

SWR #

POWER CLAIM #

384/385

PC 25

386

PC 116

387

PC 122

388

PC 24

389

PC 117

INVOICE DATE	INVOICE NO.	VOUCHER	GROSS	DISCOUNT	NET
12/29/92	OAK GROVE	93866	15,007.75	.00	15,007.75
TOTALS					15,007.75

RECEIVED

DEC 30 1992

WATER RESOURCES DEPT.
SALEM, OREGON

PLEASE DETACH BEFORE DEPOSITING.

STATE OF OREGON
WATER RESOURCES DEPARTMENT RECEIPT
 RECEIPT # **95628** 3850 PORTLAND ROAD
 SALEM, OR 97310 **OVER THE COUNTER**
 378-8455/378-8130 (FAX)

RECEIVED FROM: PGE APPLICATION _____
 BY: _____ PERMIT _____
 TRANSFER _____

CASH: CHECK: # 66-156 OTHER: (IDENTIFY)
 TOTAL REC'D \$ 15007.75

01-00-0 WRD MISC CASH ACCT

842.010	ADJUDICATIONS	\$ <u>15007.75</u>
831.087	PUBLICATIONS/MAPS	\$
830.650	PARKING FEES Name/month	\$
	OTHER: (IDENTIFY)	\$

REDUCTION OF EXPENSE

CASH ACCT. \$ _____
 COST CENTER AND OBJECT CLASS VOUCHER # _____

03-00-0 WRD OPERATING ACCT

MISCELLANEOUS:

840.001	COPY FEES	\$
850.200	RESEARCH FEES	\$
880.109	MISC REVENUE: (IDENTIFY)	\$
520.000	OTHER (P-6): (IDENTIFY)	\$

WATER RIGHTS:

842.001	SURFACE WATER	\$	842.002	\$
842.003	GROUND WATER	\$	842.004	\$
842.005	TRANSFER	\$	842.006	\$

WELL CONSTRUCTION

842.022	WELL DRILL CONSTRUCTOR	\$	842.023	\$
842.016	WELL DRILL OPERATOR	\$	842.019	\$
	LANDOWNER'S PERMIT.	\$	842.024	\$

06-00-0 WELL CONST START FEE

842.013	WELL CONST START FEE	\$	CARD #	
	MONITORING WELLS	\$	CARD #	

45-00-0 LOTTERY PROCEEDS

864.000	LOTTERY PROCEEDS	\$
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07-00-0 HYDRO ACTIVITY

842.011	POWER LICENSE FEE(FW/WRD)	LIC NUMBER	\$
842.115	HYDRO LICENSE FEE(FW/WRD)		\$
	HYDRO APPLICATION		\$

RECEIPT # **95628** DATED: 12/30/92 BY: C. Engel

March 22, 1993

JULIE KEIL C/O
PORTLAND GENERAL ELECTRIC COMPANY
121 SW SALMON STREET
PORTLAND OR 97204


Dear MS KEIL,

This will acknowledge that your Surface Water Registration Statement in the name of PORTLAND GENERAL ELECTRIC COMPANY has been received by our office. The fees in the amount of \$15007.75 have been received and our receipt #95628 was given to you. Your registration statement has been numbered SWR-387.

Our office will review your form and map in the near future. If necessary we will schedule a meeting with you that will include a site inspection. If there are problems with your form we are usually able to take care of them during our visit. We will be able to answer any questions you might have about the adjudication process at that time.

Please feel free to contact this office if you have any questions.

Sincerely,



Don Knauer
Adjudication Specialist

Enclosure

M:\WP51\SWR\CLAIMANT\SWR-0387.001



Estacada, OR
(Clackamas Co.)
Clackamas County News
(Cir. W. 2,500)

NOV 11 1992

Willamette Est. 1888

City officials wary as PGE files for water rights on Clackamas

By DAVID BATES

Managing Editor

Portland General Electric is preparing to file for "massive" water rights on the Clackamas River in a move that city officials say could require smaller water districts to curtail use in the future.

City attorney Tom Rastetter told the Estacada City Council Thursday about the development and said it might affect Estacada when the river was low.

According to PGE spokesperson Roxanne Bailey, the power company is preparing to file for water rights it acquired prior to 1909.

State law requires those who own water rights dated prior to 1909 to register them before the end of the year or lose them.

City officials and Bailey both noted that the action doesn't mean PGE will actually use all the water it is filing for.

"We're filing to protect those

rights because it's an important resource to us," Bailey said. "It's just a matter of protecting our options in the future."

Bailey said she didn't know how much additional water PGE would be entitled to, but Rastetter, whose clients include the South Fork Water Board, said it was "substantial."

"If they do get those rights approved, it could impact us a lot," said City Manager Shelly Jones. "But I really don't see it happening. Just because they have (the rights) on paper doesn't mean they'll use them."

Estacada has rights to four cubic feet of water per second from the Clackamas River, but it uses only a fourth of that.

The city's water rights date back to the 1950s, and since PGE's would be older, they would have priority during low river flows.

Bailey said PGE would be open to discussion with water users along the Clackamas.

Aug 4, 1992

Harold

H. J. Csergei, P.E.

SENIOR CIVIL ENGINEER
CIVIL ENGINEERING BRANCH
GENERATION & FACILITIES
ENGINEERING DEPARTMENT
GENERATING DIVISION



Portland General Electric
121 S.W. Salmon Street
Portland, Oregon 97204
503/464-8141

5 projects (3 today)

- 1.) WILLAMETTE Falls - ~~Sumner power~~
then send 2 parts of ownership & water

- 2.) OAK Creek power plant - CLACKAMAS RIVER
TIMOTHY LAKE - STORAGE
SUMNER RELEASE TO CHANNEL
TO HARRIETT LAKE DAM
PIPE FROM HARRIETT TO FROG LAKE RES (9' STEEL PIPE)
FROG LAKE RES TO POWER PLANT (9' STEEL PIPE)

3 LYNX CREEK = INDUSTRIAL - COOLING
DOMESTIC - IN HOME TO
INCLUDE IRR
FIRE PROTECTION (?)

- 3.) Bull Run -
MARMOT DAM - CANAL & TUNNEL TO Little Sandy RIVER
DAM ON L. Sandy RIVER - DIVERTS MARMOT DAM WATER &
L. Sandy WATER TO WOOD BUMP
FUME TO LAKE ROSLYN
PEW STUCKS TO POWER HOUSE

FORUM

OPINION & COMMENTARY

PGE water claims raise alarm

Water districts fear old rights may curtail their use of rivers

By ERIC GORANSON

Metropolitan Portland and Willamette Valley residents sometime in the future could wind up paying their water bills — along with their electric bills — to Portland General Electric Co. That's the fear of dozens of water suppliers, stemming from PGE, Smurfit Newsprint Corp. and others reaffirming late last year their water rights on the Willamette, Sandy, Little Sandy and Clackamas rivers.

Their claims are among 3,900 water-rights applications pending before the Oregon Water Resources Department as water threatens to surpass the spotted owl and salmon as a political football.

Had the applicants not refiled, they face the loss of water rights that predate 1909 and are senior to the claims by most municipal water suppliers.

If PGE's claims are endorsed by the Oregon Water Resources Department, as expected, it would be treated presumptively as vested rights. PGE and the others would have the state enforce these rights against the holders of junior upstream rights.

The endorsements also could remove the Willamette River from any further appropriation during low flows.

There are only about 1,600 cubic-feet-per-second of water left to appropriate on a year-round basis in the Willamette near Wilsonville, said the Water Resources Department. But this does not include PGE's and other pre-1909 claims at Willamette Falls.

The Willamette is one of the major sources being studied to fill future municipal needs of Portland's 720,000 customers and other suppliers.

PGE officials say that water suppliers and customers need not worry.

"We're not about to be a water seller, selling water for premium prices," said Roxanne Bailey, a PGE spokeswoman.

The Portland company needs water for its Willamette Falls hydropower plant. It's a nonconsumptive use, but any drop in revenues from not having water to make electricity will have to be made up by the cities and customers benefiting from PGE's power cutback.

City says it won't turn off the tap for water users but probably would charge suppliers for any water the utility

have to forgo to meet municipal needs.

End-water users would pay their customary purveyors; they, in turn, would pay PGE. But the next step, some water suppliers fear, would be for PGE to become a regulated water supplier in their place.

The water suppliers have united and introduced Senate Bill 1062, which would subordinate PGE's rights to those of the public.

Among those requesting the bill are water districts in Sandy, Estacada, Gladstone, Lake Oswego, Milwaukie, Molalla, Oregon City, Tualatin and the Damascus, Clairmont, Clackamas, Mount Scott, Oak Lodge, South Fork, Tigard and Tualatin Valley.

Portland is not included.

"We don't think PGE ought to get all the river water," said Dennis Klingbile, superintendent of the Damascus Water District, which uses only well water. "The way things are going, we may wind up using surface water, and PGE shouldn't have all the water just because its rights predate 1909."

The PGE claim is the biggest. On the Willamette its rights total 11,700 cfs, thus affecting almost all water users on the river's main stem plus its tributaries above Willamette Falls.

These tributaries include the Molalla, Tualatin, Yamhill, Santiam, Marv's and McKernan rivers.

Cities affected include Eugene, Corvallis, Cottage Grove, Creswell, Salem, Stayton, Albany, Philomath, Independence, Junction City, Newberg, Molalla, Monmouth and Forest Grove, plus the Tualatin Valley and Clairmont water districts.

Affected by PGE's filing for 4,600 cfs on the Clackamas River are West Linn, Estacada, Oregon City and Clairmont Water District. Affected by the Sandy River system filings for 1,600 cfs are Sandy, Portland and Hoodland corridor.

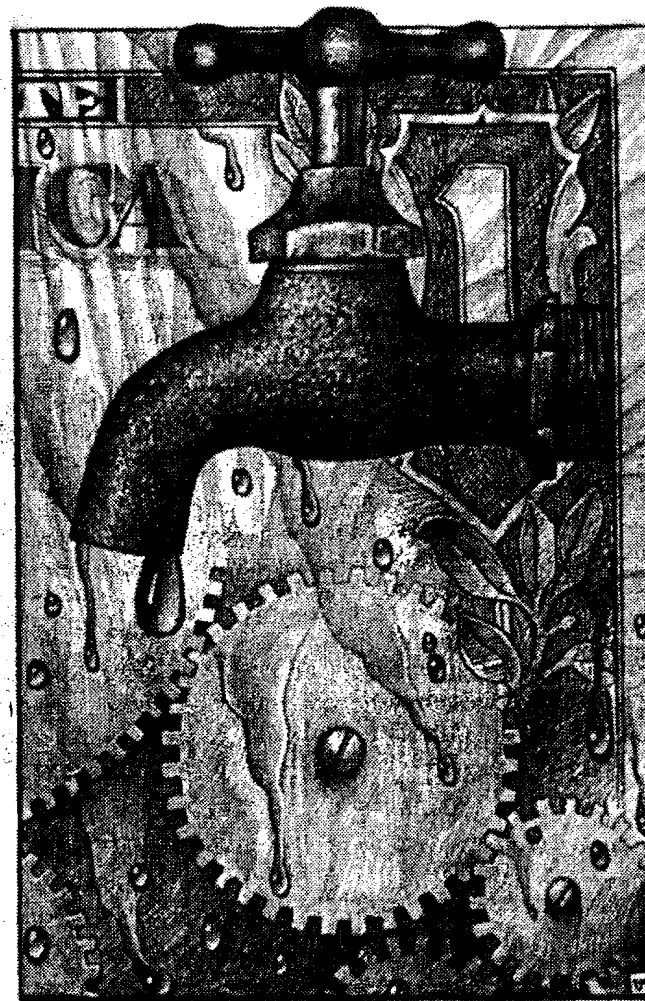
Another bill, HB2110, in effect would give water combatants and the state breathing time to work out a settlement and avoid litigation.

Both PGE and water suppliers hope the House bill will head off a repeat of the current 16-year litigation over water rights on the Klamath River.

Suppliers also want Congress to change Army Corps of Engineers policies regarding stored water behind dams that feed the Willamette. Almost all of the 1.9 million acre-feet of water is allocated for navigation, irrigation, hydro and flood-control uses.

To use that water, irrigators pay \$1.50 an acre-foot, municipalities from \$300 to in excess of \$1,500 an acre-foot. Talks to change the allocations and charges have taken place in Washington, D.C.

Not everyone opposes the idea of having PGE as a water purveyor. One Portland Water Bureau official said it "might



RICHARD MILLHOLLAND/Los Angeles Times

not be a bad idea." He said getting water from the utility might be cheaper than tapping sources such as the Cascade reservoirs.

The efficiency of a private company providing water probably would be greater than Portland or a regional water authority. Having PGE meter readers record water and power uses on the same visit would save time and labor. The Oregon Public Utility Commission could control water rates as it does phone and power rates.

Having a utility sell power and water is not unique. The Eugene Water & Electric Board does both.

What will happen is as uncertain as the weather that supplies our water. Whether the disputing sides can settle without litigation rests with the Legislature. We need both power and water. Hopefully the lawmakers can broker a peaceful compromise.

High court demands judges, not lobbyists

By ANTHONY LEWIS

In the weeks since Justice Byron White's decision to retire from the Supreme Court, the press has run various stories about whom President Clinton may appoint in his place.

The speculation has proved little about the choice, but it has done one depressing thing, shown how narrowly politicized some people want the process of selection to be.

One story mentions a possible nominee and then says that some interest group is likely to object to him or her. Why? Because the person has strayed, however slightly, from the party line of that group.

An example to hand is Judge Ruth Bader Ginsburg of the U.S. Court of Appeals for the District of Columbia. When her name was mentioned as a Supreme Court possibility, she was said to have angered some women's groups by what she said about the 1973 abortion decision, Roe vs. Wade, in a recent speech.

Judge Ginsburg gave the James Madison Lecture at New York University Law School in March. She used the occasion to explore how appellate judges can best do their work and how they should function as one of the three branches of government in our constitutional system.

She emphasized, first, the need for collegiality — for mutual respect — on a court of many judges. "One must be sensitive," she said, "to the sensibilities and mind-sets of one's colleagues."



LEWIS

Kurds working toward self-reliance may set example

SURFACE WATER REGISTRATION CHECKLIST

(received after July 18, 1990)

CHECK BASIN MAP NAME ~~lower~~ ~~lower~~ ~~lower~~ 2c UNADJUDICATED AREA ? yes
RECEIPT # 95628 S W R NUMBER 387
CHECK ENCLOSURES net PRELIMINARY DATA BASE ENTRY DWP
ACKNOWLEDGEMENT LETTER net ENTER ON STREAM INDEX _____
CHECK QUADRANGLE MAP _____ CHECK GLO PLATS _____
WATERMASTER CHECKLIST _____ PUBLIC NOTICE PUBLICATION DCS

FORM REVIEW

_____ blanks filled in
_____ signed
_____ date received stamped

MAP REVIEW

source and trib
 diversion point location
 conveyances (pipes, ditch, etc.)
 place of use
_____ scale
 township, range, section
 north arrow
 CWRE stamp
 disclaimer
 date survey was performed
 P.O.B. of survey
 dimensions and capacity of diversion system
 "beneficial use" type title
 "permanent-quality" paper

WATER RIGHT RECORD CHECK _____ FIELD INSPECTION _____
FINAL FILE REVIEW _____ FINAL DATA BASE ENTRY _____
ENTER ON PLAT CARDS _____

THE NORTHWEST

PGE's Willamette water rights cause worries

■ The electric utility's assertion of century-old claims has cities which drink from the river concerned about their future supply

The Associated Press

EUGENE — Portland General Electric Co. is legally asserting century-old rights to Willamette River water, a move that worries cities and utilities along the waterway.

PGE's claim threatens to override community water claims that were filed many years after PGE first began drawing water from the river in the late 1800s.

Officials at the Eugene Water & Electric Board and at the city of Corvallis are among those concerned that, in times of low water, municipalities might be forced to pay PGE for drinking water.

"They could tell us, 'We'll let you use it, but you've got to reimburse

us,'" said Kimber Johnson, manager of water planning for EWEB, which draws Eugene's drinking water supply from the McKenzie River, a Willamette tributary.

Under Oregon law, water rights extend not only to the main river, but to all upstream tributaries, Johnson said.

"The way the law reads, they could call for that water any time they wanted," he said.

Corvallis Public Works Director Rolland Baxter expressed concerns similar to Johnson's.

"If, through the courts or through legislation, PGE is able to establish their water rights, it could dramatically increase the cost of using Wil-

lamette River water," Baxter said. "The word going around is, they would offer to sell us the water back."

Such fears are exaggerated, PGE spokeswoman Roxanne Bailey said.

"We're not in the business of selling water," Bailey said.

But Bailey acknowledged that, as population in the Willamette Valley grows, water in the Willamette could become a scarce and precious commodity. If PGE were forced to cut back power production, it might require upstream water users to start paying, she said.

"If we have to go elsewhere for power and purchase it at a higher price, there's a possibility of charging for water," Bailey said.

PGE filed papers with the state last fall claiming priority rights to 11,700 cubic feet per second of water

to operate the Sullivan hydropower plant near Oregon City. The water flows through turbines near Willamette Falls, then is returned to the river.

At certain times of the year, 11,700 cfs represents all the water in the river, said Bob Hall, PGE governmental affairs representative.

If the river flow falls below that number, PGE might be entitled to call for restrictions on upriver use of the water.

Hall said PGE filed the claim only because it was required to do so by the 1987 Legislature. The Legislature said anyone or any corporation with water rights established before 1909 had to register their claim by last December or risk losing their rights.

The idea was to straighten out a complex network of water rights extending back before the turn of the century.

PGE's claim rests on the principle that water users are granted access to public waterways based on a first come, first-served basis.

However, water priorities can change through the adjudication process, said Lorna Stickel, chairman of the state Water Resources Commission, which issues water rights.

"It has the potential to reorganize or reprioritize how water might be called upon in the Willamette," Stickel said. Some uses, such as municipal drinking water supplies, could be granted a higher priority.

"Whether or not a hydropower plant has the ability to make a call on water like that I think is a big question," Stickel said.

PGE's claims do appear to be valid, however, she said, adding that such cities as Eugene and Corvallis "are right to be concerned about it."

Child-care a problem at night

For growing ranks of parents who work odd hours a safe, affordable service is hard to find





Portland General Electric Company

RECEIVED
DEC 30 1992
WATER RESOURCES DEPT.
SALEM, OREGON

December 30, 1992

Oregon Water Resources Department
3850 Portland Rd. NE
Salem, Oregon 97310

Re: Surface Water Registration statements

To Whom It May Concern:

I am delivering with this letter the following six surface water registration statements:

Clackamas River (River Mill Project)
Clackamas River (Cazadero/Faraday Project)
Oak Grove Fork/Three Lynx Creek (Oak Grove Project)
Sandy River/Little Sandy River (Bull Run Project)
Willamette River (Willamette Falls)
Willamette River (Willamette Falls Locks).

These registration statements are required by ORS 539.240.

Each notebook is accompanied by a rolled mylar map, prepared by a certified water rights examiner and a check for the required filing fee. I have also provided a duplicate copy of each filing, to be date stamped and returned to me for my records.

Very truly yours,

Julie A. Keil



Portland General Electric Company

**Oak Grove
Hydroelectric Project**

**Water Rights
Registration Statement
pursuant to
ORS 539.240**

SWR-387

ATTACHMENT A

AFFIDAVIT OF JULIE A. KEIL

STATE OF OREGON)
) ss.
Multnomah County)

I, Julie A. Keil, being duly sworn, depose and say:

1. I am the Project Manager, Hydro Licensing, of Portland General Electric Company ("PGE"). My job responsibilities include securing state water rights for PGE's federally licensed hydroelectric projects. I also am the custodian of PGE's documents related to hydroelectric licensing. In preparing this registration statement I have reviewed these company records, including historic generation and construction records. I have personal knowledge of the matters set forth in this affidavit.

2. "Attachment A-1" consists of true and correct copies of selected pages from Portland Electric Power Company with Its Predecessor and Subsidiary Companies (December 16, 1860 - December 31, 1935), a history of PGE's predecessor, which was compiled in 1935 by R.R. Robley, Superintendent of Operation, Portland General Electric Company, at the request of the senior management of the company. R.R. Robley was a long-time employee of PGE and its predecessor companies. Mr. Robley prepared the history based on contemporaneous documents and interviews with many of the men who were involved in the original construction of the hydroelectric plants, including

Alf Drill, T.W. Sullivan and O.B. Coldwell. Pertinent portions of pages from this document have been underscored for ease of reference.

3. "Attachment A-2" consists of true and correct copies of selected pages from a document titled History of Portland General Electric Company, a corporate history compiled in 1982 by Arthur H. Greisser, former Superintendent of Production for PGE. Pertinent portions of these pages have been underscored for ease of reference.

4. On November 11, 1907, on behalf of Southern Pacific Company, S.W. Curtis posted a Notice of Appropriation for 1,000 cfs from "Oak Grove Creek." Mr. Curtis recorded the notice with the Clackamas County recorder on November 18, 1907. The Notice states that water would be impounded and diverted through a canal to the Clackamas River. The purpose of the appropriation was "the development of the mineral resources of the State of Oregon, and to furnish Electrical power and energy for light, heat, and other purposes." "Attachment A-3" is a certified copy from the Clackamas County records of the Notice of Appropriation filed by Mr. Curtis.

5. On November 25, 1907, Mr. Curtis assigned the Oak Grove rights to the Southern Pacific Company. Southern Pacific apparently planned to use the water to produce electricity for its railroad system. See "Attachment A-2" at 40. On January 30, 1908, Mr. and Mrs. Curtis had an assignment of the Notice of Appropriation notarized in San Francisco.

This document was recorded in Clackamas County on October 13, 1910. "Attachment A-4" is a certified copy of the assignment from the Clackamas County records.

6. On June 11, 1908 Southern Pacific Company assigned its rights to the Oak Grove appropriation to Portland Railway Light and Power Company ("PRL&P"). The assignment references the documents by which Southern Pacific acquired its rights. "Attachment A-5" is a certified copy of the indenture assigning Southern Pacific's interest to PRL&P.

7. On October 5, 1908, Mr. Curtis posted Notice of Appropriation for 100 cfs from "Three Link Creek" for mineral development and power generation purposes. Mr. Curtis proposed to divert the water through a canal to the Clackamas River. Mr. Curtis filed this Notice with the County Clerk on October 8, 1908. "Attachment A-6" is a certified copy from the Clackamas County records of the Notice of Appropriation filed by Mr. Curtis.

8. From 1908 to 1911 Southern Pacific and PRL&P surveyed routes for access roads, transmission lines and a canal. In 1909 Southern Pacific entered into a "Power Agreement" with the Forest Service to allow use of National Forest lands. PRL&P continued to spend funds and take actions necessary to develop the project from 1911 until 1919 when power needs justified actual construction.

9. Notwithstanding the length of time that elapsed between the filing of the Notice of Appropriation and the

initiation of actual construction of the project, the State Engineer recognized that PRP&L had engaged in sufficient activity to maintain the validity of the water rights. Evidence of the State Engineer's conclusions is contained in a letter dated March 31, 1922 from the State Engineer to the Federal Power Commission stating that the 1907 Curtis filings provide water rights for the Oak Grove project and that the state acknowledges the validity of the water rights. A true and correct copy of this letter is attached as "Attachment A-7."

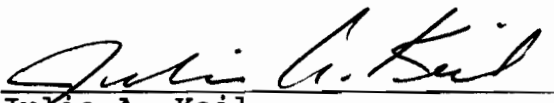
10. On August 4, 1924, PRP&L began operation of the first unit at Oak Grove (sometimes referred to as Station "P"). See "Attachment A-1" at 195. The Oak Grove project diverts water from the Oak Grove Fork of the Clackamas River through a series of tunnels and pipes to the Oak Grove powerhouse, which is located near the point that Three Lynx Creek empties into the Clackamas River. PRP&L began construction of the second penstock and turbine generator unit in 1930. PRP&L began to operate the second unit in 1931. See "Attachment A-8" Federal Power Commission, "Preliminary Accounting Report on the Actual Legitimate Investment in the original Oak Grove Project, No. 135, Oregon as of December 31, 1925."

11. The combined water usage of both units is 600 cfs. The water usage claimed at Oak Grove is based upon review of historic river flows correlated to generation records and analysis of flows. The review was done by Harold Csergei,

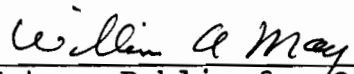
Certified Water Rights Examiner, and PGE hydroelectric engineering staff.

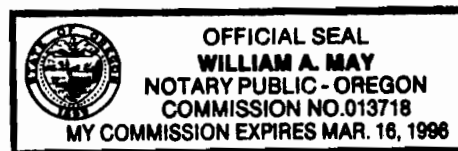
12. In addition to the water diverted from the Oak Grove Fork used for power generation, the Oak Grove project also uses 2.5 cfs from Three Lynx Creek for cooling the transformers, cooling the bearing oil for the generators, and for operating the eductor that is used to pump water out of the building sump. Water from Three Lynx Creek also occasionally is used in the restroom and for wash down. All the water is used at the Oak Grove Powerhouse.

13. "Attachment C" contains chain of title information for the Oak Grove project.


Julie A. Keil

Subscribed and sworn to before me this 27 day of December, 1992.


Notary Public for Oregon
My Commission Expires: 3/16/96



ATTACHMENT A-1

DEC 30 1932 195.

doubled by the use of modern equipment. Plans were prepared for installation of similar units in other sections of the station but they were not carried through. In July of the same year the 450-kw., 33-cycle generator in Section No. 11 was removed due to a bad burnout of the machine.

On August 4, 1924, the first unit in what was intended to be the largest plant of the Portland Electric Power Company system was put into commission, the No. 1 unit at Station "P", Three Links, sometimes called Oak Grove. The unit consisted of a 25,500-kw., 60-cycle, 11,000-volt General Electric Company generator direct connected to a 35,000-hp. Pelton 72-inch, single-runner, vertical reaction type water turbine. A new runner was later supplied to increase the wheel capacity to 40,000-hp.

The preliminary survey for this development was started in 1907 by Southern Pacific Company from whom the property was purchased in 1911, and the development as finally carried out followed in general quite closely the plans outlined by the original owners. The powerhouse is located on the Clackamas River 20 miles above the Cazadero powerhouse, Station "G", and 56 miles from Portland. Water is taken from Oak Grove Creek, a tributary of the Clackamas River, the diversion dam being located about 10 miles above the powerhouse. The dam is of reinforced concrete, arch type, 60 feet high and 175 feet long on the crest. The first 1375 feet of the waterway leading from the Intake pond is made up of pipe and reinforced concrete tunnel 12-1/3 feet in diameter and designed to carry 1600 cubic feet of water per second. The tunnel terminates in a Y branch, one branch (the one serving the present flow line) being 9 feet in diameter and the other 11 1/2 feet in diameter. With the original installation, one flow line, or pipe line, only was installed from the tunnel to the surge tank, that being the smaller line with a capacity of 600 cubic

EXHIBIT A-1
PAGE 1/3

feet per second. The capacity of the second line to be put into commission at some later date will, as at present planned, be 1,000 cubic feet per second. The line now installed is made up of steel plate varying in thickness from $9/32$ of an inch to $11/16$ of an inch and is 6.6 miles long, the laying of the pipe following in general the contour of the ground. The lower terminal of the line is in the tunnel and surge tank located on top the Knoll, a hill with an elevation something over 900 feet above the powerhouse. The tunnel through the Knoll is 14 feet in diameter, and at the upper end terminates in a Y branch of the same size as the one at the Intake tunnel. The terminal at the lower end of the Knoll tunnel, however, branches three ways, each branch being designed to connect to an 8-foot pipe line or penstock to convey water to its particular water turbine in the powerhouse. The top of the tunnel through the Knoll is connected to the bottom of a surge tank of reinforced concrete structure, the top of the tank being 12 feet higher than the crest of the Intake dam and 197 feet above the center of the tunnel through the Knoll. The penstock installed from the Knoll tunnel to the powerhouse is a steel pipe 1360 feet long, 8 feet in diameter at the upper end and tapering to 6 feet at the powerhouse. The steel plate making up the pipe is $1/2$ inch thick at the upper end increasing to $1-7/16$ inches thick at the powerhouse. The static hydraulic head, that is with no water flowing, is 935 feet. The effective head, that is with full load on the unit, is 860 feet. At the time this unit was put into commission, it held the record of operating at the highest head ever used on a reaction type of water turbine.

The powerhouse is a reinforced concrete structure and was built to accommodate one generating unit only. The upstream wall of the powerhouse was of temporary construction to allow of easy removal if and when it might be

necessary to extend the building to accommodate additional units. The ultimate capacity of the development has been set at from 105,000 to 140,000-hp.

A steel structure to accommodate the high-tension bus and switching equipment was built on a flat a short distance down river from the powerhouse.

Three single-phase, 10,000-kva., water-cooled transformers made by Westinghouse Electric and Manufacturing Company were installed at the switching structure to step voltage from 11,000-volts up to 57,100 volts Delta and eventually when required up to 125,000 volts Y.

To supply water to the plant if and when it is developed to its full capacity of three units, the plan is to impound run-off water at Big Bottoms on the upper Clackamas River and to conduct this water into the Oak Grove Creek by means of a tunnel approximately three miles long through the hog back between the two streams. The second flow line would then be built from the Intake tunnel to the Knoll. With this storage program completed, it is estimated that the minimum flow of the Clackamas River at Stations "G" and "M" that now drops as low as 700 cubic feet per second can be maintained at near 1000 cubic feet. The drainage area of the project, according to the U. S. Geological Survey, will then be around 130 square miles.

With the new hydro plant in operation, the next step for consideration was steam standby, especially important at this time since the need for still greater generating capacity was pressing. Steam Station "L" was agreed upon as the logical place for expansion of the steam program and it was here that a new boiler and steam turbine were installed.

The new boiler installed is a 1669-hp. Stirling type for operation at 415 lbs. pressure. Furnaces were built for double end firing with hog fuel automatically fed from steel fuel conveyors. The generator is a 20,000-kw., 11,000-volt, 3-phase unit made by the General Electric Company. The generating

ATTACHMENT A-2

CHAPTER V

CLACKAMAS RIVER BASIN DEVELOPMENT

A period of significant Company growth occurred in the decade from 1902 to 1912. This was evidenced both in electric service load growth and in exploitation of generation resources to meet the needs of an expanding population. As electric requirements increased at a rapid rate, low-cost hydroelectric generation became ever more attractive for bulk power supply.

The potential for power development on the Clackamas River was recognized at the turn of the century. Power sites were in relatively close proximity to Portland and to projected electric interurban lines. Thus, surveys were started in June 1901 on the John Zobrist donation land claim, and in 1902 property acquisition began for a hydroelectric generating project then named Cazadero (later, Station G, and now, Faraday). In 1908, lands were purchased for a power site a short distance west of Estacada for the River Mill hydroelectric development.

Investments and payrolls for power site investigation, as well as plant and railroad construction and operation, contributed to the stable economy and growth of the Estacada area. The Company built a hotel and picnic park, and excursion trains on an electrified railroad brought crowds of Portlanders to Estacada on weekends for summer enjoyment. The public recreational facility was further enhanced by completion of River Mill dam in 1911, creating Estacada Lake and slack water to the Faraday powerhouse. With excellent hotel meals at reasonable prices as an additional draw, as many as seven extra trains were scheduled on Sundays for the pleasure seekers. The interurban lines were advertised as "The Trout Route", in angler's guides issued by the Company to the public.

A railroad from Portland through Gresham and Boring to Estacada, terminating at Cazadero, had been completed in 1903 by the Oregon Water Power & Railway Company, a predecessor company of PGE. The railroad was built primarily for hauling workmen, equipment and supplies for the construction of the Cazadero hydroelectric plant.

The decision to construct a railroad was made after estimating the cost of an alternative horse and heavy-wagon transportation system. The latter would have required planking a 22-mile roadway from S.P.R.R. Co.'s Clackamas station and upgrading the bridges all along the route.

Benefits from some investor-owned electric interurban railway lines in that period of undependable automobiles and muddy or dusty dirt roads were realized at Estacada and along the route from Portland. According to the *Street Railway Journal* of October 29, 1904: "Estacada is a town of 300 or 400 people . . . where six months ago there was nothing but a small farm and standing timber . . . The Hotel Estacada . . . is owned by the O.W.P. & R.R. Co. and has been constructed with a view of providing accommodations for those desiring short and inexpensive outings. . . . As a special inducement for Sunday traffic, a rate of 50 cents is given for the round trip from Portland to Estacada, instead of the week-day fare of \$1.35. A rate of \$1.50 is offered for the round-trip including dinner at the hotel". The original plat for the "Town of Estacada" was filed in Oregon City on January 9, 1904. In 1905 Estacada was incorporated as a city.

The ultimate projected usage of the interurban railroad to Cazadero, according to the *Street Railway Journal*, was for "tapping of the large and excellent yellow fir region on the Upper Clackamas River. By reason of natural obstructions in the river channel below Cazadero, it has been impossible to float logs down the stream to the Willamette; and as the country is too steep and rugged for logging roads . . . this large timber section . . . has lain dormant for years. This country is settled largely by the pioneers of Oregon who crossed the mountains

(on the Barlow Toll Road) and settled in this section some 50 years ago. Without transportation facilities and a 25 to 30 mile wagon haul, the advancement of these sturdy settlers has been slow as compared to that noticed in other parts of the West".

Anticipating a delay of some years in harvesting timber in the upper Clackamas River basin, the company conducted an aggressive campaign to develop freight business along the line. As the 1904 *Street Railway Journal* article noted: "Portland burns wood almost exclusively for fuel, and uses from 200,000 to 300,000 cords annually". For the calendar year 1904, more than 100,000 cords were hauled by the Estacada line. A flatcar could carry 16 cords, and the freight rate for the full trip was 85 cents per cord. At the time, there were 37 sawmills along the railway or tributary to it. Farmers also benefited. They were able to raise potatoes and other valuable cash crops for shipment to market, instead of having to raise hay and grain for fattening hogs and cattle, and then face the drive "on the hoof" the long distance to Portland.

At the beginning, practically the only town on the Cazadero interurban line was Gresham, with a population of about 150. The railroad management anticipated the need for only one combination freight and passenger train each day. However, within a year, seven passenger trains were required every weekday, and a freight train every night. On Sundays, the passenger schedules increased from 50 to 100 percent during the fishing and picnicking season.

Three wood-burning steam locomotives were first operated on the railroad section from Boring to Estacada. In 1907, the line was electrified upon completion of the Faraday hydroelectric development, providing direct current for the trolley wires at the terminal at Cazadero and through a substation constructed at Eagle Creek. E. L. (Roy) Meyers, the first station agent at Estacada, was later a longtime lobbyist for Portland General Electric and its predecessor companies. Until 1967, he resided at Eagle Creek on the pioneer Philip Foster donation land claim.

In 1843, Philip Foster, in partnership with Francis W. Pettygrove, operated a store in Oregon City. Soon afterwards, Foster located a homestead at Eagle Creek. In June 1844, he moved into a newly built log house on those fertile farm lands. The following year, Samuel K. Barlow reached the Foster place in the course of his attempts to locate a trail to Oregon City for a pioneer covered wagon train.¹⁰

In 1846, Foster and Barlow formed a partnership to construct an 80-mile-long toll road from Maupin, south of Mt. Hood, to Foster's farm, where fresh fruit and vegetables could be obtained by the pioneer migrants. A toll gate was built near Zig Zag where, by action of the Provisional Legislature, a charge of \$5 per wagon and 10 cents for each loose animal was authorized for collection. The toll road was not a financial success, but it apparently operated until 1919, when it was deeded to the State of Oregon.

Prior to 1922, the Clackamas River basin east of Estacada was a 650-square-mile area of timbered wilderness, with no roads and few trails. Steep cliffs ran to the edge of the river at many places, forcing trails to climb up and down the side of the canyon and making a trip to the upper country an arduous task. There was only one homestead in the area. A U.S. Forest Service ranger station at Oak Grove, built about 1908, was for many years manned only in the summer fire season because of its isolated location. All supplies and equipment were transported into the area by pack train until 1923, when the Company — in preparation for the Oak Grove hydroelectric project construction — built a wagon road, immediately followed by a railroad into the area.

The Oak Grove Project

In 1907, electrification of the Southern Pacific railroad lines in the lower Willamette Valley was contemplated. In order to secure a power source, the S.P. Co. filed notices of water appropriation on the Oak Grove Fork in 1907 and on Three Lynx Creek in 1908. It also applied to the U.S. Department of Agriculture on November 4, 1907 for permission to occupy and use National Forest lands for what was to become the Oak Grove hydroelectric development. A 50-year federal permit was granted on October 6, 1909. Special Use Permits were issued in March and May 1909 by the Forest Service to the S.P. Co. for a construction camp on Three Lynx Creek and use of a right-of-way for a "wagon" road up to and inside the project area. From 1908 through June 1911, the S.P. Co., surveyed and mapped the project, including reservoir sites at Timothy Meadows and Clackamas Lake. The Big Bottom storage site was also investigated. On March 29, 1911, the State Engineer issued permits for reservoir construction at Timothy Meadows and Clackamas Lake.

Fearing competitive aspects of the development, the Portland Railway, Light & Power Company closely watched the progress of the S.P. Co.'s work on the project. Negotiations with the S.P. accordingly culminated in the signing of a contract, on May 3, 1911, under which the P.R.L.&P. Co. would supply all the electric energy required to power the S.P. Co.'s projected 340-mile Oregon electrified railroad system. Under provisions in the contract, P.R.L.&P. Co. assumed all legal liabilities and assets of the Oak Grove development and agreed to pay \$125,000 for all S.P. Co.'s rights and interests in the project. They were deeded to the Company on June 29, 1911. Application was later made to the Secretary of Agriculture for a "Preliminary Water-Power Permit" for the Oak Grove project "Dams, Conduits, Reservoirs, Forebay and Power House Site". On May 10, 1912 that permit was issued to the Company, requiring the payment of \$2,135 per year for project use of federal lands.

The P.R.L.&P. Co., continued engineering studies for the Oak Grove hydroelectric development. It also maintained stream discharge recording stations from the time of the purchase of the project. Beginning December 27, 1915 and each year thereafter, annual statements of "Water Power Claimant" together with the statutory fee for "Power Claim No. 122" were filed with the State Engineer to preserve the water rights originally acquired by the S.P. Co. (reduced to 600 cfs for the combined diversion from the Oak Grove Fork and Three Lynx Creek). In 1913, a gasoline engine-driven core drilling outfit and supplies were packed into Timothy Meadows from Maupin, and five holes were drilled into the bedrock at the S.P. Co.'s dam site for a storage reservoir. A continuous water stage recorder was installed nearby, and serviced each month thereafter until World War I.

On July 2, 1914, a State Reservoir Permit was issued to the Company by the State Engineer for 40,000 acre-foot storage at Timothy. This was allowed to lapse.

The P.R.L.&P. Co. did not accomplish much work on the project until June 1920, when a survey party was sent into the field to survey an access road alignment following the S.P. Co.'s original plan, starting from a point opposite the North Fork dam site to Three Lynx. The crew was then moved to Big Bottom to make a topographical survey of the reservoir site. A log cabin was subsequently built and a stream gauging station was installed with a continuous recording unit.

Early in 1921, the bold decision was made to proceed with the construction of the Oak Grove project. This involved penetrating a vast, heavily timbered forest area, roadless above the North Fork branch of the Clackamas River. The problem of access alone was costly and time consuming, due to the narrow steep-walled Clackamas River canyon. About 30 miles of new road, followed by a railroad at an investment cost of \$1,776,778, was needed for transporting men, equipment and supplies from the end of the electric interurban line at Cazadero into the project area. Nearly 900 acres of timber land had to be cleared and "fireproofed". In 1921, it was probably not realized that the total project cost for the first generating unit of 25,000-kW rated capacity, together with the steel tower, double-circuit 57-kV transmission line to Cazadero, would amount to \$9,371,354 by December 31, 1925.

To illustrate the pioneering difficulties in the construction of a project in the Upper Clackamas basin, some construction progress reports will be briefed later.

On July 9, 1921, a crew established a survey camp about 9 miles upriver from Estacada, for construction of the project access road. On the same date, the Forest Service granted a permit for a "wagon" road over lands under their jurisdiction. Application had been made to the Federal Power Commission on June 30, 1921 for a preliminary permit to construct the Oak Grove Fork diversion structures, the Timothy Meadows reservoir, and the Big Bottom storage and diversion from the Clackamas River. The FPC license for Project No. 135 was issued September 22, 1922 for a 50-year period, covering the hydro generating project, but not including storage at Timothy Meadows or Big Bottom. Appropriate applications were also made to the State Engineer for the water diversions and storage. An ultimate development of over 100,000 hp in three generating units was planned, with the first of the units to be in operation by July 1924.

Progress on road construction was very slow: numerous steep rock cliffs and rock slides extended to the river's edge; in one location soft ground required planking on 9,000 feet of roadway; heavy rains fell, accompanied by freezing and thawing conditions; and there was considerable difficulty and delay in transporting supplies and equipment for the work. Narrow-gauge wagons had to be used for moving supplies to the advance camps. By September 1922, nine construction camps were in operation. Two more had been added by January 1923, bringing total housing capacity in the 11 camps to 1,300 men. Many of the camps had sawmills producing lumber and railroad ties. One fortunate development that assisted solution of the project access problem was an agreement with the Union Lumber Company, made November 15, 1921, to build a joint-user railroad extension from Cazadero to the North Fork branch. In December 1922, that electrified extension of the standard gauge railroad line was complete. Subsequently, P.R.L.&P. Co. constructed a steel bridge across North Fork Creek, extending the railroad to the area that is now Promontory Park.

On January 6th and 7th of 1923, high water washed out much of the road grade and two bridges. That misfortune, combined with construction difficulties, resulted in a decision later in January to build a standard-gauge logging-type railroad that would be usable during the winter months. Some 1,900 tons of 45-lb. rail and 10,000 ties were purchased. Another sawmill was installed to produce the many additional ties needed. By May the rail laying was completed to Davis Ranch. Four 50-ton, geared-type Shay locomotives and a number of gasoline-engine-powered speeders were purchased for the railroad operation, which began hauling approximately 132,000 ton-miles per month. Thus, the upper Clackamas River basin was penetrated with the first rapid and convenient means of access upstream from the North Fork.

While the railroad greatly facilitated construction of the Oak Grove hydroelectric project, it also necessitated a costly additional clearing operation. A project construction report of May 1923 stated: "In connection with the railroad, considerable force was expended in complying with the U.S. Forest Service requirements in the nature of clearing along the railroad right-of-way. The U.S. Forest Service regulations were made rather severe and it was necessary to make a clean-sweep of all down logs and debris within certain areas of the right-of-way. The same was also true of the transmission line clearing. On May 25th, two locomotive cranes (rented) and a donkey engine rigged up on a flat car, were put into service pulling logs up into piles. Some 450 men were engaged in this clean-up which included burning all debris". For June, the report was: "Special clearing along the railroad continued . . . This clearing is termed 'Special' as the right-of-way had been gone over once. To satisfy requirements of the Forest Service, it was necessary to go over some of the right-of-way as many as five times". Throughout each fire season, a Shay locomotive, coupled to a tank car of water with steam-driven pumps and long lengths of hoses, was maintained with steam up to operating pressure.

One aspect of the project construction that was not unusual in the 1920s, but would not have been permissible in later years, was the use of "hydraulic giants" to sluice the overburden from the bedrock along the penstock line. For this operation, following removal of trees, Cripple Creek was diverted at about the 2,000-foot elevation into 3,450 linear feet of wood flume and 2,000 linear feet of 14-inch-diameter wood stave pipe. Nearly 100,000 cubic yards of material were removed by the sluicing operation.

In June 1923, at the peak of construction, 1,757 men were on the job, including those engaged in erecting a 9-foot-diameter steel conduit line, under contract with Willamette Iron & Steel Company. Clearing of 285.9 acres for the conduit was completed that August. The Forest Service required that an additional 5 acres outside the project be cleared to replace pasture lands occupied by the line in the Oak Grove Ranger Station area.

A concrete diversion dam on the Oak Grove Fork created Lake Harriet. Although the dam was completed in November 1923, the bypass through it was not closed until June 12, 1924 when the lake could be filled. Fish passage facilities were not required, as two natural 24-foot falls about a mile downstream from the dam blocked fish migration.

Installation of the Pelton Water Wheel Company hydraulic turbine and related valves was started in February 1924, at which time conductors on the transmission line were installed as far as Cazadero and the line was operated at 11,000-V to supply construction power. Prior to that time, from November 1922, the Three Lynx area electric service had been supplied by a 75-kW hydro generator on Three Lynx Creek.

First operation of the Oak Grove 25,500-kW-rated hydro turbine generator was on August 4, 1924. The initial turbine runner, rated at 35,000 hp, soon was replaced with a runner rated 40,000 hp. In 1924, the turbine manufacturer claimed that the Oak Grove plant utilized a Francis-type reaction runner in what: "So far as known, is the highest-head plant in existence . . ."

A two-room grade school with a second-floor apartment for a teacher was constructed in the Three Lynx village area in 1927 by the grade school district. However, at that time, the only taxable property in the district was owned by the Company which, in effect, provided the school facility and paid all expenses until logging companies moved operations into the area in the early 1940s. For many years, the Company's share of taxes was more than 95 percent until the Estacada Telephone Company began service in the area, reducing the Company share to about 90 percent.

Under a 1929 amendment to the Federal Power Commission license for the Oak Grove project, a diversion was authorized at Big Bottom on the main stem of the Clackamas River. A low dam, to be replaced later with a high dam for seasonal storage of 120,000 acre-feet, would divert the river through a 3-mile-long tunnel and discharge the flow into the head of Lake Harriet. The lake outlet structure for the diversion to the Oak Grove plant was designed to handle the additional water, and provisions were made for a second steel conduit line, 11 feet in diameter, extending to the surge tank. As part of the Big Bottom development, two additional generating units at the Oak Grove powerhouse were planned; also, the project railroad was extended to the tunnel mouth.

Application to the Federal Power Commission for an amendment to the Oak Grove license covering the Big Bottom diversion was made on April 15, 1926. At the same time, application for a water right was submitted to the State Engineer, superseding one dated July 1, 1921. The 3-year delay in obtaining an FPC amendment to license was due to a conflict in water right claims for power and other uses at Austin Hot Springs, downstream from Big Bottom. The owner of this 152-acre property, R. W. Cary, protested plans of the Company for the diversion. The area, in the heart of the Mt. Hood National Forest, had been purchased from the United States by Seth Austen (sic) on May 2, 1903 under a patent deed signed by President Theodore Roosevelt. Cary acquired the property, advertising it in 1914 as "Cary's Hot Springs". In a brochure, Cary referred to the area as "Queen of the Cascades" and claimed that it was "a place of such primeval and unsurpassed beauty that . . . it would become one of the scenic magnets of the Northwest".

In 1914, to reach Cary's development on the upper Clackamas River, one boarded the electric interurban in Portland at 6:45 a.m., arriving in Estacada at 8:30. An 8-mile auto-stage trip to the North Fork area was followed by a 12-mile ride with pack horses to Davis Ranch (then called "Kill Kare Kamp") for an overnight stay. By noon the next day, the hot springs were reached. There, tents were available with cooking facilities.

In July 1928, Cary sold his one-half interest in Austin Hot Springs to the Company. The following month the Company purchased for \$10,000 the one-half interest of E. C. Hunt that had been bought from Cary on November 28, 1917.

A second generating unit of 25,500-kW rating, with a 40,000-hp turbine was installed in 1930-31. It was placed in service on March 5, 1931, the Oak Grove powerhouse having been extended to accommodate the installation. A new penstock was built from the three-way branch at the surge tank outlet to the turbine, and two 10,000-kVA transformers were installed for the second generating unit. In the Three Lynx village, ten new cottages to house employee families were constructed. Married men had replaced some of the bachelors in the operating crew. Therefore, because of the remote location of the project, Company housing was needed.

Limitations in the flow capacity of the 9-foot-diameter conduit line from Lake Harriet to the surge tank resulted in a maximum peak capability of 35,000-kW for the two generating units, until the Frog Lake forebay was constructed in 1953.

During 1931 and 1932, construction work proceeded on the Big Bottom tunnel at the discharge end. Some 3,600 lineal feet of tunnel was driven before the work was terminated early in 1932. The Big Bottom Diversion development was maintained in suspense by paying annual fees to the Federal Power Commission and the State of Oregon for a 400 cubic-feet-per-second diversion, until June 26, 1970, when FPC authorization was received to abandon the development as of January 1, 1970. This reduced the Oak Grove project area on Federal lands by 600 acres. The power capacity of the licensed project was reduced by 16,500 hp.

In July 1933, at the request of the Forest Service, the Company agreed* to abandon the project railroad from the Oak Grove Ranger Station to the head of Lake Harriet. A road constructed by the Forest Service followed the grade of this 3-mile-long section, except where wood trestles crossed deep canyons. In 1937, the balance of the railroad was replaced by a PGE-constructed truck road. However, the road around the north side of the surge tank knoll was not built until 1939. Maintenance of a railroad for the light traffic of that period was too costly.

On December 30, 1942, PGE and the Forest Service agreed to a "Memorandum of Understanding" (PGE Audit No. 8711) under which the Forest Service assumed the maintenance and improvement expenses for 19.5 miles of the Oak Grove project road from Cazadero to Whitewater at the junction with the Three Lynx access road. The steadily increasing volume of logs being sold by the Forest Service after 1942 were hauled out over this road, with the result that it was improved substantially at government expense. In the 1960s, the Oregon State Highway Department included the Clackamas River road in its system for maintenance and improvement. PGE was thus left with responsibility for maintaining the Three Lynx-to-Lake Harriet road only.

In 1948, area shortages of peak and energy encouraged the Company to study developments that would increase the systems' generation capability. The first step was the installation of a fifth unit of 5000-kW rating in the River Mill plant. On May 19, 1952 the unit was first operated in commercial service.

In 1952, studies were initiated for the development of additional peak capability for the two Oak Grove generating units. In spite of an aggregate rating of 51,000 kW, they were capable of only 35,000 kW, due to conduit line flow limitations. First considered, was building a 230-foot-high rock-filled dam in the Cripple Creek Canyon, to be used as a regulating reservoir. A more economical solution was the creation of a 430-acre-foot capacity forebay at Frog Lake — a high-elevation location on the 9-foot-diameter conduit line from Lake Harriet — about 11,800 feet upstream from the surge tank. On May 17, 1953, excavation of the forebay began in a valley area enclosed by two homogeneous rolled-earth dikes between two hills. When full, the forebay surface area is 17 acres.

*PGE Audit No. 5396.

Downstream from Frog Lake, 1,160 lineal feet of conduit line were relocated at a lower elevation, permitting an increase in the flow to the surge tank. That increase raised the plant's capability for peaking service to 49,000 kW, although the effective head and efficiency of water utilization was reduced. A portion of the energy loss under peaking operations was offset by the installation of semi-permanent and higher flashboards on the crest of the Lake Harriet diversion dam. To avoid excessive transmission line losses under peak generation conditions, the two circuits from Oak Grove to Faraday were cut over to 110 kV and a third 10,000 kVA transformer was added to the bank that had been provided for the second unit in 1931.

On November 16, 1953, the Frog Lake forebay was placed in service. Ebasco Services, Inc. (EBASCO), was retained as design engineer and construction supervisor of the development. Morrison Knudsen Company was the general contractor.

To increase the energy generation capabilities of the hydro plants on the Clackamas River during low river flow periods from September to April, a seasonal storage reservoir at Timothy Meadows was investigated in the summer of 1952. The dam site selected was about 1,000 feet downstream from the site investigated in 1910 by the Southern Pacific Railroad Company. On September 14, 1953, the Federal Power Commission amended the Oak Grove project license, authorizing the Timothy Meadows storage and the Frog Lake forebay developments. The storage reservoir was renamed Timothy Lake because meadow lands were completely inundated by the project.

In 1953-54, an access road up the Oak Grove Fork canyon from Lake Harriet to Clackamas Lake (about 13 miles) was constructed by PGE under an agreement with the Forest Service and in conformity with their specifications. Clearing of over 60 million board-feet of merchantable timber on the 1,600 acres of timberland included in the reservoir area was started by a contractor on July 20, 1954. It was completed by January 20, 1956 — the completion date of all construction work on the project. A usable storage of 61,740 acre-feet in 65 feet of draft was provided behind a compacted-earth dam 110 feet in maximum height, top width of 40 feet, and crest length of 740 feet. When full, Timothy Lake has a 1,430-acre surface area. It consequently became a very popular recreation lake soon after it was created. Engineering design of the storage reservoir was by Ebasco Services, Inc., which also served as construction supervisor. General contractor on the dam and related structures, the Morrison Knudsen Company, was awarded the contract on May 19, 1954.

ATTACHMENT A-3

Book 1

EXHIBIT A-3 RECEIVED
PAGE 1/3 DEC 30 199

WATER RESOURCES
DEPT. OF GEOLOGY, OREGON

I, Thomas Withycombe, being first duly sworn depose and say that on the 9th day of October, A. D. 1907, at 11:30 o'clock A. M. I posted a notice on a conspicuous place at the proposed point of diversion and collection of the waters of the Clackamas River as therein described, by nailing the said notice firmly to a fir tree in close proximity thereto, and of which notice the hereto attached paper is a full true complete and correct copy.

Witness my hand this 10th day of October, A. D. 1907.

Thomas Withycombe

Subscribed and sworn to this 10th day of October, A. D. 1907.

(Seal of Notary)

Before me, I. S. Herbert,

Notary Public in and for the State of Oregon.

Filed and Recorded October 10th, 1907 at 3:35 P. M.

C. E. Ramsby, County Recorder.

By, C. Buchegger, Deputy.

Notice of Appropriation.

To whom it may Concern:

Notice is hereby given by the undersigned, S. W. Curtis, a citizen of the United States, that he proposes to and does hereby appropriate for the purposes of the development of the mineral resources of the State of Oregon, and to furnish Electrical power and energy for light, heat and other purposes, 40,000 miners inches under a six inch pressure of the waters of Oak Grove Creek, in Clackamas County, in the State of Oregon. The said appropriation being in volume a continuous flow of 1000 cubic feet of water per second, flowing in Oak Grove Creek, through, over and apast that point or place in said stream opposite where this notice is posted:

On a Cedar tree about 1/2 mile east of upper Falls where Creek passes through narrow Canyon in Sec. 4 T. 6 S. R. 7 E. W. M. in Clackamas County, Oregon.

The name of the canal, ditch or flume in and through which it is proposed to take and conduct such waters, is and shall be Grand Canal and S. W. Curtis, his associates, successors and assigns, shall be the owner thereof.

The dimensions and size of said canal is and shall be 20 feet on the bottom, 16 feet in depth, and of sufficient grade and fall to carry the volume of water herein appropriated. If any portion of said conduit or canal shall be a flume or pipe, it or they shall have the same water-carrying capacity as said canal as ve described.

The point of diversion of the waters of said Oak Grove Creek and the point where the headgates of said canal are to be located, and where this notice is now posted is on the North bank of Oak Grove Creek at or near the south line of Sec. 4 T. 6 S. R. 7 E. W. M. in Clackamas County, Oregon.

The general course of said canal is described as westerly on the North side and bank of Oak Grove Creek in Clackamas County, Oregon, and is to be about Nine (9) miles in length. And after the waters hereby appropriated have been carried through said canal, flume and pipe lines, and served the purpose of their appropriation, they shall be discharged into the Clackamas River near Sec. 22. T. 5 S. R. 6 E. W. M. The whole being situated within the Cascade Range Forest Reserve.

The number of reservoirs proposed to be constructed in the carrying forward of said enterprise is 1, which reservoir shall be constructed at or near the point where this notice is posted and shall consist of a dam across said Oak Grove Creek, which shall not exceed 30 feet in height, and the right is hereby claimed to back the waters of said Oak Grove Creek over such land as may be necessary in the construction and maintenance of said dam and reservoir at or near the said point of intake of said Grand Canal, as hereintofore described. The remaining reservoirs shall be constructed along the line of said canal or flume at such points as may hereafter be deemed desirable or convenient by the said S. W. Curtis, his successors or assigns, for the development of said power.

In Witness Whereof, I have hereunto set my hand and seal and caused this notice to be posted in a conspicuous place on the premises, this 11th day of November, A. D. 1907.

Executed in presence of
us as witnesses:

E. Blockley)
) S. W. Curtis (Seal)
F. H. Davis)

Filed and Recorded November 15th, 1907 at 8:20 A. M.

C. E. Ramsby, County Recorder.
By *C. Buchegger* Deputy.

To whom it may Concern:
Notice is hereby given by the undersigned, L. B. Wickerham, that he

pre-1907
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- re
reservoirs

STATE OF OREGON }
COUNTY OF CLACKAMAS } ss.

I, JOHN KAUFFMAN, County Clerk of the State of Oregon for the County of Clackamas, do hereby certify that the foregoing copy of BK 1 B 241
Unter Dieles & Flumes - DFGS -
has been by me compared with the original, and that it is a correct transcript therefrom, and the whole of such original, as the name appears on file and of record in my office and in my care and custody.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this 22 day
of December, 1922.

JOHN KAUFFMAN, Clerk
By Melissa Taylor Deputy



ATTACHMENT A-4

(Seal of Notary)

E. B. Ryan,

Notary Public in and for said city and county of San Francisco, State of California.

Filed and Recorded October 13th, 1910 at 5:00 P. M.

O. E. Ransty, County Recorder.

By: *O. E. Ransty* Deputy.

This Indenture, made this 25th day of November, A. D. 1907, by and between S. W. Curtis, of San Francisco, State of California, and Fannie M. Curtis, his wife, parties of the first part, and Southern Pacific Company, a corporation created and existing under the laws of the State of Kentucky, party of the second part, Witnesseth:

That for and in consideration of the sum of One Dollar, lawful money of the United States of America by the party of the second part paid unto the parties of the first part, and other good and valuable considerations to them thereunto moving, the receipt whereof is hereby acknowledged, the parties of the first part do hereby grant, bargain, sell, assign, transfer and set over, unto the party of the second part, its successors and assigns, all of the rights and privileges of every kind and nature, acquired by said parties of the first part or either of them, under and by virtue of a certain notice of location and appropriation of 40,000 square inches under a six inch pressure of the waters of Oak Grove Creek, sometimes known as Warm Springs Creek, in Clackamas County, in the State of Oregon, which said notice of appropriation was by the said S. W. Curtis, one of the parties of the first part, on the 11th day of November, A. D. 1907, signed and posted in a conspicuous place at the point of intended diversion to-wit: On a cedar tree on the North bank of said creek about 1/2 mile east of upper falls where said creek passes through a narrow canyon in Section 4 T. 6 S. R. 7 E. W. 1/2 in Clackamas County, Oregon, which said notice was thereafter duly recorded in the office of the County Recorder of said County, in Book 1, at page 241 of Water Ditches and Mines, reference to said notice, and said record thereof, being hereby made for further particulars.

In Witness Whereof, the parties of the first part have hereunto set their hands and seals, the day and year first above written.

Executed in presence of us as witnesses:

S. W. Curtis (Seal)
Fannie M. Curtis (Seal)

State of California)
City and County of San Francisco.) SS.

I hereby certify that on this 30th day of January, A. D. 1908, before me, the undersigned Notary Public in and for said city, county and state personally appeared the within named S. W. Curtis and Fannie M. Curtis, his wife, to me personally known to be the individuals described in and who executed the within instrument, and acknowledged to me that they executed the same freely and voluntarily, for the uses and purposes therein expressed.

In Testimony Whereof, I have hereunto set my hand and affixed my seal the day and year in

this certificate first above written.

(Seal of Notary)

E. B. Ryan,

Notary Public in and for said city and county
of San Francisco, State of California.

Filed and Recorded October 13th, 1910 at 3:21 P. M.

J. E. Ramsby, County Recorder

By: *W. Buschegger*

Deputy

This Indenture Witnesseth, That E. K. Campbell and Adah D. Campbell his wife, parties of the first part, for and in consideration of the sum of One Dollar, in lawful money of the United States of America, to them in hand paid by Eastern Investment Company, Limited, a Corporation party of the second part, the receipt whereof is hereby acknowledged, have remised, released and forever quit-claimed, and by these presents do grant, bargain, sell, convey, remise, release and forever quit-claim unto said party of the second part, and to its successors and assigns the following described premises situated, lying and being and in the County of Clatsop, State of Oregon, to-wit:

Lots Three (3) and Four (4) Block One Hundred and Twenty Three (123) and Lots Three (3) and Four (4) Block One Hundred and Forty Nine (149) Oregon City according to the fully recorded Plat thereof in said County and State.

Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining, and the reversion and reversions, remainder and remainders, rents, issues and profits thereof.



To have and to hold, all and singular the said premises, together with the appurtenances, unto said party of the second part, and to its successors and assigns forever.

In Witness Whereof, the said parties of the first part have hereunto set their hands and seals this 5th day of October, A. D. 1910.

Signed, sealed and delivered in

the presence of us as witnesses:

Geo. E. F. Lafret)
)
U. S. Fish)

E. K. Campbell) 
Adah D. Campbell) 

State of California,)
) SS.
County of Los Angeles)

Be it remembered, That on this eighth day of October, A. D. 1910 before me, the undersigned, a Notary Public in and for said County and State, personally appeared the within named E. K. Campbell and Adah D. Campbell his wife who are known to me to be the identical individuals described in and who executed the within instrument, and acknowledged to me that they executed the same freely and voluntarily, for the uses and purposes therein mentioned.

In Testimony Whereof, I have hereunto set my hand and official seal the day and year last above written.

STATE OF OREGON
COUNTY OF CLACKAMAS } ss.

I, JOHN KAUFFMAN, County Clerk of the State of Oregon for the County of Clackamas, do hereby certify that the foregoing copy of BR 117.9636

2 pgs
has been by me compared with the original, and that it is a correct transcript therefrom, and the whole of such original, as the name appears on file and of record in my office and in my care and custody.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this 22 day of December, 1992.

JOHN KAUFFMAN, Clerk
By: Michelle Taylor Deputy



ATTACHMENT A-5

This Indenture Made and entered into this 29th, day of June, 1911, by and between Southern Pacific Company, a corporation organized and existing under and by virtue of the laws of the State of Kentucky, party of the first part, (hereinafter called the "Pacific Company") and Portland Railway Light and Power Company, a corporation organized and existing under and by virtue of the laws of the State of Oregon, party of the second part (hereinafter called the "Power Company").

Witnesseth, That for and in consideration of the sum of one (\$1.00) Dollar lawful money of the United States of America, by the Power Company paid to the Pacific Company, the receipt whereof is hereby acknowledged the Pacific Company does hereby grant, bargain, sell, assign, transfer and set over unto the Power Company, its successors and assigns, all of the following rights and privileges:

1. All of the privileges of every kind and nature acquired by S. W. Curtis under and by virtue of a certain notice of location and appropriation of four thousand (4000) miners inches under a six (6) inch pressure of the waters of Three Link Creek, in Clackamas County, State of Oregon, which said notice of appropriation was by the said S. W. Curtis on the fifth day of October, 1903, signed and posted in a conspicuous place at the point of intended diversion, to wit: on a cedar tree on the south bank of said Three Link Creek about six hundred (600) feet above the second falls on said Creek in the south west quarter of section fifteen (15) township five (5) south of range six (6) east of Willamette Meridian in Clackamas County, State of Oregon, which said notice was thereafter duly filed and recorded in the office of the recorder of conveyances for said Clackamas County, at page 307 in book I of the record of Water Ditches and Flumes, to which said notice and the said record thereof reference is hereby had.

The rights and privileges being the same rights and privileges conveyed to Southern Pacific Company by said S. W. Curtis and Fannie M. Curtis, his wife by deed dated February first, 1909, and recorded October thirteenth, 1910, at page 233 in book 116 of the record of deeds for said Clackamas County, to which record reference is hereby had.

2. All of the rights and privileges of every kind and nature acquired by S. W. Curtis under and by virtue of a certain notice of location and appropriation of forty thousand (40,000) miners inches under a six (6) inch pressure of the waters of Oak Grove Creek, sometimes known as Warm Springs Creek, in Clackamas County in the State of Oregon, which said notice of appropriation was by the said S. W. Curtis on the eleventh day of May, 1907, signed and posted in a conspicuous place at the point of intended diversion, to wit, on a cedar tree on the north bank of said Oak Grove Creek about one half (1/2) mile east of the upper falls where said Creek passes through a narrow canyon in section two (2), township six (6) south of range seven (7) east of Willamette Meridian in said Clackamas County, State of Oregon, and which said notice was thereafter, on May fifteenth, 1907, filed and duly recorded in the office of the recorder of conveyances for said Clackamas County in Book I at page 227 thereof of the record of Water Ditches and Flumes, to which notice and the said record thereof reference is hereby had. The rights and privileges being the same rights and privileges conveyed to Southern Pacific Company by said S. W. Curtis and Fannie M. Curtis, his wife, by deed dated July tenth, 1907, and recorded October thirteenth, 1910, at page 635 in book 117 of the record of deeds for said Clackamas

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County, to which record reference is hereby had.

3. All of the rights and privileges of every kind and nature acquired by S. W. Curtis under and by virtue of a certain notice of location and appropriation of forty thousand (40,000) miners inches under a six (6) inch pressure of the waters of Oak Grove Creek, sometimes known as Warm Springs Creek, in Clackamas County, State of Oregon, which said notice of Appropriation was by the said S. W. Curtis on the eleventh day of November, 1907, signed and posted in a conspicuous place at the point of intended diversion, to wit, on a cedar tree on the north bank of said Creek about one half (1/2) mile east of the upper falls where said Creek passes through a narrow canyon in section four (4) township six (6) south of range seven (7) east of Willamette Meridian in Clackamas County, State of Oregon, which said notice was thereafter duly filed and recorded in the office of the recorder of conveyances for said Clackamas County in book 1 at page 241 thereof of the records of Water Ditches and Flumes, to which said notice and the said record thereof reference is hereby had. The rights and privileges being the same rights and privileges conveyed to Southern Pacific Company by said S. W. Curtis and Fannie M. Curtis, his wife, by deed dated November 25th, 1907, and recorded October 13th, 1910, at page 636 in book 117 of the records of deeds for said Clackamas County, to which record reference is hereby had.

To have and to hold all and singular the rights and privileges hereby transferred and conveyed unto the Power Company, its successors and assigns forever.

In Witness Whereof, Southern Pacific Company has caused its corporate name to be hereunto subscribed and these presents to be executed by the General Manager of its Lines in Oregon, and its corporate seal to be hereunto affixed, attested by the signature of its secretary this the day and year first above written.

In the presence of:

M. G. Soule

Southern Pacific Company

J. G. Albright

By J. P. O'Brien,

Approved as to form:

General Manager of lines in Oregon

Wm. D. Fenton,

Attest: W. F. Ingram,

Counsel

Asst. Secretary

S. P. Co. Lines in Oregon.

(Seal of S.P.Co.)

State of California)
County and City of San Francisco) :SS

EXHIBIT A-5
PAGE 214

On this 29th, day of June, 1911, before me appeared W. F. Ingram to me personally known who being duly sworn, did say that the said W. F. Ingram is the Assistant Secretary of the Southern Pacific Company, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors and said W. F. Ingram acknowledged said instrument to be the free act and deed of said corporation.

In Testimony Whereof, I have hereunto set my hand and affixed my official seal, this, the day and year first above written.

(Seal of Notary)

E. B. Ryan

Notary Public for California.

Filed and recorded September 1st, 1911, at 10 A. M.

L. E. Williams

County recorder.

This Indenture, Made and entered into this 29th. day of June, 1911, by and between Southern Pacific Company, a corporation duly incorporated, organized and existing under and by virtue of the laws of the State of Kentucky, party of the first part (hereinafter called the "Pacific Company") and Portland Railway Light and Power Company, a corporation duly incorporated, organized and existing under and by virtue of the laws of the State of Oregon, party of the second part (hereinafter called the "Power Company").

Whereas, heretofore and on the sixth day of October, 1909, there was approved by Phillip F. Wells, acting Forester of the United States a certain power agreement and permit to the Pacific Company authorizing the Pacific Company to occupy and use certain lands of the United States and rights of way reserved by the United States within the Oregon National Forest, by constructing, maintaining and operating thereon the following works:

(a) Two (2) dams approximately fourteen (14) and ten (10) feet, respectively in height.

(b) Two (2) conduits approximately nine (9) and one (1) miles, respectively in length, whereof approximately ten (10) miles will lie upon National Forest land or land within National Forests over which a right of way for ditches or canals, constructed by the authority of the United States is reserved by the Act of August 30th, 1890, (26 Stat. 391).

(c) A power house and forebay with appurtenant structures, to occupy approximately ---- acres whereof approximately ---- acres are National Forest land.

All approximately as shown on a certain tracing executed by H. M. Bowers and E. Blockley on January 21st, 1909, filed in the office of the district Forester, District No. 6, on January 23rd, 1909, which tracing is made a part of said agreement, and

Whereas, it is provided by said power agreement and permit that the works for which said permit was issued were to be constructed, maintained and operated for the purpose of storing, conducting and or using water for the generation of electric energy, all in accordance with the regulations and instructions of the Department of Agriculture governing National Forests, and specially with the conditions prescribed in said power agreement and permit, and

Whereas, the Pacific Company, acting in accordance with and under authority of said power agreement and permit, has heretofore commenced construction of works intended for the storing, conducting and using water for the generation of electric energy and has prosecuted the said work diligently and continuously at all times since the sixth day of October, 1909, which works partially constructed consists of clearing land and excavations for the purpose of constructing said dams, clearing and excavation of conduits intended for purpose of con-

STATE OF OREGON }
COUNTY OF CLACKAMAS } ss.

I, JOHN KAUFFMAN, County Clerk of the State of Oregon for the County of Clackamas, do hereby certify that the foregoing copy of BK 123 B/L

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has been by me compared with the original, and that it is a correct transcript therefrom, and the whole of such original, as the name appears on file and of record in my office and in my care and custody.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this 22 day of December, 1992.

JOHN KAUFFMAN, Clerk
By: Melissa Taylor Deputy



ATTACHMENT A-6

C. E. Ramsby, County Recorder,
By *M. G. Mulroy* Deputy.

DEC 30 1992

WATER RESOURCES DEPT
SALEM, OREGON

Notice of Appropriation.

To Whom It May Concern:

Notice is hereby given by the undersigned, S. W. Curtis, a citizen of the United States, that he proposes to and does hereby appropriate for the purpose of the of the development of the mineral resources of the State of Oregon, and to furnish Electrical power and energy for light, heat and other purposes, Four Thousand (4000) miners' inches under a six inch pressure of the waters of Three Link Creek in Clackamas County, in the State of Oregon.

The said appropriation being in volume a continuous flow of One Hundred (100) cubic feet of water per second, flowing in Three Link Creek, through, over and apast that point or place in said stream opposite where this notice is posted:

On a Cedar Tree on the South bank of Three Link Creek about 600 feet above the second falls on Three Link Creek and in the South West $\frac{1}{4}$ Sec. 15, T. 5. S. R. 6. E. W. M. in Clackamas County, Oregon.

The name of the canal, ditch or flume in and through which it is proposed to take and conduct such waters, is and shall be Three Link Canal and S. W. Curtis his associates, successors and assigns, shall be the owner thereof.

The dimentions and size of said canal is and shall be Six (6) feet on the bottom: Six (6) feet in depth, and of sufficient grade and fall to carry the volume of water herein appropriated.

If any portion of said conduit or canal shall be a flume or pipe, it or they shall have the same water-carrying capacity as said canal above described.

The point of diversion of the waters of said Three Link Creek and the point where the headgates of said canal are to be located, and where ^{this notice} is now posted is on the South bank of Three Link Creek at or near the third falls on Three Link Creek and about 600 feet above the Second Falls on Three Link Creek at in the S. W. $\frac{1}{4}$ Sec. 15. T. 5. S. R. 6. E. W. M. in Clackamas County, Oregon.

The general course of said canal is described as South Westerly on the South and bank side of Three Link Creek in Clackamas County, Oregon, and is to be about Seven tenths (7/10) mile in length.

And after the waters hereby appropriated have been carried through said canal, flume and pipe lines, and served the purpose of their appropriation, they shall be discharged into the Clackamas River near the mouth of Three Link Creek in the State

Sec. 21 T.S.S. R. G. E. W. M. The whole being situated within the Cascade Range National Forest Reserve.

The number of reservoirs proposed to be constructed in the carrying forward of said enterprise is One (1). One of which reservoirs shall be constructed at or near the point where this Notice is posted and shall consist of a dam across said Three Link Creek, which shall not exceed Fifteen (15) feet in height, and the right is hereby claimed to back the waters of said Three Link Creek over such land as may be necessary in the construction and maintenance of said dam and reservoir at or near the said point of intake of said Three Link Canal, as hereinbefore described. The remaining reservoirs shall be constructed along the line of said canal or flume at such point as may hereafter be deemed desirable or convenient by the said S. W. Curtis his successors or assigns, for the development of said power.

In Witness Whereof, I have hereunto set my hand and seal, and caused this notice to be posted in a conspicuous place on the premises, this 5th day of October A. D. 1908.

Executed in presence of;

S. W. Curtis (Seal)

us as witnesses:

E. Blockley

Ralph Lemon.

Filed and Recorded October 9th 1908 at 1:35 P. M.

C. E. Ramsby, County Recorder.

By *M. C. Mulvey* Deputy.

Notice of Location on Claim of Water.

Notice is hereby given that I the undersigned Henry W. Hagemann have this day located two thousand cubic feet per second of the waters of the Clackamas River, situated in the North East $\frac{1}{4}$ of the South West $\frac{1}{4}$ of Section 18 in Township 2 South Range 3 East of the Willamette Meridian in Clackamas County Oregon, the point of Collection and use of said waters being 100 feet east from the N. E. corner of the Horace Baker Donation Land Claim No. 63.

Notification No. 967.

The object of the claim of said waters are for manufacturing and power purpose on the banks of said Clackamas River and for transmission of the

STATE OF OREGON }
COUNTY OF CLACKAMAS } ss.

I, JOHN KAUFFMAN, County Clerk of the State of Oregon for the County of Clackamas, do hereby certify that the foregoing copy of BK 18307
W D & F 2pgs
has been by me compared with the original, and that it is a correct transcript therefrom, and the whole of such original, as the name appears on file and of record in my office and in my care and custody.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this 02 day of December, 1992.

JOHN KAUFFMAN, Clerk
By: Melissa Taylor Deputy



EXHIBIT A-6
PAGE 3/3

ATTACHMENT A-7

L. Pro. in Oregon (No. 135)
Portland Railway Light & Power Co.

RECEIVED

DEC 30 1992

WATER RESOURCES DEPT.
SALEM, OREGON

Ap. Nos. 6550

7970 & 7971

March 31st, 1922.

O. C. Merrill, Executive Secy.,
Federal Power Commission,
Washington, D.C.

Dear Sir:-

Acknowledgment is made of the receipt of your letter of March 7th relative to the right of the Portland Railway Light & Power Company to appropriate water of Oak Grove Creek and Three Links Creek, and also as to when the State will issue permit under application No. 6550 for the storage of water in Timothy Meadows Reservoir.

Agreeable to your suggestion a conference has been had with a representative of the Portland Railway Light and Power Co., the result of which is embodied in a letter addressed to this office by Mr. O. B. Coldwell, Vice President, under date of March 28th, 1922, a copy of which is enclosed for your information.

You will note that the Company proposes to ask for the approval by your Commission of the initial project as set forth in said letter. The Timothy Meadows Reservoir, however, the right to the storage of water in which was initiated under Application No. 6550, now pending before this office, is not included as a part of the initial unit. You will note that it now requests that Application No. 6550 be held in this office awaiting a more definite determination of the order in which the various steps in the development will be taken, and this is satisfactory to this office.

The water rights upon which the Company relied for its initial project are those initiated by S. J. Curtis Nov. 11, 1901 and Oct. 5, 1902 for 1,000 cu. ft. of the waters of Oak Grove Creek and Three Links Creek, respectively. The records of this office contain copies of these notices of appropriation together with the assignments from S. J. Curtis to the Southern Pacific Company and from the Southern Pacific Company to the Portland Railway Light & Power Company. The statute has been complied with in all respects in regard to the payment of the annual fees to the State of Oregon under these notices of appropriation, and it would appear that the same are valid and existing appropriations vested in the Portland Railway Light & Power Co.

EXHIBIT A-7
PAGE 1/5

as

In regard to your specific inquiry to these appropriations of water, permit me to say that their recognition by your Commission as a basis for the issuance of federal power license is entirely satisfactory to this office.

Reference is also made in your letter to water rights acquired by the Portland Railway, Light & Power Company under Application Nos. 7970 and 7971 for the diversion of water from the main Fork of the Clackamas River and the storage of water in the Big Bottom Reservoir. You state that these pending applications are sufficient for the issuance of a preliminary permit to that part of the project involving the use of water appropriated thereunder. These applications, therefore, will be held in abeyance until such time as your Commission is in a position to issue a final permit on this portion of this project, when the permits may be issued by this department upon compliance with the requirements of the statute.

Very respectfully,

Percy A. Cupper,

State Engineer.

EXHIBIT
PAGE

A-7
2/5

Spall

March 29, 1922.

Mr. Percy A. Cupper,
State Engineer,
Talent, Oregon.

Dear Sir:

Confirming our conversation of March 21st on the subject of Oak Grove water rights, wish to say that in making application to the Federal Power Commission on June 30, 1921, we proceeded as follows:

Application for license was made to construct, operate and maintain project works under two headings:

- (A) - THE INITIAL PROJECT, consisting of -
 1. Concrete Diversion dam in the Oak Grove Fork of the Clackamas River.
 2. A concrete lined conduit 8.5 miles in length.
 3. Penstock and power house equipped with generating apparatus of 30,000 K. W. capacity.
 4. A transmission line 23.7 miles in length.
 5. A wagon road 21.2 miles in length.
- (B) - THE ENLARGED PROJECT, consisting of the works listed above under (A) and in addition
 1. Timber crib storage dam at Timothy Meadows.
 2. Timothy Meadows storage reservoir of 46,377 cu feet.

In this application it is made clear that it is the intention to construct A first, three years after the date of completion of the wagon road into the project. It is asked for as time in which to complete the initial project.

The application also asks that the date of commencement of construction of the Enlarged Project be fixed not earlier than five years after issuance of license and that the date of completion be fixed not earlier than eight years after issuance of license.

In the application for license covering said project, the applicant is also asking for license for

The project proposed by the applicant will consist, in addition to the Initial Project and the Enlarged Project above described,

1. The diversion of the waters of the main fork of Clackamas River at a point suitably located above the mouth of the Collawash River, by means of a dam, open conduits, tunnels and appurtenant works approximately located as shown on Sheet No. 1 of Exhibit "A", which will discharge these waters into the Oak Grove Creek above the Intake of the Initial Project.
2. An impounding dam, reservoir, and appurtenant works for the storage and regulation of flow of the waters of the main fork of the Clackamas River at the point of diversion under item 1 above.

and it is stated that, accompanying the application for license on items 1 and 2, would be found an application for a preliminary permit for the so-called "Ultimate" part of the project, as set forth under C-1 and C-2 above.

This application for preliminary permit on Ultimate Project bears the same date as the application for license covering the Initial and Enlarged Project.

Now I explained to you in our conversation on the subject when we made application as above outlined we had in mind the steps of the development would be carried out in the order above. However, in our more recent studies we have found in all likelihood we will desire to change the order of steps of development.

As nearly as I can at present define it, the order would probably be:

1. Initial Project as above.
2. First portion of Ultimate Project, as under C-1 above, with a second unit in Lower House.
3. Enlarged Project as in (B) above.
4. Impounding reservoir, as in C-2 above, and third unit in Lower House.

Steps 3 and 4 to be carried out in sequence or at approximately the same time, dependent upon what may develop as a result of further data which should be available by that

Inasmuch as we are at the present time unprepared to state definitely the probable sequence we desire to follow in making the various steps of the development, we believe it would be best to request the Federal Power Commission to issue to us, at this time, a license for the Initial Project itself, the remainder to be handled at a later date. Our suggestion as to how this may be done is made in the closing paragraph of the Federal Power Commission's report of March 7th. In order to accomplish this, we therefore suggest that you delay granting our application 6,550 for permit to construct Timothy Meadows reservoir until such time as we have at hand information which will enable us to make a decision as to what the second step is to be.

We also suggest that you make such statement to the Federal Power Commission as may be necessary to indicate that the State is satisfied that Portland Railway, Light and Power Company possesses, by virtue of the Curtis filings, the right to divert the waters of Oak Grove and Three Links Creeks for the carrying out the development.

This would give the Commission the information asked in order to grant license to us to proceed under the Initial Project (A) above.

With the license granted on the Initial Project, we would then be in a position that, so far as the Federal Power Commission is concerned, the Timothy Meadows reservoir would be covered by the application for license of June 30, 1921, the Main Fork diversion and Big Bottom reservoir would be covered by our application for preliminary permit of June 30, 1921.

Our application 6,550 for permit to construct Timothy Meadows reservoir and our applications 7971 and 7970 to divert from the Main Fork and for Big Bottom reservoir would cover the remainder of the project so far as the State is concerned.

It is our understanding that you agree with us that the method of procedure should prove to be the most satisfactory to all parties interested.

Yours very truly,

Vice President

ATTACHMENT A-8

FEDERAL POWER COMMISSION

WASHINGTON

DEC 30 1932
VALUATION DEPT.
SEASIDE, OREGON

-000-

PRELIMINARY ACCOUNTING REPORT

on the

ACTUAL LEGITIMATE INVESTMENT

in the

ORIGINAL OAK GROVE PROJECT, NO. 135, OREGON

as of

December 31, 1925

PORTLAND GENERAL ELECTRIC COMPANY

Licensee

By

C. J. Green, Examiner of Accounts

May 25, 1932

-000-

EXHIBIT A-8
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I N D E X

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FEDERAL POWER COMMISSION
WASHINGTON

Oregon
Portland General Electric Co.

May 25, 1932

PRELIMINARY ACCOUNTING REPORT
on the
ACTUAL LEGITIMATE INVESTMENT
in the
ORIGINAL OAK GROVE PROJECT, NO. 135, OREGON
as of
December 31, 1925

1. Introductory.

The original license, for what is known as the Oak Grove Project on the Clackamas River, was issued on September 27, 1922, to Portland Railway, Light & Power Company. The name of the licensee has been changed several times, and at the present time, the license is held by Portland General Electric Company, controlled by Pacific Northwest Public Service Company, which in turn is controlled by Central Public Service Corporation, which is controlled by Central Public Service Company. There were at one time, two preliminary permits, Nos. 233 and 234, outstanding, covering proposed developments on the Clackamas River and its tributaries. The original license issued for No. 135 was amended on May 7, 1929, to include the development originally covered by permit for No. 234. An original cost statement was filed with the Commission on October 10, 1927, but later withdrawn and a revised statement substituted on March 7, 1931.

2. Component Parts of the Original Project.

As constructed, the original project (designated "First Stop" by licensee) consists of:

- (a) A small arched diversion dam on the Oak Grove Fork of the Clackamas River, at the north side of which is located -
- (b) A complete intake structure, large enough for the ultimate development, and leading to -
- (c) A 12' 4" diameter waterway 1,341 feet long, beginning its upper end at the intake, and consisting of concrete-lined tunnels Nos. 1 and 2, with 188 feet of intervening reinforced concrete pipe, all completed for the ultimate development, including a provision at the lower end for connection to (1) upper end of future 11' 6" diameter steel flow line, and (b) an existing connection to -

- (d) A 9' diameter steel pipe flow line 33,027 feet (6.26 miles) long, inclusive of the short No. 3 and No. 4 tunnels through which the steel continues, which connects to -
- (e) A surge tank connecting tunnel through Cripple Creek Knoll (which rises 900 feet above the power house). This tunnel is concrete-lined throughout, is 14 feet inside diameter and 437 feet long. In addition to its connection to the lower end of present 9-foot flow line, it also has a provision at the same point for a future connection to the lower end of the future 11' 6" steel pipe line. A penstock manifold, with three penstock connections (two of which were temporarily closed) is at the other end. There is also an upward connection to -
- (f) A vertical concrete-lined surge shaft, also 14 feet inside diameter, rising 110 feet from connecting tunnel to floor of -
- (g) A cylindrical reinforced concrete surge tank 20 feet in diameter and 57 feet high, last 20 feet of which is above the crest of Cripple Creek Knoll;
- (h) One riveted steel penstock 1,284 feet long, receiving water from the open manifold connection, extends down the steep slope of Cripple Creek Knoll to the power house, and there delivers the water under 925 feet static head to -
- (i) One Pelton 35,000 Hp., Francis type, turbine directly connected to -
- (j) One 30,000 Kva. generator, which, with appurtenant accessories, conducts generated 11,000 volt energy to -
- (k) Three 10,000 Kva. outdoor type 11,000/125,000 volt transformers;
- (l) The turbine, generator, and appurtenant accessories of both, are housed in a reinforced concrete power house 48' x 76' in plan with temporary closure at one end;
- (m) Nine (9) operator's cottages, and a guest house, with necessary utility services and auxiliary power plant buildings, are located at one side of Cripple Creek Knoll and above the power house;
- (n) A transmission line, with steel towers and two 3-phase circuits extending from transformers at power house 94,500 feet (17.87 miles) to lower end of project near Faraday (Plant G); -2-

- (c) A project railroad, extending from the previously existing common carrier terminus near Faraday (lower end of project) 28.4 miles to the Oak Grove intake, This railroad has been, and will be, used for both operating purposes and for transportation of construction materials and supplies during construction of other steps of the project which follow the First Step. The original plan of a truck road was abandoned during construction of the first unit, because of a demonstrated impracticability of transportation by truck during the heavy rainfall occurring in that locality.

A more detailed description of each item of the project may be obtained from the introductory statements of the detailed cost for each structure, as set out in the original submittal of the license entitled "Report to the Federal Power Commission of Initial Capital Investment as of Dec. 31, 1925," received October 10, 1927. As this submittal has been superseded, it now occupies only a memorandum status.

3. History of the Project.

A detailed description of the project history may be obtained from the licensee's submittal entitled "Data Accompanying Report to Public Service Commission of Oregon of Initial Capital Investment, as of December 31, 1925," received March 7, 1931. Such history is here condensed to, and supplemented where necessary by, the following statement:

- (a) In 1907, the Southern Pacific Company, a common carrier railroad contemplating electrification of a portion of its system, became actively interested in the development of hydraulic power on the Upper Clackamas River. This development now constitutes this project.
- (b) In May, 1911, Southern Pacific Company entered into a contract to sell its holdings on the Upper Clackamas River, consisting of preliminary investigations, preparations for construction, and a relatively small amount of construction work to Portland Railway, Light & Power Company. This contract also provided for the purchase by the Railroad Company from the Power Company of the energy to be required by its electrified lines, and that the purchase price of \$125,000 for the project could be paid in 15 equal annual installments in the form of credits to the bill for such energy, as furnished by the licensee company;
- (c) The record of construction expenditures shows that the new owner continued active investigation, or early construction, until the end of 1911. At that time, the purchase of one competing electric utility with surplus generating plant capacity, was followed by inroads of another new competing electric utility

on the business of this new owner. Under such conditions, further construction activity for an additional plant of the size and cost of the project was then considered unwise. This suspension of activity continued until about July 1, 1921, only the nominal expenditures for hydrographic and related work having occurred except that the regular annual payments to Southern Pacific Company of \$8,333.34 began in 1915, coincidentally with the supply of railway power from nonproject sources;

- (d) Beginning in July, 1921, prior to issuance of license, construction activity was renewed; and, from the middle of 1922, heavy monthly expenditures for construction, under difficulties detailed in the reference above, resulted in completion sufficient to permit operation by the first unit, beginning August 4, 1924;
- (e) Development of trouble, especially leakage in the concrete structures in Cripple Crook Knoll, required total shutdowns after August 3, 1924, amounting to 114 days, for which period the licensee makes a new claim of \$182,307.63 for interest and \$13,371.09 for taxes, both not included in its first submittal. Corrective construction work also required that coincident operation be continued under reduced head, but licensee makes no interest claim during such impairment of productivity of the project;
- (f) Because of the question raised later concerning interest on completed plant cost considered to be in suspense, this history should be supplemented by a statement that the project under license also covers the following additional steps, or construction units:

Step 2. Required the installation of second penstock and a second turbo-generator unit of 35,000 Kva. capacity and construction of extension of power house to cover such unit. This step has been completed, operation beginning February 1, 1931. This second unit will permit use, by both units, of about 600 second-feet, when available from Oak Grove Fork, compared to the about 400 second-foot capacity of first generating unit only;

Step 3. Temporary diversion dam at the lower end of Big Bottom Reservoir site on Upper Clackamas River, with tunnel from near such dam to a point just above present Oak Grove diversion dam. This step, now under construction, makes useful an almost continuous supply of 600 second-foot for generating Units Nos. 1 and 2;

Step 4. Installation of the 11' 6" steel conduit, paralleling the present 9' 6" conduit from end of Tunnel 2 to Cripple Creek Knoll; completion of this step was expected to occur in 1935;

Step 5. This step will permit the complete use of both generating units, or the use of the entire flow of both streams above the diversion on each, when less than about 800 second-feet are available. This final step will have two distinct parts,- the construction of the Big Bottom storage dam, and the installation of the third penstock, the third turbo-generator unit, and the power house extension to house it. This was planned for completion in 1937. Practically the complete use of the runoff of both streams above the diversion points will then result.

The planned completion date for the last three steps will be further deferred for as much as two years, if the current application for amendment to license is granted by the Commission.

4. Extent of Licensee's Service.

The territory generally served by the licensee, or its subsidiaries, includes the entire Willamette River Valley northward from Willamina and the rural districts south of Salem, Oregon. It extends down the southwest bank of the Columbia River beyond St. Helens, Oregon, and across the Columbia River into Vancouver, Washington. Since 1912, Vancouver and Portland, Oregon, have also been served competitively by the Northwestern Electric Company. The map of the licensee's transmission system, next following, shows the situation more specifically. It also includes a small scale sketch of the project. In addition to this project plant designated "Sta. P," this licensee operates other large generating plants, four hydraulic plants, designated "Stas. B, G, M, and O," and two steam plants in Portland, designated "Stas. E, and L." Other smaller plants are shown on the map.

5. Historical Statement of Accounting Records.

Following the issuance of the license, the First Step of the project was constructed, and the first unit became effectively operative on August 4, 1924. Subsequent complete outage for correcting construction defects, chiefly in the surge tank tunnel, amount to a total of 114 days. In 1925, a joint examination of the construction accounts was made at the office of the licensee in Portland, Oregon, by your examiner and a representative of the Public Service Commission of Oregon. At that time, the total cost of the original project had not been ascertained by the licensee, and, therefore, no conclusive report could be made. However, the matter of the consideration to be given to the effect of suspended construction, described in subparagraph 3-c preceding, was taken up orally with both the licensee and the Oregon Public Service Commission in accordance with the instruction of Mr. O. C. Morrill, Executive Secretary, dated January 23, 1926, here quoted as follows:

"In view of the history of the acquisition and development of project by the Licensee I am of the opinion that a reasonable amount may be allowed as interest chargeable to construction account during the period between the date of acquisition of the rights and property from the Southern Pacific Company in 1911 and the beginning of active construction of the plant about 1922. A rate of, say five per cent or not over six per cent on actual expenditures from the date they were made would seem to be sufficient, and under the circumstances attending the investigation and development of the project, I feel that the Licensee should be satisfied with simple interest and not ask that it be compounded. I shall be glad to have you discuss the matter of interest for the preconstruction period with the Oregon Commission and with representatives of the Licensee, and if an agreement can be reached in line with the views as expressed above, you may proceed to close the construction accounts on that basis. So far as the matter of interest is concerned, I am willing to agree to anything within reason that is satisfactory to the Oregon Commission."

a result of the conferences held, the licensee, with an apparent desire to reach an agreement, gave up its contention for compound interest, and the claim submitted, includes interest accrued at only 6% simple interest rate for all expenditures up to July 1, 1921, and for all accrual periods thereafter applicable to such expenditures. The licensee later made its assembly of the complete project cost, and after distributing the overhead costs to the retireable units plant, on October 10, 1927, filed with the Commission a formal statement giving the cost of the original project, as of December 31, 1925, to be \$20,126.30. Such statement was never formally accepted or approved by either the Federal Power Commission or the Public Service Commission of Oregon. By its order of April 16, 1928, the Oregon Commission agreed to complete the investigation of cost of this project, and to report the result to the Federal Power Commission.

6. In 1929 and 1930, the Oregon Commission had a rate and valuation case before it, involving this licensee and its utility properties. In a letter dated November 6, 1930, addressed to the Federal Power Commission, the Public Service Commission of Oregon stated:

"We have recently completed a valuation of the property used in the public service by the Portland Electric Power Company. During its progress, we gave considerable attention to the investment at Oak Grove, but owing to the large amount of work imposed on our limited force we were unable to give it a thorough investigation without unduly delaying our decision on the valuation and the rates based thereon. We, however, temporarily excluded as non-operating property \$2,000,000 of the valuation claimed.

"Since the issuance of our order in the case we have given the matter of this investment close attention and have reached the conclusion that we must reject the statement of investment as now presented because of its inconsistencies and because of the inclusion of expenditures which are apparently excessive, or at least are not justified by the facts presented. We have advised the utility of our conclusions and have asked that a revised statement be submitted."

prior to the letter of November 6, 1930, and as early as January of that year, it appears that the Oregon Commission had instituted an investigation to determine the reasons for certain alleged excessive costs of the Oak Grove project. Representatives of the Forest Service at Portland, Oregon, were requested to participate in such investigation, but no report of such activity was apparently required.

7. By letter, dated November 8, 1930, the licensee requested that the statement of cost of the original project filed with the Commission on October 1, 1927, together with statements subsequently filed with the Commission, showing changes in the fixed capital accounts from year to year, be returned for correction and adjustment. All such statements were returned to the licensee, with letter dated November 13, 1930, but they were again sent to the Commission, at its request, "for memorandum purposes."

8. In accordance with its agreement, specified in paragraph 5, above, the Public Service Commission of Oregon, by a letter dated February 19, 1931, advised the Federal Power Commission, as follows:

- (a) "You will recall that we requested the Portland General Electric Company to revise its statement of investment in the Oak Grove project, license No. 135 of your commission, as of December 31, 1925.
- (b) "We understand a revised report has been forwarded to you by the company showing the specific cost of the units of property before the allocation of indirect cost, such as transportation, camp expense, plant, stores expense, etc. The overhead expenses were not assigned but are shown under the proper classification, undistributed.
- (c) "The revision of this statement and the matter of this investigation has received our close attention and we have reached the conclusion that the revised expenditures reported by the Portland General Electric Company of the initial capital investment in the Oak Grove project as of December 31, 1925 has been made; that the various structures and equipment exist in the form and extent claimed and that the expenditures are properly allocated to the various accounts and there is no evidence of unnecessary or wasteful expenditures."

9. On March 7, 1931, the licensee submitted to the Commission for its consideration, one copy only of a revised statement in the form of a report to the Oregon Commission, showing the cost of the original Oak Grove project, as of December 31, 1925, to be \$9,371,353.68, an increase of \$151,227.38 over the amount shown by the original statement. This statement was not submitted under oath. It is apparently the report mentioned by Oregon Commission in paragraph 8-b, above.

The distribution, by Federal Power Commission accounts, of this claimed cost is as follows:

FIXED CAPITAL ACCOUNTS

F. P. C.
CLASSIFICATION

Intangible Fixed Capital \$ 535,756.50

301 Organization \$ 317,685.36
303 Miscellaneous Intangible Capital 218,071.14

Tangible Fixed Capital 6,979,182.39

312 Hydraulic Power Plant Land 12,781.94
313 Hydraulic Power Plant Structures 412,554.41
314 Reservoirs, Dams, and Intakes 328,805.94
316 Waterways 2,364,167.23
317 Forebays, Penstocks, and Tailraces 790,688.70
318 Product'n Roads and Trails (constr'n railway) 1,776,777.58
319 Water Turbines and Water Wheels 126,091.18
320 Electric Equipment - Hydro 147,433.41
321 Miscellaneous Power Plant Equipment - Hydro 90,461.70
Transmission Land (Mostly clearing R.of W.) 462,746.06
322 Transmission Structures 45,083.74
333 Transmission Substation Equipment 138,460.97
334 Transmission Towers and Fixtures 124,125.60
335 Transmission Tower Line Conductors 130,251.22
338 Transmission Underground Conduits 6,772.10
362 Office Equipment 565.60
382 Communication System Equipment 21,415.01

Overhead Costs and Other Undistributed Items 1,856,414.79

390 Engineering and Superintendence During Constr'n 559,991.72
391 Law Expenditures During Construction 2,275.71
392 Injuries and Damages During Construction 166,759.53
393 Taxes During Construction 41,245.48
394 Interest During Construction 887,928.31
May-Dec., incl., 1911 \$ 885.42
Jan.1912-June,1921, incl. 60,833.14
July, 1921-Aug., 1924, incl. 645,815.52
Transferred to Nonproject Cr. (2,314.06)
Miscellaneous additions to project 400.66
114 days' outage after Aug.3,1924 182,307.63

395 Miscellaneous Construction Expenditures 198,214.04

Total, Project Cost Claimed 9,371,353.68

ATTACHMENT B

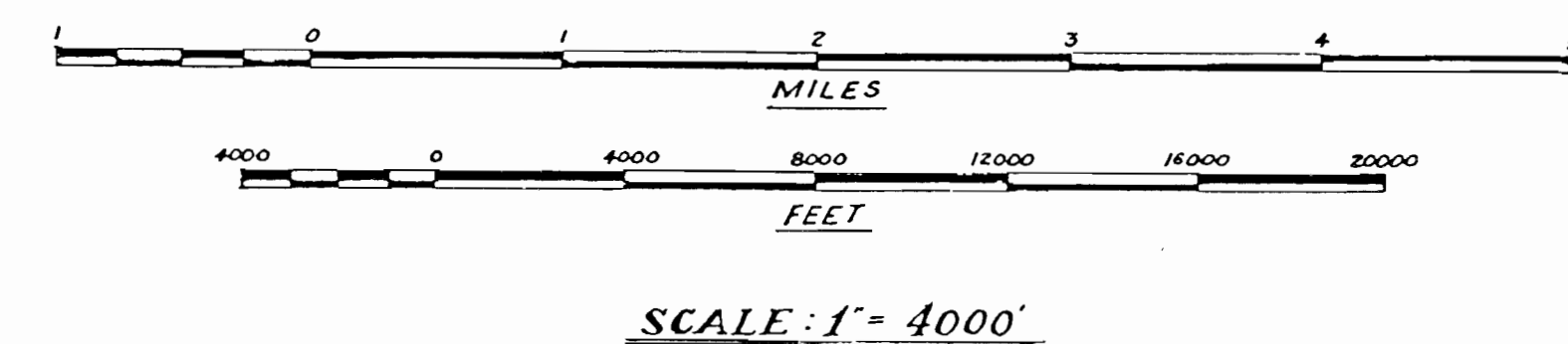
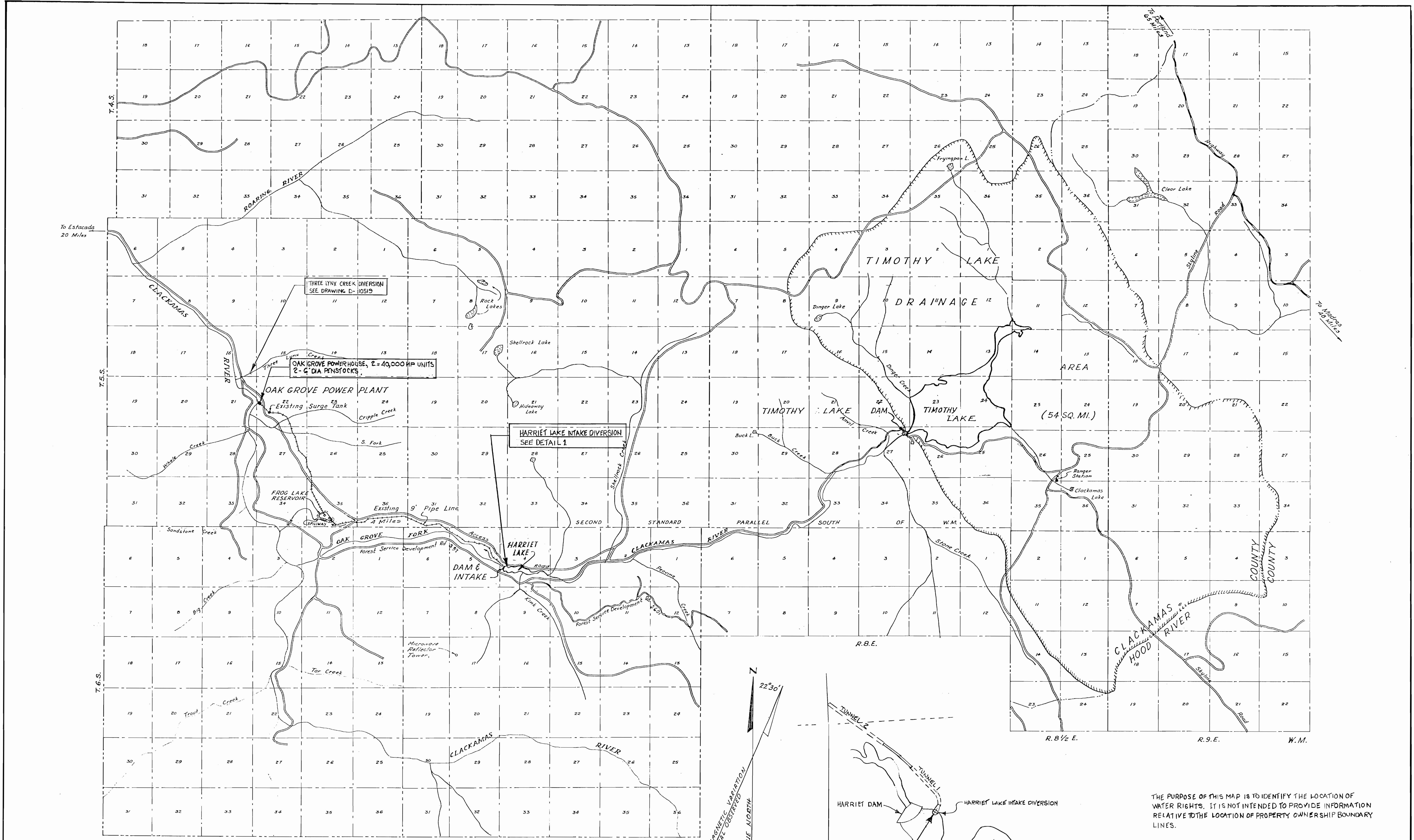
[Map prepared by certified water rights examiner]

Oak Grove

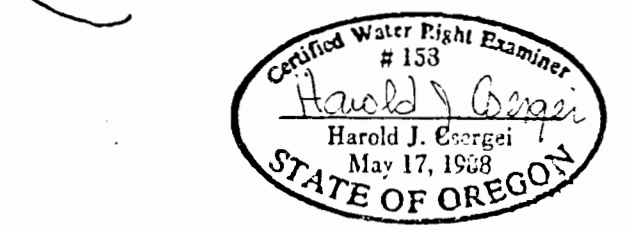
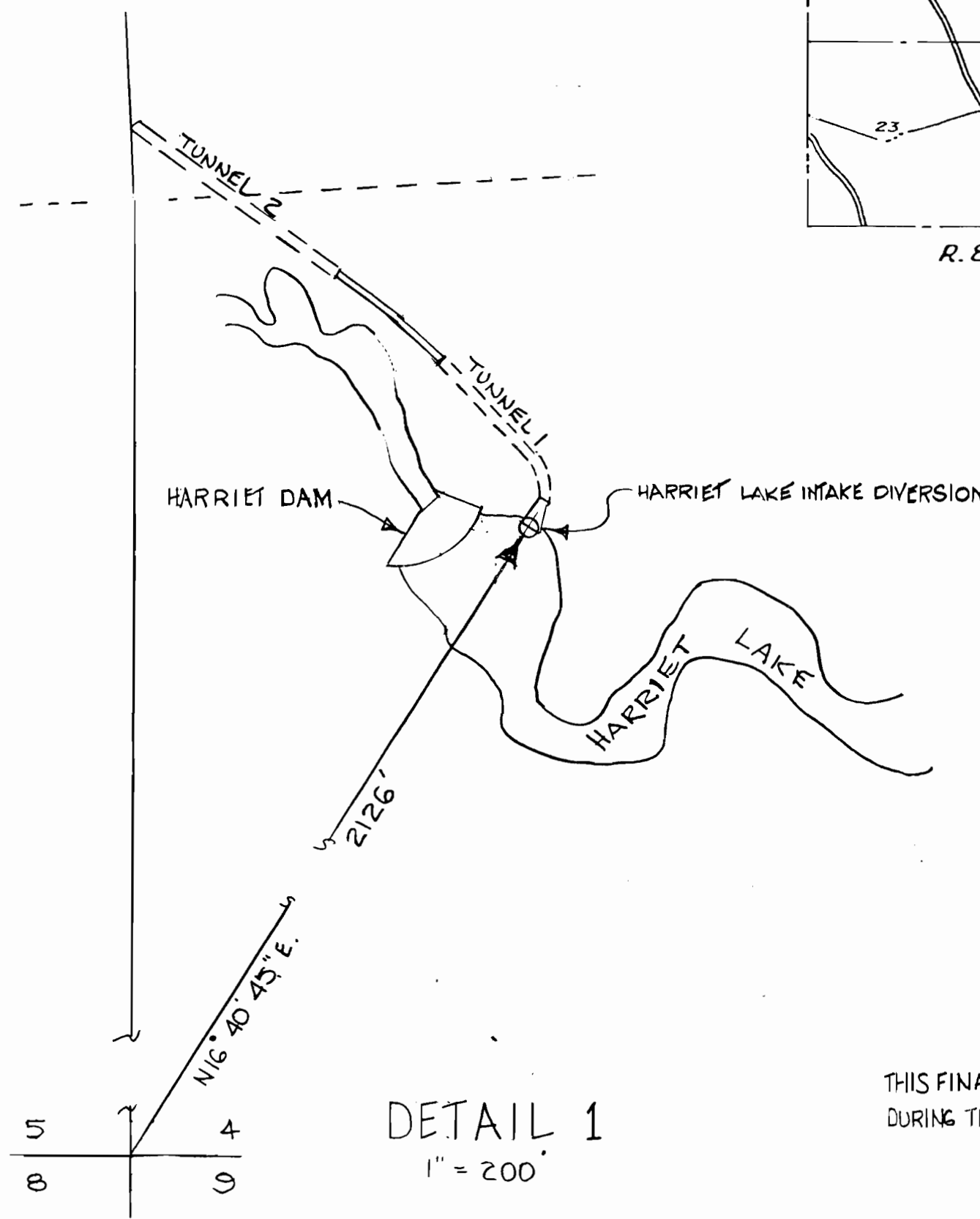
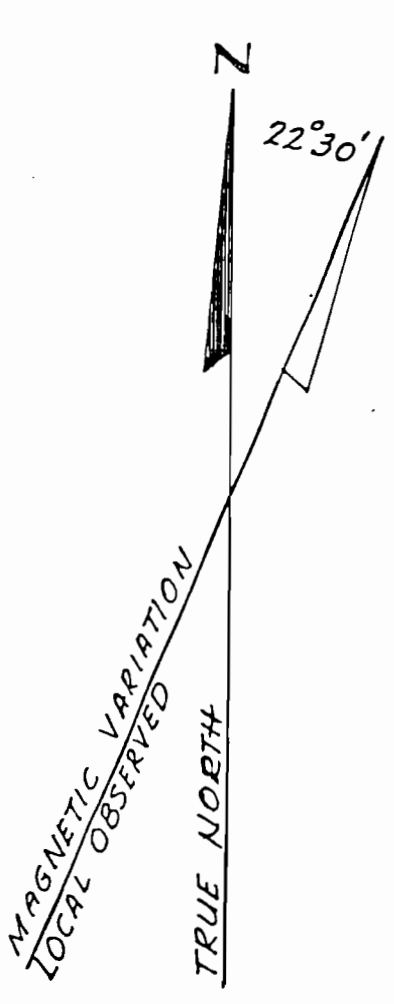
WR Map C-20442

WR Map D-10519

Exhibit L	Sht 2	of 19
Exhibit L	Sht 3	of 19
Exhibit L	Sht 4	of 19



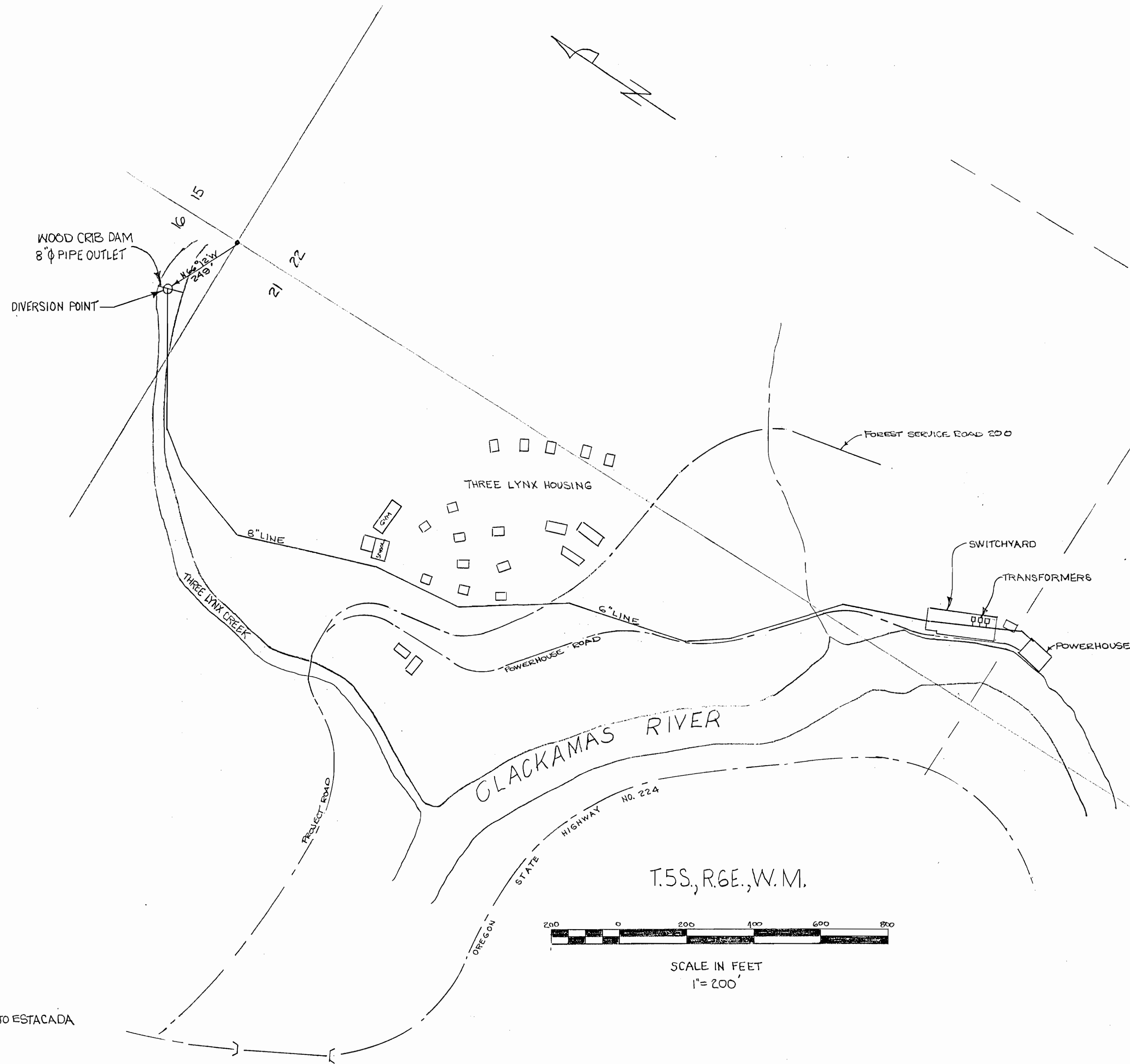
NOTE:
FOR LIST OF REFERENCE DRAWINGS
SEE DRAWING D-10519.



THIS FINAL PROOF SURVEY WAS PERFORMED
DURING THE PERIOD OCTOBER-DECEMBER, 1952.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF
WATER RIGHTS. IT IS NOT INTENDED TO PROVIDE INFORMATION
RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY
LINES.

REV	DATE	DESCRIPTION	BY	CHK	ENGR	SUPV	MGR
REVISIONS							
PORTLAND GENERAL ELECTRIC CO. PORTLAND, OREGON							
OAK GROVE PROJECT PRE 1909 VESTED WATER RIGHTS FINAL PROOF SURVEY							
APPROVALS						SCALE AS NOTED	
DESIGNER						DRAWN BY HJC	
DESIGN ENGR						CHECKED BY	
ENGR SUPV						DATE 12/28/52	
ENGR MANAGER						REV	
						C-20442	



REFERENCE DRAWINGS

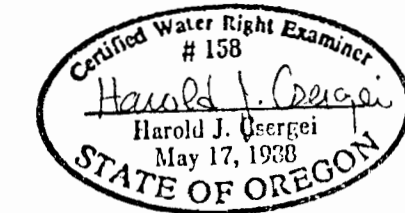
FERC OAK GROVE PROJECT LICENSE DRAWINGS

- EXHIBIT L, SHT. 2 OF 19
- EXHIBIT L, SHT 3 OF 19
- EXHIBIT L, SHT 4 OF 19
- EXHIBIT L, SHT 9 OF 19
- EXHIBIT L, SHT 11 OF 19
- EXHIBIT L, SHT 12 OF 19
- EXHIBIT L, SHT 16 OF 19
- EXHIBIT K, SHT 11 OF 18

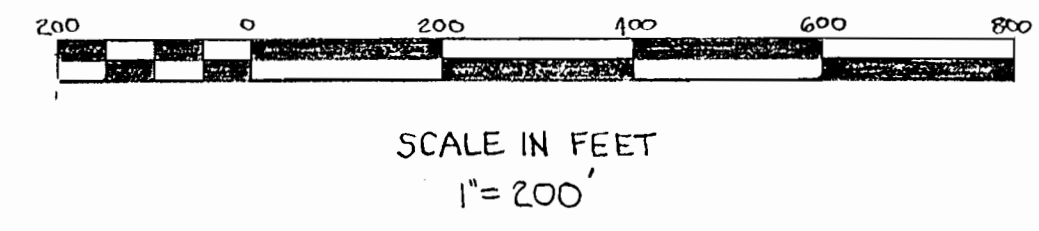
NOTE:

WORK THIS DRAWING WITH DRAWING C-20442.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF WATER RIGHTS. IT IS NOT INTENDED TO PROVIDE INFORMATION RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY LINES.

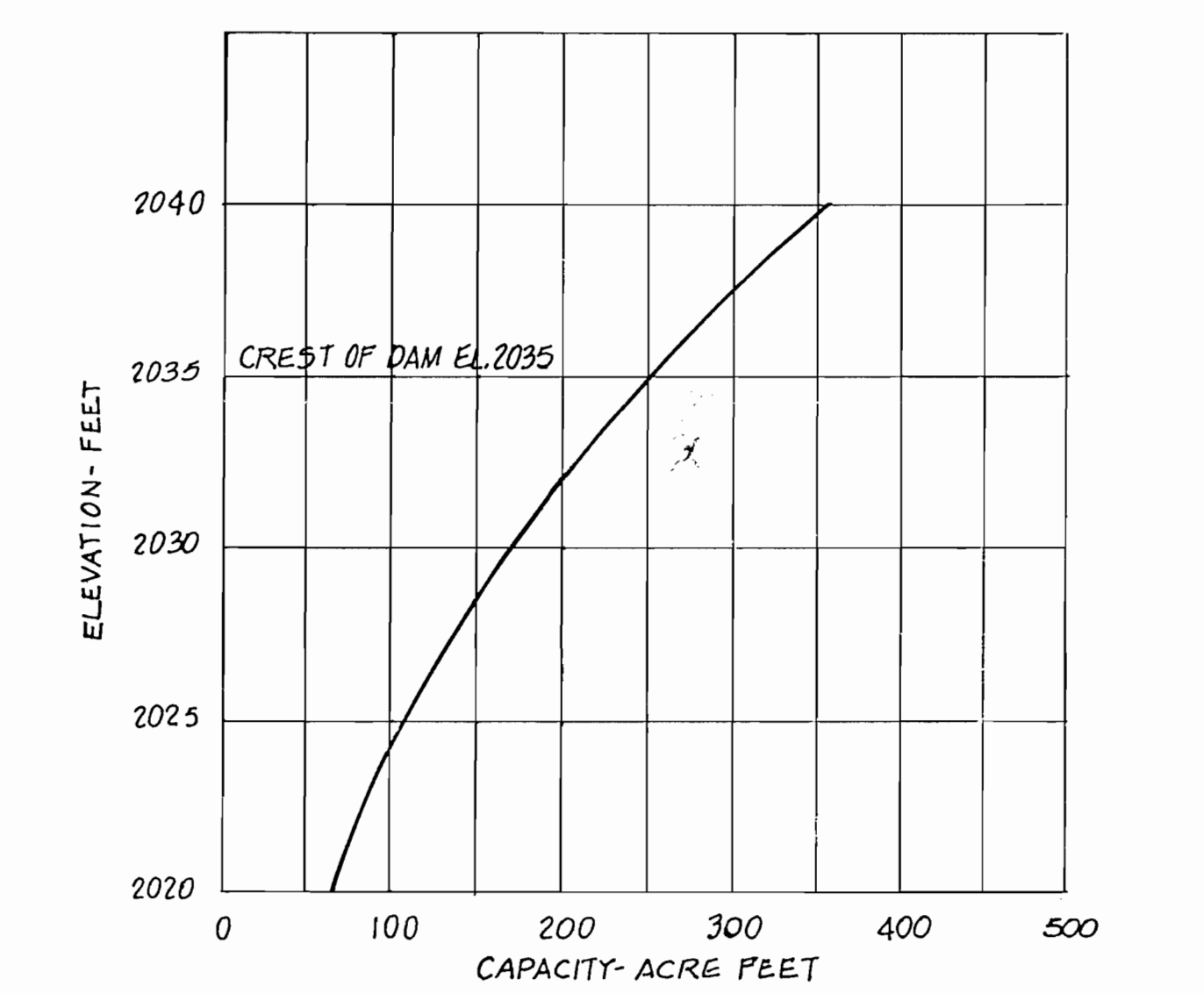
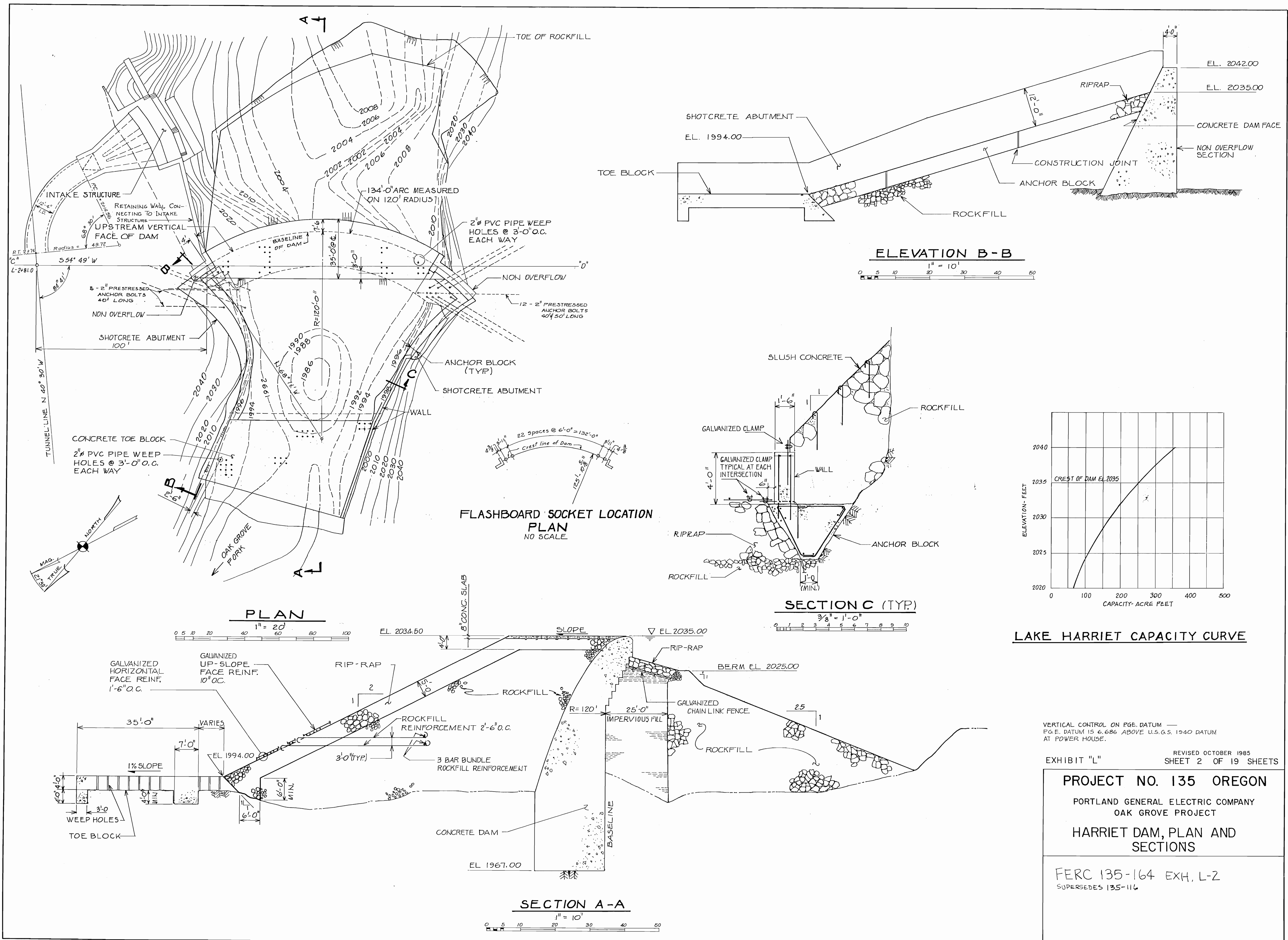


← TO ESTACADA



THIS FINAL PROOF SURVEY WAS PERFORMED DURING THE PERIOD OCTOBER-DECEMBER, 1992.

REV	DATE	DESCRIPTION	BY	ENGR	SUPV	APPD
REVISIONS						
PORTLAND GENERAL ELECTRIC CO. PORTLAND, OREGON						
OAK GROVE PROJECT THREE LYNX CREEK PRE 1909 VESTED WATER RIGHTS FINAL PROOF SURVEY						
APPROVALS		DATE 12/28/92	SCALE 1"=200'			
DRAWN BY HJC		RDC NO.	JOB NO.			
ENGINEER		DRAWING NO.	REV.			
SUPV		D-10519				



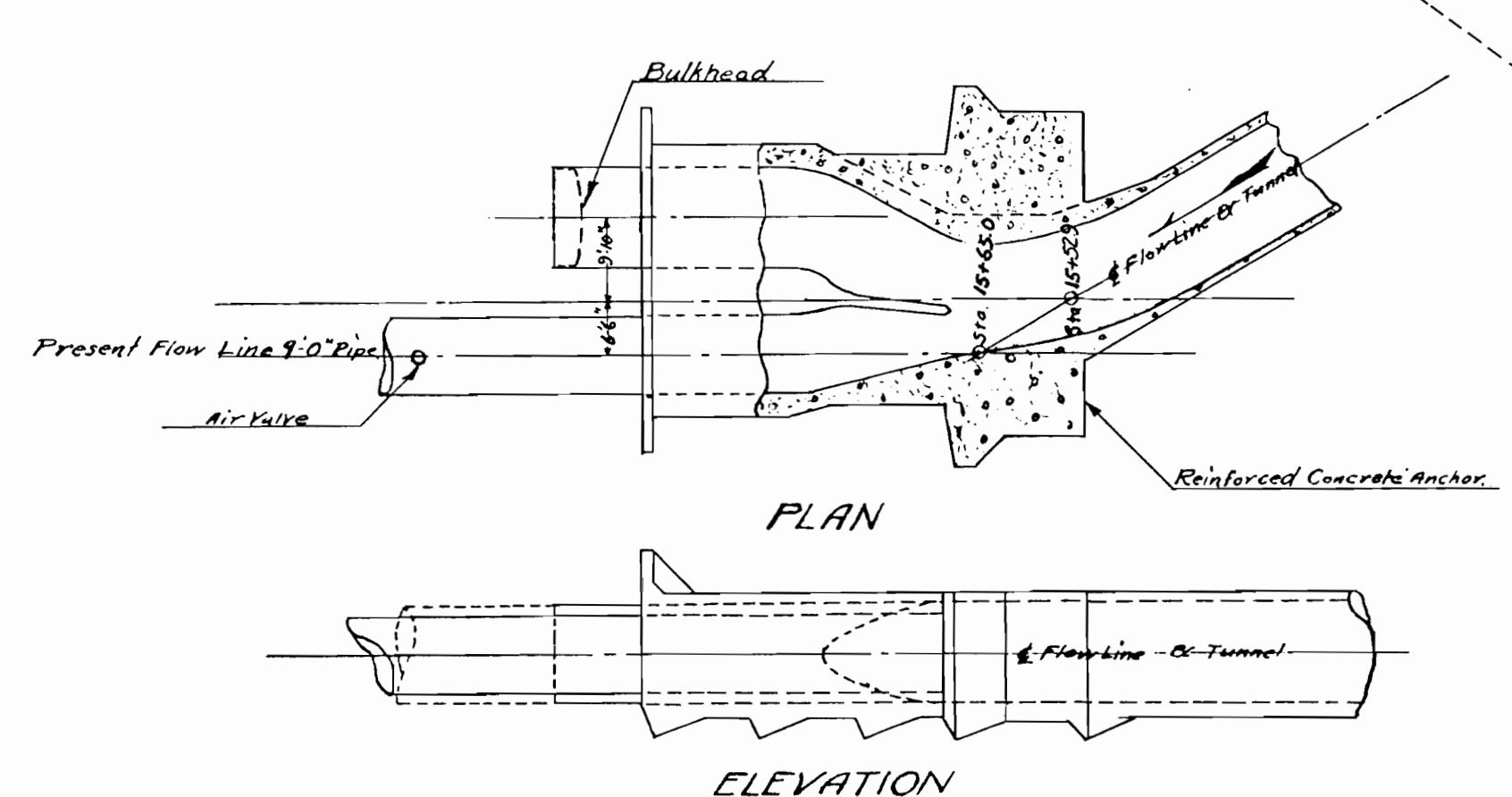
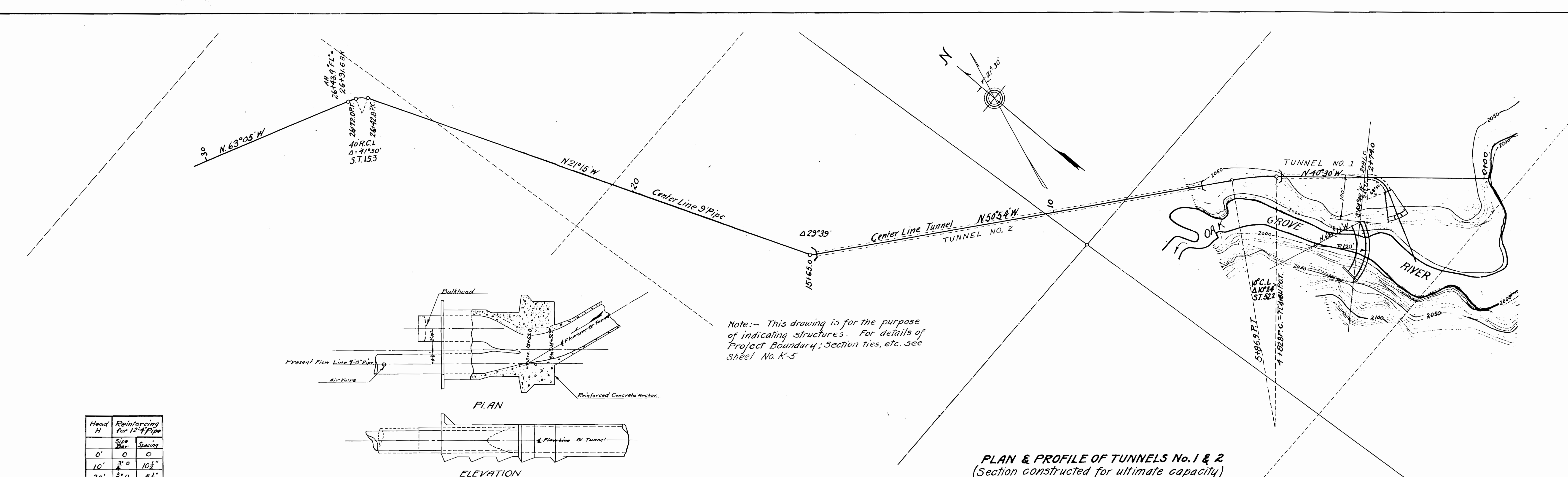
LAKE HARRIET CAPACITY CURVE

VERTICAL CONTROL ON PGE. DATUM —
 P.G.E. DATUM IS 6.686 ABOVE U.S.G.S. 1940 DATUM
 AT POWER HOUSE.

REVISED OCTOBER 1985
 SHEET 2 OF 19 SHEETS

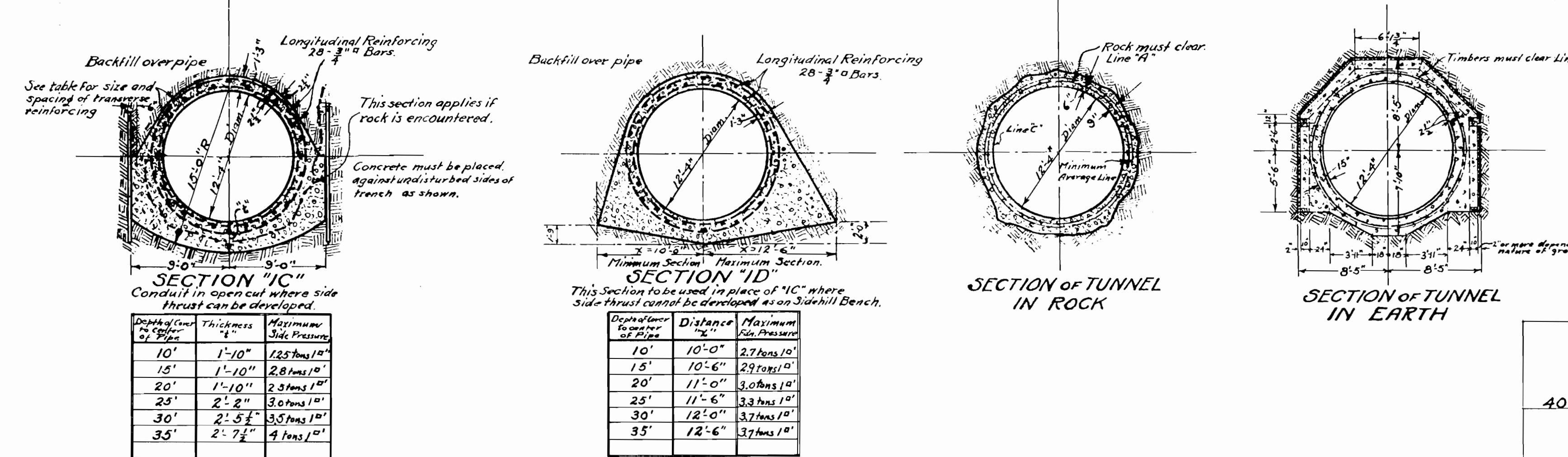
PROJECT NO. 135 OREGON
 PORTLAND GENERAL ELECTRIC COMPANY
 OAK GROVE PROJECT
HARRIET DAM, PLAN AND SECTIONS

FERC 135-164 EXH. L-2
 SUPERSEDES 135-114



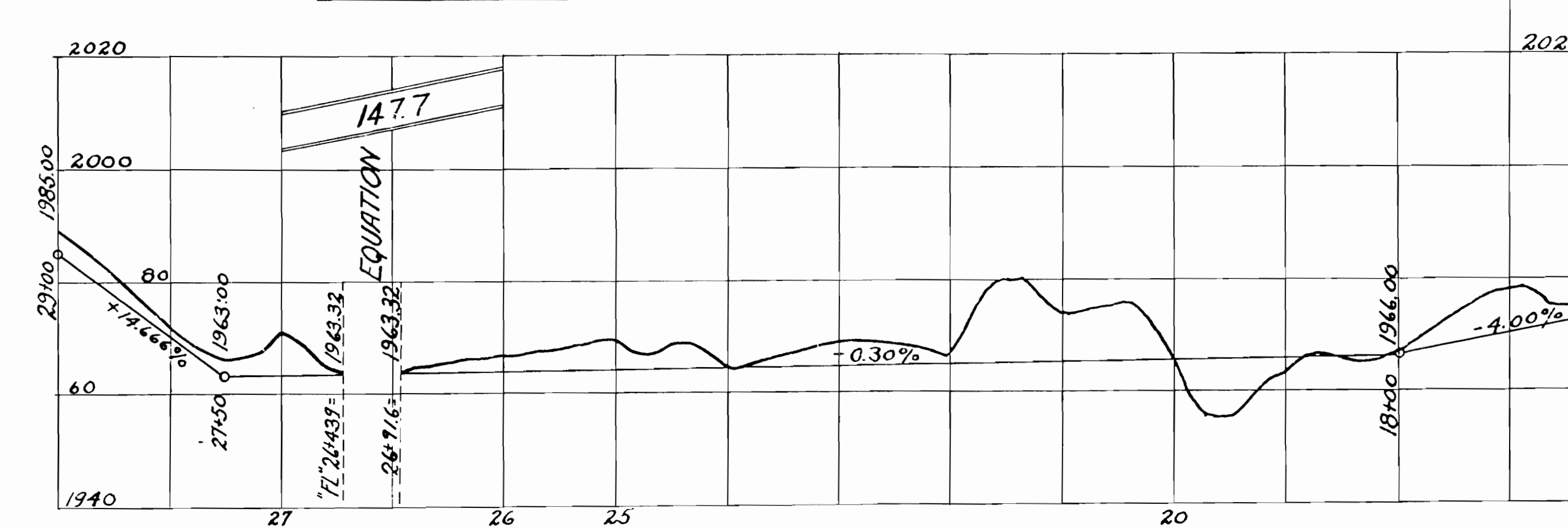
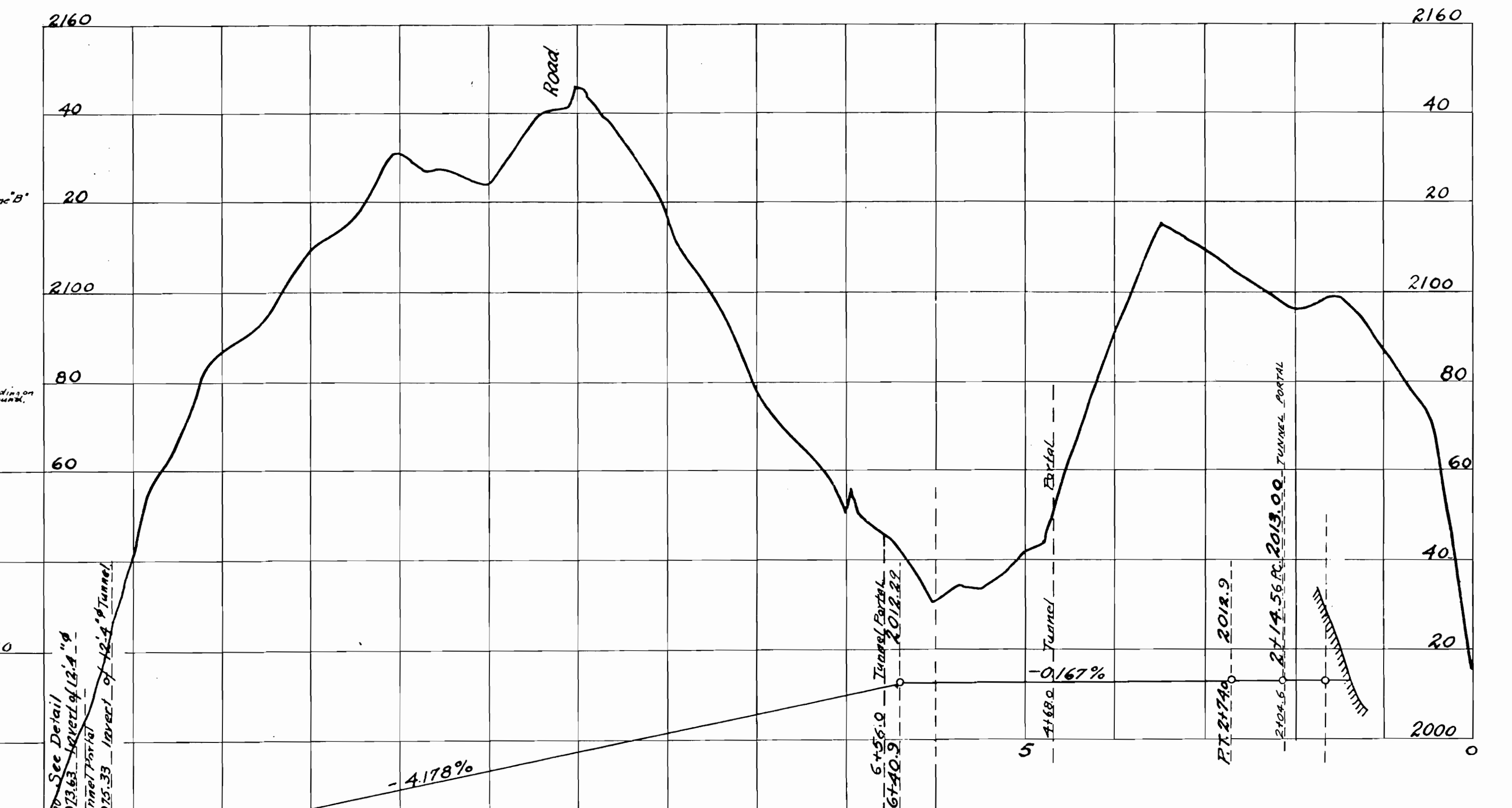
Head H	Reinforcing for 12" Pipe
Spacing	Spacing
0'	0
10'	2" @ 10"
20'	2" @ 5"
30'	1" @ 6"
40'	1" @ 4"
50'	1" @ 6"
60'	1" @ 4"

TABLE OF TRANSVERSE REINFORCING
 Head "H" equals static head on 6" of pipe less 2/3 of depth of ledge rock, curve over top of pipe. Breadth "B" equals static head. Spacing given is distance between transverse bars measured along pipe whether single or double row.



Depth of Tunnel	Thickness	Maximum Side Pressure
10'	1'-10"	185 lbs/ft ²
15'	1'-10"	28 lbs/ft ²
20'	1'-10"	28 lbs/ft ²
25'	2'-2"	30 lbs/ft ²
30'	2'-5"	35 lbs/ft ²
35'	2'-7"	4 lbs/ft ²

Depth of Tunnel	Distance	Maximum Side Pressure
10'	10'-0"	27 lbs/ft ²
15'	10'-0"	29 lbs/ft ²
20'	11'-0"	30 lbs/ft ²
25'	11'-6"	33 lbs/ft ²
30'	12'-0"	37 lbs/ft ²
35'	12'-6"	37 lbs/ft ²

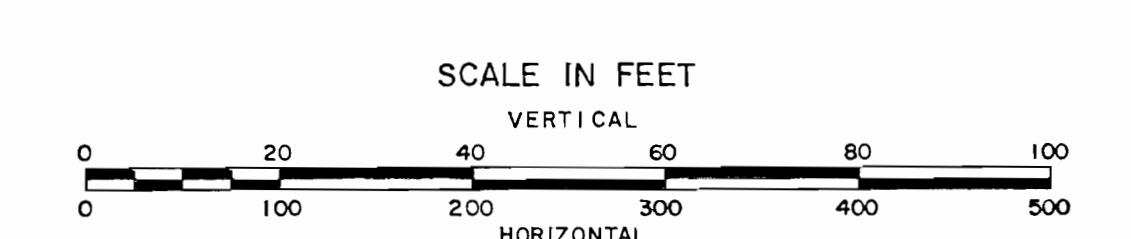


I CERTIFY THAT I SUPERVISED THE PREPARATION OF THE EXHIBIT DRAWINGS, AND THAT THEY ACCURATELY SHOW THE PRINCIPAL STRUCTURES AND APPURTENANT WORKS AS OBTAINED FROM THE RECORDS OF DESIGN AND CONSTRUCTION DRAWINGS IN THE PORTLAND GENERAL ELECTRIC COMPANY FILES.

N. W. Pettijohn
 N. W. PETTIJOHN

REGISTERED PROFESSIONAL ENGINEER
 STATE OF OREGON
 No. 215
 N. W. PETTIJOHN

PETTIJOHN ENGINEERING CO., INC.
 WAS RETAINED BY THE LICENSEE TO PREPARE THE EXHIBIT MAPS REFERRED TO ABOVE.



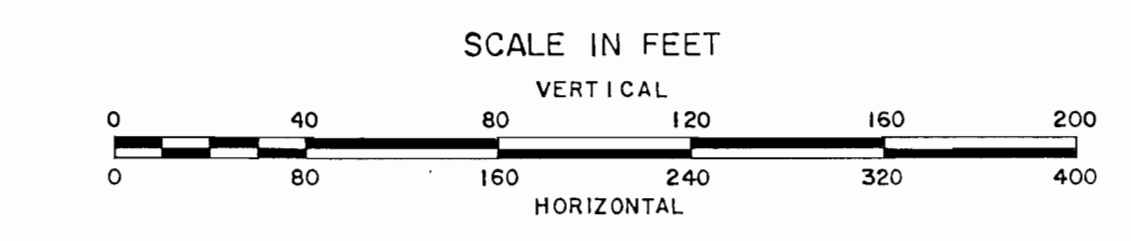
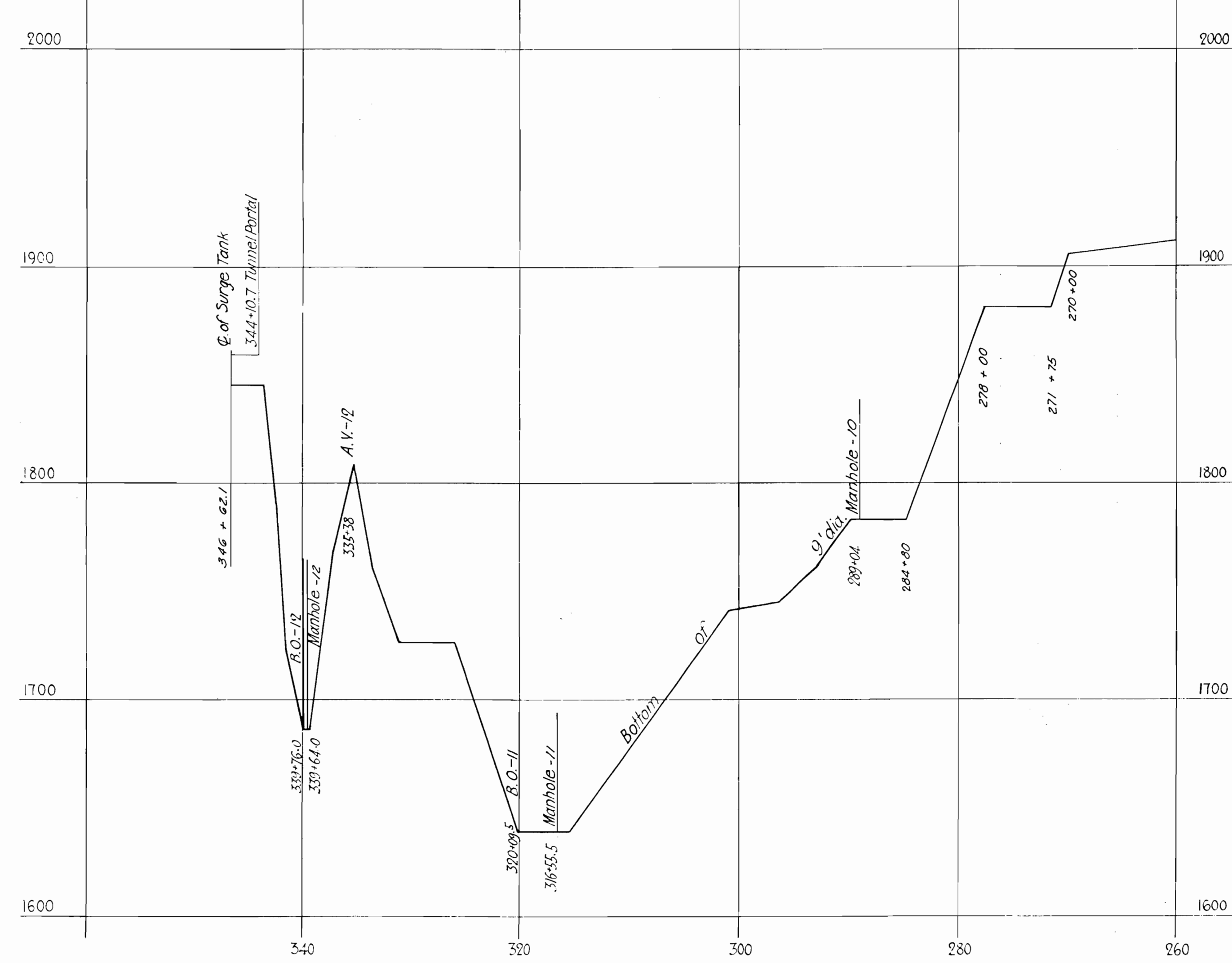
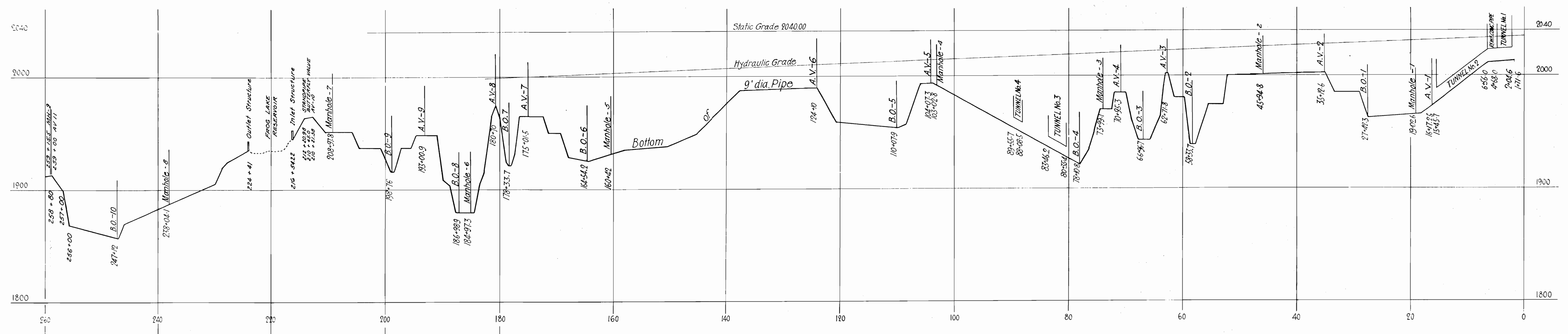
VERT. CONTROL ON P.G.E. DATUM
 P.G.E. DATUM IS 6.686 ABOVE U.S.G.S. 1940 DATUM AT POWERHOUSE.

THIS DRAWING IS PART OF THE APPLICATION FOR A NEW LICENSE MADE BY THE UNDERSIGNED THIS 16th DAY OF FEBRUARY, 1970.

PORTLAND GENERAL ELECTRIC COMPANY
 By *Waldemar Deton*
 VICE PRESIDENT

EXHIBIT "L" SHEET 3 OF 19 SHEETS
 (A REVISION OF FORMER EXHIBIT H-3 SHEET 21A)

PROJECT NO. 135 OREGON
 PORTLAND GENERAL ELECTRIC COMPANY
 OAK GROVE PROJECT
 FLOW LINE TUNNELS, PLAN, PROFILE AND SECTIONS



VERT. CONTROL ON P.G.E. DATUM
P.G.E. DATUM IS 6.686 ABOVE U.S.G.S. 1940 DATUM.
AT POWER HOUSE.

I CERTIFY THAT I SUPERVISED THE PREPARATION OF THE EXHIBIT DRAWINGS, AND THAT THEY ACCURATELY SHOW THE PRINCIPAL STRUCTURES AND APPURTENANT WORKS AS OBTAINED FROM THE RECORDS OF DESIGN AND CONSTRUCTION DRAWINGS IN THE PORTLAND GENERAL ELECTRIC COMPANY FILES.

N. W. Pettijohn
N. W. PETTIJOHN

PETTIJOHN ENGINEERING CO., INC.
WAS RETAINED BY THE LICENSEE TO PREPARE THE EXHIBIT MAPS REFERRED TO ABOVE.



THIS DRAWING IS PART OF THE APPLICATION FOR A NEW LICENSE MADE BY THE UNDERSIGNED THIS 16th DAY OF FEBRUARY, 1970.
PORTLAND GENERAL ELECTRIC COMPANY
Waldemar A. Peterson
VICE PRESIDENT

EXPLANATION
A.V. Indicates Air Vents.
B.O. Indicates Drains.
Manholes

GENERAL NOTES
9 Ft. Dia. Steel Pipe.— Total Length 6.11 Miles.— Total Weight 9,400 Tons.
Thinnest Plate 3/32 Inches.— Thickest Plate 1/16 Inch
Radius all Curves (Vert. and Hor.) 40 Ft. Most allowable angle at any seam 6°30'
Painting, inside: Shop Coat Detroit No. 501. Two Field Coats Detroit No. 827
Painting, outside: Shop Coat Detroit No. 501.
In Ground, Two Coats Detroit No. 827
Above Ground, One Coat Detroit No. 30

Safe Heads for different Plate Thicknesses and Longitudinal Joints
Internal Diameter of Pipe 108"

Plate Thickness in inches	Type of Longitudinal Joint	Safe Head in Feet	Minimum Elevation of G. of Pipe
9/32	D.R.L.	130.0	1890.0
5/16	D.R.L.	143.5	1896.5
3/16	T.R.L.	154.0	1886.0
3/8	D.R.L.	172.0	1868.0
5/8	T.R.L.	179.8	1860.2
7/16	D.R.L.	185.5	1844.5
7/16	T.R.L.	216.0	1824.0
7/16	D.R.B.	222.5	1817.5
7/16	T.R.B.	244.5	1795.5
1/2	D.R.B.	246.0	1794.0
1/2	T.R.B.	273.5	1766.5
1/2	Q.R.B.	285.5	1754.5
9/16	T.R.B.	310.5	1729.5
9/16	Q.R.B.	314.0	1726.0
5/8	Q.R.B.	356.0	1684.0
1/2	Q.R.B.	387.5	1643.5

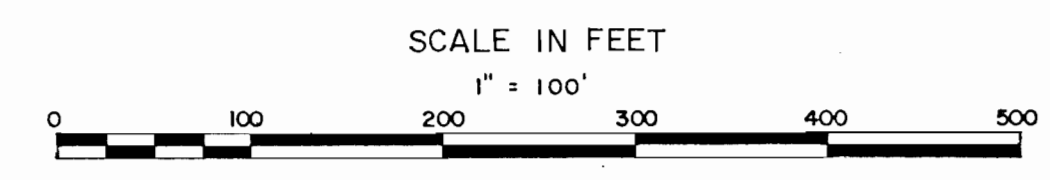
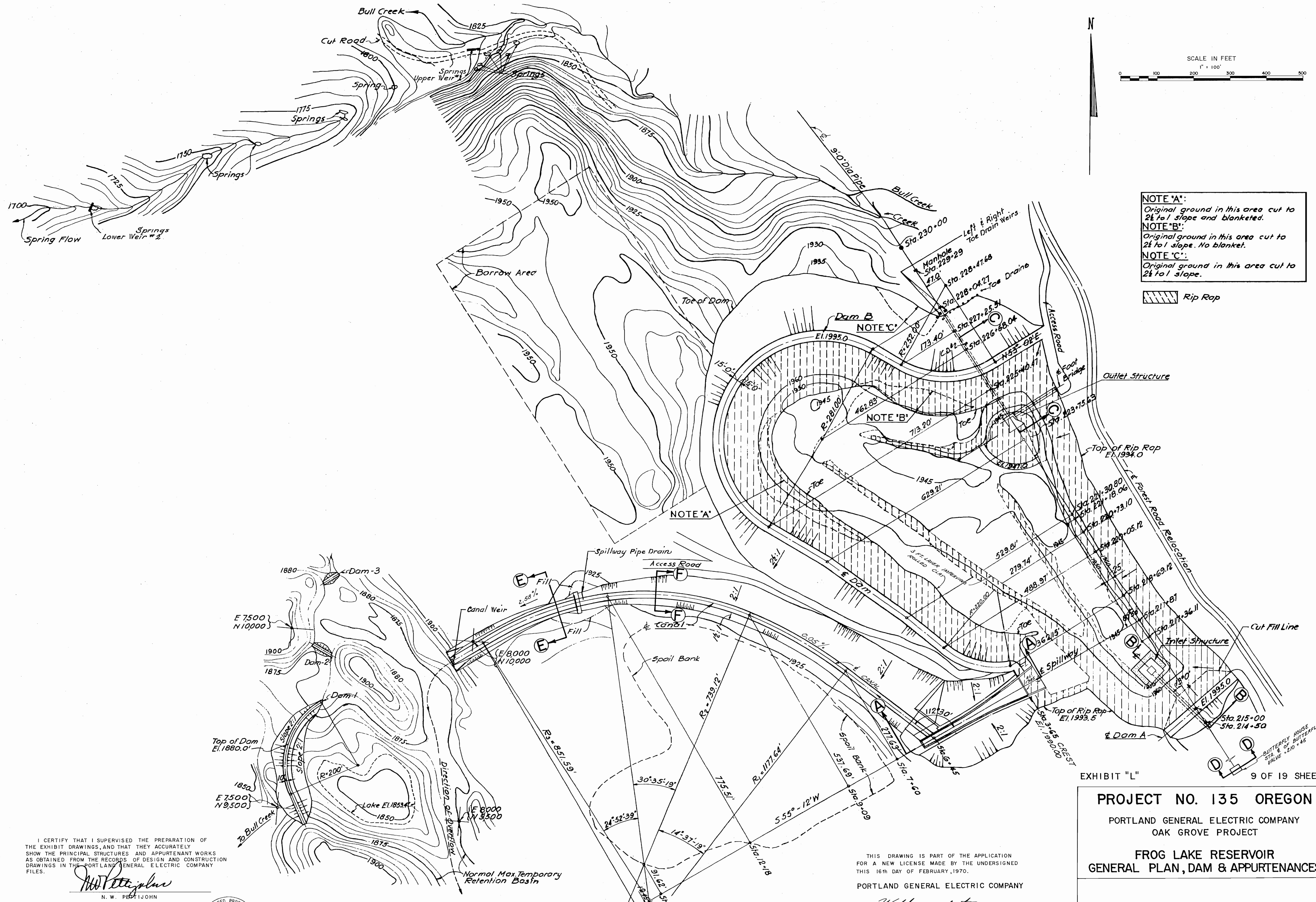
Working Stress in Pipe for safe head is 1/4 average ultimate strength.
At Gripple Cr. Siphon 1/16 Q.R.B. Pipe used down to invert Grade Elevation 1639.00.

EXHIBIT "L" SHEET 4 OF 19 SHEETS
(A REVISION OF FORMER EXHIBIT "F" SHEET 19B)

PROJECT NO. 135 OREGON
PORTLAND GENERAL ELECTRIC COMPANY
OAK GROVE PROJECT
**9 FOOT DIAMETER FLOW LINE PROFILE
MANHOLE & DRAIN LOCATIONS**

Oak Grove

Exhibit	L	Sht 9	of 19
Exhibit	L	Sht 11	of 19
Exhibit	L	Sht 12	of 19
Exhibit	L	Sht 10	of 19
Exhibit	K	Sht 11	of 18



NOTE 'A':
Original ground in this area cut to 2 1/2 to 1 slope and blanketed.

NOTE 'B':
Original ground in this area cut to 2 1/2 to 1 slope. No blanket.

NOTE 'C':
Original ground in this area cut to 2 1/2 to 1 slope.

Rip Rap

I CERTIFY THAT I SUPERVISED THE PREPARATION OF THE EXHIBIT DRAWINGS, AND THAT THEY ACCURATELY SHOW THE PRINCIPAL STRUCTURES AND APPURTENANT WORKS AS OBTAINED FROM THE RECORDS OF DESIGN AND CONSTRUCTION DRAWINGS IN THE PORTLAND GENERAL ELECTRIC COMPANY FILES.

N. W. Pettijohn
N. W. PETTIJOHN



PETTIJOHN ENGINEERING CO., INC. WAS RETAINED BY THE LICENSEE TO PREPARE THE EXHIBIT MAPS REFERRED TO ABOVE.

VERT. CONTROL ON P.G.E. DATUM
P.G.E. DATUM IS 6.686 ABOVE U.S.G.S. 1940 DATUM AT POWERHOUSE.

THIS DRAWING IS PART OF THE APPLICATION FOR A NEW LICENSE MADE BY THE UNDERSIGNED THIS 16th DAY OF FEBRUARY, 1970.

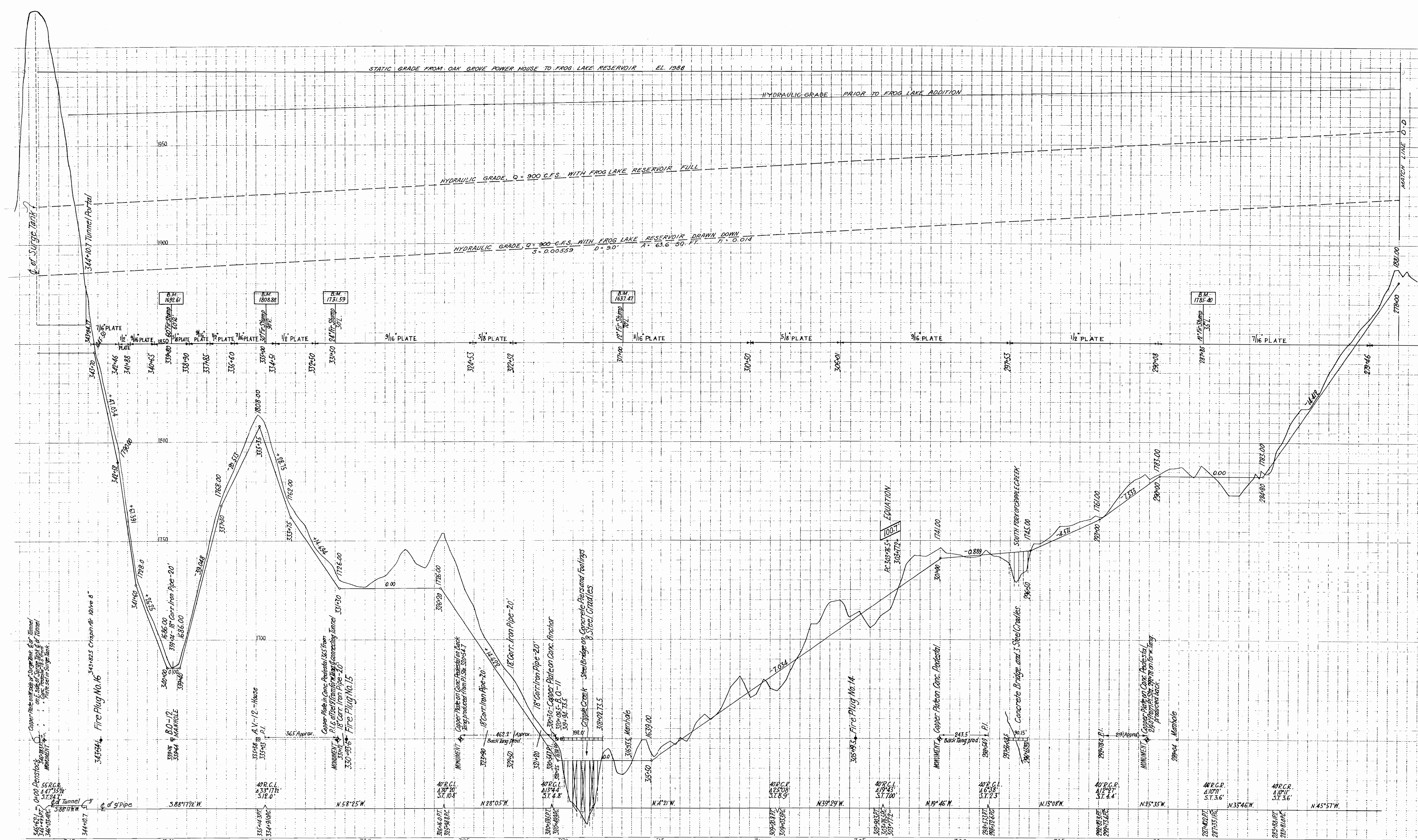
PORTLAND GENERAL ELECTRIC COMPANY

Waldemar A. Sten
VICE PRESIDENT

EXHIBIT "L" 9 OF 19 SHEETS

PROJECT NO. 135 OREGON
PORTLAND GENERAL ELECTRIC COMPANY
OAK GROVE PROJECT
FROG LAKE RESERVOIR
GENERAL PLAN, DAM & APPURTENANCES

BUTTERFLY HOUSE
S.E. 1/4 OF BUTTERFLY
VALLEY T.210 N.45

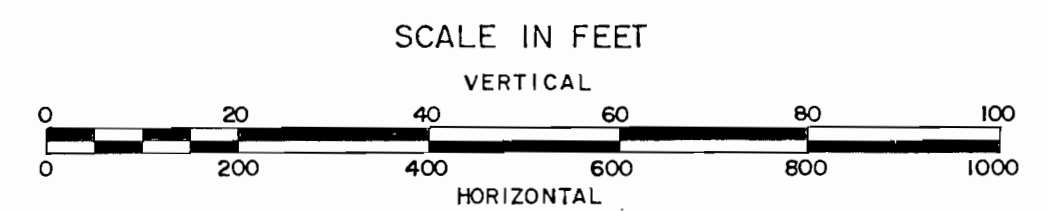


I CERTIFY THAT I SUPERVISED THE PREPARATION OF THE EXHIBIT DRAWINGS, AND THAT THEY ACCURATELY SHOW THE PRINCIPAL STRUCTURES AND APPURTENANT WORKS AS OBTAINED FROM THE RECORDS OF DESIGN AND CONSTRUCTION DRAWINGS IN THE PORTLAND GENERAL ELECTRIC COMPANY FILES.

N. W. Pettijohn
N. W. PETTIJOHN



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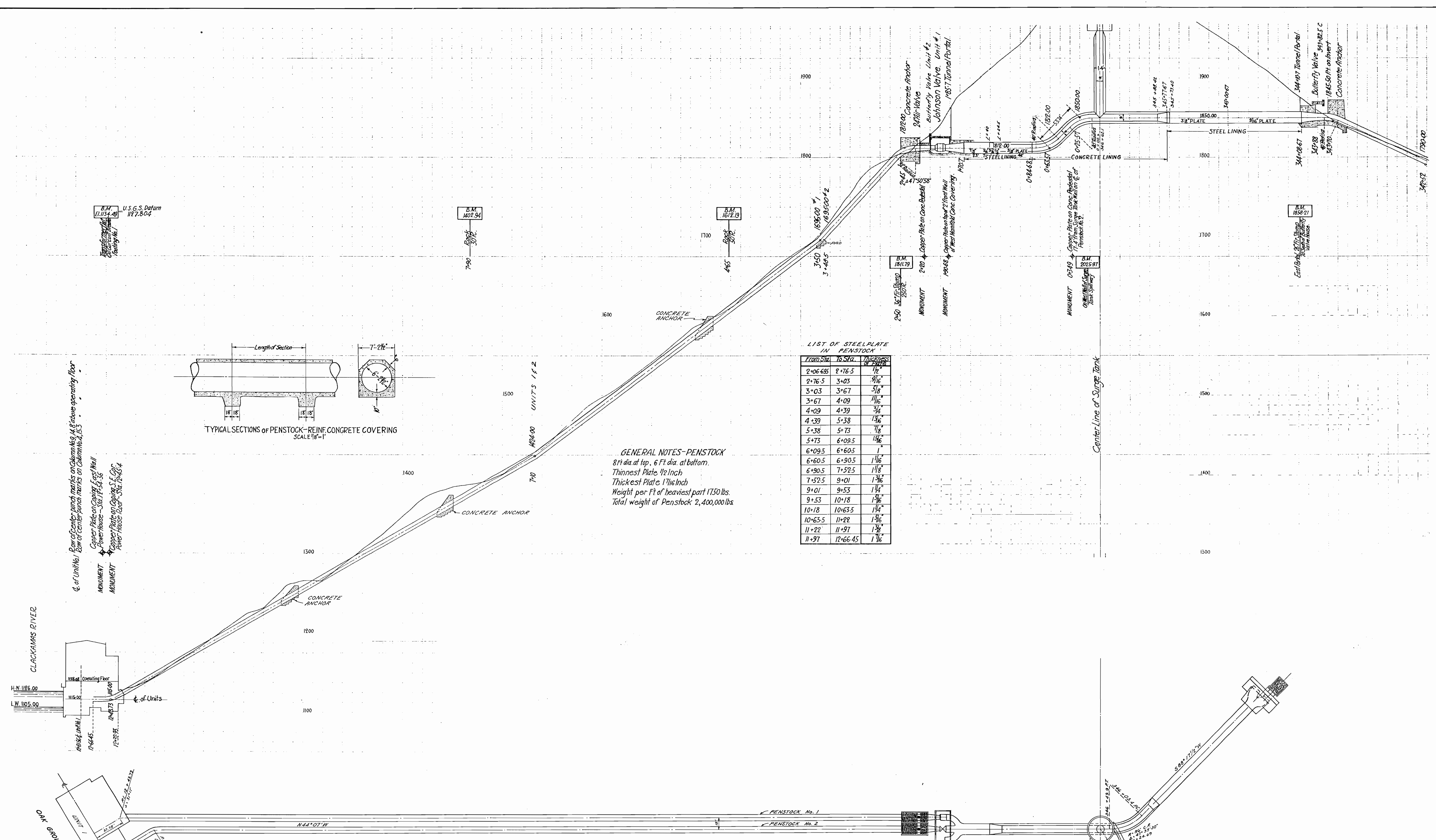
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PORTLAND GENERAL ELECTRIC COMPANY

Waldemar Soto
VICE PRESIDENT

EXHIBIT "L" SHEET 11 OF 19 SHEETS
(A REVISION OF FORMER EXHIBIT "F" SHEET 19)

PROJECT NO. 135 OREGON
PORTLAND GENERAL ELECTRIC COMPANY
OAK GROVE PROJECT
**FLOW LINE INTAKE TO SURGE TANK
PLAN & PROFILE**



B.M. 15154.00 U.S.G.S. Datum
1877.804

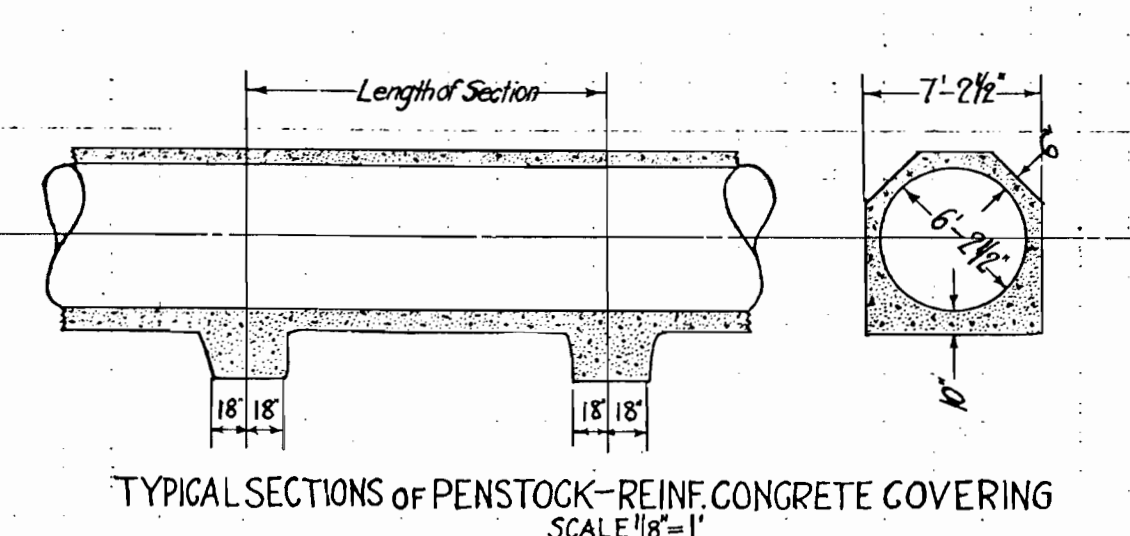
B.M. 1628.94
790 - 802.50

B.M. 1672.00
1100 - 802.50

B.M. 1811.79
290 - 802.50

B.M. 1825.97
0349 - 802.50

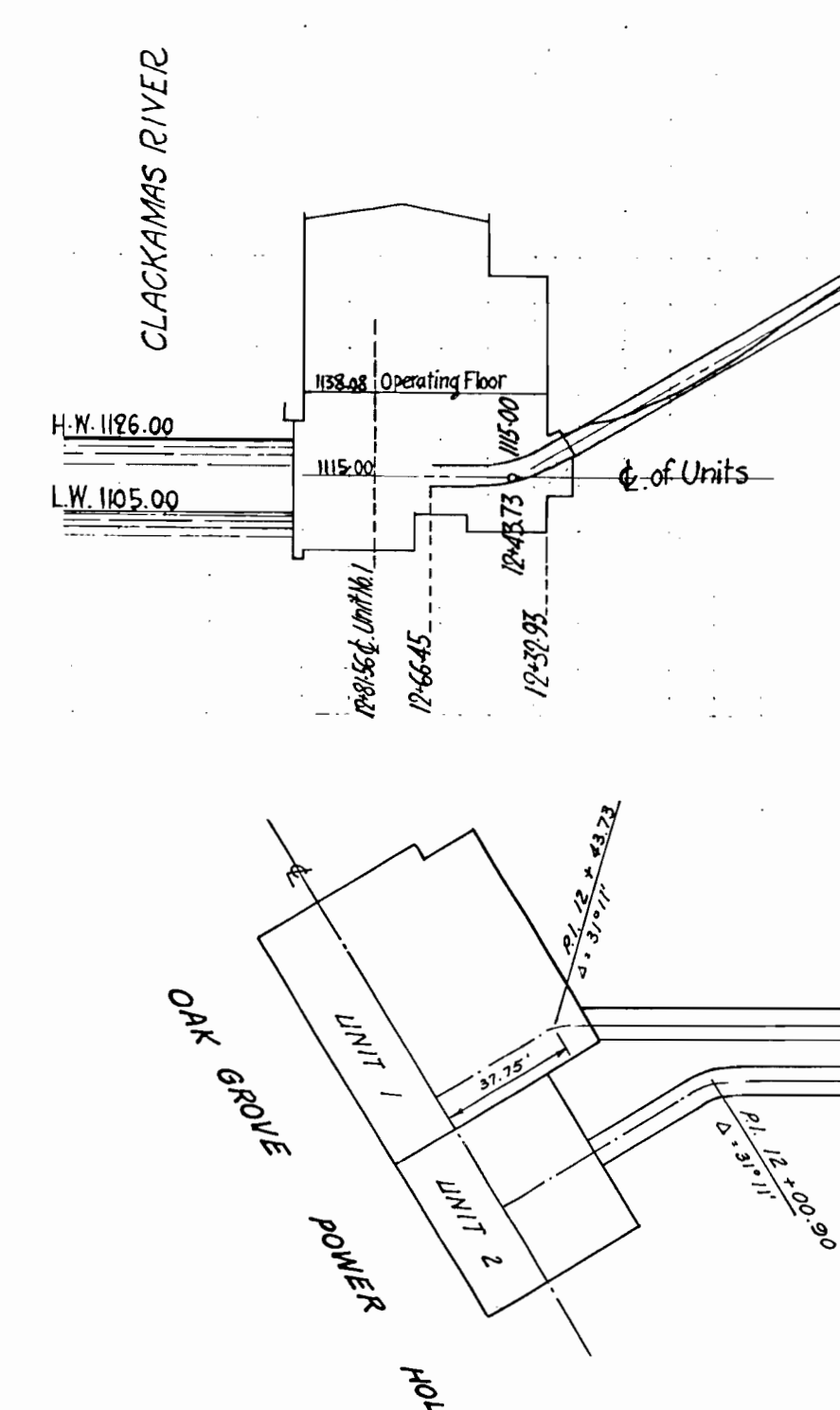
B.M. 1856.21
1845.50 - 802.50



GENERAL NOTES-PENSTOCK
 8 1/4 dia at top, 6 Ft dia. at bottom.
 Thinnest Plate 1/2 Inch
 Thickest Plate 1 1/2 Inch
 Weight per Ft of heaviest part 1750 lbs.
 Total weight of Penstock 2,400,000 lbs.

LIST OF STEEL PLATE IN PENSTOCK

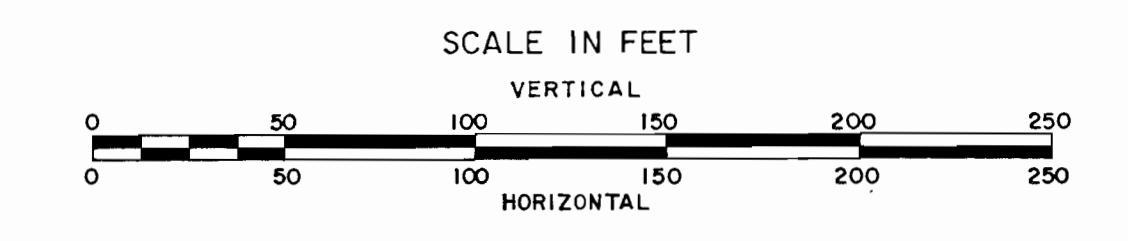
From Sta.	To Sta.	Thickness	Notes
2+06.68	2+16.5	1/2"	
2+16.5	3+05	3/16"	
3+05	3+67	5/8"	
3+67	4+09	1 1/16"	
4+09	4+39	3/4"	
4+39	5+38	1 3/16"	
5+38	5+73	1/8"	
5+73	6+09.5	1/8"	
6+09.5	6+60.5	1"	
6+60.5	6+90.5	1 1/16"	
6+90.5	7+52.5	1 1/8"	
7+52.5	9+01	1 3/16"	
9+01	9+53	1 1/4"	
9+53	10+18	1 3/16"	
10+18	10+63.5	1 1/4"	
10+63.5	11+22	1 3/16"	
11+22	11+91	1 3/8"	
11+91	12+66.45	1 1/8"	



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N. W. Pettijohn
 N. W. PETTIJOHN

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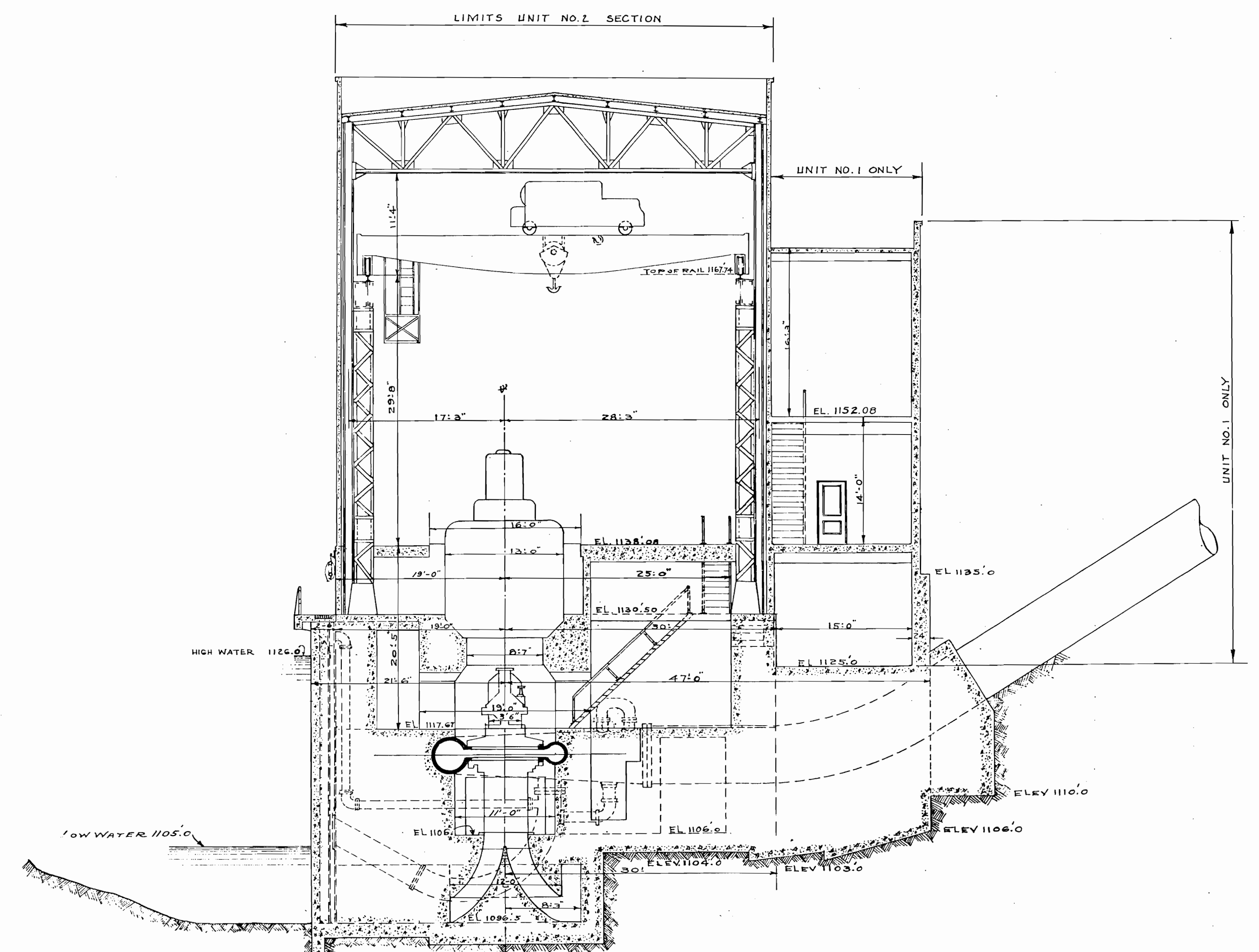
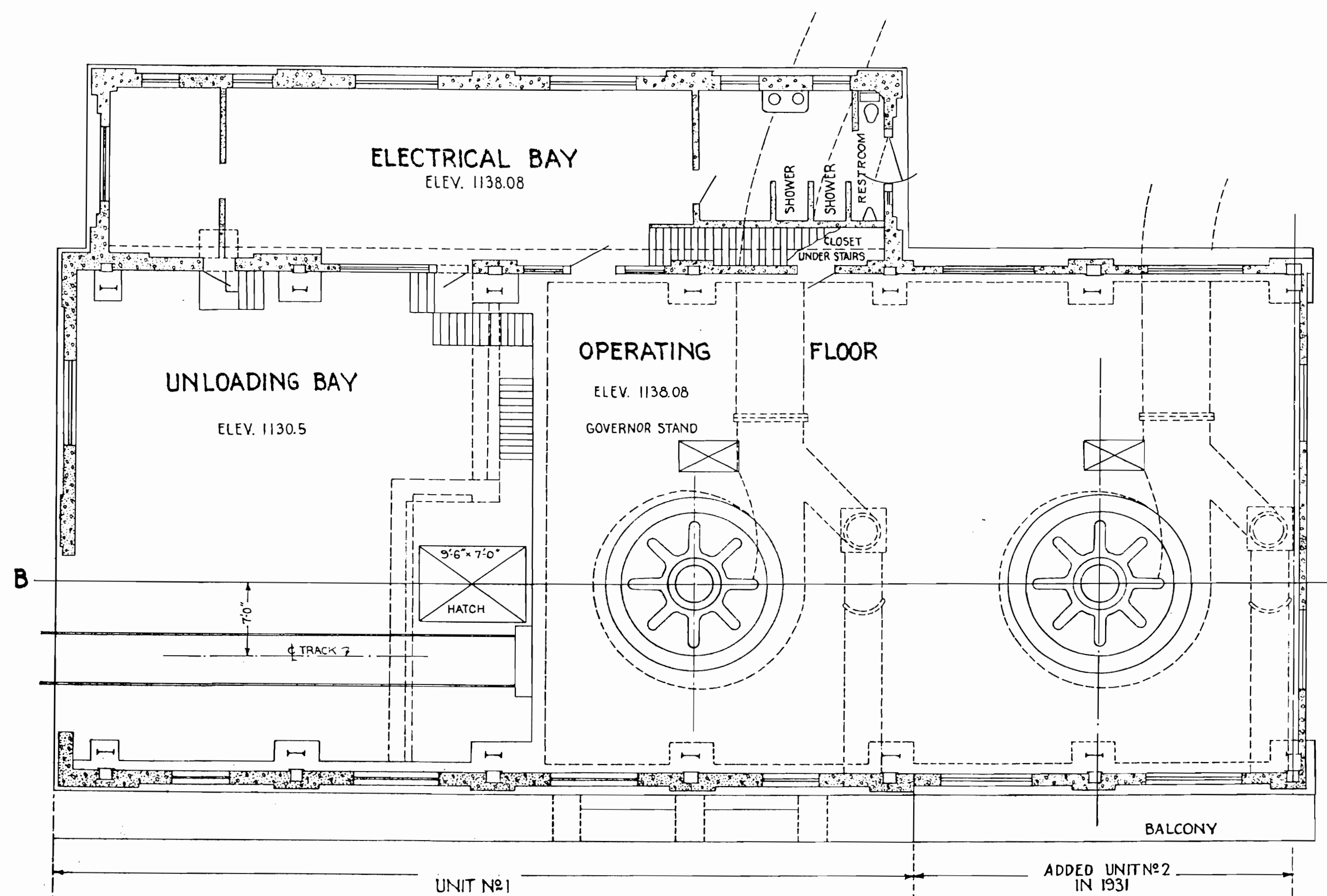
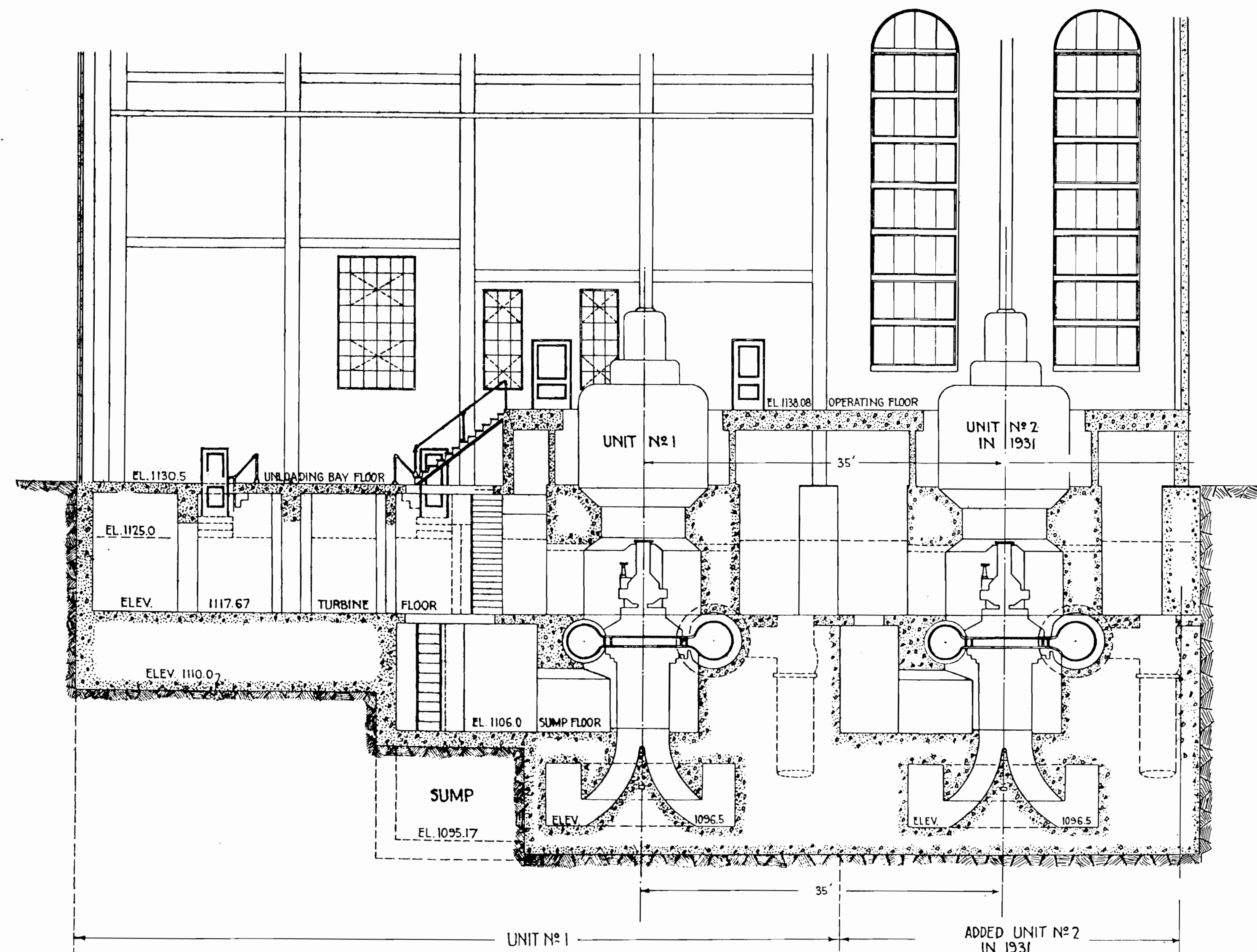
PORTLAND GENERAL ELECTRIC COMPANY

By *Waldemar A. Peterson*
 VICE PRESIDENT

EXHIBIT "L" SHEET 12 OF 19 SHEETS
 (A REVISION OF FORMER EXHIBIT "F" SHEET 19A)

PROJECT NO. 135 OREGON
 PORTLAND GENERAL ELECTRIC COMPANY
 OAK GROVE PROJECT
**SURGE TANK AND PENSTOCKS
 PLAN & PROFILE**





SECTION ON CENTER LINE UNIT NO. 1 & NO. 2

THIS DRAWING IS PART OF THE APPLICATION FOR A NEW LICENSE MADE BY THE UNDERSIGNED THIS 16th DAY OF FEBRUARY, 1970.

PORTLAND GENERAL ELECTRIC COMPANY

By *William J. ...*
VICE PRESIDENT

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N. W. Pettijohn
N. W. PETTIJOHN

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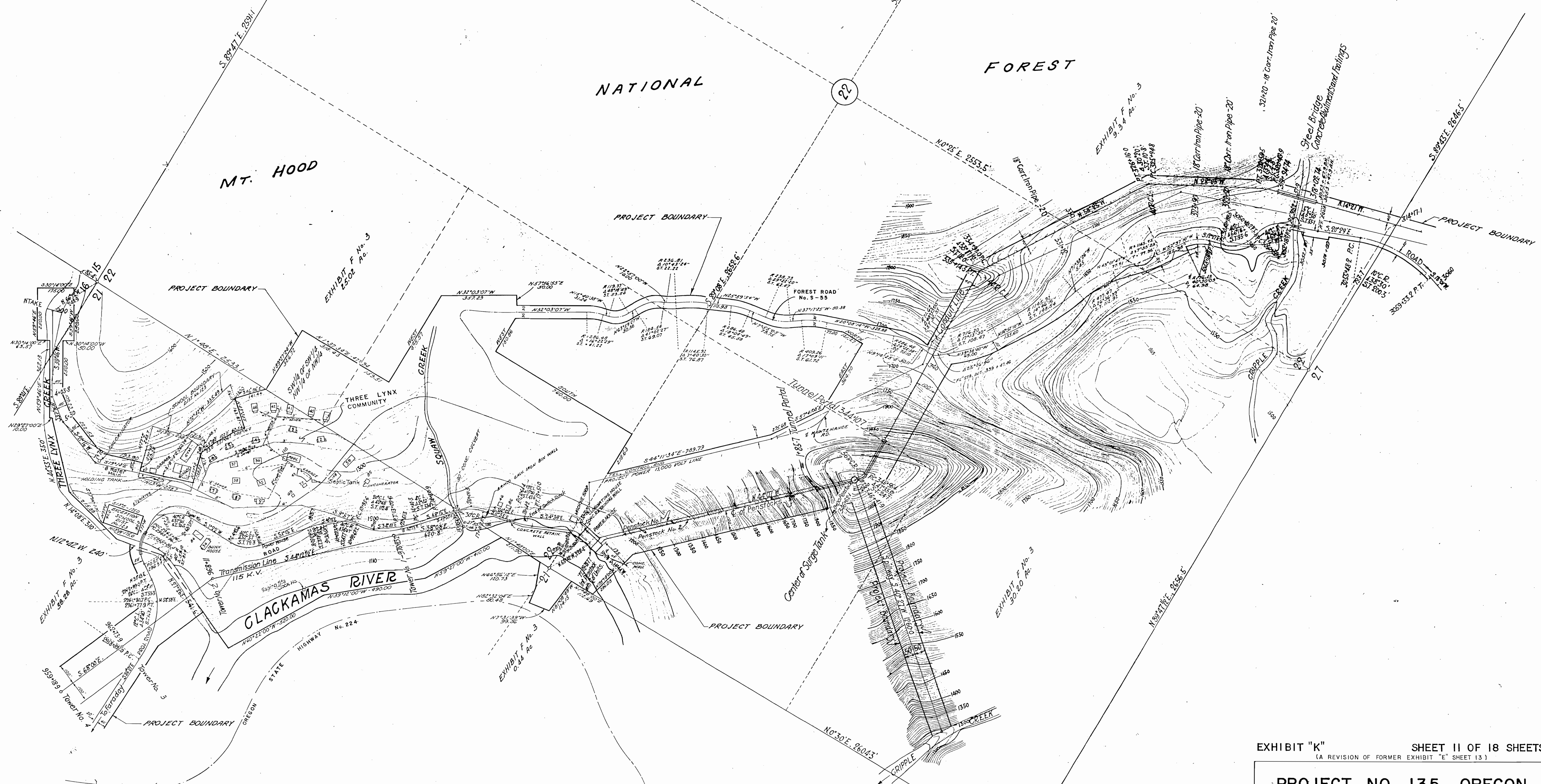
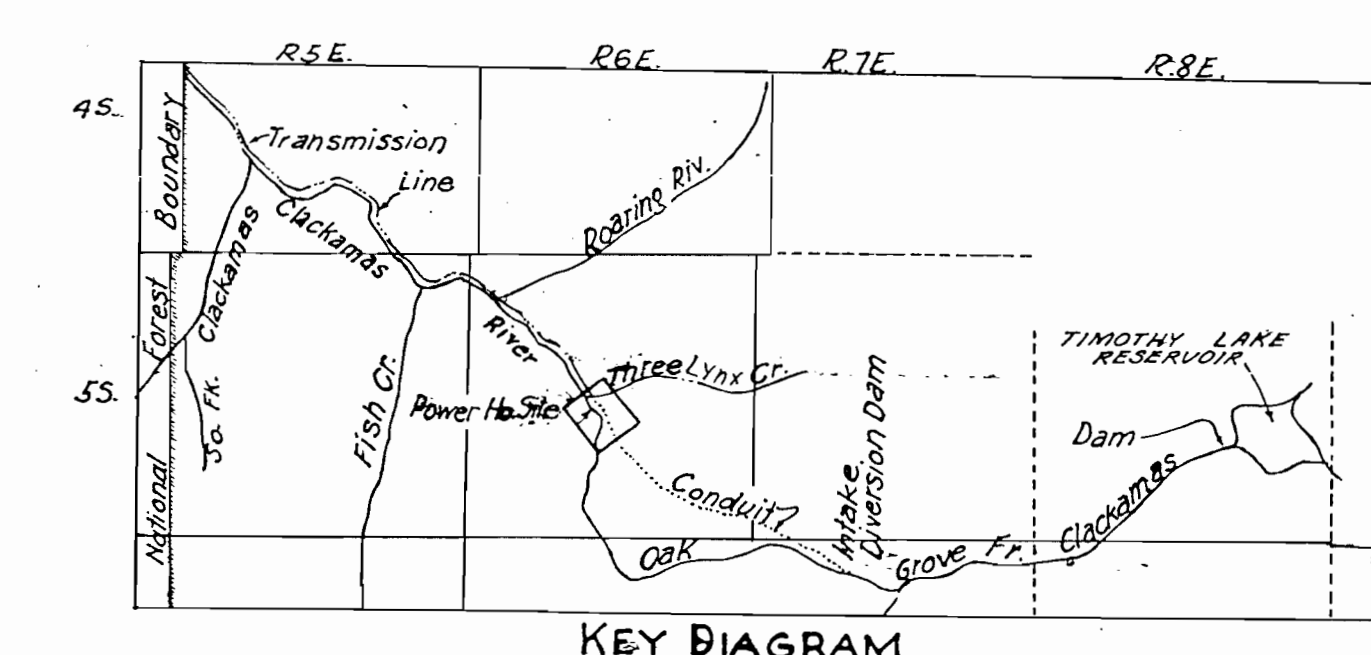
EXHIBIT "L" SHEET 16 OF 19 SHEETS
(A REVISION OF FORMER EXHIBIT H-2 SHEET 20B)

PROJECT NO. 135 OREGON

PORTLAND GENERAL ELECTRIC COMPANY
OAK GROVE PROJECT

**POWER HOUSE
PLAN & SECTIONS**

T. 5 S. R. 6 E. W. M.



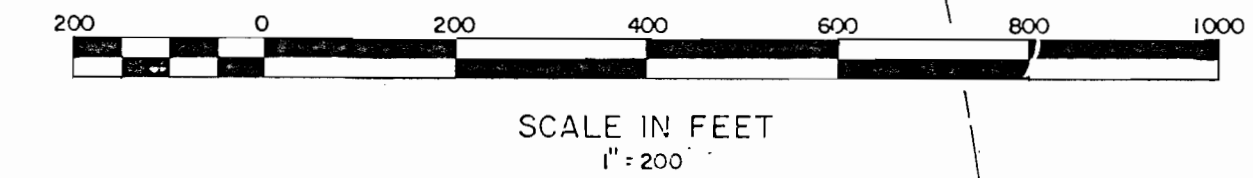
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N. W. Pettijohn
N. W. PETTIJOHN

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T. 5 S., R. 6 E. W. M.
GLACKAMAS COUNTY, OREGON



VERT. CONTROL ON P.G.E. DATUM
P.G.E. DATUM IS 6.686 ABOVE U.S.G.S. 1940 DATUM
AT POWER HOUSE.

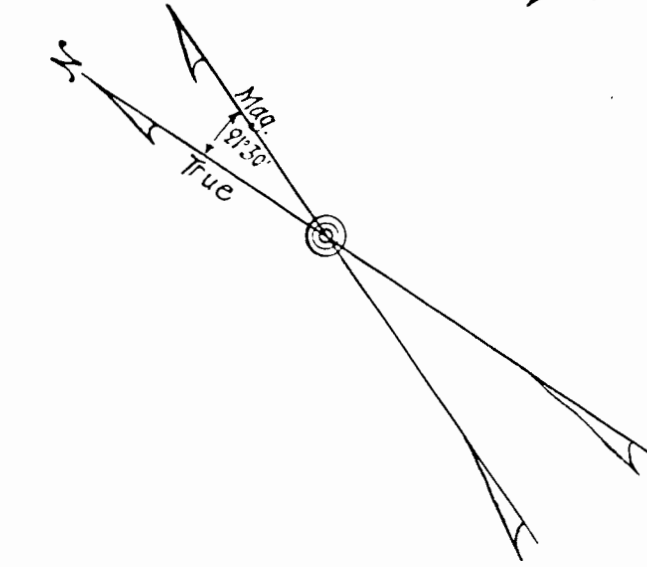


EXHIBIT "K" SHEET 11 OF 18 SHEETS
(A REVISION OF FORMER EXHIBIT "E" SHEET 13.)

PROJECT NO. 135 OREGON
PORTLAND GENERAL ELECTRIC COMPANY
OAK GROVE PROJECT
PROJECT AREA & PROJECT BOUNDARY

THIS DRAWING IS PART OF THE APPLICATION FOR A NEW LICENSE MADE BY THE UNDERSIGNED THIS 16th DAY OF FEBRUARY, 1970.

PORTLAND GENERAL ELECTRIC COMPANY
By *Waldemar Paton*
VICE PRESIDENT

135-F

ATTACHMENT C

CHAIN OF TITLE

<u>Date</u>	<u>Action</u>
11/11/07	S.W. Curtis posts Oak Grove Notice of Appropriation.
11/25/07	S.W. Curtis transfers Oak Grove appropriation right to Southern Pacific Company.
10/05/08	S.W. Curtis posts Three Link Notice of Appropriation. S.W. Curtis transfers Three Link appropriation right to Southern Pacific.
06/11/11	Southern Pacific Company transfers Oak Grove and Three Link rights to Portland Railway Light & Power Company ("PRL&P").
04/26/24	PRL&P name changed to Portland Electric Power Company ("PEPCo").
03/05/30	PEPCo name changed to Pacific Northwest Public Service Company.
03/15/33	Pacific Northwest Public Service Company name changed back to PEPCo.
11/15/48	PEPCo transfers water rights to Portland General Electric Company ("PGE") as part of an asset distribution plan.