed with the necessary trucks and crews.

There will be no need for heavy equipment or any activities of that nature.

8. Estimated Construction Cost

The estimated cost to install the hydroelectric facilities at Lemon Dam are listed below. The costs are in October 1985 dollars.

LEMON DAM HYDROPOWER PROJECT

Estimated Construction Cost

	Item	1985 Cost
1.	Penstock modifications, valve, etc.	$ 16,500
2.	Turbine and Generator	24,100
3.	Transmission Lines	8,800
	Total Direct Cost	$100,400
	Contingencies	15,000
	Engineering (1)	57,600
	Total	$173,000

(1) Includes cost of feasibility report, license application, final designs, construction observation, startup, and agency review.

EXHIBIT K

PROJECT LANDS AND BOUNDARY

Two planimetric drawings which show the project area are included in the exhibit. Drawing 519-400-53 shows the project area as a shaded area which is also the land classified as a "primary jurisdiction area" by the Bureau of Reclamation. All of the project facilities are contained within the boundaries of the primary jurisdiction area. The project area in relation to the reservoir and Florida River are shown.

The area is unsurveyed but the boundary can be described referencing Township, Range, and Sections. The project area is in Township 36 North, Range 7 West, Sections 17 and 20. The boundary can be described as:

- Beginning 1080 ft. east of the corner of Section 17, 18, 19, 20, and 1000 ft. North on the line between Sections 17 and 20; east 650 ft.; north 330 ft.; southeast 1780 ft. to a point 520 ft. north of line between Sections 17 and 20; south 520 ft.; east 40 ft.; south 1650 ft.; west 2070 ft.; north 1650 ft. to the beginning point.

The second figure shows the project facilities within the project area including the embankment, spillway, outlet works, power plant, and power lines. This drawing indicates the relationship of the project facilities to the existing dam and identifies the locations within the project boundaries.

These drawings are part of the application for License made by the Florida Water Conservancy District this 27th day of November, 1985.

Loyd Hess, President.

EXHIBIT L

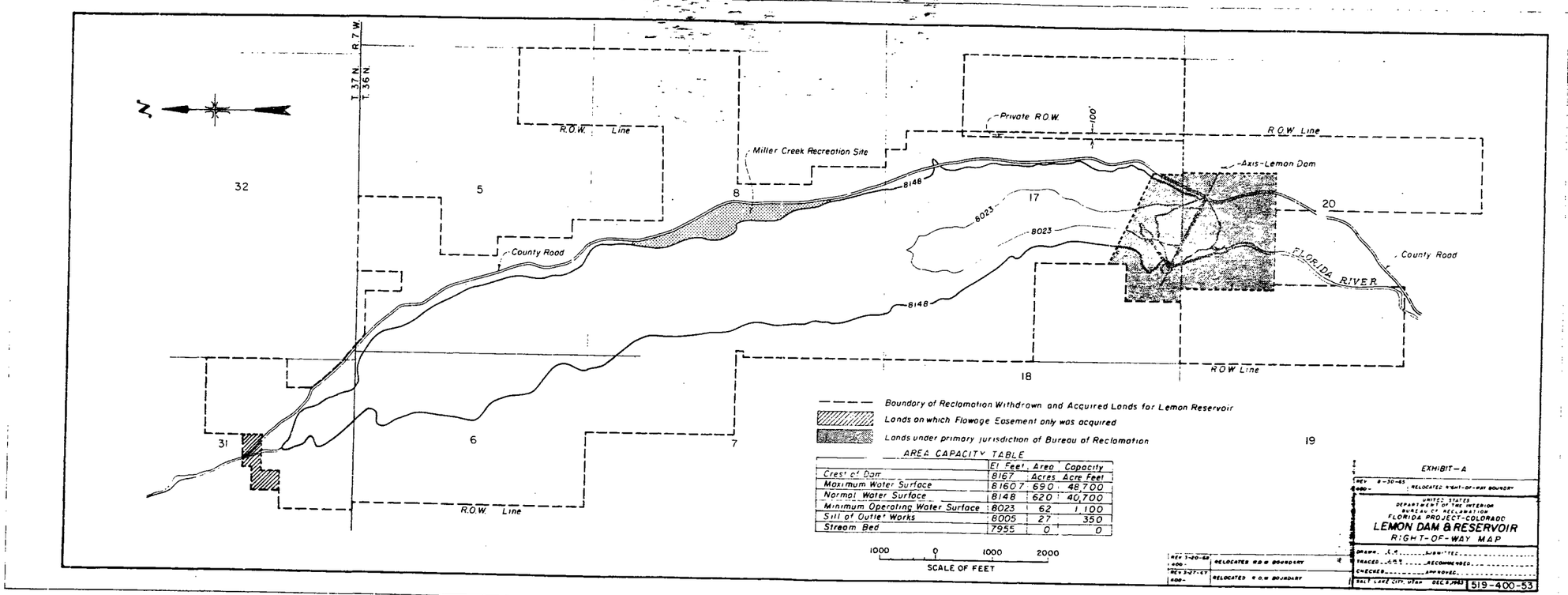
PROJECT DRAWINGS

Included in this exhibit are two oversize drawings which provide details to the schematics shown in Exhibit A. Drawing L001 shows the plan and profile of the turbine, generator, and associated equipment in the gate chamber. Drawing PE001 is a line diagram of the electrical equipment.

The drawings are attached at the end of the report.

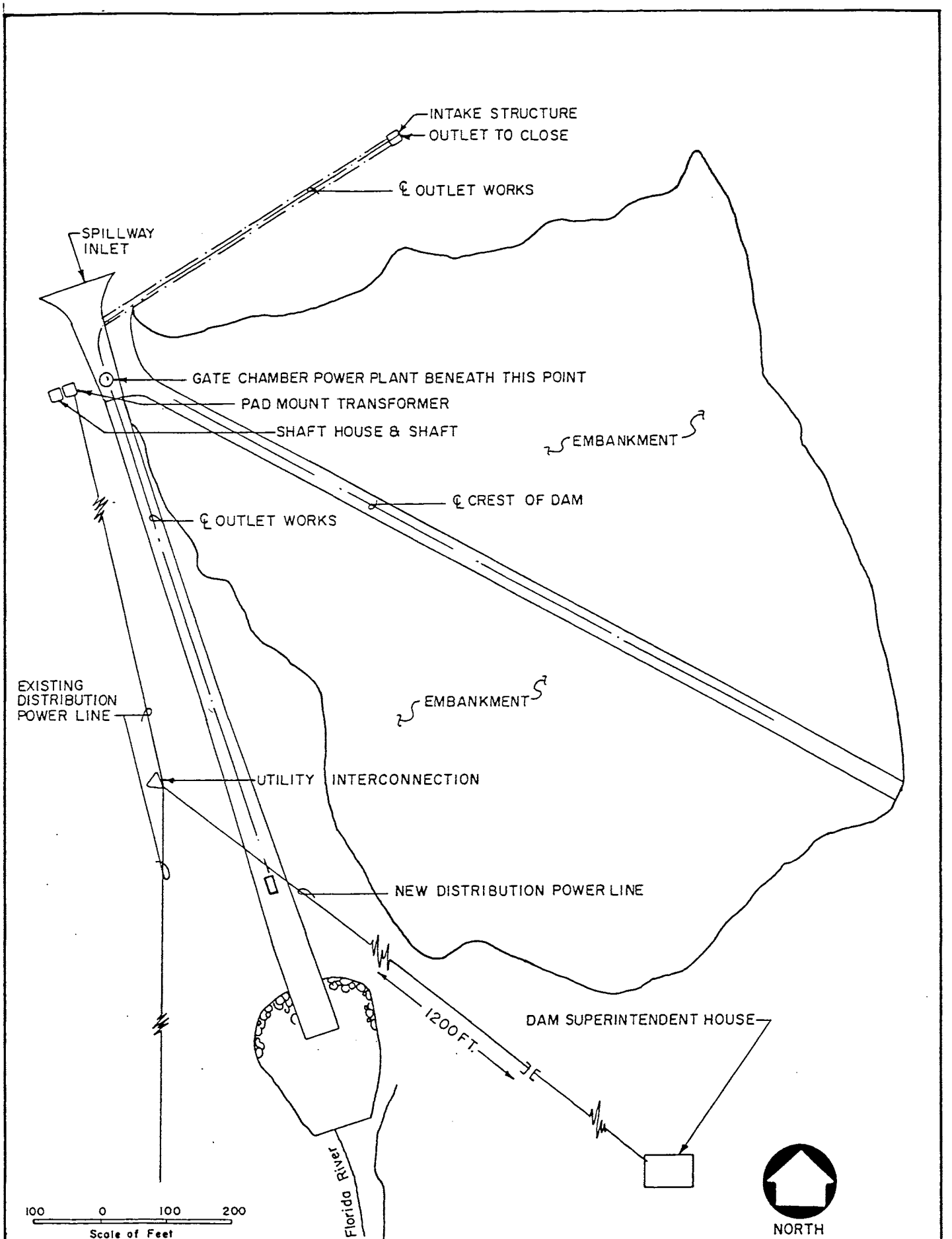
These drawings are part of the application for license made by the Florida Water Conservancy District this 27th day of November, 1985.

Loyd Hess, President



	El Feet	Area Acres	Capacity Acre Feet
Crest of Dam	8167		
Maximum Water Surface	8160.7	690	48,700
Normal Water Surface	8148	620	40,700
Minimum Operating Water Surface	8023	62	1,100
Sill of Outlet Works	6005	27	350
Stream Bed	7955	0	0

REV 3-20-68 400-	RELOCATED R/W BOUNDARY
REV 3-27-67 400-	RELOCATED R.O.W. BOUNDARY



LEMON DAM PROJECT

LEMON DAM & PROJECT FACILITIES

APPLICATION FOR SHORT FORM LICENSE

LEMON DAM HYDROPOWER PROJECT

ENVIRONMENTAL REPORT

1.0 PLAN OF DEVELOPMENT

The Lemon Dam Project would involve installation of a new hydropower plant and repair of existing facilities at Lemon Dam. The repairs are not part of the application but are mentioned periodically in the Environmental Report because the work will be done concurrently with the installation of the hydropower plant.

The District is responsible for operation of the dam and employs a dam superintendent who lives adjacent to the dam. Reclamation provides assistance to the District and makes annual inspections of the dam.

1.1 GATE REPAIR

The irrigation releases from Lemon Dam are controlled by two pairs of outlet gates, with each pair capable of releasing 455 cfs. The non-irrigation releases are made through an existing 8-inch bypass pipe on which the turbine will be installed. Each pair of gates includes an emergency gate which is either opened or closed and a regulating gate that can be opened to various degrees to make the desired release. The seats on all four of the gates and frames have become pitted during the past 20 years of operation and no longer close tightly. While the total leakage of 0.25 cfs is not considered so great that the dam is in jeopardy, the District is still required by Reclamation to make specific plans to repair the gates in the near future.

The regulating gates can be repaired by closing the emergency gates; however, the only way the emergency gates can be repaired is to dewater the entire outlet works. The outlet works consist of an intake structure in the reservoir and a 900-foot long, 8-foot diameter pressurized tunnel between the intake and the gates, and a 900-foot unpressurized tunnel downstream of the gates to the river. The top of the intake structure is at elevation 8018 feet

which means that it is normally covered by about 70 to 100 feet of water.

The outlet would be closed through use of a fabricated steel plug which would weigh 1,700 pounds and would be designed with a seal to reduce leakage while in place. Also an 8-inch butterfly valve would be installed in the plug to allow releases of 11 cfs or more into the existing outlet pipe for downstream demands. The plug would be placed by divers.

The steel plug could be implemented with minimal impacts to the fishery in the reservoir and downstream, as (1) reservoir levels could be maintained near the 14-year average for October and (2) the 8-inch valve would maintain flows in the river with no additional pumping and equipment costs. It was determined, with the assistance of the CDOW, that the steel plug would be the preferred approach for this project.

1.2 POWER PLANT

The main outlet gates are used from late April to mid-October to make large irrigation releases of over 50 cfs. During the other months the main gates are closed and releases are made through a bypass pipe, which has an inlet upstream of the main gates. The bypass pipe enters and passes through the chamber, and then daylights to the downstream tunnel 20 feet below the gates. The pipe is 8 inches in diameter through the chamber and 12 inches in diameter downstream of the chamber. Releases through the pipe are controlled by an orifice (two orifices are used at various times to make the desired releases) bolted to the exit end of the pipe. Depending upon the reservoir water surface elevation and the orifice, the releases vary from 9 to 13 cfs.

The turbine would be installed on the bypass pipe in the gate chamber, and water would then pass through the pipe all the time

rather than just during the winter months. During the irrigation season, water would be released through the main gates and the pipe concurrently.

A Worthington pump-as-a-turbine was identified as being the most appropriate unit for this project. It was the only unit that met the following selection criteria: 1) maintains flow below the dam between 9 and 13 cfs, 2) fits in the space in the gate chamber, and 3) fits in the elevator so that it can be moved to the chamber. The unit will have to be dismantled to fit in the elevator.

A 110 kW induction generator would be directly connected to the turbine to produce electricity. The power would be transmitted to the crest of the dam, transformed to the proper voltage and fed into the La Plata Electric Association (LPEA) system near the crest of the dam. The District will use part of the power for its needs at the dam and at the superintendent's home. A 1200-foot distribution line to the superintendent's home will be installed.

The bypass pipe in the gate chamber will be modified to increase the power production. This modification can only be accomplished if the outlet is dewatered as will be done with the gate repairs. The modification will significantly decrease the friction loss through the pipe and will increase the average annual production by 90,000 kWh. The estimated average output will be 750,000 kWh per year with the modifications.

A new bypass will be maintained around the turbine so that releases can be made during the winter months if the turbine becomes inoperable. Releases will be automatically routed through the bypass pipe if the turbine shuts down; a valve on the pipe to the turbine will close and a valve on the bypass pipe will open.

2.0 ENVIRONMENTAL SETTING

Lemon Dam and Reservoir are located on the Florida River, about 14 miles northeast of Durango, Colorado, La Plata County, in the San Juan Basin of the Upper Colorado River Basin (Figure 1). The reservoir is 620 acres in area with a normal maximum water surface elevation of 8148 feet. The Florida River, which is the source of water for the reservoir, originates high in the San Juan Mountains near the Continental Divide and continues southward to its junction with the Animas River, which later joins the San Juan River (a major tributary of the Colorado River) in Farmington, New Mexico.

The Florida River flows in steep, narrow valleys until almost out of the mountains with some farms and residences located along its banks. The reservoir lies within the San Juan National Forest and has a campground, a day use area, and some private residences within the immediate vicinity, as well as a gravel road which is maintained by La Plata County.

The reservoir is surrounded by high mountains covered with conifers and aspen. In general, the area can be considered rural/ wilderness.

The mean annual temperature in the area of the reservoir is 46 degrees Fahrenheit (F) with recorded temperatures varying from 101 to -38 degrees F, fluctuating between the arid characteristics of the desert and the alpine climate of the high mountains to the north. The prevailing winds are southwesterly and the annual precipitation is approximately 25 inches.

2.1 GEOLOGY

According to page 4 of the Draft Management Plan (DMP), Lemon Reservoir, Florida Project, Colorado, 1985 prepared by Reclamation, the U. S. Forest Service (USFS) and the District, Lemon Dam

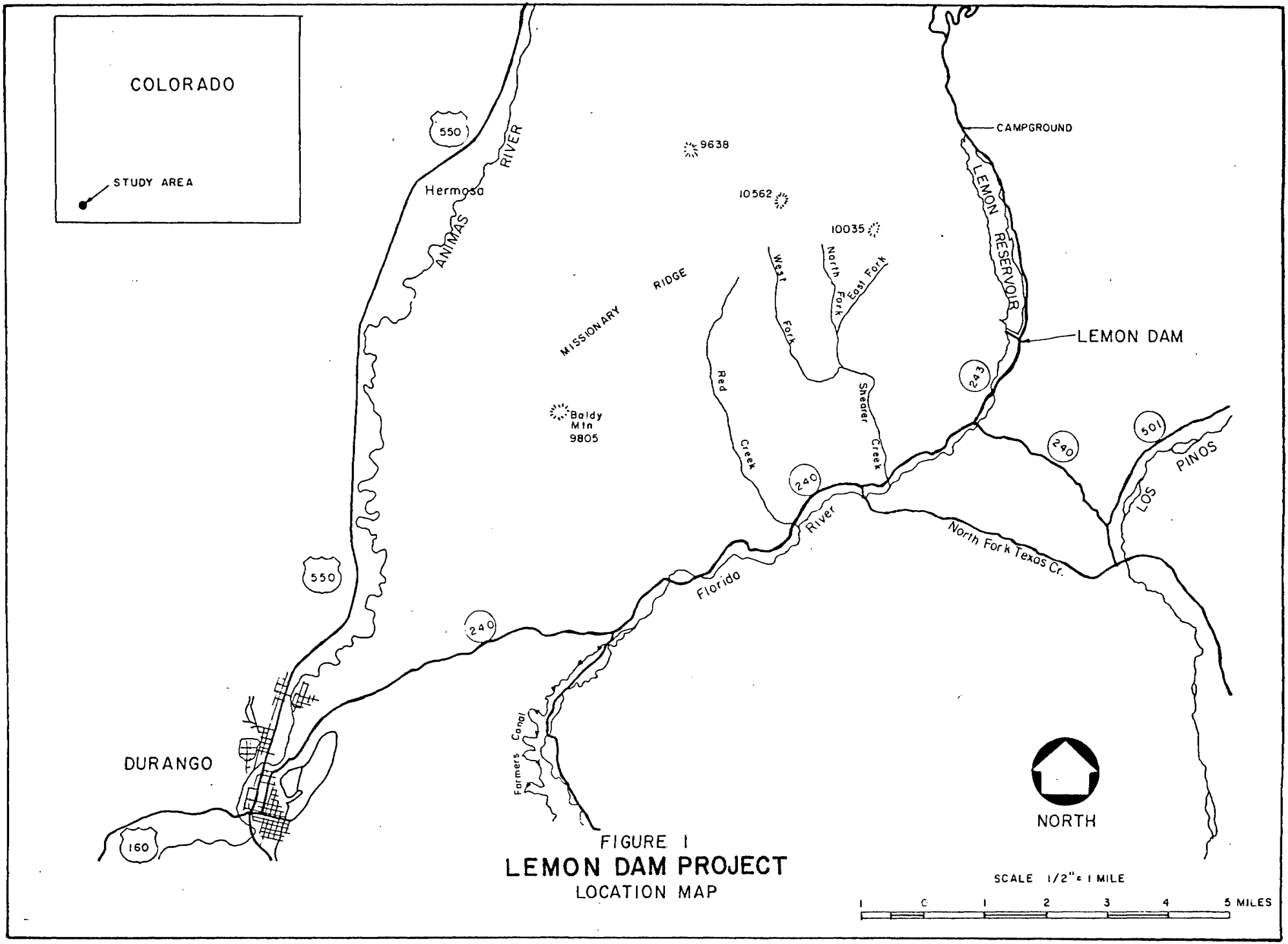


FIGURE 1
LEMON DAM PROJECT
LOCATION MAP

and Reservoir are located along the southern edge of the San Juan Mountains near the boundary of the upturned strata that forms the outline of the San Juan Basin. The formations dip downstream about 10-15 degrees around the dam axis. There are occasional faults in the vicinity of the reservoir, but no faulting was observed during construction.

Limestones, shales, siltstones, and sandstones of the Molas, Hermosa, Rico, and Cutler Formations compose the bedrock of the dam and reservoir area. These gray, red, and maroon beds range from the Pennsylvanian through the Triassic Ages. These formations are well exposed on the valley sides, but are covered with thick deposits of glacial till and outwash in the bottom of the valleys. The valley sides are occasionally covered with landslide and other colluvial deposits of variable thicknesses.

The topography of the area is steep and rugged, formed by mountainous uplift and followed by intense glaciation. In the reservoir area, more resistant strata form high ridges and the softer beds usually form valleys tributary to the Florida River. Elevations vary from 13,147 feet at the crest of Emerson Mountain near the Florida River headwaters to 7925 feet at the base of Lemon Dam.

2.2 VEGETATIVE COVER

The steep rugged slopes surrounding the reservoir are covered with shallow soils over impervious bedrock. The typical vegetation occurring in this area includes Ponderosa Pine, Douglas Fir, and Colorado Blue Spruce associations, with the Ponderosa Pine association predominating the lower dry areas and the Douglas Fir association occurring on the higher elevation sites. It is common to find the Colorado Blue Spruce association where high water tables are prevalent and along water courses.

2.3 FISH AND WILDLIFE RESOURCES

2.3.1 Fisheries

Lemon Reservoir's storage capacity was designed to ensure that a fishery be maintained for recreational opportunities at the reservoir as well as to enhance the stream fishery below the reservoir by maintaining minimum flows in the river. To enhance the recreational and fishing value of the reservoir, a minimum of 1100 af of storage capacity was provided. In addition, the project provides for a minimum flow of 4 cfs from October 16 through April 30 to meet minimum requirements for downstream fish habitat in the eleven mile reach of the Florida River between Lemon Dam and the Florida Farmers' Diversion Ditch. This annual release, on a cumulative basis, amounts to approximately 1600 acre feet. Releases from the reservoir continually exceed this minimum flow during the irrigation season.

The management approach for Lemon Reservoir is defined as a "put, grow and take fishery" which in essence is a stocking program implemented by the state and Federal wildlife agencies. Because the morphology of the reservoir is steep sided and narrow, there is not an abundance of shallow warm areas for fish maturation, and as a result, Lemon Reservoir does not have a productive growth rate.

Lemon Reservoir is annually stocked with 50,000 five-inch fingerling rainbow trout by the U. S. Fish and Wildlife Service (USFWS). Rainbow trout are popular with fisherman, are easy to catch and are a common commodity with fish hatcheries. They are "put" into the reservoir at five inches (size) with hopes that they will grow to be as large as 10-12 inches.

There is currently an existing brown trout population in the reservoir which probably has resulted from the 1975 stocking of

15,000 fish. The brown trout, which reside in the river below the reservoir, spawn downstream of the reservoir in the late fall-October and November. Those residing in the reservoir spawn upstream. In addition to the brown trout, brook and cutthroat trout are also present and reproduce in the Florida River above the reservoir. The brook trout spawn during the fall months and the cutthroat spawn in the spring.

The kokanee salmon, a land-locked sockeye salmon, thrive in Lemon Reservoir and can withstand lake level fluctuations because their primary food source, the zooplankton, are least prone to the detrimental impacts from fluctuations. The kokanee have a four-year life cycle. They move upstream into the Florida River during October, November, and December, spawn and die. The Colorado Division of Wildlife (CDOW) voluntarily stocks the Florida River with 100,000 two-inch fry-fingerlings of kokanee salmon each year.

The production costs for the two-inch fish (kokanee or trout) are 12.8¢/fish or $128/1,000 fish or $12,800 (for 100,000 fish stocked annually). For the five-inch trout, the costs are 33.5¢ per fish or $335/1,000 fish or $16,750 for 50,000 fish. Over a four year period, replenishing of the kokanee stock would amount to $51,200. The four year period is critical to the kokanee salmon because (1) that is the amount of time it takes for kokanee to mature and spawn and (2) impacts to the fishery from historic low reservoir levels have resulted in a loss of four-year classes of kokanee salmon. The CDOW estimates that it would take two years to replenish the rainbow trout following historic low reservoir levels. This would amount to $33,500.

Prior to the construction of the Florida Project (1963), the Florida River fishery (13.5 miles from the upper end of Lemon Reservoir to the head of the Florida Farmers Ditch) was valued at $50,000 annually, according to page 53 of the Florida Project,

Definite Plan Report (DPR, 1959) which states "but is limited by fluctuating flows which vary from more than 700 cfs during the spring runoff period to less than 30 cfs in late summer and less than 10 cfs in the winter." The DPR also estimated that the improvements to the fishery as a result of the reservoir operation would be $100,000 annually. According to Mike Japhet of the Colorado Division of Wildlife, "it is very difficult to place a monetary value on the entire worth of the fishery at Lemon Reservoir or at any other reservoir. For example if one was to try to assess the value based on the fishery alone, annual costs associated with stocking the fish could be used as a parameter, as these costs can be directly tied to the replacement costs. However, since there is no formula for calculating the monetary value of the fishery that already exists (i.e., those fish which are growing or have matured to 8 inches, 10 inches or 12 inches) the value of the fishery would be developed by using the stocking costs only. In addition, it is important to note that by determining the value based solely on the fishery, without consideration for economic indicators, the true value of the fishery is not portrayed.

On the other hand, in a recent report entitled "Sportsmen Expenditures for Hunting and Fishing in Colorado, 1981", Kenneth Nobe of Colorado State University takes the position that the value of each fish caught can be determined purely from an economic perspective. He estimates that each fish caught in Colorado is valued at $57.00. This figure incorporates the entire experience, including not only the equipment and licenses purchased but also motels, food, car expenditures, travel, etc. While this figure may be overestimated, the value based on the "fishery" alone appears to be underestimated. Possibly the true value lies somewhere between these two methodologies."

The fishery at Lemon Reservoir is currently used as a back-up egg source for the kokanee salmon in Vallecito Reservoir. It is a viable sport fishery site for both tourists and locals.

2.3.2 Wildlife

Big game animals such as deer, elk, black bear, mountain lion and big horn sheep are present in the area surrounding the reservoir. The deer and elk use the area as a summer range and both species are harvested during hunting season. Wildlife are numerous in this area and such small game species as coyote, fox, bobcat, marmot, pine squirrel, skunk, raccoon, beaver, muskrat, marten, raptorial birds, passerine birds and other small mammals, birds and a few reptiles can be found in the immediate area. Occasionally, waterfowl are observed in the reservoir area.

According to page 11 of the Draft Management Plan, "the only threatened and endangered species periodically inhabiting the reservoir area is the bald eagle, typically during the spring and fall months when fish and small game are most active. The eagle is an annual migrant from the northern portions of North America. There are no known active nests in the reservoir area."

Hunting is permitted throughout the reservoir area with the exception of the primary jurisdiction area (special management zone for the dam, spillway and outlet works) which Reclamation has restricted from hunting and the discharge of firearms. (DMP pages 17 and 18)

2.4 WATER RESOURCES

The purpose of the Lemon Dam and Reservoir project is to develop the unused flows of the Florida River for (1) the irrigation of 19,450 acres of land, (2) the control of flood waters and (3) the enhancement of the sport fishery and recreation. The project provides an average of 25,740 AF of water annually for lands in the Florida River service area.

The water is stored in the reservoir and released as needed via a natural river channel conveyance system to various diversion points where private ditch companies make use of the irrigation

waters during the May to mid-October irrigation season. According to page 55 of the DPR (1959) "Future flood damages along the Florida River below the Lemon Reservoir and without the reservoir in operation are estimated at an average of $13,900 annually, including $9,100 in damage from snowmelt floods. Operation of the reservoir on the basis of runoff forecasts will reduce snowmelt flood damage by $6,700 annually but will not significantly reduce the damage from rainfall floods. The prevention of additional damages from snowmelt floods by increasing the capacity of the reservoir or the outlet works was not found to be justified economically."

In addition, a portion of the reservoir storage capacity is to provide for the recreational fishery at the reservoir and to enhance the stream fishery below the dam by maintaining flows in the river.

2.4.1 Hydrology

The primary source of precipitation over the basin occurs as snow which falls during late autumn, winter and early spring. Rain may occur during any month although it is more prevalent during the warmer seasons. The annual precipitation at the higher elevations is approximately 50 inches while at Lemon Dam the average annual precipitation is about 27 inches. At higher elevations the snowfall usually accumulates until about the first of April, after which time the runoff begins. Late March or early April mark the time for runoff at the lower elevations of the watershed, resulting in considerable melting for both areas and peak flows occurring in early May.

Normally Lemon Reservoir fills gradually during the winter and early spring, reaching maximum content in May or June. It is during the next three to four months that the reservoir level drops, with a low point being reached in October. The average

annual vertical fluctuation is about 68 feet (DPR p. 54 and DPR Appendix - Bureau of Sport Fisheries and Wildlife Report, p. 8).

The drainage area for the Florida River above the Lemon Dam site is 68 square miles and varies in elevation from 7950 feet at the dam site to more than 13,000 feet at the headwaters, which originate in the Needle Mountains about ten miles southwest of the Continental Divide.

Inflow data have been derived since 1973 from measurements at a stream gage station maintained and operated by the State of Colorado "at the Florida River, above Lemon Reservoir" and indicates that the recorded inflows range from a maximum of 1140 cfs to a minimum of 3.0 cfs. The estimated annual runoff for the nine year period is 57,000 AF.

Releases recorded between mid-October and April 30 (the non-irrigation season) are relatively constant, with releases between 9-13 cfs occurring almost all of the time. Occasionally a 7 cfs or 16 cfs release occurs. During late November and early December, a week long release of 30-50 cfs is made for stock watering. During the irrigation season, the releases range from 50-1,000 cfs. Generally releases above 350 cfs result from spills when the reservoir is full.

The data related to downstream releases and reservoir capacity and elevation for 1974 and 1977 are presented in Table 2.1. Also included in this table are the reservoir elevations and capacity for the spring, following the dry year. The reservoir's active capacity is 39,000 AF (620 acres) with 900 AF inactive capacity and 400 AF dead storage capacity.

Table 2.2 identifies the historic October reservoir elevations according to year, area and capacity.

TABLE 2.1

Reservoir Data

	Releases Downstream				Reservoir		
	Peak		Low		Elevation	Capacity	Month
Year	cfs	Mo.	cfs	Mo.	(Feet)	(AF)	
1974*	275	June	10	Oct.	8053	4,500	Oct.
1975**	-	-	-	-	8147	39,500	July
1977*	215	June	9	Feb./March April/Dec.	8053	4,500	June
1978***	-	-	-	-	8134	31,900	June

* Lowest recorded years.

** 1975 was an above average year for snowfall. The reservoir filled by July.

*** 1978 was a slightly below average year for snowfall. The reservoir did not fill.

TABLE 2.2
Historic October Elevations

Year	Minimum Elevation (Feet)	Surface Area (Acres)	Capacity (Acre Feet)
1971	8100	369	16,087
1972	8068	201	7,263
1973	8112	434	20,875
1974	8053	162	4,557
1975	8115	453	22,206
1976	8106	398	18,379
1977	8056	169	5,052
1978	8070	208	7,671
1979	8108	410	19,187
1980	8116	460	22,662
1981	8118	473	23,595
1982	8130	541	29,705
1983	8122	498	25,539
1984	8118	473	23,595
Oct. Ave.	8099	360	15,724

2.4.2 Water Quality

Water Quality Regulations have been established which classify stream segments and provide numeric standards for all of the streams, tributaries and standing bodies of water in Colorado. The classifications identify the actual beneficial uses for which the water is suitable and the numeric standards are assigned to determine the allowable concentrations of various parameters.

Based on the "Classifications and Numeric Standards for San Juan River and Dolores River Basins (3.4.0)", Lemon Reservoir is classified as a Recreation Class 1 (whole body contact recreation where primary contact recreation actually exists or could reasonably be expected to occur) and Aquatic Life Class 1 cold water body (a water body which provides or could provide a habitat consisting of water quality levels and other considerations such as flow or streambed characteristics which do or could protect and maintain a wide variety of cold water biota, including sensitive species). The Florida River below the dam outlet (i.e. the mainstem) has been classified as Recreation Class 2 (where primary contact recreation does not exist) and Aquatic Life Class 1 cold water body. Both water bodies have been identified as serving water supply and agricultural needs.

Out of the 27 water quality parameters (excluding organics and uranium) developed for these two bodies of water, only two differ in numeric value: fecal coliform and cadmium. The fecal coliform (f.c.) standards for the reservoir, which is classified as Recreation Class 1, is 200 f.c./100 milliliter (ml), while for the Florida River below the dam the standard is 2,000 f.c./100 ml. The cadmium standard is 0.0007 milligram per liter (mg/l) for the Florida mainstem and 0.0004 mg/l for Lemon Reservoir. Both of these standards are more stringent for the reservoir because of the classification as Recreation Class 1. Cadmium is a heavy metal that directly affects the nervous system and fecal

coliform are indicator organisms which are used to indicate the presence of pathogens.

The water quality parameters for Lemon Reservoir and the Florida mainstem fall into five categories: physical and biological, inorganic, metals, organic, and uranium, and are illustrated in Table 2.3.

The Environmental Protection Agency's data base "STORET" provided water quality data for the "Florida River Below Lemon Reservoir" sampling station, but no data was available for the reservoir itself. The data included historic and recent results of both grab and composite samples. The data were presented in two STORET files: (a) PGM-INVENT and (b) PGM=ALL PARM. The PFM=INVENT file is a summary of all of the statistics for all of the parameters and provides a composite average of all of the data. The PGM=PARM file describes the actual sample values for each of the parameters and contains the majority of the data upon which the PGM=INVENT file was based.

When applicable, the majority of the water quality standards were met (e.g. chlorine residual and sulfur as hydrogen sulfide did not apply). However, for three of the parameters--lead, mercury and silver--the summary data appears to exceed the water quality standards for Class 2 Recreation. After examining the actual sample values (these values are the basis for the summary data), it became evident that many of the values which were presented as being "less than" a certain value, were actually integrated into the summary table as that value. (Those values which were less than 5 were carried over to the summary table as 5). Table 2.4 presents an overview of the STORET data for these three parameters in question and is organized according to numeric standard, the summary data and the actual sample values.

Based on the information presented in Table 2.4, it becomes apparent that the summary data is not a true reflection of the actual samples taken.

It must also be noted that it is not unusual for many stream segments to have elevated levels of metals due to natural or unknown causes as well as mine seepage from inactive or abandoned mines.

It is unclear as to what the stream conditions truly are with respect to these three parameters, and with this in mind, it is difficult to make a decisive statement with respect to the actual exceedance of the water quality standards.

TABLE 2.3
Water Quality Standards
(Numeric Standards)

	Lemon Reservoir	Florida Mainstem
PHYSICAL AND BIOLOGICAL		
pH	6.5 - 9.0	6.5 - 9.0
DO	6.0 mg/1 - 7.0 mg/1 spawning	6.0 mg/1 - 7.0 mg/1 - spawning
Fecal Coliform	200/100 ml	2000/100 ml
INORGANIC (mg/1)		
NH_3	0.02 unionized	0.02
Residual Cl_2	0.003	0.003
Cyanide (free)	0.005	0.005
S as H_2S	0.002 undis-	0.002 undis-
Boron	0.75 solved	0.75 solved
Nitrite (NO_2)	0.05	0.05
Nitrate (NO_3)	10.0	10.0
Chloride (Cl)	250.0	250.0
Sulfate (SO_4)	250.0	250.0
METALS (mg/1)		
Arsenic (AS)	0.05	0.05
Cadmium (CD)	0.0004	0.0007
Chromium (tri)	0.05	0.05
Chromium (hex)	0.025	0.025
Copper (Cu)	0.005	0.005
Lead (Pb)	0.004	0.004
Iron (Fe, Sol)	0.3	0.3
Manganese (Mn. sol)	0.05	0.05
Mercury (Hg)	0.0005	0.0005
Nickel (Ni)	0.05	0.05
Selenium (Se)	0.01	0.01
Silver (Ag)	0.0001	0.0001
Zinc (Zn)	0.05	0.05
Iron (Fe, tot)	1.0	1.0
Manganese (Mn, tot)	1.0	1.0

URANIUM

(a) All waters of the San Juan/Dolores River Basins are subject to the following basic standard for uranium, unless otherwise specified by a water quality standard applicable to a particular segment. However, discharges of uranium regulated by permits which are within these permit limitations shall not be a basis for enforcement proceedings under this basic standard.

TABLE 2.3 (continued)

(b) Uranium level in surface waters shall be maintained at the lowest practicable level.

(c) In no case shall uranium levels in waters assigned a water supply classification be increased by any cause attributable to municipal, industrial, or agricultural discharges so as to exceed 40 picocuries per liter (pCi/1) or naturally-occurring concentrations (as determined by the State of Colorado), whichever is greater.

(d) In no case shall uranium levels in waters assigned a water supply classification be increased by a cause attributable to municipal, industrial, or agricultural discharges so as to exceed 40 pCi/1 where naturally-occurring concentrations are less than 40 pCi/1.

ORGANICS

All waters of the San Juan/Dolores River Basins are subject to the following standards for organics. (Discharges regulated by permits, which are within the permit limitations, shall not be subject to enforcement proceedings under these standards).

(a) The organic substances listed below along with concentrations listed as assigned as basic standards intended to protect all waters in the San Juan/Dolores River Basins:

Parameter	Aquatic Life mg/1	Water Supply mg/1
Aldrin	0.000003	
Dieldrin	0.000003	
DDT (DDD & DDE)	0.000001	
Endrin	0.000004	
Heptachlor	0.000001	0.0002
Lindane	0.00001	0.004
Methoxychlor	0.00003	0.1
Mirex	0.000001	
Toxaphene	0.000005	0.005
Demeton	0.0001	
Endosulfan	0.000003	
Guthion	0.0001	
Malathion		
2, 4-D		
PCB (Polychlorinated Biphenyls)	0.000001	
Chlorphenol	0.001	0.001
Monohydric phenol	0.5	0.001
Benzidine	0.0001	0.00001

TABLE 2.3 (continued)

(b) Due to their toxicity persistence, bioaccumulation potential, and carcinogenicity, these organic substances shall be maintained at the lowest practical level in both surface or groundwater. In no case shall their presence in surface or groundwater be increased by any cause attributable to municipal, industrial, or agricultural practices or discharges, so as to exceed the levels specified in paragraph (a) above.

(c) Aldrin and dieldrin in combination should not exceed 0.000003 mg/1.

(d) All organics not covered by paragraph (a) above are covered by Section 3.1.11 of the "basic regulations".

TABLE 2.4
Summary Data of Parameters in Question
(PGM=INVENT)

Parameter	Standard mg/l	Standard *ug/l	Number of Samples	Mean	Actual Sample Values Number of Samples	Actual Sample Values Value Found
Lead	0.004	4.00	34	0.0044 mg/l	6	0
				*(4.3824 ug)	25	5
					2	5
					1	14
Mercury	0.00005	0.05	7	0.00028 mg/l	3	0
				*(.28571 ug)	4	.5
Silver	0.0001	0.1	15	0.00026 mg	3	0
				*(.26667 ug)	11	.2
					1	2

* All actual sample values that were ** 5, .5 and .2 were recorded and averaged in as 5, .5 and .2 in this column.

* micrograms per liter
** means "less than"

2.5 LAND RESOURCES

The land in the immediate vicinity of the dam and reservoir (1/4 to 2 miles from the lake perimeter) is owned by both public and private interests. The reservoir and dam site as well as many other acres of public land are owned by the U. S. Government and are administered and managed by Reclamation, the Bureau of Land Management (BLM) and the USFS. Private properties are also adjacent to these publicly owned lands. Outside of the two mile radius and surrounding the reservoir and dam on three sides, is the San Juan National Forest.

2.5.1 Mineral Resources

Currently there are no existing mineral activities within the immediate area of the reservoir and dam. There are, however, two prospects known within the Florida River drainage basin at the extreme northern end, approximately 14 miles northeast of the dam site. There are no records of any production in the other inaccessible mine workings in the area. Production of metallic minerals within a 15 miles radius of Lemon Dam has been small.

The nearest known uranium and vanadium deposits, as reported by the Atomic Energy Commission, are in the vicinity of Durango and Lightner Creek, considerably southwest of the reservoir area. Traces of uranium have been identified near Aztec Mountain, north of Lemon Reservoir, but as with metallic minerals, the production of uranium or vanadium are not considered to be of any significance.

There are currently no prospects for oil development in the reservoir area but there is a coal belt about two miles south of the dam site that runs roughly eastward from Hesperus, Colorado and crosses the Pine River north of Bayfield, Colorado, dipping southerly away from the reservoir area.

According to the Draft Management Plan (page 10), "Ownership of mineral rights on acquired project lands has been reserved by the previous landowners. Stipulations on prospecting and extraction provide that any rights reserved shall be exercised in such a manner as will not interfere with the construction, operation, and maintenance of any works of the Lemon Dam and Reservoir of the Florida Project, as determined by the Secretary of the Interior or his duly authorized representative. Methods of extraction and removal of any such minerals shall prevent pollution and shall in no way adversely affect the water supply of Lemon Dam and Reservoir."

2.5.2 Grazing

The grazing of cattle or sheep is not permitted in the reservoir management area but is permitted on the public lands in the National Forest through a deferred rotation system which allows for the maturation of range forage plants on a portion of the grazing allotment prior to use by livestock.

Many acres of the San Juan National Forest in the area of the dam and reservoir are classified as capable and suitable livestock grazing rangeland. Grazing permits for 255 head of cattle and 500 head of sheep were issued in 1985 with ranchers paying approximately $475.00 in grazing fees. Horses are also grazed in conjunction with various types of recreation between mid-May and early November. The majority of the cattle are permitted to graze from mid-May to mid-October and sheep are permitted from early July to mid-September [San Juan National Forest - Final Environmental Impact Statement (SJNF FEIS) page III-53].

2.5.3 Timber

Timber harvests are designed (1) to improve wildlife habitat diversity, (2) to improve water yields and (3) to perpetuate or create desirable vegetation mixes for aesthetic purposes. In the

San Juan National Forest there is a total of 801,474 tentatively suitable acres for timber production (SJNF FEIS page III-56).

Since 1960, there has been a steady decrease in average annual timber harvest, primarily due to the closing of three lumber mills in Dolores (1976), Pagosa Springs (1978), and Durango (1981). Sources have indicated that the shutdowns were attributed to small trees or low quality timber and to the depressed market conditions for lumber and other wood products. The harvesting in the Lemon Dam Area has decreased in the past with occasional small sales being offered.

2.6 RECREATIONAL USE

The entire Lemon Dam and Reservoir area attracts tourists and locals alike for a variety of recreational activities. Except in the spillway chute and stilling basin below the dam where only fishing is permitted, and the primary jurisdiction area where hunting and the discharge of firearms are restricted, the area is open year round for the pleasure of people seeking both water and land related recreation.

The water-based sports that are permitted on the reservoir include fishing, boating, water skiing, swimming, sailing and wind surfing (DMP page 32). Activities that are widely experienced in and around the dam and reservoir in the land based related recreation category include camping, hiking, shoreline fishing, sightseeing, picnicking, photography, snowmobiling, snowshoeing, cross-country skiing and hunting.

An eleven unit recreation site (Miller Creek Campground) with concrete boat ramp and day use picnic facilities exists on the east side of the reservoir about two miles north of the dam. Below the dam is a parking area for stream fishermen. Approximately two miles north of the reservoir are two USFS Campgrounds; Transfer Park and Florida.

According to the DPR (page 53), annual use was estimated to be 10,000 visitor days per year, at a value of $1.60/visitor day. Recent data from the Forest Service indicates that approximately 12,000 visitors per year utilized the facilities in the area of the dam and reservoir, including the Transfer and Florida Campground areas, with the primary usage occurring during the months of June through August.

In mid-September the sanitary facilities at the Miller Creek Campground (mini-flush) and in the single unit at the north end of the lake are closed because of freezing temperatures, but there are sanitary facilities available at the Miller Creek picnic area and the Transfer and Florida Campgrounds. After Labor Day visitor usage drops dramatically to approximately 200 visitor days per month and occurs primarily in the campground areas (Personal Communication - USFS).

Data derived by the Colorado Division of Wildlife from contacts with 1,174 fishermen during the months of May-October (1982) and July-October (1983) indicates that the fishery in the reservoir supported an estimated 14,484 fishermen during that period, accounting for a total of 48,188 fisherman hours. The average overall catch per manhour, which includes both bank and boat fishermen, was 0.593 (1982) and 0.792 (1983) and the average number of fish caught per fisherman trip was 1.96 (1982) and 2.7 (1983). This information is based on a 1982 and 1983 CREEL CENSUS PROJECT report developed by the CDOW.

As the hunting season approaches, the visitor usage drops considerably for those interested in hiking/photography and the aesthetic aspects of the area, and the area becomes saturated with hunters. The estimated number of hunter days for this area of the San Juan National Forest between the October-mid November prime deer/elk hunting season is 500 hunter days (Personal Communication USFS).

2.7 SOCIO ECONOMIC ASPECTS

Because the immediate area surrounding the dam and reservoir is basically rural/wilderness in nature, the definition of the socio-economic climate will be developed utilizing a larger geographical area.

On an overall basis, the area of socio and economic influence for the 1.5 million acres of the San Juan National Forest includes five counties in southwestern Colorado--La Plata, Montezuma, Archuleta, Dolores, and San Juan. It is estimated that the activities and outputs are directly or indirectly responsible for approximately 12% of the total employment within this area of influence [Land and Resource Management Plan - San Juan National Forest (LRMP-SJNF) p. II-2]

Within the general area of influence is a population of 50,000. Projected population growth is expected to more than double over the next 30 years. Average income for the five-county area in 1973 was $3,630; and in 1978 was $5,450. The total labor force in the five-county area in April 1980 was estimated to be 23,950 of which 22,600 were employed, for an overall unemployment rate of 5.6% (LRMP SJNF p. II-3). This is slightly above the Colorado average of 3.6%. Approximately 28% of this employment or approximately 6,740 jobs were related to the activities and outputs of the San Juan National Forest. According to p. II-3 of the Land and Resource Management Plan of the San Juan National Forest, "Based on an employment to population ratio of 1 to 24 for the area, it is estimated that these jobs support about 15,000 residents of the five-county area."

The Forest Service's Rocky Mountain Region has been divided into Social Resource Units (SRU's) which serve as a foundation for assessing social, cultural, and economic interactions and are defined by natural boundaries (LRMP SJNF p. II-3). The San Juan

Forest lies within the Region's Social Resource Unit K for which the eastern boundary is the Continental Divide, the northern boundary the San Juan Mountain Range, the southern delineation the Southern Ute and Ute Mountain Ute Indian Reservations and the western perimeter, the desert of Utah. Within the SRU's are smaller units, as defined by the USFS, called Human Resource Unit's (HRU's) which are areas characterized by unique patterns of life-styles, economic conditions, institutional arrangements and topography. The HRU's vary in size, may cross political jurisdictions and are more often than not larger than individual towns and communities.

According to the USFS's "Land and Resource Management Plan, San Juan National Forest, September 1983", Lemon Dam and Reservoir lie within the Animas HRU. This unit is described below as it appears in the Land and Resource Management Plan.

2.7.1 Animas Human Resource Unit

"The Animas Human Resource Unit (HRU) is bounded on the west by a line running essentially from Red Mountain Pass southwest to the New Mexico border. This line crosses U. S. Highway 160 just west of Hesperus. The northern boundary of the HRU is the Continental Divide. The eastern border runs south from the Divide a few miles east of the Los Pinos River down to the New Mexico line.

The entire HRU is dependent on Durango as a primary trade and service center and as a recreation visitor entry point. The bulk of the unit is in La Plata and San Juan Counties.

2.7.2 Lifestyle

The Animas HRU is moderately urbanized, especially in the Durango area, but the rural mountain lifestyle still prevails. Durango is the primary trade center, and is the "gateway" to the HRU and to the San Juan National Forest. Logging, ranching and

mining are directly related to National Forest activities in the HRU, and many residents spend large amounts of their leisure time in the Forest as well.

2.7.3 Attitudes, Beliefs and Values

Animas HRU residents represent a wide cross-section of attitudes, beliefs and values. The community is diverse, cosmopolitan and easily polarized on issues, including those relating to natural resource management.

2.7.4 Social Organization

The standard social services available in most small American cities are found in Durango, including a four-year college. Because of its diverse population and economic base, the Animas HRU is not as vulnerable to social disruption from projects such as mineral or ski area development as most other communities in southwest Colorado might be.

2.7.5 Population and Land Uses

Population increases of the past decade have created a problem with the conversion of agricultural lands to residential and commercial uses, particularly when converted lands are adjacent to the National Forest. Loss of access and key big game winter range are two adverse effects. Recreational use of the National Forest is growing as populations increase, with much of the increased use occurring on forest lands in the Animas HRU. Vegetation treatment is necessary to maintain the scenic views people are accustomed to and to provide for increased capacity on big game winter range to compensate for the rapid loss of private land."

2.8 HISTORICAL AND ARCHEOLOGICAL RESOURCES

According to page 13 of the Definite Plan Report (1959) and the Draft Management Plan (DMP) (1985) prepared by Reclamation,

USFS and the District, the "National Park Service's cultural resources site survey...concluded that no historical, archaeological or paleontological values exist in the reservoir area".

2.9 VISUAL RESOURCES

"The Lemon Reservoir Recreation Area is defined by a unique combination of visual features. Some of these include landforms, vegetation, and water, which combine to create an enclosed landscape of inherent harmony and character. Lemon Reservoir, along with the Florida River drainage and its continuous mountain streams, provides high visual relief. Natural ponds and lakes add to this relief, and are widely scattered throughout the vicinity of the reservoir area.

The predominant visual boundaries are defined by the surrounding landforms. The mountains to the north, capped with jagged peaks and ridges, tower above the Florida Valley. The combined peaks and ridge lines contrast sharply with the sky, and form the highest boundary of enclosure. Along the sides of the valley, other boundaries are viewed as vegetation types change. These boundaries form edges or lines cutting across the natural landforms. The surface of the reservoir acts as a valley floor and forms a distinct visual boundary at the shoreline edge. Each drainage extending downward forms a terminus as it converges at the reservoir. This arrangement of landforms tends to create a definite sense of place or arrival." (DMP page 12)

2.10 ENDANGERED AND THREATENED SPECIES

"Currently, the only threatened and endangered species periodically inhabiting the reservoir area is the bald eagle, typically during the spring and fall months when fish and small

game are most active. The eagle is an annual migrant from the northern portions of North America. There are no known active nests in the reservoir area. The USFS and CDOW coordinate with the USFWS to ensure proper management and protection of threatened and endangered species." (DMP page 11)

3.0 ENVIRONMENTAL IMPACTS

Considerable care has been taken to ensure that the work associated with the repair of the outlet gates and the installation of a turbine, generator, and electrical equipment be performed in a manner that will result in the least environmental impact. Construction has been scheduled to occur between August and November (a four month period) with a possible carryover into December, should it become necessary. Table 3.1 defines the specific actions that will be taken, the months in which they will occur, the potential consequences of the actions, and the duration of the consequences.

3.1 NON-AFFECTED RESOURCES

Based on the information provided in Table 3.1, we can assume that few, if any, impacts will occur in the following categories.

- o geology
- o vegetative cover
- o wildlife resources
- o water quality
- o minerals
- o grazing
- o timber
- o recreational use
- o socio-economic aspects
- o historical and archeological resources
- o visual resources
- o endangered and threatened species

From an overall perspective, the project is short (4-5 months) with most of the inconvenience being very temporary and short-term.

The use of trucks on an intermittent basis over a period of 1-2 weeks should not result in any undue stress or hardship to the environment or to the recreational use in the Lemon Reservoir and Dam area. Personal communication with the USFS has indicated that once Labor Day approaches, usage of the area drops to approximately 200 visitor days per month and is confined primarily to the

campground site. The reservoir level is usually drawn down due to irrigation releases. Water sports activities in the reservoir have been curtailed considerably by Labor Day and in October, fishing is at a minimum.

Currently there is no data to support the contention that there would be a change in the temperature of the water as it passes through the turbine, nor would there be any other water quality changes expected.

With respect to the fall hunting season, the hunting and the discharge of firearms are restricted in the primary jurisdiction area which is where most of the improvement activities will occur. Hunters utilizing other campgrounds in the area would not be affected by the project.

The placement of additional power poles and lines below the spillway would be in conformance with the above ground conditions that currently exist. The cost for the work associated with constructing above-ground power lines is approximately $8,000.00 while costs for burying the lines would be 2 to 3 times higher ($20,000-$24,000). Raptor protection measures will be incorporated. Utilization of some of the existing poles has been encouraged, and for the placement of new poles, the selection of sites will be made with visual and aesthetic considerations being a top priority. Suggestions to place the poles behind clusters of trees have been well received by LPEA.

3.2 DESCRIPTION OF AFFECTED ENVIRONMENTS/IMPACTS

3.2.1 Direct

The most important area which could be affected by the Lemon Dam Project is the fishery in the reservoir and in the river downstream from the dam. There are short term construction

considerations that must be addressed with relation to the fishery as well as the potential for long term impacts due to the releases resulting from the operation of the hydropower unit.

3.2.1.1 Construction

Depending on the water surface elevation when the project is actually constructed, the water level may have to be lowered to 8090 feet to facilitate the dives to efficiently place the steel plug. There is a reasonably good chance, however, that the reservoir elevation would be at 8100 feet (plus or minus 10 feet) which would eliminate the need to lower the reservoir more than a few feet. This is based on the historic data on October elevations from 1971-1982 which range from 8053 feet (low) to 8130 feet (high) (See Table 3.2).

The level of 8090 feet is within an acceptable range for the fishery and (1) is higher than the lowest level recorded (8053 feet), (2) is 9 feet lower than the fourteen year average elevation for October which is 8099 feet and (3) is considerably higher than the 1974 and 1977 record dry years when the reservoir remained at 8053 all winter.

Personal communication with Mike Japhet and Rick Sherman of the CDOW has resulted in their support for this water level and confirmation that, based on existing data, this elevation should have no significant impact on the fishery. However, it was agreed that should any additional information become available which requires that the surface water be maintained at levels higher than 8090, the project will be modified.

Another factor related to diver safety and having a potential impact on the fishery, is the need for the gates to be completely shut for 60 to 80 minutes during each dive to avoid any flow through the outlet that would endanger the divers. This, of

course, would result in intermittent releases to the downstream fishery during the diving period. Since the diving is to occur in the late fall which is the critical spawning period for the brown trout, the CDOW has indicated that a constant flow must be maintained in the river so that the gradient is not lost and the eggs are not left high and dry on the wetted perimeter. The CDOW has indicated that shut downs of up to one (1) hour would not result in any significant impacts to the brown trout population, but that shut downs for periods any greater than one hour would probably begin to impact the fishery. The diving schedule will be adjusted to respond to these needs.

With regard to other downstream concerns, the DPR (page 35) requires that a minimum release of 4 cfs from the reservoir be maintained at all times during the non-irrigation season for the downstream fishery habitat. The city of Durango has water rights for 8.9 cfs but requires an average of 6.1 cfs in October and 5.4 cfs in November. This demand is usually met by the releases from the reservoir coupled with the intervening flows below the dam. To maintain continuous flows of 9 cfs during construction, the fabricated plug will incorporate an 8 inch butterfly valve through which the required flows for downstream needs will pass.

With respect to the adjustment of flows during the irrigation and non-irrigation season, it is important to note that the first two weeks of October are usually transitional and the amount of irrigation water needed is dependent upon the ambient temperature and rainfall. Usually, the main gates, which are open during the irrigation season, are closed, and the 8 inch bypass pipe is used to maintain the downstream flows. The fish naturally adjust to these changing conditions.

From the irrigation standpoint, irrigators would be given advance notice that they would not be able to irrigate during the

construction period in the year the improvements would be made. However, the repairs should be completed in time to provide the 30-50 cfs stock water releases in late November or December.

3.2.1.2 Hydropower Operation

The criteria used in the selection of the turbine for this project was based on the need to maintain downstream flows of between 9-13 cfs during the non-irrigation season because 9-13 cfs have been the historic releases from October to April for the last ten years. By releasing constant flows, with minimal fluctuations, the stability of both the spawning environment and the adult fishery habitat will be ensured.

The actual releases with the turbine will not be the same on a daily basis as those releases using the orifice (the previous mechanism). For example, on a particular day the orifice release of 13 cfs would be comparable with a turbine release of 11 cfs; or another orifice might release 9.2 cfs while the turbine would release 12.1 cfs. Factors affecting these differences are the reservoir elevation, the performance characteristics of the turbine and the size of the orifice being used (two orifices are used). Although the turbine releases will be slightly different from those of the orifice, they will ensure streamflow continuity, which is an important factor affecting the downstream fishery.

The downstream releases during hydropower generation will, as in the past, be based on the needs of the irrigators and will not, in any way, be affected by the hydropower production. There will be no impacts on downstream water requirements as a result of the installation and operation of the hydropower unit.

The potential concern with respect to the impingement of fish in the turbine has been discussed with the CDOW. It was determined that it is very difficult to screen an 8-inch opening and

that if attempted, it might reduce the power output. Since the diameter of the 8 inch opening and the flow of water would not be great enough to allow for a significant amount of fish to find their way into the pipe, it was decided that a fish screen is not required. However, if under actual operating conditions, significant numbers of fish were found to be harmed, a redesign would be required and a mitigation technique would need to be developed by the District.

With respect to water temperature changes and potential fishery impacts downstream, it must be emphasized that no documentation currently exists to indicate that there are changes in water temperature once the water passes through the turbine.

3.2.2 Indirect

The only potential indirect concern associated with this project relates to the water levels in the reservoir during the year following project construction. Historic data has demonstrated that water levels in the 8090 foot range are not unusual for October and that the levels for October are the levels that generally remain in the reservoir throughout the winter. What determines whether the reservoir fills or not for the next year's irrigation program is the spring runoff. Historic data (Table 3.2) illustrates that reservoir levels of 8090 are very close to the average for the 14-year period. Based on the data presented in Table 3.1, which indicates that the reservoir easily recovered its capacity during both a "below average" and "average" year following a dry year, it is unlikely that there would be any significant impacts associated with the reservoir water level of 8090 feet during project construction.

Throughout the design of the project, extensive communication with those agencies responsible for protecting the various affected environments has taken place. Considerable caution has

been exercised with regard to the planning and design of construction activities that might have potential impacts on the environment. The specific mitigative measures which will be employed include:

(1) Divers would be utilized to close the outlet to avoid excessive lowering of the reservoir elevation which could harm the fishery. (The fishery could be destroyed.)

(2) A new plug would be utilized by the divers which can be handled easily and expeditiously.

(3) Raptor mitigation techniques will be employed.

(4) Downstream flows of up to 12 cfs could be maintained during construction to ensure the stability of the fishery.

If needed, other measures will be identified and implemented.

TABLE 3.1
Consequences Related to Project Components

Action	Month During Which It Occurs	Potential Consequences	Duration of Of Consequences
1. Transport and setup of electrical wiring, transformer, power poles, distribution lines below the spillway.	Aug.-Sept.	An auger truck and electrical set-up truck would be required at the site. Construction in and around the spillway will involve La Plata Electric and electrical contractor personnel.	30 days for trucks 30 days for actual construction
2. Installation of electrical panels inside the gatehouse and placement of electrical conduits in the elevator shaft.	Aug.-Sept.	One or two pick-up trucks would be involved in the transport. The inside electrical work would be similar to wiring a house or a business.	60 days (trucks) 60 days for electrical installation (inside gatehours)
3. Installation of transformer and pouring of concrete slab for base for transformer.	Aug.-Sept.	One cement truck would be on site approximately 1-2 hours. A crew would finish the concrete work the same day.	1 day (trucks) 1 day (crew)
4. Transport of transformer	Aug.-Sept.	A 14 foot long flatbed truck would be needed for transport.	1/2 day

TABLE 3.1 - continued

Action	Month During Which It Occurs	Potential Consequences	Duration of Of Consequences
5. Transport, emplacement and installment of equipment, turbine and generator (in gate chamber)	Oct.-Nov.	Welding equipment trucks would be used. All construction activity would occur 200 feet below the surface in the gate chamber (no potential consequences).	30 days (trucks) N/A
6. Transport and unloading of pontoons (18 feet long), 6 ft. diameter steel plug, decompression chamber	Aug.-Oct.	A large flatbed truck would transport the pontoons. A few pick-up trucks will be used for the transport of the other equipment.	1-3 days
7. Divers (a) reconnaisance (b) removal of trash rack/plugging of intake	Aug.-Oct.	Gates must be completely shut for 1 hour for the safety of the divers. During this period there would be no releases downstream except for what is leaking. Water levels may have to be lowered to 8090 feet to facilitate diving to plug intake.	1-2 days (Intermittent releases would result in varying downstream flows while diving occurs.) 6 months of lowered water elevations during the winter as well as construction
8. Open gates to dewater outlet; open valve on fabricated plug to begin downstream releases during gate repair	Oct.	The fabricated plug would have an 8-inch control valve so that releases could be continuously made downstream without impairing the fishery.	1 day (Intermittent flows would result while valves were being adjusted for delivery of the 9 cfs.)

TABLE 3.1 - continued

Action	Month During Which It Occurs	Potential Consequences	Duration Of Consequences
9. Repair gates	Oct.	Work would be done in gate chamber 200 feet below surface. No consequences.	N/A
10. Dive to remove plug	Oct. (late)	Gates must be shut off completely for 1 hour for the safety of the divers. During the dives there would be no releases downstream.	1-2 days (intermittent flows downstream)
11. Operation of hydropower unit	Continuous	Flows through the turbine will be nearly the same as historic releases. Present thinking is that a minimal amount of fish will be killed in the turbine and corrective action is unnecessary.	Continuous

4.0 ALTERNATIVE POWER SOURCES

The Lemon Dam Power Plant Project is located in the service area of La Plata Electric Association which has a contract with Colorado Ute Electric Association (CUEA) to exclusively provide power. CUEA is the power wholesaler to most of the electric cooperatives in western and southern Colorado.

CUEA's primary source of power now, and in the future, is from coal fired steam electric plants located in northwest Colorado. CUEA is also entitled to some hydroelectric power which is produced at the dams in the upper Colorado River basin from the Western Area Power Administration.

The alternative source of power for CUEA, should the Lemon Dam Power Plant not be built, is coal fired steam electric plants. Realistically, however, the Lemon Dam Power Plant is so small that it will have no impact on construction or operation of CUEA's coal fired power plants. The main advantage of the power plant is to provide energy at the end of long distribution line thusly reducing line losses and improving service.

5.0 AGENCY COORDINATION

The Florida Water Conservancy District initiated discussions to explore the feasibility of utilizing a 125 kW hydroelectric unit at the Lemon Dam in October 1983, and a preliminary permit was issued by FERC on March 15, 1984 for a period of 24 months. Since that time, much work has been accomplished including the preparation of technical documentation and the coordination with state, local and Federal entities. Throughout the process, Reclamation, which was responsible for the construction of the Florida Project, has made staff available to respond to technical concerns arising throughout the development of the feasibility study.

The CDOW, the USFS and the Colorado Department of Health have provided invaluable input into this process, particularly with respect to the environmental sections of the report. These agencies have willingly provided technical assistance and have reviewed draft portions and offered corrections and suggestions to ensure that their interests are protected and that the project proceeds in an environmentally sound manner. Table 5.1 summarizes the coordination efforts achieved by meetings, phone conversations and technical assistance sessions, and identifies the specific date, agency and participating staff person.

Prior to these interactions, considerable correspondence transpired between the consultant and appropriate state and Federal agencies. Table 5.2 summarizes these letters and presents the consultants response to the comments.

Continued coordination throughout the remaining phases of this project will be a primary concern of the consultant and the District. Participating agencies and entities that received copies of the draft feasibility report for official review and comment are listed below.

- Colorado Water Resources and Power Development Authority
- Florida Water Conservancy District
- Colorado Division of Wildlife
- Bureau of Reclamation
- U. S. Forest Service
- La Plata Electric Association
- Colorado Ute Electric Association

TABLE 5.1
Coordination

MEETINGS

Date	Agency	Personnel
February 19, 1985	Florida Water Conservancy District	Board Members
March 5, 1985	La Plata Electric Association	Larry Curtis
March 6, 1985	Colorado Ute (Montrose)	Bill Riley
March 13, 1985	Durango Public Works	Jack Rogers
April 16, 1985	Florida Water Conservancy District	Board Members
June 18, 1985	Florida Water Conservancy District	Board Members
July 23, 1985	La Plata Electric Association	Larry Curtis
July 29, 1985	Colorado Division of Wildlife	Mike Japhet
August 16, 1985	Colorado Division of Wildlife	Mike Japhet and Rick Sherman
October 7, 1985	Durango Water Commission	Commission Members
October 15, 1985	Florida Water Conservancy District	Board Members
November 12, 1985	Florida Water Conservancy District	Board Members

TABLE 5.1 (continued)

PHONE CONVERSATIONS

Date	Agency	Personnel
February 19, 1985	Colorado Ute	Bill Riley
February 19, 1985	FERC	Paul McKee
March 19, 1985	Colorado Division of Wildlife	Ann Hodgson
April 15, 1985	Colorado Historical Society	Leslie E. Wildesen
May 28, 1985	FERC	Paul McKee
August 8, 1985	U.S. Forest Service	Dick Bell
August 8, 1985	Bureau of Reclamation	Rich Gjere
August 22, 1985	San Juan Basin Health Unit/Colorado DOH (SJBHU/CO DOH)	Fred Hinman
August 22, 1985	CO DOH	Dennis Anderson
August 22	USEPA (Denver)	Dick Satiris/ Jim Zicki
September 9, 1985	Colorado Division of Wildlife	Mike Japhet
September 12, 1985	Bureau of Reclamation	Rich Gjere
September 12, 1985	U.S. Forest Service	Dick Bell
September 17, 1985	U.S. Forest Service	Dick Bell
October 1, 1985	Colorado Division of Wildlife	Bob Little
October 1, 1985	U.S. Forest Service	Dick Bell
October 1, 1985	CO DOH (Grand Junction)	Dwain Watson
October 1, 1985	USEPA	Dick Satiris
October 1, 1985	Storet, Washington, D.C.	Barbara Lamborne
October 1, 1985	USGS (Denver)	Jenny Stein

TABLE 5.1 (continued)

TECHNICAL ASSISTANCE

Date	Agency	Personnel	Assistance
August 1, 1985	BurRec	Dick Gjere	Provided DPR and Draft Management Plan
Sept. 10, 1985	SJBHU/CO DOH	Frank Singleton/ Fred Hinman	Provided copy of WQ Standards and Stream Classification
On-Going	BurRec (Durango Project Office and Engineering and Research Center)	Technical Personnel	Provided technical assistance throughout project duration.

TABLE 5.2
Written Communication

Date	Agency	Personnel	Summary of Comments	Consultant Response
4/22/85	Colorado Historical Society	Leslie Wildesen Deputy State Historic Preservation Officer	Based on present nature of project no impact on cultural resources will occur.	
3/8/85	Bureau of Reclamation	Rick Gold, Projects Manager	Indicating that it is not necessary to replace any riprap at the dam because what appeared to be thin spots was actually road surface material from the top of the dam which had been washed over the existing riprap	Modification of original work plan has been made to delete rip-rap portion
6/26/85	CO DOW	Ann B. Hodgson Wildlife Program Specialist	Based on the assumptions that (1) hydropower unit will use the existing small outlet tubes and will not increase downstream flows or affect reservoir release patterns, (2) no above ground power house construction is planned, and (3) the transmission lines are scheduled to be buried, there should be no detrimental effects on fish and wildlife resources.	The power house will be underground and the project has been designated to be as close as is technically possible to the past release patterns. Existing above ground power lines will be used to market the power and a new above ground line will be constructed for power to the dam superintendent's home. Burial of this line is cost prohibitive. Project design has been discussed with both Durango and Montrose DOW Staff.

TABLE 5.2 (continued)

7/8/85	CO DOW	Bob Clark, Habitat Res. Sect.	CO DOW recommends (1) minimum releases at dam of 8 cfs to Durango Diversion, and (2) historic flow of 4 cfs be maintained down to the Florida Diversion. Concurs with proposal to pump water during construction to maintain fishery flows.	These recommendations have been integrated into the design of the project. Releases of 9 cfs will be maintained during construction to accommodate the fishery and the City of Durango's water needs.
6/5/85	U.S. Dept. of the Interior Fish & Wildlife Service	Robert Berton Acting Field Supervisor	Identified 2 endangered species in the project area: Bald eagle Haliaeetus leucocephalus; Peregrine falcon falco peregrinus anatum and requested that mitigative measures be employed to protect raptor (hawks, owls and eagles) populations.	HWE has written for the document which outlines measures to be taken for raptor mitigation and will include these measures as part of the project.
4/24/85 8/30/84 1/19/85	Federal Energy Regulatory Commission	Paul McKee Kenneth Plumb, Secretary	Coordination required under preliminary permit authority - identification of initial activities, progress reports, request for extension of preliminary report	On schedule as required

United States Department of the Interior
BUREAU OF RECLAMATION
UPPER COLORADO REGION
DURANGO PROJECTS OFFICE
P.O. BOX 640
DURANGO, COLORADO 81301

IN REPLY
REFER TO: 430
600.

MAR - 8 1985

Mr. Steve Harris
Harris Water Engineering
954 East Second Avenue
Durango, Colorado 81301

Dear Mr. Harris:

In initial meetings concerning the Florida Water Conservancy District's investigations into securing funding assistance from the Colorado Water Resources and Power Development Authority to perform a feasibility study on a hydroelectric facility at Lemon Dam, it was suggested that repairs to Lemon Dam's upstream slope riprap be included in the overall study. Subsequent field examinations of the riprap have concluded that the apparent thin spots in the riprap are actually places where road surface material from on top the dam embankment has washed over the existing riprap, appearing as exposed Zone 2 material. For this reason, it is not necessary to replace any riprap at this time.

If you have any questions concerning this matter, please contact Pat Schumacher in our office.

Sincerely yours,

Rick L. Gold

Rick L. Gold
Projects Manager

cc: Mr. Loyd Hess, President
Florida Water Conservancy District

Mr. John Ey, Reservoir Superintendent
Lemon Dam

United States Department of the Interior
FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

IN REPLY REFER TO:

June 5, 1984

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

We have received your letter of April 24, 1984, which was meant to officially inform the U.S. Fish and Wildlife Service (FWS) that the Florida Water Conservancy District (FWCD) is beginning a feasibility study on the installation of a small 125 kw hydroelectric turbine on the outlet works of Lemon Dam, LaPlata County, Colorado. Our comments are offered under authority of the Section 7 Interagency Cooperation Regulations, 50 CFR 402, and the Endangered Species Act (ESA), 16 U.S.C. 1531 et seq.

It appears that federally-listed endangered species may occur in the project area, which are identified in the following list:

bald eagle	Haliaeetus leucocephalus
peregrine falcon	Falco peregrinus anatum

In recent years, much attention has been given, especially in the West, to the protection and enhancement of raptor populations (hawks, owls and eagles) with respect to powerlines. Eagles and other raptors perch on the distribution poles and consequently become primary victims of electrocution.

To offset the possibility of adverse impacts to bald eagles, peregrine falcons or other large raptors that may be in the project area, we suggest that the applicant consider measures to protect raptors from electrocution as outlined in the recent document: Suggested Practices for Raptor Protection on Powerlines - The State of the Art 1981 - Raptor Research Report #4, Raptor Research Foundation, Inc. 1981. If these measures are incorporated into the project, there should be no effect on threatened or endangered species. Copies of this report may be obtained from the Raptor Research Foundation, c/o Department of Veterinary Biology, University of Minnesota, St. Paul, Minnesota, 55101.

Thank you for your interest in conserving endangered species. As per your letter request, FWS will be happy to meet with you at your convenience to discuss details of the Lemon Hydro Project. The representative that can provide you with additional technicl assistance is Robert Smith, of our Grand Junction, Colorado office (telephone 303/243-2778).

Sincerely,

Robert Burton

Acting Field Supervisor

COLORADO
HISTORICAL
SOCIETY

Colorado State Museum 1300 Broadway Denver, Colorado 80203

April 22, 1985

Steven C. Harris
Harris Water Engineering
954 Second Avenue
Durango, Colorado 81301

Re: Lemon Dam Hydropower Project, FERC Permit No. 7830.

Dear Mr. Harris,

This is to acknowledge receipt of your April 15, 1985 correspondence concerning the above proposed project.

DATE RECEIVED: April 19, 1985

Based on the information you supplied, we believe ( ) the nature of the proposed project or (XX) the present nature of the proposed project area is such that no (further) impact upon cultural resources will occur. Therefore, you may proceed with the undertaking as proposed.

However, if previously unidentified archaeological resources are discovered in the course of the project, work must be interrupted until the resources are properly evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with this office.

Thank you for the opportunity to comment. If we may be of further assistance, please contact our Compliance Division at 866-3395 or 866-3392.

Sincerely,

Leslie E. Wildesen

Leslie E. Wildesen
Deputy State Historic Preservation Officer

No Cultural Resources Impact
Form No. 515A

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

November 1, 1985

Mr. Steven C. Harris, P.E.
959 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Subject: Review of Draft Feasibility Report, Lemon Dam Improvements Project, Florida River, LaPlata County Co FERC # 7830-000

The Colorado Division of Wildlife has reviewed the above-referenced document as requested in your letter of 10 October 1985. We have appreciated the opportunity to be involved in the planning of this dam repair project, and the consideration for Colorado's fish and wildlife resources demonstrated by the project proponent. The draft document appears to have reviewed the issues previously discussed with the project proponent and we have no further comments to offer regarding the proposal.

The Division appreciates the opportunity to review and comment on this proposal. Questions regarding our comments should be directed to Rick Sherman, Wildlife Biologist, at (303) 249-3431.

Very truly yours,

Ann B. Hodgson

Ann B. Hodgson
Wildlife Program Specialist

ABH/eja

cc: USF&WS; Denver, Grand Junction, SLC
USEPA; Denver, Attention: Mike Hammer

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

2300 S. Townsend
Montrose, CO 81401
November 1, 1985

Mr. Steven C. Harris
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Steve:

The Division of Wildlife has reviewed the Draft Feasibility Report on the proposed Lemon Dam Improvements Project. We are in agreement with this report, with the exception of a few minor changes which Mike Japhet has already expressed to you. The report is a good one and relfects the close working relationship that you have had with Mike.

We appreciate the opportunity to review this document and sincerely appreciate the cooperative spirit you've extended throughout the project review.

Sincerely,

Rick Sherman

Rick Sherman
Wildlife Biologist

RS/pjp
cc: Towry
Zgainer
Clark
Japhet
Hodgson

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

2300 S. Townsend
Montrose, CO 81401
July 8, 1985
249-3431

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

This letter is in reference to your request for wildlife input to the Lemon Dam Improvements Project, which includes the installation of a hydropower plant and repair of the main outlet gates at the dam.

The Division's concerns remain the same as outlined in earlier correspondence. I would, however, like to address the following recommendations for flow releases below Lemon Dam:

1. We recommend a minimum release at the dam of 8 cfs down to the Durango Diversion.

2. We recommend the historic flow of 4 cfs down to the Florida Diversion be maintained.

3. We concur with the proposal to pump water during construction to maintain fishery flows.

If you have further questions on these comments, please contact Mike Zgainer at our Durango, 247-0855, or Rick Sherman at our Montrose office.

Sincerely,

Bob Clark

Bob Clark
Habitat Res. Sect.

RS/pjp
cc: Donoho
Zgainer
Sherman
Hodgson

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216 (297-1192)

June 26, 1984

Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Subject: Request for consultation, Lemon Dam Hydropower, Florida River, La Plata County, Colorado.

The Division of Wildlife has reviewed the information you submitted regarding the above-referenced project and offers the following comments for your consideration.

We understand that the proposal developed by Florida Water Conservancy District to construct a hydroelectric facility at the Lemon Dam will use the existing small outlet tube and will not increase downstream flows or affect present reservoir release patterns. Additionally, no above-ground power house construction is planned and at the present time all transmission lines are scheduled to be buried. If these design criteria are not changed during the feasibility study the project should not have a detrimental effect on fish and wildlife resources. If the above design components of this project do change during the planning period we would look forward to an opportunity to meet with your representative to discuss those new considerations.

We appreciate the opportunity to review and comment on this proposal. Ann Hodgson, Wildlife Program Specialist, will serve as the liasion for this project. If you have any questions regarding these comment, please call me at (303) 297-1192, extension 271.

Very truly yours,

Ann B. Hodgson
Wildlife Program Specialist

ABH:cs

cc: N. Smith, CDOW-SW
USF&WS, Denver, SLC

United States Department of the Interior
BUREAU OF RECLAMATION
UPPER COLORADO REGION
DURANGO PROJECTS OFFICE
P.O. BOX 640
DURANGO, COLORADO 81302-0640

IN REPLY
REFER TO: 431
500.2

NOV - 7 1985

Mr. Steve Harris
Harris Water Engineering
954 Second Avenue
Durango, Colorado 81301

Dear Mr. Harris:

We have reviewed your draft feasibility report on the proposed Lemon Dam Improvements Project. We have the following comments:

1. Page 4 - Peak irrigation releases are 270 cfs. Flood control releases up to a maximum of 910 cfs can be made through the outlet works.

2. Pages 8 and 59 - Each pair of outlet gates is capable of releasing 455 cfs at reservoir elevation 8148 feet.

3. Page 10 - Unbalanced releases through the regulating gates can be made; however, Reclamation's approval of unbalanced releases will be required.

4. Page 49 - Reclamation's approval of the steel plug design will be required. A method to introduce and remove air while respectively dewatering and refilling the pressurized outlet tunnel upstream of the gates will be required.

5. Page 50 - Reclamation's approval of the bulkhead used to divert water upstream of the outlet gates during repair of the guard gate seals will be required.

6. Pages 50 and 56 - The interruption of downstream releases for a maximum of one hour during installation and removal of the inlet tower plug or bulkhead upstream of the gates appears optimistic.

7. Page 103 - The cost of $56,000 for the bronze seats appears to be excessive. Cost for similar seats to repair gates in other dams indicates the cost range to be $6,000 to $10,000.

We appreciate the opportunity to comment on your draft feasibility report. Our office will continue to be available for technical review and assistance on this project.

Sincerely yours,

John D. Newman

Rick L. Gold
Projects Manager

Colorado·Ute
Electric Association, Inc.

P. O. Box 1149
Montrose, Colorado 81402
(303) 249-4501

October 23, 1985

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Lemon Dam Hydroelectric Project

This letter is to send you the April, 1985 Policy for Small Power Producers, and to provide comments on the Lemon Dam Hydroelectric One Line Diagram. This letter does not constitute design approval.

Comments:

1. A "utility disconnect switch" should be installed between the Dam Keepers residence connection and the input to the 12.47 kv to 480V transformer.
2. Power factor correction capacitors should not correct the no load power factor above 0.95.
3. We suspect the 99% device should be numbered device number 13 and 110% device should be numbered device number 12.
4. Other induction machine operators on our system tend to interconnect their machines with an R.P.M. slightly above synchronous speed. We recommend that you carefully research the suitability of an auto close from your mechanical 99% device.
5. If there is any chance of flooding, we would recommend a float switch wired to trip.

If you have any questions, please call.

Very truly yours,

Raymond E. Keith, Manager
Electrical Engineering

REK/RLA:rbg

Enclosure

cc: G. McNaughton, LPEA

ATTACHMENT 1

COURT DECREE ESTABLISHING
FLORIDA WATER CONSERVANCY DISTRICT

IN THE DISTRICT COURT WITHIN AND FOR THE COUNTY OF LA PLATA

STATE OF COLORADO

No._____

IN THE MATTER OF FLORIDA WATER CONSERVANCY DISTRICT	)	FINDINGS AND DECREE

On the 1st day of July, A. D. 1948, the cause coming on for hearing upon the petition of William C.Adcock, et al, for the establishment of a water conservancy district, pursuant to the provisions of Chapter 266 of the Session Laws of Colorado for 1937 and all amendments thereto, and the petitioners appearing by their attorney, L. W. McDaniel, the cause was continued until the_____day of July, A.D. 1948, and upon that date, the petitioners again appearing by their attorney, L. W. McDaniel, the presentation of petitioners' evidence proceeded to the Court and the presentation of evidence continued until the attorney for petitioners announced he had no further evidence.

THEREUPON, the Court announced that any person might now present evidence for or against the petition. No persons' appearing or offering any evidence, the Court declared the evidence and hearing closed, and the Court having read the records and files herein and having heard the evidence introduced in support thereof, and having considered all thereof,

THE COURT DOTH FIND:

1. That the petition in this cause for the organization of a "Water Conservancy District " was filed in the office of the Clerk of the District Court of La Plata County, Colorado, on the 14th day of April, A.D.1948, and by ordered entered on said day this Court fixed the 1st day of July, A. D. 1948 for a hearing on said petition, said hearing to be held at Durango, Colorado, in the Courtroom of the District Court at ten o'clock A. M. on said date. That bond to pay all expenses connected with these proceedings in case the organization of a district be not effected in the sum and with security approved by the court, has been filed in and is a part of these proceedings.

2. That the petition for the organization of a water conservancy district filed herein states:

(1) The proposed name of the district.

(2) That the property within the proposed district will be benefited by the accomplishment of the purposes enumerated in Section 3 of said Act.

(3) A general description of the purpose of the contemplated improvement and of the territory to be included in the proposed district.

(4) The assessed value of all irrigated lands within the boundaries of the proposed district.

(5) A general designation of divisions of the district and the number of directors of the district proposed for each sub-division.

(6) Prayer for organization of the district by the name proposed.

(7) The signatures of the petitioners, with each tract, or tracts, of land listed opposite the name of the signer.

3. That on the 14th day of April, A. D. 1948, on motion of petitioners, the Court herein entered an Order that the Clerk of this Court be directed to give notice of hearing of petition as provided by law and mail a copy of said notice to the Board of County Commissioners of the County of La Plata, and that publication be made in The Durango News, a weekly newspaper published in Durango, Colorado, for five (5) successive weekly publications.

That the Clerk of this Court has caused Notice of the time and place of hearing to be given by publication of "Notice of Hearing on Petition" in the following newspaper, i. e. "The Durango News", a legal weekly newspaper of general circulation in La Plata County, Colorado, and said publication was made once each week for five (5) consecutive weeks (five issues) commencing on April 16, 1948 and ending on May 14, 1948, as more fully appears from the affidavit of publication on file in this cause;

That the Clerk of this Court on April 14, 1948 caused a copy of said Notice of Hearing on Petition to be mailed by United States Registered Mail, to the Board of County Commissioners of La Plata County, Colorado, at Durango, Colorado, as more fully appears from the affidavits of mailing and publication filed herein by said Clerk and the Return registration receipt on file in this cause.

5. That said petition has been signed by not fewer than twenty-five (25) per cent of the owners of the irrigated lands to be included in the district but not embraced within the incorporated limits of any city or town; and each tract, or tracts of land is listed opposite the name of the signer and each such tract (or tracts), together with improvements thereon, has an assessed value of not less than one thousand ($1000.00) Dollars; and said petitions are also signed by not fewer than five (5) per cent of the owners of non-irrigated land and/or lands embraced within the incorporated limits of any city or town, all situated in the proposed district; and each tract, or tracts of land are listed opposite the name of the signer and each such tract, or tracts, together with improvements thereon, has an assessed value of not less than one thousand ($1000.00) Dollars; that said petition has been signed and presented in full conformity with the Statutes of Colorado.

6. That no protesting petition or petitions have been filed.

7. That the assessed valuation of irrigated lands, together with improvements thereon, within the boundaries of said district, is not less than two hundred thousand ($200,000.00) Dollars, and there is no city or city and county having a population of more than twenty-five thousand, as determined by the last United States Census, included within such district.

8. That this Court has jurisdiction of the parties, and the subject matter of this proceeding.

9. That the petition in all respects complies with, and conforms to the requirements of Chapter 266 of the Session Laws of Colorado for 1937 and all amendments thereto and the allegations of said petition are true, and said petition is approved by the Court.

10. That the property within the proposed district will be benefited by the accomplishment of the following purposes, to-wit:

(1) Construction of "works" as defined in said Acts for conserving, developing and stablizing the supplies of water for domestic, irrigation, power, manufacturing and other beneficial uses.

11. That the purposes for which said district is established are: To construct a reservoir on The Florida River in La Plata County, Colorado, for the storage of water to be utilized to supplement the natural flow of The Florida River during irrigation season, with outlet and inlet canals; to build such ditches and canals as may be incidental thereto; and to exercise all powers conferred by law; to construct such "works" as may be necessary for the benefit of the territory included in said district.

12. That public necessity exists for the construction of the proposed "works".

13. That the territory included in the proposed district is situated in La Plata County, Colorado and is described as follows:

In Township Thirty-three (33), Range Nine (9) West, N. M. P. M., all of Sections 2, 3, 4, 5, 8 and 17;

and the NW¼ Section 1; NE¼SE¼, E½NW¼, E½SW¼ Section 6, NE¼, SE¼, E½NW¼, E½SW¼ Section 7; NW¼NE¼, W½SW¼ Section 9; NE¼, SE¼, E½NW¼, E½SW¼, Section 18; NE¼ SE¼, E½NW¼, E½SW¼ Section 19; NW¼, NE¼, SW¼ Section 20; NW¼, SW¼ Section 29; NE¼, SE¼, E½NW¼, E½SW¼ Section 30, NE¼, SE¼, E½NW¼, E½SW¼ Section 31; W½NW¼ Section 32,

In Township Thirty-four U (34U), Range Nine (9) West, N. M. P. M., all of Sections 1U, 2U, 3U, 4U, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 32, 33, 34, 35 and 36; and E½NE¼, E½SE¼, Section 8; NE¼, SE¼, SW¼, E½NW¼ Section 17; E½SE¼, SW¼SE¼ Section 18; NE¼, SE¼, E½NW¼, E½SW¼, Section 19; NE¼, SE¼, E½SW¼, E½NW¼ Section 30; NE¼, SE¼, E½NW¼, E½SW¼ Section 31; Lot 1 Section 5U.

In Township Thirty-four U (34U), Range Eight (8) West, N. M. P. M., all of Section 5U, 6U, 7U, 8U, 18U, 19; and W½NW¼ Section 9U; W½NW¼, W½SW¼ Section 17U; NW¼, NE¼, SW¼, W½SE¼ Section 30; NW¼, NW¼SW¼, NW¼NW¼NE¼ Section 31.

In Township Thirty-four N (34N), Range Nine (9) West, N. M. P. M., all of Sections 1, 2, 10, 11 and 12; and NE¼, SE¼Section 3; SW¼, SE¼ Section 4; NW¼, NE¼ Section 9, and NE¼SE¼ Section 9.

In Township Thirty-four N (34N) Range Eight (8) West, N. M. P. M., all of Sections 4, 5, 6, 7, 8, 9, 16, 17, and 18, NW¼, SW¼ Section 10; NW¼, Lot 2, Section 15.

In Township Thirty-four and one-half (34½), Range Nine (9) West, N. M. P. M., all of Sections 35 and 36.

In Township Thirty-five (35), Range Nine (9) West, N. M. P. M., all of Section 36; and NW¼, NE¼, SE¼ Section 24; NE¼, SE¼, SW¼ Section 25; NE¼, SE¼ Section 35;

In Township Thirty-five (35), Range Eight (8) West, N. M. P. M., all of Sections 3, 8, 18, and 31; and NW¼ Section 2; NE¼, SE¼, SW¼ Section 4; NW¼ and SE¼ Section 5; NW¼ Section 9; NW¼, SW¼, S½NE¼, W½SE¼ Section 17; NW¼, SW¼, SW¼NE¼ Section 19; NW¼, SW¼, SE¼ Section 30; NW¼, SW¼, SE¼ Section 32.

In Township Thirty-six (36), Range Eight (8) West, N. M. P. M., all of Section 36; and SW¼ SE¼ Section 34; SW¼, SE¼, NE¼, E½NW¼, SW¼NW¼ Section 35.

In Township Thirty-six (36), Range Seven (7) West, N. M. P. M., all of Sections 8, 17, 30; and NW¼, SW¼, Section 5; NE¼, SE¼ Section 6; NW¼, SW¼ Section 20; NW¼ Section 29; NW¼ Section 31.

In Township Thirty-seven (37), Range Seven (7) West, N. M. P. M., all of Section 30; NW¼, SE¼, NE¼ of Section 31; SW¼SW¼ Section 32.

14. That the territory above described should be constituted and created a Water Conservancy District under the laws of Colorado and under the corporate name of "Florida Water Conservancy District".

WHEREFORE, IT IS BY THE COURT, ORDERED, ADJUDGED, DECLARED AND DECREED:

That the territory as above described be and the same hereby is organized, constituted and created a Water Conservancy District under the Statutes of Colorado, under the corporate name of "Florida Water Conservancy District", with its office or principal place of business in the City of Durango, La Plata County, Colorado.

That the Board of Directors of said district shall consist of five directors, and the territory within said district is hereby subdivided into three divisions, each division hereinafter described to be entitled to one director, to-wit:

Division No. 1. All that portion of the proposed District situated in Township 35, Range 9; Townships 35 and 36, Range 8 (except the SE¼ and the S½SW¼ Section 32, Township 35); Townships 36 and 37, Range 7, to be known as the "Upper Florida Division", and to be entitled to one director.

Division No.2. All that portion of the proposed district situated in Township 34 North and 34½ Range 9 and in 34 North, Range 8, together with SE¼ and S½SW¼ Section 32, Township 35, Range 8, also, all that portion of the proposed district which lies in Township 34U, Range 8, and all of Sections 10, 11, 12, 13, 14, 15, 23, 24, 25 and 26, together with E½, E½W½ Section 22, E½, E½W½ Section 27, E½NE¼ Sec.34, W½NW¼, NE¼NE¼ Section 35, and all of Sections 1U, 2U and 3U, Township 34U, Range 9, to be known as "Falfa Division", and to be entitled to one director.

DIVISION No. 3. All that portion of the proposed district lying in Township 34U, Range 9 West, not included in Division No. 2, and all of lands in the proposed district situated in Township 33 North, Range 9, to be known as "Sunny Lane Division" and to be entitled to one director.

That the Water Conservancy District herein prayed for is entitled to one director for each division thereof and two directors from the district at large.

BY THE COURT:

_____

Judge

ATTACHMENT 2

APPLICATION FOR HYDROPOWER
WATER RIGHT AT LEMON DAM

FILE IN TRIPLICATE

Filed 4-16-85

WATER FORM A

IN THE DISTRICT COURT IN AND FOR

WATER DIVISION NO. 7

STATE OF COLORADO

CASE NO. 85 CW-24

IN THE MATTER OF THE APPLICATION FOR WATER RIGHTS OF FLORIDA WATER CONSERVANCY DISTRICT IN LA PLATA COUNTY.	))))	APPLICATION FOR WATER RIGHT (SURFACE)

WATERSHED Animas
TRUBUTARY Florida

1. NAME OF APPLICANT: Florida Water Conservancy District

ADDRESS OF APPLICANT: P.O. Box 1157

Durango, Colorado 81302-1157

TELEPHONE NUMBER OF APPLICANT: (303)247-1113

2. NAME OF DITCH OR OTHER STRUCTURE: Florida Power Generating Station.

3. LEGAL DESCRIPTION OF EACH POINT OF DIVERSION OR PROPOSED DIVERSION:

There will be no diversion of water. Applicant is the owner and operator of Lemmon Dam and Resevoir. The applicant is required to release between 8 and 11 cubic feet of water per second of time through a by-pass line through the dam, at times when the main gates are not being operated for irrigation purposes. A power generating turbine will be installed so as to utilize the flow of water through the by-pass for the purpose of generating power for use by the district in operating the gates and machinery in the dam at Lemon Reservoir and for heating the residence and garage used by the district for its dam superintendent. There will be no consumptive use of the water through said power generation.

4. DESCRIPTION OF DITCH, PUMP, OR PIPELINE: There is no ditch, pump or pipeline involved, the water will flow through a by-pass line in the dam from the reservoir and discharge into the stream as it always has.

5. SOURCE OF WATER (RIVER AND TRIBUTARY): Animas River, Florida River.

6. A. DATE OF INITIATION OF THE APPROPRIATION: September 20, 1983.

B. DATE WATER FIRST APPLIED TO BENEFICIAL USE: Has not been applied.

C. HOW APPROPRIATION WAS INITIATED: Commencement of engineering studies preliminary to obtaining a permit from Federal Energy Regulatory Commission.

7. AMOUNT OF WATER CLAIMED BY DIVERSION IN CUBIC FEET PER SECOND OF TIME - INDICATE WHETHER CONDITIONAL OR ABSOLUTE:

A. PORTION ABSOLUTE: -0- c.f.s. PORTION CONDITIONAL: 11 c.f.s.

8. USE OR PROPOSED USE OF WATER: Power generation.

9. IN CASE OF AN IRRIGATION PRIORITY, THE NUMBER OF ACRES BEING IRRIGATED: N/A ; THE NUMBER OF ACRES HISTORICALLY IRRIGATED N/A ; AND THE NUMBER OF ACRES PROPOSED TO BE IRRIGATED BY THE DECREE SOUGHT N/A c.f.s.

10. REMARKS: None.

s/ L. W. Mc Daniel

L. W. Mc Daniel
Attorney for Florida Water
Conservancy District
P.O. Box 1157
Durango, CO 81302-1157
(303)247-1113

STATE OF COLORADO)
) ss.
COUNTY OF LA PLATA)

L. W. Mc Daniel, being first duly sworn upon oath, deposes and says that he has read the foregoing application, knows the contents thereof and that the same is true.

L. W. Mc Daniel

Subscribed and sworn to before me this 27th day of March, 1985.

s/ Cathy Butler
Notary Public
1040 Main, Durango, CO 81301

My Commission expires: 6/30/85

IT IS ORDERED that this application is referred to the Water Referee for his investigation and ruling.

Dated_____19___

_____
WATER JUDGE

LIST FOR NOTICE

Applicants Name and Addres:

Florida Water Conservancy District
P.O. Box 1157
Durango, CO 81302-1157

List of persons or entities who may be affected by this application:

Oliver Hurt
383 Co. Rd. 225
Durango, CO 81301

Brown Ditch
John Teneyck
1098 Co. Rd. 217
Durango, CO 81301

Highline Ditch
Roy Annala, et al
122 Co. Rd. 510
Durango, CO 81301

Isgar Ditch
Mrs. George Paxton
4862 Hwy. 550
Durango, CO 81301

Campion Ditch
Roy Annala
122 Co. Rd. 510
Durango, CO 81301

Dore Pump
M.D. Dore
Route No. 1
Ignacio, CO 81137

Banks Tyner Ditch
Charles Lemon, et al
2694 Co. Rd. 222
Durango, CO 81301

D&R.G.W.R.R. Co.
P.O. Box 5482
Denver, CO 80217

Ranches Florida Well No.1
c/o Wayne Glover
917 Co. Rd. 216
Durango, CO 81301

Twin Rock Ditch Co.
c/o D.C. Adams, Sec'ty
Route 1
Aztec, New Mexico 87410

Banks Tyner Ditch-
Shumway Pump
2062 Co. Rd. 222
Durango, CO 81301

Blanton F. Cogburn
1636 Hwy. 550
Durango, CO 81301

Tyner Morrison Ditch
C.W. Shumway, et al
2062 Co. Rd. 222
Durango, CO 81301

D.F. & Katie Cogburn
Trust
1520 Hwy, 550
Durango, CO 81301

Tyner East Side Ditch
William Dashner, et al
P.O. Box 908
Durango, CO 81301

Foy Cogburn
1394 Hwy 550
Durango, CO 81301

Home Ditch
Peal P. Barnes & Sons
3544 Co. Rd. 307
Durango, CO 81301

Jennie Beyer
1929 Hwy 550
Durango, CO 81301

Florida Water
Conserfancy District
P.O. Box 1157
Durango, CO 81302-1157

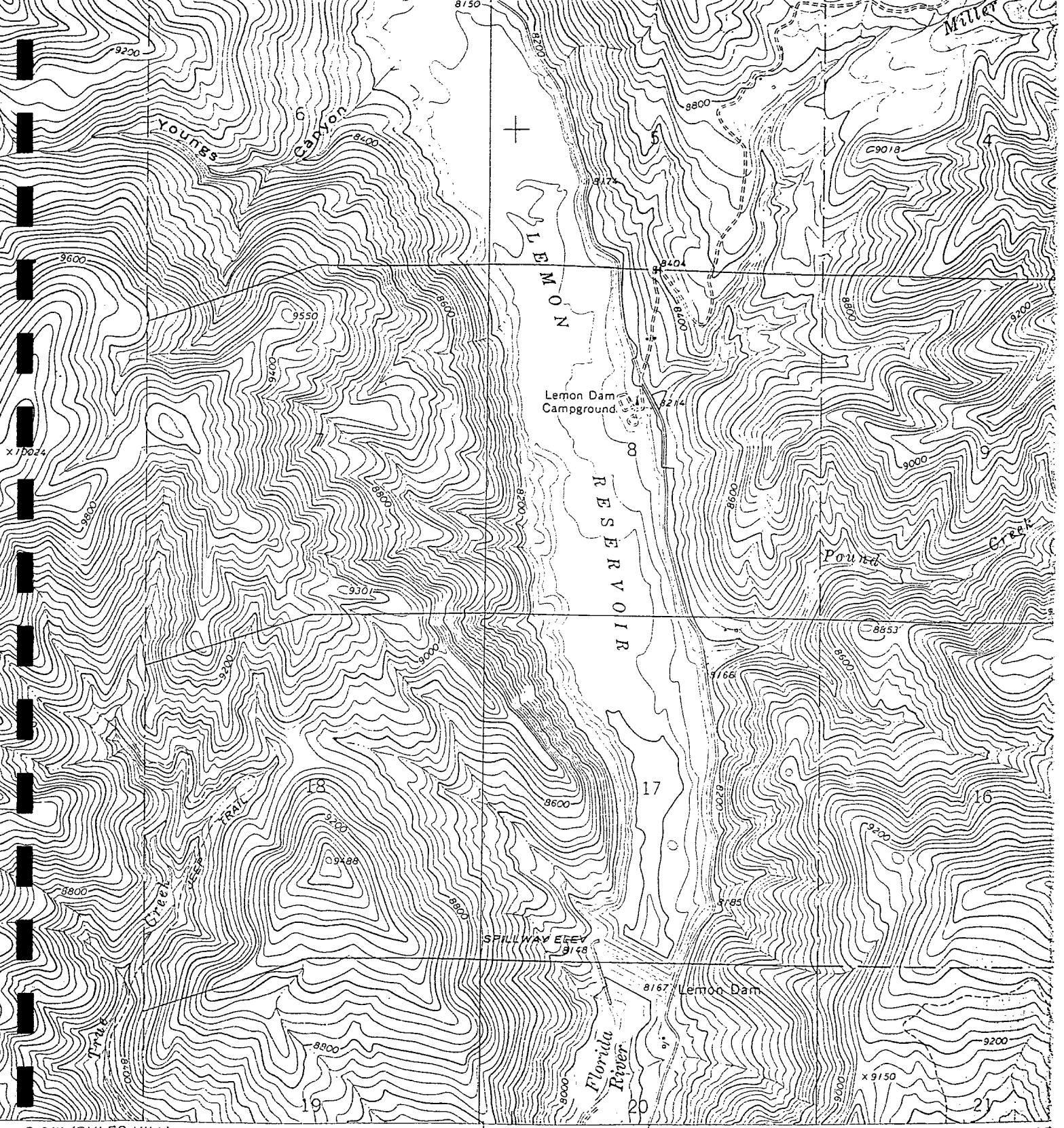
Pacific Northwest
Pipeline
3746 Co. Rd. 307
Durango, CO 81301

Florida Canal Co.
Florida Canal Enlargement
Co. c/o T.G. Eggleston
135 Riverview Drive
Durango, CO 81301

Ball Ditch
W.P. Ball
100 Mesa Avenue
Durango, CO 81301

Florida Farmers Ditch Co.
Florida Co-operative
Ditch Co.
c/o Hazel Brown
5005 Co. Rd. 234
Durango, CO 81301

(NOTE: IF ANYONE IS AFFECTED AND DOES NOT RECEIVE NOTICE, THE DECREE OF THIS WATER RIGHT MAY BE SET ASIDE.)



SCALE 1:24 000

0 1 MILE

2000 3000 4000 5000 6000 7000 FEET

0 1 KILOMETER

CONTOUR INTERVAL 40 FEET

DATUM IS MEAN SEA LEVEL

COLORADO

QUADRANGLE LOCATION

ROAD

Light-duty

LEMO

EY, DENVER, COLORADO 80225, OR WASHINGTON, D. C. 20242

POGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ADDENDUM TO APPLICATION FOR WATER RIGHT,

FLORIDA WATER CONSERVANCY DISTRICT

The axis of the dam is located in Sections 17 and 20, Township 36 North, Range 7 West N.M.P.M. beginning at a point on the right abutment, from whence the Southwest corner of Section 17, Township 36 North, Range 7 West N.M.P.M. bears South 84°34' West a distance of 1,699.6 feet, thence South 63°22' East a distance of 1,320 feet to a point on the end of the axis of the dam on the left abutment thereof.

ATTACHMENT 3

DISTRICT BOARD MINUTES AUTHORIZING
LICENSE APPLICATION

CERTIFICATION

The undersigned, assistant secretary of Florida Water Conservancy District hereby certifies that the following is a true and correct copy of a motion adopted at a regular meeting of the District held on October 8, 1985:

> It was moved, seconded and carried that as soon as the feasibility study had been completed the FERC License Application be completed and submitted.

Dated this 27th Day of November, 1985.

L. W. Mc Daniel
Assistant Secretary
Florida Water Conservancy
District

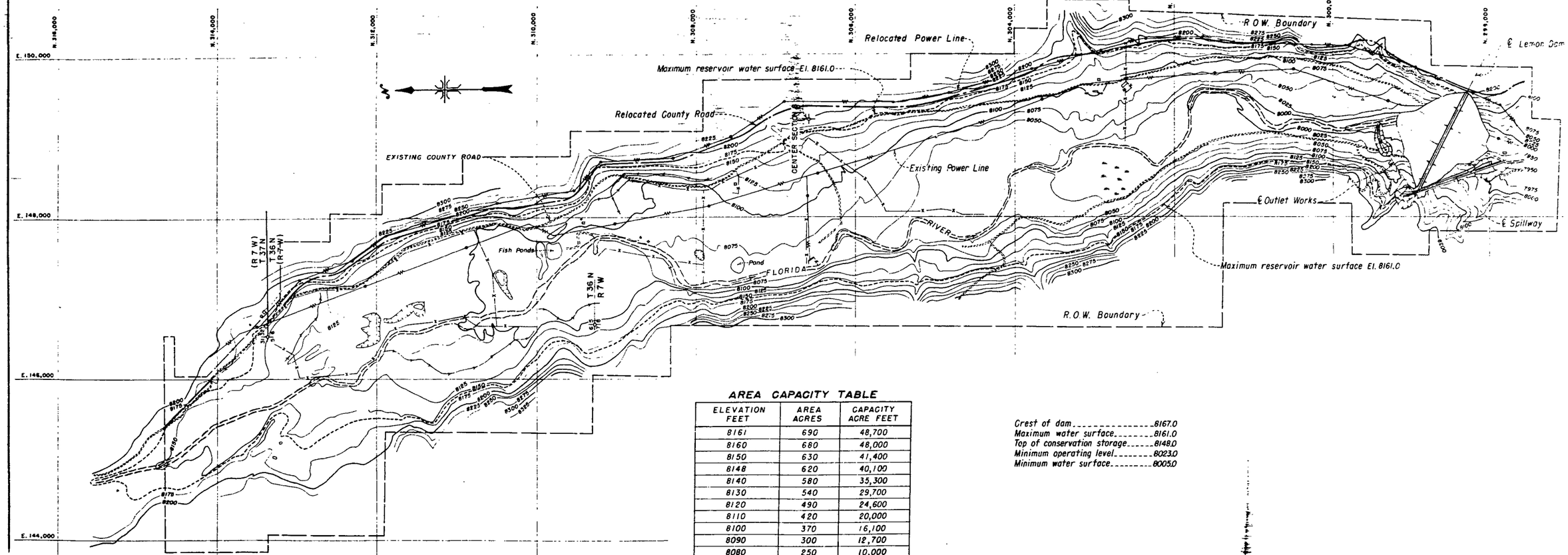
EXHIBIT L

DRAWINGS

Appendix B

USBR AS-BUILT DRAWINGS

Drawing No.	Decription
519-400-53	Right-of-Way(see p. EL-2 of Appendix A)
519-D-15	Reservoir Area
519-D-19	General Embankment Plan and Sections
519-D-4	General Plan for Spillway and Outlet Works and Tunnel Sections
519-D-12	Outlet Works - Intake Structure
519-D-14	Outlet Works - Shaft House and Shaft
519-D-13	Outlet Works - Gate Chamber
519-D-34	Outlet Works - Gate Chamber By-Pass Pipe and Drain
519-D-36	Outlet Works - High Pressure Gate Assembly
519-D-37	Outlet Works - High Pressure Gate Upstream Frame
519-D-41	Outlet Works - High Pressure Gate Leaf and Seats



AREA CAPACITY TABLE

ELEVATION FEET	AREA ACRES	CAPACITY ACRE FEET
8161	690	48,700
8160	680	48,000
8150	630	41,400
8148	620	40,100
8140	580	35,300
8130	540	29,700
8120	490	24,600
8110	420	20,000
8100	370	16,100
8090	300	12,700
8080	250	10,000
8070	210	7,700
8060	180	5,700
8050	150	4,100
8040	120	2,700
8030	87	1,600
8023	62	1,100
8020	54	940
8010	34	510
8005	27	350
8000	17	250
7990	8	140
7980	6	68
7970	3	24
7960	1	4
7955	0	0

NOTE: Area capacity values are extracted from tables of Nov. 3, 1960 and rounded.

Crest of dam 8167.0
Maximum water surface 8161.0
Top of conservation storage 8148.0
Minimum operating level 8023.0
Minimum water surface 8005.0

600 0 600 1200
SCALE OF FEET

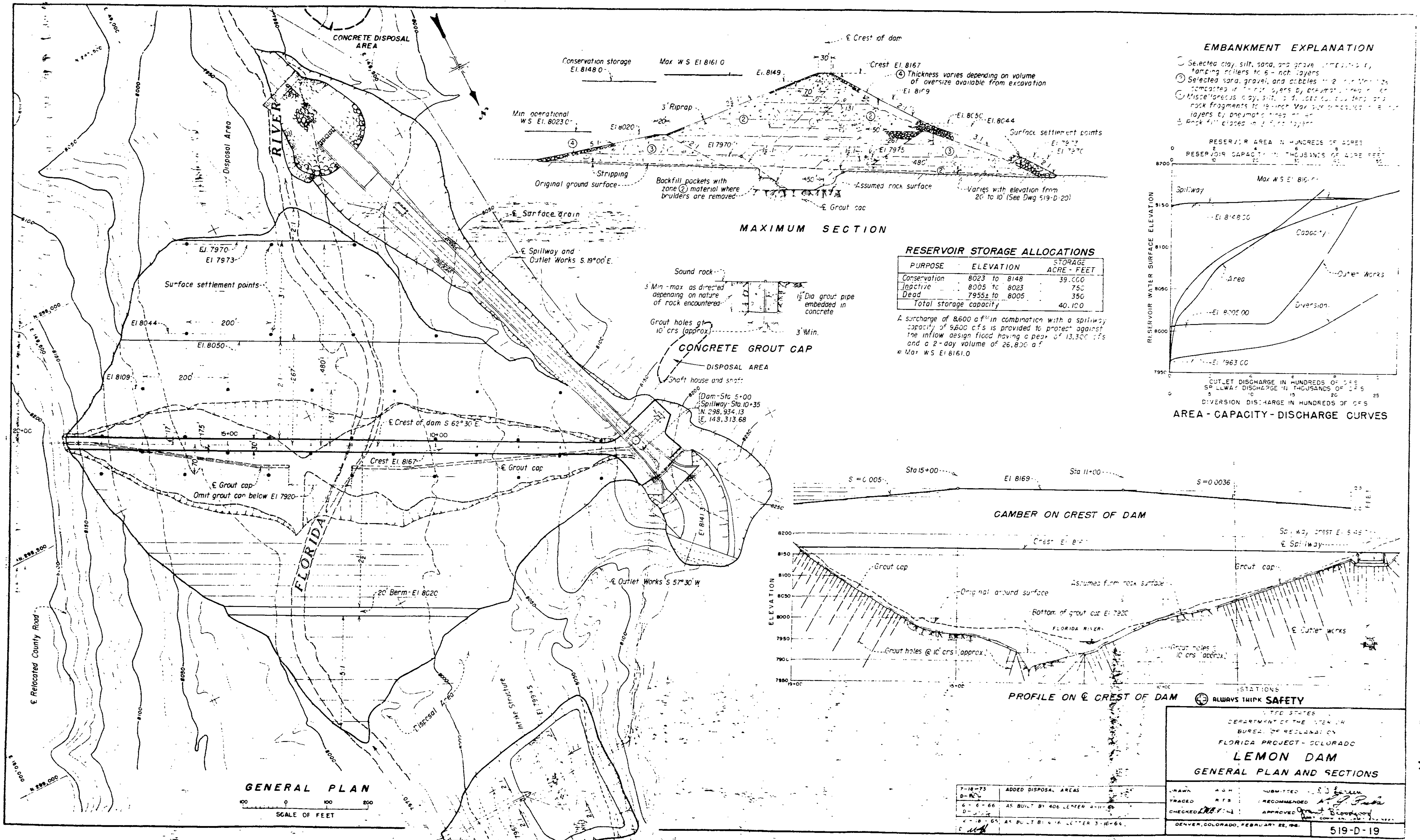
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO

LEMON DAM
RESERVOIR AREA

DRAWN H.S.P. SUBMITTED Richard W. Beck
TRACED H.S.P. RECOMMENDED
CHECKED [illegible] APPROVED
ACTING CHIEF, DAMS BRANCH

DENVER, COLORADO, FEBRUARY 28, 1961 519-D-15

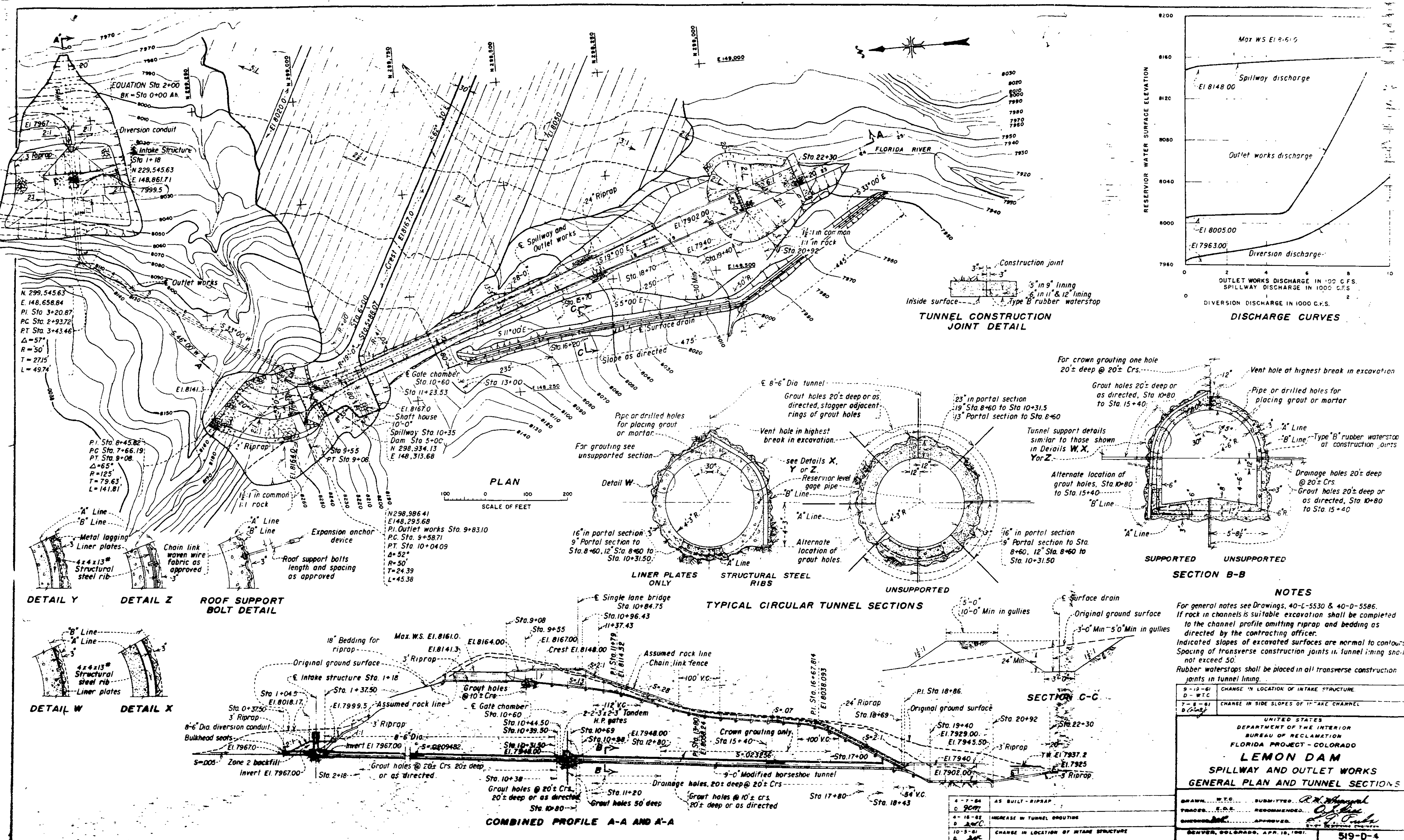
4-519-01-01-01


GENERAL PLAN
SCALE OF FEET
CONCRETE DISPOSAL AREA
Disposal Area
RIVER
FLORIDA
€ Surface drain
€ Spillway and Outlet Works S. 19°00' E.
Surface settlement points
EI. 7970
EI. 7973
EI. 8044
EI. 8050
EI. 8109
€ Crest of dam S 62° 30' E.
Crest EI. 8167
€ Grout cap
Omit grout cap below EI 7920
20' Berm-EI 8020
€ Outlet Works S 57° 30' W.
€ Relocated County Road
Dam-Sta 5+00
Spillway-Sta.10+35
N. 298,934.13
E. 148,313.68
Shaft house and shaft
DISPOSAL AREA
MAXIMUM SECTION
€ Crest of dam
Crest EI. 8167
Thickness varies depending on volume of oversize available from excavation
Conservation storage EI. 8148.0
Max W.S. EI 8161.0
Min. operational W.S. EI. 8023.0
3' Riprap
Stripping
Original ground surface
Backfill pockets with zone (2) material where boulders are removed
€ Grout cap
Assumed rock surface
Surface settlement points
Varies with elevation from 20 to 10' (See Dwg 519-D-20)
CONCRETE GROUT CAP
Sound rock
3' Min.-max. as directed depending on nature of rock encountered
1½" Dia grout pipe embedded in concrete
Grout holes at 10' crs (approx)
3' Min.
EMBANKMENT EXPLANATION
AREA - CAPACITY - DISCHARGE CURVES
RESERVOIR WATER SURFACE ELEVATION
Spillway
Capacity
Area
Outlet Works
Diversion
CAMBER ON CREST OF DAM
S = 0.005
Sta 15+00
EI 8169
Sta 11+00
S = 0.0036
PROFILE ON € CREST OF DAM
ELEVATION
Grout cap
Original ground surface
Assumed firm rock surface
Bottom of grout cap EI 7920
FLORIDA RIVER
Grout holes @ 10' crs (approx)
€ Outlet works
€ Spillway
STATIONS
ALWAYS THINK SAFETY
UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO
LEMON DAM
GENERAL PLAN AND SECTIONS
DENVER, COLORADO, FEBRUARY 22, 1961
519-D-19
7-18-73 ADDED DISPOSAL AREAS
AS BUILT BY 406 LETTER
AS BUILT BY 416 LETTER 3-16-64

RESERVOIR STORAGE ALLOCATIONS

PURPOSE	ELEVATION	STORAGE ACRE-FEET
Conservation	8023 to 8148	39,000
Inactive	8005 to 8023	750
Dead	7955± to 8005	350
Total storage capacity		40,100

A surcharge of 8,600 a.f.* in combination with a spillway capacity of 9,600 c.f.s. is provided to protect against the inflow design flood having a peak of 13,300 c.f.s and a 2-day volume of 26,800 a.f.
* Max. W.S. El 8161.0


PLAN
SCALE OF FEET
100 0 100 200
FLORIDA RIVER
EQUATION Sta. 2+00
BK = Sta. 0+00 Ah.
Diversion conduit
Intake Structure
Sta. 1+18
N 229,545.63
E 148,861.71
Outlet works
Spillway and Outlet works
Crest El. 8167.0
Gate chamber
Sta. 10+60
Sta. 11+23.53
El. 8167.0
Shaft house
10'-0"
Spillway Sta. 10+35
Dam Sta. 5+00
N 298,934.13
E 148,313.68
N 299,545.63
E 148,658.84
P.I. Sta. 3+20.87
P.C. Sta. 2+93.72
P.T. Sta. 3+43.46
Δ=57°
R=30'
T=27.15'
L=49.74'
P.I. Sta. 8+45.82
P.C. Sta. 7+66.19
P.T. Sta. 9+08
Δ=65°
R=125'
T=79.63'
L=141.81'
N298,986.41
E148,295.68
P.I. Outlet works Sta. 9+83.10
P.C. Sta. 9+58.71
P.T. Sta. 10+04.09
Δ=52°
R=50'
T=24.39
L=45.38
Surface drain
Slope as directed
24" Riprap
Sta. 22+30
Sta. 20+92
1½:1 in common
1:1 in rock
TUNNEL CONSTRUCTION JOINT DETAIL
Construction joint
5" in 9" lining
6" in 11" & 12" lining
Inside surface
Type "B" rubber waterstop
DISCHARGE CURVES
Max WS El 8161.0
Spillway discharge
El 8148.00
Outlet works discharge
El 8005.00
El 7963.00
Diversion discharge
RESERVOIR WATER SURFACE ELEVATION
OUTLET WORKS DISCHARGE IN 100 C.F.S.
SPILLWAY DISCHARGE IN 1000 C.F.S.
DIVERSION DISCHARGE IN 1000 C.F.S.
TYPICAL CIRCULAR TUNNEL SECTIONS
8'-6" Dia. tunnel
Grout holes 20'± deep or as directed, stagger adjacent rings of grout holes
Pipe or drilled holes for placing grout or mortar
Vent hole in highest break in excavation
For grouting see unsupported section
see Details X, Y or Z.
Reservoir level gage pipe
"B" Line
"A" Line
Detail W
Alternate location of grout holes.
23" in portal section
19" Sta. 8+60 to Sta. 10+31.5
13" Portal section to Sta. 8+60
16" in portal section
9" Portal section to Sta. 8+60, 12" Sta. 8+60 to Sta. 10+31.50
LINER PLATES ONLY
STRUCTURAL STEEL RIBS
UNSUPPORTED
SECTION B-B
For crown grouting one hole 20'± deep @ 20'± Crs.
Vent hole at highest break in excavation
Grout holes 20'± deep or as directed, Sta. 10+80 to Sta. 15+40
Pipe or drilled holes for placing grout or mortar
Tunnel support details similar to those shown in Details W, X, Y or Z.
Alternate location of grout holes, Sta. 10+80 to Sta. 15+40
Type "B" rubber waterstop at construction joints
Drainage holes 20'± deep @ 20'± Crs.
Grout holes 20'± deep or as directed, Sta. 10+80 to Sta. 15+40
SUPPORTED
UNSUPPORTED
DETAIL Y
DETAIL Z
ROOF SUPPORT BOLT DETAIL
Metal lagging
Liner plates
4x4x13# Structural steel rib
Chain link woven wire fabric as approved
Expansion anchor device
Roof support bolts length and spacing as approved
DETAIL W
DETAIL X
SECTION C-C
Surface drain
Original ground surface
10'-0" Min in gullies
3'-0" Min - 5'-0" Min in gullies
24" Min
COMBINED PROFILE A-A AND A'-A
Single lane bridge Sta. 10+84.75
Max. W.S. El. 8161.0
Crest El. 8148.00
Original ground surface
Intake structure Sta. 1+18
Assumed rock line
Chain link fence
Gate chamber Sta. 10+60
2-2'-3"x2'-3" Tandem H.P. gates
8'-6" Dia. diversion conduit
Bulkhead seats
Zone 2 backfill
Invert El. 7967.00
Grout holes @ 20'± Crs. 20'± deep or as directed
Crown grouting only
9'-0" Modified horseshoe tunnel
Drainage holes, 20'± deep @ 20'± Crs.
Grout holes @ 10'± crs. 20'± deep or as directed
Grout holes 50' deep
3' Riprap
NOTES
For general notes see Drawings, 40-D-5530 & 40-D-5586.
If rock in channels is suitable excavation shall be completed to the channel profile omitting riprap and bedding as directed by the contracting officer.
Indicated slopes of excavated surfaces are normal to contours.
Spacing of transverse construction joints in tunnel lining shall not exceed 50'.
Rubber waterstops shall be placed in all transverse construction joints in tunnel lining.
9-19-61 CHANGE IN LOCATION OF INTAKE STRUCTURE
7-6-61 CHANGE IN SIDE SLOPES OF INTAKE CHANNEL
4-7-64 AS BUILT - RIPRAP
4-16-62 INCREASE IN TUNNEL GROUTING
10-3-61 CHANGE IN LOCATION OF INTAKE STRUCTURE
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO
LEMON DAM
SPILLWAY AND OUTLET WORKS
GENERAL PLAN AND TUNNEL SECTIONS
DRAWN W.T.C. SUBMITTED
TRACED E.D.S. RECOMMENDED
CHECKED APPROVED
DENVER, COLORADO, APR. 19, 1961.
519-D-4

PLAN

SECTION D-D

SECTION E-E

SECTION B-B SECTION P-P

* Indicates thickness of blockout concrete.

SECTION N-N

ELEVATION C-C

DETAIL Z

SECTION J-J

SECTION H-H

SEC. K-K ELEV. L-L RUBBER SEAL

SECTION M-M

SECTION A-A

ELEVATION F-F

NOTE

For general notes, see Dwgs. 40-D-5530 and 5586.

SECTION G-G

BULKHEAD DETAILS

1-13-62 D. [illegible]	CHANGE IN PORTAL SECTION.
10-6-61 D. [illegible]	CHANGE IN LOCATION OF INTAKE STRUCTURE.
9-19-61 D. [illegible]	CHANGE IN LOCATION OF INTAKE STRUCTURE.
8-9-61 D. [illegible]	CHANGE IN BULKHEAD SEAT FOR DIVERSION CONDUIT.

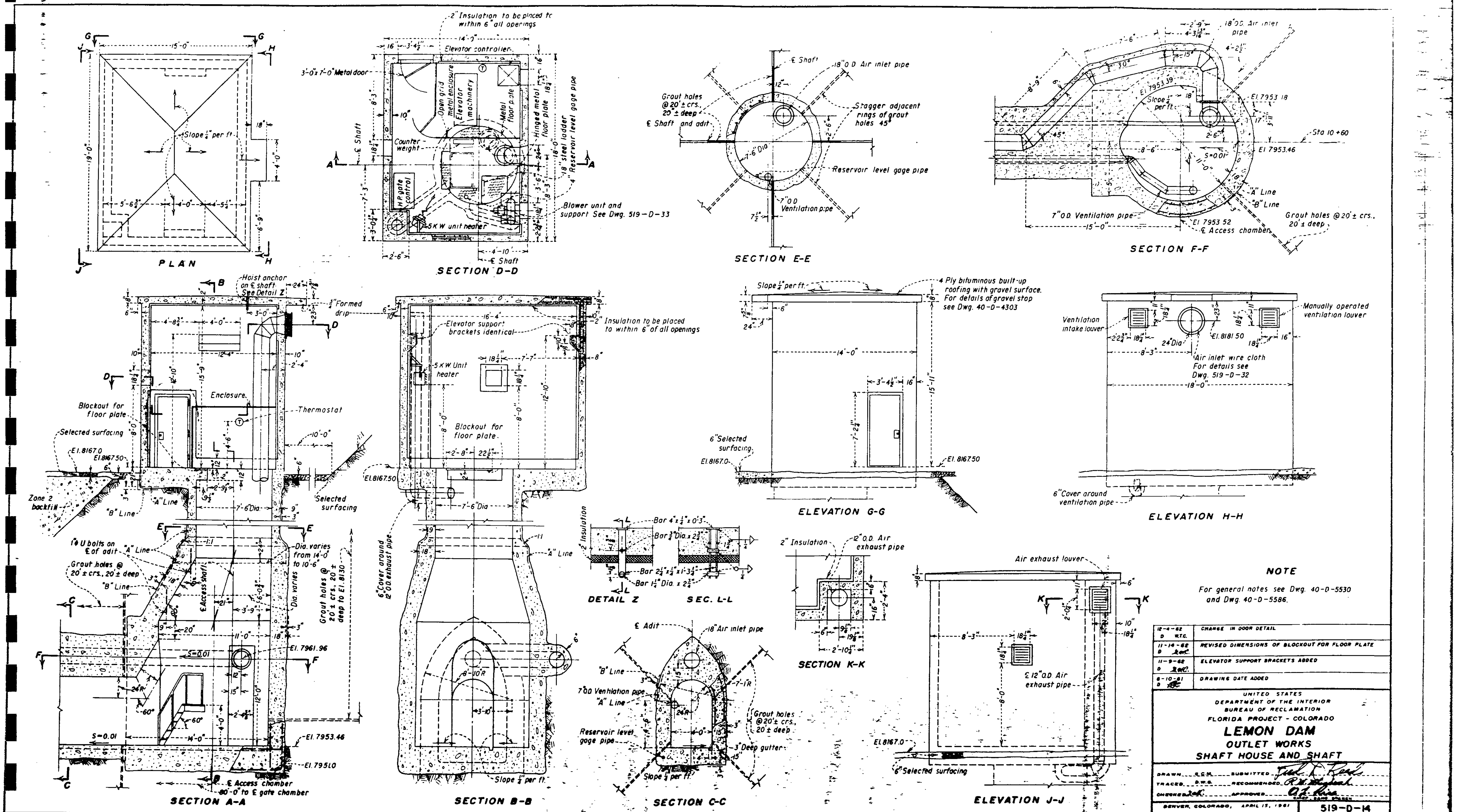
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO

LEMON DAM
OUTLET WORKS
INTAKE STRUCTURE

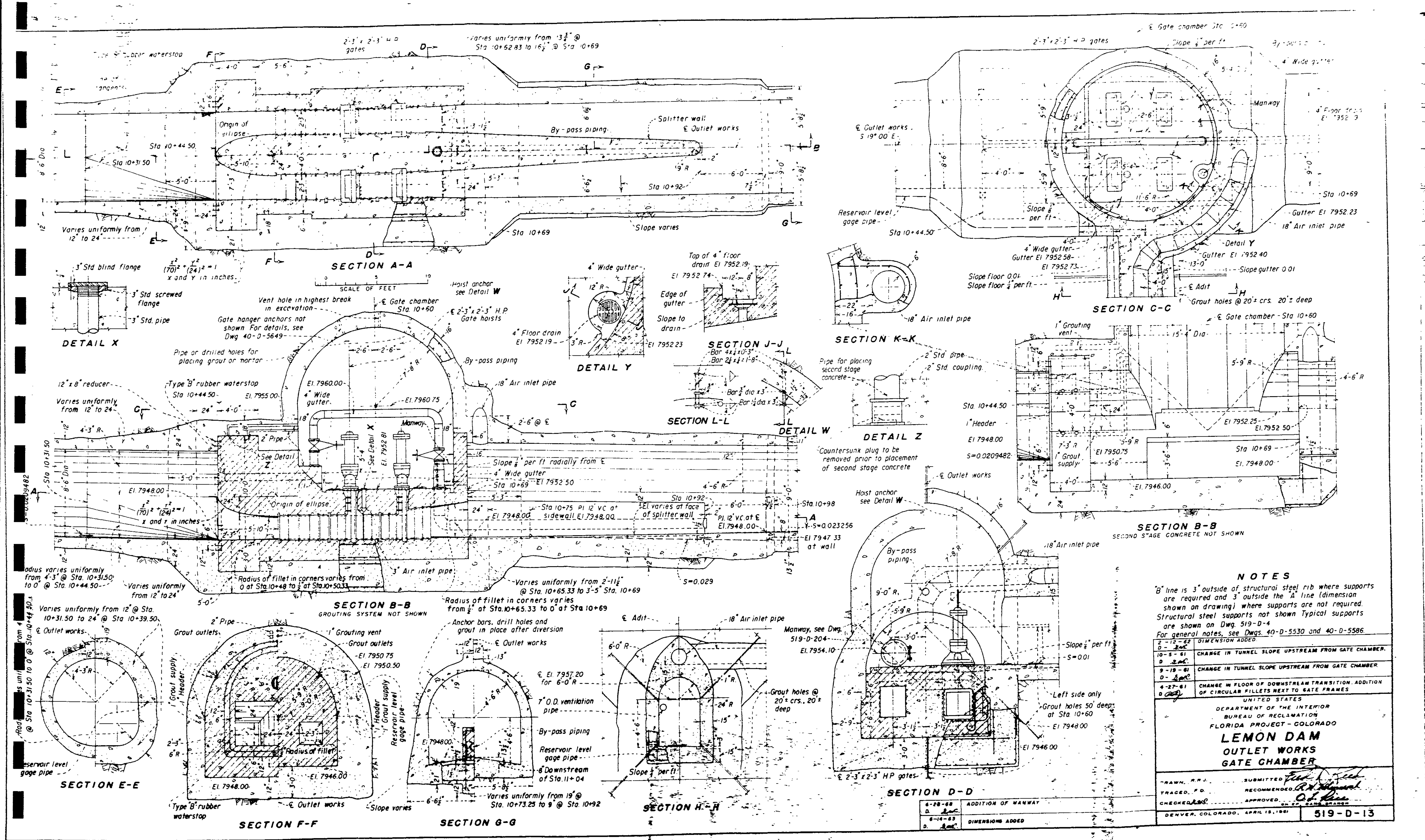
DRAWN G.G.R. SUBMITTED [signature]
TRACED C.H.S. RECOMMENDED [signature]
CHECKED [signature] APPROVED [signature]
CHIEF DAM BRANCH

DENVER, COLORADO, APRIL 18, 1961

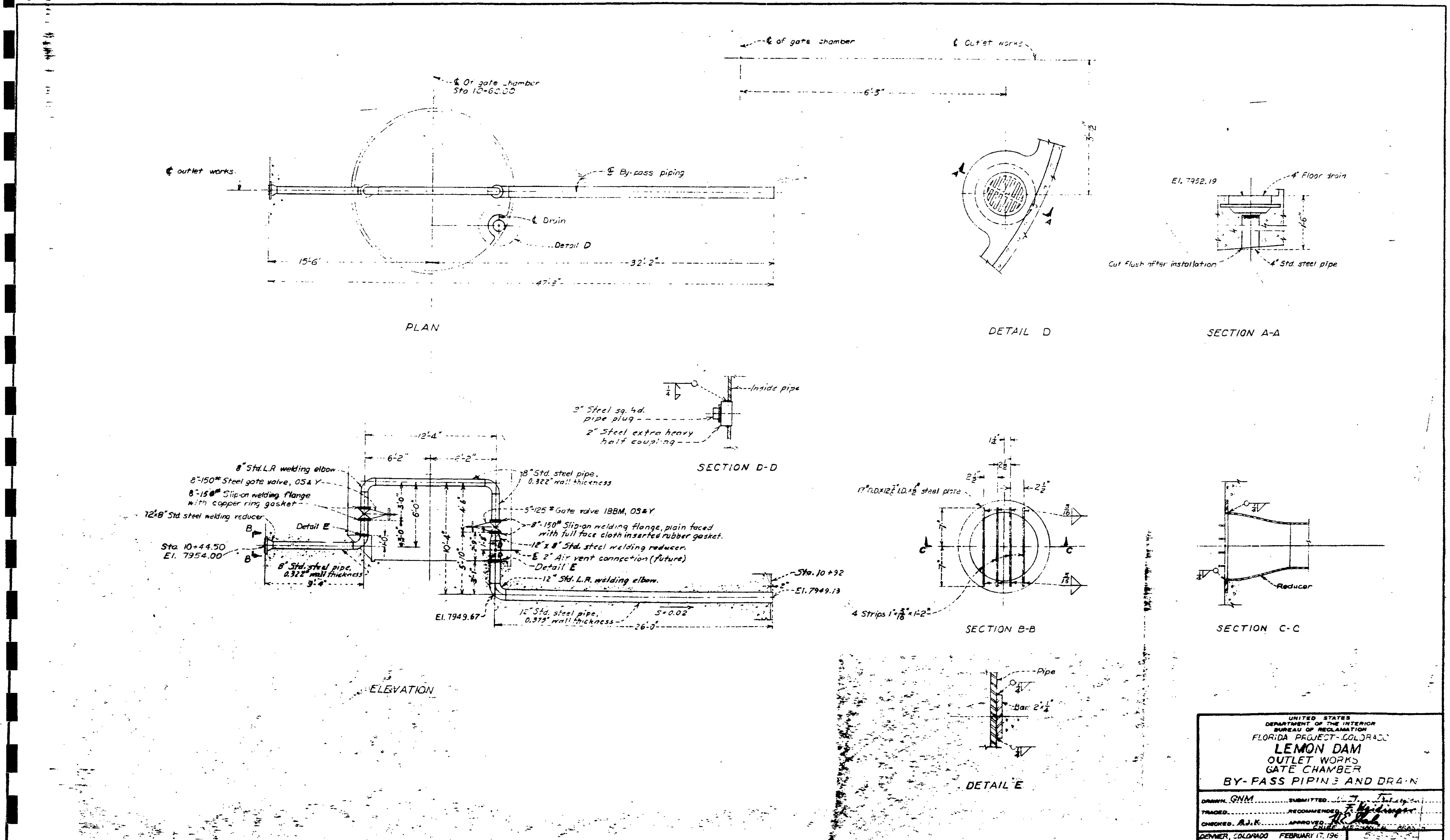
519-D-12

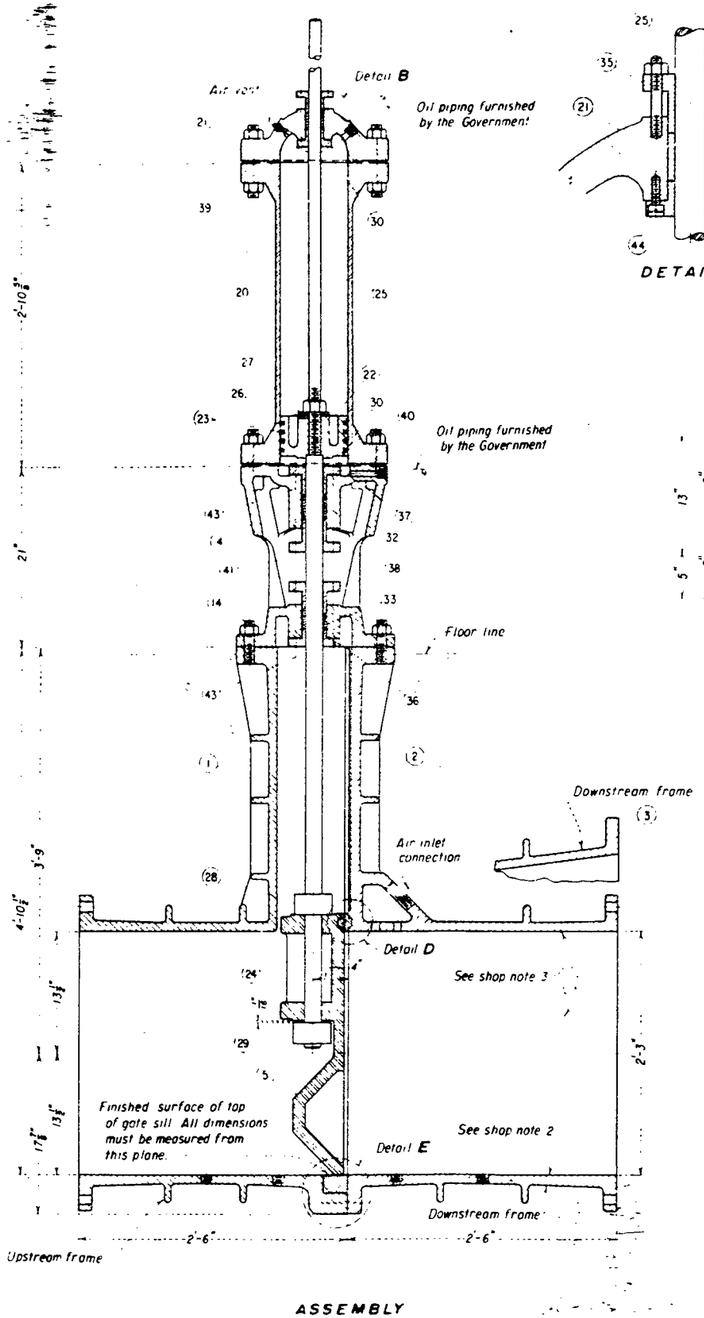


PLAN
Slope 1/4" per ft.
SECTION D-D
3'-0"x7'-0" Metal door
Elevator controller
Open grid metal enclosure
Elevator machinery
Hinged metal floor plate
18" steel ladder
4" Reservoir level gage pipe
Counter weight
H.P. gate control
5 KW unit heater
Blower unit and support See Dwg. 519-D-33
2" Insulation to be placed to within 6" of all openings
SECTION E-E
18" O.D. Air inlet pipe
Grout holes @ 20' ± crs., 20' ± deep
Stagger adjacent rings of grout holes 45°
Reservoir level gage pipe
7" O.D. Ventilation pipe
SECTION F-F
18" O.D. Air inlet pipe
7" O.D. Ventilation pipe
Sta 10+60
"A" Line
"B" Line
Grout holes @ 20' ± crs., 20' ± deep
El 7953.52
℄ Access chamber
SECTION A-A
Hoist anchor on ℄ shaft See Detail Z
3/4" Formed drip
Blockout for floor plate
Enclosure
Thermostat
Selected surfacing
Zone 2 backfill
"A" Line
"B" Line
1" U bolts on ℄ of adit
Grout holes @ 20' ± crs., 20' ± deep
Dia. varies from 14'-0" to 10'-6"
℄ Access shaft
El. 7961.96
El. 7953.46
El. 7951.0
℄ Access chamber 80'-0" to ℄ gate chamber
SECTION B-B
Elevator support brackets identical
5 KW Unit heater
Blockout for floor plate
6" Cover around 12" O.D. exhaust pipe
Slope 1/4" per ft.
DETAIL Z
SEC. L-L
SECTION C-C
℄ Adit
18" Air inlet pipe
7" O.D. Ventilation pipe
Reservoir level gage pipe
Grout holes @ 20' ± crs., 20' ± deep
3" Deep gutter
ELEVATION G-G
4 Ply bituminous built-up roofing with gravel surface. For details of gravel stop see Dwg. 40-D-4303
6" Selected surfacing
El. 8167.50
SECTION K-K
2" Insulation
2" O.D. Air exhaust pipe
ELEVATION H-H
Ventilation intake louver
Manually operated ventilation louver
Air inlet wire cloth For details see Dwg. 519-D-32
6" Cover around ventilation pipe
ELEVATION J-J
Air exhaust louver
℄ 12" O.D. Air exhaust pipe
6" Selected surfacing
NOTE
For general notes see Dwg. 40-D-5530 and Dwg. 40-D-5586.
12-4-62 CHANGE IN DOOR DETAIL
11-14-62 REVISED DIMENSIONS OF BLOCKOUT FOR FLOOR PLATE
11-9-62 ELEVATOR SUPPORT BRACKETS ADDED
6-10-61 DRAWING DATE ADDED
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO
LEMON DAM
OUTLET WORKS
SHAFT HOUSE AND SHAFT
DENVER, COLORADO, APRIL 15, 1961
519-D-14



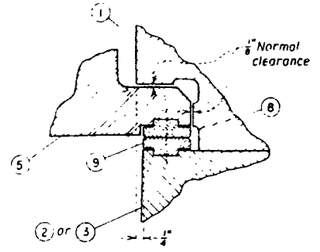
SECTION A-A
SCALE OF FEET
DETAIL X
3" Std blind flange
3" Std screwed flange
3" Std. pipe
SECTION B-B
GROUTING SYSTEM NOT SHOWN
DETAIL Y
SECTION J-J
SECTION L-L
DETAIL W
SECTION K-K
DETAIL Z
SECTION C-C
SECTION B-B
SECOND STAGE CONCRETE NOT SHOWN
SECTION D-D
SECTION E-E
SECTION F-F
SECTION G-G
SECTION H-H
Splitter wall
℄ Outlet works
By-pass piping
Origin of ellipse
18" Air inlet pipe
Manway
℄ Gate chamber Sta 10+60
2'-3" x 2'-3" H.P. Gate hoists
Vent hole in highest break in excavation
Gate hanger anchors not shown. For details, see Dwg 40-D-5649
Pipe or drilled holes for placing grout or mortar
Type "B" rubber waterstop
Countersunk plug to be removed prior to placement of second stage concrete
Hoist anchor see Detail W
Grout holes @ 20'± crs. 20'± deep
Reservoir level gage pipe
NOTES
"B" line is 3" outside of structural steel rib where supports are required and 3" outside the "A" line (dimension shown on drawing) where supports are not required. Structural steel supports not shown. Typical supports are shown on Dwg. 519-D-4
For general notes, see Dwgs. 40-D-5530 and 40-D-5586
2-12-62 DIMENSION ADDED
10-5-61 CHANGE IN TUNNEL SLOPE UPSTREAM FROM GATE CHAMBER
9-19-61 CHANGE IN TUNNEL SLOPE UPSTREAM FROM GATE CHAMBER
4-27-61 CHANGE IN FLOOR OF DOWNSTREAM TRANSITION. ADDITION OF CIRCULAR FILLETS NEXT TO GATE FRAMES
6-28-63 ADDITION OF MANWAY
6-14-63 DIMENSIONS ADDED
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO
LEMON DAM
OUTLET WORKS
GATE CHAMBER
DRAWN
TRACED
CHECKED
SUBMITTED
RECOMMENDED
APPROVED
DENVER, COLORADO, APRIL 13, 1961
519-D-13


℄ of gate chamber
℄ Outlet works
6'3"
℄ Of gate chamber Sta 10+60.00
℄ outlet works
℄ By-pass piping
℄ Drain
Detail D
15'-6"
32'-2"
47'-8"
PLAN
DETAIL D
El. 7952.19
4" Floor drain
1'-6"
Cut flush after installation
4" Std. steel pipe
SECTION A-A
Inside pipe
2" Steel sq. hd. pipe plug
2" Steel extra heavy half coupling
SECTION D-D
12'-4"
6'-2"
6'-2"
8" Std. L.R. welding elbow
8"-150# Steel gate valve, OS&Y
8"-150# Slip-on welding flange with copper ring gasket
12"x8" Std. steel welding reducer
Detail E
Sta. 10+44.50
El. 7954.00
8" Std. steel pipe, 0.322" wall thickness
9'-4"
8" Std. steel pipe, 0.322" wall thickness
8"-125# Gate valve IBBM, OS&Y
8"-150# Slip-on welding flange, plain faced with full face cloth inserted rubber gasket.
12"x8" Std. steel welding reducer.
℄ 2" Air vent connection (future)
Detail E
12" Std. L.R. welding elbow.
Sta. 10+92
El. 7949.13
El. 7949.67
12" Std. steel pipe, 0.375" wall thickness
S=0.02
26'-0"
ELEVATION
17" O.D.x12¾" I.D.x⅜" steel plate
4 Strips 1"x3/16"x1'-2"
SECTION B-B
Reducer
SECTION C-C
Pipe
Bar 2"x¼"
DETAIL E
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT-COLORADO
LEMON DAM
OUTLET WORKS
GATE CHAMBER
BY-PASS PIPING AND DRAIN
DRAWN GNM
SUBMITTED
TRACED
RECOMMENDED
CHECKED A.J.K.
APPROVED
CHIEF MECHANICAL BRANCH
DENVER, COLORADO FEBRUARY 17, 196

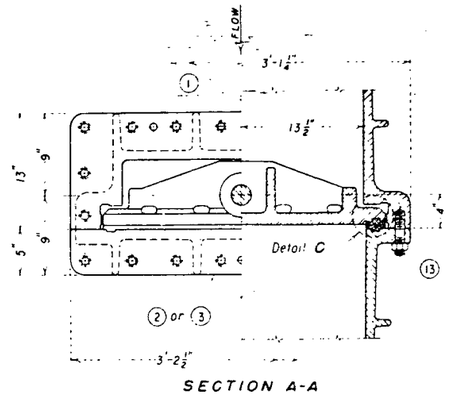


ASSEMBLY
(GATE AND HOIST)

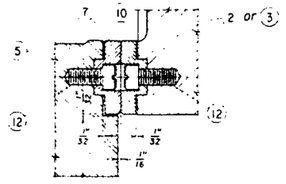
DETAIL B



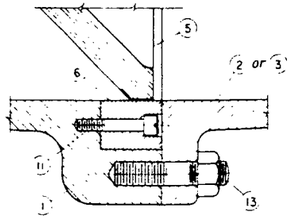
DETAIL C



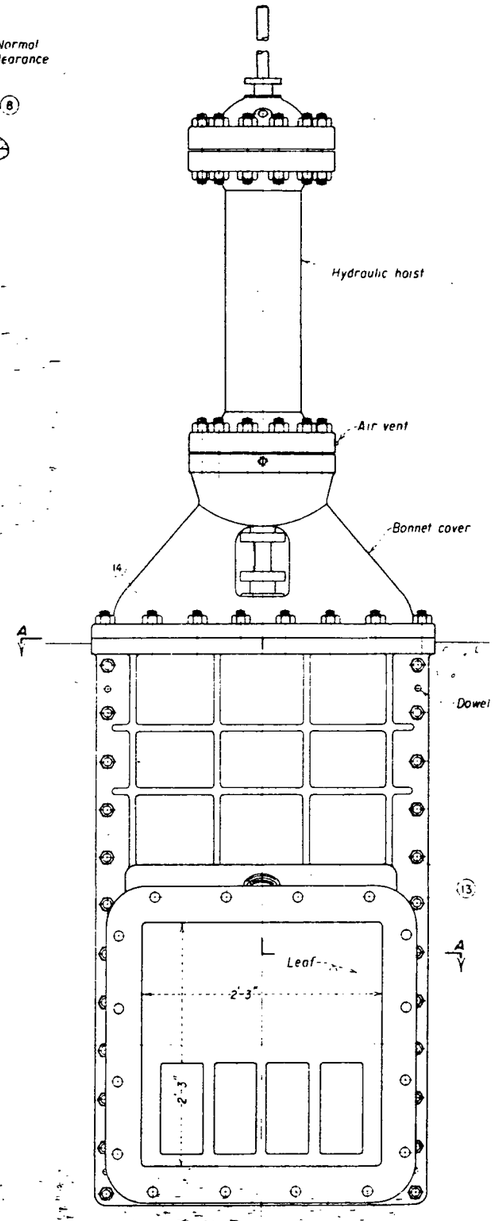
SECTION A-A



DETAIL D
(TYPICAL INSTALLATION FOR ALL SEATS)



DETAIL E



DOWNSTREAM ELEVATION

LIST OF PARTS FOR FOUR GATES

PART NO.	DESCRIPTION	MATERIAL	REQ'D	NOTES
1	Upstream frame	C Class 30	4	
2	Downstream frame	C Class 30	2	
3	Downstream frame	C Class 30	2	
4	Bonnet cover	C I - Class 30	4	
5	Gate leaf	C Stl - Class 2	4	
6	Gate sill	Bronze - Class C	4	
7	Horizontal leaf seat	Bronze - Class C	4	"
8	Vertical leaf seat	Bronze - Class C	8	"
9	Vertical frame seat	Bronze - Class D	8	
10	Horizontal frame seat	Bronze - Class D	4	"
11	¾ x 2¾" Socket head capscrew	Bronze	12	No detail
12	⅜ x ⅞" Socket head capscrew	Bronze	184	No detail
13	¾ x 4½" Stud with nut	Bolt stl - Class B	116	519-D-37
14	1¼ x 5" Stud with nut	Bolt stl - Class B	80	519-D-40
15	1 x 4½" Bolt with hex nut	Bolt stl - Class B	64	No detail
16	Conduit lining	C.I. - Class 30	2	519-D-42
*				

* For part Nos 20 thru 44 see Hydraulic Hoist Dwg No 519-D-44

LIST OF DRAWINGS

GATE
- ASSEMBLY WITH HOIST - LIST OF PARTS 519-D-36
- UPSTREAM FRAME 519-D-37
- DOWNSTREAM FRAME 519-D-38
- DOWNSTREAM FRAME 519-D-39
- BONNET COVER 519-D-40
- LEAF AND SEATS 519-D-41

HYDRAULIC HOIST
- CYLINDER 519-D-43
- LIST OF PARTS 519-D-44

CONDUIT
- LINING 519-D-42

DESIGN DATA

Maximum designed cylinder pressure 1000 p.s.i.
Bronze gate seats, coefficient of friction = 0.6 (starting)
Concrete surrounding conduit and frame castings designed to carry all the load
Gate leaf designed for 250 foot head.

SHOP NOTES

1 - Secure seats 7, 8, 9, and 10 in place with capscrews 12 before final machining on sliding faces of seats All seats must be in a true plane
2 - Bottom surface of waterway, including frames, and conduit linings be chipped and ground smooth High spots shall be beveled to 1:20
3 - For top and side surfaces of waterway, including frames, and conduit linings, adjacent units of the installation must line up with a maximum allowable offset of ¼" Offsets must be chipped to a bevel of 1:6 to form a smooth waterway.

FIELD NOTES

When assembling for installation, the finished faces of all flanged joints are to be smoothly coated with a mixture of white lead and graphite and bolted together while this coating is plastic The shanks and threads of all bolts and studs are to be similarly coated
After placing grout under upstream and downstream frames, screw pipe plugs in tight and grind flush with castings

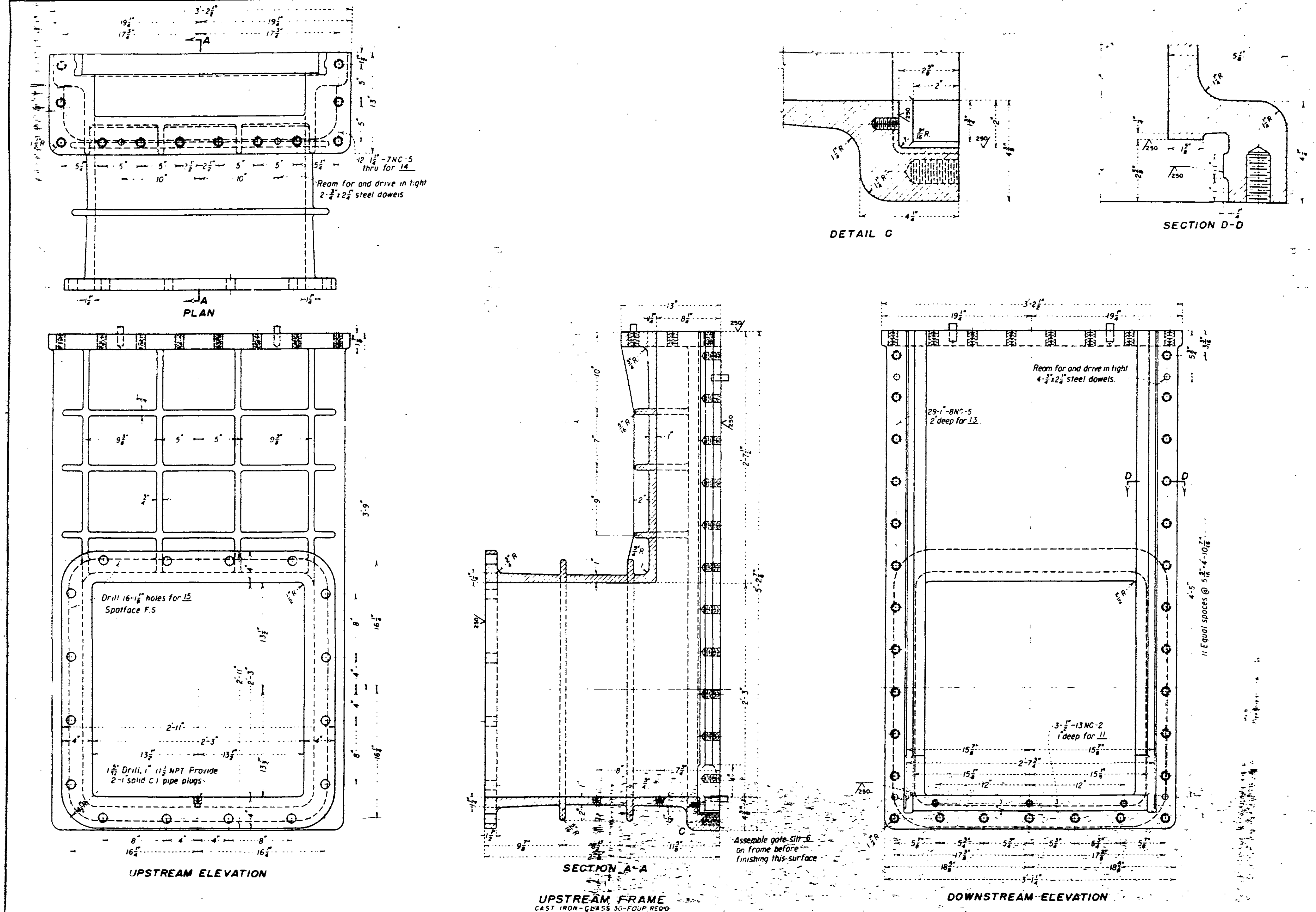
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO

LEMON DAM
OUTLET WORKS
2'-3" x 2'-3" HIGH-PRESSURE GATE
ASSEMBLY WITH HOIST - LIST OF PARTS

DRAWN J.F.R. SUBMITTED
TRACED R.L.C. REC. RECOMMENDED
CHECKED J.D.P. APPROVED
CHIEF MECHANICAL BRANCH

DENVER, COLORADO, FEB 24, 1950. 519-D-36

2'-3" x 2'-3" GATE



NOTES

Horizontal finished surface for bonnet cover connection to be finished with upstream and downstream frames bolted together with dowels in place

Fillets shall be $\frac{r}{2}$ R except where otherwise noted.

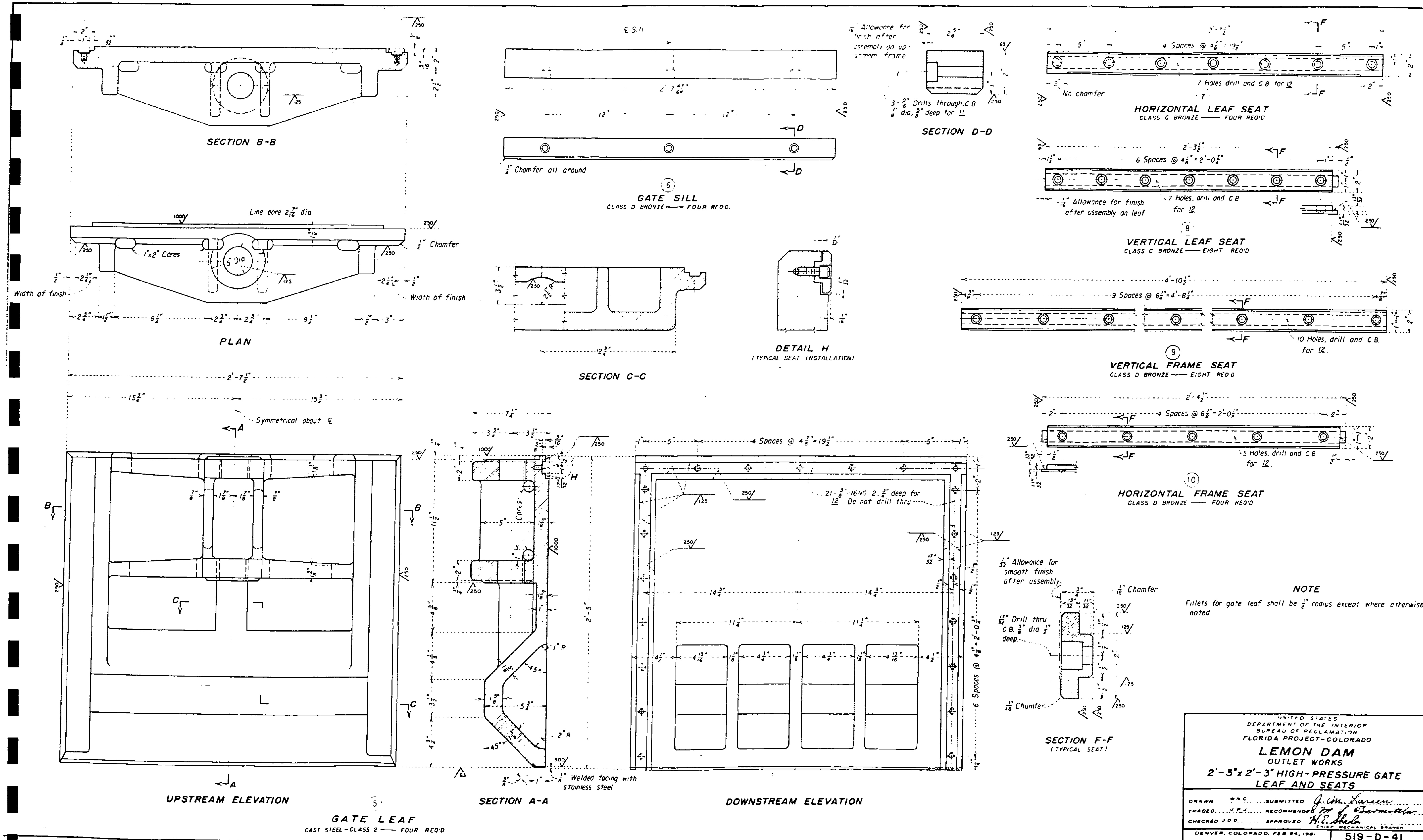
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT-COLORADO

LEMON DAM
OUTLET WORKS
2'-3" x 2'-3" HIGH-PRESSURE GATE
UPSTREAM FRAME

DRAWN	D.A.W.	SUBMITTED	J. M. Larsen
TRACED	R.L.D.	RECOMMENDED	W. L. Barmettler
CHECKED	J.O.D.	APPROVED	H.E. Sholes, CHIEF, MECHANICAL BRANCH

DENVER, COLORADO, FEB 24, 1961 — 519-D-37

2'-3" x 2'-3" H.P. GATE


SECTION B-B
PLAN
Line bore $2\frac{7}{16}$" dia.
$\frac{1}{2}$" Chamfer
1"x2" Cores
Width of finish
Symmetrical about ℄
UPSTREAM ELEVATION
SECTION A-A
Welded facing with stainless steel
DOWNSTREAM ELEVATION
4 Spaces @ $4\frac{7}{8}$" = $19\frac{1}{2}$"
6 Spaces @ $4\frac{1}{8}$" = $2'-0\frac{3}{4}$"
GATE LEAF
CAST STEEL - CLASS 2 —— FOUR REQ'D
℄ Sill
$\frac{1}{4}$" Chamfer all around
GATE SILL
CLASS D BRONZE —— FOUR REQ'D.
SECTION C-C
$\frac{1}{16}$" Allowance for finish after assembly on upstream frame
SECTION D-D
DETAIL H
(TYPICAL SEAT INSTALLATION)
HORIZONTAL LEAF SEAT
CLASS C BRONZE —— FOUR REQ'D
No chamfer
7 Holes drill and C B for 12
VERTICAL LEAF SEAT
CLASS C BRONZE —— EIGHT REQ'D
$\frac{1}{16}$" Allowance for finish after assembly on leaf
7 Holes, drill and C B for 12
VERTICAL FRAME SEAT
CLASS D BRONZE —— EIGHT REQ'D
10 Holes, drill and C.B. for 12
HORIZONTAL FRAME SEAT
CLASS D BRONZE —— FOUR REQ'D
5 Holes, drill and C B for 12
$\frac{1}{32}$" Allowance for smooth finish after assembly
SECTION F-F
(TYPICAL SEAT)
NOTE
Fillets for gate leaf shall be $\frac{1}{2}$" radius except where otherwise noted
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
FLORIDA PROJECT - COLORADO
LEMON DAM
OUTLET WORKS
2'-3" x 2'-3" HIGH-PRESSURE GATE
LEAF AND SEATS
DENVER, COLORADO, FEB 24, 1961
519-D-41

Appendix C

HYDRAULICS

Equations for Head Loss in Penstock

The equations below describe the friction loss through the penstock as a function of the flow (Q). The equations are derived from the Handbook of Hydraulics by Brater and King, Sixth Edition, Chapter 6. The flow varies according to the reservoir water surface elevation as controlled by the turbine performance characteristics, so the head loss changes with flow. This is why the head loss equations are a function of flow.

Entrances Loss: $h_e = k_e \, V^2/2g \quad ke = 0.5$

12" dia. entrance so
$h_e = 0.0126 \, Q^2$

Pipe Friction Loss: $h_f = 4.66 \, n^2 \, L \, Q^2 / d^{5.333}$
$n^f = .013$
for d = 8": $h_f = 0.0068 \, Q^2/ft.$
for d = 10": $h_f = 0.0021 \, Q^2/ft.$
for d = 12": $h_f = 0.000787 \, Q^2/ft.$

Bend Losses: $h_b = k_b \, V^2/2g$

for d = 8": $h_b = 0.0254 \, Q^2$, $k_b = 0.20$
for d = 10": $h_b = 0.0157 \, Q^2$, $k_b = 0.30$
for d = 12": $h_b = 0.0088 \, Q^2$

Contraction Losses: $h_c = k_c \, V^2/2g$

for 14" dia. to 12" dia. $k_c = 0.10$
$h_c = 0.0050 \, Q^2$

for 12" dia. to 8" dia. $k_c = 0.22$
$h_c = 0.0279 \, Q^2$

Expansion Losses: for 8" dia. to 10" dia.

$h_x = k_x \, V^2/2g \quad k_x = 0.04$

$h_x = 0.0052Q^2$

Gate Valve Losses: $h_g = k_g \, \frac{v^2}{2g}$, $h_g = .1$ for full open

for d = 8": $h_g = 0.0127 \, Q^2$
for d = 10": $h_g = 0.0052 \, Q^2$
for d = 12": $h_g = 0.0018 \, Q^2$

Butterfly Valve Losses: Estimated to be $h_b = 0.0159 \, Q^2$

but data not available.

Water Hammer

Water hammer is the dynamic pressure created in the pipeline as a result of sudden closing of the valve to the turbine. The equations to calculate water hammer were derived from the previously referenced "Handbook of Hydraulics". At Lemon Dam the water hammer potential would be in the 14 ft of 8 inch and 10 inch penstock. The outlet pipe between the intake structure and the gate chamber which is 8.5 ft diameter, is sufficiently bigger than the 8 inch diameter penstock, to essentially be a "reservoir". Therefore water hammer is not a potential.

The water hammer at Lemon Dam will be controlled by the valve closing time. The calculations below determine what the minimum closure time must be to avoid water hammer.

Velocity of pressure wave:

$$U_p = \frac{E}{P} \qquad \frac{1}{1 + (ED/EpW)}$$

$\frac{E}{P}$ = 4700, for water under normal conditions

E_p = modulus of elasticity of pipe walls = 30×10^6

D = pipe diameter = 8"

E = modulus of elasticity of water = 300,000

W = pipe wall thickness - .332"

Then: U_p = 4,200 ft./sec.

Travel time:

Time (t) for the pressure wave to travel from the valve to the reservoir and back.

$$t = \frac{2L}{Up}$$

L = length of pipe

for Plan A, L = 14', then: $t = \frac{2\ (14)}{4200} = .007$ sec.

for Plan B, L = 25', then: $t = \frac{2(25)}{4200} = .012$ sec.

Maximum pressure if closed in .007 sec. or 0.12 sec.:

$$p = \frac{62.4\ (4200)\ (37)}{32.2\ (144)} = 2{,}100 \text{ psi}$$

A reasonable closure time is three seconds or greater which would not allow the turbine to reach runaway speed. In Piping Plan A the pressure rise would be (.007/3) x (2100) = 4.9 psi and in Piping Plan B, (0.12/3) (2100) = 8.4 psi. Both pressure rises are inconsequential water hammer is not a problem, if the closure time is three seconds or greater.

Cavitation

Cavitation causes pitting of the metal, machine vibration, and loss of efficienty in turbines. The most critical cavitation factor in the installation of reaction turbines is the vertical distance from the runner to the tailwater. Reference Water Resources Engineering, by Linsley and Fransini, pages 337-339. The equation for the maximum permissible elevation above tailwater to place the turbine is:

$$z = \frac{\text{atm. press.}}{\text{gamma}} - \frac{\text{water vapor press.}}{\text{gamma}} - (\text{sigma}) \times (\text{head})$$

$\frac{\text{atm. press.}}{\text{gamma}}$ at 8,000 ft. = 25.2 ft.

$\frac{\text{vapor press}}{\text{gamma}}$ = .4 ft. (50° water temp.)

head = net head at the turbine, use max. possible head which is 160 ft.

sigma = is based upon the turbine rpm and is .0923 for the model 10LNTI4A at 1210 rpm.

z = 25.2 ft. - .4 ft. - (.0923) (160) = 10 ft.

The turbine must not be more than 10 feet above tailwater. In Piping Plans A and B the turbine is about 6 feet above tailwater.

Sigma is a function of turbine rpm so as the rpm increases, then sigma increases. If sigma increases the turbine elevation above tailwater must decrease. The result is that a turbine with 1800 rpm (the next faster rpm increment) has a larger sigma and the turbine would have to be set at the same elevation as the tailwater which is impossible for this project. The turbine must be 1200 rpm or slower.

Appendix D

POWER PLANT PRODUCTION

Introduction

This appendix describes how the kWh production from the power plant was estimated. The production for Piping Plans A and B are presented. The narrative describes how the kWh output was estimated from the reservoir water surface elevation, turbine performance curves, and friction head loss through the outlet.

The power plant operation was simulated for the years 1971 to 1982 on a daily basis. The computer output showing the head, flow, power plant efficiency, and kWh for each day of the study period are shown

Turbine Performance Curve

The turbine performance curve for the selected Worthington pump-as-a-turbine is shown in Figure D-1. Three curves are plotted on Figure D-1 which show head vs. flow, efficiency vs. flow, and kW vs. flow. The head vs. flow and efficiency vs. flow are the important curves. Equations describing the two curves were determined and listed below. The turbine efficiency (from the appropriate curve) is multiplied by the generator efficiency (92%) to estimate the overall plant efficiency.

Head vs. Flow: $\text{Flow} = 0.0875 + 0.1311 \times (\text{head}) - 0.0002917 \times (\text{head})^2$

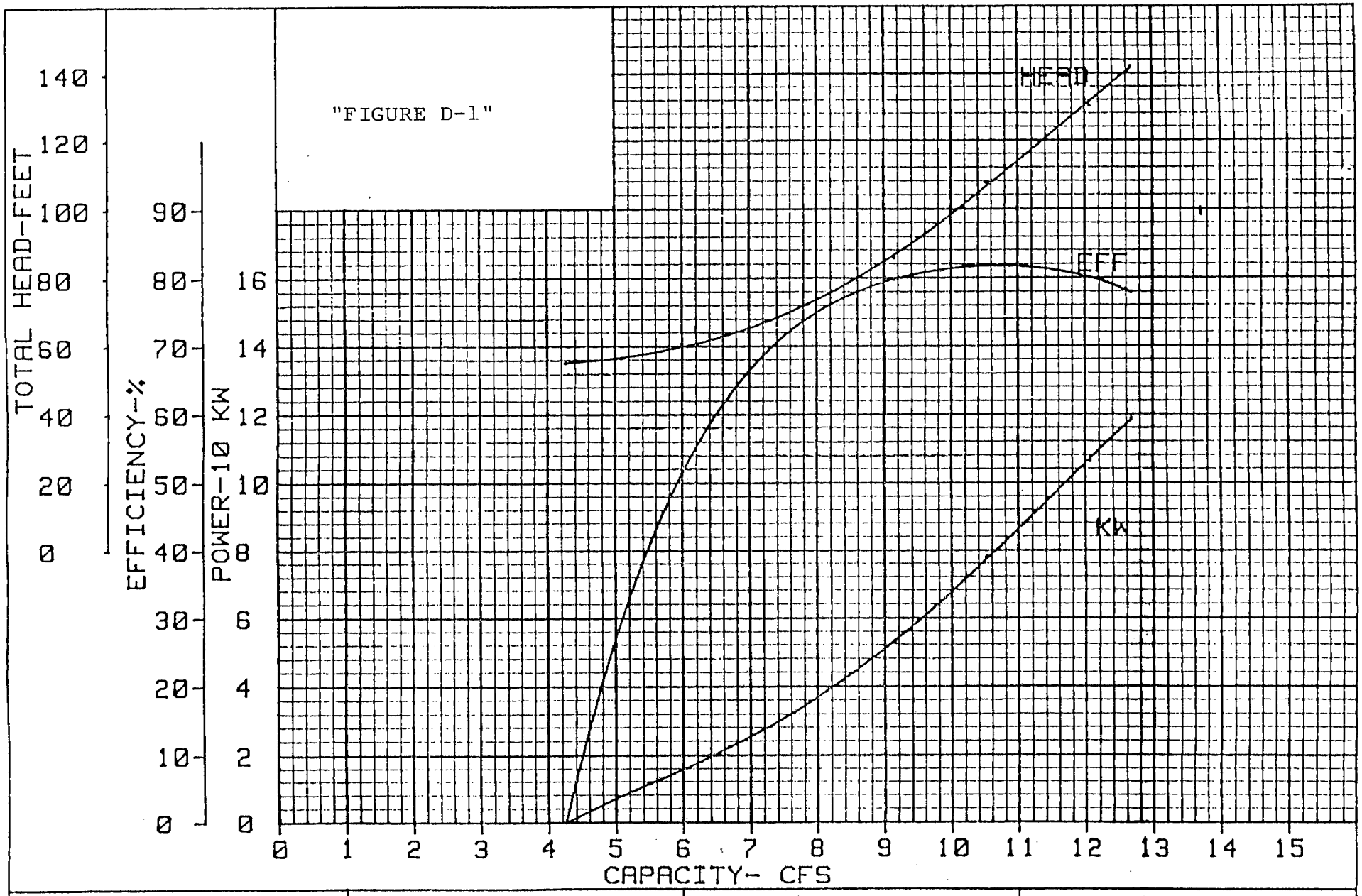
Efficiency vs. Flow: $\text{Eff} = -42.445 + 22.215 \times (\text{flow}) - 1.042\ (\text{flow})^2$

The head is determined by an iterative process described in the next section.

The availability of the turbine performance curves in order to produce the above equations is critical to the estimation of kWh production. The curves are not widely available on small units because there is a large investment to test the turbines in order to develop the curves. Worthington and Byron Jackson were the only companies found during the study that had produced the curves for pumps-as-turbines. The curves for standard turbines are more available but not for every machine.

The curves are also critical because the turbine will control winter releases from the dam which must be about 9 cfs. For the selected turbine the flow would not be less than 8.7 cfs.

WORTHINGTON HYDRAULIC TURBINE PERFORMANCE CURVE



TURBINE SIZE	RPM	TREH - FEET	CURVE NO.
10LNT14A	1210	12	ER-4571

The main problem with the selected unit is that the maximum need is 140 ft and the head is above that when the reservoir is full for Piping Plan A but is always below 140 ft. for Plan B. Plan A will probably be constructed so the head may have to be trottled when the reservoir head is in excess of 140 ft. It may be possible for the turbine to operate at the higher head but with a significant drop in efficiency.

Other Worthington model pumps were evaluated that could operate under the full head range but they cannot keep the release above 8 cfs at the low heads. The result was that the selected model fits the operational requirements the best.

Byron Jackson also had a unit that met the operational requirements but the unit was too large to be moved down the elevator shaft to the gate chamber. Performance curves were not available from other manufacturers.

Head at Turbine

The head available at the turbine to produce power is calculated as follows:

1) The daily reservoir water surface elevation is subtracted from the tailwater elevation which is 7950 ft. but 7955 ft. is used to allow for losses through the intake structure and miscellaneous losses. For example: if the reservoir is at elevation 8120 ft. then 8120 - 7955 = 165 ft. gross head.

2) The head is reduced by the friction loss through the penstock which is a function of flow as described in Appendix C. A trial and error procedure is started with an assumed flow. Example: try 12 cfs, Friction loss = $.2139\ (12)^2 = 31$ ft., net head is 165 ft. - 31 ft. = 134 ft. Test the trial flow by solving the Head vs. Flow equation for the turbine, $.0875 + .1311\ (134) - .0002917\ (134)^2 = 12.4$ cfs which is greater than 12 cfs. Redo trying 12.3 cfs, F.L. = $.2139\ (12.3)^2 = 32$, net head = 165 ft. - 32 ft. = 133 ft., flow = $.0875 + .1311\ (133) - .0002917\ (133)^2 = 12.3$ cfs, which checks. The flow through the turbine is 12.3 cfs for a gross head of 165 ft. This procedure was used to determine the flow for each ten feet of reservoir elevation. The table below summarizes the results.

Gross Head vs. Flow Table

Reservoir Elevation (Ft.)	Gross Head (Ft.)	Net Head (Ft.)	Flow (cfs)
8151	196	157	13.4
8135	180	144	12.8
8125	170	137	12.4
8115	160	129	12.0
8105	150	122	11.5
8095	140	114	11.0
8085	130	106	10.5
8075	120	99	10.0
8065	110	91	9.4
8055	110	83	8.8

This gross head vs. flow data was used to develop an equation for flow as a function of gross head. The equation is:

$$\text{Flow} = 1.365 + 0.088 \times (\text{gross head}) - 0.000136 \times (\text{gross head})^2$$

Computer Model

A computer model was developed which utilizes the daily reservoir water surface elevation from 1971 through 1982. The gross head was calculated as described above. From the gross head, the flow was calculated using the flow vs. gross head equation. The net head was calculated by subtracting the penstock friction loss, $0.2139\ (\text{flow})^2$, from the gross head. The turbine efficiency was calculated from the efficiency vs. flow equation with 2% being subtracted from the result as a contingency.

The kWh were calculated by: $\text{kWh} = 1.025 \times (\text{net head}) \times ((\text{flow}) \times 1.984) \times \text{efficiency}$.

The attached computer printouts show the above data. The far left column is the date, with the first four digits the year and the last two the month, e.g. 197101 is January of 1971. The following three sets of 8 colunns are the flow, net head, and efficiency respectively. There are 4 rows for each month with 8 days of the month in each row; the fourth row has 5, 6, or 7 days depending upon the month.

Following the 8 pages of flow, head, and efficiency there is 8 pages showing the kWh output. The output shown is for the throttled turbine; if the net head is above 140 ft. the head is throttled to reduce the head to 140 ft. This assumes the turbine cannot operate above 140 ft. but if it could the efficiency would be low and only 10,000 kw-hrs per year average is gained. The monthly totals and yearly total are shown. The last two columns show the maximum kw output for each month and the monthly plant factor.

The data for Piping Plan A is shown first followed by the data for Plan B. Plan A produces about 100,000 kw-hrs per year more than Plan B.

DATE 07/11/85

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197101	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	135	135	135	71	71	71	71	71	71	71	71
197101	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	135	135	135	135	135	135	135	135	71	71	71	71	71	71	71	71
197101	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	135	135	135	135	136	136	136	136	71	71	71	71	71	71	71	71
197101	12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	136	136	136	136	136	136	136	0	71	71	71	71	71	71	71	0
197102	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197102	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197102	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197102	12.3	12.3	12.3	12.3	0	0	0	0	136	136	136	136	0	0	0	0	71	71	71	71	0	0	0	0
197103	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197103	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197103	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
197103	12.3	12.3	12.3	12.3	12.4	12.4	12.4	0	136	136	136	136	136	136	136	0	71	71	71	71	71	71	71	0
197104	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	136	136	137	137	137	137	138	138	71	71	71	71	71	71	71	71
197104	12.4	12.5	12.5	12.5	12.5	12.5	12.6	12.6	138	139	139	139	140	140	140	140	71	70	70	70	70	70	70	70
197104	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	141	141	142	142	142	143	143	143	70	70	70	70	70	70	70	70
197104	12.7	12.7	12.7	12.7	12.7	12.7	0	0	143	144	144	144	144	144	0	0	70	70	70	70	70	70	0	0
197105	12.7	12.8	12.8	12.8	12.8	12.8	12.8	12.8	144	144	144	144	144	144	144	144	70	69	69	69	69	69	69	69
197105	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	144	144	144	144	144	144	144	144	69	69	69	69	69	69	69	69
197105	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	144	145	145	145	145	145	145	144	69	69	69	69	69	69	69	69
197105	12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	144	144	145	145	146	146	146	0	69	69	69	69	69	69	69	0
197106	12.8	12.8	12.8	12.8	12.9	12.9	12.9	12.9	146	146	146	146	146	146	146	147	69	69	69	69	69	69	69	69
197106	13	13	13	13	13	13	13	13	148	148	148	148	148	148	148	148	68	68	68	68	68	68	68	68
197106	13	13	13	13	13	13	13	13	149	149	149	149	149	149	149	148	68	68	68	68	68	68	68	68
197106	13	13	12.9	12.9	12.9	12.9	0	0	148	148	147	147	147	146	0	0	68	68	69	69	69	69	0	0
197107	12.9	12.8	12.8	12.8	12.8	12.8	12.8	12.8	146	146	146	146	145	145	145	145	69	69	69	69	69	69	69	69
197107	12.8	12.8	12.7	12.7	12.7	12.7	12.7	12.6	144	144	144	144	144	143	143	142	69	69	70	70	70	70	70	70
197107	12.6	12.6	12.6	12.6	12.5	12.5	12.5	12.5	142	141	140	140	140	140	139	139	70	70	70	70	70	70	70	70
197107	12.5	12.4	12.4	12.4	12.4	12.4	12.4	0	139	138	138	137	137	136	136	0	70	71	71	71	71	71	71	0
197108	12.3	12.3	12.3	12.2	12.2	12.2	12.1	12.1	136	136	135	134	134	133	133	133	71	71	71	72	72	72	72	72
197108	12.1	12.1	12.1	12	12	12	11.9	11.9	132	132	131	130	130	129	129	128	72	72	72	72	72	72	72	72
197108	11.9	11.9	11.8	11.8	11.8	11.8	11.8	11.8	128	128	127	127	127	127	126	126	72	72	73	73	73	73	73	73
197108	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	126	126	127	127	127	127	127	0	73	73	73	73	73	73	73	0
197109	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	126	126	126	73	73	73	73	73	73	73	73
197109	11.8	11.7	11.7	11.7	11.7	11.7	11.6	11.6	126	126	126	126	125	125	124	124	73	73	73	73	73	73	73	73
197109	11.6	11.6	11.6	11.6	11.5	11.5	11.5	11.5	123	123	122	122	122	122	121	121	73	73	73	73	73	73	73	73
197109	11.4	11.4	11.4	11.4	11.3	11.3	0	0	120	120	119	119	119	119	0	0	73	73	73	73	74	74	0	0
197110	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	118	118	118	118	118	118	118	118	74	74	74	74	74	74	74	74
197110	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	118	118	118	118	118	118	117	117	74	74	74	74	74	74	74	74
197110	11.3	11.3	11.2	11.3	11.3	11.3	11.3	11.3	117	117	117	118	118	118	119	119	74	74	74	74	74	74	74	74
197110	11.3	11.4	11.4	11.4	11.4	11.4	11.4	0	119	119	119	119	119	119	119	0	74	73	73	73	73	73	73	0
197111	11.4	11.4	11.4	11.4	11.4	11.5	11.5	11.5	120	120	120	120	120	121	121	121	73	73	73	73	73	73	73	73
197111	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	121	121	121	121	122	122	122	122	73	73	73	73	73	73	73	73
197111	11.5	11.5	11.5	11.6	11.6	11.6	11.6	11.6	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197111	11.6	11.6	11.5	11.5	11.5	11.5	0	0	122	122	122	122	122	122	0	0	73	73	73	73	73	73	0	0
197112	11.5	11.5	11.6	11.6	11.6	11.6	11.6	11.6	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197112	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197112	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197112	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
197201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	124	124	124	124	124	124	124	0	73	73	73	73	73	73	73	0
197202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197202	11.6	11.6	11.6	11.6	11.6	0	0	0	124	124	124	124	124	0	0	0	73	73	73	73	73	0	0	0
197203	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	125	125	73	73	73	73	73	73	73	73
197203	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	126	126	126	126	73	73	73	73	73	73	73	73
197203	11.7	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	127	127	127	73	73	73	73	73	73	73	73
197203	11.8	11.9	11.9	11.9	11.9	11.9	11.9	0	127	128	128	128	128	128	128	0	73	72	72	72	72	72	72	0
197204	11.9	11.9	11.9	11.9	11.9	11.9	12	12	129	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
197204	12	12	12	12.1	12.1	12.1	12.1	12.1	129	130	130	131	131	131	132	132	72	72	72	72	72	72	72	72
197204	12.1	12.1	12.1	12.1	12.1	12.1	12.2	12.2	132	132	133	133	133	133	133	133	72	72	72	72	72	72	72	72
197204	12.2	12.3	12.3	12.3	12.3	12.3	0	0	134	135	135	135	136	136	0	0	72	71	71	71	71	71	0	0
197205	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	136	136	137	137	138	138	138	138	71	71	71	71	71	71	71	71
197205	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	138	138	138	138	138	138	138	138	71	71	71	71	71	71	71	71
197205	12.4	12.4	12.5	12.5	12.5	12.5	12.5	12.5	138	138	139	139	139	139	139	139	71	71	70	70	70	70	70	70
197205	12.5	12.5	12.5	12.4	12.4	12.4	12.4	0	139	139	139	138	138	138	138	0	70	70	70	71	71	71	71	0
197206	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	138	138	138	138	138	138	138	138	71	71	71	71	71	71	71	71
197206	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	138	138	138	138	138	137	137	137	71	71	71	71	71	71	71	71
197206	12.4	12.4	12.4	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	135	135	135	71	71	71	71	71	71	71	71
197206	12.2	12.2	12.2	12.2	12.1	12.1	0	0	134	134	133	133	133	133	0	0	72	72	72	72	72	72	0	0
197207	12.1	12.1	12.1	12.1	12	12	12	12	132	132	131	131	130	130	129	129	72	72	72	72	72	72	72	72
197207	11.9	11.9	11.9	11.8	11.8	11.7	11.7	11.6	129	128	128	127	126	126	125	124	72	72	72	73	73	73	73	73
197207	11.6	11.6	11.5	11.5	11.5	11.4	11.4	11.3	123	123	122	122	121	120	119	119	73	73	73	73	73	73	73	74
197207	11.2	11.2	11.2	11.1	11.1	11	11	0	118	117	116	116	115	114	113	0	74	74	74	74	74	74	74	0
197208	11	10.9	10.9	10.8	10.8	10.7	10.7	10.6	113	113	112	111	110	110	109	108	74	74	74	74	74	74	74	74

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197208	10.6	10.5	10.5	10.4	10.3	10.3	10.2	10.2	107	106	105	105	104	103	103	102	74	74	74	74	74	74	74	74
197208	10.2	10.1	10.1	10.1	10.1	10	10	10	102	101	100	100	100	100	100	99	74	74	74	74	74	74	74	74
197208	10.5	9.9	9.9	9.9	9.9	9.9	9.8	0	106	98	98	97	97	97	96	0	74	73	73	73	73	73	73	0
197209	9.8	9.8	9.8	9.7	9.7	9.7	9.7	9.7	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197209	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	95	95	95	95	96	96	96	96	73	73	73	73	73	73	73	73
197209	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	96	96	95	95	95	95	95	95	73	73	73	73	73	73	73	73
197209	9.7	9.7	9.7	9.6	9.6	9.6	0	0	95	95	95	94	94	94	0	0	73	73	73	73	73	73	0	0
197210	9.6	9.6	9.6	9.5	9.6	9.6	9.7	9.9	93	93	93	93	93	94	95	97	73	73	73	73	73	73	73	73
197210	10	10	10.1	10.1	10.1	10.1	10.2	10.2	99	100	100	100	101	101	102	103	74	74	74	74	74	74	74	74
197210	10.3	10.4	10.5	10.7	10.8	10.9	11	11	104	105	106	110	111	113	113	114	74	74	74	74	74	74	74	74
197210	11.1	11.1	11.1	11.2	11.2	11.2	11.2	0	115	115	116	116	116	117	117	0	74	74	74	74	74	74	74	0
197211	11.3	11.3	11.3	11.3	11.3	11.4	11.4	11.4	118	118	118	119	119	119	119	119	74	74	74	74	74	73	73	73
197211	11.4	11.4	11.4	11.4	11.4	11.5	11.5	11.5	119	120	120	120	120	121	121	121	73	73	73	73	73	73	73	73
197211	11.5	11.5	11.5	11.5	11.5	11.5	11.6	11.6	121	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197211	11.6	11.6	11.6	11.6	11.6	11.6	0	0	122	122	122	122	123	123	0	0	73	73	73	73	73	73	0	0
197212	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	124	73	73	73	73	73	73	73	73
197212	11.6	11.6	11.6	11.6	11.6	11.7	11.7	11.7	124	124	124	124	124	125	125	125	73	73	73	73	73	73	73	73
197212	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	125	125	73	73	73	73	73	73	73	73
197212	11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	125	125	126	126	126	126	126	0	73	73	73	73	73	73	73	0
197301	11.7	11.7	11.7	11.7	11.7	11.7	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197301	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197301	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	127	127	73	73	73	73	73	73	73	73
197301	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	127	127	127	127	127	127	127	0	73	73	73	73	73	73	73	0
197302	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	127	127	73	73	73	73	73	73	73	73
197302	11.8	11.8	11.8	11.9	11.9	11.9	11.9	11.9	127	127	127	128	128	128	128	128	73	73	73	72	72	72	72	72
197302	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	128	128	128	128	128	128	128	128	72	72	72	72	72	72	72	72
197302	11.9	11.9	11.9	11.9	0	0	0	0	128	128	128	128	0	0	0	0	72	72	72	72	0	0	0	0
197303	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	128	128	128	128	128	128	128	128	72	72	72	72	72	72	72	72
197303	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	129	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
197303	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	129	129	129	129	129	129	128	128	72	72	72	72	72	72	72	72
197303	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	128	128	128	128	128	128	128	0	72	72	72	72	72	72	72	0
197304	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	126	126	126	73	73	73	73	73	73	73	73
197304	11.8	11.7	11.7	11.7	11.7	11.7	11.7	11.6	126	126	126	126	125	125	125	124	73	73	73	73	73	73	73	73
197304	11.6	11.6	11.6	11.6	11.6	11.6	11.5	11.5	124	124	124	123	123	122	122	122	73	73	73	73	73	73	73	73
197304	11.5	11.4	11.4	11.4	11.4	11.4	0	0	121	120	119	119	119	119	0	0	73	73	73	73	73	73	0	0
197305	11.4	11.3	11.3	11.3	11.2	11.2	11.2	11.2	119	119	118	118	117	117	116	116	73	74	74	74	74	74	74	74
197305	11.1	11.1	11.2	11.2	11.2	11.2	11.2	11.2	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197305	11.2	11.2	11.3	11.3	11.3	11.2	11.2	11.1	116	117	118	118	118	117	116	116	74	74	74	74	74	74	74	74
197305	11.2	11.3	11.3	11.3	11.4	11.4	11.5	0	116	118	119	119	119	120	121	0	74	74	74	74	73	73	73	0
197306	11.6	11.6	11.7	11.8	11.8	11.8	11.9	11.9	122	124	126	126	127	127	128	129	73	73	73	73	73	73	72	72
197306	12	12.1	12.1	12.3	12.3	12.3	12.3	12.3	130	132	133	136	135	136	136	136	72	72	72	71	71	71	71	71
197306	12.4	12.4	12.5	12.6	12.6	12.7	12.7	12.8	137	138	139	140	141	143	144	145	71	71	70	70	70	70	70	69
197306	12.9	12.9	13	13	13	13	0	0	146	147	148	148	149	149	0	0	69	69	68	68	68	68	0	0
197307	13	13	13	13	13	13	13	13	149	150	150	150	150	150	150	150	68	68	68	68	68	68	68	68
197307	13	13	13	13	13	13	13	13	150	150	150	150	150	150	150	150	68	68	68	68	68	68	68	68
197307	13	13	13	13	13	13	13	13	150	150	150	150	150	150	149	149	68	68	68	68	68	68	68	68
197307	13	13	13	13	12.9	12.9	12.9	0	149	148	148	148	147	147	146	0	68	68	68	68	69	69	69	0
197308	12.9	12.8	12.8	12.8	12.8	12.8	12.7	12.7	146	146	145	145	144	144	144	144	69	69	69	69	69	69	70	70
197308	12.7	12.6	12.6	12.6	12.6	12.6	12.5	12.5	143	142	142	141	140	140	140	140	70	70	70	70	70	70	70	70
197308	12.5	12.4	12.4	12.4	12.4	12.4	12.3	12.3	139	138	138	137	136	136	136	135	70	71	71	71	71	71	71	71
197308	12.3	12.3	12.2	12.2	12.2	12.2	12.2	0	135	135	134	134	134	133	133	0	71	71	72	72	72	72	72	0
197309	12.2	12.2	12.1	12.1	12.1	12.1	12.1	12.1	133	133	133	133	133	132	132	132	72	72	72	72	72	72	72	72
197309	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
197309	12.1	12.1	12.1	12.1	12.1	12.1	12	12	131	131	131	131	131	131	130	130	72	72	72	72	72	72	72	72
197309	12	12	12	12	12	12	12.8	0	130	130	129	129	129	129	0	0	72	72	72	72	72	72	0	0
197310	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	129	129	129	129	128	128	128	128	72	72	72	72	72	72	72	72
197310	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	127	127	73	73	73	73	73	73	73	73
197310	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	126	126	126	126	73	73	73	73	73	73	73	73
197310	11.8	11.7	11.7	11.7	11.7	11.7	11.7	0	126	126	126	126	126	125	125	0	73	73	73	73	73	73	73	0
197311	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197311	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197311	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197311	11.6	11.6	11.6	11.6	11.6	11.6	0	0	124	124	124	124	124	124	0	0	73	73	73	73	73	73	0	0
197312	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	123	123	123	73	73	73	73	73	73	73	73
197312	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197312	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197312	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197401	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197401	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197401	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197401	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
197402	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197402	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197402	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197402	11.6	11.6	11.6	11.6	0	0	0	0	123	123	123	123	0	0	0	0	73	73	73	73	0	0	0	0
197403	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197403	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197403	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197403	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
197404	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	124	73	73	73	73	73	73	73	73
197404	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197404	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197404	11.7	11.7	11.7	11.7	11.7	11.7	0	0	125	125	125	125	126	126	0	0	73	73	73	73	73	73	0	0
197405	11.7	11.7	11.7	11.7	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	127	73	73	73	73	73	73	73	73
197405	11.8	11.8	11.9	11.9	11.9	12	12	12	127	127	128	129	129	129	129	129	73	73	72	72	72	72	72	72
197405	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	129	72	72	72	72	72	72	72	72
197405	12	12	12	12	12	12	12	0	129	129	129	130	130	130	130	0	72	72	72	72	72	72	72	0
197406	12	12	11.9	11.9	11.9	11.9	11.8	11.8	129	129	129	129	128	128	127	127	72	72	72	72	72	72	73	73
197406	11.8	11.8	11.7	11.7	11.7	11.6	11.6	11.6	126	126	126	126	125	124	124	123	73	73	73	73	73	73	73	73
197406	11.6	11.6	11.5	11.5	11.5	11.4	11.4	11.4	123	122	122	121	121	120	119	119	73	73	73	73	73	73	73	73
197406	11.3	11.3	11.2	11.2	11.1	11.1	0	0	119	118	117	116	116	115	0	0	74	74	74	74	74	74	0	0
197407	11	11	10.9	10.9	10.8	10.8	10.8	10.7	114	113	113	112	111	111	110	110	74	74	74	74	74	74	74	74
197407	10.7	10.7	10.6	10.6	10.6	10.5	10.5	10.5	109	109	108	107	107	106	106	105	74	74	74	74	74	74	74	74
197407	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.6	106	106	107	107	107	107	107	107	74	74	74	74	74	74	74	74
197407	10.6	10.6	10.5	10.5	10.5	10.5	10.4	0	107	107	106	106	105	105	105	0	74	74	74	74	74	74	74	0
197408	10.4	10.3	10.3	10.3	10.3	10.3	10.2	10.2	105	104	103	103	103	103	103	103	74	74	74	74	74	74	74	74
197408	10.2	10.2	10.2	10.1	10.1	10.1	10	10	103	102	102	101	101	100	100	100	74	74	74	74	74	74	74	74
197408	10	9.9	9.9	9.9	9.9	9.8	9.7	9.7	99	98	98	97	97	96	96	95	74	73	73	73	73	73	73	73
197408	9.7	9.6	9.6	9.5	9.5	9.5	9.4	0	95	94	93	93	92	92	91	0	73	73	73	73	73	73	72	0
197409	9.3	9.3	9.3	9.2	9.2	9.2	9.1	9	90	89	89	89	88	88	87	87	72	72	72	72	72	72	71	71
197409	9	9	9	8.9	8.9	8.9	8.8	8.8	87	86	86	85	84	84	83	83	71	71	71	71	71	71	70	70
197409	8.7	8.7	8.7	8.7	8.7	8.6	8.6	8.6	83	83	83	82	82	81	81	81	70	70	70	70	70	70	70	70
197409	8.7	8.7	8.7	8.7	8.7	8.7	0	0	82	82	82	82	82	82	0	0	70	70	70	70	70	70	0	0
197410	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	82	82	82	82	82	82	82	82	70	70	70	70	70	70	70	70
197410	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	82	82	82	83	83	83	83	83	70	70	70	70	70	70	70	70
197410	8.7	8.7	8.7	8.7	8.7	8.8	8.8	8.8	83	83	83	83	83	83	83	83	70	70	70	70	70	70	70	70
197410	8.8	8.8	8.9	8.9	8.9	8.9	8.9	0	83	83	84	84	84	85	85	0	70	70	71	71	71	71	71	0
197411	8.9	9	9	9	9	9	9	9	85	86	86	86	86	87	87	87	71	71	71	71	71	71	71	71
197411	9	9	9.1	9.1	9.1	9.1	9.1	9.1	87	87	87	87	87	87	87	87	71	71	71	71	71	71	71	71
197411	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	88	88	88	88	88	88	89	89	72	72	72	72	72	72	72	72
197411	9.2	9.2	9.2	9.2	9.2	9.2	0	0	89	89	89	89	89	89	0	0	72	72	72	72	72	72	0	0
197412	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	89	88	88	88	72	72	72	72	72	72	72	72
197412	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	88	88	88	88	88	88	88	89	72	72	72	72	72	72	72	72
197412	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197412	9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	89	89	89	89	89	89	89	0	72	72	72	72	72	72	72	0
197501	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197501	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197501	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197501	9.2	9.2	9.2	9.2	9.3	9.3	9.3	0	89	89	89	89	89	89	89	0	72	72	72	72	72	72	72	0
197502	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197502	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197502	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197502	9.3	9.3	9.3	9.3	0	0	0	0	89	89	89	89	0	0	0	0	72	72	72	72	0	0	0	0
197503	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197503	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	90	90	90	90	72	72	72	72	72	72	72	72
197503	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	90	90	90	90	90	90	90	90	72	72	72	72	72	72	72	72
197503	9.3	9.3	9.3	9.3	9.3	9.3	9.3	0	90	90	90	90	90	90	90	0	72	72	72	72	72	72	72	0
197504	9.3	9.3	9.3	9.4	9.4	9.4	9.4	9.4	90	90	90	91	91	91	91	91	72	72	72	72	72	72	72	72
197504	9.4	9.4	9.5	9.5	9.5	9.5	9.5	9.5	91	91	92	92	92	92	92	92	72	72	73	73	73	73	73	73
197504	9.5	9.5	9.5	9.5	9.5	9.5	9.6	9.6	92	93	93	93	93	93	93	93	73	73	73	73	73	73	73	73
197504	9.6	9.7	9.7	9.8	9.9	9.9	0	0	94	95	96	96	97	97	0	0	73	73	73	73	73	73	0	0
197505	9.9	10	10	10	10.1	10.1	10.2	10.2	98	99	99	100	100	101	102	102	73	74	74	74	74	74	74	74
197505	10.3	10.2	10.3	10.4	10.5	10.6	10.8	10.9	103	103	103	105	106	108	110	113	74	74	74	74	74	74	74	74
197505	11.1	11.2	11.4	11.5	11.6	11.6	11.7	11.7	115	117	119	121	122	124	125	125	74	74	73	73	73	73	73	73
197505	11.7	11.8	11.9	12	12	12	12	0	126	126	128	129	130	130	130	0	73	73	72	72	72	72	72	0
197506	12.1	[illegible]	12.1	12.3	12.3	12.4	12.4	12.4	131	131	133	135	136	136	137	137	72	72	72	71	71	71	71	71
197506	12.4	12.4	12.4	12.3	12.4	12.4	12.5	12.6	137	137	136	136	136	138	140	142	71	71	71	71	71	71	70	70
197506	12.7	12.7	12.7	12.7	12.7	12.7	12.8	12.8	143	144	143	143	144	144	144	145	70	70	70	70	70	70	69	69
197506	12.9	13	13	13.1	13.1	13.1	0	0	146	148	150	150	151	152	0	0	69	68	68	68	68	68	0	0
197507	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	153	154	154	154	154	154	155	155	67	67	67	67	67	67	67	67
197507	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	154	154	154	154	153	153	154	154	67	67	67	67	67	67	67	67
197507	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	154	155	155	155	154	154	154	154	67	67	67	67	67	67	67	67
197507	13.2	13.2	13.2	13.1	13.1	13.1	13.1	0	153	153	153	152	152	152	151	0	67	67	67	68	68	68	68	0
197508	13.1	13.1	13.1	13	13	13	13	13	151	150	150	150	149	149	148	148	68	68	68	68	68	68	68	68

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197508	12.8	12.9	12.9	12.8	12.8	12.8	12.8	12.8	144	146	146	146	146	145	145	144	69	69	69	69	69	69	69	69
197508	12.8	12.7	12.7	12.7	12.7	12.7	12.6	12.6	144	144	144	143	143	143	142	142	69	70	70	70	70	70	70	70
197508	12.6	12.6	12.6	12.6	12.5	12.5	12.4	0	141	141	140	140	140	139	138	0	70	70	70	70	70	70	71	0
197509	12.4	12.4	12.4	12.4	12.4	12.4	12.3	12.3	138	138	137	137	136	136	136	135	71	71	71	71	71	71	71	71
197509	12.3	12.2	12.2	12.2	12.2	12.2	12.2	12.2	135	134	134	134	133	133	133	133	71	72	72	72	72	72	72	72
197509	12.2	12.2	12.2	12.2	12.2	12.1	12.1	12.1	133	133	133	133	133	133	133	133	72	72	72	72	72	72	72	72
197509	12.1	12.1	12.1	12.1	12.1	12.1	0	0	133	133	133	132	132	132	0	0	72	72	72	72	72	72	0	0
197510	12.1	12.1	12.1	12.1	12.1	12	12	12	132	132	131	131	131	130	130	130	72	72	72	72	72	72	72	72
197510	12	12	12	12	12	11.9	11.9	11.9	130	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
197510	11.9	11.9	11.9	11.9	11.9	11.9	11.8	11.8	129	128	128	128	128	128	127	127	72	72	72	72	72	72	73	73
197510	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	127	127	127	126	126	126	126	0	73	73	73	73	73	73	73	0
197511	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197511	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197511	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	127	127	73	73	73	73	73	73	73	73
197511	11.8	11.8	11.8	11.8	11.8	11.8	0	0	127	127	127	127	127	127	0	0	73	73	73	73	73	73	0	0
197512	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	127	127	73	73	73	73	73	73	73	73
197512	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	126	126	126	126	126	73	73	73	73	73	73	73	73
197512	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197512	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	126	126	126	126	126	126	126	0	73	73	73	73	73	73	73	0
197601	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197601	11.8	11.8	11.8	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197601	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197601	11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	126	126	126	126	126	126	126	0	73	73	73	73	73	73	73	0
197602	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197602	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197602	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197602	11.7	11.7	11.7	11.7	11.7	0	0	0	126	126	126	126	126	0	0	0	73	73	73	73	73	0	0	0
197603	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197603	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197603	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197603	11.7	11.7	11.8	11.8	11.8	11.8	11.8	0	126	126	126	126	126	126	126	0	73	73	73	73	73	73	73	0
197604	11.8	11.8	11.8	11.8	11.8	11.8	11.9	11.9	126	126	127	127	127	127	128	128	73	73	73	73	73	73	72	72
197604	11.9	11.9	11.9	12	12	12	12.1	12.1	128	129	129	129	130	130	131	131	72	72	72	72	72	72	72	72
197604	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	132	132	132	132	133	133	133	72	72	72	72	72	72	72	72
197604	12.2	12.2	12.2	12.2	12.2	12.3	0	0	133	133	133	134	134	135	0	0	72	72	72	72	72	71	0	0
197605	12.3	12.3	12.4	12.4	12.4	12.5	12.5	12.6	136	136	137	138	138	139	140	140	71	71	71	71	71	70	70	70
197605	12.6	12.6	12.6	12.7	12.7	12.7	12.7	12.8	141	142	142	143	143	143	144	145	70	70	70	70	70	70	70	69
197605	12.9	13	13	13	13	13	13.1	12.7	146	148	149	150	150	150	150	143	69	68	68	68	68	68	68	70
197605	12.7	12.8	12.8	12.8	12.8	13	13	0	144	144	145	146	146	149	150	0	70	69	69	69	69	68	68	0
197606	13	13	13	13.1	13.1	13.1	13.2	13.2	150	148	150	150	152	152	153	153	68	68	68	68	68	68	67	67
197606	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	153	154	154	155	155	155	155	154	67	67	67	67	67	67	67	67
197606	13.2	13.2	13.2	13.1	13.1	13.1	13.1	13.1	154	153	153	152	152	151	151	151	67	67	67	68	68	68	68	68
197606	13.1	13.1	13	13	13	13	0	0	150	150	150	150	149	148	0	0	68	68	68	68	68	68	0	0
197607	13	12.9	12.9	12.9	12.8	12.8	12.8	12.8	148	147	147	146	146	146	145	144	68	69	69	69	69	69	69	69
197607	12.8	12.7	12.7	12.7	12.7	12.6	12.6	12.6	144	144	144	143	143	142	141	141	69	70	70	70	70	70	70	70
197607	12.6	12.6	12.5	12.5	12.5	12.5	12.4	12.4	140	140	140	139	139	139	138	137	70	70	70	70	70	70	71	71
197607	12.4	12.4	12.3	12.3	12.3	12.3	12.2	0	137	136	136	136	135	135	134	0	71	71	71	71	71	71	72	0
197608	12.2	12.2	12.2	12.1	12.1	12.1	12.1	12.1	133	133	133	133	133	132	131	131	72	72	72	72	72	72	72	72
197608	12	12	12	11.9	11.9	11.9	11.8	11.8	130	129	129	129	129	128	127	127	72	72	72	72	72	72	73	73
197608	11.8	11.8	11.7	11.7	11.7	11.7	11.6	11.6	126	126	126	126	125	125	124	124	73	73	73	73	73	73	73	73
197608	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	124	124	123	123	123	122	122	0	73	73	73	73	73	73	73	0
197609	11.6	11.5	11.5	11.7	11.6	11.6	11.6	11.6	122	122	122	125	124	124	123	123	73	73	73	73	73	73	73	73
197609	11.6	11.6	11.6	11.6	11.6	11.6	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197609	11.5	11.5	11.5	11.5	11.5	11.4	11.4	11.4	122	122	121	121	121	120	120	119	73	73	73	73	73	73	73	73
197609	11.4	11.4	11.4	11.4	11.5	11.5	0	0	119	119	120	120	121	121	0	0	73	73	73	73	73	73	0	0
197610	11.5	11.5	11.5	11.5	11.6	11.6	11.6	11.6	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197610	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	122	122	122	123	122	122	122	122	73	73	73	73	73	73	73	73
197610	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197610	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	122	122	122	122	122	122	122	0	73	73	73	73	73	73	73	0
197611	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	122	122	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197611	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197611	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197611	11.6	11.6	11.6	11.6	11.6	11.6	0	0	123	123	123	122	122	122	0	0	73	73	73	73	73	73	0	0
197612	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197612	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197612	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197612	11.5	11.5	11.5	11.5	11.5	11.5	11.5	0	121	121	121	121	121	121	121	0	73	73	73	73	73	73	73	0

DATE : 07/11/85

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197701	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	121	121	121	121	121	121	121	121	73	73	73	73	73	73	73	73
197701	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	121	121	121	121	121	121	121	121	73	73	73	73	73	73	73	73
197701	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	121	121	121	121	121	121	121	121	73	73	73	73	73	73	73	73
197701	11.5	11.5	11.5	11.5	11.5	11.5	11.4	0	121	121	121	121	121	121	120	0	73	73	73	73	73	73	73	0
197702	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197702	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197702	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197702	11.4	11.4	11.4	11.4	0	0	0	0	120	120	120	120	0	0	0	0	73	73	73	73	73	0	0	0
197703	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197703	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197703	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197703	11.4	11.4	11.4	11.4	11.4	11.4	11.4	0	120	120	120	120	120	120	120	0	73	73	73	73	73	73	73	0
197704	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	73	73	73	73	73	73	73	73
197704	11.4	11.4	11.4	11.5	11.5	11.5	11.5	11.5	120	120	120	121	121	121	121	121	73	73	73	73	73	73	73	73
197704	11.5	11.5	11.5	11.5	11.5	11.6	11.6	11.6	121	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197704	11.6	11.6	11.6	11.6	11.6	11.6	0	0	122	122	122	123	123	123	0	0	73	73	73	73	73	73	0	0
197705	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7	124	124	125	125	125	125	125	125	73	73	73	73	73	73	73	73
197705	11.7	11.7	11.7	11.6	11.6	11.6	11.6	11.6	125	125	125	124	123	123	123	122	73	73	73	73	73	73	73	73
197705	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.4	122	122	122	122	121	121	121	120	73	73	73	73	73	73	73	73
197705	11.4	11.4	11.4	11.4	11.4	11.4	11.4	0	120	120	120	119	119	119	119	0	73	73	73	73	73	73	73	0
197706	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.1	119	119	119	118	117	117	116	116	74	74	74	74	74	74	74	74
197706	11.1	11.1	11	11	11	10.9	10.9	10.8	116	115	114	114	113	113	112	111	74	74	74	74	74	74	74	74
197706	10.8	10.7	10.7	10.6	10.6	10.5	10.5	10.4	110	110	109	108	107	106	105	105	74	74	74	74	74	74	74	74
197706	10.4	10.3	10.3	10.3	10.3	10.2	0	0	105	104	103	103	103	103	0	0	74	74	74	74	74	74	0	0
197707	10.2	10.2	10.2	10.1	10.1	10.1	10.1	10	103	103	102	101	101	100	100	100	74	74	74	74	74	74	74	74
197707	10.6	10	9.9	9.9	9.8	9.8	9.7	9.7	107	99	98	97	96	96	96	95	74	74	73	73	73	73	73	73
197707	9.6	9.6	9.5	9.5	9.5	9.4	9.4	9.3	94	93	93	93	92	91	91	90	73	73	73	73	73	72	72	72
197707	9.3	9.3	9.4	9.5	9.5	9.5	9.6	0	90	90	91	92	93	93	93	0	72	72	72	73	73	73	73	0
197708	9.5	9.5	9.5	9.5	9.4	9.4	9.3	9.3	93	93	93	92	91	91	90	89	73	73	73	73	72	72	72	72
197708	9.2	9.2	9.1	9	8.9	8.9	8.8	8.9	89	88	87	86	85	84	83	84	72	72	71	71	71	71	70	71
197708	9	9.1	9.2	9.2	9.3	9.3	9.3	9.3	86	87	88	89	89	89	89	89	71	71	72	72	72	72	72	72
197708	9.3	9.3	9.3	9.3	9.3	9.2	9.2	0	89	89	89	89	89	89	89	0	72	72	72	72	72	72	72	0
197709	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	89	89	89	89	88	88	88	88	72	72	72	72	72	72	72	72
197709	9.1	9.1	9.1	9	9	9	9	9	87	87	87	87	87	87	87	87	71	71	71	71	71	71	71	71
197709	9	9	9	9	9	9	8.9	8.9	87	87	87	86	86	86	85	85	71	71	71	71	71	71	71	71
197709	8.9	8.9	8.9	8.8	8.8	8.8	0	0	85	84	84	83	83	83	0	0	71	71	71	70	70	70	0	0
197710	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	83	83	82	82	82	82	82	83	70	70	70	70	70	70	70	70
197710	8.7	8.7	8.8	8.8	8.8	8.8	8.8	8.8	83	83	83	83	83	83	83	83	70	70	70	70	70	70	70	70
197710	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197710	8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	84	85	85	85	85	85	85	0	71	71	71	71	71	71	71	0
197711	8.9	8.9	8.9	8.9	8.9	8.9	9	9	85	85	85	85	85	85	86	86	71	71	71	71	71	71	71	71
197711	9	9	9	9	9	9	9	9	86	86	86	86	86	86	86	86	71	71	71	71	71	71	71	71
197711	9	9	9	9	9	9	9	9	86	86	86	86	86	86	86	86	71	71	71	71	71	71	71	71
197711	9	9	9	9	9	9	0	0	86	86	86	86	86	86	0	0	71	71	71	71	71	71	0	0
197712	9	9	9	8.9	8.9	8.9	8.9	8.9	87	87	86	85	84	84	84	84	71	71	71	71	71	71	71	71
197712	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197712	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197712	8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	84	84	84	84	84	84	84	0	71	71	71	71	71	71	71	0
197801	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197801	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197801	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197801	8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	84	84	84	84	84	84	84	0	71	71	71	71	71	71	71	0
197802	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197802	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197802	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197802	8.9	8.9	8.9	8.9	0	0	0	0	84	84	84	84	0	0	0	0	71	71	71	71	73	0	0	0
197803	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197803	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197803	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	84	84	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197803	8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	84	84	84	84	85	85	85	0	71	71	71	71	71	71	71	0
197804	8.9	9	9	9	9	9	9	9.1	85	86	86	86	87	87	87	87	71	71	71	71	71	71	71	71
197804	9.1	9.2	9.2	9.2	9.2	9.2	9.3	9.3	87	88	88	88	89	89	89	90	71	72	72	72	72	72	72	72
197804	9.3	9.3	9.4	9.4	9.5	9.5	9.5	9.6	90	90	91	91	92	92	93	93	72	72	72	72	73	73	73	73
197804	9.6	9.7	9.7	9.8	9.9	10	0	0	94	95	96	96	97	99	0	0	73	73	73	73	73	74	0	0
197805	10	10	10.1	10.1	10.1	10.2	10.2	10.2	99	100	100	101	101	102	102	103	74	74	74	74	74	74	74	74
197805	10.2	10.3	10.3	10.3	10.4	10.5	10.5	10.7	103	103	103	104	105	105	106	109	74	74	74	74	74	74	74	74
197805	10.8	10.9	11	11.1	11.2	11.3	11.3	11.4	111	113	114	116	116	118	119	120	74	74	74	74	74	74	74	73
197805	11.5	11.6	11.6	11.7	11.8	11.8	11.9	0	122	122	124	125	126	127	128	0	73	73	73	73	73	73	72	0
197806	12	12.1	12.1	12.2	12.2	12.3	12.3	12.4	129	131	132	133	134	135	136	136	72	72	72	72	72	71	71	71
197806	12.4	12.4	12.5	12.6	12.6	12.6	12.7	12.7	137	138	140	140	141	142	143	144	71	71	70	70	70	70	70	70
197806	12.7	12.7	12.8	12.8	12.8	12.8	12.8	12.8	144	144	144	144	144	144	144	144	70	70	69	69	69	69	69	69
197806	12.8	12.8	12.8	12.8	12.8	12.8	0	0	144	144	144	144	144	144	0	0	69	69	69	69	69	69	0	0
197807	12.8	12.8	12.7	12.7	12.7	12.7	12.7	12.7	144	144	144	144	144	144	143	143	69	69	70	70	70	70	70	70
197807	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.5	142	142	142	141	141	140	140	140	70	70	70	70	70	70	70	70
197807	12.5	12.5	12.4	12.4	12.4	12.4	12.4	12.3	139	139	138	138	137	137	136	136	70	70	71	71	71	71	71	71
197807	12.3	12.3	12.2	12.2	12.1	12.1	12.1	0	135	135	134	133	133	132	132	0	71	71	72	72	72	72	72	0
197808	12.1	12	12	11.9	11.9	11.9	11.8	11.8	131	130	129	129	128	128	127	126	72	72	72	72	72	72	73	73

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197808	11.7	11.7	11.7	11.6	11.6	11.6	11.6	11.5	126	125	125	124	123	123	122	122	73	73	73	73	73	73	73	73
197808	11.5	11.5	11.4	11.4	11.3	11.3	11.3	11.2	121	121	120	119	119	118	118	117	73	73	73	73	74	74	74	74
197808	11.2	11.2	11.2	11.1	11.1	11.1	11	0	117	116	116	116	115	115	114	0	74	74	74	74	74	74	74	0
197809	11	11	10.9	10.9	10.9	10.8	10.8	10.8	113	113	113	113	112	111	111	110	74	74	74	74	74	74	74	74
197809	10.7	10.7	10.7	10.6	10.6	10.5	10.5	10.5	110	110	109	108	107	106	105	105	74	74	74	74	74	74	74	74
197809	10.4	10.3	10.3	10.3	10.3	10.2	10.2	10.2	105	104	104	103	103	103	103	102	74	74	74	74	74	74	74	74
197809	10.2	10.2	10.1	10.1	10.1	10.1	0	0	102	102	101	101	101	101	0	0	74	74	74	74	74	74	0	0
197810	10.1	10.1	10.1	10	10	10	10	10	100	100	100	100	100	100	99	99	74	74	74	74	74	74	74	74
197810	9.9	9.9	9.9	9.9	9.8	9.8	9.7	9.7	98	98	97	97	96	96	96	96	73	73	73	73	73	73	73	73
197810	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	95	94	94	94	93	93	93	93	73	73	73	73	73	73	73	73
197810	9.6	9.6	9.6	9.6	9.6	9.6	9.6	0	93	93	93	93	93	93	93	0	73	73	73	73	73	73	73	0
197811	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	93	93	93	93	94	94	94	94	73	73	73	73	73	73	73	73
197811	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	94	94	94	94	95	95	95	95	73	73	73	73	73	73	73	73
197811	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	95	95	95	95	95	95	95	95	73	73	73	73	73	73	73	73
197811	9.7	9.7	9.7	9.7	9.7	9.6	0	0	96	96	95	95	95	94	0	0	73	73	73	73	73	73	0	0
197812	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7	94	94	94	95	95	95	95	95	73	73	73	73	73	73	73	73
197812	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	95	95	95	95	95	95	95	95	73	73	73	73	73	73	73	73
197812	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	95	95	95	95	96	96	96	96	73	73	73	73	73	73	73	73
197812	9.7	9.7	9.7	9.7	9.7	9.7	9.7	0	96	96	96	96	96	96	96	0	73	73	73	73	73	73	73	0
197901	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197901	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197901	9.7	9.8	9.8	9.8	9.8	9.8	9.8	9.8	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197901	9.8	9.8	9.8	9.8	9.8	9.8	9.8	0	96	96	96	96	96	96	96	0	73	73	73	73	73	73	73	0
197902	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197902	9.8	9.8	9.8	9.8	9.8	9.9	9.8	9.8	96	96	96	96	96	96	96	96	73	73	73	73	73	73	73	73
197902	9.8	9.8	9.8	9.8	9.8	9.9	9.9	9.9	96	96	96	96	96	97	97	97	73	73	73	73	73	73	73	73
197902	9.9	9.9	9.9	9.9	0	0	0	0	97	97	97	97	0	0	0	0	73	73	73	73	73	0	0	0
197903	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	97	97	97	97	97	97	97	97	73	73	73	73	73	73	73	73
197903	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	97	97	97	97	97	97	97	97	73	73	73	73	73	73	73	73
197903	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	97	97	98	98	98	98	98	98	73	73	73	73	73	73	73	73
197903	9.9	9.9	9.9	9.9	9.9	10	10	0	98	98	98	98	98	99	99	0	73	73	73	73	73	74	74	0
197904	10	10	10	10	10	10	10	10	99	99	99	99	99	99	99	99	74	74	74	74	74	74	74	74
197904	10	10	10	10	10	10	10	10	99	100	100	100	99	99	99	99	74	74	74	74	74	74	74	74
197904	10	10	10	10	10	10.1	10.1	10.1	99	100	100	100	100	100	100	101	74	74	74	74	74	74	74	74
197904	10.2	10.2	10.2	10.3	10.3	10.3	0	0	102	102	103	103	104	104	0	0	74	74	74	74	74	74	0	0
197905	10.4	10.5	10.5	10.6	10.6	10.7	10.8	9.2	105	105	106	107	108	110	110	89	74	74	74	74	74	74	74	72
197905	10.9	10.9	10.9	11	11	11	11	11	113	113	113	113	113	113	113	114	74	74	74	74	74	74	74	74
197905	11.1	11.1	11.2	11.3	11.4	11.5	11.6	11.7	115	116	116	118	119	121	123	125	74	74	74	74	73	73	73	73
197905	11.8	11.9	12	12.1	12.2	12.4	12.4	0	126	128	129	132	134	136	138	0	73	72	72	72	72	71	71	0
197906	12.5	12.5	12.6	12.6	12.6	12.7	12.8	12.8	139	140	140	141	142	144	144	145	70	70	70	70	70	70	69	69
197906	12.8	12.7	12.7	12.7	12.7	12.8	12.9	13	144	144	144	143	144	146	147	149	69	70	70	70	70	69	69	68
197906	13	13.1	13.1	13.1	13.1	13.2	13.2	13.2	150	150	150	151	152	153	153	154	68	68	68	68	68	67	67	67
197906	13.2	13.2	13.2	13.2	13.2	13.2	0	0	154	154	154	154	154	154	0	0	67	67	67	67	67	67	0	0
197907	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	154	154	154	154	154	154	154	155	67	67	67	67	67	67	67	67
197907	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	155	155	155	155	155	155	155	155	67	67	67	67	67	67	67	67
197907	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	155	155	155	155	155	155	154	154	67	67	67	67	67	67	67	67
197907	13.2	13.2	13.2	13.2	13.1	13.1	13.1	0	154	153	153	153	152	152	151	0	67	67	67	67	68	68	68	0
197908	13.1	13.1	13.1	13	13	13	13	13	151	150	150	150	149	149	148	148	68	68	68	68	68	68	68	68
197908	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	147	146	146	146	146	146	145	145	69	69	69	69	69	69	69	69
197908	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	145	145	145	145	145	144	144	144	69	69	69	69	69	69	69	69
197908	12.8	12.7	12.7	12.7	12.7	12.7	12.7	0	144	144	144	144	143	143	143	0	69	70	70	70	70	70	70	0
197909	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	142	142	141	141	141	140	140	140	70	70	70	70	70	70	70	70
197909	12.5	12.5	12.5	12.5	12.4	12.4	12.4	12.4	140	140	139	139	138	138	137	137	70	70	70	70	71	71	71	71
197909	12.4	12.4	12.3	12.3	12.3	12.3	12.3	12.2	136	136	136	136	136	135	135	134	71	71	71	71	71	71	71	72
197909	12.2	12.2	12.2	12.1	12.1	12.1	0	0	134	133	133	133	133	132	0	0	72	72	72	72	72	72	69	0
197910	12.1	12.1	12.1	12.1	12	12	12	11.9	132	132	131	131	130	129	129	129	72	72	72	72	72	72	72	72
197910	11.9	11.9	11.9	11.8	11.8	11.8	11.7	11.7	129	128	128	127	126	126	126	126	72	72	72	73	73	73	73	73
197910	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197910	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	124	124	124	124	124	124	124	0	73	73	73	73	73	73	73	0
197911	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197911	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197911	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
197911	11.6	11.6	11.6	11.6	11.6	11.6	0	0	124	124	124	124	124	124	0	0	73	73	73	73	73	73	0	0
197912	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197912	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197912	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197912	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0

DATE . 07/11/85

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
190001	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
190001	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
190001	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
190001	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
190002	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
190002	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
190002	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190002	11.6	11.6	11.6	11.6	11.6	0	0	0	124	124	124	124	124	0	0	0	73	73	73	73	73	0	0	0
190003	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190003	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190003	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190003	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	124	124	124	124	124	124	124	0	73	73	73	73	73	73	73	0
190004	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190004	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
190004	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	123	123	123	122	73	73	73	73	73	73	73	73
190004	11.5	11.5	11.5	11.4	11.4	11.3	0	0	122	122	121	120	119	119	0	0	73	73	73	73	73	74	0	0
190005	11.3	11.3	11.2	11.2	11.1	11.1	11.1	11.1	119	119	117	116	116	116	116	116	74	74	74	74	74	74	74	74
190005	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	116	116	116	116	116	115	115	115	74	74	74	74	74	74	74	74
190005	11	11	11	11	11	11	11.1	11.2	114	114	114	114	114	114	116	117	74	74	74	74	74	74	74	74
190005	11.3	11.4	11.4	11.5	11.6	11.6	11.7	0	119	119	120	121	122	124	126	0	74	73	73	73	73	73	73	0
190006	11.8	11.9	12	12.1	12.3	12.4	12.5	12.5	127	129	130	133	135	137	139	140	73	72	72	72	71	71	70	70
190006	12.6	12.7	12.8	12.8	12.8	12.9	12.9	13	141	143	144	145	146	146	147	148	70	70	69	69	69	69	69	68
190006	13	13	13.1	13.1	13.1	13.1	13.2	13.2	149	150	151	152	151	152	153	153	68	68	68	68	68	68	67	67
190006	13.2	13.2	13.2	13.2	13.2	13.2	0	0	153	154	155	155	155	155	0	0	67	67	67	67	67	67	0	0
190007	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	155	155	155	155	155	155	155	155	67	67	67	67	67	67	67	67
190007	13.3	13.3	13.3	13.3	13.3	13.2	13.2	13.2	155	155	155	155	155	155	155	155	67	67	67	67	67	67	67	67
190007	13.2	13.2	13.2	13.2	13.2	13.1	13.1	13.1	154	154	154	153	153	152	152	151	67	67	67	67	67	68	68	68
190007	13.1	13.1	13.1	13	13	13	13	0	151	150	150	150	149	149	148	0	68	68	68	68	68	68	68	0
190008	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	147	147	146	146	146	145	144	144	69	69	69	69	69	69	69	69
190008	12.7	12.7	12.6	12.6	12.6	12.6	12.5	12.5	144	143	142	141	141	140	140	140	70	70	70	70	70	70	70	70
190008	12.5	12.4	12.4	12.4	12.3	12.3	12.3	12.3	139	137	137	136	136	136	136	136	70	71	71	71	71	71	71	71
190008	12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	136	136	136	136	135	135	135	0	71	71	71	71	71	71	71	0
190009	12.2	12.2	12.2	12.2	12.2	12.1	12.1	12.1	134	134	134	133	133	133	133	132	72	72	72	72	72	72	72	72
190009	12.1	12.1	12.2	12.3	12.3	12.3	12.3	12.3	132	133	134	135	136	136	136	136	72	72	72	71	71	71	71	71
190009	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
190009	12.3	12.3	12.3	12.3	12.3	12.2	0	0	135	135	135	135	135	134	0	0	71	71	71	71	71	72	0	0
190010	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.1	134	134	134	133	133	133	133	133	72	72	72	72	72	72	72	72
190010	12.1	12.1	12.1	12.1	12.1	12.1	12	12	133	132	132	131	131	131	130	130	72	72	72	72	72	72	72	72
190010	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190010	12	12	12	12	12	12.1	12.1	0	130	130	130	130	130	131	131	0	72	72	72	72	72	72	72	0
190011	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190011	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190011	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190011	12.1	12.1	12.1	12.1	12.1	12.1	0	0	131	131	131	131	131	131	0	0	72	72	72	72	72	72	0	0
190012	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190012	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190012	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190012	12.1	12.1	12.1	12.1	12.1	12.1	12.1	0	131	131	131	131	131	131	131	0	72	72	72	72	72	72	72	0
190101	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190101	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190101	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190101	12	12	12	12	12	12	12	0	130	130	130	130	130	130	130	0	72	72	72	72	72	72	72	0
190102	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190102	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190102	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190102	12	12	12	12	0	0	0	0	130	130	130	130	0	0	0	0	72	72	72	72	73	0	0	0
190103	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190103	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190103	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
190103	12	12	12	12	12	12	12	0	130	130	130	130	130	130	130	0	72	72	72	72	72	72	72	0
190104	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	131	72	72	72	72	72	72	72	72
190104	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	131	131	131	131	131	132	72	72	72	72	72	72	72	72
190104	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	132	132	132	132	133	133	133	133	72	72	72	72	72	72	72	72
190104	12.2	12.2	12.2	12.3	12.3	12.4	0	0	133	133	134	135	136	136	0	0	72	72	72	71	71	71	0	0
190105	12.4	12.4	12.5	12.6	12.6	12.6	12.7	12.7	137	138	140	140	141	142	143	143	71	71	70	70	70	70	70	70
190105	12.8	12.7	12.7	12.7	12.8	12.8	12.8	12.8	144	144	144	144	144	144	144	144	69	70	70	70	69	69	69	69
190105	12.8	12.8	12.8	12.8	12.8	12.8	12.7	12.7	144	144	144	144	144	144	144	144	69	69	69	69	69	69	70	70
190105	12.7	12.7	12.8	12.8	12.8	12.8	12.8	0	144	144	144	144	145	145	146	0	70	70	69	69	69	69	69	0
190106	12.8	12.9	12.9	12.9	13	13	13	13.1	146	146	147	147	148	149	150	150	69	69	69	69	68	68	68	68
190106	13.1	13.1	13.2	13.2	13.2	13.2	13.2	13.2	151	152	153	154	154	154	154	154	68	68	67	67	67	67	67	67
190106	13.2	13.2	13.2	13.1	13.1	13.1	13.1	13.1	153	153	153	152	152	152	151	151	67	67	67	68	68	68	68	68
190106	13.1	13.1	13	13	13	13	0	0	150	150	150	150	149	149	0	0	68	68	68	68	68	68	0	0
190107	13	13	13	13	12.9	12.9	12.9	12.9	149	148	148	148	147	147	147	146	68	68	68	68	69	69	69	69
190107	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	146	146	146	146	146	146	147	147	69	69	69	69	69	69	69	69
190107	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	147	147	147	147	147	147	146	146	69	69	69	69	69	69	69	69
190107	12.9	12.8	12.8	12.8	12.8	12.8	12.8	0	146	146	146	146	145	145	145	0	69	69	69	69	69	69	69	0
190108	12.8	12.8	12.8	12.8	12.7	12.7	12.7	12.7	145	144	144	144	144	144	143	143	69	69	69	69	70	70	70	70

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85 FRICTION LOSS=.2139*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
198108	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	142	141	141	141	141	141	141	141	70	70	70	70	70	70	70	70
198108	12.6	12.6	12.6	12.6	12.5	12.5	12.5	12.5	140	140	140	140	140	140	139	139	70	70	70	70	70	70	70	70
198108	12.4	12.4	12.4	12.4	12.4	12.4	12.3	0	138	138	137	137	136	136	136	0	71	71	71	71	71	71	71	0
198109	12.3	12.3	12.3	12.2	12.2	12.2	12.2	12.2	136	135	135	134	134	133	133	133	71	71	71	72	72	72	72	72
198109	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	133	132	133	133	132	132	132	132	72	72	72	72	72	72	72	72
198109	12.1	12.1	12.1	12.1	12.1	12.1	12	12	132	132	132	131	131	131	130	130	72	72	72	72	72	72	72	72
198109	12	12	12	12	12	12	0	0	130	130	129	129	129	129	0	0	72	72	72	72	72	72	0	0
198110	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	129	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
198110	11.9	12	12	12	12	12	12	12	129	129	129	129	130	130	130	130	72	72	72	72	72	72	72	72
198110	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	131	131	132	132	132	133	133	133	72	72	72	72	72	72	72	72
198110	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	133	133	133	133	133	134	134	0	72	72	72	72	72	72	72	0
198111	12.2	12.2	12.2	12.2	12.3	12.3	12.3	12.3	134	134	134	134	135	135	135	135	72	72	72	72	71	71	71	71
198111	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	135	135	135	136	136	136	136	136	71	71	71	71	71	71	71	71
198111	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	135	135	71	71	71	71	71	71	71	71
198111	12.3	12.3	12.3	12.3	12.3	12.3	0	0	135	135	135	135	135	135	0	0	71	71	71	71	71	71	0	0
198112	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198112	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198112	12.3	12.3	12.3	12.3	12.3	12.4	12.4	12.4	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198112	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	136	136	136	136	136	136	136	0	71	71	71	71	71	71	71	0
198201	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198201	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198201	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	136	136	136	136	136	136	136	136	71	71	71	71	71	71	71	71
198201	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	137	137	137	137	137	137	137	0	71	71	71	71	71	71	71	0
198202	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	137	137	137	137	137	137	137	137	71	71	71	71	71	71	71	71
198202	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	137	137	137	137	137	137	137	137	71	71	71	71	71	71	71	71
198202	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	137	137	137	137	137	137	137	137	71	71	71	71	71	71	71	71
198202	12.4	12.4	12.4	12.4	0	0	0	0	137	137	137	137	0	0	0	0	71	71	71	71	73	0	0	0
198203	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	137	137	137	137	137	137	137	137	71	71	71	71	71	71	71	71
198203	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	137	137	137	138	138	138	138	138	71	71	71	71	71	71	71	71
198203	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	138	138	138	138	138	138	138	138	71	71	71	71	71	71	71	71
198203	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	138	138	138	138	138	138	138	0	71	71	71	71	71	71	71	0
198204	12.4	12.4	12.4	12.4	12.4	12.4	12.5	12.5	138	138	138	138	138	138	139	139	71	71	71	71	71	71	70	70
198204	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	139	139	139	139	139	139	140	140	70	70	70	70	70	70	70	70
198204	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	140	140	140	141	141	141	142	142	70	70	70	70	70	70	70	70
198204	12.6	12.7	12.7	12.7	12.7	12.7	0	0	142	143	143	143	143	143	0	0	70	70	70	70	70	70	0	0
198205	12.7	12.8	12.7	12.7	12.7	12.7	12.7	12.7	144	144	144	144	144	144	144	143	70	69	70	70	70	70	70	70
198205	12.7	12.7	12.6	12.6	12.6	12.6	12.6	12.6	143	143	142	141	141	141	141	141	70	70	70	70	70	70	70	70
198205	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	141	141	142	142	142	143	144	144	70	70	70	70	70	70	70	70
198205	12.8	12.8	12.8	12.9	12.9	13	13	0	144	145	146	146	147	148	149	0	69	69	69	69	69	68	68	0
198206	13	13	13	13	13	13	13	13	149	149	149	149	149	149	149	149	68	68	68	68	68	68	68	68
198206	13	13	13	13.1	13.1	13.1	13.2	13.2	149	150	150	150	151	152	153	153	68	68	68	68	68	68	67	67
198206	13.2	13.2	13.2	13.2	13.2	13.3	13.3	13.3	155	155	155	155	155	155	155	155	67	67	67	67	67	67	67	67
198206	13.3	13.3	13.3	13.3	13.3	13.3	0	0	155	155	155	155	155	155	0	0	67	67	67	67	67	67	0	0
198207	13.3	13.3	13.2	13.2	13.2	13.2	13.2	13.2	155	155	155	155	155	155	155	155	67	67	67	67	67	67	67	67
198207	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.1	155	154	154	154	154	153	153	152	67	67	67	67	67	67	67	68
198207	13.1	13.1	13.1	13.1	13.1	13	13	13	152	151	151	150	150	150	150	149	68	68	68	68	68	68	68	68
198207	13	13	12.9	12.9	12.9	12.9	12.9	0	149	148	147	147	147	147	147	0	68	68	69	69	69	69	69	0
198208	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	146	146	146	146	146	145	145	145	69	69	69	69	69	69	69	69
198208	12.8	12.8	12.8	12.7	12.7	12.7	12.7	12.7	145	144	144	144	144	144	144	144	69	69	69	70	70	70	70	70
198208	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	144	144	143	143	143	143	143	144	70	70	70	70	70	70	70	70
198208	12.7	12.8	12.8	12.8	12.9	12.9	12.9	0	144	145	146	146	146	146	146	0	70	69	69	69	69	69	69	0
198209	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	146	146	146	146	146	146	146	146	69	69	69	69	69	69	69	69
198209	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	146	146	146	146	146	146	146	146	69	69	69	69	69	69	69	69
198209	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	146	146	146	146	146	146	146	146	69	69	69	69	69	69	69	69
198209	12.8	12.8	12.8	12.8	12.8	12.8	0	0	146	146	146	145	145	144	0	0	69	69	69	69	69	69	69	0
198210	12.8	12.8	12.8	12.8	12.8	12.8	12.7	12.7	144	144	144	144	144	144	144	144	69	69	69	69	69	69	70	70
198210	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	144	144	143	143	143	143	143	143	70	70	70	70	70	70	70	70
198210	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	142	142	142	142	142	142	142	142	70	70	70	70	70	70	70	70
198210	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	142	142	142	142	141	141	141	0	70	70	70	70	70	70	70	0
198211	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	141	141	141	141	141	141	141	141	70	70	70	70	70	70	70	70
198211	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	141	141	141	141	141	141	141	141	70	70	70	70	70	70	70	70
198211	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	140	140	140	140	140	140	140	140	70	70	70	70	70	70	70	70
198211	12.6	12.6	12.6	12.6	12.6	12.6	0	0	140	140	140	140	140	140	0	0	70	70	70	70	70	70	0	0
198212	12.6	12.6	12.6	12.6	12.6	12.6	12.5	12.5	140	140	140	140	140	140	140	140	70	70	70	70	70	70	70	70
198212	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	140	140	140	140	140	140	140	140	70	70	70	70	70	70	70	70
198212	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	140	140	140	140	140	140	140	140	70	70	70	70	70	70	70	70
198212	12.5	12.5	12.5	12.5	12.5	12.5	12.5	0	139	139	139	139	139	139	139	0	70	70	70	70	70	70	70	0

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1971 01	2415	2415	2415	2415	2415	2398	2398	2398				
1971 01	2398	2398	2398	2398	2398	2398	2398	2398				
1971 01	2398	2398	2398	2398	2415	2415	2415	2415				
1971 01	2415	2415	2415	2415	2415	2415	2415	0	74610		101	99
1971 02	2415	2415	2415	2415	2415	2415	2415	2415				
1971 02	2415	2415	2415	2415	2415	2415	2415	2415				
1971 02	2415	2415	2415	2415	2415	2415	2415	2415				
1971 02	2415	2415	2415	2415	0	0	0	0	67620		101	100
1971 03	2415	2415	2415	2415	2415	2415	2415	2415				
1971 03	2415	2415	2415	2415	2415	2415	2415	2415				
1971 03	2415	2415	2415	2415	2415	2415	2415	2415				
1971 03	2415	2415	2415	2415	2435	2435	2435	0	74925		101	100
1971 04	2435	2435	2453	2453	2453	2453	2471	2471				
1971 04	2471	2473	2473	2473	2491	2491	2511	2511				
1971 04	2511	2511	2511	2511	2511	2511	2511	2511				
1971 04	2511	2511	2511	2511	2511	2511	0	0	74672		105	99
1971 05	2511	2511	2511	2511	2511	2511	2511	2511				
1971 05	2511	2511	2511	2511	2511	2511	2511	2511				
1971 05	2511	2511	2511	2511	2511	2511	2511	2511				
1971 05	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1971 06	2511	2511	2511	2511	2511	2511	2511	2511				
1971 06	2511	2511	2511	2511	2511	2511	2511	2511				
1971 06	2511	2511	2511	2511	2511	2511	2511	2511				
1971 06	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
1971 07	2511	2511	2511	2511	2511	2511	2511	2511				
1971 07	2511	2511	2511	2511	2511	2511	2511	2511				
1971 07	2511	2511	2511	2511	2491	2491	2473	2473				
1971 08	2473	2473	2473	2453	2453	2453	2435	2435	0	77339	105	99
1971 08	2415	2415	2398	2398	2398	2376	2356	2356				
1971 08	2356	2356	2337	2284	2284	2267	2248	2230				
1971 08	2230	2230	2225	2225	2225	2225	2207	2207				
1971 08	2207	2207	2225	2225	2225	2225	2225	0	70729		101	94
1971 09	2207	2207	2225	2225	2225	2225	2207	2207				
1971 09	2207	2189	2189	2189	2171	2171	2135	2135				
1971 09	2135	2118	2101	2101	2083	2083	2066	2066				
1971 09	2066	2066	2049	2049	2049	2049	0	0	64003		93	96
1971 10	2007	2007	2007	2007	2007	2007	2007	2007				
1971 10	2007	2007	2007	1972	2007	2007	1972	1972				
1971 10	1972	1972	1972	2007	2007	2007	2024	2024				
1971 10	2024	2014	2014	2014	2014	2014	2014	0	62135		84	99
1971 11	2031	2031	2031	2031	2031	2066	2066	2066				
1971 11	2066	2066	2066	2066	2083	2083	2083	2083				
1971 11	2083	2083	2083	2101	2101	2101	2101	2101				
1971 11	2101	2101	2083	2083	2083	2083	0	0	62237		88	98
1971 12	2101	2101	2101	2101	2101	2101	2101	2101				
1971 12	2101	2101	2101	2101	2101	2101	2101	2101				
1971 12	2101	2101	2101	2118	2118	2118	2118	2118				
1971 12	2118	2118	2118	2118	2118	2118	2118	0	65350	846791	88	100
1972 01	2135	2135	2135	2135	2135	2135	2135	2135				
1972 01	2135	2135	2135	2135	2135	2135	2135	2135				
1972 01	2135	2135	2135	2135	2135	2135	2135	0	66185		89	100
1972 02	2135	2135	2135	2135	2135	2135	2135	2135				
1972 02	2135	2135	2135	2135	2135	2135	2135	2135				
1972 02	2135	2135	2135	2135	2135	2135	2135	2135				
1972 02	2135	2135	2135	2135	2135	0	0	0	61915		89	100
1972 03	2171	2171	2171	2171	2171	2171	2171	2171				
1972 03	2171	2171	2171	2171	2188	2188	2188	2188				
1972 03	2207	2207	2207	2207	2207	2225	2225	2225				
1972 03	2225	2230	2230	2230	2230	2230	2230	0	68100		93	98
1972 04	2248	2248	2248	2248	2248	2248	2267	2267				
1972 04	2267	2284	2284	2321	2321	2321	2339	2339				
1972 04	2339	2339	2339	2356	2356	2356	2376	2376				
1972 04	2394	2394	2398	2398	2398	2115	2115	0	69770		101	96
1972 05	2435	2435	2435	2453	2453	2471	2471	2471	2471			
1972 05	2471	2471	2471	2471	2471	2471	2471	2471				
1972 05	2471	2471	2473	2473	2473	2473	2473	2473				
1972 05	2473	2473	2473	2471	2471	2471	2471	0	76511		103	100
1972 06	2471	2471	2471	2471	2471	2471	2471	2471				
1972 06	2471	2471	2471	2471	2471	2471	2453	2453				
1972 06	2435	2435	2435	2415	2415	2398	2398	2398				
1972 07	2394	2394	2376	2376	2356	2356	0	0	73063		103	99
1972 07	2339	2339	2321	2321	2284	2284	2267	2267				
1972 07	2249	2230	2230	2225	2207	2188	2171	2135				
1972 08	2083	2083	2118	2083	2083	2066	2031	2014	3024			
1972 08	2007	1972	1955	1938	1921	1887	1871	0	66144		97	92
1972 09	1871	1854	1837	1804	1788	1771	1755	1723				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1972 08	1707	1675	1659	1643	1612	1597	1581	1566				
1972 08	1566	1535	1520	1520	1520	1505	1505	1490				
1972 08	1475	1440	1440	1426	1426	1426	1397	0	49834		78	86
1972 09	1397	1397	1397	1382	1382	1382	1382	1382				
1972 09	1368	1368	1368	1368	1382	1382	1382	1382				
1972 09	1382	1382	1368	1368	1368	1368	1368	1368				
1972 09	1368	1368	1368	1340	1340	1340	0	0	41197		58	99
1972 10	1325	1325	1325	1312	1325	1340	1368	1426				
1972 10	1490	1505	1520	1520	1535	1535	1566	1581				
1972 10	1612	1643	1675	1771	1804	1854	1871	1887				
1972 10	1921	1921	1938	1955	1955	1972	1972	0	50749		82	83
1972 11	2007	2007	2007	2024	2024	2014	2014	2014				
1972 11	2014	2021	2031	2031	2031	2066	2066	2066				
1972 11	2066	2083	2080	2083	2083	2083	2101	2101				
1972 11	2101	2101	2101	2101	2101	2118	2118	0	61770		88	97
1972 12	2118	2118	2118	2118	2118	2118	2118	2135				
1972 12	2135	2135	2135	2135	2135	2171	2171	2171				
1972 12	2171	2171	2171	2171	2171	2171	2171	2171				
1972 12	2171	2171	2188	2189	2188	2188	2188	0	66799	752037	91	99
1973 01	2188	2188	2188	2188	2188	2188	2207	2207				
1973 01	2207	2207	2207	2207	2207	2207	2207	2207				
1973 01	2207	2207	2207	2207	2207	2207	2225	2225				
1973 01	2225	2225	2225	2225	2225	2225	2225	0	68465		93	99
1973 02	2225	2225	2225	2225	2225	2225	2225	2225				
1973 02	2225	2225	2225	2230	2230	2230	2230	2230				
1973 02	2230	2230	2230	2230	2230	2230	2230	2230				
1973 02	2230	2230	2230	2230	0	0	0	0	62385		93	100
1973 03	2230	2230	2230	2230	2230	2230	2230	2230				
1973 03	2240	2240	2248	2248	2248	2248	2248	2248				
1973 03	2248	2248	2248	2248	2248	2248	2230	2230				
1973 03	2230	2230	2230	2230	2230	2230	2230	0	69382		94	99
1973 04	2225	2225	2225	2225	2225	2225	2207	2207	2207			
1973 04	2207	2188	2188	2188	2171	2171	2171	2135				
1973 04	2135	2135	2135	2118	2118	2101	2083	2083				
1973 04	2066	2083	2014	2014	2014	2014	0	0	64226		93	96
1973 05	2014	2024	2007	2007	1972	1972	1955	1955				
1973 05	1938	1938	1955	1955	1955	1955	1955	1955				
1973 05	1955	1972	2007	2007	2007	1972	1955	1938				
1973 06	1955	2007	2024	2034	2014	2031	2066	0	61446		86	96
1973 06	2101	2135	2180	2207	2225	2225	2230	2248				
1973 06	2284	2309	2356	2415	2390	2415	2415	2415				
1973 06	2450	2471	2473	2511	2511	2511	2511	2511				
1973 06	2511	2511	2511	2511	2511	2511	0	0	71614		105	95
1973 07	2511	2511	2511	2511	2511	2511	2511	2511				
1973 07	2511	2511	2511	2511	2511	2511	2511	2511				
1973 07	2511	2511	2511	2511	2511	2511	2511	2511				
1973 07	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1973 08	2511	2511	2511	2511	2511	2511	2511	2511				
1973 08	2511	2511	2511	2511	2511	2511	2491	2491				
1973 08	2470	2471	2471	2453	2435	2435	2415	2398				
1973 08	2398	2398	2394	2394	2394	2376	2376	0	76417		105	98
1973 09	2376	2376	2356	2356	2356	2339	2339	2339				
1973 09	2321	2321	2321	2321	2321	2321	2321	2321				
1973 09	2321	2321	2321	2321	2321	2321	2284	2284				
1973 09	2284	2284	2267	2267	2267	2267	0	0	69535		99	98
1973 10	2240	2240	2248	2248	2230	2230	2230	2230				
1973 10	2225	2225	2225	2225	2225	2225	2225	2225				
1973 10	2225	2225	2225	2225	2207	2207	2207	2207				
1973 10	2207	2188	2188	2188	2188	2171	2171	0	68741		94	98
1973 11	2153	2135	2135	2135	2135	2135	2135	2135				
1973 11	2135	2135	2135	2135	2135	2135	2135	2135				
1973 11	2135	2135	2135	2135	2135	2135	2135	2135				
1973 11	2135	2135	2135	2135	2135	2135	2135	0	64050		89	100
1973 12	2135	2135	2135	2135	2135	2118	2118	2118				
1973 12	2118	2118	2118	2118	2118	2118	2118	2118				
1973 12	2118	2118	2118	2118	2118	2118	2118	2118				
1973 12	2118	2118	2118	2118	2118	2118	2119	0	65743	819845	89	99
1974 01	2118	2118	2118	2118	2118	2118	2118	2118				
1974 01	2118	2118	2118	2118	2118	2119	2118	2118				
1974 01	2118	2118	2118	2118	2118	2118	2118	2118				
1974 01	2118	2118	2118	2118	2118	2118	2118	0	65658		88	100
1974 02	2118	2118	2118	2118	2118	2118	2118	2118				
1974 02	2118	2118	2118	2118	2118	2118	2118	2118				
1974 02	2118	2118	2118	2118	2118	2118	2118	2118				
1974 02	2118	2118	2118	2118	0	0	0	0	59304		88	100
1974 03	2118	2118	2118	2118	2118	2118	2118	2118				
1974 03	2118	2118	2118	2118	2118	2118	2118	2118				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
197403	2118	2118	2118	2118	2118	2118	2118	2118				
197403	2118	2118	2118	2118	2118	2118	2118	0	65658		88	100
197404	2118	2118	2118	2118	2118	2118	2118	2135				
197404	2135	2135	2135	2135	2135	2135	2135	2135				
197404	2135	2135	2135	2135	2135	2135	2135	2135				
197404	2171	2171	2171	2171	2188	2188	0	0	64181		91	98
197405	2188	2188	2188	2188	2207	2207	2207	2225				
197405	2225	2225	2230	2248	2248	2267	2267	2267				
197405	2284	2284	2284	2284	2284	2284	2284	2267				
197405	2267	2267	2267	2284	2284	2284	2284	0	69767		95	99
197406	2267	2267	2248	2248	2230	2230	2225	2225				
197406	2207	2207	2188	2188	2171	2135	2135	2118				
197406	2118	2101	2083	2066	2066	2031	2014	2014				
197406	2024	2007	1972	1955	1938	1921	0	0	63599		94	94
197407	1887	1871	1854	1837	1804	1804	1788	1771				
197407	1755	1755	1723	1707	1707	1675	1675	1659				
197407	1675	1675	1707	1707	1707	1707	1707	1707				
197407	1707	1707	1675	1675	1659	1659	1643	0	53589		79	91
197408	1643	1611	1597	1597	1597	1597	1581	1581				
197408	1581	1566	1566	1535	1535	1520	1505	1505				
197408	1490	1490	1490	1476	1426	1397	1382	1368				
197409	1368	1340	1325	1312	1297	1297	1252	0	45678		68	90
197409	1226	1212	1212	1199	1185	1185	1143	1131				
197409	1131	1118	1118	1092	1079	1079	1040	1040				
197409	1028	1028	1028	1016	1016	992	992	992				
197409	1016	1016	1016	1016	1016	1016	0	0	32378		51	88
197410	1016	1016	1016	1016	1016	1016	1016	1016				
197410	1016	1016	1016	1028	1028	1028	1028	1028				
197410	1028	1028	1028	1028	1028	1040	1040	1040				
197410	1040	1040	1079	1079	1079	1092	1092	0	32077		46	94
197411	1092	1118	1118	1118	1118	1131	1131	1131				
197411	1131	1131	1143	1143	1143	1143	1143	1143				
197411	1185	1185	1185	1185	1185	1185	1199	1199				
197411	1199	1199	1199	1199	1199	1199	0	0	34779		50	97
197412	1199	1199	1199	1199	1199	1185	1185	1185				
197412	1185	1185	1185	1185	1185	1185	1185	1199				
197412	1199	1199	1199	1199	1199	1199	1199	1199				
197412	1199	1199	1199	1199	1199	1199	1199	0	37029	623697	50	100
197501	1199	1199	1199	1199	1199	1199	1199	1199				
197501	1199	1199	1199	1199	1199	1199	1199	1199				
197501	1199	1199	1199	1199	1199	1199	1199	1199				
197501	1199	1199	1199	1199	1212	1212	1212	0	37208		51	98
197502	1212	1212	1212	1212	1212	1212	1212	1212				
197502	1212	1212	1212	1212	1212	1212	1212	1212				
197502	1212	1212	1212	1212	1212	1212	1212	1212				
197502	1212	1212	1212	1212	0	0	0	0	33936		51	99
197503	1212	1212	1212	1212	1212	1212	1212	1212				
197503	1212	1212	1212	1212	1226	1226	1226	1226				
197503	1226	1226	1226	1226	1226	1226	1226	1226				
197503	1226	1226	1226	1226	1226	1226	1226	0	37838		51	100
197504	1226	1226	1226	1252	1252	1252	1252	1252				
197504	1252	1252	1297	1297	1297	1297	1297	1297				
197504	1297	1312	1312	1312	1312	1312	1325	1325				
197504	1340	1368	1382	1397	1426	1426	0	0	39070		59	92
197505	1440	1490	1490	1505	1520	1535	1566	1566				
197505	1597	1581	1597	1643	1675	1723	1788	1854				
197505	1921	1972	2014	2066	2101	2135	2171	2171				
197505	2188	2207	2230	2267	2284	2284	2284	0	57849		95	82
197506	2321	2321	2356	2398	2415	2435	2453	2453				
197506	2453	2453	2435	2415	2435	2471	2491	2511				
197506	2511	2511	2511	2511	2511	2511	2511	2511				
197506	2511	2511	2511	2511	2511	2511	0	0	73970		105	98
197507	2511	2511	2511	2511	2511	2511	2511	2511				
197507	2511	2511	2511	2511	2511	2511	2511	2511				
197507	2511	2511	2511	2511	2511	2511	2511	2511				
197507	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
197508	2511	2511	2511	2511	2511	2511	2511	2511				
197508	2511	2511	2511	2511	2511	2511	2511	2511				
197508	2511	2511	2511	2511	2511	2511	2511	2511				
197508	2511	2511	2511	2511	2491	2473	2471	0	77743		105	100
197509	2471	2471	2453	2453	2435	2435	2415	2398				
197509	2393	2394	2394	2394	2376	2376	2376	2376				
197509	2376	2376	2376	2376	2376	2356	2356	2356				
197509	2356	2356	2356	2339	2339	2339	0	0	71648		103	97
197510	2339	2339	2321	2321	2321	2284	2284	2284				
197510	2284	2284	2267	2267	2267	2248	2248	2248				
197510	2248	2230	2230	2230	2230	2230	2225	2225				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A 7/11/85
THROTTLED

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
197510	2225	2225	2225	2207	2207	2207	2207	0	69940		97	97
197511	2207	2207	2207	2207	2207	2207	2207	2207				
197511	2207	2207	2207	2207	2207	2207	2207	2207				
197511	2225	2225	2225	2225	2225	2225	2225	2225				
197511	2225	2225	2225	2225	2225	2225	0	0	66462		93	99
197512	2225	2225	2225	2225	2225	2225	2225	2225				
197512	2225	2225	2225	2207	2207	2207	2207	2207				
197512	2207	2207	2207	2207	2207	2207	2207	2207				
197512	2207	2207	2207	2207	2207	2207	2207	0	68615	712120	93	99
197601	2207	2207	2207	2207	2207	2207	2207	2207				
197601	2207	2207	2207	2188	2188	2188	2188	2188				
197601	2188	2198	2188	2188	2188	2188	2188	2188				
197601	2188	2188	2188	2188	2188	2188	2188	0	68037		92	99
197602	2188	2188	2188	2188	2188	2188	2188	2188				
197602	2188	2188	2188	2188	2188	2188	2188	2188				
197602	2188	2188	2188	2188	2188	2188	2188	2188				
197602	2188	2188	2188	2188	2188	0	0	0	63452		91	100
197603	2188	2188	2188	2188	2188	2188	2188	2188				
197603	2188	2188	2188	2188	2188	2188	2188	2188				
197603	2188	2188	2188	2188	2188	2188	2188	2188				
197603	2188	2188	2207	2207	2207	2207	2207	0	67923		92	99
197604	2207	2207	2225	2225	2225	2225	2230	2230				
197604	2230	2248	2248	2267	2284	2284	2321	2321				
197604	2321	2339	2339	2339	2339	2356	2356	2356				
197604	2376	2396	2376	2394	2394	2398	0	0	69036		100	96
197605	2415	2415	2459	2471	2471	2473	2491	2511				
197605	2511	2511	2511	2511	2511	2511	2511	2511				
197605	2511	2511	2511	2511	2511	2511	2511	2511				
197605	2511	2511	2511	2511	2511	2511	2511	0	77453		105	99
197606	2511	2511	2511	2511	2511	2511	2511	2511				
197606	2511	2511	2511	2511	2511	2511	2511	2511				
197606	2511	2511	2511	2511	2511	2511	2511	2511				
197606	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
197607	2511	2511	2511	2511	2511	2511	2511	2511				
197607	2511	2511	2511	2511	2511	2511	2511	2511				
197607	2511	2511	2491	2473	2473	2473	2471	2453				
197607	2453	2403	2415	2415	2398	2398	2394	0	76940		105	98
197608	2376	2376	2376	2356	2356	2339	2321	2321				
197608	2284	2267	2267	2248	2248	2230	2225	2225				
197608	2207	2207	2188	2188	2171	2171	2135	2135				
197608	2135	2135	2118	2118	2118	2101	2101	0	69043		99	94
197609	2101	2083	2083	2171	2135	2135	2118	2118				
197609	2101	2101	2101	2101	2101	2101	2083	2083				
197609	2083	2083	2066	2066	2066	2031	2031	2014				
197609	2014	2014	2031	2031	2066	2066	0	0	62378		90	96
197610	2083	2083	2083	2093	2101	2101	2101	2101				
197610	2101	2101	2101	2118	2101	2101	2101	2101				
197610	2101	2101	2101	2101	2101	2101	2101	2101				
197610	2101	2101	2101	2101	2101	2101	2101	0	65076		88	99
197611	2101	2101	2118	2118	2118	2118	2118	2118				
197611	2118	2118	2118	2118	2118	2118	2118	2118				
197611	2118	2118	2118	2118	2118	2118	2118	2118				
197611	2118	2118	2118	2101	2101	2101	0	0	63455		88	100
197612	2083	2083	2083	2083	2083	2083	2083	2083				
197612	2083	2083	2083	2083	2083	2083	2083	2083				
197612	2083	2083	2083	2083	2083	2083	2083	2083				
197612	2066	2066	2066	2066	2066	2066	2066	0	64454	822577	87	100
197701	2066	2066	2066	2066	2066	2066	2066	2066				
197701	2066	2066	2066	2066	2066	2066	2066	2066				
197701	2066	2066	2066	2066	2066	2066	2066	2066				
197701	2066	2066	2066	2066	2066	2066	2031	0	64011		86	100
197702	2031	2031	2031	2031	2031	2031	2031	2031				
197702	2031	2031	2031	2031	2031	2031	2031	2031				
197702	2031	2031	2031	2031	2031	2031	2031	2031				
197702	2031	2031	2031	2031	0	0	0	0	56868		85	100
197703	2031	2031	2031	2031	2031	2031	2031	2031				
197703	2031	2031	2031	2031	2031	2031	2031	2031				
197703	2031	2031	2031	2031	2031	2031	2031	2031				
197703	2031	2031	2031	2031	2031	2031	2031	0	62961		85	100
197704	2031	2031	2031	2031	2031	2031	2031	2031				
197704	2031	2031	2031	2066	2066	2066	2066	2066				
197704	2066	2083	2083	2083	2083	2101	2101	2101				
197704	2101	2101	2101	2118	2118	2118	0	0	62029		88	98
197705	2135	2135	2171	2171	2171	2171	2171	2171				
197705	2171	2171	2171	2135	2118	2118	2119	2101				
197705	2083	2083	2083	2083	2066	2066	2066	2031				
197705	2031	2031	2031	2014	2014	2014	2014	0	65109		90	97

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A 7/11/85
THROTTLED

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
197706	2024	2024	2024	2007	1972	1972	1955	1938				
197706	1938	1921	1887	1887	1871	1854	1837	1804				
197706	1788	1771	1755	1723	1707	1675	1659	1643				
197706	1643	1612	1597	1597	1597	1581	0	0	54263		84	90
197707	1581	1581	1566	1535	1535	1520	1520	1505				
197707	1707	1490	1440	1426	1397	1397	1382	1368				
197707	1340	1325	1312	1312	1297	1252	1252	1226				
197707	1226	1226	1252	1297	1312	1312	1325	0	43216		71	82
197708	1312	1312	1312	1297	1252	1252	1226	1212				
197708	1199	1185	1143	1118	1092	1079	1040	1079				
197708	1118	1143	1185	1199	1212	1212	1212	1212				
197708	1212	1212	1212	1212	1212	1199	1199	0	37061		55	91
197709	1199	1199	1199	1199	1185	1185	1185	1185				
197709	1143	1143	1143	1131	1131	1131	1131	1131				
197709	1131	1131	1131	1118	1118	1118	1092	1092				
197709	1092	1079	1079	1040	1040	1010	0	0	33921		50	94
197710	1028	1028	1016	1016	1016	1016	1016	1028				
197710	1028	1028	1040	1040	1040	1040	1040	1040				
197710	1079	1079	1079	1079	1079	1079	1079	1079				
197710	1079	1092	1092	1092	1092	1092	1092	0	32723		46	96
197711	1092	1092	1092	1092	1092	1092	1118	1118				
197711	1118	1118	1118	1118	1118	1118	1118	1118				
197711	1118	1118	1118	1118	1118	1118	1118	1118				
197711	1118	1118	1118	1118	1118	1118	0	0	33384		47	99
197712	1131	1131	1118	1092	1079	1079	1079	1079				
197712	1079	1079	1079	1079	1079	1079	1079	1079				
197712	1079	1079	1079	1079	1079	1079	1079	1079				
197712	1079	1079	1079	1079	1079	1079	1079	0	33605	579151	47	96
197801	1079	1079	1079	1079	1079	1079	1079	1079				
197801	1079	1079	1079	1079	1079	1079	1079	1079				
197801	1079	1079	1079	1079	1079	1079	1079	1079				
197801	1079	1079	1079	1079	1079	1079	1079	0	33449		45	100
197802	1079	1079	1079	1079	1079	1079	1079	1079				
197802	1079	1079	1079	1079	1079	1079	1079	1079				
197802	1079	1079	1079	1079	1079	1079	1079	1079				
197802	1079	1079	1079	1079	0	0	0	0	30212		45	96
197803	1079	1079	1079	1079	1079	1079	1079	1079				
197803	1079	1079	1079	1079	1079	1079	1079	1079				
197803	1079	1079	1079	1079	1079	1079	1079	1079				
197803	1079	1079	1079	1079	1092	1092	1092	0	33488		46	98
197804	1092	1118	1118	1118	1131	1131	1131	1143				
197804	1143	1185	1185	1185	1199	1199	1212	1226				
197804	1226	1226	1252	1252	1297	1297	1312	1325				
197804	1340	1368	1382	1397	1426	1490	0	0	37106		62	83
197805	1490	1505	1520	1505	1535	1566	1566	1581				
197805	1581	1597	1597	1612	1643	1659	1675	1755				
197805	1804	1854	1887	1938	1955	2007	2024	2031				
197805	2093	2101	2135	2171	2207	2225	2230	0	56069		93	81
197806	2257	2231	2229	2276	2294	2298	2415	2435				
197806	2453	2471	2491	2511	2511	2511	2511	2511				
197806	2511	2511	2511	2511	2511	2511	2511	2511				
197806	2511	2511	2511	2511	2511	2511	0	0	74069		105	98
197807	2511	2511	2511	2511	2511	2511	2511	2511				
197807	2511	2511	2511	2511	2511	2511	2511	2491				
197807	2473	2473	2471	2471	2453	2453	2435	2415				
197807	2398	2398	2394	2376	2356	2339	2339	0	76400		105	98
197808	2221	2204	2267	2248	2230	2230	2225	2207				
197808	2188	2171	2171	2135	2118	2118	2101	2083				
197808	2066	2066	2031	2014	2024	2007	2007	1972				
197809	1972	1955	1955	1938	1921	1921	1887	0	64833		97	90
197809	1871	1871	1854	1854	1837	1804	1804	1788				
197809	1771	1771	1755	1723	1707	1675	1659	1659				
197809	1643	1612	1612	1597	1597	1581	1581	1566				
197809	1566	1566	1535	1535	1535	1535	0	0	50464		78	90
197810	1520	1520	1520	1505	1505	1505	1490	1490				
197810	1440	1440	1426	1426	1397	1397	1382	1382				
197810	1368	1340	1340	1340	1325	1325	1325	1325				
197810	1325	1325	1325	1325	1325	1325	1325	0	43308		63	92
197811	1325	1325	1325	1325	1340	1340	1340	1340				
197811	1340	1340	1340	1340	1368	1368	1368	1368				
197811	1368	1368	1368	1368	1368	1368	1368	1368				
197811	1382	1382	1369	1368	1368	1340	0	0	40644		58	97
197812	1340	1340	1340	1340	1368	1368	1368	1368				
197812	1368	1368	1368	1368	1368	1368	1368	1368				
197812	1368	1368	1368	1368	1382	1382	1382	1382				
197812	1382	1382	1382	1382	1382	1382	1382	0	42478	582520	58	98
197901	1382	1382	1382	1382	1382	1382	1382	1382				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
197901	1382	1382	1382	1382	1382	1382	1382	1382				
197901	1382	1397	1397	1397	1397	1397	1397	1397				
197901	1397	1397	1397	1397	1397	1397	1397	0	43052		58	100
197902	1397	1397	1397	1397	1397	1397	1397	1397				
197902	1397	1397	1397	1397	1397	1397	1397	1397				
197902	1397	1397	1397	1397	1397	1426	1426	1426				
197902	1426	1426	1426	1426	0	0	0	0	39319		59	99
197903	1426	1426	1426	1426	1426	1426	1426	1426				
197903	1426	1426	1426	1426	1426	1426	1426	1426				
197903	1426	1426	1440	1440	1440	1440	1440	1440				
197903	1440	1440	1440	1440	1440	1490	1490	0	44488		62	96
197904	1490	1490	1490	1490	1490	1490	1490	1490				
197904	1490	1505	1505	1505	1490	1490	1490	1490				
197904	1490	1505	1505	1505	1505	1520	1520	1535				
197904	1566	1566	1581	1597	1612	1612	0	0	45504		67	94
197905	1643	1659	1675	1707	1723	1771	1788	1199				
197905	1854	1854	1854	1871	1871	1871	1871	1887				
197905	1921	1938	1955	2007	2014	2066	2118	2171				
197905	2207	2240	2267	2339	2394	2435	2471	0	60631		103	79
197906	2473	2491	2511	2511	2511	2511	2511	2511				
197906	2511	2511	2511	2511	2511	2511	2511	2511				
197906	2511	2511	2511	2511	2511	2511	2511	2511				
197906	2511	2511	2511	2511	2511	2511	0	0	75272		105	100
197907	2511	2511	2511	2511	2511	2511	2511	2511				
197907	2511	2511	2511	2511	2511	2511	2511	2511				
197907	2511	2511	2511	2511	2511	2511	2511	2511				
197907	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
197908	2511	2511	2511	2511	2511	2511	2511	2511				
197908	2511	2511	2511	2511	2511	2511	2511	2511				
197908	2511	2511	2511	2511	2511	2511	2511	2511				
197908	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
197909	2511	2511	2511	2511	2511	2511	2511	2511				
197909	2491	2491	2473	2473	2421	2421	2453	2453				
197909	2405	2405	2415	2415	2415	2398	2398	2394				
197909	2394	2376	2376	2356	2356	2339	0	0	73366		105	97
197910	2339	2339	2321	2321	2284	2267	2267	2248				
197910	2240	2220	2220	2225	2207	2207	2188	2188				
197910	2135	2133	2135	2135	2135	2135	2135	2135				
197910	2135	2135	2135	2135	2135	2135	2135	0	68134		97	94
197911	2135	2135	2135	2135	2135	2135	2135	2135				
197911	2135	2135	2135	2135	2135	2135	2135	2135				
197911	2135	2135	2135	2135	2135	2135	2135	2135				
197911	2135	2135	2135	2135	2135	2135	0	0	64050		89	100
197912	2118	2118	2118	2118	2118	2118	2118	2118				
197912	2118	2118	2118	2118	2118	2118	2118	2118				
197912	2118	2118	2118	2118	2118	2118	2118	2118				
197912	2118	2118	2118	2118	2118	2118	2118	0	65658	735156	88	100
198001	2118	2118	2118	2118	2118	2118	2118	2118				
198001	2118	2118	2118	2118	2118	2118	2118	2118				
198001	2118	2118	2118	2118	2118	2118	2118	2118				
198001	2118	2118	2118	2118	2118	2118	2118	0	65658		88	100
198002	2118	2118	2118	2118	2118	2118	2118	2118				
198002	2118	2118	2118	2118	2118	2118	2118	2118				
198002	2118	2135	2135	2135	2135	2135	2135	2135				
198002	2135	2135	2135	2135	2135	0	0	0	61626		89	99
198003	2135	2135	2135	2135	2135	2135	2135	2135				
198003	2135	2135	2135	2135	2135	2135	2135	2135				
198003	2135	2135	2135	2135	2135	2135	2135	2135				
198003	2135	2135	2135	2135	2135	2135	2135	0	66185		89	100
198004	2135	2135	2135	2135	2135	2135	2135	2135				
198004	2135	2135	2135	2135	2135	2135	2135	2135				
198004	2135	2135	2135	2135	2118	2118	2118	2101				
198004	2083	2083	2066	2031	2014	2024	0	0	63456		89	99
198005	2024	2024	1972	1955	1938	1938	1938	1938				
198005	1938	1938	1938	1938	1938	1921	1921	1921				
198005	1887	1887	1887	1887	1887	1887	1938	1972				
198005	2024	2014	2031	2066	2101	2135	2188	0	60971		91	90
198006	2225	2240	2234	2356	2398	2453	2473	2491				
198006	2511	2511	2511	2511	2511	2511	2511	2511				
198006	2511	2511	2511	2511	2511	2511	2511	2511				
198006	2511	2511	2511	2511	2511	2511	0	0	74170		105	98
198007	2511	2511	2511	2511	2511	2511	2511	2511				
198007	2511	2511	2511	2511	2511	2511	2511	2511				
198007	2511	2511	2511	2511	2511	2511	2511	2511				
198007	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
198008	2511	2511	2511	2511	2511	2511	2511	2511				
198008	2511	2511	2511	2511	2511	2511	2491	2491				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1980001	2473	2453	2453	2435	2415	2415	2415	2415				
1980003	2415	2415	2415	2415	2398	2398	2398	0	76464		105	98
1980009	2394	2394	2394	2376	2376	2356	2356	2339				
1980009	2339	2356	2394	2398	2415	2415	2415	2415				
1980009	2415	2415	2415	2415	2415	2415	2415	2415				
1980009	2398	2398	2398	2398	2398	2394	0	0	71836		101	99
1980010	2094	2094	2394	2376	2376	2376	2376	2356				
1980010	2356	2339	2339	2321	2321	2321	2284	2284				
1980010	2284	2284	2284	2284	2284	2284	2284	2284				
1980010	2284	2284	2284	2284	2284	2284	2321	0	71941		100	97
1980011	2321	2321	2321	2321	2321	2321	2321	2321				
1980011	2321	2321	2321	2321	2321	2321	2321	2321				
1980011	2321	2321	2321	2321	2321	2321	2321	2321				
1980011	2321	2321	2321	2321	2321	2321	0	0	69630		97	100
1980012	2321	2321	2321	2321	2321	2321	2321	2321				
1980012	2321	2321	2321	2321	2321	2321	2321	2321				
1980012	2321	2321	2321	2321	2321	2321	2321	2321				
1980012	2321	2321	2321	2321	2321	2321	2321	0	71951	831729	97	100
1980101	2284	2284	2284	2284	2284	2284	2284	2284				
1980101	2284	2284	2284	2284	2284	2284	2284	2284				
1980101	2284	2284	2284	2284	2284	2284	2284	2284				
1980101	2284	2284	2284	2284	2284	2284	2284	0	70804		95	100
1980102	2284	2284	2284	2284	2284	2284	2284	2284				
1980102	2284	2284	2284	2284	2284	2284	2284	2284				
1980102	2284	2284	2284	2284	2284	2284	2284	2284				
1980102	2284	2284	2284	2284	0	0	0	0	63952		95	100
1980103	2284	2284	2284	2284	2284	2284	2284	2284				
1980103	2284	2284	2284	2284	2284	2284	2284	2284				
1980103	2284	2284	2284	2284	2284	2284	2284	2284				
1980103	2284	2284	2284	2284	2284	2284	2284	0	70804		95	100
1980104	2321	2321	2321	2321	2321	2321	2321	2321				
1980104	2339	2339	2339	2321	2321	2321	2321	2339				
1980104	2339	2339	2339	2339	2356	2356	2356	2356				
1980104	2376	2376	2394	2398	2415	2435	0	0	70328		101	97
1980105	2453	2453	2471	2491	2511	2511	2511	2511				
1980105	2511	2511	2511	2511	2511	2511	2511	2511				
1980105	2511	2511	2511	2511	2511	2511	2511	2511				
1980105	2511	2511	2511	2511	2511	2511	2511	0	77723		105	99
1980106	2511	2511	2511	2511	2511	2511	2511	2511				
1980106	2511	2511	2511	2511	2511	2511	2511	2511				
1980106	2511	2511	2511	2511	2511	2511	2511	2511				
1980106	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
1980107	2511	2511	2511	2511	2511	2511	2511	2511				
1980107	2511	2511	2511	2511	2511	2511	2511	2511				
1980107	2511	2511	2511	2511	2511	2511	2511	2511				
1980107	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1980108	2511	2511	2511	2511	2511	2511	2511	2511				
1980108	2511	2511	2511	2511	2511	2511	2511	2511				
1980108	2511	2511	2511	2511	2511	2491	2491	2473				
1980109	2471	2471	2453	2453	2435	2435	2415	0	77281		105	99
1980109	2415	2398	2398	2394	2394	2376	2376	2376				
1980109	2356	2339	2356	2356	2339	2339	2339	2339				
1980109	2339	2339	2339	2321	2321	2321	2284	2284				
1980109	2284	2284	2267	2267	2267	2267	0	0	70074		101	96
1980110	2248	2248	2248	2248	2248	2248	2248	2248				
1980110	2248	2267	2267	2267	2284	2284	2284	2284				
1980110	2321	2321	2339	2339	2339	2356	2356	2356				
1980110	2356	2376	2376	2376	2376	2394	2394	0	71544		100	96
1980111	2094	2094	2394	2394	2398	2398	2398	2398				
1980111	2398	2398	2398	2398	2415	2415	2415	2415				
1980111	2415	2415	2415	2415	2415	2415	2398	2398				
1980111	2398	2398	2398	2398	2398	2398	0	0	72111		101	99
1980112	2415	2415	2415	2415	2415	2415	2415	2415				
1980112	2415	2415	2415	2415	2415	2415	2415	2415				
1980112	2415	2415	2415	2415	2415	2435	2435	2435				
1980112	2435	2435	2435	2435	2435	2435	2435	0	75065	872857	101	100
1980201	2435	2435	2435	2435	2435	2435	2435	2435				
1980201	2435	2435	2435	2435	2435	2435	2435	2435				
1980201	2435	2435	2435	2435	2435	2435	2435	2435				
1980201	2453	2453	2453	2453	2453	2453	2453	0	75611		102	100
1980202	2453	2453	2453	2453	2453	2453	2453	2453				
1980202	2453	2453	2453	2453	2453	2453	2453	2453				
1980202	2453	2453	2453	2453	2453	2453	2453	2453				
1980202	2453	2453	2453	2453	0	0	0	0	68684		102	100
1980203	2453	2453	2453	2453	2453	2453	2453	2453				
1980203	2471	2471	2471	2471	2471	2471	2471	2471				

LEMON DAM IMPROVEMENTS PROJECT
WORTHINGTON PUMP 10LNT14A
THROTTLED

7/11/85

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1980203	2471	2471	2471	2471	2471	2471	2471	0	76403		103	100
1980204	2471	2471	2471	2471	2471	2471	2473	2473				
1980204	2473	2473	2473	2473	2473	2473	2491	2491				
1980204	2511	2511	2511	2511	2511	2511	2511	2511				
1980204	2511	2511	2511	2511	2511	2511	0	0	74746		105	99
1980205	2511	2511	2511	2511	2511	2511	2511	2511				
1980205	2511	2511	2511	2511	2511	2511	2511	2511				
1980205	2511	2511	2511	2511	2511	2511	2511	2511				
1980205	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1980206	2511	2511	2511	2511	2511	2511	2511	2511				
1980206	2511	2511	2511	2511	2511	2511	2511	2511				
1980206	2511	2511	2511	2511	2511	2511	2511	2511				
1980206	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
1980207	2511	2511	2511	2511	2511	2511	2511	2511				
1980207	2511	2511	2511	2511	2511	2511	2511	2511				
1980207	2511	2511	2511	2511	2511	2511	2511	2511				
1980207	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1980208	2511	2511	2511	2511	2511	2511	2511	2511				
1980208	2511	2511	2511	2511	2511	2511	2511	2511				
1980208	2511	2511	2511	2511	2511	2511	2511	2511				
1980208	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1980209	2511	2511	2511	2511	2511	2511	2511	2511				
1980209	2511	2511	2511	2511	2511	2511	2511	2511				
1980209	2511	2511	2511	2511	2511	2511	2511	2511				
1980209	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
1980210	2511	2511	2511	2511	2511	2511	2511	2511				
1980210	2511	2511	2511	2511	2511	2511	2511	2511				
1980210	2511	2511	2511	2511	2511	2511	2511	2511				
1980210	2511	2511	2511	2511	2511	2511	2511	0	77841		105	100
1980211	2511	2511	2511	2511	2511	2511	2511	2511				
1980211	2511	2511	2511	2511	2511	2511	2511	2511				
1980211	2511	2511	2511	2511	2511	2511	2511	2511				
1980211	2511	2511	2511	2511	2511	2511	0	0	75330		105	100
1980212	2511	2511	2511	2511	2511	2511	2491	2491				
1980212	2491	2491	2491	2491	2491	2491	2491	2491				
1980212	2491	2491	2491	2491	2491	2491	2491	2491				
1980212	2473	2473	2473	2473	2473	2473	2473	0	77215	910013	105	99

	MONTHLY	YEARLY	KW	P.F.
AVERAGE	63115	757374	89	97
MAXIMUM	77841	910013	105	100
MINIMUM	30212	579151	45	79

DATE : 07/11/85

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197101	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	122	122	122	73	73	73	73	73	73	73	73
197101	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
197101	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	122	123	123	123	123	73	73	73	73	73	73	73	73
197101	11.5	11.5	11.5	11.5	11.5	11.5	11.5	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
197102	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197102	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197102	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197102	11.5	11.5	11.5	11.5	11.5	0	0	0	123	123	123	123	123	0	0	0	73	73	73	73	74	0	0	0
197103	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197103	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197103	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
197103	11.5	11.5	11.5	11.5	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
197104	11.6	11.6	11.6	11.6	11.6	11.6	11.7	11.7	123	123	124	124	124	124	125	125	73	73	73	73	73	73	73	73
197104	11.7	11.7	11.7	11.7	11.8	11.8	11.8	11.8	125	126	126	126	126	126	127	127	73	73	73	73	73	73	73	73
197104	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	127	127	128	128	128	129	129	129	72	72	72	72	72	72	72	72
197104	11.9	12	12	12	12	12	0	0	129	129	129	129	129	129	0	0	72	72	72	72	72	72	0	0
197105	12	12	12	12	12	12	12	12	129	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
197105	12	12	12	12	12	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
197105	12	12.1	12.1	12.1	12.1	12.1	12.1	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
197105	12	12	12.1	12.1	12.1	12.1	12.1	0	130	130	130	130	131	131	131	0	72	72	72	72	72	72	72	0
197106	12.1	12.1	12.1	12.1	12.2	12.2	12.2	12.2	131	131	131	131	132	132	132	133	72	72	72	72	72	72	72	72
197106	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	133	133	133	133	133	133	133	133	71	71	71	71	71	71	71	71
197106	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	134	134	134	134	134	134	134	133	71	71	71	71	71	71	71	71
197106	12.3	12.3	12.2	12.2	12.2	12.2	0	0	133	133	133	133	133	132	0	0	71	71	72	72	72	72	0	0
197107	12.2	12.1	12.1	12.1	12.1	12.1	12.1	12.1	132	131	131	131	130	130	130	130	72	72	72	72	72	72	72	72
197107	12	12	12	12	12	11.9	11.9	11.9	130	130	129	129	129	129	129	128	72	72	72	72	72	72	72	72
197107	11.9	11.9	11.8	11.8	11.8	11.8	11.7	11.7	128	127	127	127	126	126	126	126	72	72	73	73	73	73	73	73
197107	11.7	11.7	11.7	11.6	11.6	11.6	11.6	0	126	125	125	124	124	123	123	0	73	73	73	73	73	73	73	0
197108	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	123	123	122	122	122	121	120	120	73	73	73	73	73	73	73	73
197108	11.3	11.3	11.3	11.2	11.2	11.2	11.1	11.1	120	120	119	119	119	118	117	116	74	74	74	74	74	74	74	74
197108	11.1	11.1	11	11	11	11	11	11	116	116	116	116	116	116	115	115	74	74	74	74	74	74	74	74
197109	11	11	11	11	11	11	11	0	115	115	116	116	116	116	116	0	74	74	74	74	74	74	74	0
197109	11	11	11	11	11	11	11	11	116	116	116	116	116	115	115	115	74	74	74	74	74	74	74	74
197109	11	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	114	114	113	113	74	74	74	74	74	74	74	74
197109	10.8	10.8	10.8	10.8	10.7	10.7	10.7	10.7	113	113	112	112	111	111	110	110	74	74	74	74	74	74	74	74
197109	10.6	10.6	10.6	10.6	10.5	10.5	0	0	110	110	109	109	109	109	0	0	74	74	74	74	74	74	0	0
197110	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	108	108	108	108	108	108	108	108	74	74	74	74	74	74	74	74
197110	10.5	10.5	10.5	10.5	10.5	10.5	10.4	10.4	108	108	108	108	108	108	107	107	74	74	74	74	74	74	74	74
197110	10.4	10.4	10.4	10.5	10.5	10.5	10.5	10.5	107	107	107	108	108	108	109	109	74	74	74	74	74	74	74	74
197110	10.5	10.6	10.6	10.6	10.6	10.6	10.6	0	109	109	109	109	109	109	109	0	74	74	74	74	74	74	74	0
197111	10.6	10.6	10.6	10.6	10.6	10.7	10.7	10.7	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
197111	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	110	110	110	110	111	111	111	111	74	74	74	74	74	74	74	74
197111	10.7	10.7	10.7	10.8	10.8	10.8	10.8	10.8	111	111	111	112	112	112	112	112	74	74	74	74	74	74	74	74
197111	10.8	10.8	10.7	10.7	10.7	10.7	0	0	112	112	111	111	111	111	0	0	74	74	74	74	74	74	0	0
197112	10.7	10.7	10.8	10.8	10.8	10.8	10.8	10.8	111	111	112	112	112	112	112	112	74	74	74	74	74	74	74	74
197112	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	112	112	112	112	112	112	112	112	74	74	74	74	74	74	74	74
197112	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197112	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
197201	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197201	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197201	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197201	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
197202	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197202	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197202	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197202	10.9	10.9	10.9	10.9	10.9	0	0	0	113	113	113	113	113	0	0	0	74	74	74	74	74	0	0	0
197203	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	114	114	114	114	114	114	114	114	74	74	74	74	74	74	74	74
197203	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	114	114	114	114	115	115	115	115	74	74	74	74	74	74	74	74
197203	10.9	11	11	11	11	11	11	11	115	115	115	115	115	116	116	116	74	74	74	74	74	74	74	74
197203	11	11.1	11.1	11.1	11.1	11.1	11.1	0	116	116	116	116	116	116	116	0	74	74	74	74	74	74	74	0
197204	11.1	11.1	11.1	11.1	11.1	11.1	11.2	11.2	117	117	117	117	117	117	118	118	74	74	74	74	74	74	74	74
197204	11.2	11.2	11.2	11.3	11.3	11.3	11.3	11.3	118	119	119	119	119	119	120	120	74	74	74	74	74	74	74	74
197204	11.3	11.3	11.4	11.4	11.4	11.4	11.4	11.4	120	120	120	120	120	120	121	121	74	74	73	73	73	73	73	73
197204	11.4	11.5	11.5	11.5	11.5	11.5	0	0	122	122	122	122	123	123	0	0	73	73	73	73	73	73	0	0
197205	11.6	11.6	11.6	11.6	11.7	11.7	11.7	11.7	123	123	124	124	125	125	125	125	73	73	73	73	73	73	73	73
197205	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	125	125	73	73	73	73	73	73	73	73
197205	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	126	126	126	126	126	126	73	73	73	73	73	73	73	73
197205	11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	126	126	126	125	125	125	125	0	73	73	73	73	73	73	73	0
197206	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	125	125	73	73	73	73	73	73	73	73
197206	11.7	11.7	11.7	11.7	11.7	11.6	11.6	11.6	125	125	125	125	125	124	124	124	73	73	73	73	73	73	73	73
197206	11.6	11.6	11.6	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	122	122	122	73	73	73	73	73	73	73	73
197206	11.4	11.4	11.4	11.4	11.4	11.4	0	0	122	122	121	121	120	120	0	0	73	73	73	73	73	73	0	0
197207	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	120	120	119	119	119	119	118	118	74	74	74	74	74	74	74	74
197207	11.1	11.1	11.1	11	11	10.9	10.9	10.9	117	116	116	116	115	115	114	113	74	74	74	74	74	74	74	74
197207	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.5	113	113	111	111	110	110	109	109	74	74	74	74	74	74	74	74
197207	10.5	10.4	10.4	10.4	10.3	10.3	10.2	0	108	107	106	105	105	104	104	0	74	74	74	74	74	74	74	0
197208	10.2	10.2	10.1	10.1	10	10	9.9	9.9	104	103	102	101	101	100	100	99	74	74	74	74	74	74	73	73

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197208	9.9	9.8	9.8	9.7	9.7	9.6	9.6	9.5	98	98	97	96	95	95	94	93	73	73	73	73	73	73	73	73
197208	9.5	9.5	9.4	9.4	9.4	9.4	9.4	9.4	93	92	92	92	92	91	91	90	73	73	72	72	72	72	72	72
197208	9.8	9.3	9.3	9.3	9.3	9.3	9.2	0	98	90	90	89	89	89	88	0	73	72	72	72	72	72	72	0
197209	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	88	88	88	87	87	87	87	87	72	72	72	72	72	72	72	72
197209	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	87	87	87	87	87	87	87	87	71	71	71	71	72	72	72	72
197209	9.2	9.2	9.1	9.1	9.1	9.1	9.1	9.1	87	87	87	87	87	87	87	87	72	72	71	71	71	71	71	71
197209	9.1	9.1	9.1	9.1	9.1	9.1	0	0	87	87	87	86	86	86	0	0	71	71	71	71	71	71	0	0
197210	9	9	9	9	9	9.1	9.1	9.3	86	86	86	85	86	86	87	89	71	71	71	71	71	71	71	72
197210	9.4	9.4	9.4	9.4	9.5	9.5	9.5	9.6	90	91	92	92	92	92	93	94	72	72	72	72	73	73	73	73
197210	9.7	9.7	9.8	10	10.1	10.2	10.2	10.3	95	96	98	100	101	103	104	104	73	73	73	74	74	74	74	74
197210	10.3	10.3	10.4	10.4	10.4	10.4	10.4	0	105	105	105	106	106	107	107	0	74	74	74	74	74	74	74	0
197211	10.5	10.5	10.5	10.5	10.5	10.6	10.6	10.6	108	108	108	109	109	109	109	109	74	74	74	74	74	74	74	74
197211	10.6	10.6	10.6	10.6	10.6	10.7	10.7	10.7	109	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
197211	10.7	10.7	10.7	10.7	10.7	10.7	10.8	10.8	110	111	111	111	111	111	112	112	74	74	74	74	74	74	74	74
197211	10.8	10.8	10.8	10.8	10.8	10.8	0	0	112	112	112	112	113	113	0	0	74	74	74	74	74	74	0	0
197212	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197212	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	114	114	114	74	74	74	74	74	74	74	74
197212	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	114	114	114	114	114	114	114	114	74	74	74	74	74	74	74	74
197212	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0	114	114	115	115	115	115	115	0	74	74	74	74	74	74	74	0
197301	10.9	10.9	10.9	10.9	10.9	10.9	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197301	11	11	11	11	11	11	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197301	11	11	11	11	11	11	11	11	115	115	115	115	115	115	116	116	74	74	74	74	74	74	74	74
197301	11	11	11	11	11	11	11	0	116	116	116	116	116	116	116	0	74	74	74	74	74	74	74	0
197302	11	11	11	11	11	11	11	11	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197302	11	11	11	11.1	11.1	11.1	11.1	11.1	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197302	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197302	11.1	11.1	11.1	11.1	11.1	0	0	0	116	116	116	116	116	0	0	0	74	74	74	74	74	0	0	0
197303	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197303	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	117	117	117	117	117	117	117	117	74	74	74	74	74	74	74	74
197303	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	117	117	117	117	117	117	116	116	74	74	74	74	74	74	74	74
197303	11.1	11.1	11.1	11.1	11.1	11.1	11.1	0	116	116	116	116	116	116	116	0	74	74	74	74	74	74	74	0
197304	11	11	11	11	11	11	11	11	116	116	116	116	116	115	115	115	74	74	74	74	74	74	74	74
197304	11	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	114	114	114	113	74	74	74	74	74	74	74	74
197304	10.9	10.9	10.9	10.9	10.8	10.8	10.7	10.7	113	113	113	113	113	112	111	111	74	74	74	74	74	74	74	74
197304	10.7	10.6	10.6	10.6	10.6	10.6	0	0	110	110	109	109	109	109	0	0	74	74	74	74	74	74	0	0
197305	10.6	10.5	10.5	10.5	10.4	10.4	10.4	10.4	109	109	108	108	107	107	106	106	74	74	74	74	74	74	74	74
197305	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	105	105	106	106	106	106	106	106	74	74	74	74	74	74	74	74
197305	10.4	10.4	10.5	10.5	10.5	10.4	10.4	10.4	106	107	108	108	108	107	106	105	74	74	74	74	74	74	74	74
197305	10.4	10.5	10.5	10.5	10.6	10.6	10.7	0	106	108	109	109	109	110	110	0	74	74	74	74	74	74	74	0
197306	10.8	10.9	10.9	11	11	11	11.1	11.1	112	113	115	115	116	116	116	117	74	74	74	74	74	74	74	74
197306	11.2	11.3	11.4	11.5	11.5	11.5	11.5	11.5	119	120	120	123	122	123	123	123	74	74	73	73	73	73	73	73
197306	11.6	11.7	11.7	11.8	11.9	11.9	12	12.1	124	125	126	127	127	129	129	130	73	73	73	73	72	72	72	72
197306	12.2	12.2	12.3	12.3	12.3	12.3	0	0	132	133	133	133	134	134	0	0	72	72	71	71	71	71	0	0
197307	12.3	12.4	12.4	12.4	12.4	12.4	12.4	12.4	134	134	134	134	134	134	134	134	71	71	71	71	71	71	71	71
197307	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	134	134	134	134	134	134	134	134	71	71	71	71	71	71	71	71
197307	12.4	12.4	12.4	12.4	12.4	12.4	12.3	12.3	134	134	134	134	134	134	134	134	71	71	71	71	71	71	71	71
197307	12.3	12.3	12.3	12.3	12.2	12.2	12.2	0	134	133	133	133	133	133	132	0	71	71	71	71	72	72	72	0
197308	12.2	12.1	12.1	12.1	12	12	12	12	132	131	130	130	130	130	129	129	72	72	72	72	72	72	72	72
197308	11.9	11.9	11.9	11.9	11.8	11.8	11.8	11.8	129	128	128	127	127	127	126	126	72	72	72	72	73	73	73	73
197308	11.7	11.7	11.7	11.6	11.6	11.6	11.5	11.5	126	125	125	124	123	123	123	122	73	73	73	73	73	73	73	73
197308	11.5	11.5	11.4	11.4	11.4	11.4	11.4	0	122	122	122	122	122	121	121	0	73	73	73	73	73	73	73	0
197309	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	121	121	120	120	120	120	120	120	73	73	73	73	73	74	74	74
197309	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
197309	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
197309	11.2	11.2	11.2	11.2	11.2	11.2	12	0	119	119	118	118	118	118	0	0	74	74	74	74	74	74	72	0
197310	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	117	117	117	117	116	116	116	116	74	74	74	74	74	74	74	74
197310	11	11	11	11	11	11	11	11	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197310	11	11	11	11	11	11	11	11	116	116	116	116	115	115	115	115	74	74	74	74	74	74	74	74
197310	11	10.9	10.9	10.9	10.9	10.9	10.9	0	115	115	115	115	115	114	114	0	74	74	74	74	74	74	74	0
197311	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197311	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197311	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197311	10.9	10.9	10.9	10.9	10.9	10.9	0	0	113	113	113	113	113	113	0	0	74	74	74	74	74	74	0	0
197312	10.9	10.9	10.9	10.9	10.9	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197312	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197312	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197312	10.8	10.8	10.8	10.9	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197401	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197401	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197401	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197401	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
197402	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197402	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197402	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197402	10.8	10.8	10.8	10.8	10.9	0	0	0	113	113	113	113	112	0	0	0	74	74	74	74	74	0	0	0
197403	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197403	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197403	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197403	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
197404	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197404	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197404	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197404	10.9	10.9	10.9	10.9	10.9	10.9	0	0	114	114	114	114	115	115	0	0	74	74	74	74	74	74	0	0
197405	10.9	10.9	10.9	10.9	11	11	11	11	115	115	115	115	115	115	115	116	74	74	74	74	74	74	74	74
197405	11	11	11.1	11.1	11.1	11.2	11.2	11.2	116	116	116	117	117	118	118	118	74	74	74	74	74	74	74	74
197405	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	118	74	74	74	74	74	74	74	74
197405	11.2	11.2	11.2	11.2	11.2	11.2	11.2	0	118	118	118	119	119	119	119	0	74	74	74	74	74	74	74	0
197406	11.2	11.2	11.1	11.1	11.1	11.1	11	11	118	118	117	117	116	116	116	116	74	74	74	74	74	74	74	74
197406	11	11	10.9	10.9	10.9	10.9	10.9	10.8	115	115	115	115	114	113	113	113	74	74	74	74	74	74	74	74
197406	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.6	113	112	111	110	110	110	109	109	74	74	74	74	74	74	74	74
197406	10.5	10.5	10.4	10.4	10.4	10.3	0	0	109	108	107	106	105	105	0	0	74	74	74	74	74	74	0	0
197407	10.2	10.2	10.2	10.1	10.1	10.1	10	10	104	104	103	102	101	101	101	100	74	74	74	74	74	74	74	74
197407	9.9	9.9	9.9	9.9	9.9	9.8	9.8	9.8	100	100	99	98	98	98	98	97	73	73	73	73	73	73	73	73
197407	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	98	98	98	98	98	98	98	98	73	73	73	73	73	73	73	73
197407	9.9	9.9	9.8	9.8	9.8	9.8	9.7	0	98	98	98	98	97	97	96	0	73	73	73	73	73	73	73	0
197408	9.7	9.7	9.6	9.6	9.6	9.6	9.6	9.6	96	95	95	95	95	95	94	94	73	73	73	73	73	73	73	73
197408	9.6	9.5	9.5	9.5	9.5	9.4	9.4	9.4	94	93	93	92	92	92	91	91	73	73	73	73	73	72	72	72
197408	9.4	9.3	9.3	9.3	9.3	9.2	9.2	9.1	90	90	90	89	89	88	87	87	72	72	72	72	72	72	72	71
197408	9.1	9.1	9	9	8.9	8.9	8.9	0	87	86	86	85	84	84	83	0	71	71	71	71	71	71	71	0
197409	8.9	8.8	8.8	8.8	8.7	8.7	8.7	8.6	82	82	82	81	80	80	79	79	71	70	70	70	70	70	70	70
197409	8.6	8.6	8.6	8.5	8.5	8.5	8.4	8.4	79	78	78	78	77	77	76	76	70	70	70	69	69	69	69	69
197409	8.4	8.4	8.4	8.4	8.4	8.3	8.3	8.3	75	75	75	74	74	74	74	74	69	69	69	69	69	68	68	68
197409	8.4	8.4	8.4	8.4	8.4	8.4	0	0	74	74	74	74	74	74	0	0	69	69	69	69	69	69	0	0
197410	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	74	74	74	74	74	74	74	74	69	69	69	69	69	69	69	69
197410	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	74	74	74	75	75	75	75	75	69	69	69	69	69	69	69	69
197410	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	75	75	75	75	75	76	76	76	69	69	69	69	69	69	69	69
197410	8.4	8.4	8.5	8.5	8.5	8.5	8.5	0	76	76	77	77	77	78	78	0	69	69	69	69	69	69	69	0
197411	8.5	8.6	8.6	8.6	8.6	8.6	8.6	8.6	78	78	78	78	78	79	79	79	69	70	70	70	70	70	70	70
197411	8.6	8.6	8.7	8.7	8.7	8.7	8.7	8.7	79	79	79	79	79	79	79	79	70	70	70	70	70	70	70	70
197411	8.7	8.7	8.7	8.7	8.7	8.7	8.8	8.8	80	80	80	80	80	80	81	81	70	70	70	70	70	70	70	70
197411	8.8	8.8	8.8	8.8	8.8	8.8	0	0	81	81	81	81	81	81	0	0	70	70	70	70	70	70	0	0
197412	8.8	8.8	8.8	8.8	8.8	8.7	8.7	8.7	81	81	81	81	81	80	80	80	70	70	70	70	70	70	70	70
197412	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.8	80	80	80	80	80	80	80	81	70	70	70	70	70	70	70	70
197412	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	81	81	81	81	81	81	81	81	70	70	70	70	70	70	70	70
197412	8.8	8.8	8.8	8.8	8.8	8.8	8.8	0	81	81	81	81	81	81	81	0	70	70	70	70	70	70	70	0
197501	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	81	81	81	81	81	81	81	81	70	70	70	70	70	70	70	70
197501	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	81	81	81	81	81	81	81	81	70	70	70	70	70	70	70	70
197501	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	81	81	81	81	81	81	81	81	70	70	70	70	70	70	70	70
197501	8.8	8.8	8.8	8.8	8.8	8.8	8.8	0	81	81	81	81	82	82	82	0	70	70	70	70	70	70	70	0
197502	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	82	82	82	82	82	82	82	82	70	70	70	70	70	70	70	70
197502	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	82	82	82	82	82	82	82	82	70	70	70	70	70	70	70	70
197502	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	82	82	82	82	82	82	82	82	70	70	70	70	70	70	70	70
197502	8.8	8.8	8.8	8.8	10.9	0	0	0	82	82	82	82	82	0	0	0	70	70	70	70	74	0	0	0
197503	8.8	8.8	8.8	8.8	8.8	8.8	8.9	8.8	82	82	82	82	82	82	82	82	70	70	70	70	70	70	70	70
197503	8.8	8.8	8.8	8.8	8.9	8.9	8.9	8.9	82	82	82	82	82	82	82	82	70	70	70	70	71	71	71	71
197503	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	82	82	82	82	82	82	82	82	71	71	71	71	71	71	71	71
197503	8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	82	82	82	82	82	82	82	0	71	71	71	71	71	71	71	0
197504	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	82	82	82	83	83	83	83	83	71	71	71	71	71	71	71	71
197504	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	83	83	84	84	84	84	84	84	71	71	71	71	71	71	71	71
197504	8.9	9	9	9	9	9	9	9	84	85	85	85	85	85	86	86	71	71	71	71	71	71	71	71
197504	9.1	9.1	9.2	9.2	9.3	9.3	0	0	86	87	87	88	89	89	0	0	71	71	72	72	72	72	0	0
197505	9.3	9.4	9.4	9.4	9.4	9.5	9.5	9.5	90	90	90	91	92	92	93	93	72	72	72	72	72	73	73	73
197505	9.6	9.6	9.6	9.7	9.8	9.9	10	10.2	94	94	95	96	98	99	101	103	73	73	73	73	73	73	74	74
197505	10.3	10.4	10.6	10.7	10.8	10.9	10.9	10.9	105	107	109	110	112	113	114	114	74	74	74	74	74	74	74	74
197505	10.9	11	11.1	11.2	11.2	11.2	11.2	0	115	115	116	118	119	119	119	0	74	74	74	74	74	74	74	0
197506	11.3	11.3	11.4	11.5	11.5	11.6	11.6	11.6	119	119	120	122	123	123	124	124	74	74	73	73	73	73	73	73
197506	11.6	11.6	11.6	11.5	11.6	11.7	11.8	11.9	124	124	123	123	123	125	126	128	73	73	73	73	73	73	73	72
197506	11.9	12	11.9	11.9	12	12	12	12.1	129	129	129	129	129	129	130	130	72	72	72	72	72	72	72	72
197506	12.2	12.3	12.4	12.4	12.5	12.5	0	0	132	133	134	135	135	136	0	0	72	71	71	71	70	70	0	0
197507	12.5	12.6	12.6	12.6	12.6	12.6	12.6	12.6	137	137	137	137	137	137	138	138	70	70	70	70	70	70	70	70
197507	12.6	12.6	12.6	12.5	12.5	12.5	12.6	12.6	137	137	137	137	137	137	137	137	70	70	70	70	70	70	70	70
197507	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	137	138	138	138	137	137	137	137	70	70	70	70	70	70	70	70
197507	12.5	12.5	12.5	12.5	12.5	12.5	12.5	0	137	137	137	136	136	136	135	0	70	70	70	70	70	70	70	0
197508	12.5	12.4	12.4	12.4	12.3	12.3	12.3	12.3	135	135	135	134	134	134	133	133	70	71	71	71	71	71	71	71

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197508	12	12.2	12.2	12.1	12.1	12.1	12.1	12	130	132	132	131	131	130	130	130	72	72	72	72	72	72	72	72
197508	12	12	12	11.9	11.9	11.9	11.9	11.9	130	129	129	129	129	129	128	128	72	72	72	72	72	72	72	72
197508	11.9	11.9	11.8	11.8	11.8	11.7	11.7	0	127	127	127	127	126	126	125	0	72	72	73	73	73	73	73	0
197509	11.7	11.7	11.6	11.6	11.6	11.6	11.5	11.5	125	125	124	124	123	123	123	122	73	73	73	73	73	73	73	73
197509	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	122	122	122	122	121	121	121	121	73	73	73	73	73	73	73	73
197509	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	121	121	121	121	121	120	120	120	73	73	73	73	73	73	73	73
197509	11.4	11.4	11.4	11.3	11.3	11.3	0	0	120	120	120	120	120	120	0	0	73	73	73	74	74	74	0	0
197510	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	120	120	119	119	119	119	119	119	74	74	74	74	74	74	74	74
197510	11.2	11.2	11.2	11.2	11.2	11.1	11.1	11.1	119	118	118	118	118	117	117	117	74	74	74	74	74	74	74	74
197510	11.1	11.1	11.1	11.1	11.1	11.1	11	11	117	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197510	11	11	11	11	11	11	11	0	116	116	116	115	115	115	115	0	74	74	74	74	74	74	74	0
197511	11	11	11	11	11	11	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197511	11	11	11	11	11	11	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197511	11	11	11	11	11	11	11	11	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197511	11	11	11	11	11	11	0	0	116	116	116	116	116	116	0	0	74	74	74	74	74	74	0	0
197512	11	11	11	11	11	11	11	11	116	116	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197512	11	11	11	11	11	11	11	11	116	116	116	115	115	115	115	115	74	74	74	74	74	74	74	74
197512	11	11	11	11	11	11	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197512	11	11	11	11	11	11	11	0	115	115	115	115	115	115	115	0	74	74	74	74	74	74	74	0
197601	11	11	11	11	11	11	11	11	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197601	11	11	11	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197601	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197601	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0	115	115	115	115	115	115	115	0	74	74	74	74	74	74	74	0
197602	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197602	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197602	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197602	10.9	10.9	10.9	10.9	10.9	0	0	0	115	115	115	115	115	0	0	0	74	74	74	74	74	0	0	0
197603	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197603	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197603	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	115	115	115	115	74	74	74	74	74	74	74	74
197603	10.9	10.9	11	11	11	11	11	0	115	115	115	115	115	115	115	0	74	74	74	74	74	74	74	0
197604	11	11	11	11	11	11	11.1	11.1	115	115	116	116	116	116	116	116	74	74	74	74	74	74	74	74
197604	11.1	11.1	11.1	11.2	11.2	11.2	11.3	11.3	116	117	117	118	119	119	119	119	74	74	74	74	74	74	74	74
197604	11.3	11.3	11.3	11.3	11.3	11.4	11.4	11.4	119	120	120	120	120	120	120	120	74	74	74	74	74	73	73	73
197604	11.4	11.4	11.4	11.4	11.4	11.5	0	0	121	121	121	122	122	122	0	0	73	73	73	73	73	73	0	0
197605	11.5	11.5	11.6	11.7	11.7	11.7	11.8	11.8	123	123	124	125	125	126	126	127	73	73	73	73	73	73	73	73
197605	11.9	11.9	11.9	11.9	11.9	11.9	12	12.1	127	128	128	129	129	129	129	130	72	72	72	72	72	72	72	72
197605	12.2	12.3	12.3	12.4	12.4	12.4	12.4	11.9	132	133	134	134	134	134	135	129	72	71	71	71	71	71	71	72
197605	12	12	12.1	12.1	12.1	12.3	12.4	0	129	130	130	131	131	134	134	0	72	72	72	72	72	71	71	0
197606	12.4	12.3	12.4	12.4	12.5	12.5	12.5	12.5	134	133	134	135	136	136	137	137	71	71	71	71	70	70	70	70
197606	12.5	12.6	12.6	12.6	12.6	12.6	12.6	12.6	137	137	137	138	138	138	138	137	70	70	70	70	70	70	70	70
197606	12.6	12.5	12.5	12.5	12.5	12.5	12.5	12.5	137	137	137	136	136	135	135	135	70	70	70	70	70	70	70	70
197606	12.4	12.4	12.4	12.4	12.3	12.3	0	0	135	135	134	134	134	133	0	0	71	71	71	71	71	71	0	0
197607	12.3	12.2	12.2	12.2	12.1	12.1	12.1	12	133	133	133	132	131	131	130	130	71	72	72	72	72	72	72	72
197607	12	12	12	11.9	11.9	11.9	11.9	11.9	130	129	129	129	129	128	127	127	72	72	72	72	72	72	72	72
197607	11.8	11.8	11.8	11.7	11.7	11.7	11.7	11.6	127	127	126	126	126	126	125	124	73	73	73	73	73	73	73	73
197607	11.6	11.6	11.5	11.5	11.5	11.5	11.4	0	124	123	123	123	122	122	122	0	73	73	73	73	73	73	73	0
197608	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	121	121	121	120	120	120	119	119	73	73	73	73	73	74	74	74
197608	11.2	11.2	11.2	11.1	11.1	11.1	11	11	119	118	118	117	117	116	116	116	74	74	74	74	74	74	74	74
197608	11	11	10.9	10.9	10.9	10.9	10.9	10.9	115	115	115	115	114	114	113	113	74	74	74	74	74	74	74	74
197608	10.9	10.9	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	112	112	0	74	74	74	74	74	74	74	0
197609	10.8	10.7	10.7	10.9	10.9	10.9	10.8	10.8	112	111	111	114	113	113	113	113	74	74	74	74	74	74	74	74
197609	10.8	10.8	10.8	10.8	10.8	10.8	10.7	10.7	112	112	112	112	112	112	111	111	74	74	74	74	74	74	74	74
197609	10.7	10.7	10.7	10.7	10.7	10.6	10.6	10.6	111	111	110	110	110	110	110	109	74	74	74	74	74	74	74	74
197609	10.6	10.6	10.6	10.6	10.7	10.7	0	0	109	109	110	110	110	110	0	0	74	74	74	74	74	74	0	0
197610	10.7	10.7	10.7	10.7	10.8	10.8	10.8	10.8	111	111	111	111	112	112	112	112	74	74	74	74	74	74	74	74
197610	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	112	112	112	113	112	112	112	112	74	74	74	74	74	74	74	74
197610	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	112	112	112	112	112	112	112	112	74	74	74	74	74	74	74	74
197610	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	112	112	112	112	112	112	112	0	74	74	74	74	74	74	74	0
197611	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	112	112	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197611	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197611	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197611	10.8	10.8	10.8	10.8	10.8	10.8	0	0	113	113	113	112	112	112	0	0	74	74	74	74	74	74	0	0
197612	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	111	111	111	111	111	111	111	111	74	74	74	74	74	74	74	74
197612	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	111	111	111	111	111	111	111	111	74	74	74	74	74	74	74	74
197612	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	111	111	111	111	111	111	111	111	74	74	74	74	74	74	74	74
197612	10.7	10.7	10.7	10.7	10.7	10.7	10.7	0	110	110	110	110	110	110	110	0	74	74	74	74	74	74	74	0

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
1977010	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977011	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977012	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977013	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	0
1977020	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977021	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977022	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977023	10.6	10.6	10.6	10.6	10.9	0	0	0	110	110	110	110	113	0	0	0	74	74	74	74	74	0	0	0
1977030	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977031	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977032	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977033	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	0
1977040	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977041	10.6	10.6	10.6	10.7	10.7	10.7	10.7	10.7	110	110	110	110	110	110	110	110	74	74	74	74	74	74	74	74
1977042	10.7	10.7	10.7	10.7	10.7	10.8	10.8	10.8	110	111	111	111	111	112	112	112	74	74	74	74	74	74	74	74
1977043	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	112	112	112	113	113	113	0	0	74	74	74	74	74	74	0	0
1977050	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	114	114	114	114	114	114	74	74	74	74	74	74	74	74
1977051	10.9	10.9	10.9	10.9	10.9	10.8	10.8	10.8	114	114	114	113	113	113	113	112	74	74	74	74	74	74	74	74
1977052	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.6	111	111	111	111	110	110	110	110	74	74	74	74	74	74	74	74
1977053	10.6	10.6	10.6	10.6	10.6	10.6	10.6	0	110	110	110	109	109	109	109	0	74	74	74	74	74	74	74	0
1977060	10.5	10.5	10.5	10.5	10.5	10.4	10.4	10.4	109	109	109	108	107	107	106	105	74	74	74	74	74	74	74	74
1977061	10.4	10.3	10.3	10.3	10.2	10.2	10.1	10.1	105	105	104	104	104	103	102	101	74	74	74	74	74	74	74	74
1977062	10	10	9.9	9.9	9.9	9.8	9.8	9.7	101	100	100	99	98	98	97	96	74	74	73	73	73	73	73	73
1977063	9.7	9.7	9.6	9.6	9.6	9.6	0	0	96	95	95	95	95	94	0	0	73	73	73	73	73	73	0	0
1977070	9.6	9.6	9.5	9.5	9.5	9.4	9.4	9.4	94	94	93	92	92	92	92	91	73	73	73	73	73	72	72	72
1977071	9.9	9.4	9.3	9.3	9.2	9.2	9.2	9.1	98	90	90	89	88	88	87	87	73	72	72	72	72	72	72	71
1977072	9.1	9	9	8.9	8.9	8.9	8.9	8.9	86	86	85	85	84	83	83	82	71	71	71	71	71	71	71	71
1977073	8.9	8.9	8.9	8.9	9	9	9	0	82	82	83	84	85	85	86	0	71	71	71	71	71	71	71	0
1977080	9	9	9	8.9	8.9	8.9	8.9	8.8	85	85	85	84	83	83	82	82	71	71	71	71	71	71	71	70
1977081	8.8	8.7	8.7	8.6	8.5	8.5	8.4	8.5	81	80	79	78	78	77	76	77	70	70	70	70	69	69	69	69
1977082	8.6	8.7	8.7	8.8	8.8	8.8	8.8	8.8	78	79	80	81	82	82	82	82	70	70	70	70	70	70	70	70
1977083	8.8	8.8	8.8	8.8	8.8	8.8	8.8	0	82	82	82	82	82	81	81	0	70	70	70	70	70	70	70	0
1977090	8.8	8.8	8.8	8.8	8.8	8.7	8.7	8.7	81	81	81	81	80	80	80	80	70	70	70	70	70	70	70	70
1977091	8.7	8.7	8.7	8.7	8.6	8.6	8.6	8.6	79	79	79	79	79	79	79	79	70	70	70	70	70	70	70	70
1977092	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.5	79	79	79	78	78	78	78	78	70	70	70	70	70	70	69	69
1977093	8.5	8.5	8.5	8.4	8.4	8.4	8.4	0	78	77	77	76	76	76	0	0	69	69	69	69	69	69	0	0
1977100	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	75	75	74	74	74	74	74	75	69	69	69	69	69	69	69	69
1977101	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	75	75	76	76	76	76	76	76	69	69	69	69	69	69	69	69
1977102	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977103	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0	77	78	78	78	78	78	78	0	69	69	69	69	69	69	0	0
1977110	8.5	8.5	8.5	8.5	8.5	8.5	8.6	8.6	78	78	78	78	78	78	78	78	69	69	69	69	69	69	70	70
1977111	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	78	78	78	78	78	78	78	78	70	70	70	70	70	70	70	70
1977112	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	78	78	78	78	78	78	78	78	70	70	70	70	70	70	70	70
1977113	8.6	8.6	8.6	8.6	8.6	8.6	8.6	0	78	78	78	78	78	78	0	0	70	70	70	70	70	70	0	0
1977120	8.6	8.6	8.6	8.6	8.5	8.5	8.5	8.5	79	79	78	78	77	77	77	77	70	70	70	69	69	69	69	69
1977121	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977122	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977123	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0	77	77	77	77	77	77	77	0	69	69	69	69	69	69	69	0
1977130	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977131	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977132	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977133	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0	77	77	77	77	77	77	77	0	69	69	69	69	69	69	69	0
1977140	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977141	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977142	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977143	8.5	8.5	8.5	8.5	10.9	0	0	0	77	77	77	77	113	0	0	0	69	69	69	69	74	0	0	0
1977150	8.5	8.5	8.5	8.5	9.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977151	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977152	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	77	77	77	77	77	77	77	77	69	69	69	69	69	69	69	69
1977153	8.5	8.5	8.5	8.5	8.5	8.5	8.5	0	77	77	77	77	78	78	78	0	69	69	69	69	69	69	69	0
1977160	8.5	8.5	8.6	8.6	8.6	8.6	8.6	8.7	78	78	78	78	79	79	79	79	69	70	70	70	70	70	70	70
1977161	8.7	8.7	8.7	8.7	8.8	8.8	8.8	9.9	79	80	80	80	81	81	82	82	70	70	70	70	70	70	70	71
1977162	8.9	8.9	8.9	8.9	8.9	8.9	9	9	82	82	83	83	84	84	85	86	71	71	71	71	71	71	71	71
1977163	9.1	9.1	9.2	9.2	9.2	9.3	9.4	0	86	87	87	88	89	90	0	0	71	71	72	72	72	72	0	0
1977170	9.4	9.4	9.4	9.4	9.5	9.5	9.5	9.6	90	91	92	92	92	93	93	94	72	72	72	73	73	73	73	73
1977171	9.6	9.6	9.6	9.7	9.7	9.8	9.8	9.9	94	95	95	95	96	97	98	100	73	73	73	73	73	73	73	73
1977172	10.1	10.2	10.3	10.4	10.4	10.5	10.5	10.6	101	103	104	105	106	108	109	110	74	74	74	74	74	74	74	74
1977173	10.7	10.8	10.9	10.9	11	11	11.1	0	111	112	113	114	115	116	116	0	74	74	74	74	74	74	74	0
1977180	11.2	11.3	11.3	11.4	11.4	11.5	11.5	11.6	118	119	120	121	122	122	123	123	74	74	74	73	73	73	73	73
1977181	11.6	11.7	11.8	11.8	11.9	11.9	11.9	12	124	125	126	127	127	128	129	129	73	73	73	73	72	72	72	72
1977182	12	12	12	12	12	12	12	12	129	129	130	130	130	130	130	130	72	72	72	72	72	72	72	72
1977183	12	12	12	12	12	12	12	0	130	130	130	130	130	130	0	0	72	72	72	72	72	72	0	0
1977190	12	12	12	12	12	12	11.9	11.9	130	130	129	129	129	129	129	129	72	72	72	72	72	72	72	72
1977191	11.9	11.9	11.9	11.9	11.9	11.8	11.8	11.8	128	128	128	127	127	127	127	126	72	72	72	72	72	73	73	73
1977192	11.7	11.7	11.7	11.7	11.6	11.6	11.6	11.5	126	126	125	125	124	124	123	123	73	73	73	73	73	73	73	73
1977193	11.5	11.5	11.4	11.4	11.4	11.3	11.3	0	122	122	122	121	120	120	120	0	73	73	73	73	73	74	74	0
1977200	11.3	11.2	11.2	11.1	11.1	11.1	11	11	119	119	118	117	116	116	116	115	74	74	74	74	74	74	74	74

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
197808	10.9	10.9	10.9	10.9	10.8	10.8	10.8	10.7	115	114	114	113	113	113	112	111	74	74	74	74	74	74	74	74
197808	10.7	10.7	10.6	10.6	10.5	10.5	10.5	10.4	110	110	110	109	109	108	108	107	74	74	74	74	74	74	74	74
197808	10.4	10.4	10.4	10.4	10.3	10.3	10.3	0	107	106	106	105	105	105	104	0	74	74	74	74	74	74	74	0
197809	10.2	10.2	10.2	10.2	10.1	10.1	10.1	10	104	104	103	103	102	101	101	101	74	74	74	74	74	74	74	74
197809	10	10	9.9	9.9	9.9	9.8	9.8	9.8	100	100	100	99	98	98	97	97	74	74	73	73	73	73	73	73
197809	9.7	9.7	9.7	9.6	9.6	9.6	9.6	9.5	96	95	95	95	95	94	94	93	73	73	73	73	73	73	73	73
197809	9.5	9.5	9.5	9.5	9.5	9.5	0	0	93	93	92	92	92	92	0	0	73	73	73	73	73	73	0	0
197810	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	92	92	92	91	91	91	90	90	72	72	72	72	72	72	72	72
197810	9.3	9.3	9.3	9.3	9.2	9.2	9.2	9.2	90	90	89	89	88	88	87	87	72	72	72	72	72	72	72	72
197810	9.1	9.1	9.1	9.1	9	9	9	9	87	86	86	86	86	86	86	86	71	71	71	71	71	71	71	71
197810	9	9	9	9	9	9	9	0	86	86	86	86	86	86	86	0	71	71	71	71	71	71	71	0
197811	9	9	9	9	9.1	9.1	9.1	9.1	86	86	86	86	86	86	86	86	71	71	71	71	71	71	71	71
197811	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	86	86	86	86	87	87	87	87	71	71	71	71	71	71	71	71
197811	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	87	87	87	87	87	87	87	87	71	71	71	71	71	71	71	71
197811	9.2	9.2	9.1	9.1	9.1	9.1	0	0	87	87	87	87	87	86	0	0	72	72	71	71	71	71	0	0
197812	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	86	86	86	87	87	87	87	87	71	71	71	71	71	71	71	71
197812	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	87	87	87	87	87	87	87	87	71	71	71	71	71	71	71	71
197812	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	87	87	87	87	87	87	87	87	71	71	71	71	72	72	72	72
197812	9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	87	87	87	87	87	87	87	0	72	72	72	72	72	72	72	0
197901	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	87	87	87	87	87	87	87	87	72	72	72	72	72	72	72	72
197901	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	87	87	87	87	87	87	87	87	72	72	72	72	72	72	72	72
197901	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	87	88	88	88	88	88	88	88	72	72	72	72	72	72	72	72
197901	9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	88	88	88	88	88	88	88	0	72	72	72	72	72	72	72	0
197902	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	88	88	88	88	88	88	88	88	72	72	72	72	72	72	72	72
197902	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	88	88	88	88	88	88	88	88	72	72	72	72	72	72	72	72
197902	9.2	9.2	9.2	9.2	9.2	9.3	9.3	9.3	88	88	88	88	88	89	89	89	72	72	72	72	72	72	72	72
197902	9.3	9.3	9.3	9.3	10.9	0	0	0	89	89	89	89	115	0	0	0	72	72	72	72	74	0	0	0
197903	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197903	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	89	89	89	89	89	89	72	72	72	72	72	72	72	72
197903	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	89	89	90	90	90	90	90	90	72	72	72	72	72	72	72	72
197903	9.3	9.3	9.3	9.3	9.3	9.4	9.4	0	90	90	90	90	90	90	90	0	72	72	72	72	72	72	72	0
197904	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	90	90	90	90	90	90	90	90	72	72	72	72	72	72	72	72
197904	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.4	90	91	91	91	90	90	90	90	72	72	72	72	72	72	72	72
197904	9.4	9.4	9.4	9.4	9.4	9.4	9.4	9.5	90	91	91	91	91	92	92	92	72	72	72	72	72	72	72	73
197904	9.5	9.5	9.6	9.6	9.7	9.7	0	0	93	93	94	95	95	95	0	0	73	73	73	73	73	73	0	0
197905	9.7	9.8	9.8	9.9	9.9	10	10	8.8	96	97	98	98	99	100	101	81	73	73	73	73	73	74	74	70
197905	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.3	103	103	103	104	104	104	104	104	74	74	74	74	74	74	74	74
197905	10.3	10.4	10.4	10.5	10.6	10.7	10.8	10.9	105	105	106	108	109	110	113	114	74	74	74	74	74	74	74	74
197905	11	11.1	11.2	11.3	11.4	11.6	11.7	0	115	116	118	120	122	123	125	0	74	74	74	74	73	73	73	0
197906	11.7	11.8	11.8	11.9	11.9	12	12	12.1	126	126	127	127	128	129	130	130	73	73	73	72	72	72	72	72
197906	12	12	12	11.9	12	12.1	12.2	12.3	130	129	129	129	129	131	133	134	72	72	72	72	72	72	72	71
197906	12.4	12.4	12.4	12.5	12.5	12.5	12.5	12.6	134	135	135	135	136	137	137	137	71	71	71	70	70	70	70	70
197906	12.6	12.6	12.6	12.6	12.6	12.6	0	0	137	137	137	137	137	137	0	0	70	70	70	70	70	70	0	0
197907	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	137	137	137	137	137	137	137	138	70	70	70	70	70	70	70	70
197907	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	138	138	138	138	138	138	138	138	70	70	70	70	70	70	70	70
197907	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	138	138	138	138	138	138	137	137	70	70	70	70	70	70	70	70
197907	12.6	12.5	12.5	12.5	12.5	12.5	12.5	0	137	137	137	137	136	136	135	0	70	70	70	70	70	70	70	0
197908	12.5	12.4	12.4	12.4	12.3	12.3	12.3	12.3	135	135	135	134	134	134	133	133	70	71	71	71	71	71	71	71
197908	12.2	12.2	12.2	12.1	12.1	12.1	12.1	12.1	133	132	132	131	131	131	130	130	72	72	72	72	72	72	72	72
197908	12.1	12.1	12.1	12.1	12.1	12	12	12	130	130	130	130	130	130	130	130	72	72	72	72	72	72	72	72
197908	12	12	12	12	11.9	11.9	11.9	0	130	129	129	129	129	129	129	0	72	72	72	72	72	72	72	0
197909	11.9	11.9	11.9	11.9	11.9	11.8	11.8	11.8	128	128	127	127	127	127	127	127	72	72	72	72	72	73	73	73
197909	11.8	11.8	11.7	11.7	11.7	11.7	11.6	11.6	126	126	126	126	125	125	124	124	73	73	73	73	73	73	73	73
197909	11.6	11.6	11.5	11.5	11.5	11.5	11.5	11.4	123	123	123	123	123	122	122	122	73	73	73	73	73	73	73	73
197909	11.4	11.4	11.4	11.4	11.4	11.3	12	0	122	121	121	120	120	120	130	0	73	73	73	73	73	74	72	0
197910	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.1	120	120	119	119	119	118	118	117	74	74	74	74	74	74	74	74
197910	11.1	11.1	11.1	11	11	11	10.9	10.9	117	116	116	116	115	115	115	115	74	74	74	74	74	74	74	74
197910	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197910	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
197911	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197911	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197911	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197911	10.9	10.9	10.9	10.9	10.9	10.9	0	0	113	113	113	113	113	113	0	0	74	74	74	74	74	74	0	0
197912	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197912	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197912	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
197912	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

DATE : 07/11/85

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
198001	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198001	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198001	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198001	10.8	10.8	10.8	10.8	10.8	10.8	10.8	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
198002	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198002	10.8	10.8	10.8	10.8	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198002	10.8	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198002	10.9	10.9	10.9	10.9	10.9	0	0	0	113	113	113	113	113	0	0	0	74	74	74	74	74	0	0	0
198003	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198003	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198003	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198003	10.9	10.9	10.9	10.9	10.9	10.9	10.9	0	113	113	113	113	113	113	113	0	74	74	74	74	74	74	74	0
198004	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198004	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	113	113	113	113	113	113	113	113	74	74	74	74	74	74	74	74
198004	10.9	10.9	10.9	10.9	10.8	10.8	10.8	10.8	113	113	113	113	113	113	113	112	74	74	74	74	74	74	74	74
198004	10.7	10.7	10.7	10.6	10.6	10.5	0	0	111	111	110	110	109	109	0	0	74	74	74	74	74	74	0	0
198005	10.5	10.5	10.4	10.4	10.4	10.4	10.4	10.4	109	109	107	106	105	105	105	105	74	74	74	74	74	74	74	74
198005	10.4	10.4	10.4	10.4	10.4	10.3	10.3	10.3	105	105	105	105	105	105	105	105	74	74	74	74	74	74	74	74
198005	10.3	10.3	10.3	10.3	10.3	10.3	10.4	10.4	104	104	104	104	104	104	105	107	74	74	74	74	74	74	74	74
198005	10.5	10.6	10.6	10.7	10.8	10.9	10.9	0	109	109	110	110	112	113	115	0	74	74	74	74	74	74	74	0
198006	11	11.1	11.2	11.4	11.5	11.6	11.7	11.8	116	117	119	120	122	124	126	126	74	74	74	73	73	73	73	73
198006	11.9	11.9	12	12.1	12.1	12.2	12.2	12.3	127	129	130	130	131	132	133	133	72	72	72	72	72	72	72	71
198006	12.3	12.4	12.5	12.5	12.5	12.5	12.5	12.5	134	134	135	136	135	136	137	137	71	71	70	70	70	70	70	70
198006	12.5	12.6	12.6	12.6	12.6	12.6	0	0	137	137	138	138	138	138	0	0	70	70	70	70	70	70	0	0
198007	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	138	138	138	138	138	138	138	138	70	70	70	70	70	70	70	70
198007	12.7	12.7	12.7	12.7	12.7	12.6	12.6	12.6	138	138	138	138	138	138	138	138	70	70	70	70	70	70	70	70
198007	12.6	12.6	12.6	12.5	12.5	12.5	12.5	12.5	137	137	137	137	137	136	136	135	70	70	70	70	70	70	70	70
198007	12.5	12.4	12.4	12.4	12.3	12.3	12.3	0	135	135	135	134	134	134	133	0	70	71	71	71	71	71	71	0
198008	12.2	12.2	12.2	12.1	12.1	12.1	12	12	133	133	132	131	131	130	130	130	72	72	72	72	72	72	72	72
198008	12	11.9	11.9	11.9	11.9	11.8	11.8	11.8	129	129	128	127	127	127	126	126	72	72	72	72	72	73	73	73
198008	11.7	11.6	11.6	11.6	11.5	11.5	11.5	11.5	126	124	124	123	123	123	123	123	73	73	73	73	73	73	73	73
198008	11.5	11.5	11.5	11.5	11.5	11.5	11.5	0	123	123	123	123	122	122	122	0	73	73	73	73	73	73	73	0
198009	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	122	122	122	121	121	120	120	120	73	73	73	73	73	73	73	74
198009	11.3	11.4	11.4	11.5	11.5	11.5	11.5	11.5	120	120	122	122	123	123	123	123	74	73	73	73	73	73	73	73
198009	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198009	11.5	11.5	11.5	11.5	11.5	11.4	0	0	122	122	122	122	122	122	0	0	73	73	73	73	73	73	0	0
198010	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	122	122	122	121	121	121	121	120	73	73	73	73	73	73	73	73
198010	11.4	11.3	11.3	11.3	11.3	11.3	11.2	11.2	120	120	120	119	119	119	119	119	73	74	74	74	74	74	74	74
198010	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198010	11.2	11.2	11.2	11.2	11.2	11.3	11.3	0	119	119	119	119	119	119	119	0	74	74	74	74	74	74	74	0
198011	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198011	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198011	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198011	11.3	11.3	11.3	11.3	11.3	11.3	0	0	119	119	119	119	119	119	0	0	74	74	74	74	74	74	0	0
198012	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198012	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198012	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198012	11.3	11.3	11.3	11.3	11.3	11.3	11.3	0	119	119	119	119	119	119	119	0	74	74	74	74	74	74	74	0
198101	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198101	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198101	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198101	11.2	11.2	11.2	11.2	11.2	11.2	11.2	0	119	119	119	119	119	119	119	0	74	74	74	74	74	74	74	0
198102	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198102	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198102	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198102	11.2	11.2	11.2	11.2	10.9	0	0	0	119	119	119	119	113	0	0	0	74	74	74	74	74	0	0	0
198103	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198103	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198103	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198103	11.2	11.2	11.2	11.2	11.2	11.2	11.2	0	119	119	119	119	119	119	119	0	74	74	74	74	74	74	74	0
198104	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	119	74	74	74	74	74	74	74	74
198104	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	119	119	119	119	119	119	119	120	74	74	74	74	74	74	74	74
198104	11.3	11.3	11.3	11.3	11.4	11.4	11.4	11.4	120	120	120	120	120	120	120	120	74	74	74	74	73	73	73	73
198104	11.4	11.4	11.4	11.5	11.5	11.6	0	0	121	121	122	122	123	123	0	0	73	73	73	73	73	73	0	0
198105	11.6	11.7	11.8	11.8	11.9	11.9	11.9	11.9	124	125	126	127	127	128	129	129	73	73	73	73	72	72	72	72
198105	12	12	12	12	12	12	12	12	130	129	129	129	130	130	130	130	72	72	72	72	72	72	72	72
198105	12	12	12	12	12	12	12	12	130	130	130	130	130	130	129	129	72	72	72	72	72	72	72	72
198105	12	12	12	12	12.1	12.1	12.1	0	129	129	130	130	130	130	131	0	72	72	72	72	72	72	72	0
198106	12.1	12.2	12.2	12.2	12.3	12.3	12.4	12.4	131	132	133	133	133	134	134	135	72	72	72	72	71	71	71	71
198106	12.5	12.5	12.5	12.6	12.6	12.6	12.6	12.6	135	136	137	137	137	137	137	137	70	70	70	70	70	70	70	70
198106	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	137	137	137	136	136	136	135	135	70	70	70	70	70	70	70	70
198106	12.4	12.4	12.4	12.4	12.3	12.3	0	0	135	135	134	134	134	134	0	0	71	71	71	71	71	71	0	0
198107	12.3	12.3	12.3	12.3	12.2	12.2	12.2	12.2	134	133	133	133	133	133	133	132	71	71	71	71	72	72	72	72
198107	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	132	132	132	132	132	132	133	133	72	72	72	72	72	72	72	72
198107	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	133	133	133	133	133	133	132	132	72	72	72	72	72	72	72	72
198107	12.2	12.1	12.1	12.1	12.1	12.1	12.1	0	132	131	131	131	130	130	130	0	72	72	72	72	72	72	72	0
198108	12.1	12	12	12	12	12	11.9	11.9	130	130	130	130	129	129	129	129	72	72	72	72	72	72	72	72

DATE : 07/11/85

LEMON DAM IMPROVEMENTS PROJECT
POWER PLANT KW-HR PRODUCTION
WORTHINGTON PUMP 10LNT14A

FRICTION LOSS=.3384*Q*Q

DATE	FLOW (CFS)								NET HEAD (FT)								EFFICIENCY (%)							
198108	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	128	127	127	127	127	127	127	127	72	72	72	72	72	72	72	72
198108	11.8	11.8	11.8	11.8	11.8	11.8	11.7	11.7	127	127	127	127	126	126	126	126	73	73	73	73	73	73	73	73
198108	11.7	11.7	11.6	11.6	11.6	11.6	11.5	0	125	125	124	124	123	123	123	0	73	73	73	73	73	73	73	0
198109	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	123	122	122	122	122	121	121	121	73	73	73	73	73	73	73	73
198109	11.4	11.3	11.4	11.4	11.3	11.3	11.3	11.3	120	120	120	120	120	120	120	120	73	74	73	73	74	74	74	74
198109	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	120	120	120	119	119	119	119	119	74	74	74	74	74	74	74	74
198109	11.2	11.2	11.2	11.2	11.2	11.2	0	0	119	119	118	118	118	118	0	0	74	74	74	74	74	74	0	0
198110	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	117	117	117	117	117	117	117	117	74	74	74	74	74	74	74	74
198110	11.1	11.2	11.2	11.2	11.2	11.2	11.2	11.2	117	118	118	118	119	119	119	119	74	74	74	74	74	74	74	74
198110	11.3	11.3	11.3	11.3	11.3	11.4	11.4	11.4	119	119	120	120	120	120	120	120	74	74	74	74	74	73	73	73
198110	11.4	11.4	11.4	11.4	11.4	11.4	11.4	0	120	121	121	121	121	122	122	0	73	73	73	73	73	73	73	0
198111	11.4	11.4	11.4	11.4	11.5	11.5	11.5	11.5	122	122	122	122	122	122	122	122	73	73	73	73	73	73	73	73
198111	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	122	122	122	123	123	123	123	123	73	73	73	73	73	73	73	73
198111	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	122	122	73	73	73	73	73	73	73	73
198111	11.5	11.5	11.5	11.5	11.5	11.5	0	0	122	122	122	122	122	122	0	0	73	73	73	73	73	73	0	0
198112	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198112	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198112	11.5	11.5	11.5	11.5	11.5	11.6	11.6	11.6	123	123	133	123	123	123	123	123	73	73	73	73	73	73	73	73
198112	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	123	123	123	123	123	123	123	0	73	73	73	73	73	73	73	0
198201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	123	123	123	123	123	123	123	123	73	73	73	73	73	73	73	73
198201	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	124	124	124	124	124	124	124	0	73	73	73	73	73	73	73	0
198202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
198202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
198202	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
198202	11.6	11.6	11.6	11.6	10.9	0	0	0	124	124	124	124	115	0	0	0	73	73	73	73	74	0	0	0
198203	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	124	124	124	124	124	124	124	124	73	73	73	73	73	73	73	73
198203	11.6	11.6	11.6	11.7	11.7	11.7	11.7	11.7	124	124	124	125	125	125	125	125	73	73	73	73	73	73	73	73
198203	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	125	125	73	73	73	73	73	73	73	73
198203	11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	125	125	125	125	125	125	125	0	73	73	73	73	73	73	73	0
198204	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	125	125	125	125	125	125	126	126	73	73	73	73	73	73	73	73
198204	11.7	11.7	11.7	11.7	11.7	11.7	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
198204	11.8	11.8	11.8	11.9	11.9	11.9	11.9	11.9	127	127	127	127	127	127	128	128	73	73	73	72	72	72	72	72
198204	11.9	11.9	11.9	11.9	11.9	11.9	0	0	128	129	129	129	129	129	0	0	72	72	72	72	72	72	0	0
198205	12	12	12	12	12	12	12	11.9	129	130	129	129	129	129	129	129	72	72	72	72	72	72	72	72
198205	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	129	129	128	127	127	127	127	127	72	72	72	72	72	72	72	72
198205	11.9	11.9	11.9	11.9	11.9	11.9	12	12	127	127	128	128	128	129	129	129	72	72	72	72	72	72	72	72
198205	12	12.1	12.1	12.2	12.2	12.3	12.3	0	130	130	131	132	133	133	134	0	72	72	72	72	72	71	71	0
198206	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	134	134	134	134	134	134	134	134	71	71	71	71	71	71	71	71
198206	12.3	12.4	12.4	12.4	12.5	12.5	12.5	12.5	134	134	134	135	135	136	137	137	71	71	71	71	70	70	70	70
198206	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	138	138	138	138	138	138	138	138	70	70	70	70	70	70	70	70
198206	12.7	12.7	12.7	12.7	12.7	12.7	0	0	138	139	138	138	138	138	0	0	70	70	70	70	70	70	0	0
198207	12.7	12.7	12.6	12.6	12.6	12.6	12.6	12.6	138	138	138	138	138	138	138	138	70	70	70	70	70	70	70	70
198207	12.6	12.6	12.6	12.6	12.6	12.5	12.5	12.5	138	137	137	137	137	137	137	136	70	70	70	70	70	70	70	70
198207	12.5	12.5	12.5	12.4	12.4	12.4	12.4	12.3	136	135	135	135	135	134	134	134	70	70	70	71	71	71	71	71
198207	12.3	12.3	12.2	12.2	12.2	12.2	12.2	0	134	133	133	133	133	133	133	0	71	71	72	72	72	72	72	0
198208	12.3	12.3	12.3	12.1	12.1	12.1	12.1	12.1	132	132	132	131	131	130	130	130	72	72	72	72	72	72	72	72
198208	12.1	12	12	12	12	12	12	12	130	130	130	129	129	129	129	129	72	72	72	72	72	72	72	72
198208	12	12	11.9	11.9	11.9	11.9	11.9	12	129	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
198208	12	12.1	12.1	12.1	12.2	12.2	12.2	0	129	130	131	131	132	132	132	0	72	72	72	72	72	72	72	0
198209	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	132	132	132	132	132	132	132	132	72	72	72	72	72	72	72	72
198209	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	132	132	132	132	132	132	132	132	72	72	72	72	72	72	72	72
198209	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	132	132	132	132	132	132	132	132	72	72	72	72	72	72	72	72
198209	12.1	12.1	12.1	12.1	12.1	12	12	0	131	131	131	130	130	130	130	0	72	72	72	72	72	72	72	0
198210	12	12	12	12	12	12	12	12	130	130	130	130	130	130	129	129	72	72	72	72	72	72	72	72
198210	12	12	11.9	11.9	11.9	11.9	11.9	11.9	129	129	129	129	129	129	129	129	72	72	72	72	72	72	72	72
198210	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	128	128	128	128	128	128	128	128	72	72	72	72	72	72	72	72
198210	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	128	128	128	128	127	127	127	0	72	72	72	72	72	72	72	0
198211	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	127	127	127	127	127	127	127	127	72	72	72	72	72	72	72	72
198211	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	127	127	127	127	127	127	127	127	72	72	72	72	72	72	72	72
198211	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	127	127	73	73	73	73	73	73	73	73
198211	11.8	11.8	11.8	11.8	11.8	11.8	0	0	127	127	127	127	127	127	0	0	73	73	73	73	73	73	0	0
198212	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	127	127	127	127	127	127	126	126	73	73	73	73	73	73	73	73
198212	11.8	11.8	11.8	11.8	11.9	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
198212	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	126	126	126	126	126	126	126	126	73	73	73	73	73	73	73	73
198212	11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	126	126	126	126	126	126	126	0	73	73	73	73	73	73	73	0

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
2100	1971 01	2100	2100	2100	2100	2100	2083	2083	2083				
2083	1971 01	2083	2083	2083	2083	2083	2083	2083	2083				
2083	1971 01	2083	2083	2083	2083	2100	2100	2100	2100				
2100	1971 01	2100	2100	2100	2100	2100	2100	2100	0	64845		88	99
2100	1971 02	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 02	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 02	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 02	2100	2100	2100	2100	0	0	0	0	60929		88	103
2100	1971 03	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 03	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 03	2100	2100	2100	2100	2100	2100	2100	2100				
2100	1971 03	2100	2100	2100	2100	2118	2118	2118	0	65154		88	100
2118	1971 04	2118	2118	2135	2135	2135	2135	2171	2171				
2171	1971 04	2171	2188	2188	2188	2207	2207	2225	2225				
2240	1971 04	2213	2213	2230	2230	2230	2248	2248	2248				
2248	1971 04	2248	2267	2267	2267	2267	2267	0	0	66160		94	98
2267	1971 05	2267	2284	2284	2284	2284	2284	2284	2284				
2284	1971 05	2284	2284	2284	2284	2284	2281	2284	2284				
2284	1971 05	2284	2303	2303	2303	2303	2303	2303	2284				
2284	1971 05	2284	2284	2303	2303	2321	2321	2321	0	71050		97	98
2321	1971 06	2321	2321	2321	2321	2321	2358	2358	2358	2376			
2362	1971 06	2362	2362	2362	2362	2362	2362	2362	2362				
2380	1971 06	2380	2380	2380	2380	2380	2380	2380	2362				
2362	1971 06	2362	2362	2362	2376	2376	2376	2358	0	70862		99	99
2358	1971 07	2358	2321	2321	2321	2321	2303	2303	2303	2303			
2284	1971 07	2284	2284	2284	2267	2267	2267	2248	2248	2230			
2230	1971 07	2230	2213	2225	2225	2225	2207	2207	2188	2188			
2188	1971 07	2188	2171	2171	2171	2135	2135	2118	2118	0	69347		98	95
2100	1971 08	2100	2100	2100	2083	2065	2065	2048	2031	2031				
2041	1971 08	2041	2041	2041	2024	2006	2006	1989	1954	1938				
1920	1971 08	1938	1938	1920	1920	1920	1920	1920	1904	1904				
1904	1971 08	1904	1904	1920	1920	1920	1920	1920	0	61294		88	94
1920	1971 09	1920	1920	1920	1920	1920	1920	1904	1904				
1904	1971 09	1904	1886	1886	1886	1870	1870	1854	1854				
1837	1971 09	1837	1837	1820	1820	1787	1787	1771	1771				
1755	1971 09	1755	1755	1739	1739	1722	1722	0	0	55184		80	96
1707	1971 10	1707	1707	1707	1707	1707	1707	1707	1707				
1707	1971 10	1707	1707	1707	1707	1707	1707	1675	1675				
1675	1971 10	1675	1675	1675	1707	1707	1707	1722	1722				
1722	1971 10	1722	1739	1739	1739	1739	1739	1739	0	52994		72	99
1755	1971 11	1755	1755	1755	1755	1755	1771	1771	1771				
1771	1971 11	1771	1771	1771	1771	1787	1787	1787	1787				
1787	1971 11	1787	1787	1787	1820	1820	1820	1820	1820				
1820	1971 11	1820	1820	1787	1787	1787	1787	0	0	53569		76	98
1787	1971 12	1787	1787	1820	1820	1820	1820	1820	1820				
1820	1971 12	1820	1820	1820	1820	1820	1820	1820	1820				
1837	1971 12	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1971 12	1837	1837	1837	1837	1837	1837	1837	0	56609	747997	77	99
1854	1972 01	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 01	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 01	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 01	1854	1854	1854	1854	1854	1854	1854	0	57474		77	100
1854	1972 02	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 02	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 02	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1972 02	1854	1854	1854	1854	1854	0	0	0	53766		77	104
1870	1972 03	1870	1870	1870	1870	1870	1870	1870	1870				
1870	1972 03	1870	1870	1870	1870	1886	1886	1886	1886				
1886	1972 03	1886	1904	1904	1904	1904	1920	1920	1920				
1920	1972 03	1920	1938	1938	1938	1938	1938	1938	0	58794		81	98
1954	1972 04	1954	1954	1954	1954	1954	1954	1989	1989				
1989	1972 04	1989	2006	2006	2024	2024	2024	2041	2041				
2041	1972 04	2041	2041	2031	2031	2031	2031	2048	2048				
2065	1972 04	2065	2083	2083	2083	2100	2100	0	0	60673		88	96
2118	1972 05	2118	2118	2135	2135	2171	2171	2171	2171				
2171	1972 05	2171	2171	2171	2171	2171	2171	2171	2171				
2171	1972 05	2171	2171	2188	2188	2188	2188	2188	2188				
2188	1972 05	2188	2188	2188	2171	2171	2171	2171	0	67276		91	99
2171	1972 06	2171	2171	2171	2171	2171	2171	2171	2171				
2171	1972 06	2171	2171	2171	2171	2171	2135	2135	2135				
2118	1972 06	2118	2118	2118	2100	2100	2083	2083	2083				
2065	1972 06	2065	2065	2048	2048	2031	2031	0	0	63719		90	98
2041	1972 07	2041	2041	2024	2024	2006	2006	1989	1989				
1954	1972 07	1954	1938	1938	1920	1904	1886	1870	1854				
1837	1972 07	1837	1837	1787	1787	1771	1755	1739	1722				
1707	1972 07	1707	1675	1659	1643	1628	1612	1596	0	57139		85	90
1596	1972 08	1596	1581	1550	1535	1520	1505	1470	1455				

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1440	1972208	1440	1426	1411	1382	1368	1354	1340	1312			
1312	1972208	1312	1297	1266	1266	1266	1252	1252	1239			
1426	1972208	1426	1226	1226	1212	1212	1212	1185	0	42094		67	84
1185	1972209	1185	1185	1185	1172	1172	1172	1172	1172				
1143	1972209	1143	1143	1143	1143	1172	1172	1172	1172				
1172	1972209	1172	1172	1143	1143	1143	1143	1143	1143				
1140	1972209	1143	1143	1143	1130	1130	1130	0	0	34696		49	98
1118	1972210	1118	1118	1118	1105	1118	1130	1143	1212				
1239	1972210	1239	1252	1266	1266	1297	1297	1312	1340				
1368	1972210	1368	1382	1426	1505	1535	1581	1596	1612				
1628	1972210	1628	1628	1643	1659	1659	1675	1675	0	42903		70	82
1707	1972211	1707	1707	1707	1722	1722	1739	1739	1739				
1739	1972211	1739	1755	1755	1755	1755	1771	1771	1771				
1771	1972211	1771	1787	1787	1787	1787	1787	1820	1820				
1820	1972211	1820	1820	1820	1820	1837	1837	0	0	53154		77	96
1837	1972212	1837	1837	1837	1837	1837	1837	1837	1854				
1854	1972212	1854	1854	1854	1854	1854	1870	1870	1870				
1870	1972212	1870	1870	1870	1870	1870	1870	1870	1870				
1870	1972212	1870	1870	1886	1886	1886	1886	1886	0	57723	649411	79	98
1886	1973001	1886	1886	1886	1886	1886	1886	1904	1904				
1904	1973001	1904	1904	1904	1904	1904	1904	1904	1904				
1904	1973001	1904	1904	1904	1904	1904	1904	1920	1920				
1920	1973001	1920	1920	1920	1920	1920	1920	1920	0	59060		80	99
1920	1973002	1920	1920	1920	1920	1920	1920	1920	1920				
1920	1973002	1920	1920	1920	1938	1938	1938	1938	1938				
1938	1973002	1938	1938	1938	1938	1938	1938	1938	1938				
1938	1973002	1938	1938	1938	1938	0	0	0	0	56004		81	103
1938	1973003	1938	1938	1938	1938	1938	1938	1938	1938				
1954	1973003	1954	1954	1954	1954	1954	1954	1954	1954				
1954	1973003	1954	1954	1954	1954	1954	1954	1938	1938				
1938	1973003	1938	1938	1938	1938	1938	1938	1938		60302		81	100
1920	1973004	1920	1920	1920	1920	1920	1904	1904	1904				
1904	1973004	1904	1886	1886	1886	1870	1870	1870	1854				
1854	1973004	1854	1854	1854	1837	1837	1820	1787	1787				
1771	1973004	1771	1755	1739	1739	1739	1739	0	0	55450		80	96
1739	1973005	1739	1722	1707	1707	1707	1675	1675	1659	1659			
1643	1973005	1643	1643	1659	1659	1659	1659	1659	1659				
1659	1973005	1659	1675	1707	1707	1707	1675	1659	1643				
1659	1973005	1659	1707	1722	1722	1739	1755	1771	0	52290		74	95
1820	1973006	1820	1854	1836	1904	1920	1920	1938	1954				
2006	1973006	2006	2041	2031	2100	2093	2100	2100	2100				
2135	1973006	2135	2171	2188	2225	2213	2248	2267	2303				
2358	1973006	2358	2376	2362	2362	2380	2380	0	0	63725		99	89
2380	1973007	2380	2399	2399	2399	2399	2399	2399	2399				
2399	1973007	2399	2399	2399	2399	2399	2399	2399	2399				
2399	1973007	2399	2399	2399	2399	2399	2399	2380	2380				
2380	1973007	2380	2362	2362	2362	2376	2376	2358	0	74095		100	100
2358	1973008	2358	2321	2303	2303	2284	2284	2267	2267				
2248	1973008	2248	2220	2220	2213	2225	2225	2207	2207				
2188	1973008	2188	2171	2171	2135	2118	2118	2100	2083				
2083	1973008	2083	2083	2065	2065	2065	2048	2048	0	67713		98	93
2048	1973009	2048	2048	2031	2031	2031	2041	2041	2041				
2024	1973009	2024	2024	2024	2024	2024	2024	2024	2024				
2024	1973009	2024	2024	2024	2024	2024	2024	2006	2006				
2006	1973009	2006	2006	1989	1989	1989	1989	0	0	60628		85	99
1954	1973010	1954	1954	1954	1954	1938	1938	1938	1938				
1920	1973010	1920	1920	1920	1920	1920	1920	1920	1920				
1920	1973010	1920	1920	1920	1920	1904	1904	1904	1904				
1904	1973010	1904	1886	1886	1886	1886	1870	1870	0	59412		81	99
1854	1973011	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1973011	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1973011	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1973011	1854	1854	1854	1854	1854	1854	1854	0	55620		77	100
1854	1973012	1854	1854	1854	1854	1854	1837	1837	1837				
1837	1973012	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1973012	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1973012	1837	1837	1837	1837	1837	1837	1837	0	57032	[illegible]	77	100
1837	1974011	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974011	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974011	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974011	1837	1837	1837	1837	1837	1837	1837	0	56947		77	99
1837	1974012	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974012	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974012	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974012	1837	1837	1837	1837	0	0	0	0	53273		77	103
1837	1974013	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1974013	1837	1837	1837	1837	1837	1837	1837	1837				

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	0	56947		77	99
1837	1837	1837	1837	1837	1837	1837	1837	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1870	1870	1870	1870	1870	1886	1886	0	0	55629		79	98
1886	1886	1886	1886	1886	1904	1904	1904	1920				
1920	1920	1920	1939	1954	1954	1989	1989	1989				
2006	2006	2006	2006	2006	2006	2006	2006	1989				
1989	1989	1989	1989	2006	2006	2006	2006	0	60851		84	97
1989	1989	1989	1954	1954	1938	1938	1920	1920				
1904	1904	1904	1886	1886	1870	1854	1854	1837				
1837	1837	1820	1787	1771	1771	1755	1739	1739				
1722	1722	1707	1675	1659	1643	1628	0	0	54850		83	92
1612	1612	1596	1581	1550	1535	1535	1520	1505				
1470	1470	1470	1455	1440	1440	1426	1426	1411				
1426	1426	1426	1440	1440	1440	1440	1440	1440				
1440	1440	1440	1426	1426	1411	1411	1382	0	45400		67	91
1382	1382	1368	1354	1354	1354	1354	1340	1340				
1340	1340	1312	1312	1297	1297	1266	1252	1252				
1239	1239	1226	1226	1212	1212	1185	1172	1143				
1143	1143	1130	1118	1105	1079	1079	1067	0	38510		58	89
1054	1054	1027	1027	1015	991	991	978	967				
967	967	955	955	930	918	918	896	896				
884	884	884	884	872	872	849	849	849				
872	872	872	872	872	872	872	0	0	27660		44	87
872	872	872	872	872	872	872	872	872				
872	872	872	872	884	884	884	884	884				
884	884	884	884	884	884	896	896	896				
896	896	896	918	918	918	930	930	0	27526		39	95
930	930	955	955	955	955	967	967	967				
967	967	967	978	978	978	978	978	978				
991	991	991	991	991	991	991	1015	1015				
1015	1015	1015	1015	1015	1015	1015	0	0	29519		42	98
1015	1015	1015	1015	1015	1015	991	991	991				
991	991	991	991	991	991	991	991	1015				
1015	1015	1015	1015	1015	1015	1015	1015	1015				
1015	1015	1015	1015	1015	1015	1015	1015	0	31225	538337	42	100
1015	1015	1015	1015	1015	1015	1015	1015	1015				
1015	1015	1015	1015	1015	1015	1015	1015	1015				
1015	1015	1015	1015	1015	1015	1015	1015	1015				
1015	1015	1015	1015	1015	1027	1027	1027	0	31501		43	98
1027	1027	1027	1027	1027	1027	1027	1027	1027				
1027	1027	1027	1027	1027	1027	1027	1027	1027				
1027	1027	1027	1027	1027	1027	1027	1027	1027				
1027	1027	1027	1027	1027	0	0	0	0	30101		43	104
1027	1027	1027	1027	1027	1027	1027	1027	1027				
1027	1027	1027	1027	1027	1054	1054	1054	1054				
1054	1054	1054	1054	1054	1054	1054	1054	1054				
1054	1054	1054	1054	1054	1054	1054	1054	0	32350		44	99
1054	1054	1054	1054	1067	1067	1067	1067	1067				
1067	1067	1067	1079	1079	1079	1079	1079	1079				
1079	1079	1105	1105	1105	1105	1105	1118	1118				
1130	1130	1143	1172	1185	1212	1212	0	0	32999		51	90
1226	1226	1239	1239	1252	1266	1297	1312	1312				
1340	1340	1340	1354	1382	1426	1455	1520	1581				
1628	1628	1675	1739	1771	1820	1854	1870	1870				
1886	1886	1904	1938	1989	2006	2006	2006	0	49503		84	79
2024	2024	2024	2031	2083	2100	2118	2135	2135				
2135	2135	2118	2100	2118	2171	2207	2230					
2248	2248	2267	2248	2248	2267	2267	2284	2303				
2358	2358	2362	2399	2417	2402	2420	0	0	66354		101	91
2438	2438	2457	2457	2457	2457	2457	2475	2475				
2457	2457	2457	2457	2457	2438	2438	2457	2457				
2457	2457	2457	2475	2475	2475	2457	2457	2457				
2438	2438	2438	2438	2438	2420	2420	2402	0	75977		103	99
2402	2402	2402	2417	2417	2399	2380	2362	2362				
2284	2284	2303	2358	2358	2321	2321	2303	2284				
2284	2284	2267	2267	2248	2248	2248	2230	2230				
2213	2213	2213	2225	2225	2225	2207	2188	2171	0	71115	101	95
2171	2171	2171	2135	2135	2135	2118	2118	2100	2083			
2083	2083	2065	2065	2065	2048	2048	2048	2048				
2048	2048	2048	2048	2048	2048	2048	2031	2031	2031			
2031	2031	2031	2031	2041	2041	2041	0	0	62050		90	96
2041	2041	2041	2024	2024	2024	2006	2006	2006				
2006	2006	1989	1989	1989	1989	1954	1954	1954				
1954	1954	1938	1938	1938	1938	1938	1920	1920				

DATE	KW-HRS PRODUCED									MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
197510	1920	1920	1920	1904	1904	1904	1904	0		60856		85	96
197511	1904	1904	1904	1904	1904	1904	1904	1904	1904				
197511	1904	1904	1904	1904	1904	1904	1904	1904	1904				
197511	1920	1920	1920	1920	1920	1920	1920	1920	1920				
197511	1920	1920	1920	1920	1920	1920	0	0	0	57344		80	100
197512	1920	1920	1920	1920	1920	1920	1920	1920	1920				
197512	1920	1920	1920	1920	1904	1904	1904	1904	1904				
197512	1904	1904	1904	1904	1904	1904	1904	1904	1904				
197512	1904	1904	1904	1904	1904	1904	1904	1904	0	59200	629350	80	99
197601	1904	1904	1904	1904	1904	1904	1904	1904	1904				
197601	1904	1904	1904	1886	1886	1886	1886	1886	1886				
197601	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197601	1886	1886	1886	1886	1886	1886	1886	1886	0	58664		79	100
197602	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197602	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197602	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197602	1886	1886	1886	1886	1886	1886	0	0	0	54694		79	103
197603	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197603	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197603	1886	1886	1886	1886	1886	1886	1886	1886	1886				
197603	1886	1886	1886	1904	1904	1904	1904	1904		58556		79	100
197604	1904	1904	1920	1920	1920	1920	1938	1938					
197604	1938	1954	1954	1989	2006	2006	2024	2024					
197604	2024	2041	2041	2041	2041	2031	2031	2031					
197604	2040	2040	2048	2065	2065	2083	0	0		59897		87	96
197605	2100	2100	2135	2171	2171	2188	2207	2225					
197605	2213	2230	2230	2248	2248	2248	2267	2303					
197605	2358	2362	2380	2399	2399	2399	2417	2248					
197605	2267	2284	2303	2321	2321	2380	2399	0		70521		101	94
197606	2399	2362	2399	2417	2420	2420	2438	2438					
197606	2420	2457	2457	2475	2475	2475	2475	2457					
197606	2457	2438	2438	2420	2420	2402	2402	2402					
197606	2417	2417	2399	2399	2380	2362	0	0		72755		103	98
197607	2362	2076	2376	2358	2321	2321	2303	2284					
197607	2284	2267	2267	2248	2248	2230	2213	2213					
197607	2225	2225	2207	2188	2188	2188	2171	2135					
197607	2135	2118	2100	2100	2083	2083	2065	0		68882		99	94
197608	2048	2048	2048	2031	2031	2041	2024	2024					
197608	2006	1989	1989	1954	1954	1938	1920	1920					
197608	1904	1904	1886	1886	1870	1870	1854	1854					
197608	1854	1854	1837	1837	1837	1820	1820	0		59852		85	95
197609	1920	1787	1787	1870	1854	1854	1837	1837					
197609	1820	1820	1820	1820	1820	1820	1787	1787					
197609	1787	1787	1771	1771	1771	1755	1755	1739					
197609	1739	1739	1755	1755	1771	1771	0	0		53806		78	96
197610	1787	1787	1787	1787	1820	1820	1820	1820					
197610	1820	1820	1820	1837	1820	1820	1820	1820					
197610	1820	1820	1820	1820	1820	1820	1820	1820					
197610	1820	1820	1820	1820	1820	1820	1820	0		56305		77	98
197611	1820	1820	1837	1837	1837	1837	1837	1837					
197611	1837	1837	1837	1837	1837	1837	1837	1837					
197611	1837	1837	1837	1837	1837	1837	1837	1837					
197611	1837	1837	1837	1820	1820	1820	0	0		55025		77	99
197612	1787	1787	1787	1787	1787	1787	1787	1787					
197612	1787	1787	1787	1787	1787	1787	1787	1787					
197612	1787	1787	1787	1787	1787	1787	1787	1787					
197612	1771	1771	1771	1771	1771	1771	1771	0		55285	724242	74	100
197701	1771	1771	1771	1771	1771	1771	1771	1771					
197701	1771	1771	1771	1771	1771	1771	1771	1771					
197701	1771	1771	1771	1771	1771	1771	1771	1771					
197701	1771	1771	1771	1771	1771	1771	1755	0		54885		74	100
197702	1755	1755	1755	1755	1755	1755	1755	1755					
197702	1755	1755	1755	1755	1755	1755	1755	1755					
197702	1755	1755	1755	1755	1755	1755	1755	1755					
197702	1755	1755	1755	1755	0	0	0	0		50994		73	104
197703	1755	1755	1755	1755	1755	1755	1755	1755					
197703	1755	1755	1755	1755	1755	1755	1755	1755					
197703	1755	1755	1755	1755	1755	1755	1755	1755					
197703	1755	1755	1755	1755	1755	1755	1755	0		54405		73	100
197704	1755	1755	1755	1755	1755	1755	1755	1755					
197704	1755	1755	1755	1771	1771	1771	1771	1771					
197704	1771	1787	1787	1787	1787	1820	1820	1820					
197704	1820	1820	1820	1837	1837	1837	0	0		53510		77	97
197705	1854	1854	1870	1870	1870	1870	1870	1870					
197705	1870	1870	1870	1854	1837	1837	1837	1820					
197705	1787	1787	1787	1787	1771	1771	1771	1755					
197705	1755	1755	1755	1739	1739	1739	1739	0		56160		78	97

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1722	197706	1722	1722	1722	1707	1675	1675	1659	1643				
1643	197706	1643	1628	1612	1612	1596	1581	1550	1535				
1520	197706	1520	1505	1470	1455	1440	1426	1411	1382				
1382	197706	1382	1368	1354	1354	1354	1340	0	0	46043		72	89
1340	197707	1340	1340	1312	1297	1297	1266	1266	1252				
1440	197707	1440	1239	1226	1212	1185	1185	1172	1143				
1130	197707	1130	1118	1105	1105	1079	1067	1067	1054				
1054	197707	1054	1054	1067	1079	1105	1105	1118	0	36479		60	82
1105	197708	1105	1105	1105	1079	1067	1067	1054	1027				
1015	197708	1015	991	978	955	930	918	896	918				
955	197708	955	978	991	1015	1027	1027	1027	1027				
1027	197708	1027	1027	1027	1027	1027	1015	1015	0	31422		46	92
1015	197709	1015	1015	1015	1015	991	991	991	991				
978	197709	978	978	978	967	967	967	967	967				
967	197709	967	967	967	955	955	955	930	930				
930	197709	930	918	918	896	896	896	0	0	28873		42	95
884	197710	884	884	872	872	872	872	872	884				
884	197710	884	884	896	896	896	896	896	896				
918	197710	918	918	918	918	918	918	918	918				
918	197710	918	930	930	930	930	930	930	0	27998		39	96
930	197711	930	930	930	930	930	930	955	955				
955	197711	955	955	955	955	955	955	955	955				
955	197711	955	955	955	955	955	955	955	955				
955	197711	955	955	955	955	955	955	0	0	28500		40	99
967	197712	967	967	955	930	918	918	918	918				
918	197712	918	918	918	918	918	918	918	918				
918	197712	918	918	918	918	918	918	918	918				
918	197712	918	918	918	918	918	918	918	0	28605	497874	40	96
918	197801	918	918	918	918	918	918	918	918				
918	197801	918	918	918	918	918	918	918	918				
918	197801	918	918	918	918	918	918	918	918				
918	197801	918	918	918	918	918	918	918	0	28458		38	101
918	197802	918	918	918	918	918	918	918	918				
918	197802	918	918	918	918	918	918	918	918				
918	197802	918	918	918	918	918	918	918	918				
918	197802	918	918	918	918	0	0	0	0	27558		38	104
918	197803	918	918	918	918	918	918	918	918				
918	197803	918	918	918	918	918	918	918	918				
918	197803	918	918	918	918	918	918	918	918				
918	197803	918	918	918	918	930	930	930	0	28494		39	98
930	197804	930	955	955	955	967	967	967	978				
978	197804	978	991	991	991	1015	1015	1027	1054				
1054	197804	1054	1054	1067	1067	1079	1079	1105	1118				
1130	197804	1130	1143	1172	1185	1212	1239	0	0	31440		52	84
1239	197805	1239	1252	1266	1297	1297	1312	1312	1340				
1340	197805	1340	1354	1354	1368	1382	1411	1426	1470				
1505	197805	1505	1501	1612	1643	1659	1707	1722	1755				
1787	197805	1787	1820	1854	1870	1904	1920	1938	0	47727		81	79
1989	197806	1989	2024	2041	2048	2065	2083	2100	2118				
2135	197806	2135	2171	2207	2225	2213	2230	2248	2267				
2267	197806	2267	2267	2284	2284	2284	2284	2284	2284				
2284	197806	2284	2284	2284	2284	2284	2284	0	0	66106		95	97
2284	197807	2284	2284	2284	2267	2267	2267	2248	2248				
2230	197807	2230	2230	2230	2213	2213	2225	2225	2207				
2188	197807	2188	2188	2171	2171	2135	2135	2118	2100				
2083	197807	2083	2083	2065	2048	2031	2041	2041	0	67503		95	96
2024	197808	2024	2006	1989	1954	1938	1938	1920	1904				
1886	197808	1886	1870	1870	1854	1837	1837	1820	1787				
1771	197808	1771	1771	1755	1739	1722	1707	1707	1675				
1675	197808	1675	1659	1659	1643	1628	1628	1612	0	55785		84	89
1596	197809	1596	1596	1581	1581	1550	1535	1535	1520				
1505	197809	1505	1505	1470	1455	1440	1426	1411	1411				
1382	197809	1382	1368	1368	1354	1354	1340	1340	1312				
1312	197809	1312	1312	1297	1297	1297	1297	0	0	42747		67	89
1266	197810	1266	1266	1266	1252	1252	1252	1239	1239				
1226	197810	1226	1226	1212	1212	1185	1185	1172	1172				
1143	197810	1143	1130	1130	1130	1118	1118	1118	1118				
1118	197810	1118	1118	1118	1118	1118	1118	1118	0	36453		53	92
1118	197811	1118	1118	1118	1118	1130	1130	1130	1130				
1130	197811	1130	1130	1130	1130	1143	1143	1143	1143				
1143	197811	1143	1143	1143	1143	1143	1143	1143	1143				
1172	197811	1172	1172	1143	1143	1143	1130	0	0	34131		49	97
1130	197812	1130	1130	1130	1130	1143	1143	1143	1143				
1143	197812	1143	1143	1143	1143	1143	1143	1143	1143				
1143	197812	1143	1143	1143	1143	1172	1172	1172	1172				
1172	197812	1172	1172	1172	1172	1172	1172	1172	0	35713	502115	49	98
1172	197901	1172	1172	1172	1172	1172	1172	1172	1172				

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
1172	1172	1172	1172	1172	1172	1172	1172	1172				
1172	1172	1185	1185	1185	1185	1185	1185	1185				
1185	1185	1185	1185	1185	1185	1185	1185	0	36514		49	100
1185	1185	1185	1185	1185	1185	1185	1185	1185				
1185	1185	1185	1185	1185	1185	1185	1212	1212				
1212	1212	1212	1212	1212	0	0	0	0	35255		51	103
1212	1212	1212	1212	1212	1212	1212	1212	1212				
1212	1212	1212	1212	1212	1212	1212	1212	1212				
1226	1226	1226	1226	1226	1226	1226	1226	1226				
1239	1239	1239	1239	1239	1226	1239	1239	1239	37780		52	98
1239	1239	1252	1252	1252	1239	1239	1239	1239				
1239	1239	1252	1252	1252	1252	1266	1266	1297				
1312	1312	1312	1340	1354	1368	1368	0	0	37993		57	93
1382	1382	1411	1426	1440	1455	1505	1520	1015				
1581	1581	1581	1581	1596	1596	1596	1596	1612				
1628	1628	1643	1659	1707	1739	1771	1837	1870				
1904	1904	1933	1989	2041	2065	2118	2171	0	51973		90	78
2130	2130	2207	2225	2213	2230	2267	2284	2303				
2284	2284	2267	2267	2248	2267	2321	2376	2380				
2399	2399	2417	2417	2402	2420	2438	2438	2457				
2457	2457	2457	2457	2457	2457	2457	0	0	70457		102	96
2457	2457	2457	2457	2457	2457	2457	2457	2475				
2475	2475	2475	2475	2475	2475	2475	2475	2475				
2475	2475	2475	2475	2475	2475	2475	2457	2457				
2457	2457	2438	2438	2438	2420	2420	2402	0	76251		103	100
2402	2402	2417	2417	2399	2380	2380	2362	2362				
2376	2376	2358	2358	2321	2321	2321	2303	2303				
2303	2303	2303	2303	2303	2303	2284	2284	2284				
2284	2284	2267	2267	2267	2248	2248	2248	0	71976		101	96
2230	2230	2230	2213	2213	2213	2225	2225	2225				
2207	2207	2207	2188	2188	2171	2171	2135	2135				
2118	2118	2118	2100	2100	2100	2083	2083	2065				
2065	2065	2048	2048	2031	2031	2041	2284	0	66491		95	97
2041	2041	2041	2024	2024	2006	1989	1989	1954				
1954	1954	1938	1938	1920	1904	1904	1886	1886				
1854	1954	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	0	59208		85	94
1854	1954	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1837	1837	1837	1837	1837	1854	1854	0	0	55620		77	100
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	0	56947	656465	77	99
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1837	1837	1837	1837	1837	1837	0	56947		77	99
1837	1837	1837	1837	1837	1837	1837	1837	1837				
1837	1837	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	0	0	0	53477		77	100
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	0	57474		77	100
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1854	1854	1854	1854				
1854	1854	1854	1854	1854	1837	1837	1837	1820				
1787	1787	1787	1771	1755	1739	1722	0	0	54972		77	99
1722	1722	1722	1675	1659	1643	1643	1643	1643				
1643	1643	1643	1643	1643	1643	1628	1628	1628				
1612	1612	1612	1612	1612	1612	1612	1643	1675				
1722	1722	1722	1755	1771	1820	1854	1886	0	51986		79	88
1920	1920	1954	2006	2031	2083	2135	2188	2207				
2213	2213	2248	2284	2303	2321	2358	2376	2362				
2380	2380	2399	2402	2420	2402	2420	2438	2438				
2438	2438	2457	2475	2475	2475	2475	0	0	69083		103	93
2495	2495	2495	2495	2495	2495	2495	2495	2495				
2495	2495	2495	2495	2495	2495	2475	2475	2475				
2457	2457	2457	2457	2438	2438	2420	2420	2402				
2402	2402	2417	2417	2399	2380	2380	2362	0	76106		104	98
2376	2376	2376	2358	2321	2321	2303	2284	2284				
2267	2267	2248	2230	2213	2213	2225	2207	2207				

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
198008	2100	2100	2100	2118	2100	2100	2100	2100				
198008	2100	2100	2100	2100	2083	2083	2083	0	68058		99	92
198009	2065	2065	2065	2048	2048	2031	2031	2041				
198009	2041	2031	2065	2083	2100	2100	2100	2100				
198009	2100	2100	2100	2100	2100	2100	2100	2100				
198009	2083	2083	2083	2083	2083	2065	0	0	62294		88	98
198010	2065	2065	2065	2048	2048	2048	2048	2031				
198010	2031	2041	2041	2024	2024	2024	2006	2006				
198010	2006	2006	2006	2006	2006	2006	2006	2006				
198010	2006	2006	2006	2006	2006	2024	2024	0	62741		86	98
198011	2024	2024	2024	2024	2024	2024	2024	2024				
198011	2024	2024	2024	2024	2024	2024	2024	2024				
198011	2024	2024	2024	2024	2024	2024	2024	2024				
198011	2024	2024	2024	2024	2024	2024	0	0	60720		84	100
198012	2024	2024	2024	2024	2024	2024	2024	2024				
198012	2024	2024	2024	2024	2024	2024	2024	2024				
198012	2024	2024	2024	2024	2024	2024	2024	2024				
198012	2024	2024	2024	2024	2024	2024	2024	0	62744	736602	84	100
198101	2006	2006	2006	2006	2006	2006	2006	2006				
198101	2006	2006	2006	2006	2006	2006	2006	2006				
198101	2006	2006	2006	2006	2006	2006	2006	2006				
198101	2006	2006	2006	2006	2006	2006	2006	0	62186		84	100
198102	2006	2006	2006	2006	2006	2006	2006	2006				
198102	2006	2006	2006	2006	2006	2006	2006	2006				
198102	2006	2006	2006	2006	2006	2006	2006	2006				
198102	2006	2006	2006	2006	0	0	0	0	58022		84	103
198103	2006	2006	2006	2006	2006	2006	2006	2006				
198103	2006	2006	2006	2006	2006	2006	2006	2006				
198103	2006	2006	2006	2006	2006	2006	2006	2006				
198103	2006	2006	2006	2006	2006	2006	2006	0	62186		84	100
198104	2024	2024	2024	2024	2024	2024	2024	2024				
198104	2024	2024	2024	2024	2024	2024	2024	2041				
198104	2041	2041	2041	2041	2031	2031	2031	2031				
198104	2048	2048	2065	2083	2100	2118	0	0	61151		88	97
198105	2135	2171	2207	2225	2213	2230	2248	2248				
198105	2284	2267	2267	2267	2284	2284	2284	2284				
198105	2284	2284	2284	2284	2284	2284	2267	2267				
198105	2247	2247	2284	2284	2303	2303	2321	0	70165		97	97
198106	2321	2358	2376	2376	2362	2380	2399	2417				
198106	2402	2420	2438	2457	2457	2457	2457	2457				
198106	2438	2438	2438	2420	2420	2420	2402	2402				
198106	2417	2417	2399	2399	2380	2380	0	0	72304		102	98
198107	2380	2362	2362	2362	2376	2376	2376	2358				
198107	2359	2358	2358	2358	2358	2358	2376	2376				
198107	2376	2376	2376	2376	2376	2376	2358	2358				
198107	2359	2321	2321	2284	2303	2303	2303	0	73054		99	99
198108	2303	2284	2284	2284	2267	2267	2248	2248				
198108	2230	2213	2213	2213	2213	2213	2213	2213				
198108	2225	2225	2225	2225	2207	2207	2188	2188				
198109	2171	2171	2135	2135	2118	2118	2100	0	68544		96	96
198109	2100	2083	2083	2065	2065	2048	2048	2048				
198109	2031	2041	2031	2031	2041	2041	2041	2041				
198109	2041	2041	2041	2041	2024	2024	2006	2006				
198109	2006	2006	1989	1989	1989	1989	0	0	61013		88	96
198110	1954	1954	1954	1954	1954	1954	1954	1954				
198110	1954	1989	1989	1989	2006	2006	2006	2006				
198110	2024	2024	2041	2041	2041	2031	2031	2031				
198110	2031	2048	2048	2048	2048	2065	2065	0	62194		86	97
198111	2065	2065	2065	2065	2083	2083	2083	2083				
198111	2083	2083	2083	2083	2100	2100	2100	2100				
198111	2100	2100	2100	2100	2100	2100	2083	2083				
198111	2083	2083	2083	2083	2083	2083	0	0	62605		88	99
198112	2100	2100	2100	2100	2100	2100	2100	2100				
198112	2100	2100	2100	2100	2100	2100	2100	2100				
198112	2100	2100	2100	2100	2100	2118	2118	2118				
198112	2118	2118	2118	2118	2118	2118	2118	0	65280	778704	88	100
198201	2118	2118	2118	2118	2118	2118	2118	2118				
198201	2118	2118	2118	2118	2118	2118	2118	2118				
198201	2118	2118	2118	2118	2118	2118	2118	2118				
198201	2135	2135	2135	2135	2135	2135	2135	0	65777		89	99
198202	2135	2135	2135	2135	2135	2135	2135	2135				
198202	2135	2135	2135	2135	2135	2135	2135	2135				
198202	2135	2135	2135	2135	2135	2135	2135	2135				
198202	2135	2135	2135	2135	0	0	0	0	61666		89	103
198202	2135	2135	2135	2135	2135	2135	2135	2135				
198202	2135	2135	2135	2171	2171	2171	2171	2171				
198202	2171	2171	2171	2171	2171	2171	2171	2171				

DATE	KW-HRS PRODUCED								MONTHLY TOTALS	YEARLY TOTALS	MAXIMUM KW	PLANT FACTOR
198203	2171	2171	2171	2171	2171	2171	2171		66905		90	100
198204	2171	2171	2171	2171	2171	2171	2188	2188				
198204	2188	2188	2188	2188	2188	2188	2207	2207				
198204	2225	2225	2225	2213	2213	2213	2230	2230				
198204	2230	2248	2248	2248	2248	2248	0	0	66188		94	98
198205	2267	2284	2267	2267	2267	2267	2267	2248				
198205	2248	2248	2230	2213	2213	2213	2213	2213				
198205	2213	2213	2230	2230	2230	2248	2267	2267				
198205	2284	2303	2321	2358	2376	2362	2380	0	70207		99	95
198206	2380	2330	2380	2380	2380	2380	2380	2380				
198206	2030	2399	2399	2417	2402	2420	2438	2438				
198206	2475	2475	2475	2475	2475	2495	2495	2495				
198206	2495	2495	2495	2495	2495	2495	0	0	73163		104	98
198207	2495	2475	2475	2475	2475	2475	2475	2475				
198207	2475	2457	2457	2457	2457	2438	2438	2420				
198207	2420	2402	2402	2417	2417	2399	2399	2380				
198207	2000	2062	2376	2376	2376	2376	2376	0	75297		104	97
198208	2358	2358	2358	2321	2321	2303	2303	2303				
198208	2000	2284	2284	2267	2267	2267	2267	2267				
198208	2267	2267	2248	2248	2248	2248	2248	2267				
198208	2267	2303	2321	2321	2358	2358	2358	0	71158		98	98
198209	2358	2358	2358	2358	2358	2358	2358	2358				
198209	2358	2358	2358	2358	2358	2358	2358	2358				
198209	2358	2358	2358	2358	2358	2358	2358	2358				
198207	2021	2021	2321	2303	2303	2284	2284	0	72729		98	103
198210	2284	2284	2284	2284	2284	2284	2267	2267				
198210	2267	2267	2248	2248	2248	2248	2248	2248				
198210	2230	2230	2230	2230	2230	2230	2230	2230				
198210	2230	2230	2230	2230	2213	2213	2213	0	69659		95	99
198211	2213	2213	2213	2213	2213	2213	2213	2213				
198211	2213	2213	2213	2213	2213	2213	2213	2213				
198211	2225	2225	2225	2225	2225	2225	2225	2225				
198211	2225	2225	2225	2225	2225	2225	0	0	66558		93	99
198212	2225	2225	2225	2225	2225	2225	2207	2207				
198212	2207	2207	2207	2207	2207	2207	2207	2207				
198212	2207	2207	2207	2207	2207	2207	2207	2207				
198212	2188	2188	2188	2188	2188	2188	2188	0	68392	827699	93	99

	MONTHLY	YEARLY	KW	P.F.
AVERAGE	55626	662618	79	97
MAXIMUM	76251	827699	104	104
MINIMUM	27526	497874	38	78

Appendix E

FLOWS BELOW LEMON DAM

This appendix is included to evaluate the historic flows below Lemon Dam as compared to flows assuming the turbine had been installed during, the study period, 1971 to 1982.

The before and after power plant flows will be minimally different during the winter months, October to April, when only the bypass pipe is used. The summer, or irrigation season, releases have historically been controlled by the irrigation demand and this will continue. The large outlet gates are used during the high release period. There will not be any change in releases to irrigation demands.

The releases through the bypass are controlled by an orifice bolted to the outlet of the bypass and the reservoir water surface elevations. The District has maintained those releases, generally between 9 cfs and 13 cfs, with occasional times above or below that range. The Worthington 10LNT14A pump was selected because it would generally provide those releases, although not exactly. The winter releases will be different than historical releases because the turbine controls releases differently than the orifice.

The computer printout in this appendix shows the historic releases below Lemon Dam, the assumed flow with the turbine, and the change in flow. All of the numbers are in cfs. The year and month are in the left hand column. The change of flow is shown with a minus sign for a flow reduction, no sign for a flow increase, and a zero if there is not a flow change. The flow does not change when the irrigation releases are made which occurs when the historic flow is 20 cfs or greater. The asterisks in years 1977 to 1982 are from computer formating restrictions because the field width was exceeded and the table could not be expanded.

Table E-1 summarizes the numbers of days per year there is a change of flow. For example: in 1974 there were 124 days when the flow would have been 0-1 cfs less with the turbine than the orifice and 55 days when the flow would have been 1-2 cfs less with the turbine. In 1982 there would have been no days with less flow but 5 days with 1-2 cfs more, 91 days with 2-3 cfs more, etc.

Generally, the days when the flow change is less than 1 cfs are inconsequential because the flow change is imperceptible. Also, the major flow reductions between 3 cfs and 5 cfs only occurred in 1971 and 1972 when the District released 16 cfs during the winter; that practice was curtailed in 1973. Those two years do not reflect release patterns since 1972 and should be disregarded.

The data for the years 1983-1982 indicate that the most significant negative impact is when the flow is reduced 1 cfs to 2

cfs which frequently occurs. On the other hand, if the flow is increased it will almost always be 2 cfs to 3 cfs greater. In either case the flows will almost always be in the 9 cfs to 13 cfs range.

The releases during the driest year, 1977, would be very nearly the same as they were historically. The actual releases ranged from 9.2 cfs to 10 cfs and with the turbine the releases would be 8.7 cfs to 9.3 cfs. The difference in releases is almost always less than 1 cfs, with a 0.3 cfs difference for three of the critical seven months.

The lowest release is 8.7 cfs occurring in 1974 and 1977. The recommended fishery release of 8 cfs is always met and the 8.92 cfs water right to the City of Durango is essentially always met, e.g., there is a two month period in 1984 when the turbine releases would have been 8.7 cfs.

Operation of the turbine will change the flow below Lemon Dam from the historic releases but the flows will usually be between 9 cfs and 13 cfs as they have been since 1972. The small changes within the 9 cfs to 13 cfs will be inconsequential.

TABLE E-1

Lemon Dam Improvements Project

Flows Below Lemon Dam

Year	Days of Reduced Flow						Days of Increased Flow					
	0-1cfs	1-2cfs	2-3cfs	3-4cfs	4-5cfs	Total	0-1cfs	1-2cfs	2-3cfs	3-4cfs	4-5cfs	Total
1971	0	0	0	112	68	180	0	0	0	0	0	0
1972	0	0	0	6	116	122	1	0	8	13	7	29
1973	46	49	0	0	0	95	4	5	4	0	0	13
1974	124	55	14	0	0	193	16	0	0	0	0	16
1975	8	167	0	0	0	175	10	6	0	0	0	16
1976	23	109	46	7	0	185	0	0	0	0	0	0
1977	100	24	0	0	0	124	0	0	64	0	0	64
1978	140	51	0	0	0	191	0	0	0	0	0	0
1979	38	124	0	0	0	162	0	0	0	0	0	0
1980	75	29	0	0	0	104	48	28	39	0	0	115
1981	0	0	0	0	0	0	0	13	84	27	11	135
1982	0	0	0	0	0	0	0	5	91	17	5	118
TOTAL	554	608	60	125	184	1531	79	57	290	57	23	499

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85

(HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197101	50	50	50	50	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	0	0	0	-3.7	-3.7	-3.7	-3.7
197101	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197101	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197101	16	16	16	16	16	16	16		12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	0
197102	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197102	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197102	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197102	16	16	16	16					12.3	12.3	12.3	12.3	11.6	0	0	0	-3.7	-3.7	-3.7	-3.7	0	0	0	0
197103	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197103	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197103	16	16	16	16	16	16	16	16	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7	-3.7
197103	16	16	16	16	16	16	16		12.3	12.3	12.3	12.3	12.4	12.4	12.4	0	-3.7	-3.7	-3.7	-3.7	-3.6	-3.6	-3.6	0
197104	16	16	16	16	16	16	16	16	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6	-3.6
197104	16	16	16	16	16	16	16	16	12.4	12.5	12.5	12.5	12.5	12.5	12.6	12.6	-3.6	-3.5	-3.5	-3.5	-3.5	-3.5	-3.4	-3.4
197104	16	16	16	16	16	16	16	16	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	-3.4	-3.4	-3.4	-3.4	-3.4	-3.3	-3.3	-3.3
197104	16	16	16	16	16	16			12.7	12.7	12.7	12.7	12.7	12.7	0	0	-3.3	-3.3	-3.3	-3.3	-3.3	-3.3	0	0
197105	16	50	70	90	90	110	110	60	12.7	12.8	12.8	12.8	12.8	12.8	12.8	12.8	-3.3	0	0	0	0	0	0	0
197105	60	80	119	120	120	120	120	120	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197105	128	140	160	160	160	160	160	180	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197105	180	180	180	210	236	240	230		12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0	0
197106	230	240	250	250	350	250	240	232	12.8	12.8	12.8	12.8	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
197106	240	240	240	240	240	240	240	230	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
197106	230	230	222	220	210	220	220	220	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
197106	220	220	220	220	220	220			13	13	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0	0	0
197107	212	200	180	165	142	133	130	140	12.9	12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197107	159	160	160	151	150	150	170	190	12.8	12.8	12.7	12.7	12.7	12.7	12.7	12.6	0	0	0	0	0	0	0	0
197107	200	200	200	190	190	190	180	170	12.6	12.6	12.6	12.6	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0
197107	170	160	140	140	140	170	180		12.5	12.4	12.4	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0	0
197108	200	200	210	210	210	210	180	180	12.3	12.3	12.3	12.2	12.2	12.2	12.1	12.1	0	0	0	0	0	0	0	0
197108	180	190	190	190	190	160	160	160	12.1	12.1	12.1	12	12	12	11.9	11.9	0	0	0	0	0	0	0	0
197108	160	160	170	170	140	140	130	120	11.9	11.9	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0
197108	111	110	110	100	100	100	110		11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0	0
197109	110	110	110	110	110	110	110	110	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0
197109	110	110	110	110	110	110	122	125	11.8	11.7	11.7	11.7	11.7	11.7	11.6	11.6	0	0	0	0	0	0	0	0
197109	125	125	125	125	125	125	125	125	11.6	11.6	11.6	11.6	11.5	11.5	11.5	11.5	0	0	0	0	0	0	0	0
197109	125	125	125	125	78	16			11.4	11.4	11.4	11.4	11.3	11.3	0	0	0	0	0	0	0	-4.7	0	0
197110	75	105	105	79	50	50	50	50	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	0	0	0	0	0	0	0	0
197110	50	60	70	70	70	70	70	70	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	0	0	0	0	0	0	0	0
197110	16	16	16	16	16	16	16	16	11.2	11.2	11.2	11.3	11.3	11.3	11.3	11.3	-4.8	-4.8	-4.8	-4.7	-4.7	-4.7	-4.7	-4.7
197110	16	16	16	16	16	16	16		11.3	11.4	11.4	11.4	11.4	11.4	11.4	0	-4.7	-4.6	-4.6	-4.6	-4.6	-4.6	-4.6	0
197111	16	16	16	16	16	16	16	16	11.4	11.4	11.4	11.4	11.4	11.5	11.5	11.5	-4.6	-4.6	-4.6	-4.6	-4.6	-4.5	-4.5	-4.5
197111	16	16	16	16	16	16	16	16	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5
197111	16	16	16	16	16	16	37	50	11.5	11.5	11.5	11.6	11.6	11.6	11.6	11.6	-4.5	-4.5	-4.5	-4.4	-4.4	-4.4	0	0
197111	50	50	50	50	50	16			11.6	11.6	11.5	11.5	11.5	11.5	0	0	0	0	0	0	0	-4.5	0	0
197112	16	16	16	16	16	16	16	16	11.5	11.5	11.6	11.6	11.6	11.6	11.6	11.6	-4.5	-4.5	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197112	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197112	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197112	16	16	16	16	16	16	16		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	0
197201	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197201	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197201	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197201	16	16	16	16	16	16	16		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	0
197202	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197202	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197202	16	16	16	16	16	16	16	16	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4	-4.4
197202	16	16	16	16					11.6	11.6	11.6	11.6	11.6	0	0	0	-4.4	-4.4	-4.4	-4.4	0	0	0	0
197203	16	16	16	16	16	16	16	16	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3
197203	16	16	16	16	16	16	16	16	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3
197203	16	16	16	16	16	16	16	16	11.7	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-4.3	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2	-4.2
197203	16	16	16	16	16	16	16		11.8	11.9	11.9	11.9	11.9	11.9	11.9	0	-4.2	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	0
197204	16	16	16	16	16	16	16	16	11.9	11.9	11.9	11.9	11.9	11.9	12	12	-4.1	-4.1	-4.1	-4.1	-4.1	-4.1	-4	-4
197204	16	16	16	16	16	16	16	16	12	12	12	12.1	12.1	12.1	12.1	12.1	-4	-4	-4	-3.9	-3.9	-3.9	-3.9	-3.9
197204	16	16	33	50	50	50	63	78	12.1	12.1	12.1	12.1	12.1	12.1	12.2	12.2	-3.9	-3.9	0	0	0	0	0	0
197204	110	130	147	162	170	170			12.2	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0	0	0
197205	180	219	230	198	190	180	180	180	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197205	180	190	200	200	210	210	210	220	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197205	220	220	220	220	220	240	250	250	12.4	12.4	12.5	12.5	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0
197205	250	240	240	240	240	250	250		12.5	12.5	12.5	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0	0
197206	250	250	250	250	250	250	250	230	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197206	210	220	210	188	180	190	190	200	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197206	190	190	180	180	180	180	180	173	12.4	12.4	12.4	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
197206	164	160	160	160	167	170			12.2	12.2	12.2	12.2	12.1	12.1	0	0	0	0	0	0	0	0	0	0
197207	170	154	150	150	160	170	170	160	12.1	12.1	12.1	12.1	12	12	12	12	0	0	0	0	0	0	0	0
197207	160	170	190	198	210	219	226	230	11.9	11.9	11.9	11.8	11.8	11.7	11.7	11.6	0	0	0	0	0	0	0	0
197207	220	210	210	210	210	210	210	210	11.6	11.6	11.5	11.5	11.5	11.4	11.4	11.3	0	0	0	0	0	0	0	0
197207	210	210	190	173	170	170	170		11.3	11.2	11.2	11.1	11.1	11	11	0	0	0	0	0	0	0	0	0
197208	180	180	180	180	180	170	160	158	11	10.9	10.9	10.8	10.8	10.7	10.7	10.6	0	0	0	0	0	0	0	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85

(HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197208	140	140	140	140	152	150	134	130	10.6	10.5	10.5	10.4	10.3	10.3	10.2	10.2	0	0	0	0	0	0	0	0
197208	112	110	110	100	80	80	80	80	10.2	10.1	10.1	10.1	10.1	10	10	10	0	0	0	0	0	0	0	0
197208	80	80	80	70	60	50	50		10.5	9.9	9.9	9.9	9.9	9.9	9.8	0	0	0	0	0	0	0	0	0
197209	50	50	50	50	50	60	51	50	9.8	9.8	9.8	9.7	9.7	9.7	9.7	9.7	0	0	0	0	0	0	0	0
197209	50	50	40	40	40	40	50	50	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	0	0	0	0	0	0	0	0
197209	50	60	70	70	60	50	50	50	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	0	0	0	0	0	0	0	0
197209	60	60	60	60	60	50			9.7	9.7	9.7	9.6	9.6	9.6	0	0	0	0	0	0	0	0	0	0
197210	46	55	64	77	77	45	30	13	9.6	9.6	9.6	9.5	9.6	9.6	9.7	9.9	0	0	0	0	0	0	0	-3.1
197210	10	30	48	48	20	8.4	8.9	13	10	10	10.1	10.1	10.1	10.1	10.2	10.2	0	0	0	0	0	1.7	1.3	-2.8
197210	14	14	31	24	13	11	11	11	10.3	10.4	10.5	10.7	10.8	10.9	11	11	-3.7	-3.6	0	0	-2.2	-0.1	0	0
197210	13	13	12	14	14	14	13		11.1	11.1	11.1	11.2	11.2	11.2	11.2	0	-1.9	-1.9	-0.9	-2.8	-2.8	-2.8	-1.8	0
197211	15	17	19	19	20	20	19	20	11.3	11.3	11.3	11.3	11.3	11.4	11.4	11.4	-3.7	-5.7	0	0	0	0	0	0
197211	19	17	17	14	16	16	16	15	11.4	11.4	11.4	11.4	11.4	11.5	11.5	11.5	0	-5.6	-5.6	-2.6	-4.6	-4.5	-4.5	-3.5
197211	16	16	15	16	15	15	16	16	11.5	11.5	11.5	11.5	11.5	11.5	11.6	11.6	-4.5	-4.5	-3.5	-4.5	-3.5	-3.5	-4.4	-4.4
197211	16	16	17	13	13	13			11.6	11.6	11.6	11.6	11.6	11.6	0	0	-4.4	-4.4	-5.4	-1.4	-1.4	-1.4	0	0
197212	10	12	11	8.9	8.9	7.8	7.8	7.8	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-0.4	0.6	2.7	2.7	3.8	3.8	3.8
197212	8.4	8.4	8.4	7.3	7.3	7.3	7.3	6.8	11.6	11.6	11.6	11.6	11.6	11.7	11.7	11.7	3.2	3.2	3.2	4.3	4.3	4.4	4.9	4.9
197212	6.8	7.3	7.8	8.4	8.4	8.4	8.4	8.4	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	4.9	4.4	3.9	3.3	3.3	3.3	3.3	3.3
197212	8.4	8.9	8.9	9.4	9.4	9.4	9.4		11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	3.3	2.8	2.8	2.3	2.3	2.3	2.3	0
197301	9.9	10	10	11	11	12	12	12	11.7	11.7	11.7	11.7	11.7	11.7	11.8	11.8	1.8	1.7	1.7	0.7	0.7	-0.3	-0.2	-0.2
197301	12	12	10	9.9	9.4	9.4	9.4	9.4	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-0.2	-0.2	1.8	1.9	2.4	2.4	2.4	2.4
197301	12	11	11	12	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-0.2	0.8	0.8	-0.2	-1.2	-1.2	-1.2	-1.2
197301	13	13	13	13	13	13	13		11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	0
197302	13	13	13	13	13	13	12	12	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-0.2	-0.2
197302	12	12	12	12	12	12	12	12	11.8	11.8	11.8	11.9	11.9	11.9	11.9	11.9	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.1
197302	12	12	12	12	12	12	12	12	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
197302	12	12	14	16					11.9	11.9	11.9	11.9	11.7	0	0	0	-0.1	-0.1	-2.1	-4.1	0	0	0	0
197303	17	20	23	23	23	23	23	23	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	-5.1	0	0	0	0	0	0	0
197303	23	24	24	24	24	24	24	24	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	0	0	0	0	0	0	0
197303	25	28	60	86	86	81	79	81	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	0	0	0	0	0	0	0
197303	84	92	90	88	88	88	92		11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	0	0	0	0	0	0	0	0
197304	96	100	100	96	128	148	144	135	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0
197304	126	117	109	117	126	133	130	124	11.8	11.7	11.7	11.7	11.7	11.7	11.7	11.6	0	0	0	0	0	0	0	0
197304	126	126	117	117	183	205	243	246	11.6	11.6	11.6	11.6	11.6	11.6	11.5	11.5	0	0	0	0	0	0	0	0
197304	252	249	252	252	255	282			11.5	11.4	11.4	11.4	11.4	11.4	0	0	0	0	0	0	0	0	0	0
197305	291	285	285	285	282	282	279	279	11.4	11.3	11.3	11.3	11.2	11.2	11.2	11.2	0	0	0	0	0	0	0	0
197305	279	279	342	448	484	484	476	476	11.1	11.1	11.2	11.2	11.2	11.2	11.2	11.2	0	0	0	0	0	0	0	0
197305	480	508	615	670	675	795	750	620	11.2	11.2	11.3	11.3	11.3	11.2	11.2	11.1	0	0	0	0	0	0	0	0
197305	440	366	363	366	366	366	363		11.2	11.3	11.3	11.3	11.4	11.4	11.5	0	0	0	0	0	0	0	0	0
197306	360	356	352	349	346	360	360	388	11.6	11.6	11.7	11.8	11.8	11.8	11.9	11.9	0	0	0	0	0	0	0	0
197306	560	716	765	765	845	945	870	352	12	12.1	12.1	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
197306	338	338	338	338	338	338	338	338	12.4	12.4	12.5	12.6	12.6	12.7	12.7	12.8	0	0	0	0	0	0	0	0
197306	444	656	805	820	825	820			12.9	12.9	13	13	13	13	0	0	0	0	0	0	0	0	0	0
197307	795	676	636	596	520	472	426	402	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
197307	384	349	312	312	312	312	272	294	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
197307	279	282	243	232	224	224	218	210	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
197307	226	237	237	237	237	246	240		13	13	13	13	12.9	12.9	12.9	0	0	0	0	0	0	0	0	0
197308	232	232	232	232	232	232	235	246	12.9	12.8	12.8	12.8	12.8	12.8	12.7	12.7	0	0	0	0	0	0	0	0
197308	246	237	229	229	237	243	229	237	12.7	12.6	12.6	12.6	12.6	12.6	12.5	12.5	0	0	0	0	0	0	0	0
197308	232	216	216	216	216	208	197	176	12.5	12.4	12.4	12.4	12.4	12.4	12.3	12.3	0	0	0	0	0	0	0	0
197308	178	183	155	146	144	137	135		12.3	12.3	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0	0
197309	126	124	122	122	117	111	111	111	12.2	12.2	12.1	12.1	12.1	12.1	12.1	12.1	0	0	0	0	0	0	0	0
197309	109	142	109	72	64	60	59	59	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	0	0	0	0	0	0	0	0
197309	59	59	55	57	66	70	77	83	12.1	12.1	12.1	12.1	12.1	12.1	12	12	0	0	0	0	0	0	0	0
197309	88	88	90	92	94	94			12	12	12	12	12	12.8	0	0	0	0	0	0	0	0	0	0
197310	97	94	88	88	88	90	90	90	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	0	0	0	0	0	0	0
197310	97	90	33	0	0	0	0	4.4	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	11.8	0	0	7.4
197310	71	72	55	51	44	51	57	64	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0
197310	60	66	66	66	66	66	92		11.8	11.7	11.7	11.7	11.7	11.7	11.7	0	0	0	0	0	0	0	0	0
197311	76	12	12	12	11	11	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-0.4	-0.4	-0.4	0.6	0.6	-0.4	-0.4
197311	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197311	12	12	12	12	12	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-1.4	-1.4	-1.4
197311	13	13	13	13	13	22	40		11.6	11.6	11.6	11.6	11.6	11.6	0	0	-1.4	-1.4	-1.4	-1.4	0	0	0	0
197312	40	56	66	58	40	25	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	0	0	0	-1.4	-1.4
197312	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
197312	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
197312	13	13	13	13	13	13	13		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85 (HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197401	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197401	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197401	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197401	12	12	12	12	12	12	12		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	0
197402	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197402	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197402	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197402	12	12	12	12					11.6	11.6	11.6	11.6	11.6	0	0	0	-0.4	-0.4	-0.4	-0.4	0	0	0	0
197403	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197403	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197403	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197403	12	12	12	12	12	12	12		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	0
197404	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197404	12	12	12	11	11	11	11	10	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	0.6	0.6	0.6	0.6	1.6
197404	11	11	11	11	11	11	11	11	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
197404	11	11	11	12	12	12			11.7	11.7	11.7	11.7	11.7	11.7	0	0	0.7	0.7	0.7	-0.3	-0.3	-0.3	0	0
197405	22	51	68	58	45	47	82	105	11.7	11.7	11.7	11.7	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	0
197405	129	166	189	195	211	240	249	249	11.8	11.8	11.9	11.9	11.9	12	12	12	0	0	0	0	0	0	0	0
197405	249	249	249	249	249	249	252	252	12	12	12	12	12	12	12	12	0	0	0	0	0	0	0	0
197405	252	254	254	254	266	275	272		12	12	12	12	12	12	12	0	0	0	0	0	0	0	0	0
197406	263	254	243	235	227	219	219	219	12	12	11.9	11.9	11.9	11.9	11.8	11.8	0	0	0	0	0	0	0	0
197406	216	216	216	216	216	216	216	216	11.8	11.8	11.7	11.7	11.7	11.6	11.6	11.6	0	0	0	0	0	0	0	0
197406	216	216	216	206	199	196	194	194	11.6	11.6	11.5	11.5	11.5	11.4	11.4	11.4	0	0	0	0	0	0	0	0
197406	196	206	211	209	206	206			11.3	11.3	11.2	11.2	11.1	11.1	0	0	0	0	0	0	0	0	0	0
197407	201	182	155	144	144	144	144	141	11	11	10.9	10.9	10.8	10.8	10.8	10.7	0	0	0	0	0	0	0	0
197407	133	129	124	116	114	114	110	90	10.7	10.7	10.6	10.6	10.6	10.5	10.5	10.5	0	0	0	0	0	0	0	0
197407	77	74	64	62	62	66	77	82	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.6	0	0	0	0	0	0	0	0
197407	85	85	92	94	101	118	141		10.6	10.6	10.5	10.5	10.5	10.5	10.4	0	0	0	0	0	0	0	0	0
197408	150	146	139	133	122	101	94	99	10.4	10.3	10.3	10.3	10.3	10.3	10.2	10.2	0	0	0	0	0	0	0	0
197408	105	105	105	112	118	131	105	105	10.2	10.2	10.2	10.1	10.1	10.1	10	10	0	0	0	0	0	0	0	0
197408	108	95	94	94	94	103	103	103	10	9.9	9.9	9.9	9.9	9.8	9.7	9.7	0	0	0	0	0	0	0	0
197408	103	103	103	103	94	94			9.7	9.6	9.6	9.5	9.5	9.5	9.4	0	0	0	0	0	0	0	0	0
197409	94	94	94	94	85	80	77	77	9.3	9.3	9.3	9.2	9.2	9.2	9.1	9	0	0	0	0	0	0	0	0
197409	77	77	77	77	77	77	77	57	9	9	9	8.9	8.9	8.9	8.8	8.8	0	0	0	0	0	0	0	0
197409	57	57	57	57	57	57	10	10	8.7	8.7	8.7	8.7	8.7	8.6	8.6	8.6	0	0	0	0	0	0	-1.4	-1.4
197409	10	10	10	10	10	10			8.7	8.7	8.7	8.7	8.7	8.7	0	0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	0	0
197410	10	10	10	10	10	10	10	10	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197410	10	10	10	10	10	10	10	10	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197410	10	10	10	10	10	10	10	10	8.7	8.7	8.7	8.7	8.7	8.8	8.8	8.8	-1.3	-1.3	-1.3	-1.3	-1.3	-1.2	-1.2	-1.2
197410	10	10	10	11	11	11	11		8.8	8.8	8.9	8.9	8.9	8.9	8.9	0	-1.2	-1.2	-1.1	-2.1	-2.1	-2.1	-2.1	0
197411	11	11	11	11	11	11	11	11	8.9	9	9	9	9	9	9	9	-2.1	-2	-2	-2	-2	-2	-2	-2
197411	11	11	11	11	11	11	11	11	9	9	9.1	9.1	9.1	9.1	9.1	9.1	-2	-2	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9
197411	11	11	11	11	11	11	11	11	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8
197411	11	11	11	11	11	11			9.2	9.2	9.2	9.2	9.2	9.2	0	0	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	0	0
197412	22	34	38	44	44	44	37	10	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	0	0	0	0	0	0	-0.8
197412	10	10	10	10	10	10	10	10	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
197412	10	10	10	10	10	10	10	10	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
197412	10	10	10	10	10	10	10		9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	0
197501	11	11	11	11	11	11	11	11	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8
197501	11	11	11	11	11	11	11	11	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8
197501	11	11	11	11	11	11	11	11	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8	-1.8
197501	11	11	11	11	11	11	11		9.2	9.2	9.2	9.2	9.3	9.3	9.3	0	-1.8	-1.8	-1.8	-1.8	-1.7	-1.7	-1.7	0
197502	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197502	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197502	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197502	11	11	11	11					9.3	9.3	9.3	9.3	11.6	0	0	0	-1.7	-1.7	-1.7	-1.7	0	0	0	0
197503	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197503	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197503	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7
197503	11	11	11	11	11	11	11		9.3	9.3	9.3	9.3	9.3	9.3	9.3	0	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	-1.7	0
197504	11	11	11	11	11	11	11	11	9.3	9.3	9.3	9.4	9.4	9.4	9.4	9.4	-1.7	-1.7	-1.7	-1.6	-1.6	-1.6	-1.6	-1.6
197504	11	11	11	11	11	11	11	11	9.4	9.4	9.5	9.5	9.5	9.5	9.5	9.5	-1.6	-1.6	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5
197504	11	11	11	11	11	11	10	10	9.5	9.5	9.5	9.5	9.5	9.5	9.6	9.6	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-0.4	-0.4
197504	10	10	10	10	10	10	10	10	9.6	9.7	9.7	9.8	9.9	9.9	0	0	-0.4	-0.3	-0.3	-0.2	-0.1	-0.1	-10	-10
197505	10	10	10	10	10	10	10	10	9.9	10	10	10	10.1	10.1	10.2	10.2	-0.1	0	0	0	0.1	0.1	0.2	0.2
197505	10	10	10	9.7	9.7	9.7	9.7	9.7	10.2	10.2	10.3	10.4	10.5	10.6	10.8	10.9	0.2	0.2	0.3	0.7	0.8	0.9	1.1	1.2
197505	9.7	10	10	10	56	87	87	88	11.1	11.2	11.4	11.5	11.6	11.6	11.7	11.7	1.4	1.2	1.4	1.5	0	0	0	0
197505	90	90	149	243	281	281	281		11.7	11.8	11.9	12	12	12	12	0	0	0	0	0	0	0	0	0
197506	281	281	344	627	910	892	895	890	12.1	12.1	12.1	12.3	12.3	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197506	885	885	885	622	478	485	490	665	12.4	12.4	12.4	12.3	12.4	12.4	12.5	12.6	0	0	0	0	0	0	0	0
197506	743	748	571	366	294	294	294	294	12.7	12.7	12.7	12.7	12.7	12.7	12.8	12.8	0	0	0	0	0	0	0	0
197506	275	263	266	398	478	478			12.9	13	13	13.1	13.1	13.1	0	0	0	0	0	0	0	0	0	0
197507	482	578	630	626	485	395	455	546	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197507	546	542	470	430	332	250	235	235	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197507	235	235	235	235	235	235	224	216	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197507	211	211	211	219	214	211	211		13.2	13.2	13.2	13.1	13.1	13.1	13.1	0	0	0	0	0	0	0	0	0
197508	211	216	222	229	229	229	229	227	13.1	13.1	13.1	13	13	13	13	13	0	0	0	0	0	0	0	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85 (HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197508	224	222	222	211	199	184	173	164	12.8	12.9	12.9	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197508	157	150	150	152	159	164	164	164	12.8	12.7	12.7	12.7	12.7	12.7	12.6	12.6	0	0	0	0	0	0	0	0
197508	164	166	166	166	164	159	155		12.6	12.6	12.6	12.6	12.5	12.5	12.4	0	0	0	0	0	0	0	0	0
197509	150	152	157	160	149	192	173	173	12.4	12.4	12.4	12.4	12.4	12.4	12.3	12.3	0	0	0	0	0	0	0	0
197509	155	139	122	105	85	77	58	56	12.3	12.2	12.2	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
197509	68	83	83	83	83	83	77	62	12.2	12.2	12.2	12.2	12.2	12.1	12.1	12.1	0	0	0	0	0	0	0	0
197509	49	53	68	66	66	65			12.1	12.1	12.1	12.1	12.1	12.1	0	0	0	0	0	0	0	0	0	0
197510	65	72	83	83	83	83	83	83	12.1	12.1	12.1	12.1	12.1	12	12	12	0	0	0	0	0	0	0	0
197510	83	82	77	77	77	71	65	65	12	12	12	12	12	11.9	11.9	11.9	0	0	0	0	0	0	0	0
197510	62	52	52	57	68	87	92	71	11.9	11.9	11.9	11.9	11.9	11.9	11.8	11.8	0	0	0	0	0	0	0	0
197510	62	62	62	62	70	62	13		11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	0	-1.2	0
197511	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197511	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197511	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197511	13	13	13	13	13	13			11.8	11.8	11.8	11.8	11.8	11.8	0	0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	0	0
197512	13	13	13	13	13	13	13	22	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	0
197512	35	35	35	35	35	25	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	0	0	0	0	0	-1.2	-1.2
197512	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197512	13	13	13	13	13	13	13		11.8	11.8	11.8	11.8	11.8	11.8	11.8	0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	0
197601	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197601	13	13	13	13	13	13	13	13	11.8	11.8	11.8	11.7	11.7	11.7	11.7	11.7	-1.2	-1.2	-1.2	-1.3	-1.3	-1.3	-1.3	-1.3
197601	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197601	13	13	13	13	13	13	13		11.7	11.7	11.7	11.7	11.7	11.7	11.7	0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	0
197602	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197602	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197602	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197602	13	13	13	13					11.7	11.7	11.7	11.7	11.7	0	0	0	-1.3	-1.3	-1.3	-1.3	0	0	0	0
197603	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197603	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197603	13	13	13	13	13	13	13	13	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197603	13	13	13	13	13	13	13		11.7	11.7	11.8	11.8	11.8	11.8	11.8	0	-1.3	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2	0
197604	14	14	14	14	14	14	14	14	11.8	11.8	11.8	11.8	11.8	11.8	11.9	11.9	-2.2	-2.2	-2.2	-2.2	-2.2	-2.2	-2.1	-2.1
197604	14	14	14	14	14	14	14	14	11.9	11.9	11.9	12	12	12	12.1	12.1	-2.1	-2.1	-2.1	-2	-2	-2	-1.9	-1.9
197604	14	14	14	14	14	14	14	14	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9	-1.9
197604	14	14	14	14	14	14			12.2	12.2	12.2	12.2	12.2	12.3	0	0	-1.8	-1.8	-1.8	-1.8	-1.8	-1.7	0	0
197605	14	14	17	67	101	93	66	39	12.3	12.3	12.4	12.4	12.4	12.5	12.5	12.6	-1.7	-1.7	-4.6	0	0	0	0	0
197605	23	46	66	77	85	88	95	116	12.6	12.6	12.6	12.7	12.7	12.7	12.7	12.8	0	0	0	0	0	0	0	0
197605	139	276	336	336	281	257	240	232	12.9	13	13	13	13	13	13.1	12.7	0	0	0	0	0	0	0	0
197605	229	224	206	199	201	214	206		12.7	12.8	12.8	12.8	12.8	13	13	0	0	0	0	0	0	0	0	0
197606	206	238	252	259	290	311	314	314	13	13	13	13.1	13.1	13.1	13.2	13.2	0	0	0	0	0	0	0	0
197606	314	287	275	275	275	275	272	257	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197606	252	252	252	252	249	227	214	214	13.2	13.2	13.2	13.1	13.1	13.1	13.1	13.1	0	0	0	0	0	0	0	0
197606	224	219	209	182	180	180			13.1	13.1	13	13	13	13	0	0	0	0	0	0	0	0	0	0
197607	182	196	201	201	201	204	209	201	13	12.9	12.9	12.9	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197607	196	196	196	194	199	206	206	189	12.8	12.7	12.7	12.7	12.7	12.6	12.6	12.6	0	0	0	0	0	0	0	0
197607	182	187	196	196	196	196	199	206	12.6	12.6	12.5	12.5	12.5	12.5	12.4	12.4	0	0	0	0	0	0	0	0
197607	206	201	187	164	166	152	144		12.4	12.4	12.3	12.3	12.3	12.3	12.2	0	0	0	0	0	0	0	0	0
197608	144	152	166	177	184	189	192	192	12.2	12.2	12.2	12.1	12.1	12.1	12.1	12.1	0	0	0	0	0	0	0	0
197608	177	164	157	157	155	152	150	150	12	12	12	11.9	11.9	11.9	11.8	11.8	0	0	0	0	0	0	0	0
197608	141	135	135	122	122	112	99	99	11.8	11.8	11.7	11.7	11.7	11.7	11.6	11.6	0	0	0	0	0	0	0	0
197608	99	110	114	114	118	124	129		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0	0
197609	129	129	129	129	129	124	124	105	11.6	11.5	11.5	11.7	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0
197609	95	112	108	103	94	85	85	85	11.6	11.6	11.6	11.6	11.6	11.6	11.5	11.5	0	0	0	0	0	0	0	0
197609	90	95	105	112	112	112	112	112	11.5	11.5	11.5	11.5	11.5	11.4	11.4	11.4	0	0	0	0	0	0	0	0
197609	87	51	45	40	39	39			11.4	11.4	11.4	11.4	11.5	11.5	12.8	0	0	0	0	0	0	0	0	0
197610	39	39	39	44	46	46	46	46	11.5	11.5	11.5	11.5	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0
197610	46	46	52	57	74	82	76	76	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0
197610	61	14	14	14	15	15	15	15	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-2.4	-2.4	-2.4	-3.4	-3.4	-3.4	-3.4
197610	15	15	15	14	14	14	14		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-3.4	-3.4	-3.4	-2.4	-2.4	-2.4	-2.4	0
197611	14	14	14	14	14	14	14	14	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
197611	14	14	14	14	14	14	14	14	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
197611	14	14	14	14	14	14	14	14	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
197611	14	30	57	57	57	57			11.6	11.6	11.6	11.6	11.6	11.6	0	0	-2.4	0	0	0	0	0	0	0
197612	57	50	23	13	13	13	13	13	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	0	0	0	-1.5	-1.5	-1.5	-1.5	-1.5
197612	12	12	12	12	12	12	12	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
197612	12	12	12	12	12	12	12	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
197612	12	12	12	12	12	12	12		11.5	11.5	11.5	11.5	11.5	11.5	11.5	0	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85 (HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197701	12	12	12	12	12	12	12	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
197701	12	12	12	12	12	12	12	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
197701	12	12	12	12	12	12	12	12	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
197701	12	12	12	12	12	12	12		11.5	11.5	11.5	11.5	11.5	11.5	11.4	0	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.6	0
197702	12	12	12	12	12	12	12	12	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6
197702	12	12	12	12	12	10	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	-0.6	-0.6	-0.6	-0.6	-0.6	1.4	2.4	2.4
197702	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
197702	9	9	9	9					11.4	11.4	11.4	11.4	11.6	0	0	0	2.4	2.4	2.4	2.4	0	0	0	0
197703	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
197703	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
197703	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
197703	9	9	9	9	9	9	9		11.4	11.4	11.4	11.4	11.4	11.4	11.4	0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	0
197704	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
197704	9	9	9	9	9	9	9	9	11.4	11.4	11.4	11.5	11.5	11.5	11.5	11.5	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5
197704	9	9	12	13	31	40	40	40	11.5	11.5	11.5	11.5	11.5	11.6	11.6	11.6	2.5	2.5	-0.5	-1.5	0	0	0	0
197704	31	12	12	12	12	12			11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	-0.4	-0.4	-0.4	-0.4	-0.4	0	0
197705	13	18	61	92	95	99	126	157	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7	-1.4	0	0	0	0	0	0	0
197705	170	180	189	192	177	157	141	141	11.7	11.7	11.7	11.6	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0
197705	141	137	131	116	116	118	118	118	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.4	0	0	0	0	0	0	0	0
197705	116	116	124	135	139	150	157		11.4	11.4	11.4	11.4	11.4	11.4	11.4	0	0	0	0	0	0	0	0	0
197706	170	194	209	214	214	211	206	206	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.1	0	0	0	0	0	0	0	0
197706	206	206	206	206	206	196	182	182	11.1	11.1	11	11	11	10.9	10.9	10.8	0	0	0	0	0	0	0	0
197706	182	184	187	184	182	180	155	131	10.8	10.7	10.7	10.6	10.6	10.5	10.5	10.4	0	0	0	0	0	0	0	0
197706	105	90	80	80	78	78			10.4	10.3	10.3	10.3	10.3	10.2	0	0	0	0	0	0	0	0	0	0
197707	83	85	94	97	92	88	78	74	10.2	10.2	10.2	10.1	10.1	10.1	10.1	10	0	0	0	0	0	0	0	0
197707	82	114	130	126	116	114	116	116	10.6	10	9.9	9.9	9.8	9.8	9.7	9.7	0	0	0	0	0	0	0	0
197707	108	114	108	105	116	108	103	94	9.6	9.6	9.5	9.5	9.5	9.4	9.4	9.3	0	0	0	0	0	0	0	0
197707	84	65	52	53	53	52	55		9.3	9.3	9.4	9.5	9.5	9.5	9.6	0	0	0	0	0	0	0	0	0
197708	76	85	94	108	108	108	106	122	9.5	9.5	9.5	9.5	9.4	9.4	9.3	9.3	0	0	0	0	0	0	0	0
197708	133	139	135	118	118	116	103	82	9.2	9.2	9.1	9	8.9	8.9	8.8	8.9	0	0	0	0	0	0	0	0
197708	38	10	10	10	25	54	80	85	9	9.1	9.2	9.2	9.3	9.3	9.3	9.3	0	-0.9	-0.8	-0.8	0	0	0	0
197708	90	80	62	56	56	56	56		9.3	9.3	9.3	9.3	9.3	9.2	9.2	0	0	0	0	0	0	0	0	0
197709	56	56	56	56	56	56	62	70	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	0	0	0	0	0	0	0	0
197709	72	72	72	62	58	57	51	46	9.1	9.1	9.1	9	9	9	9	9	0	0	0	0	0	0	0	0
197709	47	47	51	57	64	64	64	64	9	9	9	9	9	9	8.9	8.9	0	0	0	0	0	0	0	0
197709	64	64	64	64	62	62			8.9	8.9	8.9	8.8	8.8	8.8	0	0	0	0	0	0	0	0	0	0
197710	****************9.7 ************								8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	0	0	0	0	-1	-1.3	-1.3	-1.3
197710	********************************								8.7	8.7	8.8	8.8	8.8	8.8	8.8	8.8	-1.3	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197710	********************************								8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
197710	************************9.7								8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-0.8	0
197711	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.9	8.9	8.9	8.9	8.9	8.9	9	9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.7	-0.7
197711	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9	9	9	9	9	9	9	9	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
197711	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9	9	9	9	9	9	9	9	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
197711	9.7	9.7	9.2	9.2	9.2	9.2			9	9	9	9	9	9	0	0	-0.7	-0.7	-0.2	-0.2	-0.2	-0.2	0	0
197712	9.2	******************9 2						9.2	9	9	9	8.9	8.9	8.9	8.9	8.9	-0.2	0	0	0	0	0	-0.3	-0.3
197712	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197712	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197712	9.2	9.2	9.2	9.2	9.2	9.2	9.2		8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	0
197801	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197801	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197801	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197801	9.2	9.2	9.2	9.2	9.2	9.2	9.2		8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	0
197802	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197802	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197802	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3	-0.3
197802	9.2	9.2	9.2	9.2					8.9	8.9	8.9	8.9	11.6	0	0	0	-0.3	-0.3	-0.3	-0.3	0	0	0	0
197803	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
197803	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
197803	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8
197803	9.7	9.7	9.7	9.7	9.7	9.7	9.7		8.9	8.9	8.9	8.9	8.9	8.9	8.9	0	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	-0.8	0
197804	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.9	9	9	9	9	9	9	9.1	-0.8	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6
197804	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.1	9.2	9.2	9.2	9.2	9.2	9.3	9.3	-0.6	-0.5	-0.5	-0.5	-0.5	-0.5	-0.4	-0.4
197804	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.3	9.3	9.4	9.4	9.5	9.5	9.5	9.6	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1
197804	9.7	9.7	9.7	9.7	********				9.6	9.7	9.7	9.8	9.9	10	0	0	-0.1	0	0	0.1	-0.1	0	0	0
197805	********************************								10	10	10.1	10.1	10.1	10.2	10.2	10.2	-1	-1	-0.9	-0.9	-0.9	-0.8	-0.8	-0.8
197805	********************************								10.2	10.3	10.3	10.3	10.4	10.5	10.5	10.7	-0.8	-0.7	-0.7	-0.7	-0.6	-0.5	-0.5	-0.3
197805	********************************								10.8	10.9	11	11.1	11.2	11.3	11.3	11.4	-0.2	0	0	0	0	0	0	0
197805	55	72	88	103	131	139	161		11.5	11.6	11.6	11.7	11.8	11.8	11.9	0	0	0	0	0	0	0	0	0
197806	168	182	222	235	238	257	263	266	12	12.1	12.1	12.2	12.2	12.3	12.3	12.4	0	0	0	0	0	0	0	0
197806	263	263	246	232	238	243	240	238	12.4	12.4	12.5	12.6	12.6	12.6	12.7	12.7	0	0	0	0	0	0	0	0
197806	238	238	227	227	222	216	204	196	12.7	12.7	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197806	196	189	180	166	164	155			12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0	0	0
197807	155	155	155	155	159	164	164	173	12.8	12.8	12.7	12.7	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0
197807	182	184	184	187	192	204	214	219	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.5	0	0	0	0	0	0	0	0
197807	219	216	204	199	194	194	196	199	12.5	12.5	12.4	12.4	12.4	12.4	12.4	12.3	0	0	0	0	0	0	0	0
197807	199	204	222	232	229	227	222		12.3	12.3	12.2	12.2	12.1	12.1	12.1	0	0	0	0	0	0	0	0	0
197808	219	216	214	204	194	192	194	196	12.1	12	12	11.9	11.9	11.9	11.8	11.8	0	0	0	0	0	0	0	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85

(HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
197808	194	187	177	168	155	150	152	164	11.7	11.7	11.7	11.6	11.6	11.6	11.6	11.5	0	0	0	0	0	0	0	0
197808	168	168	166	164	157	144	101	95	11.5	11.5	11.4	11.4	11.3	11.3	11.3	11.2	0	0	0	0	0	0	0	0
197808	106	124	135	133	131	122	119		11.2	11.2	11.2	11.1	11.1	11.1	11	0	0	0	0	0	0	0	0	0
197809	110	116	112	112	106	105	112	116	11	11	10.9	10.9	10.9	10.8	10.8	10.8	0	0	0	0	0	0	0	0
197809	120	118	126	131	131	129	124	120	10.7	10.7	10.7	10.6	10.6	10.5	10.5	10.5	0	0	0	0	0	0	0	0
197809	92	77	77	82	82	77	71	72	10.4	10.3	10.3	10.3	10.3	10.2	10.2	10.2	0	0	0	0	0	0	0	0
197809	57	47	42	42	42	44			10.2	10.2	10.1	10.1	10.1	10.1	0	0	0	0	0	0	0	0	0	0
197810	46	49	50	49	55	60	65	65	10.1	10.1	10.1	10	10	10	10	10	0	0	0	0	0	0	0	0
197810	62	66	66	66	55	66	66	66	9.9	9.9	9.9	9.9	9.8	9.8	9.7	9.7	0	0	0	0	0	0	0	0
197810	66	58	52	50	39	23	23	23	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	0	0	0	0	0	0	0	0
197810	16	11	11	11	11	10	10		9.6	9.6	9.6	9.6	9.6	9.6	9.6	0	-6.4	-1.4	-1.4	-1.4	-1.4	-0.4	-0.4	0
197811	10	10	10	10	10	10	10	10	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197811	10	10	11	11	11	11	11	11	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	-0.4	-0.4	-1.4	-1.4	-1.3	-1.3	-1.3	-1.3
197811	11	11	11	11	11	11	11	11	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197811	11	22	52	52	51	38			9.7	9.7	9.7	9.7	9.7	9.6	0	0	-1.3	0	0	0	0	0	0	0
197812	11	11	11	11	11	11	11	11	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7	-1.4	-1.4	-1.4	-1.3	-1.3	-1.3	-1.3	-1.3
197812	11	11	11	11	11	11	11	11	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197812	11	11	11	11	11	11	11	11	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197812	11	11	11	11	11	11	11		9.7	9.7	9.7	9.7	9.7	9.7	9.7	0	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	0
197901	11	11	11	11	11	11	11	11	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197901	11	11	11	11	11	11	11	11	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
197901	11	11	11	11	11	11	11	11	9.7	9.8	9.8	9.8	9.8	9.8	9.8	9.8	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197901	11	11	11	11	11	11	11		9.8	9.8	9.8	9.8	9.8	9.8	9.8	0	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	0
197902	11	11	11	11	11	11	11	11	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197902	11	11	11	11	11	11	11	11	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2	-1.2
197902	11	11	11	11	11	11	11	11	9.8	9.8	9.8	9.8	9.8	9.9	9.9	9.9	-1.2	-1.2	-1.2	-1.2	-1.2	-1.1	-1.1	-1.1
197902	11	11	11	11					9.9	9.9	9.9	9.9	11.7	0	0	0	-1.1	-1.1	-1.1	-1.1	0	0	0	0
197903	11	11	11	11	11	11	11	11	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
197903	11	11	11	11	11	11	11	11	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
197903	11	11	11	11	11	11	11	11	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1
197903	11	11	11	11	11	11	11		9.9	9.9	9.9	9.9	9.9	10	10	0	-1.1	-1.1	-1.1	-1.1	-1.1	-1	-1	0
197904	11	11	11	11	11	11	11	11	10	10	10	10	10	10	10	10	-1	-1	-1	-1	-1	-1	-1	-1
197904	55	55	56	56	56	57	58	58	10	10	10	10	10	10	10	10	0	0	0	0	0	0	0	0
197904	58	88	110	110	110	110	110	110	10	10	10	10	10	10.1	10.1	10.1	0	0	0	0	0	0	0	0
197904	110	110	110	110	110	110			10.2	10.2	10.2	10.3	10.3	10.3	0	0	0	0	0	0	0	0	0	0
197905	110	112	112	92	0	33	129	148	10.4	10.5	10.5	10.6	10.6	10.7	10.8	9.2	0	0	0	0	0	0	0	0
197905	148	148	148	148	148	148	148	148	10.9	10.9	10.9	11	11	11	11	11	0	0	0	0	0	0	0	0
197905	148	148	148	150	206	232	290	336	11.1	11.1	11.2	11.3	11.4	11.5	11.6	11.7	0	0	0	0	0	0	0	0
197905	339	339	346	350	395	423	426		11.8	11.9	12	12.1	12.2	12.4	12.4	0	0	0	0	0	0	0	0	0
197906	430	434	434	434	530	725	945	940	12.5	12.5	12.6	12.6	12.6	12.7	12.8	12.8	0	0	0	0	0	0	0	0
197906	935	935	935	945	574	284	382	790	12.8	12.7	12.7	12.7	12.7	12.8	12.9	13	0	0	0	0	0	0	0	0
197906	855	642	392	328	482	684	780	780	13	13.1	13.1	13.1	13.1	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197906	780	780	780	780	780	780			13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0	0	0
197907	707	676	676	578	486	328	260	328	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197907	378	325	266	284	300	278	263	252	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197907	232	206	204	201	201	201	211	222	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
197907	219	227	238	238	232	224	214		13.2	13.2	13.2	13.2	13.1	13.1	13.1	0	0	0	0	0	0	0	0	0
197908	214	224	243	249	235	229	219	214	13.1	13.1	13.1	13	13	13	13	13	0	0	0	0	0	0	0	0
197908	214	214	214	224	214	206	196	164	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197908	146	131	122	116	122	141	150	155	12.8	12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
197908	131	126	135	152	161	161	150		12.8	12.7	12.7	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0	0
197909	161	144	135	129	118	118	133	146	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
197909	157	159	146	137	135	144	152	152	12.5	12.5	12.5	12.5	12.4	12.4	12.4	12.4	0	0	0	0	0	0	0	0
197909	148	144	126	122	131	137	155	155	12.4	12.4	12.3	12.3	12.3	12.3	12.3	12.2	0	0	0	0	0	0	0	0
197909	155	141	133	124	105	105			12.2	12.2	12.2	12.1	12.1	12.1	12.8	0	0	0	0	0	0	0	0	0
197910	112	110	129	141	139	137	137	137	12.1	12.1	12.1	12.1	12	12	12	11.9	0	0	0	0	0	0	0	0
197910	137	137	137	137	137	135	135	133	11.9	11.9	11.9	11.8	11.8	11.8	11.7	11.7	0	0	0	0	0	0	0	0
197910	124	106	45	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	-0.4	-0.4	-0.4	-0.4	-0.4
197910	12	12	12	12	12	12	12		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	0
197911	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197911	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197911	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
197911	12	12	53	60	47	47			11.6	11.6	11.6	11.6	11.6	11.6	0	0	-0.4	-0.4	0	0	0	0	0	0
197912	28	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
197912	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
197912	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
197912	13	13	13	13	13	12	12		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-1.4	-1.4	-1.4	-1.4	-1.4	-0.4	-0.4	0

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

8/12/85

(HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
198001	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198001	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198001	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198001	12	12	12	12	12	12	12		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	0
198002	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198002	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198002	12	12	11	11	11	11	11	11	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	0.6	0.6	0.6	0.6	0.6	0.6
198002	11	11	11	11	11				11.6	11.6	11.6	11.6	11.6	0	0	0	0.6	0.6	0.6	0.6	0.6	0	0	0
198003	11	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198003	12	12	12	12	12	12	12	12	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4
198003	12	12	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-0.4	-0.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
198003	13	13	13	13	13	13	13		11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	0
198004	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
198004	13	13	13	13	13	13	13	13	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4
198004	32	108	148	177	196	214	249	275	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	0	0	0	0	0	0	0	0
198004	290	290	287	287	284	284			11.5	11.5	11.5	11.4	11.4	11.3	0	0	0	0	0	0	0	0	0	0
198005	284	284	281	281	281	232	201	204	11.3	11.3	11.2	11.2	11.1	11.1	11.1	11.1	0	0	0	0	0	0	0	0
198005	206	206	206	206	204	204	204	204	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	0	0	0	0	0	0	0	0
198005	201	201	201	201	201	201	201	204	11	11	11	11	11	11	11.1	11.2	0	0	0	0	0	0	0	0
198005	206	209	209	209	209	209	211		11.3	11.4	11.4	11.5	11.6	11.6	11.7	0	0	0	0	0	0	0	0	0
198006	211	214	214	216	216	301	510	518	11.8	11.9	12	12.1	12.3	12.4	12.5	12.5	0	0	0	0	0	0	0	0
198006	522	662	890	900	975	860	635	554	12.6	12.7	12.8	12.8	12.8	12.9	12.9	13	0	0	0	0	0	0	0	0
198006	506	506	653	845	825	364	542	752	13	13	13.1	13.1	13.1	13.1	13.2	13.2	0	0	0	0	0	0	0	0
198006	604	434	412	406	402	322			13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0	0	0
198007	363	363	230	222	219	206	196	194	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	0	0	0	0	0	0	0	0
198007	184	199	206	224	217	214	204	196	13.3	13.3	13.3	13.3	13.3	13.2	13.2	13.2	0	0	0	0	0	0	0	0
198007	196	206	209	209	209	209	214	232	13.2	13.2	13.2	13.2	13.2	13.1	13.1	13.1	0	0	0	0	0	0	0	0
198007	240	240	240	238	224	216	222		13.1	13.1	13.1	13	13	13	13	0	0	0	0	0	0	0	0	0
198008	235	238	238	238	238	245	254	254	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
198008	254	254	254	243	238	227	211	209	12.7	12.7	12.6	12.6	12.6	12.6	12.5	12.5	0	0	0	0	0	0	0	0
198008	216	222	219	206	201	199	180	148	12.5	12.4	12.4	12.4	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
198008	139	150	141	133	139	131	119		12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0	0
198009	120	129	129	139	152	146	141	141	12.2	12.2	12.2	12.2	12.2	12.1	12.1	12.1	0	0	0	0	0	0	0	0
198009	124	90	64	53	53	53	53	56	12.1	12.1	12.2	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
198009	62	62	68	72	72	72	74	77	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	0	0	0	0	0	0	0	0
198009	80	80	80	76	72	72			12.3	12.3	12.3	12.3	12.3	12.2	0	0	0	0	0	0	0	0	0	0
198010	72	78	83	82	82	87	103	105	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.1	0	0	0	0	0	0	0	0
198010	105	105	105	105	106	110	114	10	12.1	12.1	12.1	12.1	12.1	12.1	12	12	0	0	0	0	0	0	0	2
198010	****	****	****	****	****	****	****	*9.7	12	12	12	12	12	12	12	12	2	2	2	2	2	2	2	2.3
198010	9.7	9.7	9.7	9.7	9.7	9.7	9.7		12	12	12	12	12	12.1	12.1	0	2.3	2.3	2.3	2.3	2.3	2.4	2.4	0
198011	9.7	9.7	9.7	9.7	****	****	****	****	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.4	2.4	2.4	2.4	2.1	2.1	2.1	2.1
198011	****	****	****	****	****	****	****	****	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
198011	****	****	****	****	****	****	****	****	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.1	2.1	2.1	2.1	2.1	1.1	1.1	0.1
198011	12	12	12	12	13	13			12.1	12.1	12.1	12.1	12.1	12.1	0	0	0.1	0.1	0.1	0.1	-0.9	-0.9	0	0
198012	13	13	13	13	13	13	13	13	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
198012	13	13	13	13	13	13	13	13	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
198012	13	13	13	13	13	13	13	13	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9
198012	13	27	60	60	60	60	46		12.1	12.1	12.1	12.1	12.1	12.1	12.1	0	-0.9	0	0	0	0	0	0	0
198101	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	1	1	1	1	1	1	1	1
198101	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	1	1	1	1	1	1	1	1
198101	11	11	11	11	11	11	11	11	12	12	12	12	12	12	12	12	1	1	1	1	1	1	1	1
198101	11	11	11	11	11	11	11		12	12	12	12	12	12	12	0	1	1	1	1	1	1	1	0
198102	10	10	10	10	10	10	10	10	12	12	12	12	12	12	12	12	2	2	2	2	2	2	2	2
198102	10	10	10	10	10	10	10	10	12	12	12	12	12	12	12	12	2	2	2	2	2	2	2	2
198102	10	10	10	10	10	10	10	10	12	12	12	12	12	12	12	12	2	2	2	2	2	2	2	2
198102	****	****	*9.9	9.9					12	12	12	12	11.6	0	0	0	2	2	2.1	2.1	0	0	0	0
198103	9.9	9.9	9.9	9.9	9.8	9.8	9.8	9.8	12	12	12	12	12	12	12	12	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2
198103	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	12	12	12	12	12	12	12	12	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
198103	9.8	9.8	9.8	9.8	9.7	9.7	9.7	9.7	12	12	12	12	12	12	12	12	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
198103	9.7	9.7	9.7	9.7	9.7	9.2	9.2		12	12	12	12	12	12	12	0	2.3	2.3	2.3	2.3	2.3	2.8	2.8	0
198104	9.2	9.2	9.2	9.2	9.2	9.2	9.7	9.7	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.9	2.9	2.9	2.9	2.9	2.9	2.4	2.4
198104	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198104	9.7	9.7	9.7	9.7	9.7	9.7	9.7	****	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.1
198104	****	****	****	****	****	****			12.2	12.2	12.2	12.3	12.3	12.4	0	0	1.2	1.2	1.2	1.3	1.3	1.4	0	0
198105	****	****	****	****	****	****	38	51	12.4	12.4	12.5	12.6	12.6	12.6	12.7	12.7	1.4	1.4	1.5	1.6	1.6	1.6	0	0
198105	51	51	65	76	76	76	94	116	12.8	12.7	12.7	12.7	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
198105	116	133	152	155	166	159	148	148	12.8	12.8	12.8	12.8	12.8	12.8	12.7	12.7	0	0	0	0	0	0	0	0
198105	161	177	196	209	214	222	214		12.7	12.7	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0	0
198106	204	192	177	161	148	152	175	184	12.8	12.9	12.9	12.9	13	13	13	13.1	0	0	0	0	0	0	0	0
198106	196	204	211	229	227	224	243	246	13.1	13.1	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
198106	222	216	204	196	182	201	211	211	13.2	13.2	13.2	13.1	13.1	13.1	13.1	13.1	0	0	0	0	0	0	0	0
198106	194	182	182	182	180	161			13.1	13.1	13	13	13	13	0	0	0	0	0	0	0	0	0	0
198107	187	180	152	139	133	124	139	146	13	13	13	13	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198107	146	144	146	150	159	159	141	120	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198107	110	110	103	110	120	131	150	168	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198107	168	166	157	144	124	103	103		12.9	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0	0
198108	110	120	131	155	161	161	170	180	12.8	12.8	12.8	12.8	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0

8/12/85

LEMON DAM IMPROMENTS PROJECT
FLOW COMPARISON WITH AND WITHOUT TURBINE
WORTHINGTON 10LNT14A PUMP

(HL=0.2139)

DATE	HISTORIC FLOW BELOW LEMON (CFS)								FLOW THRU TURBINE (CFS)								CHANGE IN FLOW (CFS)							
198108	184	182	150	129	120	120	120	126	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198108	137	137	141	155	160	192	173	166	12.6	12.6	12.6	12.6	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0
198108	166	166	166	166	161	155	144		12.4	12.4	12.4	12.4	12.4	12.4	12.3	0	0	0	0	0	0	0	0	0
198109	141	148	166	157	152	150	150	148	12.3	12.3	12.3	12.2	12.2	12.2	12.2	12.2	0	0	0	0	0	0	0	0
198109	144	131	126	122	112	101	94	101	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	0	0	0	0	0	0	0	0
198109	105	116	126	126	118	105	101	101	12.1	12.1	12.1	12.1	12.1	12.1	12	12	0	0	0	0	0	0	0	0
198109	101	101	101	101	97	116			12	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0
198110	114	101	101	97	70	50	39	32	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	0	0	0	0	0	0	0	0
198110	****	****	****	****	****	****	****	8.4	11.9	12	12	12	12	12	12	12	0	0	0	0	0	0	0	3.6
198110	8.4	7.9	7.9	7.4	7.4	7.4	7.4	7.4	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	3.7	4.2	4.2	4.7	4.7	4.7	4.7	4.7
198110	7.4	7.4	7.9	7.9	8.4	8.8	8.8		12.1	12.2	12.2	12.2	12.2	12.2	12.2	0	4.7	4.8	4.3	4.3	3.8	3.4	3.4	0
198111	9.2	9.2	9.2	9.2	9.2	9.2	9.7	9.7	12.2	12.2	12.2	12.2	12.3	12.3	12.3	12.3	3	3	3	3	3.1	3.1	2.6	2.6
198111	9.2	9.2	9.2	9.2	9.0	9.0	9.0	9.0	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	3.1	3.1	3.1	3.1	3.3	3.3	3.3	3.3
198111	9.0	****	****	****	****	****	****	****	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	3.3	0	0	0	0	0	0	0
198111	****	9.0	9.0	9.0	9.0	9.0			12.3	12.3	12.3	12.3	12.3	12.3	0	0	0.3	3.3	3.3	3.3	3.3	3.3	0	0
198112	9.0	9.0	9.0	9.0	9.0	9.5	9.5	9.5	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	3.3	3.3	3.3	3.3	3.3	2.8	2.8	2.8
198112	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
198112	9.5	9.5	****	****	****	****	****	****	12.3	12.3	12.3	12.3	12.3	12.4	12.4	12.4	2.8	2.8	2.3	2.3	2.3	2.4	2.4	2.4
198112	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	-10
198201	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2..4
198201	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198201	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198201	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	2.4	2.4	2.4	2.4	2.4	2.4	2.4	-10
198202	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198202	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198202	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198202	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	11.7	0	0	0	2.4	2.4	2.4	2.4	1.7	-10	-10	-10
198203	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198203	****	****	****	****	****	****	****	****	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
198203	****	9.5	9.5	9.5	9.5	9.5	9.5	9.5	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	2.4	2.9	2.9	2.9	2.9	2.9	2.9	2.9
198203	9.5	9.5	9.5	9.5	9.5	9.5	9.5		12.4	12.4	12.4	12.4	12.4	12.4	12.4	0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	0
198204	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.2	12.4	12.4	12.4	12.4	12.4	12.4	12.5	12.5	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.3
198204	9.2	9.2	9.2	9.2	8.8	8.8	8.4	8.4	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	3.3	3.3	3.3	3.3	3.7	3.7	4.1	4.1
198204	8.4	8.4	8.4	8.8	9.2	9.2	9.7	9.7	12.6	12.6	12.6.	12.6	12.6	12.6	12.6	12.6	4.2	4.2	4.2	3.8	3.4	3.4	2.9	2.9
198204	9.7	****	****	****	****	****			12.6	12.7	12.7	12.7	12.7	12.7	0	0	2.9	0	1.7	1.7	1.7	1.7	0	0
198205	11	182	308	308	308	304	304	304	12.7	12.8	12.7	12.7	12.7	12.7	12.7	12.7	1.7	0	0	0	0	0	0	0
198205	304	304	304	305	150	110	100	100	12.7	12.7	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198205	100	100	100	100	150	150	150	150	12.6	12.6	12.6	12.6	12.6	12.7	12.7	12.7	0	0	0	0	0	0	0	0
198205	160	180	190	190	190	400	500		12.8	12.8	12.8	12.9	12.9	13	13	0	0	0	0	0	0	0	0	0
198206	590	595	595	594	594	594	594	518	13	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0
198206	412	314	281	281	281	272	269	269	13	13	13	13.1	13.1	13.1	13.2	13.2	0	0	0	0	0	0	0	0
198206	260	249	332	350	272	249	249	246	13.2	13.2	13.2	13.2	13.2	13.3	13.3	13.3	0	0	0	0	0	0	0	0
198206	356	482	450	402	388	350			13.3	13.3	13.3	13.3	13.3	13.3	0	0	0	0	0	0	0	0	0	0
198207	402	370	300	270	222	189	189	189	13.3	13.3	13.2	13.2	13.2	13.2	13.2	13.2	0	0	0	0	0	0	0	0
198207	201	219	222	224	235	238	235	235	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.1	0	0	0	0	0	0	0	0
198207	238	229	240	246	243	229	224	232	13.1	13.1	13.1	13.1	13.1	13	13	13	0	0	0	0	0	0	0	0
198207	246	252	272	257	243	232	232		13	13	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0	0
198208	232	219	214	209	222	227	229	232	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0
198208	232	209	187	189	175	155	157	166	12.8	12.8	12.8	12.7	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0
198208	168	168	160	150	150	150	140	120	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0
198208	60	60	70	70	70	70	85		12.7	12.8	12.8	12.8	12.9	12.9	12.9	0	0	0	0	0	0	0	0	0
198209	90	90	90	80	70	70	90	90	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198209	90	90	80	80	80	100	110	150	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198209	150	150	150	150	250	250	250	250	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	0	0	0	0	0	0	0	0
198209	250	250	250	250	200	130			12.8	12.8	12.8	12.8	12.8	12.8	12.8	0	0	0	0	0	0	0	0	0
198210	130	130	130	130	130	130	130	130	12.8	12.8	12.8	12.8	12.8	12.8	12.7	12.7	0	0	0	0	0	0	0	0
198210	130	130	130	110	90	90	90	90	12.7	12.7	12.7	12.7	12.7	12.7	12.7	12.7	0	0	0	0	0	0	0	0
198210	90	90	72	54	54	54	54	53	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198210	53	53	53	53	53	53	53		12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0	0
198211	52	52	52	52	52	44	35	35	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198211	35	35	35	35	35	35	50	55	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198211	55	55	40	39	39	39	39	39	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0
198211	39	39	39	39	38	38			12.6	12.6	12.6	12.6	12.6	12.6	0	0	0	0	0	0	0	0	0	0
198212	38	38	38	38	38	37	37	37	12.6	12.6	12.6	12.6	12.6	12.6	12.5	12.5	0	0	0	0	0	0	0	0
198212	37	37	37	37	37	37	37	36	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0
198212	36	36	36	36	36	36	36	35	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0
198212	35	35	35	35	35	35	35		12.5	12.5	12.5	12.5	12.5	12.5	12.5	0	0	0	0	0	0	0	0	0

Appendix F

CONSTRUCTION COST, REVENUE AND FINANCIAL EVALUATION

This appendix supplements the Construction Cost Estimate and Financial Chapters by presenting more detailed data. The specific line items used to determine the engineering and field costs are shown. The sensitivity of the project to various interest rates and repayment periods is also shown.

The monetary considerations of the project are evaluated in this appendix. The construction cost estimate for the project with subtotals for the power plant, gate repair and designs are presented. The potential revenues from the power plant are estimated. The monetary assets available to the District are tabulated. Lastly, the financial evaluation of the project is determined using various funding scenarios.

A. Construction Cost Estimate

The estimate of construction costs for the project are shown on Table F-1 and have been developed in 1985 dollars. The costs are based upon estimates by welders, divers and electricians who, where possible, have performed similar services in southwest Colorado. The costs are separated into those for gate repair, power plant, feasiblity report and engineering designs and are further identified by items and subitems.

For each subitem the number of units and the cost of each are shown and are used to calculate the direct costs. The column for "Item Cost" shows the total of the direct costs for each item. The total direct cost for all of the items are tabulated across from the major heading, e.g., Gate Repair. To the total is added 10% for unlisted costs, and 15% for contingencies to arrive at the "Total Cost". The 10% for unlisted costs is not added to the

TABLE F-1
LEMON DAM IMPROVEMENTS PROJECT
CONSTRUCTION COST ESTIMATE

ITEM	UNITS	UNIT COST	DIRECT COST	ITEM COST	UNLISTED ITEMS (10%)	CONTINGENCIES (15%)	TOTAL COST
LEMON DAM IMPROVEMENTS PROJECT							$298,610.00
GATE REPAIR				$91,400.00	$9,100.00	$15,100.00	$115,600.00
Construct Plug				$5,000.00			
Material & Labor	1	$4,500.00	$4,500.00				
Transportation	1	$500.00	$500.00				
Close Outlet				$22,000.00			
Divers & Crew Inspection	1	$6,500.00	$6,500.00				
Divers & Crew Close Outlet	1	$6,500.00	$6,500.00				
Divers & Crew Open Outlet	1	$6,500.00	$6,500.00				
Mobilization	1	$2,500.00	$2,500.00				
Gate Repair				$64,400.00			
Parts	1	$56,000.00	$56,000.00				
Labor hours	140	$60.00	$8,400.00				
HYDROELETRIC FACILITIES				$91,310.00	$9,100.00	$15,100.00	$115,510.00
Piping				$15,020.00			
Remove Old Pipe hours	16	$60.00	$960.00				
Remove Concrete Block hours	32	$60.00	$1,920.00				
Butterfly Valve w/Actuator	2	$1,500.00	$3,000.00				
10"Gate Valve	1	$2,200.00	$2,200.00				
12" Gate Valve	1	$1,300.00	$1,300.00				
8"-10" Expansion	2	$40.00	$80.00				
14"-12" Reduction	1	$100.00	$100.00				
10"Steel Pipe	1	$250.00	$250.00				
Flanges	6	$100.00	$600.00				
90deg Bend, 10" Pipe	2	$100.00	$200.00				
90deg Bend, 12" Pipe	1	$120.00	$120.00				
10" Dresser Coupler	1	$200.00	$200.00				
12" Dresser Coupler	1	$250.00	$250.00				
10" & 10" T Bend	1	$120.00	$120.00				
12" & 10" T Bend	1	$120.00	$120.00				
Weld Pipe	60	$60.00	$3,600.00				
Turbine and Generator				$22,000.00			
Turbine and Generator	1	$22,000.00	$22,000.00				
Electrical Equipment				$46,250.00			
Euclid Speed Switch	1	$1,000.00	$1,000.00				
"W" Main Circuit Breaker,Safety Switch, 15kva Dry Transformer ,Size 5 Starter,35kvar Capacitor, Surge Protection	1	$16,000.00	$16,000.00				
Watt, VAR Transducers	1	$1,000.00	$1,000.00				
Operator Control Panel	1	$3,900.00	$3,900.00				
Primary Metering, Fused Cutouts ,Arrestors, Poles & Hardware, Padmount Transformer	1	$8,300.00	$8,300.00				
Cable & Conduit to Main CB	1	$350.00	$350.00				
Cable & Conduit to Starter	1	$1,600.00	$1,600.00				
Cable & Conduit, Starter to Gen	1	$200.00	$200.00				
Cable & Conduit to Switch	1	$100.00	$100.00				
Mount & Connect Capacitor	1	$200.00	$200.00				
Multi Control Wires	1	$600.00	$600.00				
Labor to Install	520	$25.00	$13,000.00				
Power to FWCD Home				$8,040.00			
Power Line and Transformer ft	1200	$6.70	$8,040.00				

TABLE F-1
LEMON DAM IMPROVEMENTS PROJECT
CONSTRUCTION COST ESTIMATE

ITEM	UNITS	UNIT COST	DIRECT COST	ITEM COST	UNLISTED ITEMS (10%)	CONTINGENCIES (15%)	TOTAL COST
ENGINEERING AND DESIGN				$30,010.00	$0.00	$4,500.00	$34,500.00
CUEA Purchase Agreement	16	$40.00	$640.00				
CUEA Interconnect Agreement	10	$40.00	$400.00				
Notify Downstream Water Users	10	$40.00	$400.00				
Prepare Designs & Specs							
Turbine & Generator	24	$50.00	$1,200.00				
Electrical Equipment	60	$65.00	$3,900.00				
Piping Modifications	24	$40.00	$960.00				
Outlet Plug	16	$40.00	$640.00				
Close & Open Outlet	8	$40.00	$320.00				
Repair Gates	20	$40.00	$800.00				
Prepare Bid Documents & Select							
Turbine & Generator	22	$40.00	$880.00				
Electrical Equipment	12	$65.00	$780.00				
Piping Modifications	8	$40.00	$320.00				
Outlet Plug	2	$40.00	$80.00				
Close & Open Outlet	8	$40.00	$320.00				
Repair Gates	8	$40.00	$320.00				
Construction Observation	80	$40.00	$3,200.00				
Start-up Engineering	80	$50.00	$4,000.00				
Contract Administration	40	$40.00	$1,600.00				
Turbine Testing	24	$50.00	$1,200.00				
Electrical Testing	24	$50.00	$1,200.00				
Shop Drawing Review	30	$50.00	$1,500.00				
Operation Manual	8	$50.00	$400.00				
Drafting	60	$20.00	$1,200.00				
Clerical & Office Expenses	1	$2,000.00	$2,000.00				
Transportation	3000	$0.25	$750.00				
Misc.	1	$1,000.00	$1,000.00				
FEASIBILITY REPORT							$33,000.00

engineering and design. The feasibility report costs are the costs incurred to prepare this report.

The materials costs are fairly accurate, probably plus or minus 10% or better; however, the labor costs are plus or minus 20%. This occurs because more unforeseen work is required on existing facilities than new facilities. For example, extra time may be required to plug the outlet due to a trash rack that will not move; however, the price quoted for the turbine and generator from the Worthington Pump Company, should not change much. An attempt was made to estimate the costs at the higher end of the reasonable values so that there will be few, if any, surprises when bids are received to construct the facilities.

The total estimated design and construction cost is $265,600 for the project brokendown as follows: $115,600 for the gate repairs; $115,470 for the power plant; and $34,500 for engineering and design.

B. Financial Evaluation

Since the construction costs for this project are relatively small, the Authority will not issue Revenue Bonds for this project alone, but will either make a loan from cash reserves or piggyback bonds for this project on a larger bond issue. If a straight loan is used there would be no financing costs, but if bonds were used there would be a 10% financing fee. Both possibilities are analyzed below.

If the project were constructed today, the interest rate would be 9% for a period of 15 years. However, using a current interest rate alone will not provide a suitable evaluation because the future rate could be very different than current rates. The evaluation should analyze the project over a range of interest rates and time periods.

The evaluations were made using interest rates from 6% to 12% in 1% increments and loan periods of 10 years to 20 years in 5 year increments. A 20 year loan is unacceptable for a project this small but is included, in the event interest rates approach 12% again.

Table F-2 summarizes the annual costs at various interest rates and repayment periods, assuming no financing fee and the District will contribute $85,000 in cash. Table F-3 shows a similar analysis but with a 10% financing fee.

Tables F-4 and F-5 shows the debt service evaluation with and without a financing fee for the power plant increment which illustrates to what extent the power plant revenues are sufficient to repay the associated costs. Note that the District's cash is not applied to the power plant construction.

The District will have to contribute revenues above what is derived from marketing the power for any of the financing options. If the project were financed today and the maximum annual revenues the District could contribute was $12,500; then 15 years at 9% interest, with or without a financing fee would be the most likely terms. If an 8% rate for 10 years, without a financing fee, could be obtained then that option could be considered. The District revenues would be at or below $12,500 in each case.

Generally, if interest rates stay at 9% or below the project is financially feasible, but if the rates are 12% or greater then project probably is infeasible. Interest rates between 9% and 12% will make the project marginal.

TABLE F-2
ECONOMIC ANALYSIS
NO BONDING FEE

Costs	
Const. Cost	$220,600
FWCD Cash	$10,000
Financed	$210,600
Bonding (0%)	$0
Total Finan	$210,600

Revenues	KW-HR	Mil Rate	Income
Total Gen	750000		n/a
FWCD Use	18000	$0.07	$1,300.00
Sold	732000	$0.035	$25,600.00

FINANCING ALTERNATIVES

	Annual Values					
	Expenses				Income	
Financing	Debt Service	FERC Charge	O,M&R	Total	Power Revenues	District Revenues
10 yrs @ 6%	$32,400	$750	$3,000	$36,150	$25,600	($10,550)
10 yrs @ 7%	$34,000	$750	$3,000	$37,750	$25,600	($12,150)
10 yrs @ 8%	$35,600	$750	$3,000	$39,350	$25,600	($13,750)
10 yrs @ 9%	$37,200	$750	$3,000	$40,950	$25,600	($15,350)
10 yrs @ 10%	$38,800	$750	$3,000	$42,550	$25,600	($16,950)
15 yrs @ 6%	$24,600	$750	$3,000	$28,350	$25,600	($2,750)
15 yrs @ 7%	$26,200	$750	$3,000	$29,950	$25,600	($4,350)
15 yrs @ 8%	$27,900	$750	$3,000	$31,650	$25,600	($6,050)
15 yrs @ 9%	$29,600	$750	$3,000	$33,350	$25,600	($7,750)
15 yrs @ 10%	$31,400	$750	$3,000	$35,150	$25,600	($9,550)
15 yrs @ 11%	$33,200	$750	$3,000	$36,950	$25,600	($11,350)
15 yrs @ 12%	$35,000	$750	$3,000	$38,750	$25,600	($13,150)
20 yrs @ 9%	$26,100	$750	$3,000	$29,850	$25,600	($4,250)
20 yrs @ 10%	$28,000	$750	$3,000	$31,750	$25,600	($6,150)
20 yrs @ 11%	$30,000	$750	$3,000	$33,750	$25,600	($8,150)
20 yrs @ 12%	$31,900	$750	$3,000	$35,650	$25,600	($10,050)

TABLE F-3
ECONOMIC ANALYSIS
10% BONDING FEE

Cost	
Const. Cost	$223,600
FWCD Cash	$35,000
Financed	$188,600
10% Bonding	$20,900
Total Finan	$262,500

Revenues	KW-HR	Mil Rate	Income
Total Gen	750000		n/a
FWCD Use	18000	$0.07	$1,300.00
Sold	732000	$0.035	$25,600.00

FINANCING ALTERNATIVES

	Annual Values					
	Expenses				Income	
Financing	Debt Service	FERC Charge	O,M&R	Total	Power Revenues	District Revenues
10 yrs @ 6%	$35,700	$750	$3,000	$39,450	$25,620	($13,830)
10 yrs @ 7%	$37,400	$750	$3,000	$41,150	$25,620	($15,530)
10 yrs @ 8%	$39,100	$750	$3,000	$42,850	$25,620	($17,230)
10 yrs @ 9%	$40,900	$750	$3,000	$44,650	$25,620	($19,030)
10 yrs @ 10%	$42,700	$750	$3,000	$46,450	$25,620	($20,830)
15 yrs @ 6%	$27,000	$750	$3,000	$30,750	$25,620	($5,130)
15 yrs @ 7%	$28,800	$750	$3,000	$32,550	$25,620	($6,930)
15 yrs @ 8%	$30,700	$750	$3,000	$34,450	$25,620	($8,830)
15 yrs @ 9%	$32,600	$750	$3,000	$36,350	$25,620	($10,730)
15 yrs @ 10%	$34,500	$750	$3,000	$38,250	$25,620	($12,630)
15 yrs @ 11%	$36,500	$750	$3,000	$40,250	$25,620	($14,630)
15 yrs @ 12%	$38,500	$750	$3,000	$42,250	$25,620	($16,630)
20 yrs @ 9%	$28,800	$750	$3,000	$32,550	$25,620	($6,930)
20 yrs @ 10%	$30,800	$750	$3,000	$34,550	$25,620	($8,930)
20 yrs @ 11%	$33,000	$750	$3,000	$36,750	$25,620	($11,130)
20 yrs @ 12%	$35,100	$750	$3,000	$38,850	$25,620	($13,230)

TABLE F-4
ECONOMIC ANALYSIS
HYDROPOWER PLANT
10% BONDING FEE

Costs	
Const. Cost	$170,000
FWCD Cash	$0
Financed	$170,000
Bonding (10%)	$17,000
Total Finan	$190,000

Revenues	KW-HR	Mil Rate	Income
Total Gen	750000		n/a
FWCD Use	18000	$0.07	$1,300.00
Sold	732000	$0.035	$25,600.00

FINANCING ALTERNATIVES

	Annual Values					
	Expenses				Income	
Financing	Debt Service	FERC Charge	O,M&R	Total	Power Revenues	District Revenues
10 yrs @ 6%	$25,900	$750	$3,000	$29,650	$25,620	($4,030)
10 yrs @ 7%	$27,100	$750	$3,000	$30,850	$25,620	($5,230)
10 yrs @ 8%	$28,400	$750	$3,000	$32,150	$25,620	($6,530)
10 yrs @ 9%	$29,700	$750	$3,000	$33,450	$25,620	($7,830)
10 yrs @ 10%	$31,000	$750	$3,000	$34,750	$25,620	($9,130)
15 yrs @ 6%	$19,600	$750	$3,000	$23,350	$25,620	$2,270
15 yrs @ 7%	$20,900	$750	$3,000	$24,650	$25,620	$970
15 yrs @ 8%	$22,200	$750	$3,000	$25,950	$25,620	($330)
15 yrs @ 9%	$23,600	$750	$3,000	$27,350	$25,620	($1,730)
15 yrs @ 10%	$25,000	$750	$3,000	$28,750	$25,620	($3,130)
15 yrs @ 11%	$26,500	$750	$3,000	$30,250	$25,620	($4,630)
15 yrs @ 12%	$27,900	$750	$3,000	$31,650	$25,620	($6,030)
20 yrs @ 9%	$20,000	$750	$3,000	$24,550	$25,620	$1,070
20 yrs @ 10%	$22,400	$750	$3,000	$26,150	$25,620	($530)
20 yrs @ 11%	$23,900	$750	$3,000	$27,650	$25,620	($2,030)
20 yrs @ 12%	$25,500	$750	$3,000	$29,250	$25,620	($3,630)

TABLE F-5
ECONOMIC ANALYSIS
HYDROPOWER PLANT
NO BONDING FEE

Costs	
Const. Cost	$170,000
FWCD Cash	$0
Financed	$170,000
Bonding (0%)	$0
Total Finan	$170,000

Revenues	KW-HR	Mil Rate	Income
Total Gen	750000		n/a
FWCD Use	18000	$0.07	$1,300.00
Sold	732000	$0.035	$25,600.00

FINANCING ALTERNATIVES

	Annual Values					
	Expenses				Income	
Financing	Debt Service	FERC Charge	O,M&R	Total	Power Revenues	District Revenues
10 yrs @ 6%	$23,500	$750	$3,000	$27,250	$25,620	($1,630)
10 yrs @ 7%	$24,600	$750	$3,000	$28,350	$25,620	($2,730)
10 yrs @ 8%	$25,800	$750	$3,000	$29,550	$25,620	($3,930)
10 yrs @ 9%	$27,000	$750	$3,000	$30,750	$25,620	($5,130)
10 yrs @ 10%	$28,200	$750	$3,000	$31,950	$25,620	($6,330)
15 yrs @ 6%	$17,800	$750	$3,000	$21,550	$25,620	$4,070
15 yrs @ 7%	$19,000	$750	$3,000	$22,750	$25,620	$2,870
15 yrs @ 8%	$20,200	$750	$3,000	$23,950	$25,620	$1,670
15 yrs @ 9%	$21,500	$750	$3,000	$25,250	$25,620	$370
15 yrs @ 10%	$22,700	$750	$3,000	$26,450	$25,620	($830)
15 yrs @ 11%	$24,100	$750	$3,000	$27,850	$25,620	($2,230)
15 yrs @ 12%	$25,400	$750	$3,000	$29,150	$25,620	($3,530)
20 yrs @ 9%	$19,000	$750	$3,000	$22,750	$25,620	$2,870
20 yrs @ 10%	$20,300	$750	$3,000	$24,050	$25,620	$1,570
20 yrs @ 11%	$21,700	$750	$3,000	$25,450	$25,620	$170
20 yrs @ 12%	$23,200	$750	$3,000	$26,950	$25,620	($1,330)

Appendix G

Correspondence

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

November 1, 1985

Mr. Steven C. Harris, P.E.
959 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Subject: Review of Draft Feasibility Report, Lemon Dam Improvements Project, Florida River, LaPlata County Co FERC # 7830-000

The Colorado Division of Wildlife has reviewed the above-referenced document as requested in your letter of 10 October 1985. We have appreciated the opportunity to be involved in the planning of this dam repair project, and the consideration for Colorado's fish and wildlife resources demonstrated by the project proponent. The draft document appears to have reviewed the issues previously discussed with the project proponent and we have no further comments to offer regarding the proposal.

The Division appreciates the opportunity to review and comment on this proposal. Questions regarding our comments should be directed to Rick Sherman, Wildlife Biologist, at (303) 249-3431.

Very truly yours,

Ann B. Hodgson

Ann B. Hodgson
Wildlife Program Specialist

ABH/eja

cc: USF&WS; Denver, Grand Junction, SLC
USEPA; Denver, Attention: Mike Hammer

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

2300 S. Townsend
Montrose, CO 81401
November 1, 1985

Mr. Steven C. Harris
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Steve:

The Division of Wildlife has reviewed the Draft Feasibility Report on the proposed Lemon Dam Improvements Project. We are in agreement with this report, with the exception of a few minor changes which Mike Japhet has already expressed to you. The report is a good one and relfects the close working relationship that you have had with Mike.

We appreciate the opportunity to review this document and sincerely appreciate the cooperative spirit you've extended throughout the project review.

Sincerely,

Rick Sherman

Rick Sherman
Wildlife Biologist

RS/pjp
cc: Towry
Zgainer
Clark
Japhet
Hodgson

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192

2300 S. Townsend
Montrose, CO 81401
July 8, 1985
249-3431

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

This letter is in reference to your request for wildlife input to the Lemon Dam Improvements Project, which includes the installation of a hydropower plant and repair of the main outlet gates at the dam.

The Division's concerns remain the same as outlined in earlier correspondence. I would, however, like to address the following recommendations for flow releases below Lemon Dam:

1. We recommend a minimum release at the dam of 8 cfs down to the Durango Diversion.

2. We recommend the historic flow of 4 cfs down to the Florida Diversion be maintained.

3. We concur with the proposal to pump water during construction to maintain fishery flows.

If you have further questions on these comments, please contact Mike Zgainer at our Durango, 247-0855, or Rick Sherman at our Montrose office.

Sincerely,

Bob Clark

Bob Clark
Habitat Res. Sect.

RS/pjp
cc: Donoho
Zgainer
Sherman
Hodgson

STATE OF COLORADO
Richard D. Lamm, Governor
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE
James B. Ruch, Director
6060 Broadway
Denver, Colorado 80216 (297-1192)

June 26, 1984

Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Subject: Request for consultation, Lemon Dam Hydropower, Florida River, La Plata County, Colorado.

The Division of Wildlife has reviewed the information you submitted regarding the above-referenced project and offers the following comments for your consideration.

We understand that the proposal developed by Florida Water Conservancy District to construct a hydroelectric facility at the Lemon Dam will use the existing small outlet tube and will not increase downstream flows or affect present reservoir release patterns. Additionally, no above-ground power house construction is planned and at the present time all transmission lines are scheduled to be buried. If these design criteria are not changed during the feasibility study the project should not have a detrimental effect on fish and wildlife resources. If the above design components of this project do change during the planning period we would look forward to an opportunity to meet with your representative to discuss those new considerations.

We appreciate the opportunity to review and comment on this proposal. Ann Hodgson, Wildlife Program Specialist, will serve as the liasion for this project. If you have any questions regarding these comment, please call me at (303) 297-1192, extension 271.

Very truly yours,

Ann B. Hodgson
Wildlife Program Specialist

ABH:cs

cc: N. Smith, CDOW-SW
USF&WS, Denver, SLC

COLORADO
HISTORICAL
SOCIETY

Colorado State Museum 1300 Broadway Denver, Colorado 80203

April 22, 1985

Steven C. Harris
Harris Water Engineering
954 Second Avenue
Durango, Colorado 81301

Re: Lemon Dam Hydropower Project, FERC Permit No. 7830.

Dear Mr. Harris,

This is to acknowledge receipt of your April 15, 1985 correspondence concerning the above proposed project.

DATE RECEIVED: April 19, 1985

Based on the information you supplied, we believe ( ) the nature of the proposed project or (XX) the present nature of the proposed project area is such that no (further) impact upon cultural resources will occur. Therefore, you may proceed with the undertaking as proposed.

However, if previously unidentified archaeological resources are discovered in the course of the project, work must be interrupted until the resources are properly evaluated in terms of the National Register of Historic Places eligibility criteria (36 CFR 60.4) in consultation with this office.

Thank you for the opportunity to comment. If we may be of further assistance, please contact our Compliance Division at 866-3395 or 866-3392.

Sincerely,

Leslie E. Wildesen

Leslie E. Wildesen
Deputy State Historic Preservation Officer

No Cultural Resources Impact
Form No. 515A

United States Department of the Interior
FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197

IN REPLY REFER TO:

June 5, 1984

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

We have received your letter of April 24, 1984, which was meant to officially inform the U.S. Fish and Wildlife Service (FWS) that the Florida Water Conservancy District (FWCD) is beginning a feasibility study on the installation of a small 125 kw hydroelectric turbine on the outlet works of Lemon Dam, LaPlata County, Colorado. Our comments are offered under authority of the Section 7 Interagency Cooperation Regulations, 50 CFR 402, and the Endangered Species Act (ESA), 16 U.S.C. 1531 et seq.

It appears that federally-listed endangered species may occur in the project area, which are identified in the following list:

bald eagle	Haliaeetus leucocephalus
peregrine falcon	Falco peregrinus anatum

In recent years, much attention has been given, especially in the West, to the protection and enhancement of raptor populations (hawks, owls and eagles) with respect to powerlines. Eagles and other raptors perch on the distribution poles and consequently become primary victims of electrocution.

To offset the possibility of adverse impacts to bald eagles, peregrine falcons or other large raptors that may be in the project area, we suggest that the applicant consider measures to protect raptors from electrocution as outlined in the recent document: Suggested Practices for Raptor Protection on Powerlines - The State of the Art 1981 - Raptor Research Report #4, Raptor Research Foundation, Inc. 1981. If these measures are incorporated into the project, there should be no effect on threatened or endangered species. Copies of this report may be obtained from the Raptor Research Foundation, c/o Department of Veterinary Biology, University of Minnesota, St. Paul, Minnesota, 55101.

Thank you for your interest in conserving endangered species. As per your letter request, FWS will be happy to meet with you at your convenience to discuss details of the Lemon Hydro Project. The representative that can provide you with additional technicl assistance is Robert Smith, of our Grand Junction, Colorado office (telephone 303/243-2778).

Sincerely,

Robert Burton

Acting Field Supervisor

United States Department of the Interior
BUREAU OF RECLAMATION
UPPER COLORADO REGION
DURANGO PROJECTS OFFICE
P.O. BOX 640
DURANGO, COLORADO 81301

IN REPLY
REFER TO: 430
600.

MAR - 8 1985

Mr. Steve Harris
Harris Water Engineering
954 East Second Avenue
Durango, Colorado 81301

Dear Mr. Harris:

In initial meetings concerning the Florida Water Conservancy District's investigations into securing funding assistance from the Colorado Water Resources and Power Development Authority to perform a feasibility study on a hydroelectric facility at Lemon Dam, it was suggested that repairs to Lemon Dam's upstream slope riprap be included in the overall study. Subsequent field examinations of the riprap have concluded that the apparent thin spots in the riprap are actually places where road surface material from on top the dam embankment has washed over the existing riprap, appearing as exposed Zone 2 material. For this reason, it is not necessary to replace any riprap at this time.

If you have any questions concerning this matter, please contact Pat Schumacher in our office.

Sincerely yours,

Rick L. Gold

Rick L. Gold
Projects Manager

cc: Mr. Loyd Hess, President
Florida Water Conservancy District

Mr. John Ey, Reservoir Superintendent
Lemon Dam

United States Department of the Interior
BUREAU OF RECLAMATION
UPPER COLORADO REGION
DURANGO PROJECTS OFFICE
P.O. BOX 640
DURANGO, COLORADO 81302-0640

IN REPLY
REFER TO: 431
500.2

NOV - 7 1985

Mr. Steve Harris
Harris Water Engineering
954 Second Avenue
Durango, Colorado 81301

Dear Mr. Harris:

We have reviewed your draft feasibility report on the proposed Lemon Dam Improvements Project. We have the following comments:

1. Page 4 - Peak irrigation releases are 270 cfs. Flood control releases up to a maximum of 910 cfs can be made through the outlet works.

2. Pages 8 and 59 - Each pair of outlet gates is capable of releasing 455 cfs at reservoir elevation 8148 feet.

3. Page 10 - Unbalanced releases through the regulating gates can be made; however, Reclamation's approval of unbalanced releases will be required.

4. Page 49 - Reclamation's approval of the steel plug design will be required. A method to introduce and remove air while respectively dewatering and refilling the pressurized outlet tunnel upstream of the gates will be required.

5. Page 50 - Reclamation's approval of the bulkhead used to divert water upstream of the outlet gates during repair of the guard gate seals will be required.

6. Pages 50 and 56 - The interruption of downstream releases for a maximum of one hour during installation and removal of the inlet tower plug or bulkhead upstream of the gates appears optimistic.

7. Page 103 - The cost of $56,000 for the bronze seats appears to be excessive. Cost for similar seats to repair gates in other dams indicates the cost range to be $6,000 to $10,000.

We appreciate the opportunity to comment on your draft feasibility report. Our office will continue to be available for technical review and assistance on this project.

Sincerely yours,

Rick L. Gold
Projects Manager

Colorado·Ute
Electric Association, Inc.

P. O. Box 1149
Montrose, Colorado 81402
(303) 249-4501

October 23, 1985

Mr. Steven C. Harris, P.E.
Harris Water Engineering
954 Second Avenue
Durango, CO 81301

Dear Mr. Harris:

Lemon Dam Hydroelectric Project

This letter is to send you the April, 1985 Policy for Small Power Producers, and to provide comments on the Lemon Dam Hydroelectric One Line Diagram. This letter does not constitute design approval.

Comments:

1. A "utility disconnect switch" should be installed between the Dam Keepers residence connection and the input to the 12.47 kv to 480V transformer.
2. Power factor correction capacitors should not correct the no load power factor above 0.95.
3. We suspect the 99% device should be numbered device number 13 and 110% device should be numbered device number 12.
4. Other induction machine operators on our system tend to interconnect their machines with an R.P.M. slightly above synchronous speed. We recommend that you carefully research the suitability of an auto close from your mechanical 99% device.
5. If there is any chance of flooding, we would recommend a float switch wired to trip.

If you have any questions, please call.

Very truly yours,

Raymond E. Keith, Manager
Electrical Engineering

REK/RLA:rbg

Enclosure

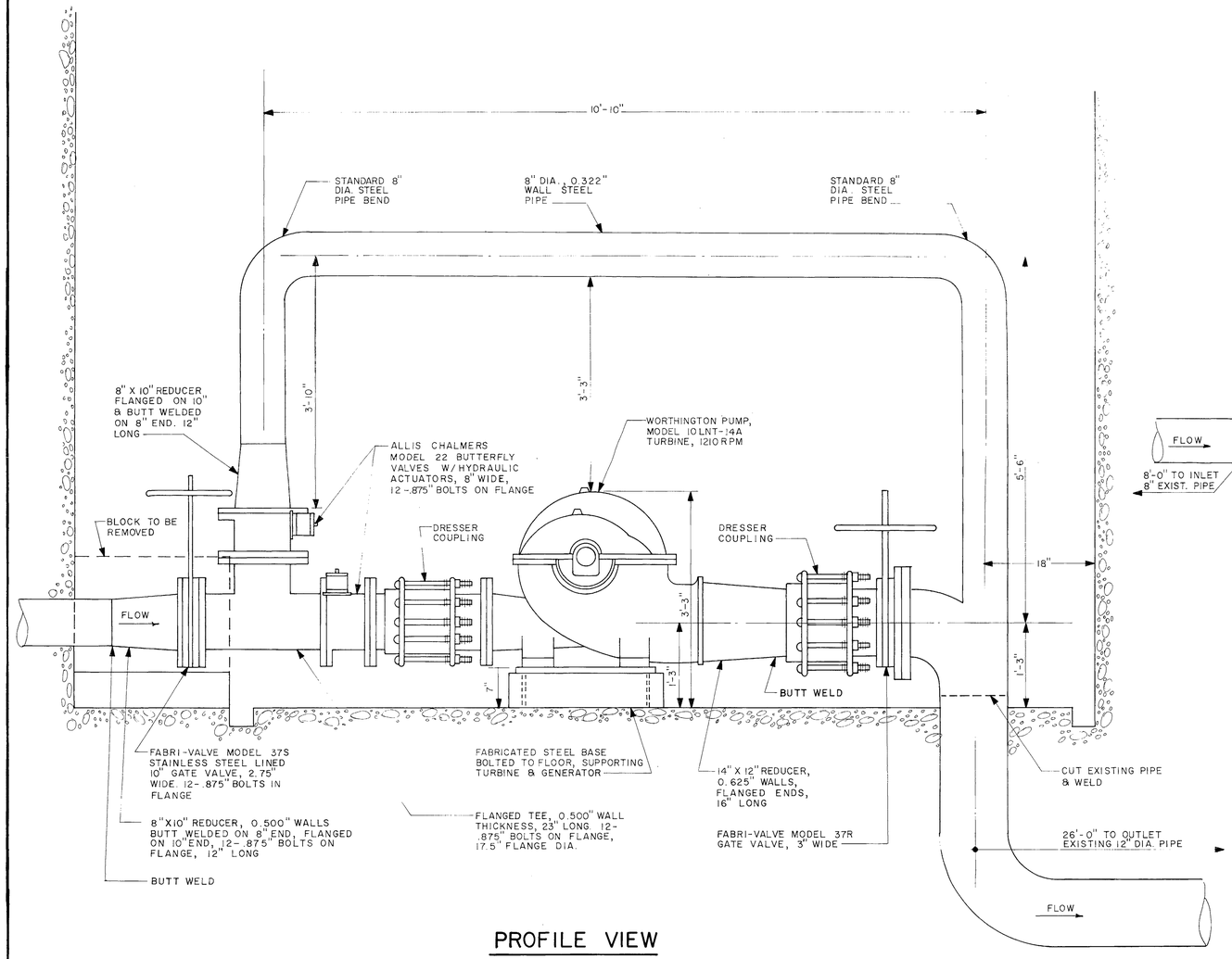
cc: G. McNaughton, LPEA

Appendix H

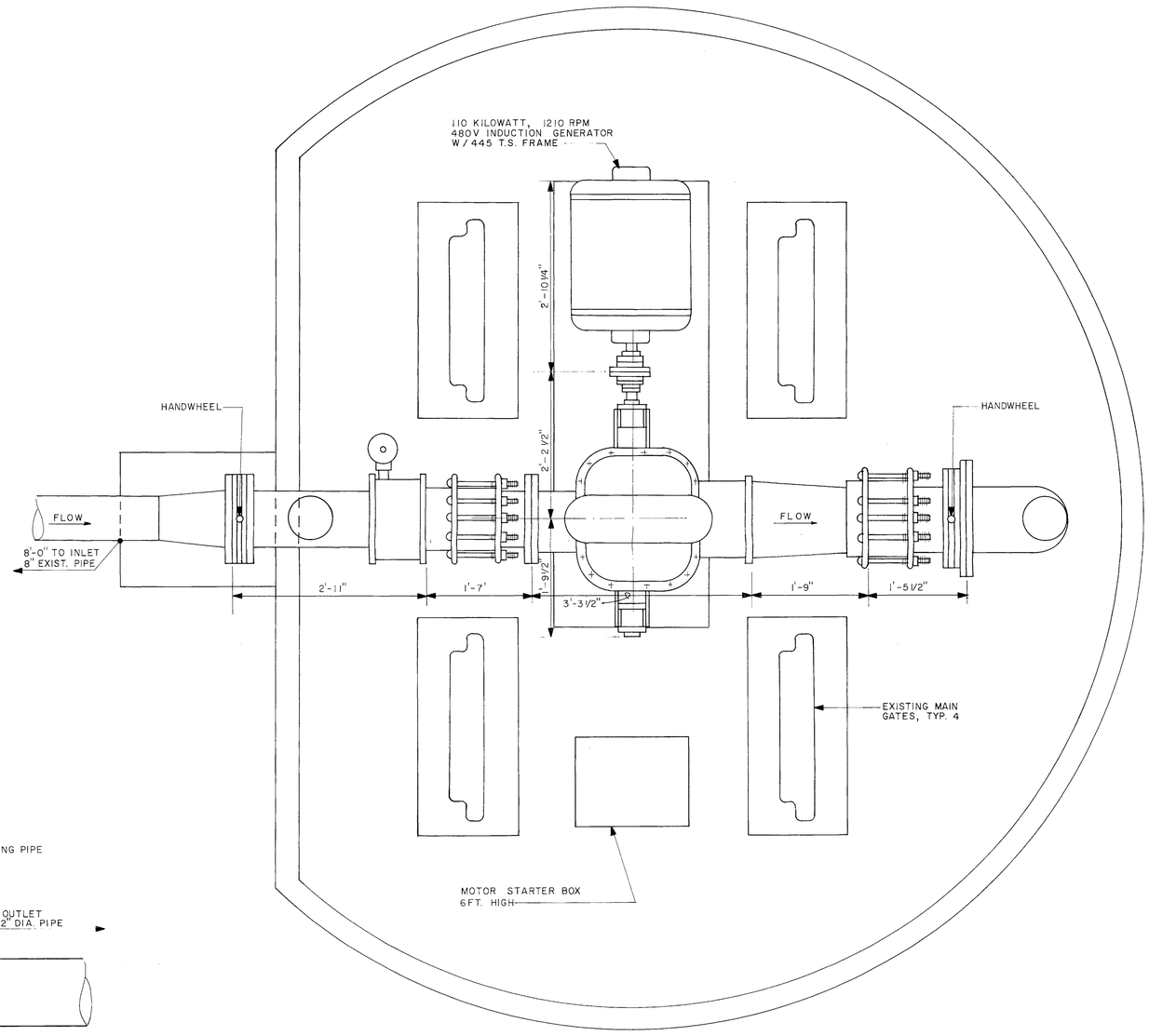
DETAIL DRAWINGS

L001 Turbine and Generator Plan

PE001 Electrical Wiring Schematic



PROFILE VIEW



PLAN VIEW

SCALE 1 .5 0 .5 1 1.5 2 2.5 3 FEET

HARRIS WATER ENGINEERING CO.

LEMON DAM IMPROVEMENTS PROJECT

TURBINE AND GENERATOR PLAN

DWG. NO.	REV.
L 001	

SCALE:	DATE: 10-11-1985	SHEET: 1 OF 2