



Northern Pacific Railway Company.
Engineering Department Records.

Copyright Notice:

This material may be protected by copyright law (U.S. Code, Title 17). Researchers are liable for any infringement. For more information, visit www.mnhs.org/copyright.



N. P. 1757
6-24

OFFICE OF

CHIEF ENGINEER

FILE NO.

8226-1

SUBJECT:

Columbia Basin Development

8226-1

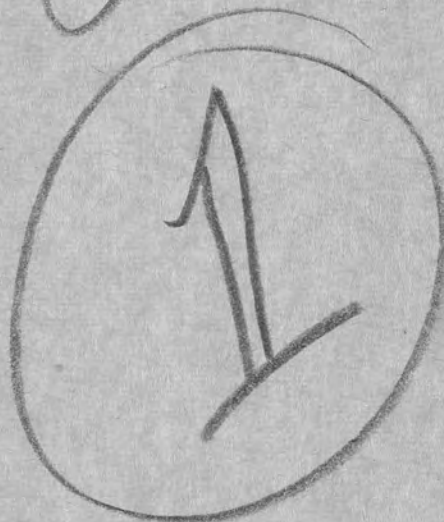
To Dec 31st 1948.

Per File 8731 Curana Coulee Dam

B-2

Closed

8 2 2 6



8731

Seattle Journal of Commerce, Dec 30th, 1948

BIDS ON NORTH DAM SCHEDULED TO BE CALLED ON DECEMBER 31

Denver Office of Bureau of Reclamation to Ask Figures

Bids are scheduled to be invited Dec. 31 for the contract to construct the 1350-ft. earth-fill North dam in the million-acre Columbia Basin project, bureau of reclamation officials announce. The Denver office will issue the call for bids.

The dam will contain 1,191,000 cubic yards of earth and rock. It will block the famed upper Grand coulee, three miles from Grand Coulee dam.

The 94-foot high earth-fill will form the northerly barrier for the 27-mile equalizing reservoir of the irrigation system.

Completion time is 600 days.

Estimated quantities include: 1,245,000 cu. yds. excavation, all classes; 1,191,000 cu. yds. earthfill in embankment, all classes; 26,000 cu. yds. placing riprap; 80,000 lbs. furnishing and placing reinforcing steel; and 1400 cu. yds. concrete in footings and structures.

The 10,000-foot south dam for the reservoir is nearing completion at Coulee City.

Mr. Blum
note 9/12/70

(Handwritten mark)

OFFICE OF THE ENGINEER
JAN 2 1910
RECEIVED

Journal of Commerce
Jan 1910

BBmm
What does
reconciled "at
the technical
level mean".

Prize rights
are not settled
on that level

MM

CHIEF OF BUREAU OF
DEC 17 1948
NY

8731

Mr. Haur:

Mr. Blum
note
JW 12/10Here is something
for the book

12/15

B.B.

Seattle Journal of Commerce, Dec 9th, 1948

Reclamation Bureau, Army Agree on Basin Developing Program

SPOKANE.—All technical differences in the multi-million dollar Columbia basin development plans of the corps of engineers and the U. S. bureau of reclamation have been reconciled as the result of meetings between representatives of the two agencies on the technical level, according to an announcement made jointly here yesterday by Col. Theron D. Weaver, North Pacific division engineer of the corps of engineers and R. J. Newell, regional director of the bureau.

The heads of the two agencies said various engineering phases of the corps' Columbia river review report and the bureau's comprehensive basin development study were discussed in detail by engineers of the respective agencies. Analysis of the two plans in these joint discussions revealed only minor engineering or technical deviations and these have been satisfactorily resolved, they declared.

Both plans call for construction of multiple-purpose dams and other improvements on the Columbia river and its tributaries. The engineers' review report announced last Nov. 8 recommends immediate authorization of seven new dams, in addition to those now authorized or under way, and construction of levees in a comprehensive plan in the interest of flood control, navigation, irrigation, power and other uses, Col. Weaver and Newell said.

The bureau of reclamation's program, first announced about a year ago, also recommends construction

of new multiple-purpose projects, emphasizing reclamation but also providing various other benefits in a comprehensive multi-million dollar development plan. The two plans complement each other and nowhere are there to be found any major differences from an engineering or technical standpoint or in the primary purposes of each of the various projects considered.

Irrigation of 800,000 acres of new land and the addition of 4,300,000 kilowatts of power generating capacity is being planned for the Pacific Northwest, a bureau of reclamation official said here yesterday.

The new seven-year federal reclamation program was outlined before the Western States Chemurgy clinic by E. N. Torbert, regional planning engineer for the bureau of reclamation.

Torbert said the program would cost approximately \$919,000,000 over the seven-year period, plus \$348,000,000 to complete the projects at a later date.

Purpose of the program is to meet needs for expanded national agriculture production, farm and employment opportunities for veterans and others, and power for industry, farms and homes. Gross farm income from the proposed irrigation plus land now suffering water shortages, would total \$53,000,000 annually, Torbert said.

Torbert pointed out that the proposed projects would be subject to congressional approval. It is part of an over-all development program for the 17 Western states, the Boise, Ida., speaker said.

Torbert also outlined the department of interior's comprehensive plan to develop the Columbia river drainage basin, stressing the basin-wide financial pooling program. This would make possible, through revenues from the sale of power dams, the construction of worthy power projects otherwise economically impossible.

CHIEF ENGINEER

DEC

13

1948

FOR FILE BY

THE JOURNAL OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Combined Bid of \$7,614,729 Is Low to Build 2.3 Mile Siphon

Figures Held

The Utah Const. Co., San Francisco, and Winston Bros. Const. Co., Ephrata, submitted a low combined bid of \$7,614,729 under Plan 1 for the contract to construct the 2.3 mile Soap Lake siphon for the bureau of reclamation, Frank A. Banks, district manager of the bureau, reported yesterday. Utah-Winston Bros.' proposal was \$91,000 lower than a bid submitted by Guy F. Atkinson, Bressi & Brevanda & E. C. Gordon, Banks said.

While no action has been recommended by the bureau, Banks said that the bids under plan 2, which called for a combination of reinforced-steel pipe and plate-steel pipe, and which were higher than plan 1 figures, will not be considered. Additional time was requested by contractors submitting proposals under the second plan, Banks stated.

The Utah-Winston Bros. bid was: schedule No. 1, \$2,544,850; and schedule No. 2, \$5,422,330. They authorized a deduction of 6½ per cent of their schedule No. 2 figures providing they were awarded the contracts for both schedules.

The combine headed by Guy F. Atkinson bid on schedules Nos. 1 and 2 respectively, was: \$2,550,180 and \$5,156,440.

Concrete Pipe

Plan one calls for a reinforced-concrete pipe the full 12,180-ft. length of the siphon. Part of this would be lined with 6,000,000 pounds of plate steel. This plan includes

furnishing and placing 25,600,000 pounds of reinforcing steel.

Other bids submitted under plan one, were:

General Const. Co.-J. F. Shea-Morrison-Knudsen - J. E. Terteling & Sons, schedule No. 1, \$2,585,400; schedule No. 2, \$5,126,620.

United Concrete Pipe Corp.-Stolte Inc.-Haddock Engr. Ltd. & Associates, No. 1, \$3,068,300; and No. 2, \$5,821,500.

Plan two provided for bids on three schedules. The figures received were as follows:

Schedule No. 1

Utah Const. Co.-Winston Bros., \$2,616,650.

Schedule No. 2

Scheumann & Johnson, \$843,060; Utah Const.-Winston Bros., \$866,280; and C. J. Montag & Sons, \$1,094,460.

Schedule No. 3

American Pipe Const. Co., \$6,792,516; Consolidated Western Engr.-Chicago Bridge & Iron & Associates, \$6,890,000; and Southwest Welding & Mfg. Co., \$7,289,000.

Following are the quantities involved under each of the two plans:

Plan 1

Schedule (1) — Reinforced concrete pipe: Excavation, 168,000 cu. yds.; furnishing and placing reinforcing steel, 10,300,000 lbs.; concrete, 32,000 cu. yds.

Schedule (2) — Reinforced concrete pipe, plate-steel lined: Excavation, 310,000 cu. yds.; furnishing and installing plate-steel liner, 6,000,000 lbs.; concrete, 43,200 cu. yds.; furnishing and placing reinforcing steel, 15,300,000 lbs.

Plan 2

Schedule (1) — Reinforced concrete pipe: Excavation, 173,000 cu. yds.; furnishing and placing reinforcing steel, 10,800,000 lbs.; concrete, 33,000 cu. yds.

Schedule (2) — Anchors and pedestals for plate-steel pipe: Excavation, 165,000 cu. yds.; furnishing and placing reinforcing steel, 900,000 lbs.; concrete, 19,000 cu. yds.

Schedule (3) — Plate-steel pipe: Furnishing and erecting 22.3-foot diameter plate-steel pipe including supports, 8100 ft.

The big siphon, with a maximum diameter of 25 feet, will handle 28,250 gallons of water a second—sufficient to serve 280,000 acres of land in the basin. The structure will be the largest of its kind in the Pacific Northwest.

Under the bureau's specifications, a contractor would have 950 days, or two years and seven months, to complete the work.

NOV 22 1961
FBI
10

RECEIVED by [illegible] to [illegible]

8731

Saint Paul 1, Minnesota,
11 November 1948.

MR. J. H. POORE:

Returning attached Corps of Engineers public notice of November 8th which reports on a comprehensive multiple-purpose plan of development for the Columbia River Basin:

You will be interested to know that the Bureau of Reclamation also recently submitted a similar report for this basin which although varying in detail includes the main structures proposed by the Army. The Bureau report includes the construction of many irrigation projects not included by the Army.

You will note that the cost of the Army program is estimated at \$3,030,475,700. The Bureau's program is estimated to cost \$5,598,494,000. Both estimates are on the basis of January 1948 costs which, of course, are low compared with those now in force. Also we should bear in mind that most construction agencies commonly underestimate the cost of their structures.

These two programs are at the moment mainly a gleam in the eyes of the Engineers, but nevertheless in view of the Democratic party pledges we must assume that construction will begin on some, if not all, of the proposed works. We may as well determine how these works will effect us some time in the future and brace our feet accordingly.

I am returning your copy of this report as I already have one.

JWH:LBS

Att.

cc: JWMorrison

BBlum

B

Seattle Journal of Commerce, Nov 8th, 1948

COLUMBIA RIVER AND TRIBUTARY REPORT OF U. S. ENGINEERS PENDING

Outline of Works Shows \$3-Billions Needed for Development

The corps of engineers' review report on the Columbia river and its tributaries will be disclosed at a public meeting in Portland, Wednesday, Nov. 10, of the Columbia Basin inter-agency committee, according to announcement by Colonel Theron D. Weaver, North Pacific division engineer. The details of this \$3,000,000,000 plan and its accomplishments, the projects recommended for construction, and the estimated costs are given in the official public notice which is now being issued.

The magnitude of the projects recommended in this report is of vital importance in the development of the Pacific Northwest. The tragic consequences of the devastating flood of 1948 accentuated the need for revision of the "308" report published in 1932 in order that measures for protection from floods, provision of additional power required to support the expanding economy of this region, and for necessary navigation, irrigation and other improvements is responsive to the developments actually essential today and during

the next twenty years and, furthermore, outline a coordinated pattern for still longer range future developments, Colonel Weaver said. The corps of engineers initiated such review in July, 1943, and the present report is, therefore, prepared from an engineering and economic standpoint and timed to reflect the post-war and first flood conditions.

Flood Protection

Protection against major damage from floods in the Columbia river basin is assured under the plan recommended in the report. Colonel Weaver emphasized, however, that the plan is thoroughly multiple-purpose and not a flood control or a power plan alone. In many basins flood control and power cannot be provided from the same reservoirs. In fact, it is generally impossible except where enough storage is provided for both purposes separately, it is con-

tended. In the Columbia basin, however, due to the stream characteristics peculiar to the region, a thoroughly coordinated plan has been worked out which allows efficient power production by the same series of reservoirs which provide flood control. The reliability of the flood control plan has been made of paramount importance. The bureau of reclamation's Hungry Horse and Grand Coulee projects, as a result of cooperative investigations, have been planned for use as fully effective component parts of flood control as well as of the power and irrigation plans. A measure of the effectiveness of the system as a whole is given by the fact that whereas, under present conditions, the 1948 flood greatly reduced the power output obtainable from the Bonneville and Grand Coulee dams, in a future flood of this type the dams that constitute the "Main Control Plan" will control such floods, but the system as a whole will maintain its power output unimpaired. With the reservoirs constructed, the crest of a flood comparable to that of 1948 would be reduced about six feet at Portland. In the case of greater flood, such as that of 1894, the reservoir system now planned would still be adequate to control them without material damage after strengthening of the levee systems.

Power Shortage

There is a serious power shortage in this region in which both publicly and privately owned power supply keeps falling further behind the requirements of a rapidly growing population to an extent which is already retarding industrial development. The demand for additional supplies of cheap power is region-wide, coming alike from labor and from management, from the farms, from all political parties and from both public and private utilities. This power shortage, while of real immediate concern to business and the general public in the Pacific Northwest, is also encountered elsewhere in the United States. In the Columbia basin, however, potential resources for low-cost power are available, and plans are submitted in this report for the installation of over six million kilowatts of additional hydroelectric generating capacity at costs far below the cost of such power in other regions.

lished by congress in the cases of Bonneville and McNary dams.

High Costs of Work

The high construction costs now prevailing, which have almost doubled since Bonneville and Grand Coulee were built, are partially offset by the operating efficiency of the new planned power system. These figures, and the corroborating estimates of the Bonneville Power Administration and Federal Power Commission, showing that this entire amount of power will be required from federally-owned facilities within the period 1962 to 1970, forecast a continued expansion of the energy base for an industrial development and a high standard of living for the Pacific Northwest. This requires no far-fetched effort of the imagination, but simply practical engineering planning to support the present trend, the engineers state.

A departure from previous policy is also advocated in the report; namely, that where there is a net annual tax loss suffered by local governmental units as a direct result of the construction of the multiple-purpose reservoirs in the main control plan, it is recommended that the chief of engineers be authorized to pay to the states concerned sums equivalent to such net tax losses and that such payments be considered as charges against the power features of the respective projects. This provision, while costing the federal government only relatively minor amounts annually, should be helpful to certain areas, especially upstream reservoir areas, which in some cases do not tangibly benefit from the reservoir construction.

The report gives endorsement and place in the planning for such vital elements as the preservation and enhancement of the fisheries, soil conservation, pollution abatement, major drainage and recreation.

*Mr. Blum
note
gtd 11/9
B*

Seattle Journal of Commerce, Nov 8th, 1948

Of national interest is the untapped resource of 30 million kilowatts of hydro-electric power in the Columbia basin. A series of dams, augmenting the now existing or authorized projects, has been carefully planned to produce a combined output of over 10 million kilowatts of firm power, taking full advantage of multiple-purpose development giving other benefits. Even at current high construction prices, these dams can provide this amount of power for distribution on a wholesale rate of approximately \$21.00 per kilowatt year, which is believed to be far lower than the rate obtainable at potential large-scale power developments in other regions. The estimates are based on reimbursement of all costs allocated to power, as was estab-



NOV 12 1941
FBI

8731

Train 4, Yellowstone division,
October 18, 1948

MR. J. T. DERRIG:
MR. H. M. TREMAINE:
MR. H. M. SCHUDLICH:

The U S Geological Survey has issued a circular letter advising of their studies of ground water in the Quincy Basin, etc. as covered in a report entitled

"GROUND WATER IN THE QUINCY BASIN, WAKLUKE SLOPE
AND PASCO SLOPE SUBAREAS OF THE COLUMBIA BASIN
PROJECT, WASHINGTON"

The studies were made in co-operation with the Hydraulics Division of the Washington State Department of Conservation and Development. The report describes the geological framework of the area and the geological and hydrologic characteristics that control the ground waters of the subareas. Tables give data on the depth of wells, size of casings, type and depth of aquifers, ground water levels, etc. etc.

Copies of the report are not available for distribution but may be consulted at the Division of Hydraulics, Olympia; the libraries of the State College at Pullman and State University at Seattle; the Bureau of Reclamation at Ephrata, and at Coulee Dam, as well as at 603 Post Office Bldg., at Portland.

bb/s



DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

GEOLOGICAL SURVEY

For release OCTOBER 15, 1948.

GROUND WATER IN COLUMBIA BASIN, WASHINGTON, DESCRIBED

The most readily accessible ground-water body in the Quincy Basin is that which follows the deposits in the glacial-outwash channel now used by Crab Creek. Ground water also occurs, but at greater depth and under more complex conditions, in the Columbia River basalt, which underlies the whole basin area. This information is found in a report entitled "Ground water in the Quincy Basin, Wakluke Slope and Pasco Slope subareas of the Columbia Basin Project, Washington," release of which has been announced by William E. Wrather, Director of the Geological Survey, United States Department of the Interior. The report gives the findings of a study of the area by the Geological Survey in cooperation with the Hydraulics Division of the Washington State Department of Conservation and Development. It is the chief work so far completed toward the solution of Problem 22 (Ground Water Facts) of the Columbia Basin Joint Investigations.

The report describes the geologic framework of the area and the geologic and hydrologic characteristics that control the ground waters of the subareas. A geologic map shows the distribution of the rock units in the Columbia Basin Project area. The report lists the available data on water wells and shows the location of typical wells and springs within the three areas planned for early development. The tables give data on depths of the wells, size of casing, type and depth of aquifers encountered by the wells, ground-water levels, type of pump, use of water, and other pertinent details. Also included are descriptive tabulations on the principal springs.

The ground water is generally of fair quality, but in many places it is hard and often is of a marked sodium-bicarbonate type. Chemical analyses are listed for water samples from type wells and springs. Suggestions are given for development of the ground water, based on the ground-water facts and on the expected types of farm-home arrangements.

Copies of the report are not available for distribution but may be consulted at the Division of Hydraulics in Olympia, the libraries of the State College in Pullman and the State University in Seattle, the Bureau of Reclamation in Ephrata and Coulee Dam, and the Geological Survey, 2209 Federal Works Building, Washington, D. C., and 603 Post Office Building, Portland, Oregon.

X X X



8731

Seattle Journal of Commerce, Oct 13th, 1948

\$13,300,000 CONTRACT FOR BASIN CONSTRUCTION PROGRAM PLACED

Peter Kiewit-Morrison- Knudsen to Begin Work This Week

Award of a \$13,348,419 contract to Peter Kiewit Sons Co., Omaha, and the Morrison-Knudsen Co., Inc., Hoge Bldg., Seattle, for construction work in the vicinity of Coulee dam was announced yesterday by the Bureau of Reclamation.

Principal items in the big contract, largest award in the Columbia basin project since the completion of the Grand Coulee dam, will include completion of the big pumping plant for the project's irrigation system, excavation of the first portion of the feeder canal, construction of a 2,000,000-gallon water storage reservoir, building of the headworks for the feeder canal, and the installation of discharge pipes for the pumping plant.

A. O. Strandberg, project manager for the contractors, estimated that 700 men would be employed at the peak of construction on the three-year job. He said work under the \$13,300,000 contract would be carried on simultaneously with a \$2,789,000 job held by the two firms here covering completion of the east switchyard, east control-bay building, and related structures.

Strandberg said many of the employees needed under the new contract would be obtained locally. Persons interested in employment should see union representatives or

call at the companies' offices near the east control bay construction site.

Preliminary work on the big contract probably will get underway this week with the removal of rock in the vicinity of the pumping plant and the feeder canal, Strandberg added.

Mr. Bl...
note 9/15/48
19
B

CHIEF OF ENGINEER
1 OCT 1948
1000

RECEIVED AT THE OFFICE OF THE CHIEF OF ENGINEER



8731
Mable per note
9/15/48 17
Seattle Journal of Commerce, Sept 13th, 1948

Work Proceeds On Columbia Basin Canal



AERIAL VIEW SHOWS WEST CANAL AND SIPHONS ON COLUMBIA BASIN PROJECT

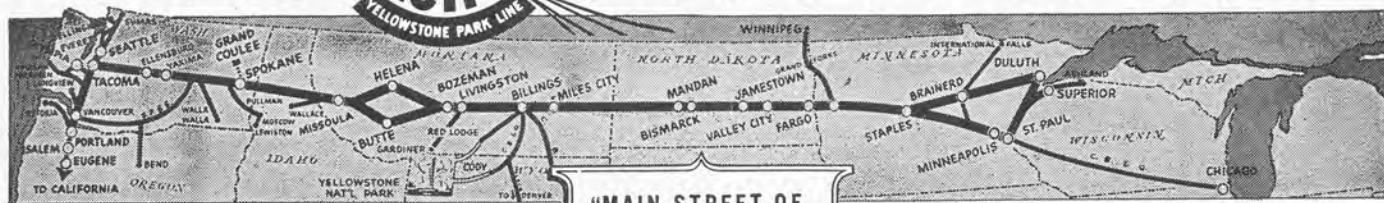
The immensity of the Columbia Basin project construction program in Eastern Washington is reflected in this aerial photograph of part of the West Canal, east of Soap Lake. In the foreground can be seen an open section of the big canal. An earth fill now blocking its path will be removed and a structure built so that the canal will empty into Dry Coulee Siphon No. 1, which is taking shape. The canal has a bottom width of 38 feet and a top width of nearly 100 feet. The siphon is 25 feet in diameter. In the distance is another open section of the canal. Beyond that will be a second siphon. This picture shows only a small portion of the first 5½ miles of the canal which ultimately will be 88 miles long. Winston Brothers Co. and the Utah Construction Co. hold a \$2,871,000 contract for the first section.

2

SEP 1961

U.S. AIR FORCE

The Northern Pacific Northwest



"MAIN STREET OF THE NORTHWEST"

VOL. XXII

No. 9

ST. PAUL, MINN., SEPTEMBER, 1948

\$7,000 for a Drink of Water

Like the Ancient Mariner, new settlers on the Roza division of the Yakima Irrigation project can say there is "water, water everywhere nor any drop to drink."

Irrigation canals run bank-full but water suitable for domestic uses is a problem on much of the land that is coming into cultivation in the central part of the state of Washington, including the enormous Columbia Basin project.

It usually is so far down into the earth in that area to a dependable supply of pure drinking water that the average settler can't afford to have a well drilled. So, people are getting together, forming cooperative associations which spread the cost over several families, thus lightening the cost and making water available under pressure.

The Snipes Creek Water association, Inc., taking its name from a local creek that is dry now, is one of the cooperatives. A. V. Nixon is president and John Cline is secretary-treasurer. A. M. Gage, Jack Trusley, Cliff Trusley and Herbert Swofford are the other members. They put in \$100 each, or \$600. The Farmer's Home Administration, a federal agency, loaned them \$6,400. They had a 469-foot well drilled and cased for \$2,500.



That big grin on A. V. Nixon's face is the tip-off as to how much a good supply of domestic water means to settlers on the Roza division of the Yakima Irrigation project in Washington. Farmer Nixon, who is president of the Snipes Creek Water association, is drawing a cup of cool water for himself in front of the association's pump house, which was built on top of a 469-foot well. Several cooperative groups in the same area have organized to obtain domestic water.

An electric motor, a pump, pressure tank and pump house cost

\$1,900. The balance of their money was spent on 7,000 feet of pipe, 3,500 feet of it being copper tubing. The six members dug the trenches for the pipe and built the pump house.

It cost them, then, \$7,000 to get their first good drink of water that didn't have to be hauled in a tank. The automatic pump was started on January 1, last, and each day since then the cost of that first drink has been diluted more and more, as thousands of gallons have been pumped for home use.

The farmers have, in fact, 20 years time for repaying the government loan. The interest rate is three per cent. Each of the six settler members pays \$75 a year to service the loan and \$2 monthly for power and incidental operating expenses.

The Farmers' Home Administration has made 15 water association loans in the Pacific Northwest. No borrowing group has had any repayment trouble. The government takes a mortgage on the water system in each case.

The Jones Corner Water association, also on the Roza, got a \$4,500 loan, on a 15-year repayment plan, to drill and equip a 260-foot well. There are five members, all farmers. A. Seibert

is president.

Seventeen farmers belong to the

NORTHERN PACIFIC RAILWAY

J. W. HAW.....St. Paul, Minn.
Director

W. J. HUNT.....St. Paul, Minn.
Assistant to the Director

A. J. DEXTER.....St. Paul, Minn.
Agricultural Development Agent

A. R. MIESEN.....St. Paul, Minn.
Agricultural Development Agent

H. W. BYERLY.....St. Paul, Minn.
Immigration Agent

L. S. MacDONALD.....Missoula, Mont.
Agricultural Development Agent

W. P. STAPLETON.....Seattle, Wash.
Western Agricultural Development Agent

KENNETH L. COOK.....Seattle, Wash.
Agricultural Development Agent

This magazine is sent free for five months to those indicating an interest in the Northwest states. On expiration of that period it may be obtained on a yearly basis by sending 25 cents in postage stamps, war savings stamps, coin or money order made out to Northern Pacific Railway. If you wish to renew on a complimentary basis for five months, this may be done by making a written request.

SEPTEMBER, 1948

Whitstrand Heights Water association, Inc. These people raised \$2,-



Joseph Eberhardt, in Thurston county, Washington, has three large propeller-type fans, like this one, placed at one end of his planting of tame blueberries and along one side, on ground that is higher than the peat soil his fruit occupies. Sometimes it gets frosty in the bog when it is 12 degrees warmer on nearby higher ground. A thermostat in the middle of his blueberry field sets off a bell at the house when the temperature hits 34 degrees. After this warning, Eberhardt turns on the fans, which push out cold air and suck in warmth from the higher land. In three years he has had the fans, frost damage has been avoided. His story is told on page 3.

CLOSE-UPS

Short Paragraphs About Agriculture in
Northern Pacific Territory

"I have located on land in northern Idaho," T. O. Lystad, from Colorado, said. "This country around Orofino and Greer has fine climate and many good benchland farms. Almost all fruits and vegetables grow well. All four seasons are moderate and it is about as nice a place to live as any in the United States."

The Lewiston Orchards, a section of small irrigated farms near Lewiston, northern Idaho, interested Vernon Olmstead when he read about it while living at Anchorage, Alaska. Now he has bought one of the farms and has located at Lewiston.

"Your paper, The Northwest, helped us pick this locality," said Phillip S. Butman. The Butmans are Illinois people but they live now on a little farm in King county, east of Seattle, Wash.

From Texas to western Montana is the move Mr. and Mrs. George Cates have made. They bought a ranch 10 miles from Missoula.

C. M. Chisholm, Jr. and his family have found a location they like, 13 miles from Tacoma, Wash. They moved to the Pacific Northwest from Florida this summer.

A Texan from Amarillo has bought an 80-acre farm in Wadena county, Minnesota, where he lives now. His name is C. F. Doty.

Henry J. Kehner, a Chicagoan, said: "From your literature I selected a farm (which you described) and bought it. The land is in Becker county, Minnesota, and we will move there next spring."

Mr. and Mrs. Emil Leischner, who have four children, have moved to a farm they bought in Lewis county, southwestern Washington.

Roy Laird, who is married and has two children, moved from Missouri to eastern Washington, where he has a job testing for a dairy herd improvement association. He expects to go to the Snohomish valley, in western Washington, where he will do the same kind of work. Later, Laird says, he will buy a farm.

A. W. Peltier, formerly a Californian, said: "I have lived at Longview, Wash., two years and have five acres of raspberries just coming into bearing. I purchased land on the Long-Bell time plan."

Blueberries Are His Business

Eberhardt's Unusual Fruit Is Shipped to Many Distant Points;
He Has Started Others Growing This Interesting Crop

Joseph Eberhardt has been growing blueberries more than 20 years on his farm in Thurston county, western Washington. For nearly that long, they have been his principal source of income and it is a very good income, too.

Eberhardt raises blueberries by the acre rather than in small patches. He has seven acres of bearing plants. The ripe fruit is sold all over the Northwest and in California. He has made many successful shipments, also to Michigan, New Jersey, New York and other eastern points by express. Total sales of berries last year amounted to 30 tons, which would fill three railroad refrigerator cars.

No other individual was attempting to cultivate blueberries on a commercial basis in Washington when Eberhardt began doing so. In addition to producing fruit, he has established a nursery and a blueberry breeding department in which he has developed several new varieties that are superior to old ones. Thousands of plants are produced and sold at his farm every year—50,000 of them in 1947, enough to plant 75 acres.

He has become known all over the West as the "blueberry man." Others have taken up the crop as a commercial enterprise, too—enough others so that the Northwest Blueberry Growers' association has been organized.

For beauty in the home garden, or in a hedge, and for a harvest of tasty fruit as well, Eberhardt votes blueberries a wide margin over any other fruit.

In the spring his blueberry bushes (which get five to eight feet tall when mature at eight years of age) are a source of beauty, with their profusion of waxy white flower bells. In summer, large clusters of fruit turn from light green to blue as they ripen. During the fall the foliage changes from green to rich crimson and scarlet.

Eberhardt's cultivated blueberries are not much like the wild ones you gather in the woods. They are bigger, the bushes are taller and the yields are larger. For six weeks every summer, he picks heaping boxes of small-seeded, meaty but sweet and juicy berries, many of them each from half an inch to an inch in diameter. While



Joseph Eberhardt, the "blueberry man" himself, and a five-year-old blueberry plant of the Washington variety, which he developed, along with other varieties—Pacific and Olympia. He has seven acres in bearing, from which he picks 30 tons every year, enough to load three railroad refrigerator cars if they were all ready to go at once. Also Eberhardt, who has been studying blueberries and growing them for over 20 years, sold 50,000 plants, enough for 75 acres, in 1947.

for the average home garden an acre would be much too much, they yield for Eberhardt at the rate of better than 8,000 pounds of fruit an acre.

It isn't too hard to raise blueberries, Eberhardt says, judging by his own experience. First, he says, an acid soil is preferable—at the edge of a peat bog, an alder bottom or a cedar swamp. He raises his on peat land which he cleared but he has had tame varieties do very well on upland soil, too, that has had peat, leaf mold, or rotted sawdust worked into it.

In the spring he sets two-year-old plants four to eight feet apart in rows, with eight feet between rows. He has observed some evidence in favor of pinching the blooms the first season and not letting the young bushes bear until the second year after planting. A 6-10-6 fertilizer is used and Eberhardt has found, too, that barnyard manure is suitable as a top dressing, usually put on during the winter. He has tried cover crops also. However, he likes clean culti-

(Continued on page 8)



Joseph Eberhardt's blueberry nursery is watered frequently with sprinklers. From three wells, Eberhardt fills a 100,000 gallon reservoir near the nursery and a pump then feeds the sprinkler lines when water is needed. For his bearing plants, Eberhardt subirrigates, which is accomplished by running water into perforated lines under the surface of the soil. This water is pumped from his wells, too. Plants in the nursery are from cuttings.



World's Biggest Project

Our Reporter Finds That With \$46,000,000 to Spend in the Present Fiscal Year, Builders are Pushing Construction for Columbia Basin

The other day we had a chance to see the Columbia Basin, in east central Washington, for the first time in 18 months. Our mental powers were taxed to grasp the full extent of immense operations we saw in progress now compared with the little trickle of work that was apparent on the occasion of our previous visit.

Clouds of dust raised in the sagebrush by the equipment of the contractors' crews, each engaged in a job costing a million dollars or more, are seen at a dozen points scattered from Grand Coulee dam to the Potholes, south of Moses lake, a distance of 66 miles as the crow might fly.

What it amounts to is that the biggest irrigation project in the world no longer is in the dream stage or on drawing boards. What the contractors are doing is building it gigantic piece by gigantic piece scattered here and there over the hot, undulating countryside. Later, these enormous segments of construction, along with others yet to be built, seemingly so hit or miss now, finally will fit together

like a fabulous crossword puzzle, just as orderly and as nice as you please.

H. A. Parker, the supervising engineer for the irrigation features of the Columbia Basin project, mentioned in an offhand way this likeness to a crossword puzzle when we dropped in to visit him at Ephrata, where the headquarters for the construction agency, the U.S. Bureau of Reclamation, are located. He gave us a map we never had seen before which makes the parts of the great project quite clear after a little study. We are reproducing the map on the next page, since we think it will make it easier for our readers to grasp what we are going to say from here on in this article.

Finding when we stepped into Parker's roomy office that it is air-conditioned, we heaved a sigh of relief, since the July sun had been cooking us all day. His office is in the new headquarters building at Ephrata, but we understand this still isn't the permanent structure that will house the supervising staff and on-the-spot planning

Recent and Current Happenings in the Columbia Basin

1. Starting work to finish east powerhouse at Grand Coulee dam.
2. Contract let for three power generating units for east powerhouse.
3. Opened gravel pit to furnish material to build pumping plant at Grand Coulee dam.
4. Contract let for six of the 12 pumping units to be installed at Grand Coulee dam.
5. Will finish feeder canal and South Coulee dam this fiscal year.
6. Bacon siphon 50 per cent finished.
7. Bacon tunnel "holed through," but still to be lined.
8. Long lake dam 70 per cent complete.
9. Main canal excavation nearly finished.
10. Six and a half miles of west canal concrete-lined.
11. Twelve miles of east low canal excavated and lining with concrete started.
12. Potholes dam is 70 per cent finished.
13. Will let contract for Soap lake siphon.
14. Will let contract for Burbank distribution system.
15. Will let contract to line main canal.
16. Began pumping water for Pasco unit.
17. Completed installation of generators in west powerhouse at Grand Coulee dam.

force. That still is to come later.

As we were waved to a chair near his desk, we just naturally remembered for an instant the time we first saw Parker 20 years ago when he was in charge of operating the Lower Yellowstone Irrigation project at Sidney, Mont. He looks about the same now as he did then. At that time, before he had gone up the ladder through engineering jobs with the Bureau, we called him "Happy," a designation we always assumed he came by because of the three initials of his name. Now, with him in his high position, as he views the large works under his supervision, we wonder whether people still feel free to call him "Happy." Our

guess is that if they do, he has no objection.

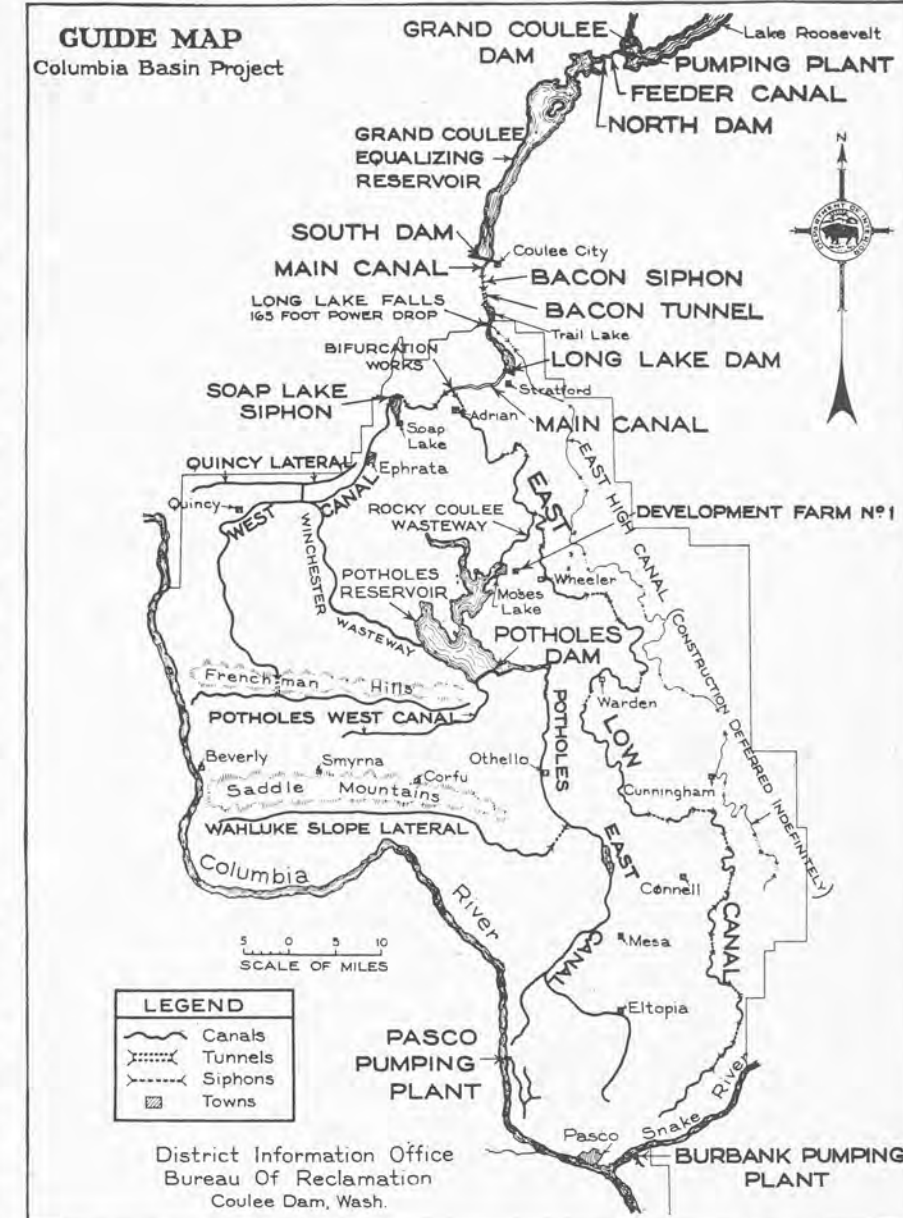
Parker told us, in sort of chronological order, what is being done in the Columbia Basin at the moment and what additional works it is hoped will be started before long. The Congress that adjourned just before the national political conventions appropriated \$45,300,000 for Columbia Basin work. With \$700,000 of carryover funds, it makes \$46,000,000 for the current fiscal year.

How much of it will be used for further power development at Grand Coulee dam and how much will go for irrigation features wasn't known when we were there but it is anticipated that the variety of work now partially finished will be continued and that at least three new contracts will be started, namely: lining of the main canal, building the Soap lake siphon and starting the Burbank unit. The Burbank unit, located in Walla Walla county, south of the Snake river and east of the Columbia, was described quite fully in our August issue of The Northwest.

The biggest thing that is happening in building of actual irrigation works, we found from Parker's remarks, is the construction of the Potholes dam, 12 miles south of Moses lake, somewhere around half way between the north and south ends of the basin. It is named for potholes, or ponds, that occur among sand dunes northwest of the site of the dam. Three and a half miles long and 207 feet above bedrock, here is an earth fill that will be the fourth longest dam in the United States when it is finished. The contractor, a group of three Midwest firms, has been working on it 17 months and the job is 70 per cent completed. Potholes dam will cost \$9,359,000. Its volume—9,190,000 cubic yards of material—will be nearly as large as that of Grand Coulee dam.

Potholes dam will form a 615,000-acre-foot reservoir which will back water into Moses lake to a height five or six feet above its present level. It will store water draining from lands in the northern part of the Columbia Basin for use on approximately 270,000 acres in the southwestern part of the project after it already has been

GUIDE MAP
Columbia Basin Project



used once before for irrigation of lands at a higher elevation. Recapture of thousands of acre feet annually is anticipated when the basin is developed fully. In the course of time large amounts will be saved in pumping costs, since the water collected in the reservoir will reduce by an equivalent total the water that will have to be lifted by power out of the Columbia river at Grand Coulee dam.

At the extreme north end of the Columbia Basin project, Grand Coulee dam, which everyone must have heard about by this time, cuts across the Columbia more than 4,000 feet and backs water in Roose-

velt lake to the Canadian border some 150 miles. At the huge dam, which was built before World War II, on the downstream face, there are two enormous powerhouses. In the west powerhouse, when we were there in January, 1947, six generating units, each consisting of water turbine and generator, each capable of developing 150,000 horsepower in energy, were fully installed and functioning. They had hummed during the war. There were bays for three more similar generating units. Today these all have been installed and the west powerhouse is capable, therefore, of operating at the full



Building the 1,000-foot Bacon siphon, on the main canal of the Columbia Basin Irrigation project. Can you find the man in the foreground? The siphon is over four times as high as he is. It will carry water across a natural depression and will connect with Bacon tunnel, a 10,000-foot bore through lava rock. Siphon and tunnel together, are costing \$3,494,000. In the background, the main canal, from the north, is shown in rimrock.



capacity that was planned before it was built.

The east powerhouse never has been completed. It has stood there since 1941, practically an empty shell. A contract has been let now, however, to get it ready to produce power. This work includes finishing and equipping the control bay at one end of the building, work on a cable control tunnel from the powerhouse to the switchyard and work on the switchyard itself.

The east powerhouse, like the west one, eventually will have nine generating units. Preparations to install generators numbered 1, 2 and 3 have been begun and the machines have been ordered. It is expected all three will be in place sometime in 1949—ready to transfer the power of falling water into electrical force.

The surface of Roosevelt lake isn't near the top of the river canyon. It is hundreds of feet below. This simple fact makes headaches for irrigation engineers. To get water to the top of the canyon, where it can flow, by force of gravity, to land that is to be watered in the Columbia Basin Irrigation project, a Herculean pumping job must be performed. Some day the water for a million acres will be lifted out of the lake and boosted up some 300 feet.

Twelve vertical-shaft centrifugal pumps, each direct-connected to 65,000-horsepower synchronous motors, will be put in at the upstream side of Grand Coulee dam to do the pumping. These pump units will be operated in pairs and each pair is to be furnished power by one of the 150,000-horsepower generating units in the adjacent west powerhouse. Each pump, capable of delivering 12 times more water than any ever built before, will throw 720,000 gallons a minute, or 2,880 tons of the stuff. It's like boosting 440 elephants, as far as weight is concerned, each the size of Jumbo, as high as the twenty-fifth story of the Empire State building every 60 seconds.

The foregoing explanation, then, leads up to the news we wish to give you to the effect that contracts have been let to builders to manufacture the first six of the 12 pumps and motors. It takes a long time to make this kind of equipment. The



This kind of equipment is used to trim and line, with concrete, open sections of the large canals on the Columbia Basin Irrigation project. Six and a half miles of the west canal have been lined with concrete. Bids are to be requested soon for lining some six miles of the main canal and the first 12 miles of the east canal, which eventually will be 130 miles long, are being lined now.

pumping plant will cost a lot of money. The six units now under contract come to \$3,590,007. Crews previously have done a great deal of work on the plant, but a contract is being let to finish its construction. An operation has been begun to furnish sand and gravel that will be needed in building the pumping plant. The first pumps must be ready to function early in 1951.

On the west rim of the river canyon, pumped water will emerge into a feeder canal 1.6 miles long. Work already has been done on this canal and it will be completed in the present fiscal year. The canal is to discharge water into an equalizing reservoir 27 miles long and one and a half to five miles wide, on the bed of the old Upper Grand Coulee. North Coulee dam and South Coulee dam, both earth fills, prodigious undertakings in themselves, will close off the Coulee at either end. The north dam is 1,400 feet long and the south one is nearly two miles and it is 450 feet wide at its base. It is 85 per cent finished and is to be completed this fiscal year. North Coulee dam will be under way next year.

From the equalizing reservoir, Lake Roosevelt water some day will flow into the project's main canal, which will begin near Coulee City along the Northern Pacific, and extend for 20 miles to a point

just north of Adrian, which also is on our railroad. Included in these 20 miles, along with conventional canal, are the Bacon siphon, across a deep coulee, and the Bacon tunnel, a two-mile bore through a lava ridge. Also a part of the main canal, used in lieu of regular canal construction, are Trail lake, a natural depression just south of the Bacon tunnel, and Long lake.

The Bacon siphon, a concrete tube 1,000 feet long, 23 feet in diameter inside and having a 23-inch shell, is 50 per cent finished. When we had our talk with Parker, he thought the contractor would "hole through" on the tunnel in August. After that, it must be lined with concrete. Three hundred thousand tons of basaltic rock have been hauled out of the tunnel, which is 26 feet in diameter and almost two miles long.

Long lake dam, another fill, which will restrain water at the south end of Long lake, is 70 per cent finished. It will be completed this year.

Excavation on the main canal almost all has been finished. Six and a half miles excavated last year are up for contract for lining with concrete. Some small jobs, like headgate at Long lake and certain bridges and canal structures are to be contracted yet, too, on the main canal.

(Continued on page 8)



Farm and Home Opportunities

You may select from this listing of typical farms or ask us for other propositions suited to your needs. Additional information, including addresses of owners or agents, furnished on request.

MINNESOTA

M-231—120-acre improved farm, on state highway, four miles from village, Koochiching county, northern Minnesota. Good house, fair barn, machine shed; 40 acres fenced with sheep fencing, remainder partly fenced. Seven acres cultivated, 25 acres can be put under plow. Seller says enough marketable timber to pay for farm, if cut and sold. Well on place. Selling account age and ill health. Price, \$2,500. \$1,500 cash, balance on terms to suit buyer.

M-232—160 acres, dairy and poultry farm, four miles from Detroit Lakes, west central Minnesota. Sandy clay loam with clay subsoil, 50 acres cropland, remainder is pasture, hay land and timber. Good set of buildings, on township road. Price, \$5,000. Half cash, terms on balance, interest at four per cent.

M-465—480-acre stock and grain farm, eight miles from village, Red Lake Falls area, northwestern Minnesota. Six-room house, old but livable; 60-foot barn, cement floors; large machinery shed, large granary, chicken house, flowing well for stock water. Open land, largely under cultivation, in Scandinavian community, one mile from church. Price, \$10,000.

M-323—240 acres, one mile from Perham, Otter Tail county, west central Minnesota. Fair house, good barn, silo, milk house, granary, almost new two-story poultry house, 30x100; two wells with force pumps for stock; electricity, milk route and school bus service. Land is all cultivated, sandy loam soil, 40 acres pasture. Owner says buildings worth price asked for farm, \$10,000; includes poultry equipment.

NORTH DAKOTA

N-328—354-acre hog and cattle farm, on Sheyenne river, 10 miles from Lisbon, county seat of Ransom county, southeastern North Dakota. Mostly productive river bottom land for small grains, corn and alfalfa. Complete set modern buildings, two flowing wells. Owner has grazing rights for 120 cattle with 160 acres cheap hayland in large government park one mile away. Price, \$55 an acre.

N-567—1,600 acres, in Barnes and Cass counties, northeast of Valley City, eastern North Dakota. Well improved, modern buildings, woven wire fencing;

320 acres pasture, rest is cropland. Price, \$60 an acre.

MONTANA

S-257—400-acre dude and stock ranch, at foot of mountains, south of Big Timber, south central Montana. Six-room log house, bath and large porch; four log cabins, good log barn, milking barn, hog house and fair chicken house. Can put up 50 tons hay. In hunting, fishing and scenic region. Price, \$25,000. Livestock and equipment may be purchased also, if desired.

S-180—99-acre farm, four and a half miles from Stevensville, Bitter Root valley, western Montana. Five-room log and frame dwelling, barn for 15 cows, other buildings. Land all in hay and pasture, all irrigated; three-acre apple orchard for home use; good well, open stock water from spring; electricity. Near mail route, school bus and milk route at door. Price, \$13,490.

S-496—1,280-acre mountain ranch, on new graveled highway, near Bozeman, south central Montana. Fair improvements; 300 acres hay and grain land, old water right, good timber. Ranch will run 300 cattle. Price, \$20,000. Possession, March 1, 1949.

IDAHO

I-461—120 acres, Clearwater county, northern Idaho. Fair house and barn, good water and wood timber; 20 acres cultivated; on graveled road, electricity pending. School conditions not very good, nearest school at Ahsahka, four miles. Sell for \$3,700; includes two cows, team of horses, hay in barn, enough grain seed for place, and machinery.

I-460—80 acres, five miles from village, three quarters mile to school, in Moscow area, Latah county, northern Idaho. Fair four-room house, electricity; poor barn, other buildings; well, spring and creek. Spring needs fixing, can be piped in. Rolling land, fenced and cross-fenced; volcanic ash top soil, clay subsoil; 37 acres cultivated, remainder is pasture. Some loganberries, 16 apple trees. Price, \$3,000. \$1,400 cash will handle.

I-795—960-acre stock ranch, on county road, quarter mile from main highway, near Kamiah, northern Idaho. Water piped into house, electricity contracted; fair barn, other buildings poor.

Owner is not farmer or stock man. Will sell for \$16,500. Half cash, balance easy terms.

WASHINGTON

W-237—20 acres, in Sunnyside division of Yakima Irrigation project, central Washington. Four-room house, semi-modern, water system, half basement, solid foundation; barn and chicken house; 13 acres alfalfa, five acres corn, remainder is open land. Owner must sell due to poor health. Price, \$9,000; includes equipment, livestock and hay.

W-984—210-acre dairy farm, fully stocked and equipped, 130 acres in cultivation, in Raymond area, Pacific county, southwestern Washington. Output contracted to local distributor at attractive price, grossed \$13,000 last year. Running stream, in hunting and fishing region. Sickness is only reason for selling. Price and other details on request.

W-1257—For rent. 2,000 acres stump land, eight miles from inland town, southwestern Washington. Five-room house, fruit room, woodshed, garage; gas-powered water system. Good pasture, not fenced; additional range adjoining. Particulars on request.

OREGON

O-411—72 acres, in Hillsboro district, on rock road, three and a half miles to store and paved highway, western Oregon. Three-room house, small barn; three acres bottom land cultivated, remainder is old logged off land suitable for clearing, gentle south slope, early location for berries. All-year creek and spring. Price, \$5,000.

O-820—800-acre Willamette valley stock ranch, 15 miles from Salem, two and a half miles from large market town, western Oregon. Productive, rolling low hill land covered with two and a half million feet of marketable fir and oak timber; 80 acres cultivated, all land fenced sheep tight. Suitable building sites, running water, market road through place. Sell without timber at \$30 an acre.

BUSINESS OPENINGS

In Minnesota, North Dakota, Montana, Idaho, Washington and Oregon, are described in new business opportunities circular. Write for copy if desired.

Property Described on This Page Is Subject to Sale Without Notice



CANADA SENT US HER WHEAT

Red Fife, also called "Scotch Fife," and selections from it were the wheats commonly grown in North Dakota until the introduction of Bluestem in the early 1890's. Preston, or Velvet Chaff, was introduced from Canada in about 1895. By 1919 it accounted for about 750,000 acres.

Marquis, a Canadian wheat, came into small scale production in the state in 1912; by 1919 it was being raised on 4,250,000 acres, or about two-thirds of the acreage of hard red spring wheat in the state at that time. Ceres, developed at the North Dakota station, was first distributed in 1925 and it occupied about 45 per cent of the hard red spring wheat acreage by 1934 and a larger proportion in 1935. Ceres was badly attacked by a strain of black stem rust in 1935 and was gradually replaced by Thatcher, a variety developed at the Minnesota station.

Thatcher was being seeded on about 60 per cent of the hard red spring wheat acreage in the state by 1941. Rival, developed at the North Dakota station, was released in 1939. Mida, the latest new hard red spring wheat variety from the North Dakota Experiment station, was released in 1944.

By 1947 Mida and Rival, from the North Dakota station, and Pilot, a variety developed cooperatively by plant breeders of the North Dakota station and the U.S. department of agriculture, had become leading varieties grown.

A survey of wheat acreages in 1944 made by the U.S. Bureau of Agricultural Economics, indicated that North Dakota's wheat acreage consisted of 82 per cent hard red spring and 18 per cent durum. In that year the varietal distribution of hard red spring wheats by acreage was as follows: Thatcher, 32 per cent; Rival, 31 per cent; Regent, 12 per cent; Pilot, eight per cent; Renown, six per cent; Vesta, four per cent; and miscellaneous, seven per cent.

Carleton and Stewart durums were introduced cooperatively by the North Dakota station and the U.S.D.A. in 1943 as stem rust re-

Berry Increase

Of the 6,900 acres growing commercial strawberries in the state of Washington this year, 2,000 acres were in Whatcom county.

Next year 700 acres will be added to the Whatcom county crop. A few years ago there were only 500 acres altogether in the county.

sistant varieties. These two varieties and the Mindum variety released by the Minnesota station about 1917 are the leading durums. Some Kubanka is still grown.—From N. D. station bulletin.

World's Biggest Project

(Continued from page 6)

Six and a half miles west of Long lake dam, the main canal ends where it divides into west canal and east low canal.

Excavation and concrete lining on six and a half miles of the west canal were finished this summer. The west canal eventually is to be 88 miles in length. On the east low canal, crews are working on three large siphons. Twelve miles of this canal, which finally will be 130 miles long, almost as long as the famous All-American canal in southern California, or about the same distance as the mileage between Washington, D. C. and Philadelphia, have been excavated and the lining contractor has begun his work.

The Soap lake siphon, which we mentioned earlier, a part of the west canal, will carry water around the north end of Soap lake in order to get it over to the west side of the lake. It will be 23 feet in diameter and 12,000 feet (over two miles) long. It will have reinforced concrete at the ends and steel or steel-lined concrete in its midsection.

Whether it will be possible to ask for bids on construction of further sections of the west canal and the east low canal before next July had not been determined when we were at Ephrata.

The Pasco Pumping unit, which has been described from time to time in our columns, was about completed in June when water was

turned on the first time. Some of the settlers are there farming the land.

We looked at the electric clock on the wall of Parker's office. It said the hour had gone by 4:30 p.m., daylight saving time, when the Bureau's office is supposed to close for the day, having opened at 7:30 a.m. Parker didn't seem a bit nervous about it, but we put away our pencil and notebook and went out into the still very warm sunshine.

Blueberries Are His Business

(Continued from page 3)

vation from blooming time to the end of harvest. Blueberries want water, he says. So, he irrigates if they run into a dry spell. He sub-irrigates the main bog, on which his bearing plants grow, but the nursery is watered with sprinklers.

After the plants are four to five years of age, some of the oldest wood is pruned annually. Eberhardt has learned that this increases the vigor of the bushes and encourages growth of young wood, which produces the biggest and best berries. Given reasonably good care, a planting will last a long time.

He likes to use a number of varieties, like the Rancocas, Atlantic, Concord, Stanley, Jersey, Weymouth and Pemberton. Three good kinds, however, probably are enough for an average grower. Eberhardt no longer uses Rubel, Grover, Harding, Pioneer, Adams and Cabot, as he considers them inferior in size, flavor and productiveness compared with new kinds.

Three new varieties which Eberhardt himself has developed, by crossing and selecting, are getting favorable mention for superior performance. They are called Pacific, Washington and Olympia. They are heavy yielders of large fruit.

Travel by Rail

Let us quote you round trip fares from your station and assist you in planning your trip to inspect western land.

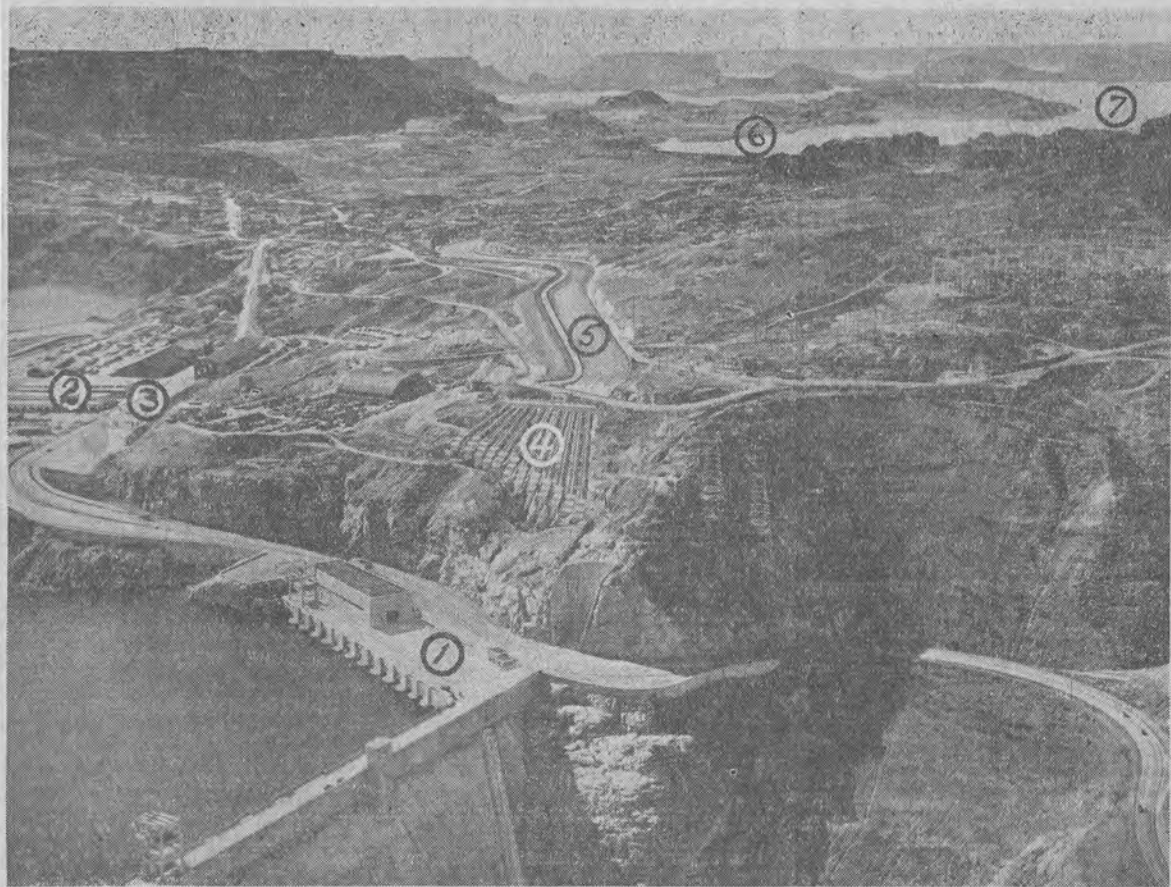
J. W. HAW

115 Northern Pacific Railway
St. Paul 1, Minn.

8731 29-5

Seattle Journal of Commerce, Sept 1st, 1948

Grand Coulee Projects Depicted



This aerial view of the Grand Coulee dam area in Eastern Washington depicts for the first time the extensive construction program planned by the federal Bureau of Reclamation during the next few years. An artist has sketched in the principal features to be built. The cost will total several million dollars. Many of the structures are covered in a bid opening held Sept. 1, at Coulee Dam, including completion of the Columbia Basin project main pumping plant (1) and Warehouses A and B (2), construction of a large machine shop (3), and installation of pumping plant discharge pipes and the headworks for the feeder canal (4). Bids submitted are under consideration by the bureau. This job alone will require about three years to complete. Future jobs also shown are the feeder canal (5) and the North Dam (6) which will form a 27-mile equalizing reservoir in the upper Grand Coulee (7) for the project's irrigation system, largest of its type in the nation. The pumping plant (1) will house the world's largest pumps and the world's greatest electric motors, rated at 65,000 horsepower each. Each big discharge pipe will be capable of handling sufficient water for 100,000 acres of land.

B

Mr. Blair
per note
11/15/48

OF ENGINEER
CHIEF SEP 5 1948 RY.
FOR PAL. IN
ST.

6.5 MILE COLUMBIA BASIN CANAL LINING WORK DRAWS \$2,376,027 BID

Sioux City, Iowa, Firm Submits Low Figure; No Action Taken

The Western Contracting Corp., Sioux City, Iowa, submitted the low bid to the Bureau of Reclamation yesterday for lining 6½ miles of the main canal on the Columbia Basin project, the United Press reported.

The Iowa firm bid \$442,636 on Schedule 1 of the contract and \$1,933,391 on Schedule 2, the main lining job, for a total of \$2,376,027.

Winston Bros. and Utah Const. Co., Azusa, Cal., were the only other bidders on both schedules, \$559,644 on Schedule 1 and \$2,729,387 on Schedule 2 with \$40,000 knocked off if awarded both jobs.

Two firms bid on Schedule 1 (headworks) alone. George B. Henley Const. Co., Caldwell, bid \$293,777 and Scheumann & Johnson, Seattle, \$332,879.

The bids were referred to the bureau's Denver office.

This portion of the giant canal, which will be capable of carrying sufficient water for 800,000 acres of land, begins at Long Lake dam, near Stratford, and extends westerly toward Soap Lake. Excavation of more than 2,000,000 yards of earth and rock for the canal was completed in June, 1947, by the Morrison-Knudsen Co., Seattle, under a \$619,000 contract.

Supervising Engineer H. A. Parker of the bureau's irrigation division said the canal will have a finished bottom width of about 50 feet and will be approximately 120 feet wide at the top. It will be 23½ feet deep.

Quantities will include placing 75,120 cubic yards of concrete, furnishing and handling about 112,000 barrels of cement, furnishing and placing nearly 2,000,000 pounds of reinforcing steel, and excavating about 150,000 cubic yards of material.

Start of the lining program is included in the fiscal year construction program announced following approval by congress of \$45,312,000 in funds for the self-liquidating irrigation project which is designed to carry water ultimately to 13,000 family-size farms in Eastern Washington.

In picturing the size of the Main canal's southerly section, bureau engineers said it will have a capacity of 9700 cubic feet of water per second (70,000 gallons). In four hours it would carry more than a

billion gallons—more than enough to meet all needs of the city of Chicago for a 24-hour period.

B

Central Journal of Science, Vol. 1, No. 1, 1943

FILED
AUG
26
1948
R.Y.
ST. PAUL, MN.
FOR PAC. NW.

8731

Enroute, Train 2/2, August 14, 1948

MR. H. M. TREMAINE:

In reply to my letter of the 11th, copy to you, concerning request of Supervisor McComb of the SPOKANE weather office that he be furnished information as to the amount of flood damage we sustained in the June floods this year, Mr. Judson has written me as follows:

"This can or cannot become an important matter depending on what use is made of the information given. A complete statement of costs would entail a great deal of work, but if a rough approximation will serve the purpose I think that can be obtained without too much trouble, and, as you say, will have to come from the division officers".

He sent copy of his letter to Mr. Alsip, so it might be in order to suggest to Mr. McComb that he ask Mr. Alsip to supply the figures he wants.

bb/s

St. Paul, Minn., August 12, 1948.

Mr. Bernard Blum:

Your letter of August 11 about request from the weather office at Spokane for information in regard to the cost to the Northern Pacific of flood damage in the recent floods of the Columbia and tributaries above Grand Coulee Dam:

This can or cannot become an important matter depending on what use is made of the information given. A complete statement of costs would entail a great deal of work but, if a rough approximation will serve the purpose, I think that can be obtained without too much trouble and, as you say, will have to come from the division officers.

A handwritten signature in dark ink, appearing to be 'M. L. ...', written in a cursive style.

cc Mr. J. F. Alsip

OFFICE OF
CHIEF ENGINEER
AUG 12 1948
10R PAC RY
ST. LOUIS, MO.

Saint Paul, August 11, 1948

MR. W. W. JUDSON:

A day or two ago Supervisor Robert McComb of the local weather office at Spokane asked Mr. Tremaine if we could furnish him the estimated cost to us of flood damages in the recent floods in the territory of the Columbia and tributaries above Grand Coulee Dam.

This would include lines in northeastern Washington, northern Idaho, and northwestern Montana.

Mr. Derrig asked me to advise if there are any figures we could quote to Mr. McComb. I replied to Mr. Tremaine that we had no information here as to the money damage as it was too recent an occurrence, and that the data would have to come from the Rocky Mountain and Idaho divisions, supplemented by such information as Mr. Tremaine might have. I also stated that it would have to be submitted to the Management before passing it on to Mr. McComb, and assumed that it was in furtherance of flood control.

I now have a letter from Mr. Tremaine in reply to my wire that Mr. McComb stated that the information was not being collected directly for flood control work, but from the nature of the reports he makes it was Mr. Tremaine's opinion that that would be its ultimate destination and I think that that is obvious.

Mr. McComb went on to say that he did not need the information immediately but would like to have it in about three weeks, and that he was asking other local railroads and highway bodies for the same data.

If it is agreed that this information should be supplied, then I think a rough approximation of cost could be made by the local division officers of what they have spent or consider should be spent as a result of the floods.

Will you please advise your decision in the matter, and if the data should be collected.

cc-Mr. H. M. Tremaine

bb/s

AIRMAIL

Spokane, Washington
August 9, 1948

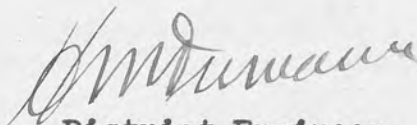
Mr. Bernard Blum:

In reply to your B-93, Mr. McComb states that this information is not being collected directly for flood control work, but from the nature of the reports he makes, I anticipate that such use would be its ultimate destination.

I am wondering, in the event you think this kind of information should be furnished upon the request from this local Supervisor of the Weather, whether you would not wish to consider having the information collected by the Superintendents in conjunction with this office and furnished you through the regular channels.

I have just noticed the newspapers report of a small flood control district having been created and work authorized in Pullman, direct cost of which would be borne equally by the City and the Federal Government. I am quietly checking to determine if by any chance we are involved. I am taking the liberty of suggesting this further consideration in view of this development.

Mr. McComb does not need this information immediately; states that if available he would like to have it in about three weeks. Mr. McComb has advised that he is asking other local railroad offices and highway bodies for these same data. Will you please advise.


District Engineer

HMT:lcb
Copy for confirmation

OFFICE OF THE
CHIEF ENGINEER
AUG 11 1948
3:00 PM

Spokane, Washington
August 11, 1948

ALBANY

Mr. Bernard Dunn:

In reply to your 8-23, Mr. McCamp states that this information is not being collected directly for flood control work, but from the nature of the reports he makes, I anticipate that such use would be made in the future.

I am wondering, in the event you think this kind of information should be furnished upon the request from this local supervisor of the Weather, whether you would not wish to consider having the information collected by the Superintendent in conjunction with this office and furnished you through the regular channels.

I have just noticed the newspaper's report of a small flood control district having been created and work authorized in Pullman, direct cost of which would be borne equally by the City and the Federal Government. I am chiefly checking to determine if any chance we are involved. I am taking the liberty of suggesting this further consideration in view of this development.

Mr. McCamp does not need this information immediately; states that it will be available in about three weeks. Mr. McCamp has advised that he is asking other local railroad offices and highway bodies for these same data. Will you please advise.

District Engineer

WMT:lab
Copy for continuation

Saint Paul, November 30, 1948

MR. W. W. JUDSON:

Recently the Division Engineer of the U S Corps of Engineers issued a pamphlet covering the development of the COLUMBIA RIVER and its tributaries.

I have now obtained an additional copy, and am transmitting it for your information and file.

You will note that the Engineers are recommending immediate authorization of the Albeni Falls project; the Priest Rapids project; the John Day and the Dalles projects - all of which affect our interests. The Albeni Falls project would raise the waters of the Pend Oreille river and lake, and the Clarks Fork, to a point just above our bridge 92 at Clarks Fork, and would require raising several of our bridges and considerable of our main track.

The Priest Rapids project would affect our Ritzville-Ellensburg cutoff, if it should ever be built - and that is not inconceivable in view of the continued development of the Columbia Basin irrigation.

The John Day and the Dalles projects are large dams in the Columbia vitally affecting the SP&S.

In addition there are four dams across the Snake River.

bb/s

att.

Seattle, Wash.

Nov. 27, 1948

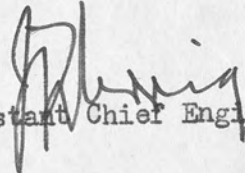
29-5

U.S. Columbia Basin Project

Mr. Bernard Blum:

I am attaching hereto copy of Colonel Weaver's report covering program for development of Columbia River Basin Projects.

This program, as you know, proposes an estimated expenditure of about three million dollars.


Assistant Chief Engineer

JTD:c

cc JFA

B

Seattle, Wash.
Nov. 27, 1948
22-5
3761
0001
NOV 27 1948
U.S. DEPT. OF AGRICULTURE
WASHINGTON, D.C.

U.S. Columbia Basin Project

Mr. Bernard Riney:

I am attaching hereto copy of Colonel Weaver's report covering program for development of Columbia River Basin Project. This program, as you know, provides an estimated expenditure of about three million dollars.

Assistant Chief of Engineers

END
cc - 101

DEPARTMENT OF THE ARMY
Corps of Engineers
Office of the Division Engineer
North Pacific Division
500 Pittock Block
Portland 5, Oregon

OFFICE OF
ASST. CHIEF ENGR.
NOV 22 1948
N. P. RY. CO.
SEATTLE, WASH.

November 8, 1948

PUBLIC NOTICE

For the information of all who may have an interest in the development of Columbia River and tributaries for flood control, navigation, power, irrigation and other purposes, concerning which numerous public hearings were held (attached Exhibit 1 is a partial list of the hearings), notice is hereby given that the report thereon authorized by resolution of the Committee on Commerce of the United States Senate adopted September 24, 1943, and several other authorities, has been submitted. The report of the Division Engineer - incorporating sub-basin analyses and studies on individual projects by the District Engineer, Portland District, Portland, Oregon, and the District Engineer, Seattle District, Seattle, Washington, - is favorable to the adoption of a comprehensive multiple-purpose plan of development for the Columbia River Basin within the United States.

The reporting officer has developed a comprehensive and carefully coordinated plan to provide for the present and immediate future needs of the region; also for later developments that will be needed as the region expands. Adoption of the plan is recommended. The plan consists of: (1) a system of levees, multiple-purpose reservoirs (as indicated on attached map Exhibit 4), and navigation improvements which is called the Main Control Plan; (2) modification and extension of the Willamette Valley Project, a comprehensive sub-basin plan in the interest of flood control and other purposes (as indicated on attached map, Exhibit 3); (3) and other sub-basin plans comprising local flood control, navigation and irrigation projects, the latter as previously recommended by the Bureau of Reclamation. Associated plans essential to the comprehensive plan and recommended for Congressional recognition are: (1) necessary extension of the power transmission network of the Bonneville Power Administration; (2) the Lower Columbia River Fishery Plan developed by the United States Fish and Wildlife Service; (3) an expanded hydrometeorological network to furnish data for the operation of multi-purpose reservoirs, operated cooperatively by the various participating agencies; (4) soil and forest cover programs of the Department of Agriculture.

Main Control Plan

The Main Control Plan includes the following elements and specific recommendations:

Enc 1

a. Immediate authorization of the following multiple-purpose dams and reservoirs in the interest of flood control, navigation, power and other water uses:

- (1) Libby Project, Kootenai River, Montana
- (2) Albeni Falls Project, Pend Oreille River, Idaho
- (3) Priest Rapids Project, Columbia River, Washington
- (4) Hells Canyon Project, Snake River, Oregon and Idaho
- (5) John Day Project, Columbia River, Oregon and Washington
- (6) The Dalles Project, Columbia River, Oregon and Washington
- (7) In addition to the above, the Glacier View Project on Flathead River, Montana, is included for consideration pending the concurrence of the Secretary of the Interior, with a view to its definite recommendation at such time as the Secretary of the Interior may concur. Should its construction not be authorized after reasonable consideration, further study of feasible alternates will be made.

b. Modification of the authorization for Grand Coulee Dam, with the general concurrence of the Bureau of Reclamation, in the interest of flood control to provide for increase in outlet capacity and reservation of 5,120,000 acre-feet of storage for the joint use of flood control, irrigation, and power.

c. Adoption of specific procedures relating to the most effective operation of the Grand Coulee and Hungry Horse Projects of the Bureau of Reclamation as a part of the Main Control Plan.

d. Modification of existing levees, construction of new levees, and provision of certain bank protection, to supplement the flood control provided by storage in the recommended reservoirs for the protection of valuable lands along the lower Columbia River, subject to the provision that local interests comply with the requirements of cooperation specified in the Flood Control Act of 1936, as amended.

e. Open-river navigation improvements on Snake River, from Lewiston, Idaho to Lime Point, Idaho, a distance of 30 miles, and the construction of certain approach channels and turning basins on both the Columbia and Snake Rivers, subject to certain requirements of local cooperation.

Willamette Valley Project - The modified and extended Willamette Valley Project provides for a system of twenty multiple-purpose reservoirs - including five reservoirs now existing or under construction - supplemented by levees, channel improvement, bank protection, drainage works, hydro-electric power plants and recreational facilities at selected reservoirs, reconstruction of Willamette Falls Locks, and provision of facilities for artificial propagation of fish. This plan is as previously recommended in the separate report on the Willamette River Sub-Basin Plans.

Sub-basin plans include the following sub-basin improvements previously recommended in separate reports, subject, in each instance, to certain requirements of cooperation by local interests.

- a. Snake River in Wyoming (Jackson Hole) - Approximately 12.6 miles of new levees for flood control in three locations between the town of Moose and the mouth of Fish Creek.
- b. Willow Creek at Heppner, Oregon - Dam, reservoir and downstream channel improvement for flood control and incidental irrigation.
- c. Umatilla River at Pendleton, Oregon - Levees and channel rectification for flood control.
- d. Umatilla, Oregon - Excavation of harbor area and approach channel for navigation.
- e. Columbia Slough, Oregon - Widening and deepening of a side channel in North Portland Harbor.
- f. Westport Slough, Oregon - Widening and deepening a Columbia River side channel at Westport.
- g. Baker Bay Channel and Mooring Basin, Washington - An approach channel and an improved waterway from Ilwaco on Baker Bay to the Columbia River main ship channel, together with a mooring basin for small boats.

Also included in sub-basin plans are construction and extension of local levee protection for Bonners Ferry, on Kootenai River, Idaho, provided that local interests comply with the requirements of cooperation specified in the Flood Control Act of 1936 as amended.

Sub-basin plans recommend authorization of funds for the construction of numerous and relatively small local flood protection works other than reservoirs at an estimated Federal first cost of \$28,405,000, subject to the approval of the Chief of Engineers and the Secretary of the Army and to the provision that local interests comply with the requirements of cooperation specified in the Flood Control Act of 1936, as amended.

Indian Rights - In view of the fact that some of the reservoirs in the Main Control Plan will inundate Indian lands and usual and accustomed Indian fishing grounds, full replacement in kind is recommended where practicable. Where this is not practicable, in order to insure recognition of treaty rights and special obligations of the Government toward the Indians, the report recommends that compensation for any major deficiency be provided by special Act of Congress following a special report and recommendation by the Chief of Engineers.

Associated Plans - As essential elements of the comprehensive plan for water resource development to be accomplished at this time, in conjunction with the Main Control Plan, the following associated plans involving work or participation by other agencies are recommended for appropriate recognition by Congress. These plans are closely coordinated with the plans of the Corps of Engineers for water resource development.

a. The proposal of the United States Fish and Wildlife Service for the establishment of the Lower Columbia River Fishery Plan in the interests of conservation and enhancement of the fisheries resource. The plan aims at restitution and rehabilitation of the fishery resource of the Columbia River. It proposes to develop the salmon runs of the lower tributaries of the Columbia River to the highest possible level of productivity by the removal of obstructions, abatement of pollution, screening of diversions and fishway construction, transplantation of fish refuges.

b. Establishment and operation of a cooperative hydrometeorological network for the basin, with participation by the appropriate agencies, in order that the operation of the several multipurpose reservoirs may be fully coordinated for their most effective use.

c. Necessary transmission facilities to enable the Bonneville Power Administration to transmit the power generated at the recommended projects as it becomes available.

d. An adequate program by the Department of Agriculture directed at conservation of soil and forest cover in the interest of prevention of soil erosion and reduction of stream sedimentation.

Tax Losses - A special recommendation of the report is that where net annual tax losses to local governmental units are actually suffered through construction and operation of the new multipurpose projects in the Main Control Plan, the Chief of Engineers be authorized to pay to the State or States annually a sum equivalent to the net annual tax loss for distribution to the local taxing unit suffering the loss.

Irrigation - In the interest of continued agricultural growth and expansion of the Columbia River Basin, as part of the comprehensive development, the report recommends that the group of irrigation projects recommended by the Secretary of the Interior on June 3, 1948, estimated to cost \$273,324,000, be authorized for construction by the Bureau of Reclamation concurrently and pro rata with the Main Control Plan, subject to necessary agreements by the states concerned and to the policy of Congress.

Costs - Excepting the program of the Department of Agriculture for which no estimate of cost is available, the estimated total Federal first cost of the recommended projects, associated plans and irrigation projects is \$2,973,076,100 and the non-Federal cost \$57,399,600. Exhibit 2 shows a partial breakdown of these figures.

Accomplishments of plans - The reservoirs in the Main Control Plan will provide storage sufficient to reduce a flood like that of 1894, the highest of record, from 1,240,000 cubic feet per second at The Dalles to 800,000 cubic feet per second. Similarly a flood like the recent disastrous one of June 1948, would be reduced from 1,010,000 cubic feet per second to 700,000 cubic feet per second. On the Portland gage the reduction in the 1948 flood would be from a stage of 29.95 feet to about 24 feet. Supplemented by extensive levee reconstruction, damages from floods in the Lower Columbia River would be reduced to a relatively minor amount.

In addition to the new reservoirs recommended for authorization, the Main Control Plan contemplates the use of storage for flood control in the existing Anderson Ranch and Arrowrock Reservoirs on Boise River; the authorized Palisades Reservoir on Snake River and Lucky Peak Reservoir on Boise River; the Cascade Reservoir now under construction on Payette River; and the Garden Valley Reservoir on South Fork Payette River in the Mountain Home Project, recommended by the Secretary of the Interior June 3, 1948. These reservoirs will be operated for local flood control, as well as irrigation and other purposes, but will supplement general flood control provided by the Main Control Plan. Considerable local flood control will also be accomplished in the various sub-basins by the reservoirs in the Main Control Plan. Areas receiving benefits are the Kootenai Flats area on Kootenai River in Idaho, Kalispell area on Flathead River, areas adjacent to Flathead Lake, Plains area on Clark Fork in Montana, areas adjacent to Pend Oreille Lake and along Pend Oreille River in Idaho and Washington, areas along Snake River in the Heise-Roberts area and continuing downstream in varying amounts to Lewiston, Idaho; in Boise, Payette and Weiser River Valleys, Idaho; and in the Richland area, Washington on Columbia River.

The power installations incorporated in the Main Control Plan will increase the installed capacity in the Federal system by about

6,000,000 kilowatts, to give a total installed capacity of approximately 11,700,000 kilowatts which will meet the load forecasted between 1960-70.

Navigation features in the Main Control Plan will extend the Columbia-Snake barge channel to Lime Point, Idaho, 495 miles from the mouth of Columbia River, 320 miles of which will be slackwater.

The modified Willamette Valley Project will reduce by 85 percent the annual damage done by floods in that seriously damaged area by reservoirs and levees. Other important accomplishments are extensive improvements in drainage; water supply for the irrigation of 452,000 acres of agricultural lands; considerable improvement in navigation; and the addition of 387,000 kilowatts of power that will serve the Federal system; recreation; fish and other conservation uses.

Sub-Basin Plans will provide needed local flood control measures; (a) in Kootenai River Sub-Basin at Bonners Ferry, Idaho, (b) in Clark Fork Sub-Basin at Missoula, St. Regis, Haugan and Saltese, Montana, Lightning Creek at Clark Fork, Idaho, (c) in Yakima River Sub-Basin at Ellensburg, Washington, (d) in upper Snake River Sub-Basin in the Jackson Hole area near Jackson, Wyoming; in the Heise-Roberts, Shelley, Blackfoot, Teton River, Blackfoot River, Portneuf River and Marsh Creek, Mud Lake, Little Wood River, Camas Creek areas, Idaho, (e) in the Central Snake River Sub-Basin in the Malheur River, Boise River, Payette River and Weiser River areas, Idaho, (f) in the Middle and Lower Snake River Sub-Basin in the Palouse River area, Washington, and the White Bird Creek, South Fork Clearwater River and Kendrick areas, Idaho, and the Grand Ronde Valley area, Oregon, (g) in the Sub-Basin of Columbia River and its minor tributaries above the mouth of Yakima River in the Okanogan Valley, Methow Valley, Entiat Valley, Wenatchee Valley, Crab and Wilson Creek areas, Washington, (h) in the minor tributaries of Columbia River below the mouth of Yakima River in the Lower Walla Walla River, Mill Creek, Touchet River, Randle on Cowlitz River, Lower Cowlitz River areas, Washington, the Pendleton, Heppner, Umatilla River, John Day River, Prineville areas, Oregon.

In addition to those areas, numerous other local areas in different parts of Columbia River Basin will be given flood protection based on a favorable showing of economic and engineering feasibility as the result of surveys and studies being made of the damages done by the recent June, 1948 flood.

Navigation improvements in the sub-basin plans are at Umatilla, Columbia Slough and Westport Slough, Oregon, and Baker Bay, Washington.

The irrigation projects included in the recommendation for accomplishment by the Bureau of Reclamation are Bitterroot Valley

project including the Woodside Unit, Missoula Valley Project (North Side Unit) in Montana; the Upper Star Valley Project in Wyoming; the Mountain Home Project (Payette Unit); Cambridge Bench Project, Council Project, Mann Creek Project in Idaho; the Canby Project, Crooked River Project, Vale Project (Bully Creek Extension), The Dalles Project (West Unit) in Oregon, and the Yakima Project (Kennewick Division) in Washington. In all 81,250 acres will receive supplemental water and 292,620 acres of new land will be irrigated.

Further views of interested parties - You are further notified that all interested parties have the privilege of presenting their views on the subject matter of the report to the Board of Engineers for Rivers and Harbors, a permanent body sitting at Washington, D.C., to whom all examination and survey reports of this character are referred. Parties desiring to present any statements or facts concerning the improvements in question may be heard by the Board either orally or in writing. Written communications should be addressed to the Board of Engineers for Rivers and Harbors, Room 1336, Building T-7, Gravelly Point, Washington 25, D. C. and should be mailed in time to be in the possession of the said Board within four weeks from the date of this communication. If, however, you have important data to communicate to the Board which cannot be collected and prepared for proper presentation within four weeks, the Board should be informed of this fact without delay and request made for an extension of the limiting date for submitting information. If oral hearings are desired, dates for the same may be arranged for by correspondence with the Board.

Any further information needed may be obtained by application to the Division Engineer, North Pacific Division, Corps of Engineers, 500 Pittock Block, Portland 5, Oregon. For the more convenient inspection of the report by local interests, a copy is on file at the following places:

Idaho

Boise: Mark R. Kulp, State Reclamation Engineer, State Capitol Building

Boise: Resident Engineer, Corps of Engineers, Boise Barracks.

Bonnors Ferry: Owen Critchfield, County Auditor, Bonner County Court
House

Pocatello: W. J. Jensen, County Commissioner, Bannock County
Court House

Lewiston: Wayne S. Talbott, Chairman, Board of County
Commissioners, Nez Perce County Court House

Montana

Helena: Fred S. Buck, Chief Engineer, State Water Conservation Board.

Kalispell: A. S. Shaw, Clerk and Recorder, Flathead County Court House

Missoula: O. B. Parsons, Chairman, Board of County Commissioners, Missoula County Court House

Oregon

Fort Stevens: Resident Engineer, Corps of Engineers.

Portland: District Engineer, Portland District, Corps of Engineers, 628 Pittock Block, 921 S.W. Washington Street.

Eugene: Resident Engineer, Corps of Engineers, Fern Ridge Dam.

Salem: Chas. E. Stricklin, State Engineer, State Office Building.

Big Eddy: Resident Engineer, Corps of Engineers.

Umatilla: Field Engineer, Corps of Engineers, McNary Dam.

Washington

Olympia: Frank A. Stewart, Director, Department of Conservation and Development, Transportation Building.

Seattle: District Engineer, Seattle District, Corps of Engineers, 4735 East Marginal Way.

Spokane: Frank J. Glover, County Auditor, Spokane County Court House.

Walla Walla: District Engineer, Walla Walla District, Corps of Engineers, Union Bulletin Building, 19 E. Poplar Street.

Wyoming

Cheyenne: L. C. Bishop, State Engineer, State Engineer's Office.

Copies of the report will not be furnished or loaned for use outside of the offices designated, but interested parties, including the press, will be permitted to make such notes of the contents as they desire.

You are requested to communicate the foregoing to any persons known by you to be interested in the improvement and who, not being known to this office, do not receive a copy of this communication.

Theron D. Weaver

THERON D. WEAVER
Colonel, Corps of Engineers
Division Engineer

4 Incls.

- Incl. 1 - Exhibit 1, List of Hearings
- Incl. 2 - Exhibit 2, Cost of Comprehensive Plan
- Incl. 3 - Exhibit 3, Map of Willamette Valley Plan
- Incl. 4 - Exhibit 4, Map of Comprehensive Plan - Major Dams

EXHIBIT 1

PARTIAL LIST OF PUBLIC HEARINGS HELD IN CONNECTION WITH
COLUMBIA RIVER REVIEW REPORT

<u>Date</u>	<u>Location</u>
June 3 - 5, 1943	Kalispell, Montana
June 18, 1943	Sandpoint, Idaho
June 19, 1943	Priest River, Idaho
February 22, 1944	Eugene, Oregon
June 8, 1944	Walla Walla, Washington
June 15, 1944	Portland, Oregon
June 22, 1944	Boise, Idaho
April 25, 1945	The Dalles, Oregon
September 22, 1945	The Dalles, Oregon
November 20, 1945	Coeur d'Alene, Idaho
December 21, 1945	Hillsboro, Oregon
November 9, 1946	Lebanon, Oregon
November 8, 1946	Vida, Oregon
March 21, 1947	Toledo, Washington
April 25, 1947	Salem, Oregon
April 24, 1947	Eugene, Oregon
April 15, 1947	Kalispell, Montana
April 17, 1947	Libby, Montana
May 28, 1947	Sandpoint, Idaho
May 29, 1947	Metalline Falls, Washington
June 25-26, 1947	Walla Walla, Washington
July 9, 1947	Lewiston, Idaho
September 16, 1947	Jackson, Wyoming
October 15, 1947	Pocatello, Idaho
May 18, 1948	Wenatchee, Washington
May 25, 1948	Kalispell, Montana
May 25, 1948	Arlington, Oregon
May 26, 1948	Hot Springs, Montana
July 7, 1948	Libby, Montana
August 9, 1948	Wenatchee, Washington
August 19, 1948	Kamiah, Idaho

EXHIBIT 2

ESTIMATED COST OF COMPREHENSIVE PLAN OF DEVELOPMENT FOR
COLUMBIA RIVER BASIN

ESTIMATED FEDERAL FIRST COST
(Based on January 1948 Price Levels)

<u>Feature</u>		<u>Main uses served by reservoirs</u>
1. Main Control Plan:		
a. Reservoirs TOTAL	\$1,699,671,000	
(1) Libby	239,077,000	Flood control, power, navigation and recreation
(2) Glacier View (Conditionally recommended)	94,962,000	Flood control, power, navigation and recreation
(3) Albeni Falls	31,070,000	Flood control, power, navigation and recreation
(4) Priest Rapids	326,124,000	Flood control, power, recreation
(5) Hells Canyon	342,076,000	Flood control, power, navigation, and recreation
(6) John Day	379,826,000	Flood control, power, navigation, irrigation, and recreation
(7) The Dalles	286,286,000	Power, navigation, irrigation, and recreation
(8) Grand Coulee Dam	250,000	Modification of outlet works for flood control
b. Lower Columbia River levees, flood walls and bank protection	30,501,000	<u>Remarks</u> Non-Federal first cost \$13,493,000

1. Main Control Plan: (Cont'd)

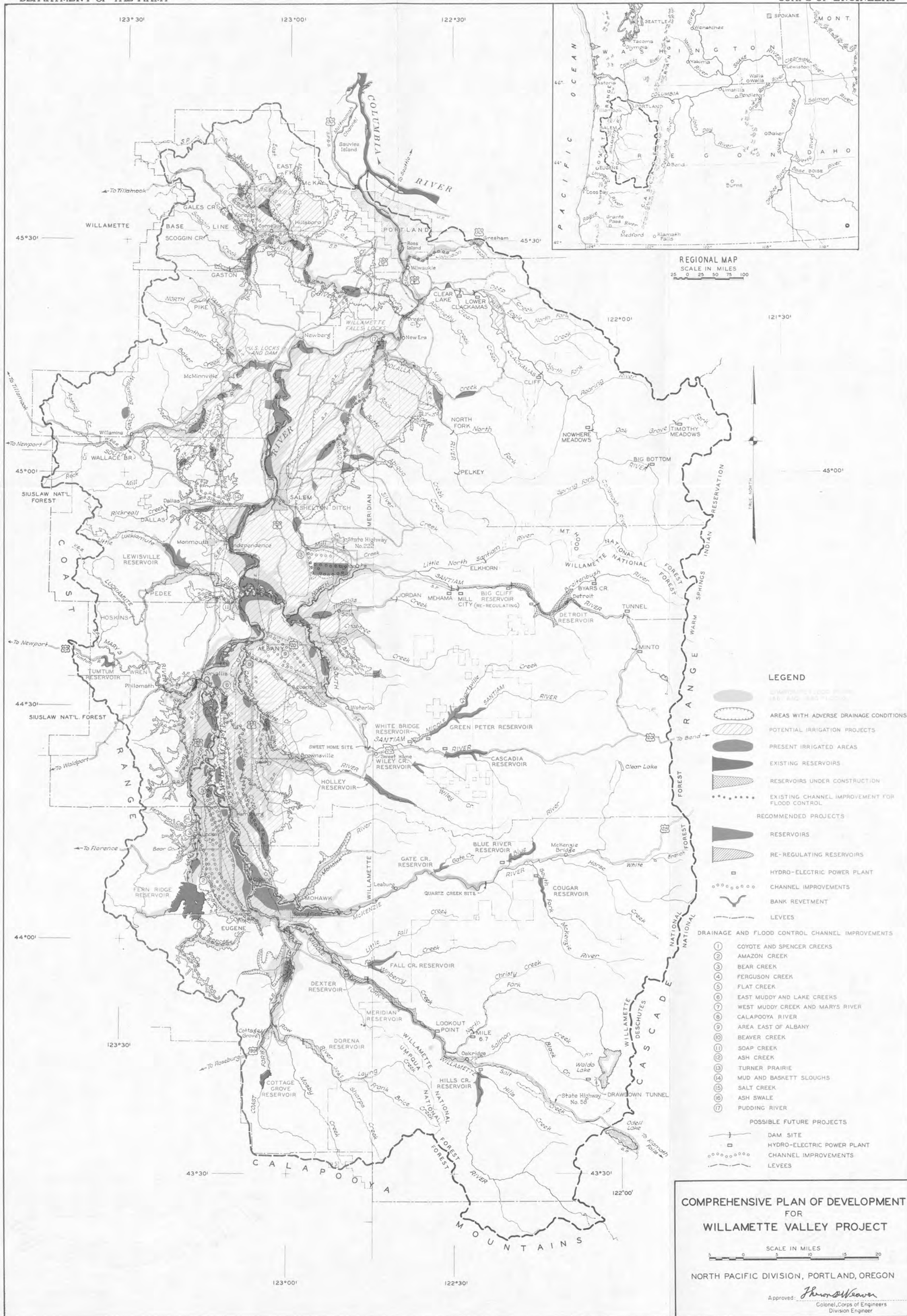
c. Navigation improvements on Columbia and Snake Rivers	3,650,000	Open river channel above Lewiston and 21 harbors
d. Downstream power units	<u>53,848,000</u>	At existing and authorized plants
Total Federal first cost	1,787,670,000	\$13,493,000 Non-Federal first cost

2. Modified Willamette Project 390,746,000 Non-Federal first cost
\$41,141,000

3. Sub-Basin Plans

a. Previously recommended flood control and navigation projects	9,012,100	\$693,600
b. Local flood protection, other than reservoirs:		
(1) Bonners Ferry on Kootenai River	750,000	79,000
(2) Clark Fork	336,000	52,000
(3) Yakima River	850,000	50,000
(4) Columbia River and minor tributaries above Yakima River	1,050,000	75,000
(5) Upper Snake River	4,418,000	347,000
(6) Central Snake River	1,865,000	135,000
(7) Middle and Lower Snake River	3,398,000	272,000
(8) Minor tributaries below Yakima River	1,488,000	62,000

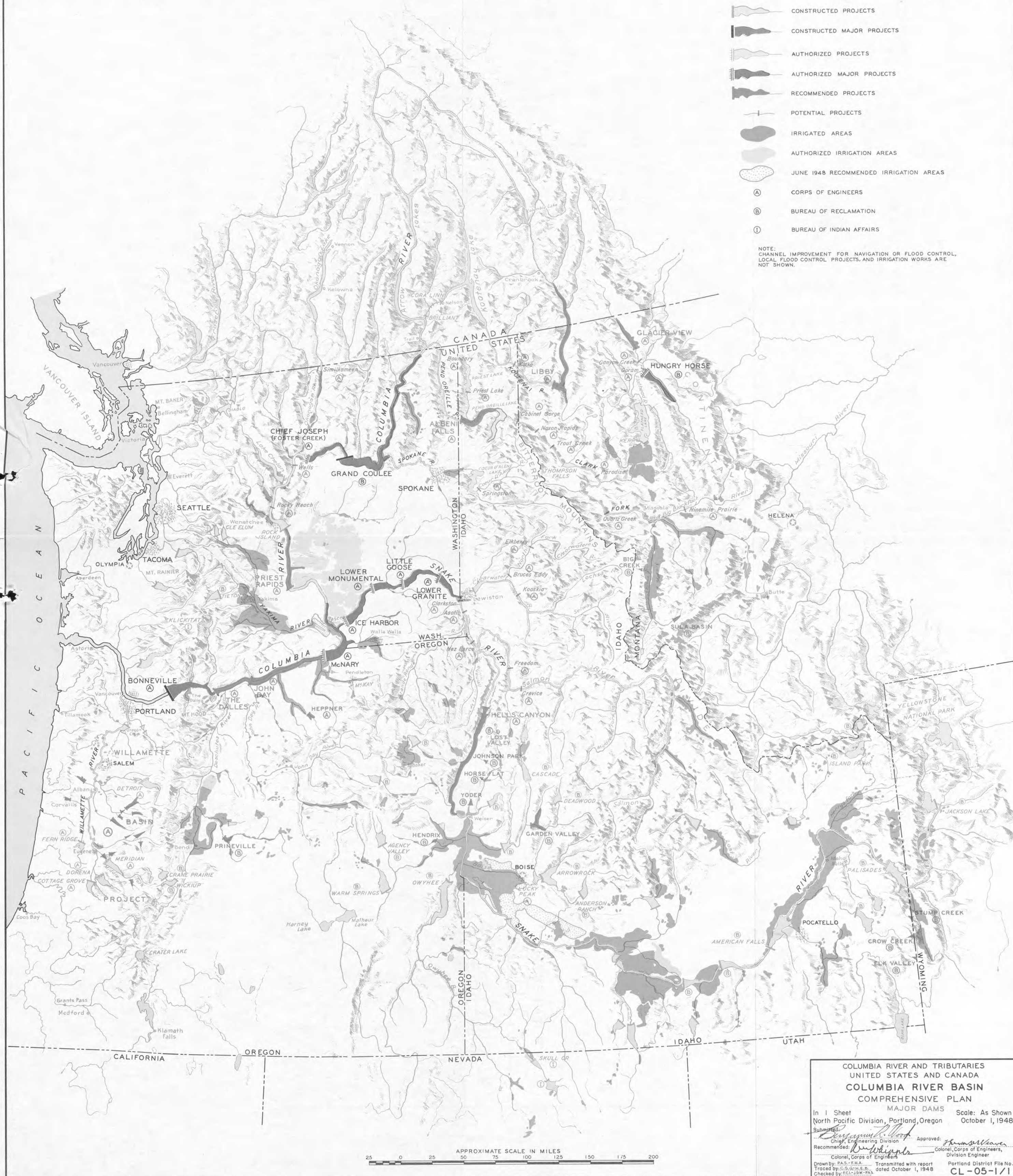
3.	<u>Sub-Basin Plans</u> (Cont'd)		<u>Non-Federal first cost</u>
b.	Local flood protection, other than reservoirs: (Cont'd)		
	(9) Other improvements throughout Columbia River Basin	<u>15,000,000</u>	<u>1,000,000</u>
	Total Federal first cost, Sub-Basin plans	29,155,000	\$2,072,000 Non-Federal first cost
4.	<u>Associated Plans:</u>		
a.	Lower Columbia River Fishery Plan	20,000,000	
b.	Hydrometeorological reporting network	500,000	
c.	Power Transmission systems	<u>462,669,000</u>	
	Total Federal first cost - Associated plans	\$483,169,000	
5.	¹³ 23 Irrigation Projects of Bureau of Reclamation	273,324,000	
6.	Grand Total Federal first cost	\$2,973,076,000	
7.	Total Non-Federal first cost	<u>51,399,600</u>	
8.	Grand Total first cost	\$3,030,475,700	



LEGEND

- CONSTRUCTED PROJECTS
- CONSTRUCTED MAJOR PROJECTS
- AUTHORIZED PROJECTS
- AUTHORIZED MAJOR PROJECTS
- RECOMMENDED PROJECTS
- POTENTIAL PROJECTS
- IRRIGATED AREAS
- AUTHORIZED IRRIGATION AREAS
- JUNE 1948 RECOMMENDED IRRIGATION AREAS
- CORPS OF ENGINEERS
- BUREAU OF RECLAMATION
- BUREAU OF INDIAN AFFAIRS

NOTE:
CHANNEL IMPROVEMENT FOR NAVIGATION OR FLOOD CONTROL,
LOCAL FLOOD CONTROL PROJECTS, AND IRRIGATION WORKS ARE
NOT SHOWN.



COLUMBIA RIVER AND TRIBUTARIES
UNITED STATES AND CANADA
COLUMBIA RIVER BASIN
COMPREHENSIVE PLAN

In 1 Sheet
North Pacific Division, Portland, Oregon
Scale: As Shown
October 1, 1948

Submitted by: *Benjamin T. Wood*
Chief, Engineering Division
Recommended by: *Benjamin T. Wood*
Colonel, Corps of Engineers
Approved: *James M. Weaver*
Colonel, Corps of Engineers
Division Engineer
Drawn by: P.A.S.-T.N.A. Transmitted with report
Traced by: S.S.S.-S.C.H.S.S. dated October 1, 1948
Checked by: F.C.L.-J.D.W.-P.A.S.
Portland District File No.
CL-05-1/1



N. P. 1386
12-24

TELEGRAM—BE BRIEF

TIME FILED

M.

St. Paul, August 9, 1948

H M Tremaine - "poikane"

A-91 We have no information here as to money damage. That would have to come from Wyo Mtn and Idaho divisions supplemented by your information.

Suggest you obtain this data and then submit to me for the Management to pass on for furnishing to McComb. I assume this is to further the program for flood control. B-93

B. Blum

TELEGRAM



TELEGRAM



TELEGRAM



N.P. RY. ST. PAUL
TELEGRAPH OFFICE

1948 AUG 9 PM 1 42

NP142SF G SPOKANE 9 1050A

BERNARD BLUM STP

ROBERT MCCOMB SUPERVISOR OF LOCAL WEATHER OFFICE HAS ASKED IF THE
NORTHERN PACIFIC COULD FURNISH HIME THE ESTIMATED COST TO US OF THE
FLOOD DAMAGE BROUGHT ABOUT IN THE RECENT RUNOFFS IN THE TERRITORY IN
WHICH THE COLUMBIA RIVER AND TRIBUTARIES ARE FOUND ABOVE GRAND
COULEE DAM AND FOUND IN NORTHEASTERN WASHINGTON NORTHERN IDAHO AND
NORTHWESTERN MONTANA THE WEATHER BUREAU OFFICE IS AT GEIGER FIELD SPOKANE
WILL YOU PLEASE ADVISE IF YOU HAVE ANY FIGURE YOU WISH ME TO QUOTE ~~WIZ~~ HIM
A-91

H M TREMAINE.

8868

Saint Paul, July 22, 1948

MR. J. W. HAW:

Thank you for your letter of the 2nd sending me the editorial in the Portland paper with respect to upstream storage for the Columbia River dams:

As I discussed with you on the train yesterday I think very highly of this article, especially with reference to storage in Canadian lakes and a limited raise of waters in Lake Pend Oreille.

I do not like the present plan of the U S Engineers with respect to the height to which they propose to raise Lake Pend Oreille behind the Albeni Falls dam.

bb/s

J. M. H.
yes, particularly in Canada
& to a limited extent
Pend Oreille

Saint Paul 1, Minnesota,
2 July 1948.

MR. B. BLUM:

This editorial appealed to me and I believe coincides with your ideas as to how and where upstream storage should be provided.

Of course, hydro-power could be firmed up by steam plants located adjacent to large centers of power consumption such as around Portland, Seattle, Tacoma and Spokane. In the end this might be more economical than to go upstream and provide storage reservoirs to equalize runoff in the main stem of the Columbia throughout the year. I am quite certain that is what private power companies would do.

J. M. H.

JWH:LBS

CHIEF ENGINEER
JUL 3 1948
ST. PAUL, MN
RY.

PORTLAND, OREGON, WEDNESDAY, J

TODAY'S GUEST EDITORIAL

River Control

By W. E. SOUTHARD

Attorney, Ephrata, Wash.

I have lived in the state of Washington for 47 years and have studied the Columbia river and its possibilities for some 20 years in connection with the data that we have, including Maj. Butler's findings and his data on the runoff of all the streams above the Grand Coulee dam, taken from the United States records.

I was requested in 1933 to go Nelson, B. C., to testify and give my views on the matter in the West Kootenai Power company's undertaking to secure some storage in the Kootenai lake basin. Since then I have co-operated to a considerable extent with the British Columbia people in the matter of storage in the three great basins in the upper reaches of the Columbia—the Pend Oreille lake basin on our side of the line and the Kootenai basin and the Great Arrow lakes on the main stem of the Columbia river. I also have the data gathered by the engineers of British Columbia on the flow of the Columbia, and the possibility of storage on the main stem of the river which flows through these lakes. I have the records that those engineers have made.

These records show that in these three basins we can store 26 million acre-feet and that is one third of the mean flow of the river, which is 78 million acre-feet; the lower flow is 50 million acre-feet and the greater flow is 101 million acre-feet. These figures cover the years as far back as 1894, which was a year very much like this year.

The matter of the distribution of storage and the general things that affect this river is in the hands of the international joint commission, which has control of these matters up to a point where there is a division, at which time it would be referred to the respective state departments of our country and Canada.

I have outlined my theory of storage and control of the river to the chairman of that commission on our side of the line, and I am able to say that he agrees with me completely. This storage will enable us to run all the 18 generators at Grand Coulee. It will, of course, greatly increase the power on all dams built or to be built on the Columbia. Secondly, it will so improve the navigability of the Columbia river as to more than double the number of boats that can now operate on the river, and will insure a flow of 108 thousand feet at Pasco at the lowest water period, which would be January and February. It will also increase the supply of water, if necessary, for irrigation.

I have just returned from Washington, D. C., and I am able to say that there will be a delegation from congress out here to go over these basins and advise themselves of their value and necessity. I had no trouble in interesting the senators I contacted in the importance of this storage.

Portland can rest assured that if this storage is provided that there will never be another flood that will interfere with the traffic above Portland. That is my purpose in coming to The Oregon Journal to get these matters before the public here, and help to get the movement for storage initiated.

8731

Saint Paul 1, Minnesota,
21 June 1948.

B

MR. R. W. CLARK:

I attach map of Columbia Basin area showing in color the first four blocks of irrigated land to be developed in the East District under the East Low Canal. Order of development is as indicated E-1, E-2, etc. Figure under such designation is the irrigated ~~area~~ in each unit.

Units E-1 and E-2 comprising a total of 36,740 irrigated acres are scheduled by the Bureau of Reclamation to receive water for production of a crop in 1952. Settlement, land clearing and leveling and farmstead construction should start in the late summer of 1950 and be in full progress during 1951.

Units E-3 and E-4 will follow directly thereafter.

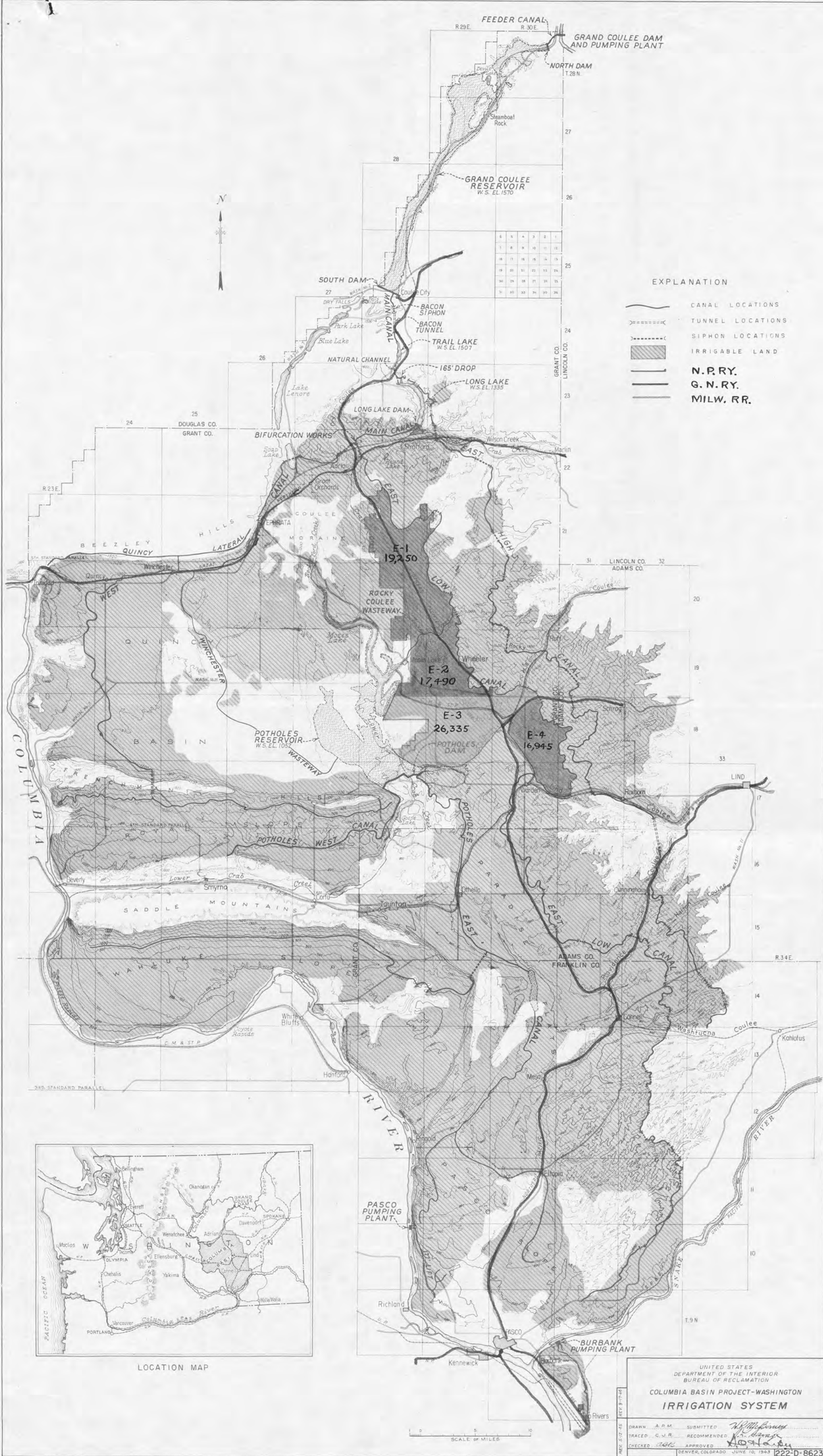
It is estimated that the appropriation for the July 1, 1948-June 30, 1949 government fiscal year will carry the east low main canal from Adrian to a point approximately midway between Wheeler and Varden where some very heavy construction will be encountered.

Map should be retained for your file. I am supplying duplicates to those to whom copy of this letter is given.

JWE:LBS
Att.
cc: WJudson
BBlum
JHughes

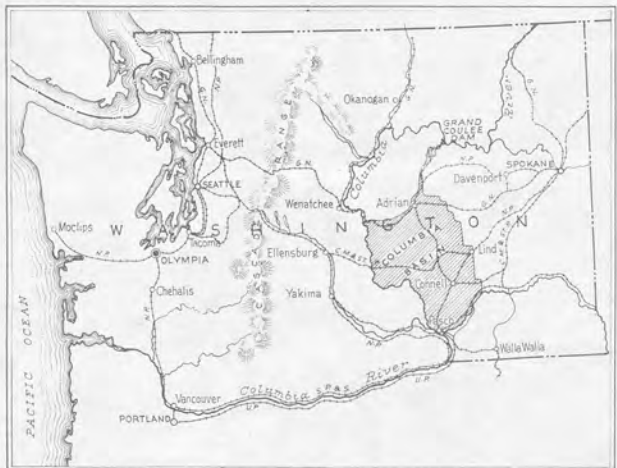
J. M. Haw





EXPLANATION

- CANAL LOCATIONS
- TUNNEL LOCATIONS
- SIPHON LOCATIONS
- IRRIGABLE LAND
- N.P.R.R.
- G.N.R.R.
- MILW. R.R.



LOCATION MAP

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA BASIN PROJECT-WASHINGTON
IRRIGATION SYSTEM

DRAWN A.R.M. SUBMITTED *W.H. Kistler*
TRACED G.W.R. RECOMMENDED *W.H. Kistler*
CHECKED *W.H. Kistler* APPROVED *W.H. Kistler*
DENVER, COLORADO JUNE 10, 1963 222-D-8623

8731

Seattle Journal of Commerce, June 18th, 1948

BASIN ROADS TO COST STATE \$57 MILLIONS

SPOKANE.—George P. Weber, state highway department engineer, said here that the total cost of road construction in the Columbia Basin irrigation district will be \$57,500,000, under present estimates. Of this amount, \$40,000,000 will be for the 4000 miles of county or district roads. It is planned to have a crossroad reach one of the state highways at three-mile intervals.

"Sticking his neck out," as he put it, Weber said the system should be completed by 1956. It would cost more to build the highways after the water is on the 1,000,000 acres of land in the project.

There is no system of highway financing, Weber said, that includes a proper reserve for depreciation. This is generally handled as part of maintenance.

Columbia basin district retail sales will be \$55,000,000 a year, on which the sales tax will be \$1,500,000. But there are many intangible or unmeasurable ways in which settlement of the area and reconstruction of its highway will mean money for the rest of the state.

The saving to travelers merely by shortening the cross-state routes will amount to \$350,000 a year, the engineer estimates. There will also be less car maintenance and more riding comfort.

On highway economics in general it is well to remember that only one road in Washington pays its own way, Weber said. That is U. S. 99, running from Canada to Oregon through Bellingham, Everett, Seattle, Tacoma and Vancouver.

The department is conscious of the difficulties at Spokane's west entrance, he said, but he is not handling the details. He refused to be quoted on plans for routing U. S. highway 10 into Spokane via Marshall and providing a freight by-pass from Marshall to Greenacres, just touching the city limits at the southeast corner.

Mr. Baker
note to Mr. Baker 6/19

B

OFFICE OF
CHIEF ENGINEER
JUN 12 1948
NDR. PAC. RY.
ST. PAUL, MN.

8731

Saint Paul 1, Minnesota,
28 October 1947.

B

MR. R. W. CLARK
✓ MR. B. BLUM
MR. J. M. HUGHES

Mr. Haw has asked that I send you a copy of the
attached letter from Mr. Stapleton relative to the construction
status of the Columbia Basin projects for your information and file.

Lawrence D. Smith
Secretary to Mr. Haw.

LBS

CHIEF ENGINEER
OCT 129
1947
NY
ST
DR. PAC

C
O
P
Y

C
O
P
Y

Seattle, Washington,
October 3, 1947.

MR. J. W. HAW:

Construction status Columbia Basin project:

POWER PLANT: Generators 7, 8 and 9 due to go on line approximately October 15, February 15 and May 15. There may be delays. Funds available. Generators 10, 11 and 12 are under construction. Some progress payments have been made on these generators.

MAIN PUMPING PLANT: Work suspended. Backwall and rock work completed. Tunnels bored.

FEEDER CANAL: (Delivers water from pumping plant outlet to Grand Coulee reservoir): Work suspended. 50% complete.

SOUTH DAM: Work in progress. 40% complete.

NORTHERN PORTION OF MAIN CANAL (South Dam to Long Lake): Work in progress. Excavation 44% complete.

BACON SIPHON AND TUNNEL: Work on siphon and outlet portal of tunnel suspended. Work on intake portal of tunnel in progress. Siphon and tunnel 26% complete.

LONG LAKE DAM: Work in progress. 26% complete.

SOUTHERN PORTION OF MAIN CANAL (From Long Lake to bifurcation works): Work suspended. 50% complete.

FIRST SIX MILES OF WEST CANAL (From bifurcation works to Soap Lake): Work suspended. 48% complete.

FIRST TWELVE MILES OF EAST LOW CANAL (Extending south and east from bifurcation works into NP territory): Work in progress. 11% complete.

POTHOLES DAM: Work in progress. 32% complete.

PASCO PUMPING UNIT: Work in progress. 90% complete. If pumps and pumping plant equipment delivered on time water expected to be available for this unit in April 1948. But there is no certainty that water will be available on this date.

As you know Bureau estimates that deficiency appropriation of \$15,000,000 is necessary to progress all existing contracts to July 1, 1948, this including features exclusively incident to the Dam.

WPS:MCG

cc: R.S.MacFarlane & F. J. Berry

W. P. STAPLETON

8731

Saint Paul, October 6, 1947

MR. J. W. HAW:

Thank you for your letter of September 16 transmitting to me a statement of the principal features of the Columbia Basin as outlined by James O. Sullivan.

I am glad to have a statement in this way showing the principal features.

bb/s

Relained by Mr. Beum

8731

~~JWH~~
JWH

Saint Paul, Minnesota,
16 September 1947.

MR. BERNARD BLUM:

It occurred to me you might wish to have on your file an authoritative statement of the principal features of the Columbia Basin.

Attached find a brief, late statement of the various project features which can be retained for reference.

JMA aw

JWH:LAB
Att.

B

CHIEF OF ENGINEER
SEP 18 1947
ST. LOUIS MO

DATA RE MAIN CONSTRUCTION FEATURES
OF THE
COLUMBIA BASIN PROJECT

By
James O'Sullivan
Administrative Assistant
Columbia Basin Commission
August 1, 1947

MULTIPLE-PURPOSE FEATURES

1. Grand Coulee Dam. The dam is 550 feet high above lowest point of bedrock, nearly 4,200 feet long at the top, 500 feet thick at the base, and 30 feet thick at the top. If the recesses in the granite abutments at each end of the dam, which are used for housing the cranes that operate on top of the dam are included, the length of the dam at the top is nearly 4,400 feet. As of October 17, 1945, the concrete in this dam and all structures considered a part of the dam, such as the head wall of the pumping station, was 10,230,776 cubic yards. The concrete in the two powerhouses was then 321,113 cubic yards, making a total of 10,551,889 cubic yards of concrete in the dam, head wall, and powerhouses. As turbines and generators are installed, the total yardage of concrete will increase. Construction of Grand Coulee Dam was begun in 1934 and completed in 1941, just in time for some of its power to be used in the war effort. The estimated cost of the dam and powerhouses, with all generators installed, is about \$225,000,000.

- a. Repairs to Bucket. During construction of the dam, all of the river flow was taken over low blocks of concrete in the dam, thus setting up a reverse or rotary current for about 300 feet downstream that caused gravel and rock to be carried into the bucket of the dam. This caused erosion of the bucket. More than \$6,000,000 to date has been invested in a drydock and a huge floating caisson and other equipment. The caisson is to be used in repairing the bucket. Work should certainly begin during low water in the fall of 1947 in repairing the bucket. It is estimated that this work will require seven years to complete because work can be carried on only during the short, low-water season each winter.
- b. Riprapping Banks of River. Considerable work has been done in riprapping with rock the banks of the Columbia River for about one-half mile downstream from the dam to prevent undercutting of the banks by the swift water and by wave action in high-water seasons. This work may have to be continued for some time.

2. Grand Coulee Power Plant. Pits in the two powerhouses of the dam were provided for the installation of 18 large turbine-driven generators, each of which will have a rated capacity of 108,000 kilowatts and an actual capacity of 120,000 kilowatts, making a total rated capacity of 1,944,000 kilowatts and an actual capacity of 2,160,000 kilowatts. The large generators installed have each carried 125,000 kilowatt-loads continuously over long periods.

Prior to and during the recent World War, six of the large generators were installed and two Shasta generators, each with a rated capacity of 75,000 kilowatts. There were also installed two house units each with a rated capacity of 10,000 kilowatts. During the war the total rated capacity was 818,000 kilowatts.

After the war, the two Shasta generators and turbines were removed and shipped to Shasta Dam, leaving the present rated capacity of Grand Coulee power plant (August 1, 1947) at 668,000 kilowatts.

The construction of three large new generating units to be installed in the West or Left Powerhouse is well under way. The Bureau of Reclamation is now installing the turbines of these units. When installation of these generators is completed in 1948, the rated capacity of the power plant will be 992,000 kilowatts. The Bureau of Reclamation's plans call for completion of the installation of L-7 by November 1, 1947; L-8 by February 1, 1948; and L-9 by June 1, 1948.

By November 1946, contracts in the sum of \$5,737,444 were let for three new 108,000-kilowatt (rated capacity) generating units, (including turbines and governors) for the East (Right) Powerhouse at Grand Coulee Dam. When the three new units for the West Powerhouse are installed by the middle of 1948 and the three units for the East Powerhouse are installed shortly thereafter, the present rated capacity (668,000 kilowatts) will be nearly doubled. The installed rated capacity will then be 1,316,000 kilowatts. Without further upstream storage, the total estimated firm power capacity of the Grand Coulee power plant is about 1,000,000 kilowatts.

3. Columbia River Reservoir (Roosevelt Lake). This lake, formed by Grand Coulee Dam, backs the water to the Canadian boundary. It is 151 miles long, averages eight-tenths of a mile wide, and with a draw-down of 80 feet, furnishes 5,028,000 acre-feet of useful storage which greatly increases the firm power at Grand Coulee and other dams, now built or to be built downstream on the Columbia River. The maximum water stage elevation of Roosevelt Lake is 1,290 feet above sea level.

IRRIGATION FEATURES

1. Grand Coulee Pumping Station. It being necessary to provide for the Grand Coulee Pumping Station during the construction of Grand Coulee Dam, a set-back in the west granite abutment of the dam, upstream and adjacent to the dam, was excavated. A head or outer wall connected with the dam was then constructed. This head wall is in reality a dam about 600 feet long, about 150 feet high above granite foundations, about 65 feet wide at the base, and contains between 150,000 and 200,000 cubic yards of concrete. The intakes for the pumps are located in this head wall.

Between the head or outer wall and the west side of the set-back, there will be installed 10 giant pumps, each with a capacity of 1,600 second-feet and each driven by a 65,000-horsepower motor. There will be space left for the installation of two additional pumps and motors. The center-line of the pumps will be at elevation 1,203 feet, low enough to provide for a draw-down of 80 feet in Roosevelt Lake. The intakes of the pumps will be 14 feet in diameter and the center-line elevation of the intakes at the intake gates will be, as shown on the plans, 1,191.75 feet. A different figure of 1,193.27 feet given for such elevation of the intakes may be due to a subsequent change in the plans. The draw-down of 80 feet in Roosevelt Lake, when useful storage is fully utilized, will be from the top of the intake gates at about normal water stage elevation of 1288 feet to the minimum water stage elevation of 1208 feet.

During excavation for the Pumping Station, 12 tunnels were driven to carry the discharge of the pumps up toward the Feeder Canal. These tunnels will each be lined with steel pipe 12 feet in diameter. From the outlets of the tunnels, steel pipe of the same diameter will carry the water to the intake of the Feeder Canal. The distance from the pumps to the Feeder Canal is about 850 feet.

During the part of the irrigation season when the requirements for water are heaviest, the average height to which the water will have to be lifted from Roosevelt Lake to the Feeder Canal will be about 280 feet. It is estimated that the cost of such pumping will be about 85 cents per acre per year.

Contracts for six of the huge pumping units were awarded prior to November 1946, at a delivered price of \$3,572,000.

For some time the Bureau of Reclamation, by force-account, had been preparing the Pumping Station for the installation of the pumps and motors. Work at the Pumping Plant by Government employees virtually ceased by July 10, 1947, due to anticipated restrictions on force-account activities by Congress.

2. The Feeder Canal. This canal, which will be about 1.6 miles long, will be able to carry about 16,000 cubic feet of water per second (equal to the average flow of the Colorado River at Boulder Dam) from the headworks of the pump outlets to the Equalizing Reservoir in the upper Grand Coulee. This canal will be 116.9 feet wide at the water surface, 50 feet wide at the bottom, and the water depth will be 22.3 feet. A reported water depth of 25 feet is from the top of the concrete lining.

The work of excavating the Feeder Canal had been carried on by the Bureau of Reclamation on force-account in order to obtain rock for riprapping the banks of the Columbia downstream from the Grand Coulee Dam and to maintain a crew for work on the bucket of the dam, which can only be carried on during periods of low water. Work on this canal ceased in the middle of July, 1947 because of force-account reductions.

3. The North Dam. This dam of rock and earth fill will be located near the outlet of the Feeder Canal. It will be approximately 1,360 feet long and about 90 feet high. It will not be constructed until later since it would obstruct the highway from Coulee City to the Grand Coulee Dam and cause premature abandonment of the Government railroad using the floor of the upper Grand Coulee.

4. The Equalizing Reservoir. This reservoir will be about 27 miles long from the North Dam to the South Dam at Coulee City. When full, this reservoir will be at elevation 1570 feet. It will contain nearly 700,000 acre-feet of useful storage. The total storage of the Equalizing Reservoir is about 1,000,000 acre-feet. The draw-down of this reservoir, in order to furnish about 700,000 acre-feet of useful storage, is 30 feet.

5. The South Dam. This rock and earth fill dam, when completed, will be about 10,000 feet long, about 65 feet high above lowest ground surface, and will have a maximum width at the base of about 450 feet. Bair and Crick of Spokane are building this dam under a contract in the sum of \$2,771,887. The dam is located across the upper Grand Coulee at a point close to Coulee City, Washington. The present U. S. highway 10-A, which is almost parallel with the axis of this dam, will be carried on top of the dam.

The site of this dam has been stripped to bedrock, the bedrock has been grouted, a concrete core wall in and above the bedrock has been virtually completed, and an impervious mixture of soil is being placed and compacted on both sides of the core wall. The dam will contain a total of 1,500,000 cubic yards of earth and rock.

6. The Main Canal. The Main Canal begins at the South Dam at Coulee City and extends to the Bifurcation Works northeast of Adrian, Washington, a distance of about 20 miles. It will be capable of carrying 13,200 second-feet of water to a point a

very short distance north of Long Lake. Here, when the 110-mile long East High Canal is built to serve about 215,000 acres of project land, 3,070 second-feet may be used to supply the East High Canal and the balance, or about 10,130 second-feet, will drop a distance of 165 feet into Long Lake to serve the West and East Low Canals and the Potholes Reservoir. The Main Canal, which also will serve directly from the canal about 6,400 acres consists of the following features:

- a. Twenty-four hundred feet of Main Canal to be constructed by the contractors who are building the South Dam near Coulee City. This section will extend south from the South Dam.
- b. A section of the Main Canal from the part mentioned in "a" to Bacon Siphon. This section, about 6,900 feet long, is included in a contract with J. A. Terteling and Sons, Inc. for the construction of the Main Canal proper from the part mentioned in "a" to Long Lake, excluding Bacon Siphon, Bacon Tunnel, and Trail Lake. In the Terteling section leading to Bacon Siphon, heavy excavation in basalt rock is being done with a 15-cubic-yard dragline. In this section, due to the topography, etc., the canal varies in size. At one place, the canal, which will be lined with concrete, will be 24 feet wide at the bottom, 95 feet wide at the top (water level), and the water depth will be 23.68 feet. At another place, where the canal will be unlined, the canal will be 50 feet wide at the bottom, 86 feet wide at the top (water level) and the depth of the water will be 36 feet. The contract price for the Terteling portion of the Main Canal to Long Lake is \$1,548,060.
- c. Bacon Siphon. This reinforced concrete siphon will be 1,000 feet long and 23 1/4 feet in inside diameter. Excavation for the foundation of this siphon has been carried well along by the T. E. Connolly Company.
- d. Bacon Tunnel. The next feature proceeding south is Bacon Tunnel. This tunnel will be about 10,000 feet long and 23 1/4 feet in inside diameter. Excavation of the upper section of this horseshoe shaped tunnel, which is 13 feet deep and 19 feet wide, has proceeded from both ends. In July, 1947, the contractor began driving the full heading from the intake portal. Most of the excavation is in basalt rock. The T. E. Connolly Company has the contract for both the Bacon Siphon and Bacon Tunnel in the sum of \$3,494,420. This contract includes the lining of the tunnel with concrete. The tunnel under construction will serve 500,000 acres. The tunnel contract includes a short section of the Main Canal from the outlet of the tunnel, not over 1,000 feet long. A companion Bacon Siphon and Tunnel ultimately will be constructed.
- e. From the short section of the Main Canal at the outlet of Bacon Tunnel, mentioned in "d" the Terteling Company, under its contract heretofore mentioned, will construct a section of the Main Canal about one mile long leading to what will be known as "Trail Lake."
- f. Trail Lake. This is a natural channel which will be about one and one-fourth miles in length (exclusive of canal cuts at each end) running south. The normal water elevation in this lake will be 1,507 feet.
- g. From the outlet of Trail Lake, the Terteling Company will construct under their contract a section of the Main Canal about 10,000 feet long, in a southeasterly direction to Long Lake.
- h. Long Lake Dam. This dam is under construction by the Terteling Company

under contract in the sum of \$1,770,592. The dam will be about 1,900 feet long, about 110 feet in maximum height and will contain about 1,500,000 cubic yards of earth and rock fill. It will save about 5 1/2 miles of heavy canal construction along the rock side wall of Long Lake. The normal water stage elevation of this 5 1/2 mile-long lake will be 1,335 feet. Stripping to bedrock has been done, bedrock has been grouted, and a concrete core wall in and above bedrock partly completed. Impervious material will be placed on both sides of the core wall, wetted down in layers and rolled. An outlet tunnel 7 1/2 feet in diameter is under construction. The contract allows eight hundred days for completion of Long Lake Dam after the date of award.

- i. From Long Lake Dam to the West and East Low Canal Bifurcation Works 2 1/2 miles northeast of Adrian, the Morrison-Knudsen Co. has completed the excavation of 6 1/2 miles of Main Canal under their contract in the sum of \$619,000. This part of the Main Canal is 50 feet wide at the bottom, 112 feet wide at the top (water surface) and 20.73 feet deep (water depth). It will carry 9,700 second-feet of water. This contract was awarded April 26, 1946, and the contractor had 750 days for completion after notice to proceed. He completed the job in about half the specified time. The lining of this canal with 4 1/2 inches of concrete will be handled under a later contract.

7. The West Canal. This canal will be 80 miles long when completed and will irrigate about 281,000 acres. A contract for the first 5 1/2 miles of this canal, from the Bifurcation Works to Soap Lake, was let to the Utah Construction Co. and Winston Bros. for \$2,871,796.50. The contract includes lining parts of the canal with concrete 4 1/2 inches thick. The size of this canal varies. There is an unlined earth section 50 feet wide at the bottom and 107 feet wide (water level) at the top. The normal concrete lined section is 38 feet wide at the bottom and 87 feet wide (water level) at the top. The initial capacity of this section of the canal will be 5,100 second-feet. The contractors have commenced to line with concrete a portion of the West Canal. Near the beginning of the West Canal there are under construction two reinforced concrete siphons across Dry Coulee. These siphons will each be about 25 feet in diameter. No. 1 Dry Coulee Siphon will be about 4,520 feet long. No. 2 Dry Coulee Siphon will be about 1,175 feet long. The siphons will be covered with earth. The contractor has 900 days to complete this section of the West Canal after the date of notice to proceed. The contractors are well along with this construction.

8. East Low Canal. This canal, when completed, will be 130 miles long, with an initial capacity of 4,500 second-feet to irrigate about 252,000 acres. A contract for the construction of the Bifurcation Works and the first 12.3 miles of this canal was let to the Utah Construction Co. and Winston Bros. in the sum of \$3,977,136.75. The part of the canal under construction will have a maximum bottom width of about 72 feet and a maximum water-level width of about 120 feet.

The part under construction, which reaches a point halfway between Adrian and Wheeler, has three reinforced concrete siphons, each 19 feet four inches in diameter. One is 3,250 feet long across Crab Creek and under primary State highway No. 2, north of Adrian. One is 1,400 feet long across Crab Creek and under the Great Northern Railway north of Adrian. Farther south in the 12.3 mile section there is to be Broken Rock Siphon No. 1 which will be 881 feet long. The contractors have constructed a highway, waterline and powerline almost the full length of the 12.3 miles of construction and have begun to construct a part of the canal.

9. The Potholes Dam. The Lytle, Green and Amis Construction Companies have the contract for the construction of the Potholes Dam. This rock and earth fill dam

across the Crab Creek channel south of Moses Lake will be about 19,000 feet long, about 200 feet high above lowest bedrock and will contain about 9,190,000 cubic yards. The contract price is \$9,359,011. The dam will form a lake with an area of 47 square miles, with a gross storage of 615,000 acre-feet, and an active storage of 350,000 acre-feet. This lake will catch an estimated 862,000 acre-feet of run-off water per year from irrigated lands to the north. From the East and West Potholes Canals, with an initial capacity of 4,835 second-feet, the lake will irrigate about 267,600 acres of land to the south and west of Potholes Dam. This lake will have a normal water stage elevation of 1,052 feet and will raise Moses Lake five or six feet. The contractors are now constructing this dam between islands of rock. They are making excellent headway.

10. The Pasco Pumping Unit. This consists of nearly 5,400 acres to be irrigated by water pumped out of the Columbia River at a point about 14 miles northwest of Pasco, Washington. The pumping lift will be 177 feet. The James Construction Co. of Seattle has a contract for the Pumping Station in the sum of \$188,537.68. This pumping plant has a capacity of 945 gallons per second. The J. A. Terteling Co. has a contract for the canals in the sum of \$714,223. There will be about 79 farms in this unit averaging 70 acres in size. Water will probably be delivered to the 5,400 acres in the spring of 1948.

Irrigable Acreage.

The project acreage to be irrigated may be summarized as follows:

Main Canal	-- about	6,400 acres
East High Canal	-- about	215,000 acres
East Low Canal	-- about	252,000 acres
West Canal	-- about	281,000 acres
Potholes Lake	-- about	267,600 acres
Burbank Division	-- about	<u>7,000 acres</u>

TOTAL 1,029,000 acres

NOTE

The contracts mentioned, except those for the generating equipment and for the pumping units, do not include large expenditures for material furnished by the Bureau of Reclamation.

COLUMBIA BASIN CONSTRUCTION DESCRIBED BY BUREAU ENGINEER

SPOKANE.—Contractors building millions of dollars in dams, canals, siphons, and other irrigation structures in the Columbia Basin project are slowing down their work to enable the bureau of reclamation to meet progress payments during the coming months, R. B. Williams, assistant district manager of the project, reports.

Speaking before the Columbia Basin committee of the Spokane Chamber of Commerce, Williams explained that the retrenchment program on different structures varies because some contractors have reached the critical stage of certain jobs and must go ahead as rapidly as possible before winter.

He commented that the bureau

has about \$36,600,000 in existing obligations for the fiscal year, which began July 1, but that available funds, including carry-over, are about \$21,600,000.

"That leaves us short about \$15,000,000," he added, pointing out that Reclamation Commissioner Michael

W. Straus has assured project officials he will seek a deficiency appropriation from the congress "that will keep the project rolling for the entire fiscal year," which ends next June 30.

Present Status Outlined

Here is a step-by-step review of construction in the Basin, as presented by Williams:

Main pumping plant at Coulee dam—All construction work halted because of restriction on construction by government crews. The world's largest pumps and electric motors are being built for the pumping plant and some discharge pipe for the pumping works has been received at Coulee Dam.

Feeder canal—All work on this canal, which leads from the pumping plant outlet to the future reservoir in the Upper Grand Coulee, has been halted.

South dam, near Coulee City—"Good progress" has been made on this 10,000-foot dam at the lower end of the Grand Coulee, but curtailment of construction will be necessary because of limited funds.

Main canal, northern portion—Lining postponed indefinitely by contractor.

Bacon siphon and Bacon tunnel—Contractor T. E. Connelly has halted work on the Bacon siphon and has withdrawn crews from the outlet portal operations of the 10,000-foot Bacon tunnel. Work is limited to driving the full heading of the tunnel from the intake portal. The contractor has shifted some construction machinery from this job.

Long Lake dam—Work on this dam will cease shortly and the contractor will emphasize work on his portion of the Main canal contract.

West canal—Contractor has ceased work on west canal and is concentrating his forces on the East low canal.

Potholes dam—Work on this 3½-mile dam near the center of the project has not been appreciably curtailed yet because the contractor must bring embankments to the original ground line before winter.

Pasco pumping plant—Materials shortages have slowed work on this job, but the bureau is proceeding with plans to have irrigation water delivered to the 5361-Pasco unit next spring.

Williams told the chamber members that installation of new generating units at the Grand Coulee dam is going ahead satisfactorily and explained that L-7, the first postwar generator scheduled for completion, "may go on the line about Oct. 15 to help alleviate the critical power situation in the Pacific Northwest."

OF ENGINEER
CHIEF
SEP 20
1947
RY.
ST. PAUL
MINN.

8731

Seattle, Wash.
Aug. 28, 1947

29-5

U.S. Columbia Basin Works

Mr. Bernard Blum:

It occurred to me that you might be interested in the attached clipping from the Seattle Journal of Commerce, August 27, 1947, indicating the Reclamation Department propose to use about 90,000 sq. yds. of asphaltic concrete 2-inches in thickness in the 14 mile canal northwest of Pasco in lieu of the ordinary concrete lining usually used in irrigation canals of this size.

J. Derrig
Assistant Chief Engineer

JTD:c

cc RSM
JFA

~~H. R. P. K.~~
~~C. E. S. M.~~
~~J. E. H. 9/6 H 9/3~~
~~D. H. S. 9/3~~
~~L. B. C. 9/3~~
9/1 note B.B.

OFFICE OF
CHIEF ENGINEER
AUG 13 1947
LDR PAC RY
ST. PAUL, MINN.

General, Wash.
Aug. 23, 1947

20-2

Re: St. Louis Bridge

Dear Sir:

It is requested to have your attention directed to the fact that the bridge is being built in the vicinity of the St. Louis Bridge, and that the bridge is being built in the vicinity of the St. Louis Bridge. The bridge is being built in the vicinity of the St. Louis Bridge, and the bridge is being built in the vicinity of the St. Louis Bridge.

Respectfully,
Chief Engineer

Yours,
LDR

cc -
LDR

BRILL
ST. PAUL-MINN.
1947
2
SEP
OFF
LDR PAC RY
ST. PAUL-MINN.

Seattle, Wash.
Aug. 28, 1947

29-5

U.S. Columbia Basin Works

Mr. Bernard Blum:

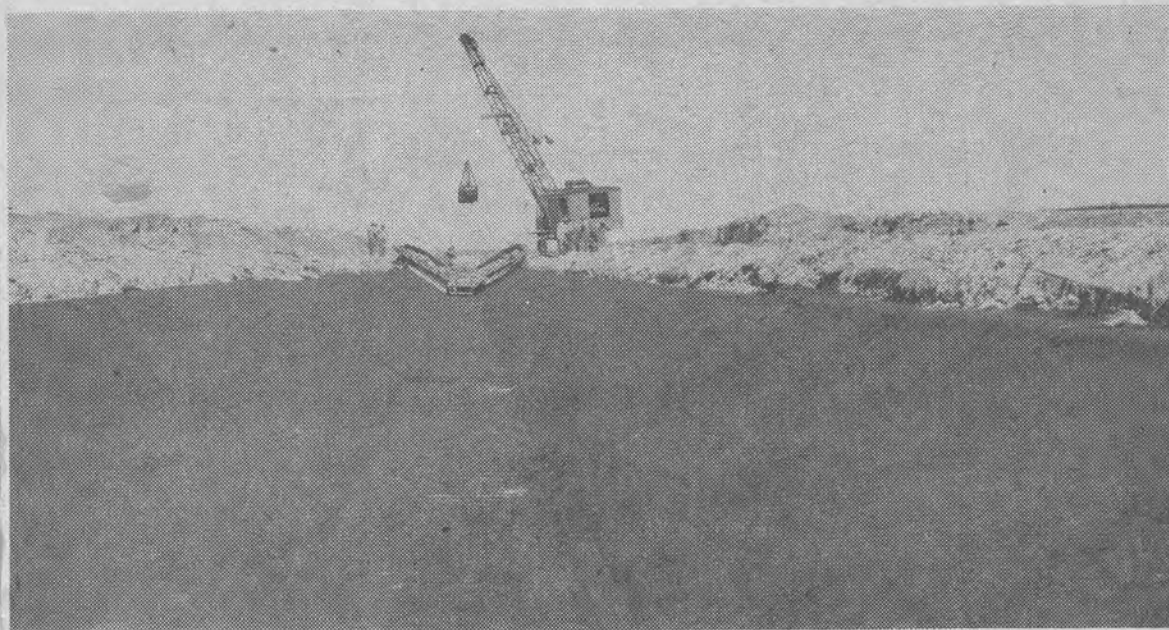
It occurred to me that you might be interested in the attached clipping from the Seattle Journal of Commerce, August 27, 1947, indicating the Reclamation Department propose to use about 90,000 sq. yds. of asphaltic concrete 2-inches in thickness in the 14 mile canal northwest of Pasco in lieu of the ordinary concrete lining usually used in irrigation canals of this size.

J. T. DERRIG
Assistant Chief Engineer

JTD:c

cc RSM
JFA

LATERAL CANAL LINED WITH ASPHALT



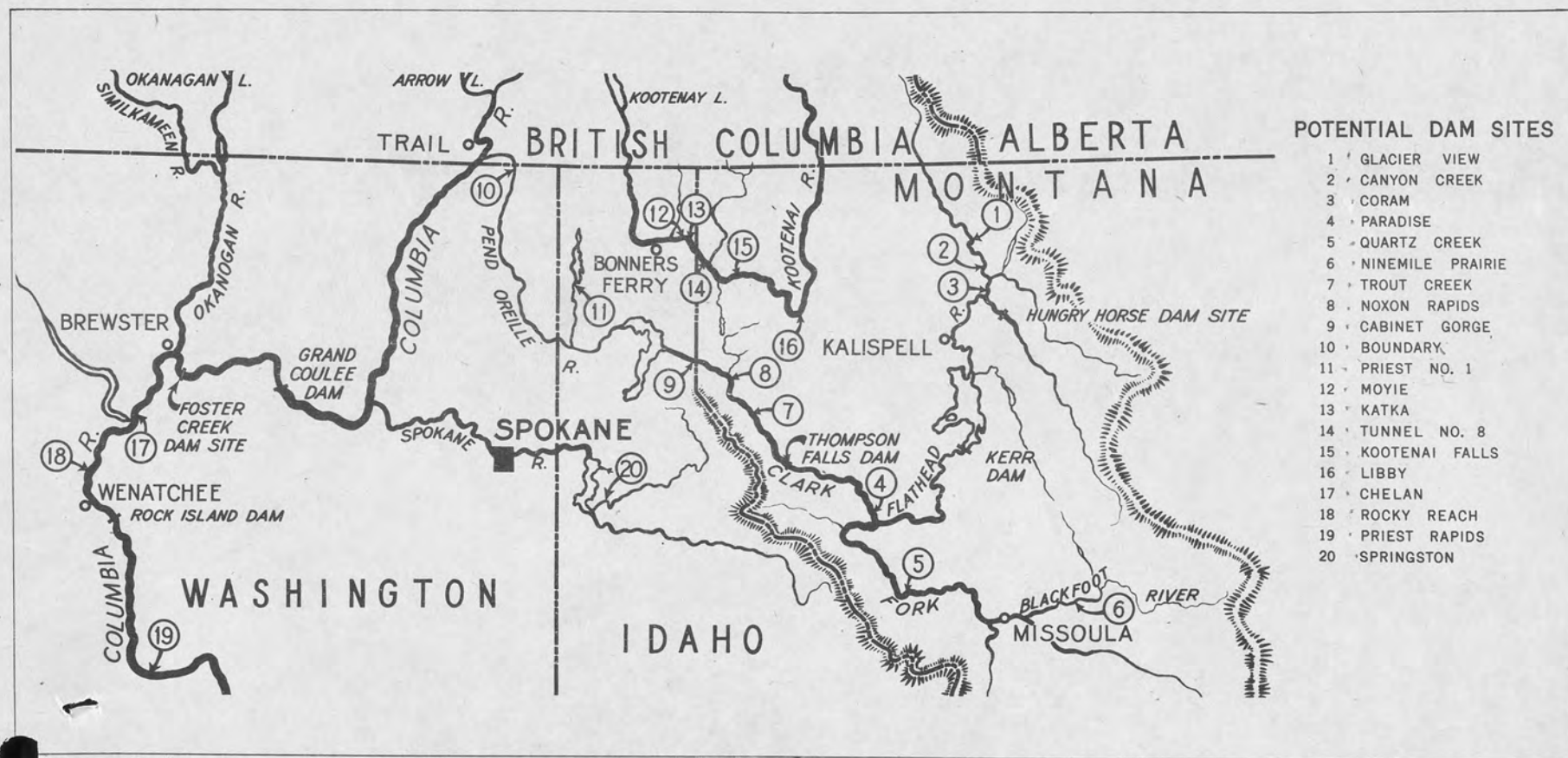
Experimental installations of asphalt in canal lining have heretofore been relatively small and have not offered opportunity to develop placing machinery for the material. Above is shown a Madsen Asphalt Plant and Ekenstam canal lining machine (with certain modifications) at work under supervision of the general contracting firm of J. E. Terteling & Sons lining the Pasco pump lateral canal of the Columbia basin with asphalt.

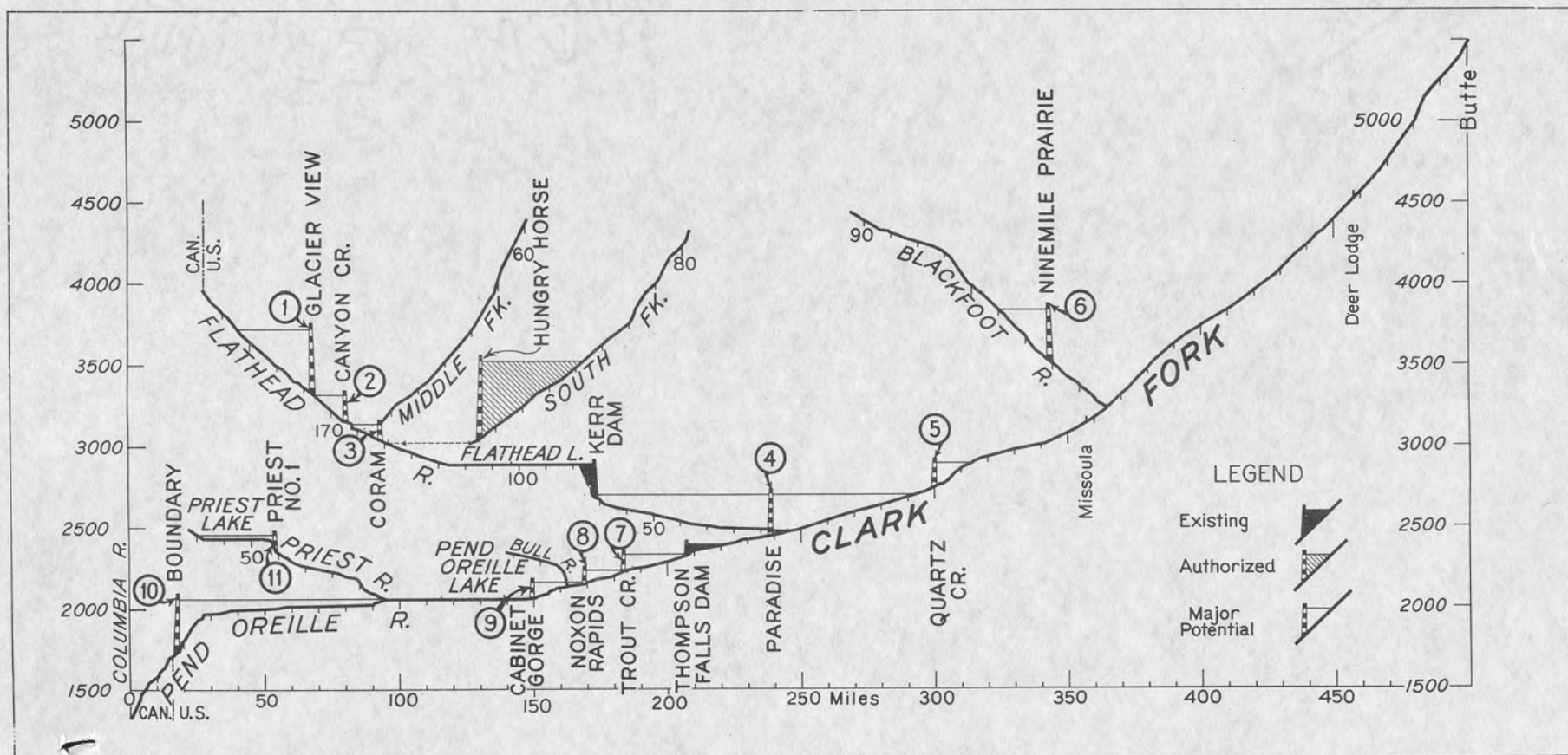
The work involves the placing of 90,000 square yards of asphaltic concrete 2-inches in thickness. The canal is 14 miles northwest of Pasco and the Tom McCorkle Const. Co. of Boise carried out the subcontract work in mixing and hauling the asphaltic material.

The Pasco project represented the first major installation of asphaltic canal lining in which it was specified that the mix be placed by machine methods. The machine used was developed at the plant of the Madsen Iron Works, Los Angeles. It was designed to obtain compactness by means of rollers but it was found that by substituting hot screeds weighted down with sacks of sand, the required compactness was secured and better results in general were obtained.

Special Agent in Charge, St. Paul, Minn.

MR. PAC. RY. CO.
- OFFICE OF -
SEP 2 1947
BRIDGE ENGINEER
ST. PAUL, MINN.





OFFICE OF
ASST. CHIEF ENGR.
JUN 3 1947
N. P. RY. CO.
SEATTLE, WASH.

May 29 '47

2 DAMS OPPOSED AT ARMY HEARING

State of Idaho and
Two U. S. Agencies
Fight Plans.

By LEON STARMONT.

SANDPOINT, Idaho, May 28.—Loud opposition was voiced at the army engineers hearing today to both the proposed dam at the outlet of Priest lake and to the Boundary dam on Pend Oreille river in northeastern Washington.

Tempers grew hot in late afternoon when Percy Campbell, operator of a Newport pole plant, protested "as an American citizen" at what he termed the "unfair attitude" of Col. L. H. Hewitt, Seattle district engineer, who did not encourage voting on the question.

"This is a hearing in which all views offered will be passed on to the war department at Washington," Col. Hewitt said. Pressed for a show of hands, he consented to such an off-record balloting, and the result was about two to one against the boundary project at the afternoon meeting.

Proponents of the project, however, had been heard in the forenoon and the colonel said he did not believe the result would be much more than 50-50 if all who attended both sessions were heard.

All Oppose Priest Dam.

On the Priest lake dam sentiment was virtually unanimous against the proposed raising of the lake, which would create an annual drawdown of 37 feet. Even the United States forest service through Meyer H. Wolff of Missoula protested against a plan that he said would ruin the lake as a resort.

Mark R. Kulp, Idaho state hydraulic engineer, also opposed the Priest lake dam, but said the state will make no official protest against holding the level of Pend Oreille lake at 2062½ feet, which is a few inches lower than it is today.

Priest lake resort owners heard in opposition to the outlet dam included Walt Hunziker, proprietor of the outlet resort and secretary of the Resort Owners' association and Jim Lowe, William G. Warren, dairyman, and Roy Rednour, cattle raiser, also spoke against the Priest lake dam. Fred Foster of Portland, with the United States fish and wildlife service, said definite conclusions now would be premature.

Lake 140 Miles Long.

When the boundary dam was considered, it was brought out that a lake would be created extending 140 miles from the Canadian border to the tip of Pend Oreille.

Glenn E. Bandelin marshaled those who favored this project. A. B. Lafferty, Coeur d'Alene, and Roosevelt lake boat operator, said it would provide cheap transportation for the Metaline area and might even make it unnecessary for the Milwaukee railroad to relocate its branch.

Col. Hewitt suggested that Bandelin also act as master of ceremonies at the afternoon session. This brought a violent protest from Albert M. Nash, Clark Fork mine operator, and Eugene Ralph,

(Continued on page 10, column 7.)

chairman of the Clark Fork citizens committee.

John Derr and his brother, Alfred Derr, former state senator, argued against using Pend Oreille as a storage reservoir, saying it would be better engineering to utilize headwaters of the Pend Oreille basin, which are nearly all in forested valleys and therefore would flood no farms.

Potato Crop Large.

Oliver Ruen, Clark Fork potato king, told of paying \$15,000 for a 40-acre farm and taking enough from his first crop to pay for it. Hesitating a bit, he said his income tax might interfere with that.

Ralph brought the day's biggest laugh by saying Clark Fork farmers were afraid the Kamloops trout of Pend Oreille might bite their calves. Ralph also said he believed it was unwise to install such an important dam only one mile from the international line.

Nash said the whole northwest should be suspicious of the designs of Dr. Paul Raver of Bonneville power administration to dominate the region's economy.

Paul Hecker, Sandpoint deputy sheriff, raised the cry of "Idaho waters for Idaho power," and suggested a power dam at Albeni Falls, near Newport, with the boundary dam enough lower to keep from flooding parts of the valley in Washington.

Would Wipe Out Towns.

A map exhibited at the hearing shows the proposed lake backed up by a boundary dam would be six miles wide near Cusick and Usk, Wash., both of which would be inundated.

There would be bays from a mile to three miles deep at Ione, Tiger and the mouth of Skookum creek, in Washington, and at Priest river, Cocolalla creek and Morton, Idaho. Water would be backed six miles up Pack river, which flows into Pend Oreille lake west of Hope, Idaho.

Several speakers for the Pack river area expressed fear for their farms, and were advised they could present briefs until June 10 if map comparisons indicate great damage would result.

Tomorrow's hearing at Metaline Falls is expected to bring out strong opposition from mining interests to the boundary dam.

OFFICE OF
ASST. CHIEF ENGR.
JUN 3 1947
N. P. RY. CO.
SEATTLE WASH.

Seattle Journal of Commerce, May 28th, 1947

FLOOD CONTROL DAM HEARINGS SLATED

SANDPOINT, Ida.—(Special) —
The army engineers will conduct
a public hearing here Wednesday
May 28, on two proposed flood con-
trol dams in this area.

Under the proposals a dam
would be built across Pend Oreille
river in Washington near the Cana-
dian border and another across
Priests river below the Priest lake
outlet. The engineers want to
store water during flood season
and release it during the late sum-
mer to guarantee a steady flow to
the Columbia river power plants.

A similar hearing is scheduled
Thursday in Metaline Falls, Wash.

Mr Blum
note 5/29

B

OFFICE OF
CHIEF ENGINEER
JUN 1 1947
NOR. PAC. RY.
ST. PAUL, MINN.

St. Paul, May 5, 1947.

Mr. J. T. Derrig:

My letter of April 21 and your reply of the 26th about proposed hearing of the War Department at Sandpoint in connection with investigation of early reports on the development of the Columbia River and tributaries:

We have just received notice from the War Department, (probably you have received the same), advising that this hearing has been changed from May 13 to May 28.

Chief Engineer

TRG:S

cc: H. M. Tremaine

WAR DEPARTMENT

Corps of Engineers

Office of the District Engineer
Seattle District

1400 Textile Tower

Seattle 1, Washington

1 May 1947

NOTICE OF PUBLIC HEARINGS

Reference is made to the Notice of Public Hearings dated 15 April 1947 in which it was stated that public hearings would be held in the Community Hall at Sandpoint, Idaho at 9:30 a.m. on 13 May 1947, and in the school gymnasium at Metaline Falls, Washington at 9:30 a.m. on 14 May 1947 to present information on the current review and further investigation by the Corps of Engineers of its earlier reports on development of Columbia River and Tributaries. Because it is thought that many residents and representatives of the interested local, state, and Federal agencies may desire to attend the 8th meeting of the Columbia Basin Inter-Agency Committee at Idaho Falls on 15 May 1947 and/or the 1947 annual meeting of the Idaho State Reclamation Association in the same city on 16-17 May 1947, it is believed advisable to postpone the scheduled hearings.

ACCORDINGLY, THE HEARING AT SANDPOINT, IDAHO WILL BE HELD IN THE COMMUNITY HALL AT 10:30 a.m. ON 28 MAY 1947, AND THE HEARING AT METALINE FALLS, WASHINGTON WILL BE HELD IN THE SCHOOL GYMNASIUM AT 10:30 a.m. ON 29 MAY 1947.

One of the projects investigated by this office, pursuant to the resolution quoted in the reference notice, is the Boundary project in northeastern Washington. These hearings are being held so that this office may inform local interests regarding these projects, and also to obtain their views regarding them. These views will be presented to higher authority in connection with the review report authorized by the reference resolution or in any special report that may be ordered by such authority.

The Boundary project contemplates the construction of a 1350-foot arched, concrete, gravity dam about 430 feet high on the Pend Oreille River at a site about one river mile upstream from the Canadian boundary. If this project is constructed, the reservoir above the dam would have a normal water surface elevation of 2062.5, thus creating a navigable body of water more than 135 miles in length and consequently offering substantial inducements to the development of navigation. Such a pool level equivalent to the ordinary stage occurring almost annually on Lake Pend Oreille would have a surface area of 136,500 acres and would inundate all

of the area known as Calispell Flats and about 5,000 acres of other agricultural lands. It is believed that it would not impair mining operations if some mine adits were relocated and existing ones sealed, nor interfere with the manufacture of Portland cement at the present site. Such an expanse of fresh water would give impetus to the rapid development of additional recreational facilities and, together with the dam, would constitute a major tourist attraction.

The spillway of the dam would be of conventional ogee design and would occupy the entire width of river channel so that, in combination with channel improvement at Albeni Falls and Box Canyon, sufficient capacity would be available to pass future flood flows without exceeding the unregulated flood stage of Pend Oreille Lake for a flow equivalent to the maximum known flood. Flood damage to property on the shores of the lake would be reduced for floods of lesser magnitude.

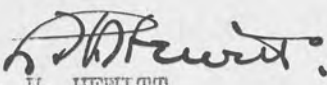
The powerhouse would be located on the left bank downstream from the dam axis, and initially would consist of eight 104,000-kilowatt electric generators, each driven by 144,000-horsepower Francis turbines. Provision would be made during construction for ultimate expansion to 16 main units when the demand for power necessitates the installation of additional generating capacity.

Another project to be considered is a dam, to be located near the outlet of Priest Lake, which would provide controlled storage on the lake.

In order that interested parties may be afforded an opportunity to express their views and opinions for the further guidance of this office, it is desired that all persons or agencies affected by such proposals be represented at the scheduled time and place. Sufficient time will be made available to discuss the character and extent of the proposed improvements as well as to consider various possible alternative developments.

Oral statements are solicited, but for the accuracy of the record, it is desired that important facts and evidence be furnished in writing. It is suggested that submission of such material subsequent to the hearing will have the advantage of factual backgrounds to be presented at the hearing by representatives from this office. Prepared exhibits should be mailed to the office of the District Engineer not later than 10 June 1947.

Please bring the contents of the foregoing to the attention of persons known by you to be interested in these developments.


L. H. HEWITT
Colonel, Corps of Engineers
District Engineer



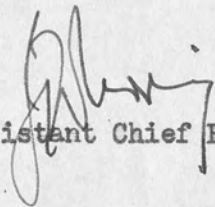
Seattle, Wash.
April 26, 1947

Columbia River - Flood Control

Mr. Bernard Blum:

Your letter of the 21st in reference to proposed hearing of
the War Department at Sandpoint, 9:30 in the morning, May 13th.

I advised Mr. Tremaine under date of April 21st to attend
this hearing.


Assistant Chief Engineer

JTD:p

cc JFA



Seattle, Wash.
April 20, 1947

Colin A. Liver - 120-1-10-1

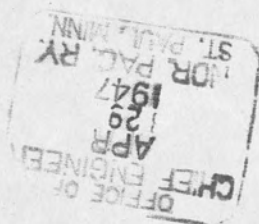
Mr. Bernard E. ...

Your letter of the 15th in reference to proposed hearing of
the War Department at Washington, D.C. in the morning, May 15th.
I received Mr. ... under date of April 15th to attend
this hearing.

Respectfully,
Assistant United States Attorney

W:L

cc 44



Saint Paul, April 21, 1947

MR. J. T. DERRIG:

Under date of April 15 Col. Shaler, Executive Officer of the U S District Engineer, SEATTLE, issued a notice of public hearing to be held in the Community Hall at SANDPOINT at 9:30 AM, May 13, to present information concerning review and further investigation of the earlier reports on development of the Columbia River and tributaries.

The notice goes on to say that the hearing will "pertain to potential developments on Pend Oreille River below Pend Oreille Lake and to Priest River".

bb/s

WAR DEPARTMENT

Corps of Engineers

Office of the District Engineer
Seattle District

1400 Textile Tower

Seattle 1, Washington

15 April 1947

NOTICE OF PUBLIC HEARINGS

Public hearings will be held in the Community Hall at Sandpoint, Idaho at 9:30 a.m. on 13 May 1947, and in the school gymnasium at Metaline Falls, Washington at 9:30 a.m. on 14 May 1947 to present information concerning the current review and further investigation by the War Department of its earlier reports on Development of Columbia River and tributaries, and to obtain the views of all interested parties with respect to the most beneficial further utilization of Columbia River water resources. The review report will be made pursuant to the following resolution adopted 24 September 1943:

"United States Senate

Committee on Commerce

Resolved by the Committee on Commerce of the United States Senate, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby requested to review the reports on the Columbia River and tributaries submitted under the provisions of House Document Numbered 308, Sixty-Ninth Congress, First Session, as authorized by the River and Harbor Act of January 21, 1927, with a view to determining whether any modification of existing projects or recommended comprehensive plans of improvement should be made at this time."

Reports on six streams within the Columbia River Basin were submitted to comply with the provisions of the River and Harbor Act of 21 January 1927; namely, the John Day, Lewis, Cowlitz, Willamette, and Snake Rivers and that portion of the Columbia together with its minor tributaries from the international boundary to tidewater. All such reports were prepared as directed in the Act, "with a view to the formulation of general plans for the most effective improvement of such streams for the purpose of navigation and the prosecution of such improvement in combination with the most efficient development of the potential water power, the control of floods, and the needs of irrigation." The report on "Columbia River and Minor Tributaries," by far the most extensive yet presented for utilization of Columbia River waters, presented a comprehensive plan of development and, as a part thereof, advocated the construction of a series of 10 dams on

the main stem. This is the report referred to in the foregoing resolution. The minor tributaries considered were those on which regulated storage would materially affect the regimen of the main stem. Three of the suggested main stem projects have been constructed; two others have been authorized for construction, and many tributary developments are in progress or completed. Additional meteorological and hydrological data are now available, and extensive economic developments have taken place in recent years. These facts have made it essential to re-examine and extend the findings of the original reports in order to assure the most advantageous continued development of the water resources throughout the Columbia River system.

It is emphasized that the present investigations are not directed toward altering materially the original plans, but instead will contemplate such additional proposals as are needed to keep abreast of the expanding economy of the Northwest.

Previous hearings have been held by this Department and other agencies at which many interested persons expressed opinions and submitted statements concerning proposed Columbia River developments which have been useful in guiding the investigations to date. However, the shift to peacetime operations and the recent authorizations for construction of many projects, as well as the lapse of time since the last hearings, make it appropriate for the War Department at this time to apprise the public of progress to date, of the special problems encountered, and of such practicable solutions as now seem apparent. At the same time, it is especially desired to secure current statements from the well-informed and interested residents which will assist this office in formulating plans that will be most satisfactory to all.

Oral statements are solicited, but for the accuracy of the record, it is desired that important facts and evidence be furnished in writing. Prepared exhibits may be handed to the presiding officer or mailed to the office of the District Engineer at the address given above. It is suggested that submission of such material subsequent to the hearing will have the advantage of factual backgrounds presented by representatives from this office at the hearing.

These hearings will pertain to potential developments on Pend Oreille River below Pend Oreille Lake and to Priest River. A number of alternate plans have been investigated, among which the most satisfactory from the standpoint of local desires and over-all regional benefits remains to be determined.

FOR THE DISTRICT ENGINEER:



W. R. SHULER
Colonel, Corps of Engineers
Executive Officer

OFFICE OF
CHIEF ENGINE
APR 18 1947
NOR. PAC. RY.
ST. PAUL, MINN.

29-5
8731
Seattle Journal of Commerce, April 15th, 1947

PLAN ENDORSED BY BASIN GROUP

A resolution urging the government to appropriate the full sum of \$27,500,000 for the Columbia Basin irrigation project has the endorsement of the Columbia Basin commission and a committee representing various state organizations.

The group passed another resolution opposing any changes in present reclamation laws unless to get the appropriation, legislation is necessary to clarify what happens to interest payments from power and irrigation districts.

Reclamation and irrigation leaders from throughout the state were told at a meeting here yesterday that three eastern congressmen on an appropriations subcommittee say they will withhold a major part of Columbia Basin funds unless the interest payments go into the U. S. treasury.

A department of interior solicitor has reportedly ruled that the interest payments should go into a department revolving fund where they can be used for additional work.

Yesterday's meeting was called to reconcile differences between state groups in order to put up a united front for the full appropriation for the Columbia Basin project.

Before the resolutions were adopted, Floyd O. Hagie, National Reclamation association spokesman, argued in favor of amending the reclamation act, particularly to curb the powers of the interior department secretary.

Members of the commission contend there should be no legislation whatsoever because it would give hostile eastern congressmen a peg on which to carry on their battle to curtail project funds.

Sen. Warren Magnuson echoed their sentiment and said the campaign for full Basin appropriations would be carried on more efficiently if no bills were put before congress at this time.

*Mr. Blum
note p. 4
16*

B

2-PS



OFFICE OF
ENGINEER
CHIEF
APR 1947
NOR
ST. PAUL
MINN.

8731

WAR DEPARTMENT

Corps of Engineers

Office of the District Engineer
Seattle District

 1400 Textile Tower
Seattle 1, Washington

20 March 1947

NOTICE OF PUBLIC HEARINGS

Public hearings will be held in the Country Club at Kalispell, Montana at 9:30 a.m. on 15 April 1947, and in the Court House at Libby, Montana at 9:30 a.m. on 17 April 1947 to present information concerning the current review and further investigation by the War Department of its earlier reports on development of Columbia River and tributaries, and to obtain the views of all interested parties with respect to the most beneficial further utilization of Columbia River water resources. The review report will be made pursuant to the following resolution adopted 24 September 1943:

"United States Senate

Committee on Commerce

Resolved by the Committee on Commerce of the United States Senate, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act, approved June 13, 1902, be, and is hereby requested to review the reports on the Columbia River and tributaries submitted under the provisions of House Document Numbered 308, Sixty-Ninth Congress, First Session, as authorized by the River and Harbor Act of January 21, 1927, with a view to determining whether any modification of existing projects or recommended comprehensive plans of improvement should be made at this time."

Reports on six streams within the Columbia River Basin were submitted to comply with the provisions of the River and Harbor Act of 21 January 1927; namely, the John Day, Lewis, Cowlitz, Willamette, and Snake Rivers and that portion of the Columbia together with its minor tributaries from the international boundary to tidewater. All such reports were prepared as directed in the Act, "with a view to the formulation of general plans for the most effective improvement of such streams for the purpose of navigation and the prosecution of such improvement in combination with the most efficient development of the potential water power, the control of floods, and the needs of irrigation." The report on "Columbia River and Minor Tributaries," by far the most extensive yet presented for utilization of Columbia River waters, presented a comprehensive plan of development and, as a part thereof,

1 advocated the construction of a series of 10 dams on the main stem. This is the report referred to in the foregoing resolution. The minor tributaries considered were those on which regulated storage would materially affect the regimen of the main stem. Three of the suggested main stem projects have been constructed; two others have been authorized for construction, and many tributary developments are in progress or completed. Additional meteorological and hydrological data are now available, and extensive economic developments have taken place in recent years. These facts have made it essential to re-examine and extend the findings of the original reports in order to assure the most advantageous continued development of the water resources throughout the Columbia River system.

It is emphasized that the present investigations are not directed toward altering materially the original plans, but instead will contemplate such additional proposals as are needed to keep abreast of the expanding economy of the Northwest.

Previous hearings have been held by this Department and other agencies at which many interested persons expressed opinions and submitted statements concerning proposed Columbia River developments which have been useful in guiding the investigations to date. However, the shift to peacetime operations and the recent authorizations for construction of many projects, as well as the lapse of time since the last hearings, make it appropriate for the War Department at this time to apprise the public of progress to date, of the special problems encountered, and of such practicable solutions as now seem apparent. At the same time, it is especially desired to secure current statements from the well-informed and interested residents which will assist this office in formulating plans that will be most satisfactory to all.

Oral statements are solicited, but for the accuracy of the record, it is desired that important facts and evidence be furnished in writing. Prepared exhibits may be handed to the undersigned or mailed to him. It is suggested that submission of such material subsequent to the hearing will have the advantage of factual backgrounds presented by representatives from this office at the hearing.

The hearing at Libby will pertain particularly to provisions for storage on Kootenai River in the United States, by means of which destructive floods may be controlled and the flow of the river regulated to accomplish other beneficial water uses. A number of alternate plans have been investigated, among which the selection of the most satisfactory from the standpoint of local desires and overall regional benefits remains to be determined.

The hearing at Kalispell will be devoted to problems of additional storage development on upper Flathead River for flood control and other

1
purposes; consideration of remedial measures to cope with St. Regis River floods; and an outline of the potential projects that have been investigated for the development of the Clark Fork Basin above Pend Oreille Lake.



L. H. HEWITT
Colonel, Corps of Engineers
District Engineer

OFFICE OF
CHIEF ENGINEER
MAR 24 1947
NOR. PAC. RY.
ST. PAUL, MINN.

8731

Spokane, Washington
February 13, 1947

Mr. J. T. Derrig:

For your file on the Columbia Basin Irrigation Project, I am attaching hereto mounted clipping from the Spokesman-Review of February 11th, listing the contracts reported to have so far been awarded to date on this project and are now under way.

District Engineer

HMT:lcb

Enc.

cc-Mr. Bernard Blum ✓

B

MAIN BUILDERS IN BASIN LISTED

Sites, Firms, Cost,
Key Personnel Are
Disclosed.

COULEE DAM, Wash., Feb. 11.—Office headquarters and key personnel of contracting firms handling more than \$27,000,000 in bureau of reclamation construction jobs on the Columbia basin irrigation project were listed today by bureau officials.

The information, they said, will prove useful to grocers, dairies, equipment dealers, fuel distributors, service agencies, and other business firms in all parts of the Pacific northwest which provides supplies and machinery for construction jobs and contractors' camps.

Following is the list:

South dam—Bair-Crick company; contract \$2,771,000. James Crick Jr., general superintendent; address, Coulee City, Wash.

Odair aggregates preparation—J. G. Shotwell; \$172,000; Coulee City.

Northern section of main canal—J. A. Terteling & Sons; \$1,548,000; Eugene C. Williams, superintendent; Allen C. Rice, office manager; Coulee City.

Bacon tunnel and Bacon siphon—T. E. Connolly, Inc.; \$3,494,000; W. D. Connolly, superintendent; R. K. Buker, comptroller; Coulee City.

Long Lake dam—J. A. Terteling & Sons; \$1,770,000; Bob Ross, general superintendent; Jack Ward, assistant general superintendent; Rudy Hardin, office manager; Stratford, Wash.

Southern section of Main canal—Morrison-Knudsen company; \$679,000; Roy F. Johnson, superintendent; H. M. Skov, engineer; O. O. Williams, office manager; Ephrata, Wash.

West Canal Contractors.

First section of West canal—Winston-Utah Construction company; \$2,800,000; George Mann, project manager; Roy Harer, general superintendent; A. P. Fisher, engineer; R. L. Wahl, office manager; Ephrata.

First section of East Low canal—Winston-Utah Construction company; \$3,977,000; same personnel as West canal except that J. C. Agnew is engineer; Ephrata.

Adrian aggregates preparation—H. F. Green & Co.; \$373,000; William Hattamer, superintendent; A. R. Smith, office manager; 603 Chronicle bldg., Spokane, Wash.

Potholes dam—Lytle, Amis & Green; \$9,300,000; P. C. Royer, superintendent of construction; Glenn H. Voegelien, project engineer; Merle Orten, equipment superintendent; F. M. Case, office manager; Moses Lake, Wash.

Pasco distribution system—J. A. Terteling & Sons; \$714,000; Al Perry, superintendent; Glenn K. Caskey, office manager; Pasco, Wash.

Pasco pumping plant—James Construction company; \$188,000; James Pearce, superintendent of construction.

Office Engineer Arthur Davidson of the bureau's irrigation division in Ephrata said that representatives of business firms, who are unfamiliar with the area, can call at the bureau's Ephrata and Coulee Dam offices to obtain travel information regarding the best routes to the various jobs and contractors' camps.

29-5 8731

Mr. Blum
note 9/17

\$13,800,000 WORK STARTED ON COLUMBIA DAMS

COULEE DAM. — For the first time in the history of the west, three earth-and-rock dams are under construction on a reclamation development—the Columbia basin project in eastern Washington, the bureau of reclamation announces.

They are the 3½-mile-long Potholes dam, the 1900-foot Long Lake dam, and the 10,000 South dam. In all, 12,190,000 cubic yards of earth and rock, greater in volume than the 10,500,000 cubic yards of concrete used in the Grand Coulee dam and its two powerhouses, are involved.

The three dams, said bureau officials, represent contracts totaling \$13,800,000 and are part of the comprehensive system of irrigation structures designed to serve more than a million acres of dry land in the Big Bend region of the Columbia river. This area will be divided into from 12,000 to 15,000 family-size farms for veterans and other settlers.

Work on the South dam, near

Coulee City, Grant county, began last fall under a \$2,771,000 contract granted Bair-Crick Co. of Spokane. Heavy earth-moving equipment started operating at the two other dams in the past few days, thus bringing the total under construction to three. A fourth large earth-and-rock dam, on which bids are yet to be called, is the North dam in upper Grand Coulee.

The Boise firm of J. A. Terteling & Sons holds a \$1,770,000 Long Lake dam contract, and the firm of Lytle, Amis & Green will build the \$9,300,000 Potholes dam, fourth longest in the United States.

Long Lake dam, north of Stratford, in Grant County, will save nearly 6 miles of costly main canal construction, said Reclamation Commissioner Michael W. Straus. The Potholes dam, blocking Drummheller channels, near the center of Columbia basin, will capture seepage and return flow from irrigated land, reducing costs at the project's main pumping station.

At the South dam, which will block the upper Grand Coulee to form a 27-mile storage reservoir for the irrigation project, the Bair-Crick Co. is working on the foundation cut-off wall and completing excavation for a two-mile structure.

Terteling Sons are completing their camp and performing preliminary excavation for the foundation and outlet works. The outlet will be used to carry flow of Crab creek and other natural waterways during construction.

If contractors' schedules are maintained, the Long Lake dam is to be completed by Feb. 23, 1949; South dam by Feb. 13, 1949; and Potholes dam by Nov 6, 1950. The Potholes dam will contain approximately 9,200,000 cubic yards of material. Long Lake and South dams will contain about 1,500,000 cubic yards each.

B

Castle Journal of Commerce, Feb 7th, 1947

FOR
FEB
FLO
1947

8731

~~HPP~~

Seattle, Wash.
Feb. 7, 1947

note
B.B.
3/2

29-5

Columbia Basin Project

Mr. J. F. Alsip:

I am attaching hereto duplicate copy of minutes covering regular meeting of the Columbia Basin Inter-Agency Committee held at the Benjamin Franklin Hotel, Seattle, Wash., during the week of January 8, 1947. This meeting was conducted by Colonel Zimmerman alternating for Colonel Weaver of the North Pacific Division, War Department, Portland.

Colonel Walsh, District Engineer, Portland, in submitting his report for the Columbia River improvements indicated that this report will not attempt to consolidate all of the information available under the various Governmental departments, State and Civic organizations. This reports covers numerous dam site possibilities on the Columbia River and its tributaries including Pend Oreille Lake and Clarks Fork and Flat Head Rivers.

Some of these dams will probably never be built or even seriously considered in the remote future such as the dam investigated just west of Paradise on the Clarks Fork River below the junction of the Flat Head and Missoula Rivers, referred to on Page 4 of the Columbia River Review Report (308) - briefed in the attached minutes. The investigation of the possible dam site just below Paradise was based on constructing an earth dam some 350 ft. in height, backing storage water up to a point on the Kerr Dam on the Flat Head River and a corresponding elevation on our low line St. Regis to Missoula.

While no extensive investigation was made on any of these dam projects referred to in the attached report, such as the Paradise project, the investigation nevertheless was handled by experienced engineers and the War Department's report when completed should contain some valuable information for future reference.

J. T. DERRIG

Assistant Chief Engineer

JTD:p

cc BB - Copy of report attached.

Minutes of the Sixth Regular Meeting of the
COLUMBIA BASIN INTER-AGENCY COMMITTEE
Benjamin Franklin Hotel, Seattle, Washington
January 8, 1947

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

1. The meeting was called to order at 9:30 a.m. by Colonel G. J. Zimmerman, C.E., Chairman pro tem., as alternate for Colonel T. D. Weaver, C.E., who was absent. Members, representatives and other interested parties in attendance were:

Federal Members and Alternates:

Colonel G. J. Zimmerman, Corps of Engineers

Mr. J. S. Moore, Alternate, Department of Interior

Mr. Leshner S. Wing, Federal Power Commission

Mr. George T. Hudson, Department of Agriculture
Mr. Robert W. Putnam, Alternate

Dr. Paul J. Raver, Bonneville Power Administration
Mr. D. L. Marlett, Alternate

State Representatives:

Mr. Charles E. Stricklin, Oregon State Engineer

Mr. C. H. Raymond, Montana State Water
Conservation Board

Mr. Mark R. Kulp, Idaho State Reclamation Engineer

Mr. L. C. Bishop, Wyoming State Engineer

Others Present:

Mr. C. E. Webb, Department
of Mines and Resources, Canada

Mr. Ken W. Morton, Public
Works Department of Canada

Colonel L. H. Hewitt
Seattle District Engineer

Colonel O. E. Walsh
Portland District Engineer

Mr. Ben E. Torpen
North Pacific Division

Mr. Ben L. Peterson
North Pacific Division

Mr. Oliver Johnson
North Pacific Division

Mr. Robert E. Hickson
Portland Engineer District

Mr. Douglas Polivka
Portland Engineer District

Mr. Roy R. Clark
Portland Engineer District

Mr. C. C. Galbraith
Portland Engineer District

Mr. Kenneth G. Tower
Portland Engineer District

Mr. L. E. Rydell
Portland Engineer District

Mr. William J. Homan
Federal Power Commission

Mr. John C. Beebe
Federal Power Commission

Dr. Edward N. Torbert
Bureau of Reclamation

Mr. Don S. Campbell
Bureau of Reclamation

Mr. Frank A. Banks
Bureau of Reclamation

Mr. Fred. J. Foster
Fish and Wildlife Service

Mr. Fred M. Veatch
U. S. Geological Survey

Mr. Arthur Johnson
U. S. Geological Survey

Mr. C. C. McDonald
U. S. Geological Survey

Mr. Arthur M. Piper
U. S. Geological Survey

Mr. Paul F. Henderson
U. S. Indian Service

Mr. Walter H. Horning
Bureau of Land Management

Mr. George W. Olcott
National Park Service

Mr. Neal A. Butterfield
National Park Service

Mr. C. A. Davidson
U. S. Forest Service

Mr. Don A. Williams
Soil Conservation Service

Mr. George D. Clyde
Soil Conservation Service

Mr. R. A. Work
Soil Conservation Service

Mr. Hugh J. McLaughlin
Farmers Home Administration

Mr. Wilbur D. Staats
Farmers Home Administration

Mr. Earl D. Ostrander
Bonneville Power Administration

Mr. Henry R. Stevens
Bonneville Power Administration

Mr. J. Frank Ward
Bonneville Power Administration

Mr. Dan B. Noble, Pacific
Northwest Development Assn.

Mr. Kirby Billingsley
Columbia Basin Commission

Mr. H. Maurice Ahlquist, President
Washington State Reclamation Assn.

Mr. Thomas B. Hill, Washington
State Reclamation Association

Mr. Axel E. Strom, Washington
State Reclamation Association

Mr. Holland H. Houston, Wash-
ington Dept. of Public Utilities

Mr. A. L. Ganson
Seattle Chamber of Commerce

Mr. T. K. Dimmitt
Seattle Chamber of Commerce

Mr. E. V. Ellington
Washington State College

Mrs. Earl Weber
League of Women Voters

Mr. Patrick Johnson, Puget
Sound Power and Light Company

Mr. E. H. Collins, Wash-
ington Water Power Company

Mr. H. H. Schoolfield, Pacific
Power and Light Company

Mr. J. L. Maguire
Northern Pacific Railway Co.

Mr. J. T. Derrig
Northern Pacific Railway Co.

Mr. Jack Noser, Seattle
Daily Journal of Commerce

Mr. H. M. Goehring
Great Northern Railway Co.

Mr. Ed. Fussel
The Seattle Star

Mr. Everett H. Thomas
Great Northern Railway Co.

Mr. Ross Cunningham
The Seattle Times

Mr. E. B. Crane, Chicago, Milwaukee, St. Paul & Pacific RR

Mr. D. F. Stevens
Western Construction News

Mr. Elliot Marple, Representative of Eastern trade papers

2. The Chairman asked each Committeeman for a statement covering items of general interest to the Committee as a whole occurring since the November meeting.

a. Mr. J. S. Moore for the Department of Interior. The Pacific Northwest Coordination Committee held its second meeting in Portland on December 4 with Regional Director Newell as Chairman. Following a discussion of the subject of effects of the Columbia River dam construction on salmon fisheries, the Committee authorized the appointment of a subcommittee to consider and report on the problem. The Chairman appointed four members on the subcommittee representing the four agencies (Fish and Wildlife, Indian Affairs, Bonneville Power Administration and Reclamation) more directly concerned. The Chairman also announced the personnel of the Minerals Subcommittee made up of representatives of three agencies (Mines, BPA and Geological Survey) which subcommittee had been authorized at the first meeting of the Committee on October 25. The assignment given this subcommittee is to prepare, as the first order of business, a complete list of mineral raw materials, commodities and problems on which information is required, including the type of information required in each instance. The third meeting of the Coordination Committee was scheduled for January 9 at Portland.

Progress reports on the activities of the individual agencies are as follows:

Fish and Wildlife. Preliminary discussions were held with the Fish and Game Departments of the States of Oregon and Washington looking to the furtherance of the development of fisheries resources in the Lower Columbia and its tributaries. While this program is independent of and apart from the proposed program of dam construction in the Middle Columbia and upper tributaries, its urgency is accentuated thereby.

Geological Survey. Investigations described in previous progress reports have been continued or in some cases completed. During the winter period emphasis generally is placed on office work rather than field work. One exception to this rule is the large amount of basic hydraulic field data that has been collected west of the Cascades during December in regard to the rather unusual floods - highest in Washington

since 1933 for some streams. Sets of river survey topographic plan and profile maps are to be printed and issued soon for large sections of the following streams: Flathead River in Montana and Nooksack, Green, and Dungeness Rivers in Washington.

Land Management. On December 11 the Secretary formally established as the Siuslaw Master Unit a body of forest lands in west central Oregon embracing a total forest area of over 400,000 acres. The order establishing the unit requires local manufacture of the 46 million board feet of annual timber harvest which can be removed continuously from the 145,000 acres of O&C lands included within the unit. The order is expected to result in speedy completion of the first phase of a two-fold program designed to bring about sustained yield forest management on large areas in western Oregon.

Park Service. The National Park Service has established an office on Swan Island, Portland, Oregon.

The primary function of the office is to cooperate with the Bureau of Reclamation in making investigations of the recreational facilities and archeological and historical resources of the Columbia Basin. The work will cover both existing and potential facilities and will involve the preparation of preliminary recreational development plans and estimating costs and benefits for recreational developments for existing and proposed reservoir projects as requested by the Bureau.

The office also will be prepared to assist the Corps of Engineers when requested, on planning for the recreational use of their reservoir projects.

Reclamation. Two more major contracts have been awarded by the Bureau of Reclamation since the last meeting of the Committee. A contract to provide trashracks for the outlet works of Anderson Ranch Dam totaling \$700,000 has been awarded and also a \$375,000 contract to process aggregates for irrigation structures on the Columbia Basin Project. This roughly brings the dollar value of major construction contracts awarded in the region during 1946 to \$50,000,000.

In the field of project investigations, the long-awaited report on the water supply for the authorized Palisades Project, which recommends far-reaching water conservation measures for the Snake River and tributaries above Bliss, Idaho, was completed by the Bureau, approved by the Secretary and distributed for the consideration of the water users involved. Final drafts of reports covering the 21,000-acre Kennewick Division of the Yakima Project, and the 987-acre Hayden Lake Project have been submitted to the Commissioner. Investigations of 60 potential irrigation and multiple-purpose projects was advanced during 1946.

Work was halted on Anderson Ranch Dam on November 21, with 96 percent of the approximate 9,000,000 cubic yards of the embankment material in place.

Production of electric energy in 1946 by power plants on the Minidoka, Boise, Yakima and Columbia Basin Projects totaled about 4 billion kilowatt hours.

A joint meeting was held in Boise on November 18 and 19 with BPA and Bureau engineers to review the Bureau's study for the determination of the economic height of Hungry Horse Dam. It was determined that a 3,200,000 a.f. reservoir was the maximum economic size of the development.

b. Mr. L. S. Wing for the Federal Power Commission. Federal Power Commission activities since the last meeting, with respect to work in which the Columbia Basin Inter-Agency Committee has an interest, was largely confined to efforts of the subcommittees working on the cost-benefits ratios studies, the Committee's handbook, and on matters pertaining to hydrology. Preliminary work has been done to determine the value of power benefits in the area. It is hoped that some basis acceptable for this purpose may be worked out, having in mind a detailed study of rate levels as they may affect power benefits.

c. Mr. G. T. Hudson for the Department of Agriculture. With respect to agricultural financing of various types carried on by agencies of the Department of Agriculture in the Pacific Northwest, the following figures may be of interest. All the figures used are for the total period of years in which the Department has been making the several types of loan. For the Farm Credit Administration of Spokane, the Federal Land Bank of Spokane and Land Bank Commissioner of Spokane, loans have totaled \$288,677,000. Federal Intermediate Credit Bank of Spokane loans have totaled \$967,239,000. The Spokane Bank for Cooperatives loaned \$119,445,000. The Emergency Crop and Feed Loan Division loaned \$30,050,000. The Rural Electrification Administration loaned \$31,999,115. The Federal Land Bank borrowers in this region have gradually retired all of the capital stock originally provided by the Federal Government to capitalize the Federal Land Bank of Spokane and the borrowers now own the Bank outright. The Bank has approximately \$67,000,000 in total assets and \$13,000,000 net worth and reserve.

Mr. Hudson then called upon various other representatives of the Department for reports concerning activities of the Department's respective agencies.

Mr. Putnam of the U. S. Forest Service stated that a report just released by that service shows that there were 3,481 forest fires in 1946, as compared with 2,817 fires as a yearly average during the past five years (1941-1945); but that while there were more fires, less acreage was burned over in 1946 than the average for previous years. The report showed that 19,036 acres were burned over last year as compared with 44,975 acres as the average number burned over in the period 1941 to 1945.

Mr. D. A. Williams for the Soil Conservation Service stated that the Department of Agriculture has initiated field and office work on re-examination of the watershed survey of the Walla Walla River and its tributaries. This survey was authorized under the Flood Control Act of 1936 as amended in 1937. The survey has been assigned to the Soil Conservation Service. The Forest Service is participating in the survey and in the preparation of a report. Mr. G. D. Clyde added that in Deschutes County, Oregon, the snow survey of April 1946 revealed that water supply in prospect would greatly exceed the average. As a

result of this forecast, lands were cultivated in 1946 which usually are not planted. This cultivation of additional acreage produced a near-record crop for Deschutes County, in a year when maximum production was urgently needed. According to best estimates presently available, 2,500 acres of land were seeded and irrigated which would not have been planted had not a good water supply been forecast. The cash value of crops (potatoes, grain, hay and pasture) from this additional land was approximately \$250,000.

Similarly, in Crook County, Oregon, where Ochoco Reservoir provides the most important supply of water the Soil Conservation Service on April 5, 1946 forecast inflow to the reservoir for the irrigation season equal to 285 percent of normal. Thereupon lands in Crook County which normally are not seeded because of lack of water were seeded and irrigated. This cultivation of 4,000 acres of land produced crops valued at \$400,000.

On the Kootenai River in Idaho the April 1 forecast indicated potential high water. The Kootenai Valley is protected from river overflow by high earthen dikes. Some 37,000 acres are involved. Upon receipt of the water supply forecast the Secretary of the Kootenai Valley Reclamation Association used this forecast as the basis of a request to the Army Engineers for help. The Army was ready and when the flood came some 700 men with equipment were on the job. The dikes were strengthened and made to hold. Had these dikes broken the damage would have been as much as \$2,000 per acre because they would have been out of production two years. The annual loss for two years to the area would have been about \$4,000,000.

Mr. W. D. Staats of the Farmers Home Administration stated that heavy demand from veterans for production loans in Oregon, Washington and Idaho have exhausted all initial loan funds for the present fiscal year ending July 1, 1947. Veteran farm ownership loan funds are still available.

As a result of the interest of the Washington State Columbia Basin Commission in application of FHA authorities in financing settlement on reclamation areas, a survey is being made of these possibilities. It appears FHA is the only direct federal lending agency now having authorities for farm operating, real estate and development financing.

Since beginning of the program FHA has loaned \$51,060,000 to about 30,000 farm families in Oregon, Washington and Idaho. Principal repayments exceed \$38,500,000.

d. Dr. P. J. Raver, Bonneville Power Administration.
Power Sales: The total average load in December, estimated at 987,000 kw, was 70.5 percent greater than that of December 1945. This month's energy sales are estimated at 734,000,000 kwh.

The BPA maximum 60-minute peak demand was 1,328,000 kw with an average kw generation of 1,056,000 kw, giving a load factor of 79.5 percent. During this month the nominal peaking capability was 1,300,000 kw.

The Spokane aluminum reduction plant (Kaiser Co.) began the operation this month of a fifth pot line (approximately 35,000 kw).

Load estimates for the quarter ending March 13, 1947 indicate additional load of about 125,000 kw as follows: To Mountain States in southern and central Oregon an increase from 9,000 kw to 21,500 kw, including 3,500 kw for transfer to public agencies in that area; Spokane aluminum reduction plant, pot line six, 35,000 kw; Troutdale aluminum reduction plant, pot line four, 35,000 kw; and possibly Tacoma aluminum reduction plant, two pot lines, 42,000 kw.

Regional Power Requirements: As an indication of the extent to which the loss of load following the end of the war has been recovered, the peak power requirements in the Pacific Northwest this winter exceeded the peak demand during the war by several hundred thousand kilowatts. The peak load of the Northwest Power Pool (excluding southern Idaho and Utah) during the war (January 1944) was 2,518,000 kilowatts, of which 1,247,000 kilowatts, or 49.5 percent, were supplied by Bonneville and Grand Coulee. The peak load carried by the same systems for the week ending December 19, 1946 was 2,826,000 kilowatts, an increase of over 300,000 kw; 1,243,000 kilowatts, or 44 percent, were supplied by the Bonneville-Grand Coulee system. In December only part of the loads of the Spokane and Troutdale aluminum reduction plants are included. These plants are expected to be in full operation shortly after the first of 1947. The Tacoma aluminum reduction plant is also not included. It is tentatively scheduled to start operations in March.

The estimated peak load early in 1947 for these same power systems, after the total aluminum load is in service, is 2,900,000 kilowatts, which exceeds the wartime peak by 382,000 kilowatts. BPA is expected to furnish about 1,300,000 kw. Present power capabilities indicate that the power situation will continue to be critical during the balance of the winter.

Revenues: The preliminary estimate of revenues from the sale of electric energy for December is \$1,800,000. The total for the fiscal year to date is \$9,436,488.

If other electric revenues, largely cancellation charges, are included, the total electric revenues for the fiscal year to date are \$11,324,231.

Transmission Facilities: The BPA system consists of 2,917.7 miles of line and 67 substations with 2,328,833 kva transformer capacity (with cooling fans). During the month the Bethany-Forest Grove 115 kv line, 13.6 miles, and the Forest Grove substation, 6,000 kva, were energized.

During this quarter net additions to the system consisted of five substations, 78.3 circuit miles of line, and transformer capacity amounting to 42,850 kva. Taken out of service during this period were 5.5 miles of line and transformers with a capacity of 7,950 kva.

Industrial Development Studies: Work on the phosphate fertilizer industry, largely centered in Idaho, has continued.

Intense interest is being shown by national farm organizations and in possibilities of western development to meet the acute fertilizer shortages. The fertilizer companies now located in the western area, as well as other companies, emphasize making detailed investigations preliminary to establishment of electric furnace plants. The immediate problem is one of assuring an adequate supply of low-cost power in the vicinity of the phosphate beds.

Cooperative projects with the University of Washington on olivine-phosphate rock smelting and with Oregon State College on the use of electricity on the defrosting and blanching of foods continued.

Of considerable significance was the formation of the Minerals Sub-Committee under the Departmental Coordinating Committee. The committee includes representation from Bonneville, the U. S. Bureau of Mines and the Geological Survey.

Finance: Arthur Andersen & Co., auditors, completed the audit of the Administration's financial activities for the year ending June 30, 1946. The audit indicated a net surplus of \$4,754,895 for the year after payment of all power operation, maintenance, depreciation and interest costs. The earnings for the year brought EPA's cumulative surplus net revenues from power operations since the beginning of operations in 1937 to \$16,326,947.

e. Colonel G. J. Zimmerman for the Corps of Engineers. Since the November meeting of this Committee the restrictions placed upon the expenditures of river and harbor and flood control funds have been further relaxed and will permit the continuance of all necessary maintenance work on the strictest economy basis, continued advance planning, and the initiation of preliminary and preparatory work on certain new projects.

Reductions in the force of employees have exceeded 40 percent. The current funds situation now is such, however, that as the need therefor arises our organization may be expanded somewhat to approximately 70 percent of its former strength.

In addition to all essential maintenance activities, it is planned to commence work on the following projects:

Preparation of definite project report on Foster Creek Dam.

Complete the plans and specifications of existing bridges involved in the Tacoma-Puyallup River flood control project.

Complete plans and specifications and let the contract for Dorena Dam, Willamette Valley flood control project.

Complete Mud Mountain Dam, and start of road relocation at Detroit Dam.

The President's declaration of the end of hostilities will no doubt have a definite bearing on some of the military activities of the Districts, the nature and extent of which can be determined only after further study of the matter.

Colonel Zimmerman said the Department of Commerce has accepted an invitation extended by the Federal Inter-Agency River Basin Committee to participate as a member in the Committee's work. Mr. Olds, Chairman of the Federal Committee, has informed the Chairman of the Columbia Basin Committee that the Department of Commerce will designate a representative to participate in the work of the Columbia Basin Committee, Colonel Zimmerman said, adding that he was sure the Committee would welcome such participation. At the present time the Coast and Geodetic Survey and the Weather Bureau, both Department of Commerce activities, participate in the work of the Committee on the technical level. Other branches interested include the Office of Business Economics, Office of Domestic Commerce, Office of Small Business, and Office of Technical Services.

3. The Chairman thereupon introduced Mr. C. E. Webb, District Chief Engineer, Dominion Water and Power Bureau, Department of Mines and Resources, and member of the International Columbia River Engineering Committee. Mr. Webb outlined to the Committee the work under way in Canada with respect to the over-all study being made by the International Columbia River Engineer Committee for the International Joint Commission on the comprehensive development of the water resources of the Columbia River and tributaries. (See Exhibit I.)

4. The Chairman then introduced Mr. K. W. Morton, District Engineer of the Department of Public Works of Canada, and member of the International Columbia River Engineering Committee. Mr. Morton discussed bathymetric survey and drilling operations in connection with the same investigations. (See Exhibit II.)

5. Colonel L. H. Hewitt, Seattle District Engineer, with the aid of maps, sketched for the Committee the status of engineering studies presently under way in the Seattle District with emphasis on the District's work on the "308" Columbia River Review Report. (See Exhibit III.)

6. Colonel O. E. Walsh, Portland District Engineer, and Messrs. R. E. Hickson, L. E. Rydell and K. G. Tower outlined the current studies under way by the Portland, Oregon District in connection with the comprehensive study of the development of the Columbia Basin. (See Exhibit IV.)

7. Dr. E. N. Torbert, reporting for the special subcommittee preparing the handbook, stated that a revised draft thereof had been placed in the hands of each committeeman, that the subcommittee wished to emphasize the fact that the handbook in its present form was designed for the dual purpose of furnishing technical information to the Committeemen and at the same time general information to the public.

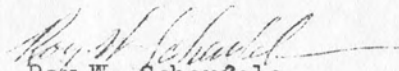
8. Mr. E. D. Ostrander, Chairman of the Subcommittee on Costs, Benefits, Allocations and Payout Requirements, filed a report of the subcommittee, attached as Exhibit V.

9. Mr. H. R. Stevens, Chairman of the Subcommittee on Hydrology, filed a report attached as Exhibit VI.

10. The next meeting of the Columbia Basin Inter-Agency Committee will be held on February 12, 1947, at Lewiston, Idaho, to discuss the proposed dams on the Lower Snake River.

11. Minutes were read and approved.

Meeting adjourned at 3:15 p.m.


Roy W. Scheufele
Executive Secretary

6 Incls.:
Exhibits I to
VI, inclusive.

Vancouver, B. C.
January 3, 1947

Exhibit I to Minutes
of January 8th Meeting

DEPARTMENT OF MINES AND RESOURCES
SURVEYS AND ENGINEERING BRANCH
DOMINION WATER AND POWER BUREAU

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

Memorandum re Columbia River Studies in Canada
For Presentation at Columbia Basin Inter-Agency Committee
Sixth Regular Meeting, Seattle, Washington
January 8, 1947

By C. E. Webb, C.E., Chairman, Canadian Section
International Columbia River Engineering Committee

Pursuant to the reference dated March 9, 1944, to the International Joint Commission by the Governments of Canada and the United States, the International Columbia River Engineering Board was appointed by the Commission to investigate and report upon the feasibility of further development of the water resources of the Columbia River Basin. The Board is made up of four members, two from each country. The Canadian section of the Board consists of Mr. Victor Meek, Controller, Dominion Water and Power Bureau, Department of Mines and Resources, Chairman; and Mr. F. G. Goodspeed, Superintending Engineer, Department of Public Works, Canada, both of Ottawa.

In order to expedite the investigations the members of the Board designated representatives from associated offices on the West Coast to take charge of field operations and assist the Board in its studies. These representatives form the four-man International Columbia River Engineering Committee, the Canadian section of which is made up of Mr. K. W. Morton, District Engineer, Department of Public Works, Canada, New Westminster, B. C.; and myself as Chairman.

While some investigations of the water resources of isolated portions of the Columbia River system in Canada have been made for various purposes, there has been no over-all survey of the complete water resources of the basin in Canada such as was made by the Corps of Engineers, United States Army, in the compilation of the Columbia River "308" Review Report. This report covered a thorough study embracing the resources of the entire Columbia River system in the United States. The authorization of the present study of this great river system, therefore, represents in the United States the furtherance and continuation of the fundamental work included in the "308" Review Report; in Canada it represents both the securing of basic and fundamental data, and the furtherance and continuation of these studies. In other words, this investigation is well advanced in the United States, while to date it is only in the preliminary stages in Canada.

Following the formation of the International Columbia River Engineering Committee in 1944, a four-year program of investigation was inaugurated, the field work to commence as soon as possible. During

the latter part of 1944 substantial progress was made in the correlation and evaluation of basic data already available, which included numerous reports on the topography, geology, hydrology, climatology, as well as on the potential and developed resources of portions of the area under review.

In the spring of 1945 a full-scale field program was put under way, including aerial photography, precise levelling, topographic mapping, reconnaissance surveys, hydrological studies, bathymetric surveys and dam site investigations.

Aerial photography of the Columbia River and all of its tributaries in Canada was commenced in April, 1945, by the Royal Canadian Air Force. The coverage of the photographs is to extend to a minimum elevation of five hundred feet above the valley floor along all of the principal streams in the basin. To ensure satisfactory results, photography is restricted to the low water periods and to the times when snow is absent from the lower levels; hence the periods suitable for this phase of the investigation are quite brief. In spite of these limitations, the photographic program is now virtually completed excepting for the Big Bend area of the Columbia River, where weather conditions during the low water periods have so far precluded completion of the photographic coverage. Completion of the photography is thus contingent on weather conditions, and will be accomplished as these conditions permit.

Extension of the existing precise level nets to cover the entire Columbia River system in Canada was commenced by the Geodetic Service of Canada during the 1945 field season. Over five hundred miles of precise levels have been completed during the 1945 and 1946 field seasons to complete the coverage required in the course of this investigation. This mileage includes lines on the Columbia River from Donald via the Big Bend to Revelstoke; on the Kootenay River upstream from Canal Flats and from Newgate to Elko on the Elk River; from Beaton to Trout Lake and along the Lardeau River to Lardo; on the Similkameen River from its headwaters via Princeton to the International Boundary and several other connecting and check lines.

Correlation of the vertical control along the International Boundary is essential before satisfactory progress can be made in topographic mapping and river investigations in the transboundary area. To this end, the Geodetic Service of Canada and the United States Coast and Geodetic Survey have completed much additional field work necessary, and are at present engaged in the office studies which will result in the elimination of differentials in elevation along the International Boundary.

Topographic mapping for this investigation was initiated in the Kootenay Flats from the International Boundary northward in May, 1945, by the Hydrographic and Map Service of Canada. The information being obtained is sufficient to ensure accurate contour intervals of from five to twenty feet on map scales from one thousand feet to one-half mile to the inch, dependent on the character of the terrain. This work was continued and extended during the 1946 field season, and to date

mapping of the following areas has been completed; Kootenay Flats, all of Kootenay Lake, and the West Arm as far as Corra Linn; the upper Kootenay Valley from the International Boundary upstream to Wardner; and the lower Columbia Valley from the outlet of Arrow Lakes downstream to below the confluence of the Kootenay River near Brilliant. Adequate map coverage from Corra Linn to Brilliant had previously been obtained by the West Kootenay Power and Light Company, Limited, in the course of their studies of this reach of the Kootenay River. It is planned to continue this phase of the investigation during the 1947 field season to include the upper Kootenay River Valley from Wardner upstream to Canal Flats and the Columbia River Valley from Canal Flats to Golden and from Revelstoke to the International Boundary.

Reconnaissance surveys of the main stem of the Columbia River and most of its tributaries in Canada are still required to obtain more information regarding potentialities. Those observed on reconnaissance may then be subjected to more detailed study where such treatment appears to be warranted. Prior to 1945 reconnaissance surveys had covered only a few scattered reaches of the Columbia River in Canada. Since that time reconnaissance surveys have been or are being completed along the Kootenay River from its headwaters to the International Boundary near Newgate, the St. Mary, Larocau and Duncan Rivers, the upper Columbia River from Columbia Lake to Windermere, the outlet of Lower Arrow Lake, and a number of minor tributary streams. Extension of this phase of the investigation to include the Columbia River from Windermere downstream around the Big Bend to Revelstoke is planned for 1947.

Hydrological investigations may be divided into two main subdivisions; surface water and ground water studies. The Dominion Water and Power Bureau has, in the course of the past thirty-five years established a comprehensive system of stream gauging and water elevation stations on the Columbia River system in Canada. However, in view of the complete coverage of the water resources of the basin being considered in this investigation, it has been deemed desirable to extend the system of gauging stations to provide more complete coverage of the basin. Present indications are that at some forty points new stations are to be established, or substantial improvements made to equipment at existing stations. Of this number twenty-three stations have been established or improved, and this work is to be continued until all necessary station installations and improvements have been completed.

In connection with the hydrological program, I may say that it has been my good fortune and that of the Bureau which I represent to be closely associated with the United States Geological Survey in the operation of certain gauges located on transboundary streams which have been designated as international gauging stations by agreement between our respective governments. Records obtained at these stations by either organization are accepted and published on the same basis as those of the other. This cooperation has been a decided asset to the study and solution of stream flow problems along the International Boundary, and of particular value to the various Boards of Control who administer the orders of the International Joint Commission on certain designated waters, such as the International Kootenay Lake Board of Control,

composed of representatives of the Corps of Engineers, United States War Department, the United States Geological Survey, and the Dominion Water and Power Bureau.

Prior to 1945, studies of ground water conditions in the Columbia River basin in Canada had been of a very limited nature. Two areas in the basin have now been selected as localities in which ground water study is essential; these are the Kootenay Flats in the vicinity of Creston and the Upper Columbia Flats above Golden. During 1945, comprehensive ground water investigations were initiated in the Kootenay Flats area by the Dominion Water and Power Bureau. These investigations were extended during 1946, and it is expected to commence similar studies in the Columbia Flats during 1947.

A program of soil surveys has been initiated in those areas of the Columbia River basin which are of potential value as agricultural lands. Substantial progress has been achieved during 1946, and continuation of these studies is planned for 1947.

Necessary bathymetric surveys of the north and south ends and the west arm of Kootenay Lake are being carried out by the Department of Public Works, Canada. These surveys are being carefully tied in to the topographical mapping survey which has been completed in this area. Triangulation surveys for the horizontal control of the underwater surveys have been made by the Hydrographic and Map Service of Canada in the course of their topographical mapping, where this procedure is feasible; wherever necessary, additional control is being provided by the bathymetric survey shore parties. Completion of this work in this area is planned for 1947, together with its extension to cover the Narrows between the Upper and Lower Arrow Lakes and the Columbia River from the outlet of Lower Arrow Lake downstream to the International Boundary.

Owing to the paucity of information available regarding possible dam sites on the Columbia River system in Canada, detailed site investigations could not be commenced until reconnaissance surveys had been made to determine possibilities. In consequence, investigations during 1945 were limited to the "Gibraltar Rock" site on the upper Kootenay River, eighteen miles upstream from Canal Flats. At this site a preliminary survey and drilling program was conducted, and a preliminary geological examination was made in 1946. A more extensive drilling and sampling program is now in progress at this site, with further geological examinations to be initiated during 1947. When investigations in this area are more advanced, it is planned to extend operations to sites on the Kootenay River near Torrent and Wardner, and on the Lardeau and Duncan Rivers. Preliminary geological examinations have been made at these sites during 1946. Drilling operations are now being carried out by the Department of Public Works, Canada.

Systematic additions to the present meteorological and snow survey coverage of the basin are being planned, with fourteen new snow courses scheduled to be put in operation during 1947 and 1948. This latter work is being done by the Water Rights Branch of the British Columbia Department of Lands and Forests, in cooperation with the Dominion Water and Power Bureau.

Information in connection with the fish and wild life of the basin is being obtained by the appropriate agencies, with a view to possible effects of any works that may be proposed as a result of the over-all study of the water resources.

Office studies in correlation of the data being obtained from the field are continuing with the constant receipt of additional information. These studies are increasing with the accumulation of data, and it is anticipated that the latter part of 1947 will see the commencement of over-all planning based on the data accumulated by that time.

The foregoing outline of field and office activities indicates that considerable progress has been made to date, despite difficulties in obtaining adequate personnel and equipment. In the northern part of the basin in Canada, the field season is very limited due to the climatic conditions. Transportation, particularly in this area, presents a major obstacle to field investigations, as many roads become impassable to ordinary vehicles with the onset of winter snows.

It is anticipated that 1947 will show greater progress in the field investigations insofar as is necessary for the intelligent approach to, and appraisal of, the feasibility of further development of the water resources in the Columbia River system.

This survey is based on the realization that a large part of the water resources of our two countries in this very important river basin is not being utilized because of the lack of effective regulation and control. With an efficient measure of control the Columbia River system may be regulated to provide benefits of many kinds; additional power plants may be installed and the output from present plants increased, lands now arid may be made productive by irrigation, other lands now subject to flooding may be reclaimed, flood damage along the water courses may be minimized and the prosperity and well-being of the people who reside in the Columbia River basin and adjacent areas on both sides of the International Boundary may be greatly expanded.

New Westminster, B. C.
December 19th, 1946.

Exhibit II to Minutes
of January 8th Meeting

DEPARTMENT OF PUBLIC WORKS OF CANADA

Memorandum, Columbia River Studies in Canada
For Presentation at
Columbia Basin Inter-Agency Committee
Sixth Regular Meeting, Seattle, Washington, U.S.A.
January 8th, 1947

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

By Ken. W. Morton, District Engineer,
B. C., Yukon District

Surveys of Kootenay Lake

In order to obtain physical information required in the consideration of immediate problems of navigation water storage and reclamation in the Kootenay Lake area the Dominion Public Works Department was delegated to complete surveys and plans of the water areas at the north and south ends of the lake and land and water areas of the West Arm of Kootenay Lake from the main lake to Corra Linn, B. C., a distance of 33 miles.

The West Arm survey was commenced in the summer of 1945. The triangulation network was connected to the established Geological Survey of the main lake and carried westward to Grohman Narrows, 3 miles west of Nelson, a distance of about 26 miles, weather closing down the work December 19th, 1945. One hundred seventeen permanent triangulation stations were established. Three check bases were laid out and measured. Accuracy of the survey is approximately 1 in 9000.

The plan on a scale of 200 feet to 1 inch is being completed as the survey proceeds. Land and water contours at 2 feet intervals are shown up to the 1894 high water level.

Work was continued in 1946, commencing May 23rd. A 40-foot launch had been acquired for the bathymetric sounding and an 18-foot launch was used for the narrower reaches. Inshore soundings were taken by hand. The survey is now completed to Grohman Narrows leaving a portion still to do next season. The approximate cost of the survey to date has been \$18,000. The crew consisted of Engineer in charge, three Instrumentmen and eight Chainmen.

Underwater depths are obtained by the use of a Bathygraph Sonic sounding machine plotting cross-section of the bottom to a vertical scale of 1/8 inch to 1 foot from which elevations are plotted as required referred to the datum of the Geodetic Survey of Canada.

A description of the Bathygraph apparatus is herewith appended.

Soundings of the lower end of Kootenay Lake have not been completed owing to early winter weather. This will be completed next with the upper end of Kootenay Lake, the West Arm from Grohman to Corra

Linn and the Columbia River main stem from lower end Arrow Lakes to the International Boundary. Completion is expected in 1947.

Department of Public Works, Canada,
B. C., Yukon District.

/s/ Ken. W. Morton
Ken. W. Morton,
District Engineer.

BATHYMETRIC SURVEYING

The maritime countries of the world understood from the day their ships appeared on the sea the value and importance of hydrography, and its handmaid cartography, to the success of their maritime ventures. Hidden beneath the waters on which they sailed lay dangers which could spell disaster to all their efforts, and the first requirement was the most accurate determination of those underwater dangers of rocks and shoals, and their recording on charts for all mariners to use. This was early recognized by the British seamen and scientists. In the 17th century the stars were catalogued and the information recorded in the Nautical Almanac. Similarly tidal predictions were tabulated, now a world-wide practice.

The natural and simplest method of ascertaining ground levels under water was, and still is, by the suspension of a weight on a line properly marked to record these depths. For centuries this method, improved and refined, has been used. This was the method used by the Phoenicians and the Greeks, and even in the scriptures, the classic instance of Paul's shipwreck gives shoaling depths in Greek fathoms off a Maltese Bay, with an accuracy borne out by modern charts.

As all hempen line is subject to serious shrinkage when wetted, the general practice prior to marking was to wet and stretch and keep wet, checking constantly. Errors resulting were in excess of the line.

Another cause of error is the difficulty of obtaining vertical soundings unless from a boat with zero speed, except by skilled leadsmen. Accurate "plumbing" and "feeling" the bottom at a depth of say 6 fathoms is not adequate for the nice deliberation which critical accuracy demands. Even if "plumbing" and "feeling" were perfect the pressure of currents varying in intensity and direction result in such large irregularities and large amplitude catenaries in lead line as to make the resulting soundings inaccurate. Many safety devices were, therefore, applied to lead line soundings to give that "least depth below mean low water springs" which would endanger no vessel assuming its truth. Again the use of the 10-20 lb. of lead in such soundings does not allow of a true record on a soft bottom which the lead undoubtedly will penetrate without "feel". In harbour channels this is important as every inch of depth is important to the uninterrupted passage of the vessel, avoiding all bottom dragging with resultant loss of control.

It is, therefore, evident, and is known to all who have used this method of obtaining depths, that sounding by lead method is not sufficiently accurate and the increased draught of vessels has rendered this ever more dangerous. All inaccuracies result in over depths. This has been practically experienced by every surveyor who has attempted to check a sounded section under different tidal conditions in spite of every precaution taken. Admiral Wharton, R.N., said in 1882, "It is evident that a perfect machine is more trustworthy than the record of an up-and-down cast with the ship in motion, as given by a fallible man; and when such perfect machine is invented it will be gladly adopted by surveyors".

The location of those depths had also to be recorded and as the need arose methods were evolved to chart those depths as a record for all. At first these methods were also crude, improving as the scientist brought his efforts and ingenuity to bear on the problem of the need for more and more accurate recordings of the depths obtained. The methods of locating and recording progressed to a much greater extent than the methods of obtaining accurate depths.

Not until the development of the association of various impulses, the visible or audible recordings of those formerly known but inaudible and invisible vibration, did the way open up for an improved method of obtaining an accuracy in water depth recording never before known.

Admiral Wharton's dream, remote as it then seemed, has now actually materialized, an outcome of that burst of intense research into the "Sonic Interval" methods of measurement brought on by the necessities of the first World War - and is embodied in the Hughes Magneto-Striction Radial Arm Type of Echo Sounding device.

Ordinary lead methods of sounding are inaccurate for these reasons:

Accuracy is dependent upon so many unknown and variable factors where depths exceed about 30 feet.

Sounding cannot be hurried even under good circumstances: "weather hindrance" can seriously jam the progress of the work.

A line of soundings represents depths at sounding points only and over areas equal to that of the lead alone.

When all these "reasons" act together real accuracy and efficiency are impossible and result in adjustments being made to guard against over-depths records.

The Echo gear solves all these problems. Actual and deliberate precision in depths to 3 inches can be obtained and incontrovertibly checked, up to all ranges of depth. The record bearing such depth can be examined at leisure during and after the survey. Sounding can be carried out at speeds greater than that at which one can plot position even with the most modern plotting technique. Bad weather will not necessarily stop sounding operations as waves do not influence depths recorded as they do in lead soundings. A line of soundings on the Echo

Sounder is an actual chart of the bottom as depths are taken at 300 per minute, one every 2 feet at a speed of 6 knots. The chart produced is not merely a line of intermittent soundings but a strip or band of continuously examined areas equal in width to about $1/3$ the depth.

Prior to the development of the new method of sounding by Echo, improvement in lead sounding had removed many of the inaccuracies.

The Wedell Machine makes use of a heavy sinker and strong small gauge wire. These are handled from a drum and depths can be read in feet and decimals from a calibrated dial geared to the drum. By this method "bend" in the line is reduced as the heavy sinker and thin wire keep the line taut. But the heavy lead is inclined to "Trail", thus restricting the instrument to slow speed.

Sutcliffe's sounding gear brings the depth wire to the circumference of a large wooden wheel about 3 feet in diameter. A round shot lead of about 40 lbs. is secured to the line and a dial related to the wheel records true depths when zero has been set with the lead at water line. In addition a fore and aft preventer line of small thread manilla is secured through a ring in the lead line forward to the bow and back to the wheel where it is operated with the wheel on a spiral-way so that both lines are held taut at any position of the lead. This allows of faster sounding as the lead needs only to be raised from the bottom between each sounding. This method is efficient only in shoal areas of not more than 30 foot depth where bottom obstructions are unlikely.

The use of the sounding pole in shallow areas is preferable to lead soundings.

Fish leads have been used and calculations of line "bend" made for 4 to 5 knot speeds, but the results are not satisfactory. Two knots is about the limit of speed.

One other difficulty overcome by the echo method is that of highly variable depths. Lead soundings demand a variable time to procure depending on the depth of sounding, therefore a variable boat speed. When this is the case fixing of position becomes as constant as to be almost impossible. With the echo method constant speeds can be maintained, independent of depths, but apart from variable current speeds, and even subdivision between fixes becomes accurate.

The Recording Echo Sounder is a device which sends out short impulses of sound from the diaphragm of a conical transmitter in the bottom of the boat, or mounted outboard under water; measures the time required for the echo to return to the conical receiver, and presents that measurement in the form of a graphical depth indication.

Impulses are engendered by a condenser and delivered to the transmitter, of 16,000 cycles per second. The transmitter oscillator consists of an inverted conical reflector containing toroidally wound nickel stampings which expand and contract in a magnetic field, thereby sending out impulses of sound directed to the bottom from the stainless steel diaphragm, the maximum effective angle being approximately 15° on all sides of the center.

The receiver is similar in construction. The sound impulses are received, transformed into oscillatory electric current in the windings, delivered to the machine where it is amplified; transmitted to stylus, which records it on the iodized paper.

The machine used on the Kootenay River survey is the M.S.X. Radial Arm Echo Sounding Gear, and may be grouped into these divisions:

1. Oscillators - Transmitting and receiving.
2. Recording gear.
3. Electrical accessories - Batteries and charging gear.

1. Oscillators.

The principle of Sonic sounding being based on the assumption of a constant speed of sound in water - at a given temperature and salinity - it follows that the problem set is to measure the time interval between the transmission of a sound impulse from one oscillator to its reception on the other after reflection from the bottom. The conversion of half this time interval into feet, corrected for separation of oscillators, will be the depth below the mean height of the effective planes of the oscillators.

The oscillators are simple inverted conical reflectors containing the toroidally wound nickel stampings so constituted as to transmit or receive the vibrations to and from the sea bottom.

Oscillators are fitted separately in tanks, as close to one another as possible and maintained full of fresh water. Oscillators are either installed in the vessel's bottom or attached as outboard installations. The depth of oscillators below the water line must be added to the depths recorded on the chart.

2. Recorder.

This is the "brain" of the equipments, with the function to graphically convert into convenient units of depth the time interval measured between transmission and reception. The gear is calibrated for an assumed speed of sound in sea water of 4800 feet per second.

The method of graphically measuring the distance consists primarily of a radial arm rotating at 300 r.p.m. having at its outer extremity a spring "pen" which passes over and contacts through a starch iodized paper, sensitive to electrical impulse. When the transmitter sends out a sonic vibration, a circuit is closed and the pen records the point of transmission. The moment the return echo is felt by the receiver the current set up therein is instantaneously amplified, rectified and recorded by the stylus. In the case of the M.S.X. gear, a 30° segment of the arc transversed by the pen would occupy 1/60th of a second in time and represent 40 feet of depth over a chord length of 4.855 inches. For depths over 40 feet a phasing switch is operated which enables an alternative transmission contact to be made, recording depth of 30 feet to 70 feet on the next phase, and as often as required, limited only to one complete revolution of the disc.

The machine can also be geared to change the scale as required and increase the range by altering the speed of the pen, say from feet to fathoms.

The machine used on the Kootenay River survey is phased 15 times, the maximum to give a recorded depth maximum of 490 feet. It is also geared to slow the machine down 6 to 1 to give the same phasing in fathoms or a maximum depth of 2940 feet in fathoms.

The record paper is 5 inches wide giving a scale of 1 inch to 8 feet in feet and 48 feet to 1 inch in fathoms. The horizontal scale depends on the speed of the sounding vessel.

The natural operation of the machine will record on the iodized paper depths up to 40 feet. For greater depth the first phase switch is operated which enables the recorder to register on the paper the next depth phase of 30 to 70 feet, the zero on the scale now being 30 feet instead of Zero. It is therefore important to record the phase on which the machine is operating. This is of particular importance on variable bottoms at depths coinciding with the phase change when it becomes necessary for repeated changes in phasing in order to have the depth recorded on the paper. With depths to 490 in 15 phases this feature becomes very vital requiring extreme care. On the foot scale the recorded points on the record occur at successive intervals of $1/5$ th of a second and occur so rapidly and closely as to show a profile of depths of practically a solid line, of course irregular.

As the radial arm carries the stylus around on an arc of 9.4 inches radius, the arc length recorded can be graduated by equal sub-divisions. However, it is easier to measure depths directly at right angles to the transmission line. This is done by a special scale subdivided in sine relationship to the arc, upon either side of the center line of the record. Horizontal distances must however correspond with the depth shown on the area to which they belong.

When sextant fixes are made they may be marked on the chart by pressing the "fix marking fix" which inscribes a line across the chart at the instant contact is made. This can be marked or numbered on the chart by a special electric recording pencil.

The true water line zero on the chart is checked at intervals by a bar check consisting of a flat iron bar about 6 feet long 6 inches wide lowered on chains so as to lie directly beneath the oscillators at step intervals of 5 feet depths to 35 feet. The speed of the machine is so regulated by governor control to bring the echo marks denoting depths of the bar to agree with the various steps of bar depths.

The speed of the machine is taken by stop watch and that speed maintained throughout. In practice this check is made twice per day.

While the past generation of hydrographers measured their lead lines after sounding, their modern successors will steel tape their bar check lines weekly, carry out a bar check at every survey, check their instruments by stop watch throughout its use, not neglecting to check the stop watch by chronometer periodically.

As with any machine, extreme care must be taken with the instrument, and all adjustments kept accurately. Only in this way can the perfection of the machine be maintained and the extreme accuracy of the records upheld.

In addition to the recording of under water ground line the machine has successfully been used for other purposes.

1. Although the machine falls short of the lead in producing a sample of the bottom, it has been used to ascertain the layering of the bottom in certain materials and the presence of solid rock. Core depths checked this feature and the records agreed very closely, any differences being possibly due to features of scale calibration which would be overcome by bar check methods.

2. To determine periodicity of silt deposition or suspension in a tidal cycle by repeated cross sections over the tidal period.

3. Determination of the presence of fish shoals. This has been in extensive use on the Pacific Coast during the past season.

4. For the recording of the position of submerged cables.

5. The location of wrecks for salvage purposes. The wreck of the "Lusitania" was located in this manner. Its use can continue throughout the salvage operations to determine clearances over the wreck and its definite position at any time.

6. Air being a perfect reflector, oscillators placed vertically on the sea bottom have been used to record tidal fluctuations. Captain Wharton's successors have as he predicted, gladly adopted this modern accurate method of recording water depths.

January 17, 1947

Exhibit III to Minutes
of January 8th Meeting

The "308" Columbia River Review Report
in Seattle Engineer District

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

The original "308" report on the Columbia River and minor tributaries, submitted to Congress by the Secretary of War in 1932, described main stem dam sites in detail, and discussed, more or less extensively, certain tributary possibilities. Of the main stem sites, three subsequently have been developed and two more have been authorized for construction. The current review of the "308" report which has been requested by Congress, will present further data on the undeveloped main stem sites and will carry the studies of tributary development to the point where a comprehensive, coordinated plan of water resources utilization may be presented. Field investigations and office studies for the review report have progressed now to the point where very tentative conclusions concerning some of the major possibilities for future development are emerging.

The multiplicity of the possible tributary developments gives this undertaking a scope perhaps never before equaled in a similar investigation. Altogether, more than 100 dam sites will have been investigated by the Seattle District, each to such extent that its merits for inclusion in the comprehensive plan will have been ascertained. Individual consideration of each possible project is but half the task, however. The inter-relationships of projects, both physical and economic, become highly complex in a watershed of such magnitude. This is particularly true where storage is involved. Reservoir sites in the Columbia River basin above the mouth of Snake River, which are under investigation by this office and which appear physically feasible of development in the comprehensive plan, would provide net usable storage in the United States of 20 to 25 million acre-feet, including storage reserved for flood control.

The hydrological and economical evaluation of this storage, in terms of its effects at each site and cumulatively downstream, and in accordance with sound, uniform principles, is a major requirement of comprehensive planning. Such evaluation governs first, the comparisons and selections of individual projects; and second, the integration of selected projects in the most advantageous over-all scheme. Not to be overlooked in such planning is the desire for, and support of, the proposed improvements on the part of the people who must foot the bills, and those who will be affected by the results. Triple assurance that there will be full understanding and constructive analysis of all proposals to be made in the review report lies in the existence of this Committee, in the procedure for public hearings before any recommendations are made, and in the review of all reports by state authorities before submission to Congress.

Extensive subsurface explorations have been conducted to ascertain the physical feasibility of construction at each site. Altogether 774 seismic lines and 240 drill holes have been completed in the Seattle

District to date. Supplementing this work, numerous trenches and test pits have been dug, and a broad program of laboratory analysis has been carried forward. Subsurface investigations have progressed to the point where site rejections and selections for physical reasons are nearly complete. Project layouts, cost estimates, and economic studies based on tentative principles adopted by the Portland and Seattle District offices have gone along with the physical investigations. The economic analyses may be subject to some modification as the result of refinement in principles when current studies by this Committee and the Federal Inter-Agency Committee are completed. Meanwhile, the problem of uniform and rational analysis has proven less difficult in this District than it might have been if purposes other than power production were predominant. Thus far, a comparison of possible developments on the basis of investment cost per kilowatt of prime power added to the regional system has sufficed for preliminary selections. Whether other purposes are served, the capitalized value of resulting annual benefits is deducted in computing the unit power cost.

Possible major developments for the comprehensive plan, based on physical and economic considerations, together with several possible alternative arrangements in some cases, are discussed hereafter. These projects will be presented for discussion at a series of local public hearings to be held in various parts of the basin during the coming year.

Clark Fork Basin - Flathead River.

The accompanying, simplified profile of Clark Fork and its principal tributaries shows existing dams, the authorized Hungry Horse Dam, and the major potential developments now under consideration by the Seattle District. It will be noted that Bitterroot River is omitted, as investigations on that tributary are concerned with irrigation and are being conducted by the Bureau of Reclamation. Such projects as the Bureau may recommend, either here or at other locations will, of course, be included in final, over-all studies.

Hungry Horse Dam, on the South Fork of Flathead River, has been authorized for construction by the Bureau of Reclamation. It will provide storage for all purposes and will have a generating station at the site. Preliminary construction is under way.

The Corps of Engineers' interim report on Hungry Horse Dam, made in 1941, suggested also a dam at Glacier View on the main stem (known locally as North Fork) about two miles above the mouth of Big Creek. Subsequent investigation has indicated the feasibility of a high, earthfill dam at this site, which would create a reservoir 28 miles long and provide storage for power generation at the site and for flood control and power generation at downstream points. Operation of Glacier View in combination with Hungry Horse Dam would eliminate the recurring flood damages along Flathead River above Flathead Lake.

Additional opportunities for development of the upper Flathead occur at Canyon Creek and Coram. Both sites are suitable for construction of concrete gravity dams which would develop all main stem power

potentiality between South Ford (Hungry Horse Dam) and the Glacier View site. Storage at the latter would serve the power installations at Canyon Creek and Coram to great advantage.

A site with rock abutments and foundation suitable for a concrete gravity dam has been investigated upstream from Belton, Montana on the Middle Fork of Flathead River. Although such a dam would provide for power development at the site and for desirable river regulation at downstream points, the necessary relocation of the existing railroad and highway would be so expensive as to render this a rather remote project in the comprehensive plan. It therefore is not shown on the profile.

Flathead River planning involves no change in the level of Flathead Lake, except that resulting from beneficial flood control by storage upstream. Two dam sites on Flathead River below the lake have been investigated and discarded because of unsatisfactory foundation conditions. However, this reach can be developed advantageously by a dam near Paradise on Clark Fork below the mouth of Flathead River.

Upper Clark Fork, Main Stem.

An earthfill dam can be constructed at Paradise which will store Flathead River waters upstream to the foot of the Montana Power Company's Kerr Dam near the lake outlet. It would also create a reservoir on Clark Fork reaching to Superior. Such a development would yield power at the site and would impound storage desirable for flood control and power production on all parts of the Clark Fork and Columbia River system downstream. The extensive railroad and highway relocations involved are a detriment that may defer this project for many years. The only development now under investigation by the Corps of Engineers on the Clark Fork main stem above Paradise is at Quartz Creek near the town of Tarkio. A concrete gravity dam can be built here for power production whenever such power is needed and the project is economically justified in relation to other possible power sources.

Other Headwater Tributaries.

St. Regis River does not offer attractive opportunities for dam construction, but greatly needs further channel work and bank protection for alleviation of local flood damage. Measures for effective relief are being investigated. Bitterroot River is not being studied by the Corps of Engineers for major water resource development as heretofore mentioned. Further flood control possibilities in Bitterroot Valley will be considered, however, in the light of such river regulation as the Bureau of Reclamation may propose primarily for irrigation.

A feasible location for the construction of a high, earth dam has been found on Blackfoot River at Nine-mile Prairie. It would create a pool extending about 18 miles up Blackfoot River and up Clearwater River to Elbow Lake. The project would develop power at the site for mining, rural, and domestic use in Montana. It would also provide storage to reduce the flood crests that now damage Missoula and other

communities downstream. Like all headwater storage projects, a reservoir at Nine-mile Prairie would yield additional power, flood control, and navigation benefits throughout the downstream river system.

Lower Clark Fork.

From the Paradise dam site just below the junction of the Flathead River with Clark Fork, the latter stream descends rapidly more than 350 feet to the level of Pend Oreille Lake in a distance of about 80 miles. This power potentiality could be developed in a stepped series of dams, including the existing structure at Thompson Falls. Three sites in downstream order from Thompson Falls; namely, Trout Creek, Noxen Rapids, and Cabinet Gorge, appear to offer the best possibilities for complete head development in this reach. The latter site has been favorably considered also by the Bureau of Reclamation. These would be head developments only and would rely upon the upstream reservoirs such as Hungry Horse, Glacier View, Nine-mile, and Paradise for coordinated stream regulation.

In addition to the dam sites and river reaches of the Clark Fork watershed in Montana which have been mentioned as likely features of a comprehensive development, others are being studied as alternate possibilities or eventual minor additions to the plan. Among these are Clearwater River, Bull River, and Swan Lake. Most of the sites on these streams would involve comparatively high costs, but several may at some time become economical of development for small volumes of storage.

Pend Oreille Lake and River.

The obvious opportunities for storage development in Pend Oreille Lake long have been the subject of discussion. One possibility is the provision of substorage by deepening the lake outlet in the almost level reach from Sandpoint to Albeni Falls. Such storage alone is found to be more expensive in relation to the results achieved than that provided by an impounding and control structure in the river. Several dam sites and combinations of sites have been investigated, including Albeni Falls, Box Canyon, the well-known Z Canyon studied years ago by Colonel Hugh L. Cooper, and Boundary, the current version of the Z Canyon plan, lying about a mile farther downstream and about a mile upstream from the international boundary.

The most advantageous development of the Pend Oreille on this side of the border appears to be by means of a single dam at the Boundary site. Here the river has cut deeply through an extensive bed of limestone which will provide excellent foundation and abutments. A pool at maximum elevation 2062.5, as recommended by local authorities, would create a navigable lake continuous with Lake Pend Oreille and would provide usable storage exceeding two million acre-feet. A pool at elevation 2069 would not exceed maximum lake levels recorded since 1903, but would be objectionable to some local interests. Neither stage of development would require relocation of large communities, but either would involve considerable stretches of railroad and highway. Interference with mines of the Meteline Falls district appear minor and

remediable. The reservoir would be held full during the summer, thus enhancing the recreational utility of Lake Pend Oreille. Winter use would add a large block of hydroelectric power to the Northwest system.

Priest Lake and River.

Among several Priest River dam sites investigated, that designated No. 1, close to the outlet of Priest Lake, appears to be the best. It is feasible for the construction of a dam to raise the level of the lake and, in conjunction with substorage obtained by excavating the lake outlet, to regulate the flow for power for downstream stations on the Pend Oreille and Columbia Rivers. The project would require the relocation of a number of summer homes around the lake and the development of new beaches and grounds for these homes.

Kootenai River.

Eight dam sites on Kootenai River in the United States have been explored for foundation conditions and five of these have been found to be reasonably satisfactory. The five sites present opportunity for a variety of alternative single-dam or combination developments. They are shown on a simplified river profile.

The Moyie site is located on Kootenai River two miles above the mouth of Moyie River, and nine miles above Bonners Ferry. The Katka site is less than two miles above the Moyie site and about a mile downstream from Katka siding of the Great Northern Railway. Tunnel No. 8 site, between Pine Creek and Yaak River, about 23 miles upstream from Bonners Ferry, takes its name from the Great Northern tunnel nearby. At Kootenai Falls, a location just below the falls appears to be more favorable than one above the falls. The so-called Libby site actually lies 11 miles upstream from Libby, near Jennings.

A single high dam at Katka, Tunnel No. 8, or Kootenai Falls would provide maximum flood control and power storage of seven to ten million acre-feet. A two-dam plan, with a low dam at Moyie or Katka, and a high dam at Kootenai Falls or Libby site, also appears feasible. This latter combination would avoid serious flowage difficulties at the town of Libby, and may prove to be the most desirable, although storage capacity would be limited to five to seven million acre-feet. There are great power potentialities at all sites, arising from the total fall of approximately 550 feet on Kootenai River in the United States. A high degree of regulation through storage would add greatly to the prime power available at all downstream sites in Canada and the United States. Large storage on the Kootenai is highly desirable for control of the serious flood situation from Bonners Ferry to Kootenai Lake.

The choice of the best over-all plan for Kootenai River development does not rest alone upon the studies of physical and economic factors. High-level development would extend the reservoir into Canada and require Canadian approval and assistance. The amount of storage desirable in this country will depend also upon what may be provided by the Canadians on their side. Flowage problems are a major consideration and will require close coordination with local highway, railway, and community interests.

Columbia River, Main Stem.

Installation of the remaining units at Grand Coulee Dam will complete the development of the main stem of Columbia River for a distance of 150 miles below the Canadian border. Construction of the authorized Foster Creek Dam will represent the next step of development, with a pool extending 51 miles downstream from Grand Coulee. The Chelan and Rocky Reach sites, considered in the original "308" report, lie between Foster Creek and the existing plant at Rock Island. Deep deposits of pervious material over bedrock at both Chelan and Rocky Reach sites present construction problems that will not be easily solved. The economic aspects of these two sites also are less favorable than other main stem possibilities, and probably will relegate them to some more remote phase of the comprehensive plan.

Priest Rapids site, the last in downstream order above the mouth of Snake River, has satisfactory foundation rock for a concrete main channel structure, with long earthfill embankments at each side, particularly the left. Backwater would extend to Rock Island Dam. Economic development of Priest Rapids must be predicated on the prior construction of more storage upstream than now exists. A favorable project, therefore, must wait upon earlier stages of the comprehensive plan, such as storage developments on the Kootenai and Clark Fork.

Minor Tributaries.

There are several possibilities for tributary development, investigation of which for the most part is not sufficiently advanced to furnish a satisfactory basis for present discussion. A separate report is nearly completed and will be submitted in the near future, dealing with Spokane River and Springston Reservoir in particular. Projects on the Similkameen are being investigated and one or more on the Wenatchee appear to merit consideration. There has been considerable study of flood control in Yakima Valley, but major storage development on that river logically is and will be a function of the Bureau of Reclamation. Other tributary potentialities will be investigated and included in the review report.

The Comprehensive Plan.

The crystallization of an over-all plan of future Columbia River development remains to be accomplished. Work to date has considerably narrowed the field of selection among the projects which merit consideration, and the methods of analysis have been greatly clarified and simplified as a result of the current studies. However, much investigation and study remains to be done before the most advantageous, complete, and integrated system can be visualized. Other agencies represented on this Committee are conducting related or cooperate studies, the results of which will have direct bearing on the form of the plan to be recommended. State, local and Canadian viewpoints must be consulted and correlated, and our own higher authority will review the results before Congress receives the report. Meanwhile, as tentative conclusions begin to emerge, such discussions as this among those most interested will be of value in bringing out helpful viewpoints and suggestions toward further progress.

January 20, 1947

Exhibit IV to Minutes
of January 8th Meeting

For Inter-Agency Meeting in Seattle, Washington
January 8, 1947

Navigation in Portland District

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

Before discussing the plans for further improvements in the Columbia system for navigation, I want to review briefly the existing navigation projects to show how the additional improvements authorized and proposed will fit into and supplement the whole.

The Columbia drains an area of 259,000 square miles and constitutes a great artery of transportation. Its development to the fullest for transportation is very important to the entire area. From the sea the main ship channel, 35 feet deep, extends to Portland and Vancouver, with a 27-foot extension to The Dalles 180 miles from the sea authorized and partially completed. Along the main channel of the lower river there are in addition, side channels for ship navigation at Skipanon, Westport, Rainier, Longview, St. Helens, and Washougal, and 16 side channels for barge traffic.

From The Dalles a 7-foot channel provides for barge transportation to Pasco, Washington, in which reach is included 8 miles in The Dalles-Celilo canal and locks. This section of the river is difficult to navigate and extensive additional improvements are necessary, the first of which will be McNary Dam now authorized. The recently authorized slack water project on the Snake from the mouth to Lewiston, Idaho will overcome a total fall of 375 feet in 140 miles. On the Willamette, another important tributary, the present authorized project under the comprehensive plan of improvement will provide for barge and log traffic to Salem, Albany and Corvallis and further study of this stream may indicate justification eventually for navigation improvements to Eugene. It will be possible, however, to provide the deeper channel below Albany only after the large storage dams on the Willamette and tributaries are completed, as the present unregulated low water flow is not sufficient to maintain the 5 and 6 feet proposed depths. A modern set of locks is also authorized at Willamette Falls to replace the old flight constructed in 1876. Plans for these locks are practically complete and construction can be started when funds are available.

Traffic

The waterborne traffic on the lower Columbia, below Portland and Vancouver, in 1946 amounted to about 7,500,000 tons ocean-borne, and 9,500,000 tons of inland traffic, a total of about 17,000,000 tons. On the upper Willamette River, traffic in 1946 amounted to a total of 2,050,000 tons passing through the locks at Oregon City, most of which was logs.

On the upper Columbia, traffic through Bonneville lock increased from a small quantity in 1938 to approximately 1,000,000 tons in 1946. This tonnage is at present principally in petroleum products bound

upstream for delivery at The Dalles, Umatilla, Attalia and Pasco. Downstream tonnage has been small but is now increasing. It is principally in wheat. Fifty-five thousand tons were handled in 1946 and wheat shipments will reach an estimated total of 900,000 tons upon completion of the major improvements. Total movement for the inland system at the end of 50 years is estimated at 6,000,000 tons, about 2/3 of which will be downstream.

Considering geographical limits it is at present indicated that The Dalles in deep water, at upper end of the Bonneville pool should remain as the upper limit for ship navigation. Above that point the cost of channel work in the pools for deep draft vessels would be excessive and the costs of navigation and risks in operation compared with those in open water would also be such as to make its success very doubtful.

Barge traffic to Pasco is an established operation and will be greatly facilitated by construction of McNary Dam now authorized, and the authorized slack water project on the Snake will provide adequately for barge navigation to Lewiston. An interim report on The Dalles Dam has been submitted and in the Columbia Review Report careful consideration will be given to the provision of additional dams on the Columbia between The Dalles and McNary Dam to provide continuous slack water on the Columbia to Pasco. The Dalles Dam will drown out the old Dalles-Celilo canal, which is now obsolescent and inadequate for modern needs.

To provide for navigation of Snake River above Lewiston, through the Hells Canyon reach to Weiser, Idaho, would be a major undertaking, the economic justification of which has not as yet been determined. The river falls about 1,400 feet in 210 miles between Weiser and Lewiston, and except for minerals and limestone this immediate stretch of river would not be productive of much tonnage. Improvement for practical navigation of this section of the Snake would call for the construction of probably 15 low to moderate height dams, but the use of low dams would sacrifice much of the power and storage possibilities.

Above Weiser for a distance of about 100 miles the river has a moderate gradient, and open river navigation of moderate draft would be feasible with a limited amount of improvement. Such work could be undertaken at any future time should the demand arise. The upper reaches of the Snake above Swan Falls are not susceptible of improvement for navigation at reasonable cost. The primary needs of this southern Idaho area are for additional irrigation, flood control and power.

The economic size of locks on the Columbia and Snake has been the subject of considerable discussion with navigation interests since the definite project report for McNary Dam was submitted. The report recommends locks 86 feet by 500 feet in the clear with a single lift of about 90 feet between normal pool levels. These dimensions are sufficient to accommodate at one time a tow of at least 4 large barges, but some navigation companies think these dimensions are too small and ask for a lock 130 feet by 750 feet to accommodate 9 barges in a single

tow. A detailed economic study of this question is now being made in connection with design of McNary lock and the final determination will have a direct bearing on the size of locks to be constructed in the future at other dams in the Columbia River system.

All studies as to the future tonnage to be accommodated, the economic size of locks, channel dimensions, and the river reaches for which improvements for navigation are considered economically feasible, are well along, and in collaboration with the Seattle District can be completed in advance of the time such information will be needed for inclusion in the comprehensive Review Report on the Columbia and tributaries.

Status of Flood Control Investigations
For Columbia Review Report
January 7, 1947

1. Evaluation of Flood Problem, Portland District. In order to visualize the approximate magnitude and scope of the flood control problem in the Portland District, the following preliminary tabulation has been prepared. It is the first time this information has been assembled for the entire District, and much of the data is as yet in very tentative form and subject to revision as studies progress.

Status of Flood Control Problem
Portland District, Jan. 6, 1947

Number of individual flood damage localities	130
Length of river affected	1,620 miles
Area subject to flood damage	984,000 acres
Area subject to impeded drainage	604,000 acres
Average annual flood damages (approximate)	\$6,050,000
Average annual potential drainage and increased land use benefits	\$5,370,000
Number of authorized investigations	30
Number of flood control reservoirs under study	48
Length of major channel improvements studied	910 miles
Length of minor channel improvements studied	890 miles
Status of flood control investigations	50%

2. Geographical Regions Affecting Flood Control Problem. The flood control problem in the Portland District is divided into three major geographical areas, each of which has individual characteristics determined by land forms, geological features, meteorological and hydrological conditions, and status of development. The lower Columbia River tributaries, comprising the areas west of the Cascades and principally the Willamette and Cowlitz valleys, is a region characterized by a well-defined winter flood season, caused by a combination of heavy rainfall and melting snows in the mountains. The central Columbia Basin area comprises the central part of Oregon extending from the Cascade Mountains to the Blue and Wallowa Mountains. Much of it is a semidesert plateau area only lightly developed due to inadequate rainfall, largely in the form of snow, resulting from the shielding effect of the Cascade range. Flood problems affect certain isolated but relatively highly developed areas. The third region comprises the Snake River Basin, which is further subdivided into three sub-basins. The flood problem affects particularly those plains areas within the basin which have been highly developed by irrigation. It is a region of light rainfall in the plains and relatively heavy precipitation in the form of snow in the mountains. Flood problems are created largely by snow runoff from the mountain areas occurring during the spring.

3. Basis for Investigations. Flood control investigations in the Portland District are going forward under some 29 separate report authorizations. The results of these individual studies will be integrated for comprehensive treatment of the problem in connection with the Columbia Review Report. The flood control problem falls into two classifications - those flood control problems which are closely

related to the development of the Columbia River and its tributaries and therefore are considered under multiple-purpose investigations, and those projects which are of local nature and must be solved individually and independently of the general plan. In the planning of multiple-purpose developments, flood control is taken into consideration along with such other purposes as irrigation, navigation, and power. Investigations are also being made on a great many localized flood hazard areas where individual solution is necessary. The scope of the Review Report is considered broad enough to permit consideration of all such problems that come to the attention of the Portland District either through investigations by our engineers or by information received from outside sources.

4. Flood Control in Combination with Drainage Improvements. By recent law the Department was authorized to consider major drainage improvements in the same category as flood control improvements. Under this authority the scope of flood control investigations has been considerably expanded and possibilities for beneficial developments combining both aspects have been broadened and the economic feasibility of many projects greatly improved over that which would exist if the flood control aspect only were considered.

5. Status of Investigations West of Cascades.

a. Willamette Basin. With 500,000 acres of land subject to flood hazards and an equal area lacking adequate drainage, the highly developed Willamette valley presents by far the greatest flood and drainage problem in the Portland District. Average annual flood damages are approximately \$3,350,000; potential land use and drainage benefits creditable to the proposed improvements total an additional \$5,200,000. Due to the strongly seasonal characteristics of the floods - which occur predominantly in the winter months of December and January - the control of floods by multiple-purpose storage reservoirs has proven the most practicable solution of the flood problem. This permits also the conservation of the water resources of the basin in the interests of irrigation, navigation, power and other purposes. A general plan for the flood protection of this valley and multiple-purpose development of the Willamette River and its tributaries was authorized in 1938 and construction of two reservoirs completed prior to the war. Construction of two additional reservoirs is being initiated at this time. A review of the entire plan of development for the basin is now being undertaken and will be submitted July 1, 1947 and also will be reported in connection with the comprehensive Columbia River Review Report. The review investigation is taking into account the recent phenomenal development of certain portions of the valley as well as the series of disastrous floods which have occurred since the preparation of the original report; and makes use of the data thus obtained in revising the general plan of development to obtain greater effectiveness. In broad outline the report will propose certain modifications of the existing project including increased storage at certain reservoirs; substitution of a series of small reservoirs in lieu of main stream reservoirs originally proposed on the Santiam and McKenzie Rivers; multiple-purpose reservoirs on Fall Creek, Calapooya, Little North

Santiam and Luckiamute Rivers; channel improvements and levees below several of the proposed reservoirs and on the main stem of the Willamette to provide adequate channel capacity to supplement the operation of the reservoirs; and drainage and minor flood control improvements on a number of smaller streams and areas within the basin. This investigation is now approximately 85 percent complete.

b. Cowlitz, Lewis and Minor Streams. Some 30,000 acres of land are subject to flood hazard on these streams, and average annual damages are roughly \$170,000. Investigations of possible storage reservoirs to provide flood protection in combination with power and navigation development are being investigated but the economic feasibility of such reservoirs has not yet been established. Studies are also under way to provide flood protection by means of channel improvements and levees for certain localized areas, particularly in the vicinity of Randle, Washington.

6. Central Columbia Basin Region. Flood hazards at eleven principal locations affect some 50,000 acres of land and cause approximately \$400,000 average annual flood damages. Most flood problems in this area are of a local nature and not closely related to the comprehensive development of the Columbia Basin. In some instances flood protection is simply a local problem of providing channel improvements and/or levees; but in other cases reservoirs for combined purposes of irrigation and flood control are being considered. These investigations are being carried out under ten separate report authorizations and in collaboration with the Bureau of Reclamation with respect to the irrigation features. The findings of these studies will also be presented and integrated in the Columbia Review Report. These studies are well advanced on the most critical areas such as the Walla Walla, Umatilla and Crooked Rivers, whereas only preliminary investigations have been done on such other streams as the John Day, Klickitat, White Salmon, and Hood Rivers. Investigations are approximately 50 percent complete.

7. Snake River Basin. Floods in this basin occur characteristically as a result of snow melt in the mountains during the early spring. Because of this characteristic, forecast methods in determining the use of reservoir storage can be applied advantageously to permit joint use of space in a reservoir for flood control and irrigation purposes. While methods for such joint use are not yet fully perfected, effective procedures can be developed with increasing availability of field data and future operating experience and technical studies. This condition is of utmost importance to a region where water supply for irrigation purposes is a critical factor and conservation of flood flows is vital to maintain adequate water supplies. Investigation in the Snake River Basin is being carried on under eleven report authorizations, and in close liaison with the Bureau of Reclamation and other interested Federal and State agencies. Some 25 principal flood locations, affecting approximately 360,000 acres and some 450 miles of river channel, are under investigation in this area. Average annual flood damages are estimated at roughly \$1,900,000. Some 19 reservoir sites are being investigated for joint flood control and irrigation (and in some instances power) use. Approximately 296 miles of channel are under study for

possible improvement in the interest of flood control. Investigations in the Snake River Basin are approximately 45 percent complete. Further details on subdivision of the basin follow:

a. Upper Snake River Basin (above Milner Dam). The area covered in this investigation comprises the headwaters in Wyoming and eastern Idaho. Flood problems are largely confined to some ten isolated locations on the main stem of the Snake and on principal tributaries, affecting approximately 170,000 acres. Average annual flood damages are roughly estimated to total \$580,000. Under three separate report authorizations, investigations are being made of eight multiple-purpose reservoir sites for development in the combined interest of flood control, irrigation, and power; also of channel improvements and levees to provide supplementary protection on some 34 miles of river. Work is approximately 50 percent completed with an interim report recently submitted on the problem of flood protection for the Snake River in Wyoming.

b. Central Snake River Basin (Milner Dam to Weiser). Flooding at ten principal locations, affecting some 90,000 acres of land, causes average annual damages roughly approximating \$1,000,000. Damages are experienced notably in the Boise, Payette and Weiser River basins. Eight reservoir sites are being considered in collaboration with the Bureau of Reclamation, for operation in the joint interests of flood control and irrigation. Major supplementary channel improvements are being considered on 125 miles of river, together with 60 miles of minor channels. Studies in this area are approximately 30 percent complete. A separate report was submitted in January 1946 recommending construction of a flood control reservoir at the Lucky Peak site on the Boise River.

c. Lower Snake River Basin (Weiser to Mouth). Flood problems in this area are minor except for certain locations on the upper Grande Ronde, Powder, and Palouse Rivers which are being investigated as individual projects under separate authority. Flooding at six locations affects approximately 90,000 acres and causes damages roughly approximating \$330,000 annually. Three reservoir sites are being investigated, together with some 36 miles of minor channel and drainage improvements. Investigations in this area are approximately 50 percent completed.

Status of Portland District Power Studies Under Way
In Connection with the Columbia Basin Review Report

Before reciting the present status of power studies currently under way in the Portland District in connection with the Columbia Basin Review Report, I wish to review briefly the main elements of our work, i.e., the starting points, the successive intermediate levels of work, and finally the goal of our studies.

Having thus established the work pattern which is in effect a scale by which our progress can be measured, I can readily describe for you the relative degrees of completion of our various required investigations.

Our power studies are directed at providing the answers to three broad categories of questions:

Category I: Where is the power to be found? What is the relative economic feasibility of the various possible power projects, and what is the quality and quantity of power generated in the system and at the various individual power sites? These questions will be answered under our Review Report Problem 10, "Power Generation" studies.

Category II: What is the nature of the power market; i.e., where are the load centers? What rate of system load growth can be expected, and what demand characteristics should be provided for? The answers to these questions will be contained in the Review Report Problem 5 study, "Survey of Industrial and Agricultural Development and Power Market".

Category III: What provisions will be required, and what are the costs of conveying power from the generating stations to the load centers? Questions in this category will be covered under the Review Report Problem 12, "Power Distribution" study.

In connection with Problem 10, "Power Generation" studies, the following four general work stages have been established:

a. Inventory; i.e., investigation, from the standpoint of practicality and economic feasibility, of all possible power sites offering approximately 5,000 kilowatts or more of firm capability.

b. Selection of the best sites which will permit the complete practicable development of the Columbia Basin power resources.

c. Selection of those plants which will be in the "First Level of Development", i.e., projects which are likely to be built in the next twenty to twenty-five years - possibly to serve primarily some purpose other than power - and which will collectively supply the reasonably foreseeable future system power requirements.

d. System power studies which will take into account load characteristics, and will correlate regulation of power storages with diversified stream characteristics and the various individual power

plant operational procedures to assure development of the maximum possible firm capability in a vast, unified, and closely interconnected Northwest Power System. These studies will establish the maximum provisions required in the project layouts for possible future expansions of power generating facilities. Although these system analyses will be pursued most intensively in connection with projects scheduled under the "First Level of Development", somewhat modified system studies will be made of all projects for which possible individual advantages or structural requirements for future power expansion might appear materially different if examined on a more restricted basis.

The Portland District is in the aforementioned stage "d" of our studies with respect to Willamette Basin, the lower Columbia River, and the lower Snake River developments. For projects in the middle reach of the Snake River (Lewiston to Weiser) and in the Salmon and Clearwater River Basins, we are well along in stage "b" of our studies in so far as key sites are concerned. Lesser developments in this area are in the stage "a" of study.

In the upper Snake River Basin we are correlating our studies closely with the U. S. Bureau of Reclamation which bears principal responsibility in this area inasmuch as the projects are predominately irrigation developments. From our standpoint, this work could be classified as partially in stage "a" and partially in stage "b".

Studies in the Cowlitz, Deschutes, and Lewis River Basins have progressed to stage "b". For those remaining tributary basins of the Columbia River not mentioned our work is at present at the stage "a" or inventory level. A start has been made at examining all of the individual basins to be studied.

It has also been possible currently to tentatively arrive at stage "c" of our Problem 10 investigation. As we visualize it, the "First Level of System Development" will include in addition to the existing Grand Coulee and Bonneville projects the following additional governmentally constructed power developments: The Dalles, John Day, Arlington, McNary, Foster Creek, four dams on the lower Snake River, Detroit, Boundary, and the U. S. Bureau of Reclamation Hungry Horse project. The last mentioned project is of course not the only project proposed by the Bureau of Reclamation for construction in the near future, but is included here principally for the reason that its storage will have a very material effect in firming power output at many of the projects mentioned.

Both Problem 5 and Problem 12 have been assigned under formal agreement with the Portland District to the Bonneville Power Administration whom we recognize as authorities on marketing and distribution problems. Their reports on these two Problems will be appended to the Review Report. Their work on both problems is well under way and will be completed on schedule and in time for review by the Corps of Engineers.

In order that all participating agencies may be informed as to the progress and the nature of the results currently being obtained by the Bonneville Power Administration in their studies, and in regard to our

studies under Problem 10, regularly scheduled quarterly conferences at a working level have been held for approximately the past year among representatives of the War Department's Seattle, Portland, and Division offices; the Bonneville Power Administration; the Federal Power Commission, and the U. S. Bureau of Reclamation.

In general, it may be said that we have been handicapped in our power studies by lack of funds and personnel. In view of this situation, the power data to be presented in the Report will not be as exhaustive as originally contemplated. It will be necessary to omit numerous interesting studies in favor of essential work. We are bending every effort, however, to assure that the information to be presented in the Review Report will be properly envisioned, will be ample for the purpose intended, and will be clearly and authoritatively presented in the best tradition of the Corps of Engineers.

REPORT TO COLUMBIA BASIN INTER-AGENCY COMMITTEE
SEATTLE, January 8, 1947



1. Contact and Cooperation with Federal Subcommittee.

The Federal Subcommittee on Benefits and Costs has informed us that direct contact and cooperation between the Federal and Columbia Basin Subcommittees has now been formally approved. The Federal Subcommittee is concerned lest there be duplication of effort. At the present time there seems little likelihood of duplication for two reasons. The Federal Subcommittee has a considerable staff working on its studies. Some of that staff is devoting full time and some of it substantial portions of time to the work. We in the field do not have personnel that can be used full time or even for a substantial part of their time except of course as our work relates to our day to day practical operations. The second reason for believing that duplication will be avoided or held to a minimum is that the Columbia Basin Subcommittee must devote itself principally to the current problems of preparing payout analyses and coordination of budget and program presentations.

We have obtained from the Federal Subcommittee copies of the minutes of all of the meetings held to date. These minutes are quite condensed and therefore do no more than indicate the subject matter of their studies. From time to time, however, the Federal Subcommittee attaches to its minutes a paper setting forth its interpretation of the current practice of the various agencies with regard to benefits. Papers have been issued so far on benefits from the watershed improvement program of Agriculture, irrigation by the Bureau of Reclamation, and flood control and navigation by the Corps of Engineers. Benefits from hydroelectric projects as defined by the FPC have been under discussion but a final paper has not been prepared. In addition to these studies of current practices in regard to benefits, the Federal Subcommittee is undertaking a so-called objective analysis of costs and benefits. Up to this time, however, no definite materials have been issued in connection with this phase of the study.

The minutes and papers of the Federal Subcommittee are being studied by members of the Columbia Basin Subcommittee. One of the members of the Economic Staff of the Bonneville Power Administration has recently been made available to study these Federal materials. The extent to which he will be able to devote his time to that study will be determined after he has made his examination and a conclusion is reached as to the importance of such an assignment relative to his other duties.

It seems that the Columbia Basin's most feasible approach at this time is along this line of reviewing the work of the Federal Subcommittee with the subsequent program to be developed after we have had an opportunity to complete such review.

2. Study of Existing Legislation.

At the meeting in Spokane last September the Subcommittee recommended the appointment of a separate subcommittee to study existing legislation,

At the meeting at Salem in November it was decided that a separate subcommittee for that purpose would not be appointed but that the existing subcommittee would handle that study as well as the others on which subcommittees had been recommended. In so doing of course the Subcommittee can enlist the aid of other staff members of their agencies. Mr. Kaseberg of the legal staff of the Bonneville Power Administration, Mr. Buckee of the legal staff of U.S.B.R. at Boise, and Mr. Scheufele of the Corps of Engineers have thus far been designated as staff members on the study of legislation. The other agencies may not be able to assign a specific staff member, in which event some other plan for cooperation will be required.

3. Payout Analyses.

Payout studies are proceeding on two bases. One is the revision of the payout schedules used last year covering just Bonneville and Grand Coulee projects and the related transmission system. These included elaborate payout schedules showing results to date and forecasting expected results over the payout period.

The second basis consists of a rough or preliminary estimate of the average annual financial requirements for a system consisting of thirteen dams and related transmission. The thirteen dams are Bonneville, Grand Coulee, Foster Creek, Hungry Horse, McNary, The Dalles, Detroit, and six sites on the Lower Snake River. All of these except The Dalles have been authorized but for all of them except Bonneville and Grand Coulee all data are estimates and they are pretty rough in most cases. Little progress has been made since the last meeting on this phase of the study inasmuch as work on necessary additional data by some of the agencies has not been completed.

With respect to the revision of the payout schedules from the original Payout Report, the following progress can be reported:

a. Representatives from the Bureau and the Administration conferred on a revision of Schedule C-2 covering the Columbia Basin project. These staff representatives agreed on a proposed revision that the Bureau is to submit to the Administration for consideration.

b. A revision of Schedule B-1 covering the Bonneville Dam project was completed and copies sent to members of the Subcommittee.

c. A revision of Schedule A-1, the over-all schedule that makes provision for the requirements of the generating projects and the transmission system, is in process. A forecast of transmission plant requirements has been completed but not the forecast of transmission expenses.

d. The revised payout schedules contain a change from the last year as regards the treatment of plant account and replacements in order to overcome a deficiency in the original schedules. That deficiency was the failure to make provision for the cost of retirements and salvage in connection with retirements. The new plan over-

comes this lack and at the same time provides a practical and simplified basis of measuring actual replacements from year to year. However, the schedules are still unsatisfactory in that they do not effectively make the transition from the cost accounting data set forth in the certified financial statements to the repayment requirement which is in effect a cash account. A revised schedule has been developed which solves this problem, at least for the Bonneville Dam and the Bonneville Power Administration. The Columbia Basin Project presents a special problem because of different statutory requirements in regard to payout. The problem can be illustrated by reference to the Bonneville Dam project schedules. For that project the payout schedule, revised as of June 30, 1946 on the same basis as originally used, shows an unamortized investment of \$54,183,132 but the certified financial statement shows that the unpaid Federal investment was only \$53,871,686, or \$311,446 less than the payout schedule. The difference consists of two factors. In the first place, the payout schedule includes all operation and maintenance expenses, even though some of those expenses were non-cash in that they merely represented the establishment of reserves for deferred maintenance. But the schedule did not make this distinction and it did not reflect the fact that this reserved cash actually operated to repay the Federal investment. The second point of difference is the fact that there were other assets and liabilities involved such as, for example, current liabilities representing in effect an investment by others than the Federal Government but this is a temporary situation which will ultimately have to be reflected in the Federal investment. The revised form of payout schedule solves these problems in such fashion that every figure on the schedule can be taken directly from the certified financial statements or developed from those statements by simple additions and subtractions. The schedule on this basis thus shows an unamortized investment exactly the same as the certified balance sheet.

This is a very sketchy and inadequate description of the revised payout schedule but it will serve to indicate that progress is being made along this line. The new plan will be described in writing in detail and submitted to the agencies for their approval. This new plan has been reached only quite recently with result that the subcommittee members themselves have not had an opportunity to review it.

January 17, 1947

Exhibit VI to Minutes
of January 8th Meeting

Interim Report of the Subcommittee on Hydrology
to the Columbia Basin Inter-Agency Committee
January 8, 1947

OFFICE OF
ASST. CHIEF ENGR.
JAN 31 1947
N. P. RY. CO.
SEATTLE, WASH.

At the August meeting of the Columbia Basin Inter-Agency Committee held in Missoula, the subcommittee was appointed with instructions to prepare program under ground water studies and submit it to the parent Committee for approval. A program was prepared and submitted to the parent Committee at the September meeting in Spokane. At the November meeting held in Salem the name of the Ground Water Storage Subcommittee was changed to the "Subcommittee on Hydrology", and the scope of its activities increased to include all hydrologic phenomena. The membership of the subcommittee consists of Henry R. Stevens, Chairman, Bonneville Power Administration; Arthur M. Piper, U. S. Geological Survey, Department of Interior; John C. Beebe, Federal Power Commission; Don A. Williams, Soil Conservation Service, Department of Agriculture; and Oliver L. Johnson, Division Office of the U. S. Engineers. Report on ground water investigations for the Columbia Basin (Exhibit VIII, September minutes) together with a memorandum dated September 16, 1946, prepared by D. A. Williams, Chief of the Regional Water Conservation Division, was referred to the subcommittee for study and recommendation. The memorandum of September 16 outlines studies which should be covered and investigations made by the Subcommittee on Hydrology and presents seven items for consideration as follows:

1. Complete the development of a network of snow courses on strategic watersheds.
2. Initiation and development of a series of test wells, adjacent to snow courses, as a means of correlating data obtained from snow courses with ground water storage.
3. Exploratory well and spring development in forested and range areas to determine location, adequacy and quality of underground water in untested or unimproved areas.
4. A correlated research program on effects of proper and improper land use practices on infiltration runoff-erosion and siltation.
5. Correlation of effects of upstream ground water storage on sustained streamflow yield.
6. Completion of a geologic survey to define: Heavy runoff areas, ground water divides, recharge areas, aquifers, ground water storage basins, and barriers.
7. Correlation of influences of headwater underground storage and yield on downstream streamflow or downstream ground water storage.

In reconsideration of the report on ground water investigations, in light of the comments by Agriculture, the subcommittee deemed the ground water phase as but one of several requiring its attention. Because other phases were to be subsequently dealt with, the subcommittee unanimously agreed to support the ground water investigations report.

The subcommittee, among other things, has herein made recommendations on some of the suggestions made by the Department of Agriculture. Subsequent subcommittee meetings will give attention to other phases of the hydrologic needs of the basin.

Definition of Field

In seeking to define its proper field, the Subcommittee on Hydrology has formulated these guiding principles and concepts:

1. The ultimate development of the Pacific Northwest, for all of its people, will involve to the utmost its resources in water, land, and other natural resources; of these, water probably will prove to be the limiting resource.

2. In its use of water resources heretofore the region has exploited the more obvious opportunities based on available hydrologic information which has proven inadequate in some respects. How it is making, or contemplates making, very large commitments in an integrated schedule of works with a diminishing unobligated resource, coupled with an increasing scope and complexity in operations. To meet anticipated problems the scope of information is still inadequate.

3. The maximum utilization of all water resources will involve, among other things, seasonal forecasting of the potential water supplies in progressively greater refinement. Thus, present commitments incur a dual responsibility for the future - first, for an ultimate inventory of all potentially usable sources of water, both surface water and ground water, with respect to conditions of occurrence and to fluctuations in quantity and in chemical character; second, to establish a sound and adequate basis for forecasting flood magnitudes and seasonal supplies.

4. A dependable forecast for any basin involves the specific and complete knowledge of the hydrologic regimen of the basin under consideration. Such complete knowledge of these hydrologic elements is not now available.

5. Heretofore few elements in the hydrologic regimen of Pacific Northwest basins have been measured at all comprehensively, and concerning some fundamental elements the current knowledge is in part speculative, scattered, meager and uncoordinated. Useful mean values for such variables cannot be determined and coordinated until observations have been continued for at least ten years. Dependable mean values can be approached only by observational data spanning an even longer period.

6. It is the responsibility of the Federal Government to establish and maintain a program to evaluate the factors affecting all water

resources. A local responsibility also is recognized wherein the states and/or local agencies participate in the program.

In line with these concepts, your subcommittee feels that its present function should, among other things, be the progressive formulation and recommendation of programs in the scope just outlined.

Program Recommended for Immediate Action

With respect to inventory of water resources, it feels that the first priority deficiency is covered adequately by the long-term "Proposed program of ground water investigations for the Columbia River Basin", which is Exhibit VIII attached to the minutes of the September 1946 meeting of the Columbia Basin Inter-Agency Committee. Accordingly, the subcommittee recommends the adoption of that proposed program as an initial step toward the desirable over-all program. It further recommends that support be given to the requests for appropriations for fiscal year 1948 so that the presently initiated ground water investigation program of the U.S.G.S. may be continued.

Program Requiring Early Consideration

Snow surveys. The subcommittee recognizes that for forecasting runoff and water supplies within the Columbia Basin, snow surveys are the most widely used and practical means now developed. The subcommittee commends the task that has been performed in the field of snow surveys and forecasting during the past 11 years, in spite of many obstacles, by the Division of Irrigation in the Soil Conservation Service and numerous collaborating agencies.

However, the subcommittee recognizes that there are deficiencies in forecasts which are of concern to many water users and governmental agencies. It further recognizes a need for an expanded network of snow courses on strategic watersheds, for more frequent snow measurements and water forecasts, for correlation of data on snow cover with soil water and transient ground water storage in upstream areas, and for more intensively developing the relation between precipitation, snow melt, and runoff.

It is the opinion of the subcommittee that, while the present scope of water forecasts in large part have been directed toward agricultural needs, there are additional and highly significant applications to the operation of flood control and hydroelectric works and also to industrial and other developments. The subcommittee recognizes the present responsibility of the Division of Irrigation of the Soil Conservation Service in the field of snow surveys and related water forecasts. It recommends that this responsibility be extended to the broader program as per the attached exhibit.

Watershed Hydrology

An urgent need exists for evaluation of existing hydrologic data and for additional investigations on the effects of geologic factors, watershed management, and land use practices on infiltration, runoff,

erosion and siltation. Among the particular objectives of such investigations in the Columbia Basin would be to define areas of heavy runoff, ground water divides, and recharge areas; also, under various climate environments, to evaluate the factors of vegetal cover, soil and rock type, and land scope with respect to retardation of runoff and prevention of soil erosion.

Mr. Chairman:

The Subcommittee on Hydrology recommends to the Columbia Basin Inter-Agency Committee that it approve this report.

Respectfully submitted January 8, 1947

Henry R. Stevens, Chairman, Bonneville Power
Administration

Arthur M. Piper, Department of Interior

John C. Beebe, Federal Power Commission

D. A. Williams, Department of Agriculture

Oliver L. Johnson, U. S. Corps of Engineers

SNOW SURVEYS

History Procedure and Needed Program

Snow surveys now exist on all major tributaries of the Columbia River, both in the United States and in Canada. Earliest snow survey records of any importance in this Basin date to 1919, but records at 80 per cent of existing snow courses began in 1936 or later. Snow surveys made possible with funds appropriated to date are providing only a generalized picture of snow conditions in some parts of the Columbia River Basin, and in only a few drainages within the Basin may snow surveys be considered adequate as to number or frequency of measurement for accurate forecasting. However, the surveys now being made are providing a general guide to water supply annually in prospect to the most prominent reservoirs or to the larger units of irrigated land and to some of the established hydro-power generating units in the Basin.

Extension of the snow survey network is urgently needed to make possible more detailed and reliable forecasts of streamflow to existing projects and to smaller sub-stream basins. Such extension of snow surveys is particularly needed in the less accessible mountainous regions where surveys are now incomplete because of high cost of reaching such locations by men on skis. Mechanized equipment for reaching isolated watershed locations now is available but only at high initial cost.

In the 11 years since the Soil Conservation Service, Department of Agriculture, was designated by the Federal government to coordinate and conduct snow surveys and related forecasts of water supply for irrigation, the work has increased greatly in scope due to the cooperative assistance of numerous State and Federal agencies, and has gained in recognition and use far beyond expectations. Last winter snow surveys were made at more than 300 locations in Columbia Basin, and a force of from 300 to 900 men was required during the few days each month that the field measurements were taken. In addition to the pressing need that was first seen for this service, that of forecasting water supplies for irrigation, numerous other demands for it have come to light. Two of the most important of these are: Progressive volumetric runoff forecasts during the spring months in order to regulate flood control works to best advantage; and water supply forecasting for hydro-electric power generation. To meet the requirements of individual farmers or groups of farmers organized in Irrigation, Soil Conservation, and other districts, there is particular need for water supply forecasts designed to serve as aids in planning land and water use and cropping programs on land units of all sizes and classes, extending from the head waters meadow or hay lands to crop lands of major valleys below.

Extension of the snow survey network is needed to make possible detailed and reliable forecasts of streamflow for water-control and water-use projects not yet constructed. At least ten to fifteen

seasons of record on snow courses are required to provide a reliable index to streamflow; therefore, it is important that snow surveys be initiated several years prior to construction of such water-control or water-use units.

Planning of a more extensive snow course network will require analysis by sub-basins of existing snow survey and streamflow records to determine the degree of correlation each year between measured snow cover and resultant streamflow. These analyses will be basic to preparation of forecast curves for each sub-basin. In carrying forward these analyses, so far as pertinent information is available consideration will be given to the degree in which the basic relationship between snow cover and runoff is affected by deviations from average temperature, precipitation, other climatic factors, and ground-water storage. Analyses of existing data for the principal sub-basins of the Columbia River Basin will require not less than twenty man years of technical time with necessary clerical and sub-professional assistance.

At present the surveys are made on approximately the first of each month through the winter. Relatively few are made on the first of January, February, and May, whereas it is the aim to make all of them the first of April and as many as possible the first of March. To increase the value of snow surveys in programming operations of reservoirs used for flood control it is imperative that snow surveys at courses applicable for this use be made at least at monthly intervals beginning in November and continuing into the spring so long as snow remains on the watershed. In some cases these measurements should be made at least twice monthly. This is a future and very important objective of the snow survey work now prevented by lack of funds and manpower.

There will be encouraged the present policy of full cooperation and unreserved interchange of data with other agencies concerned with water use and control within the Columbia River Basin. Every possible means will be used to insure procurement of snow survey and related data for the Bureau of Reclamation, the Corps of Engineers, Bonneville Administration, and other operating agencies, as may be requested.

It is believed that the Division of Irrigation, Soil Conservation Service, because of its long experience in making snow surveys and streamflow forecasts, can be of major assistance to the Columbia Basin Inter-Agency Committee by obtaining for it advanced information concerning the potential annual water supply and its seasonal distribution. It is the policy of the Soil Conservation Service to cooperate fully with other State or Federal agencies in this program. All information that is obtained is fully available to other Federal or to State and private agencies for current use.

The Columbia River system extends into the states of Oregon, Washington, Idaho, Montana, Wyoming, Utah, and Nevada and into British Columbia. Snow survey offices of the Division of Irrigation now are located in Oregon, Idaho, Montana, Utah, and Nevada. The Province of British Columbia has a snow survey office in Victoria. Under the plan proposed to increase usefulness and scope of snow surveys, an office should be established in the State of Washington and personnel strengthened in the Montana office and in the Basin Supervisor's office at Boise, Idaho.

Whether or not financial support to the snow survey program in Columbia River Basin be strengthened to the extent that appears necessary, the Division of Irrigation, Soil Conservation Service, places at the disposal of the Inter-Agency Committee such information as it now has and its facilities as far as possible to secure additional information needed in the solution of the hydrological problems of the Columbia River Basin.

The following budget estimate sets forth personnel and operational needs that should be provided to make this snow survey planning and operational project effective.

Columbia River Basin
Snow Survey Annual Cost Estimate

<u>Personnel</u>				
<u>Number</u>	<u>Grade</u>	<u>Salary</u>	<u>Travel</u>	<u>Total</u>
1	P-5	\$ 5,905	\$ 2,400	\$ 8,305
2	P-4	9,804	3,000	12,804
1	P-3	4,146	1,000	5,146
4	P-2	13,588	4,000	17,588
5	CAF	10,840	---	10,840
1	S.P.	2,400	900	3,300
95	S.P. (Part time)	9,500	2,500	12,000
Equipment & Supplies				<u>30,017</u>
Basin Total				\$ 100,000

Submitted by R. A. Work, Senior Irrigation Engineer, Soil Conservation Service.

U. S. DEPARTMENT OF COMMERCE
W. AVERELL HARRIMAN, SECRETARY
WEATHER BUREAU
F. W. REICHELDERFER, CHIEF

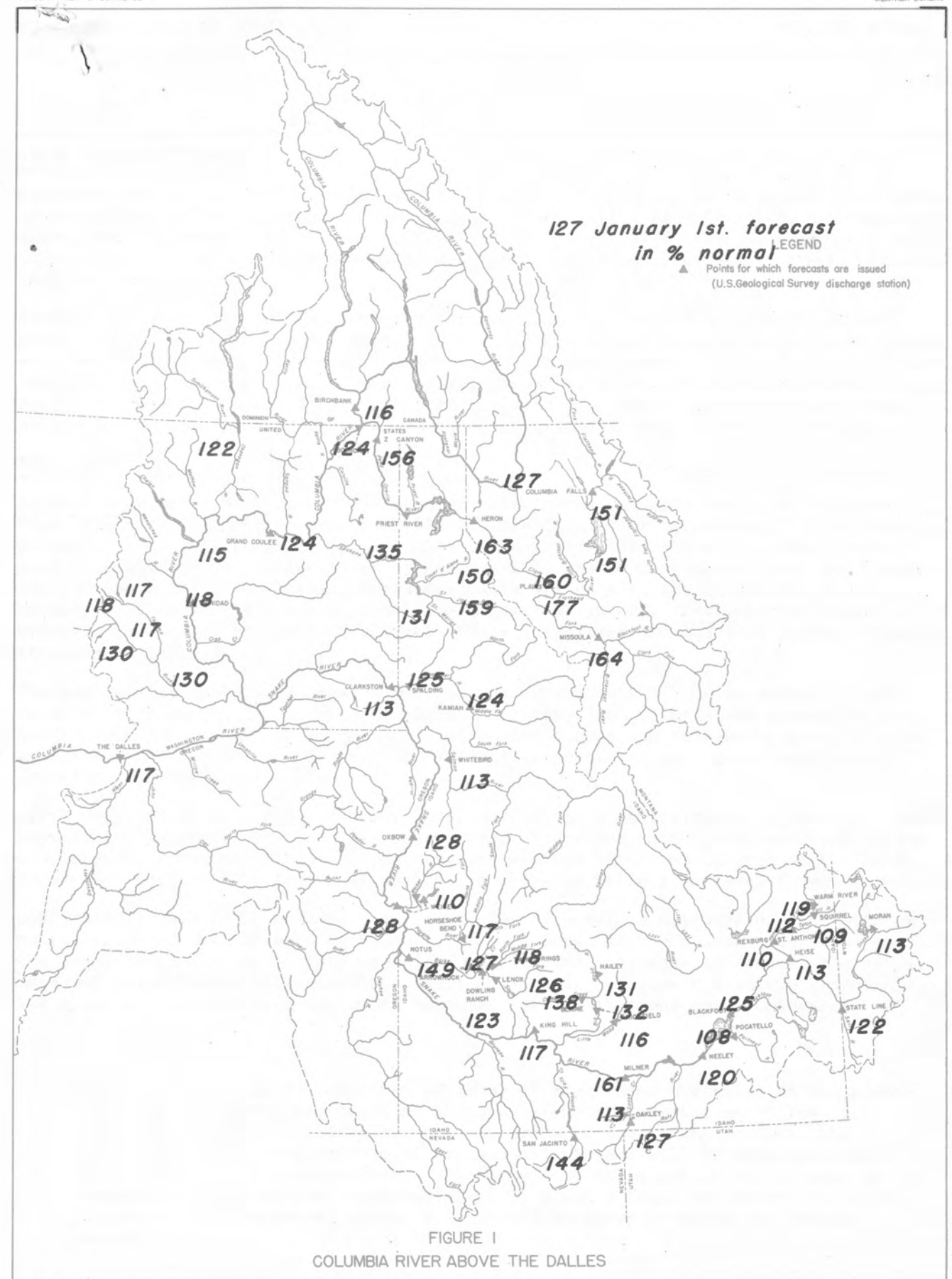
8731

WATER SUPPLY FORECASTS
FOR
THE COLUMBIA RIVER
SYSTEM
1946-47 WATER YEAR

ISSUED AS OF JANUARY 1, 1947



WASHINGTON. D. C.



COLUMBIA RIVER SYSTEM
WATER SUPPLY FORECASTS
Issued as of January 1, 1947

WATER SUPPLY OUTLOOK:

September through December precipitation has been considerably above normal over most of the Columbia Basin. Stations in the Clark Fork Basin reported amounts generally above 160% of normal, with some reports of as much as 280%. In remaining portions of the basin, September-December precipitation ranged generally between 120% and 150% of normal.

Near-normal precipitation from January through June will result in a water supply about 10% to 30% above normal, except in the Clark Fork and Spokane Basins where flows will be 135% to 165% of normal. Should subsequent precipitation be as low as the minimum of record, runoff will be near normal, except in the Clark Fork and Spokane Basins where above normal flows are virtually assured. Record maximum January-June precipitation will produce flows approaching or exceeding the highest of record.

EXPLANATION OF TABLES AND FIGURES:

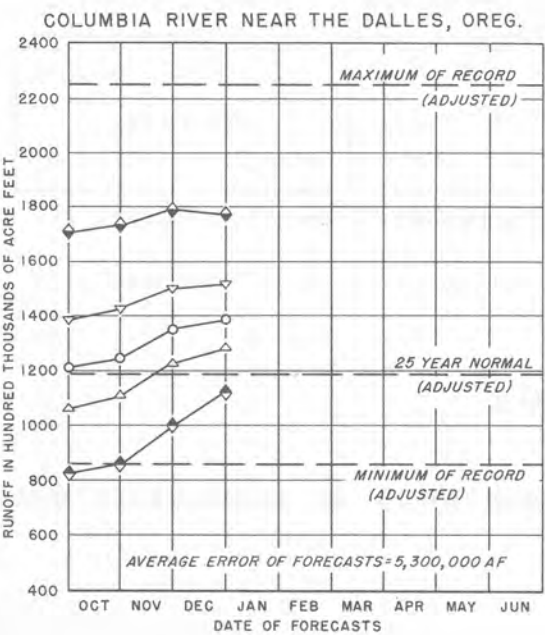
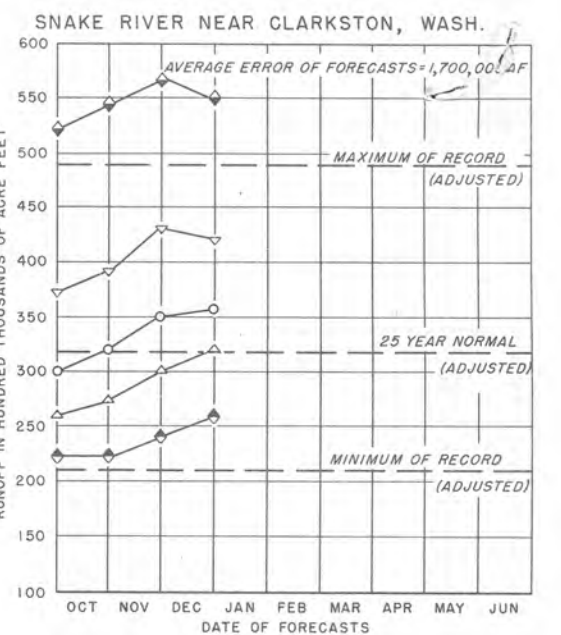
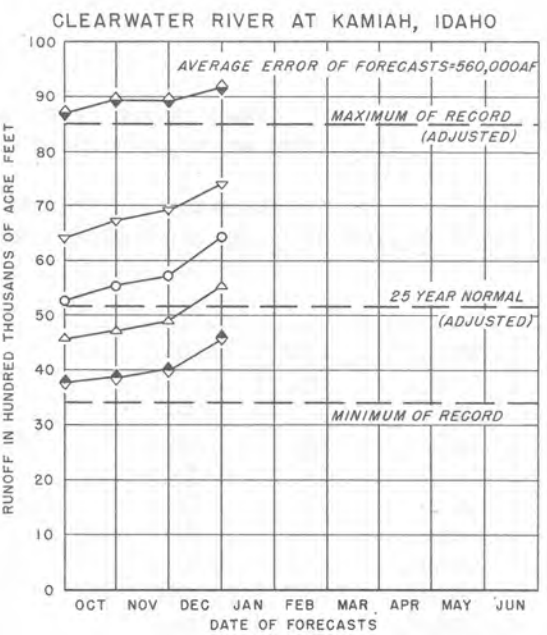
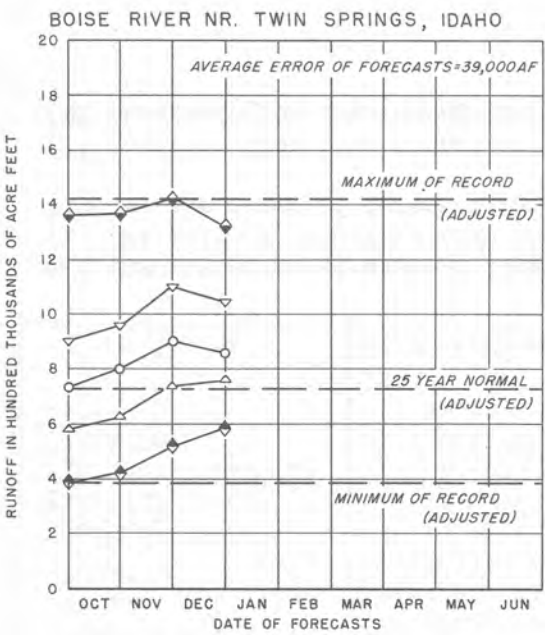
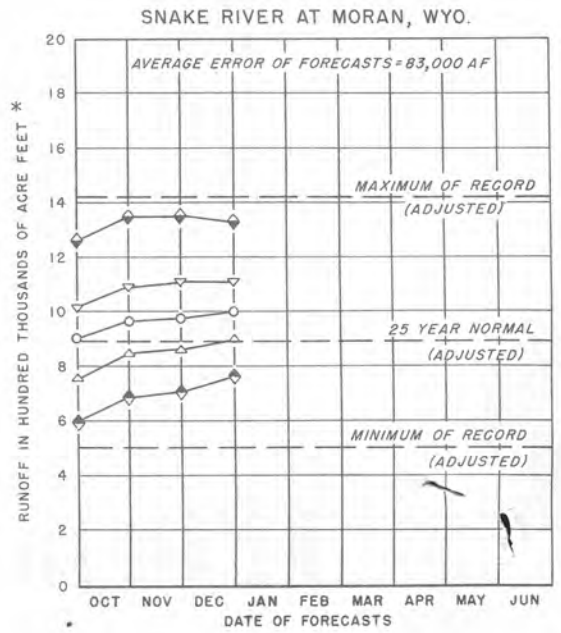
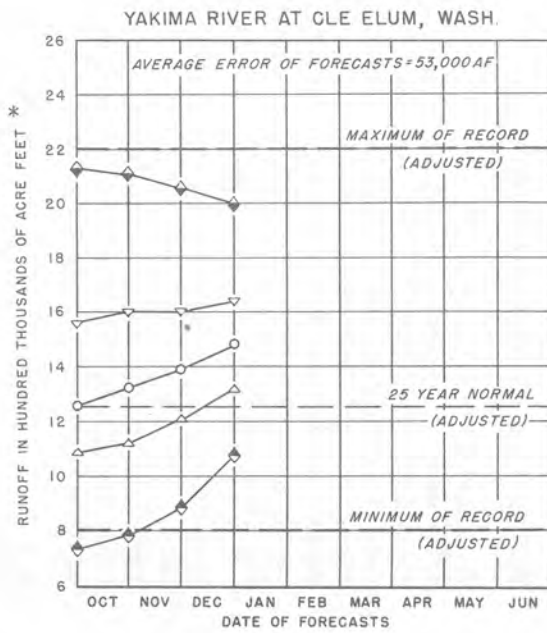
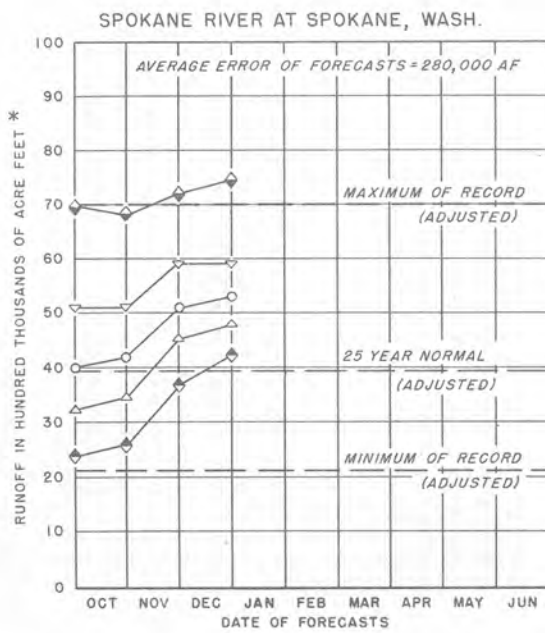
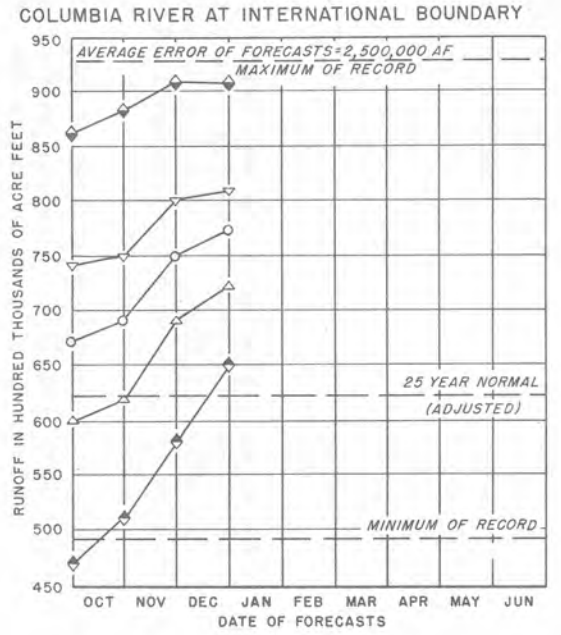
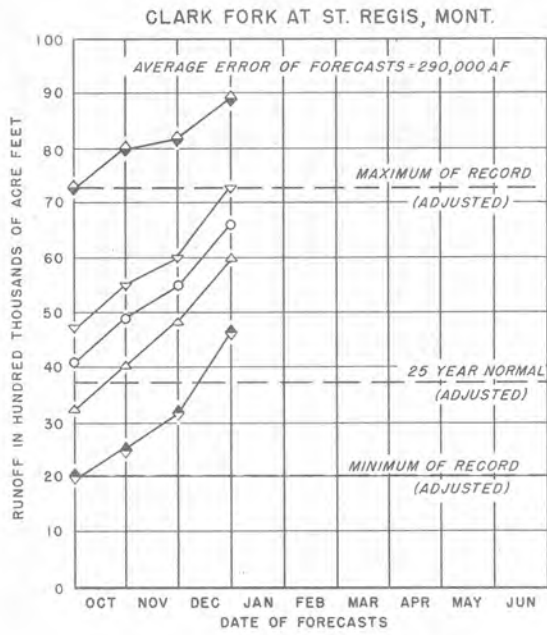
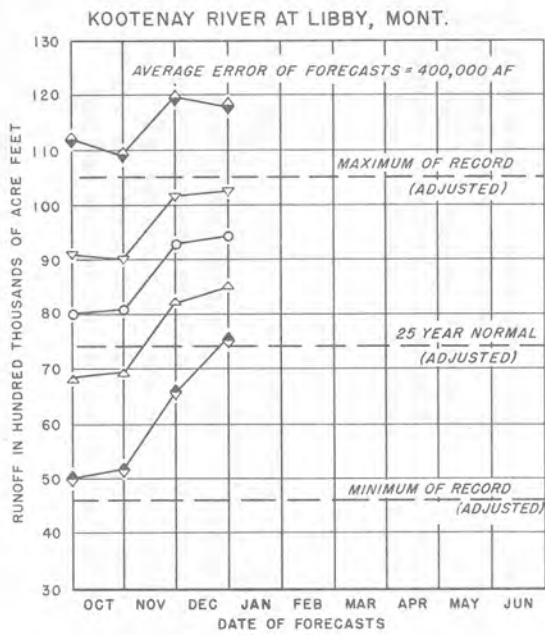
Forecasts of water year runoff for stations within the Columbia Basin, as computed from meteorological data observed at 120 key stations prior to January 1, 1947, are presented in Figure 1, Table 1, and Table 2. Approximately 55% of the total index used in computing the forecasts as of January 1 is based on observed data, the remaining portion being statistical. These forecasts are made on the assumption that January-June precipitation will equal the median* of record. Estimates of runoff based on subsequent precipitation equal to the quartiles* and extremes of record are included in Table 2.

The analysis of basin data, preliminary to the development of the procedures, indicates that there is now, in general, less runoff per inch of measured precipitation than in earlier years. To permit more effective comparison between basins, all normals are given for the 25-year period, 1920-44, adjusted to the runoff conditions prevailing at the present time.

All forecasts and estimates of runoff published in this bulletin are, of course, subject to the inherent errors of the procedures. Since the anticipated accuracy varies considerably from one station to another, the average error, as determined by "trial forecasts" for the full period of record, is given in Table 1 for each forecast point.

Confirming or modifying forecasts and estimates of possible extremes of flow will be published as of the first of each month, through May. As the season progresses and the proportion of observed data used in preparing the forecasts increases, the estimates of the extremes will converge toward the median. Figure 2 displays graphically the trend of forecasts and estimates computed for key stations since October 1.

*When a data series is tabulated in order of magnitude, the value at the mid-point is the median and those at the quarter-points are the quartiles. Since the analysis is based on about 30 years of precipitation data, the approximate odds that the record maximum and minimum will be exceeded are 1 to 30 and 30 to 1, respectively. The odds that the quartile values will be reached or exceeded are approximately 1 to 3 and 3 to 1, and there is a 1 to 1 chance that the actual amount will be either above or below the median value.

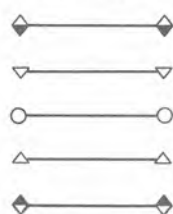


— Figure 2 —
PROGRESSIVE FORECASTS OF WATER YEAR RUNOFF
FOR SELECTED STATIONS IN THE
COLUMBIA RIVER BASIN
1946-47

LEGEND
Assuming that precipitation for the
balance of the year is equal to:

- Maximum of record
- Upper Quartile
- Median
- Lower Quartile
- Minimum of record

SYMBOL



* For notes on adjustments see Table I.

TABLE I
FORECASTS OF WATER YEAR RUNOFF
THE COLUMBIA BASIN
ISSUED AS OF JANUARY 1, 1947

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Forecast		Comparative Data						Average Error
		1946 - 47		Normal ^a Flow	1944 - 45 ^b		1945 - 46 ^b			
		Flow	% Norm		Flow	% Norm	Flow	% Norm		
Columbia River	Birchbank, B. C.	55000	116	47500						2600
" "	International Boundary	77000	124	62300						2500
" " (1)	Grand Coulee, Wash.	89000	124	71500	64300	90				3200
" " (1)	Trinidad, Wash.	93000	118	79000	71600	91				3300
" " (1)	The Dalles (nr) Oreg.	139000	117	119000	109400	92	142000	119		5300
Kootenay River	Libby, Montana	9400	127	7420	6400	86				400
Flathead River	Columbia Falls, Mont.	8600	151	5700	5420	95				490
Flathead River (2)	Polson (nr) Mont.	10100	151	6700	6380	95				540
Clark Fork	Missoula (below) Mont.	4600	164	2800	2800	100				350
" "	St. Regis, Mont.	6600	177	3720	3770	101				290
" "	Plains (nr) Mont.	17100	160	10700	10330	97				1000
" "	Heron (nr) Mont.	19700	163	12100	11700	97				1100

(a) 1920-44 adjusted average flow.

(b) Preliminary data furnished by U.S. Geological Survey (subject to revision).

(c) Average error of forecasting relations (1,000 Acre Feet).

(1) Observed flow plus change in storage in Grand Coulee Reservoir.

(2) Observed flow plus change in storage in Flathead Lake.

TABLE I (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Forecast		Comparative Data						Average Error
		1946-47		Normal ^a Flow	1944-45 ^b		1945-46 ^b			
		Flow	% Norm		Flow	% Norm	Flow	% Norm		
Pend Oreille R. (3)	Z Canyon (below) Wash.	23000	156	14700						1400
Couer d'Alene River	Cataldo (nr) Idaho	2100	150	1400	1460	104				92
St. Joe River	Calder, Idaho	2050	159	1290	1290	100				64
St. Maries River	Lotus, Idaho	370	131	282	253	90				19
Spokane River (4)	Spokane, Washington	5300	135	3940	3695	94	5263	134		280
Okanagan River	Tonasket (nr) Wash.	2200	122	1800						270
Chelan River (5)	Chelan, Washington	1490	115	1300	1085	83				45
Cle Elum River (6)	Roslyn (nr) Wash.	690	117	590						27
Kachess River (7)	Easton (nr) Wash.	210	118	178						8
Yakima River (8)	Cle Elum, Washington	1480	117	1260						53
Bumping River (9)	Nile (nr) Washington	230	130	177						11

(a) 1920-44 adjusted average flow.

(b) Preliminary data furnished by U.S. Geological Survey (subject to revision).

(c) Average error of forecasting relations (1,000 Acre Feet).

(3) Observed flow plus change in storage in Pend Oreille Lake.

(4) " " " " " " " Couer d'Alene Lake.

(5) " " " " " " " Lake Chelan.

(6) " " " " " " " Cle Elum Lake.

(7) " " " " " " " Kachess Lake.

(8) " " " " " " " Keechelus, Kachess, and Cle Elum Lakes and diversion by Kittitas Canal.

(9) " " " " " " " Bumping Lake.

TABLE I (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Forecast		Comparative Data						Average Error
		1946 - 47		Normal ^a Flow	1944 - 45 ^b		1945 - 46 ^b			
		Flow	% Norm		Flow	% Norm	Flow	% Norm		
Yakima River (10)	Parker (nr) Washington	3020	130	2330						140
Snake River (11)	Moran, Wyoming	990	113	874	897	103				83
Salt River	Wyoming-Idaho State Line	500	122	410	559	136				57
Snake River	Heise (nr) Idaho	4500	113	3980	4420	111				310
Henrys Fork (12)	Warm River, Idaho	720	119	606	726	120				37
Teton River	St. Anthony (nr) Idaho	530	112	474	654	138				44
Fall River (13)	Squirrel (nr) Idaho	540	109	495	542	108				33
Henrys Fork	Rexburg (nr) Idaho	1260	110	1150	1530	133				100
Snake River	Blackfoot (nr) Idaho	2600	125	2080	2820	136				210
Portneuf River	Pocatello, Idaho	158	108	146	223	153				10
Snake River	Neeley, Idaho	4800	120	4000	4520	113				200
Goose Creek	Oakley (nr) Idaho	33	127	26	34	131				6
Trapper Creek	Oakley (nr) Idaho	10.5	113	9.3	10	108				1.4
Snake River	Milner, Idaho	1400	161	870	1140	131				140
Salmon Falls Creek	San Jacinto (nr) Nevada	118	144	82	130	159				18
Big Wood River (14)	Hailey, Idaho	350	131	267	262	98				20

(a) 1920-44 adjusted average flow.

(b) Preliminary data furnished by U.S. Geological Survey (subject to revision).

(c) Average error of forecasting relations (1,000 Acre Feet).

(10) Combined flow of Yakima River and canals adjusted for change in upstream storage.

(11) Observed flow plus change in storage in Jackson Lake.

(12) " " " " " " " " Henrys Lake and Island Park Reservoir.

(13) " " " " " " " " Grassy Lake.

(14) Includes Big Wood Slough.

TABLE I (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Forecast		Comparative Data						Average Error
		1946 - 47		Normal ^a Flow	1944 - 45 ^b		1945 - 46 ^b			
		Flow	% Norm		Flow	% Norm	Flow	% Norm		
Camas Creek (15)	Blaine (nr) Idaho	112	138	81	63	78			14	
Big Wood River (16)	Richfield (nr) Idaho	330	132	250	223	89			43	
Little Wood River(15)	" " "	52	116	45	50	111			6	
Snake River	King Hill, Idaho	7000	117	6000	6963	116			190	
Boise River	Twin Springs (nr) Idaho	860	118	726	794	109			39	
South Fork, Boise R.	Lenox (nr) Idaho	810	126	645	582	90			42	
Boise River (17)	Dowling Ranch, Idaho	1850	122	1510	1460	97			83	
Moore Creek	Arrowrock (nr) Idaho	250	127	197	206	104			17	
Boise River (18)	Notus, Idaho	1000	149	670	587	88			120	
Payette River	Horseshoe Bend (nr) Idaho	2400	117	2060	1960	95			160	
Weiser River (19)	Below Crane Creek, Idaho	720	110	654	742	113			85	
Snake River	Weiser, Idaho	12800	128	10000	12020	120			360	
Snake River	Oxbow, Idaho	13400	128	10500	12420	118			380	
Salmon River	Whitebird, Idaho	7500	113	6620	6610	100			660	
Clearwater River	Kamiah, Idaho	6400	124	5150					560	
Clearwater River	Spalding, Idaho	12000	125	9600					1000	
Snake River	Clarkston (nr) Wash.	36000	113	31800	30800	97			1700	

(a) 1920-44 adjusted average flow.

(b) Preliminary data furnished by U.S. Geological Survey (subject to revision).

(c) Average error of forecasting relations (1,000 Acre Feet).

(15) For period April through September.

(16) Observed flow plus change in storage in Magic Reservoir.

(17) " " " " " " " " Arrowrock Reservoir.

(18) " " " " " " " " Arrowrock and Deerflat Reservoirs.

(19) Weiser River above Crane Creek near Weiser plus Crane Creek at mouth near Weiser.

TABLE 2
PROBABLE RANGE AND POSSIBLE EXTREMES FOR OPERATIONAL PLANNING
THE COLUMBIA BASIN
ISSUED AS OF JANUARY 1, 1947

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Assuming that the precipitation for the balance of the year is equal to:									
		Min. of record		Lower Quartile		Median		Upper Quartile		Max. of Record	
		Flow	% N	Flow	% N	Flow	% N	Flow	% N	Flow	% N
Columbia River	Birchbank, B. C.	47000	99	51000	107	55000	116	58000	122	63000	133
" "	International Boundary	65000	104	72000	116	77000	124	81000	130	91000	146
" " (1)	Grand Coulee, Washington	75000	105	83000	116	89000	124	93000	130	105000	147
" " (1)	Trinidad, Washington	78000	99	87000	110	93000	118	98000	124	111000	141
" " (1)	The Dalles (nr) Oregon	112000	94	129000	108	139000	117	151000	127	177000	149
Kootenay River	Libby, Montana	7500	101	8500	115	9400	127	10300	139	11800	159
Flathead River	Columbia Falls, Montana	6800	119	7900	139	8600	151	9400	165	11000	193
Flathead R. (2)	Polson (nr) Montana	7900	118	9300	139	10100	151	11100	166	13000	194
Clark Fork	Missoula (below) Montana	3400	121	4200	150	4600	164	4900	175	5800	207
" "	St. Regis, Montana	4600	124	6000	161	6600	177	7200	194	8900	239
" "	Plains (nr) Montana	12800	120	15700	147	17100	160	18700	175	22300	208
" "	Heron (nr) Montana	14500	120	18000	149	19700	163	21500	178	23500	194

(1) Observed flow plus change in storage in Grand Coulee Reservoir.

(2) " " " " " " " Flathead Lake.

TABLE 2 (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Assuming that the precipitation for the balance of the year is equal to:									
		Min. of record		Lower Quartile		Median		Upper Quartile		Max. of Record	
		Flow	% N	Flow	% N	Flow	% N	Flow	% N	Flow	% N
P. Oreille R. (3)	Z Canyon (below) Wash.	17500	119	21200	144	23000	156	25000	170	29700	202
Couer d'Alene R.	Cataldo (nr) Idaho	1700	121	1900	136	2100	150	2300	164	2700	193
St. Joe River	Calder, Idaho	1710	133	1890	147	2050	159	2210	171	2690	209
St. Maries River	Lotus, Idaho	270	96	340	121	370	131	430	152	520	184
Spokane R. (4)	Spokane, Washington	4300	109	4800	122	5300	135	5900	150	7400	188
Okanagan River	Tonasket (nr) Wash.	1400	78	2000	111	2200	122	2500	139	3100	172
Chelan R. (5)	Chelan, Washington	1180	91	1340	103	1490	115	1630	125	2000	154
Cle Elum R. (6)	Roslyn (nr) Wash.	510	86	620	105	690	117	760	129	930	158
Kachess R. (7)	Easton (nr) Wash.	150	84	180	101	210	118	230	129	280	157
Yakima R. (8)	Cle Elum, Wash.	1080	86	1310	104	1480	117	1640	130	2000	159
Bumping R. (9)	Nile (nr) Wash.	170	96	200	113	230	130	260	147	350	198

(3) Observed flow plus change in storage in Pend Oreille Lake.

(4) " " " " " " " Couer d'Alene Lake.

(5) " " " " " " " Lake Chelan.

(6) " " " " " " " Cle Elum Lake.

(7) " " " " " " " Kachess Lake.

(8) " " " " " " " Keechelus, Kachess, and Cle Elum Lakes and diversions by Kittitas Canal.

(9) " " " " " " " Bumping Lake.

TABLE 2 (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Assuming that the precipitation for the balance of the year is equal to:									
		Min. of record		Lower Quartile		Median		Upper Quartile		Max. of Record	
		Flow	% N	Flow	% N	Flow	% N	Flow	% N	Flow	% N
Yakima R. (10)	Parker (nr) Wash.	2050	88	2570	110	3020	130	3450	148	4600	197
Snake R. (11)	Moran, Wyoming	760	87	890	102	990	113	1100	126	1320	151
Salt River	Wyo.-Idaho State Line	420	102	460	112	500	122	530	129	630	154
Snake River	Heise (nr) Idaho	3700	93	4100	103	4500	113	4900	123	5800	146
Henry's Fork (12)	Warm River, Idaho	670	111	710	117	720	119	740	122	760	125
Teton River	St. Anthony (nr) Idaho	430	91	490	103	530	112	580	122	700	148
Fall River (13)	Squirrel (nr) Idaho	440	89	510	103	540	109	590	119	720	145
Henry's Fork	Rexburg (nr) Idaho	970	84	1160	101	1260	110	1410	123	1770	154
Snake River	Blackfoot (nr) Idaho	1600	77	2100	101	2600	125	3100	149	4400	212
Portneuf River	Pocatello, Idaho	124	85	146	100	158	108	170	116	198	136
Snake River	Neeley, Idaho	4000	100	4400	110	4800	120	5200	130	6300	158
Goose Creek	Oakley (nr) Idaho	18	69	26	100	33	127	37	142	54	208
Trapper Creek	Oakley (nr) Idaho	7.8	84	9.6	103	10.5	113	11.4	123	15.5	167
Snake River	Milner, Idaho	550	63	950	109	1400	161	1800	207	3000	345
Salmon Falls Cr.	San Jacinto (nr) Nevada	71	87	101	123	118	144	130	159	208	254
Big Wood R. (14)	Hailey, Idaho	210	79	310	116	350	131	420	157	630	234

(10) Combined flow of Yakima River and Canals adjusted for change in upstream storage.

(11) Observed flow plus change in storage in Jackson Lake.

(12) " " " " " " " " Henry's Lake and Island Park Reservoir.

(13) " " " " " " " " Grassy Lake.

(14) Includes Big Wood Slough.

TABLE 2 (CONT'D)

(All data in thousands of acre-feet for period October 1, 1946 to September 30, 1947, except as noted)

STREAM	STATION	Assuming that the precipitation for the balance of the year is equal to:									
		Min. of record		Lower Quartile		Median		Upper Quartile		Max. of Record	
		Flow	% N	Flow	% N	Flow	% N	Flow	% N	Flow	% N
Camas Cr. (15)	Blaine (nr) Idaho	50	62	75	93	112	138	150	185	234	289
Big Wood R. (16)	Richfield (nr) Idaho	150	60	250	100	330	132	460	184	800	320
Little Wood R. (15)	Richfield (nr) Idaho	30	67	40	89	52	116	64	142	98	218
Snake River	King Hill, Idaho	5900	98	6500	108	7000	117	7600	127	9200	153
Boise River	Twin Springs (nr) Idaho	580	80	760	105	860	118	1040	143	1320	182
S. Fork Boise R.	Lenox (nr) Idaho	480	74	680	105	810	126	960	149	1300	202
Boise R. (17)	Dowling Ranch, Idaho	1200	79	1600	106	1850	123	2250	149	2900	192
Moore Creek	Arrowrock (nr) Idaho	170	86	220	112	250	127	330	168	430	218
Boise R. (18)	Notus, Idaho	350	52	700	104	1000	149	1450	216	2250	336
Payette River	Horseshoe Bend (nr) Idaho	1600	78	2200	107	2400	117	2800	136	3700	180
Weiser R. (19)	Below Crane Creek, Idaho	470	72	630	96	720	110	860	131	1310	200
Snake River	Weiser, Idaho	9400	94	11400	114	12800	128	14900	149	19800	198
Snake River	Oxbow, Idaho	9900	94	12000	114	13400	128	15600	149	20800	198
Salmon River	Whitebird, Idaho	5800	88	6900	104	7500	113	9300	140	12300	186
Clearwater River	Kamiah, Idaho	4600	89	5500	107	6400	124	7400	144	9200	179
Clearwater River	Spalding, Idaho	8500	89	10200	106	12000	125	14000	146	17800	185
Snake River	Clarkston (nr) Washington	26000	82	32000	101	36000	113	42000	132	55000	173

(15) For period April through September.

(16) Observed flow plus change in storage in Magic Reservoir.

(17) " " " " " " " " Arrowrock Reservoir.

(18) " " " " " " " " Arrowrock and Deerflat Reservoirs.

(19) Weiser River above Crane Creek near Weiser plus Crane Creek at mouth near Weiser.

8731

St. Paul, Minn., January 27, 1946.

Mr. J.W. Haw:

I am returning your letter of the 17th to Mr. Stapleton with attachments concerning the Columbia Basin Inter-Agency Committee held in Seattle on January 8.

It does appear from published claims by the Bonneville Power Administration that additional power can be used in the west coast area, but it does seem to me that that does not justify immediate construction of dams and power houses that would triple or quadruple in the next four or five years the present power load.

I am inclined to believe the Army Engineers are doing everything in their power to pyramid their construction activities so that all the boys will have good jobs.

BB/gtg
enc.

BERNARD BLUM

8731
~~29-5~~

Seattle Journal of Commerce, Jan 13th, 1947

ARMY PREPARED TO BEGIN COLUMBIA BASIN PROJECTS

PORTLAND.—(UP) — The army engineers are prepared to go right to work on Columbia basin projects if and when congress approves the \$27,500,000 appropriation, Col. O. E. Walsh, district engineer, announces.

Detroit dam would be the first completed, Walsh said. He predicted a "labor boom" when the projects get underway.

The appropriation would mean starting of McNary dam, the Snake river dams and Detroit dam on the Santiam, for which all plans have been completed, the engineer stated.

A construction camp at the McNary dam site is being built to house 7000 persons. The peak of employment for that project is expected to be 5000 workers. The first three units of McNary dam would be ready for use in Decem-

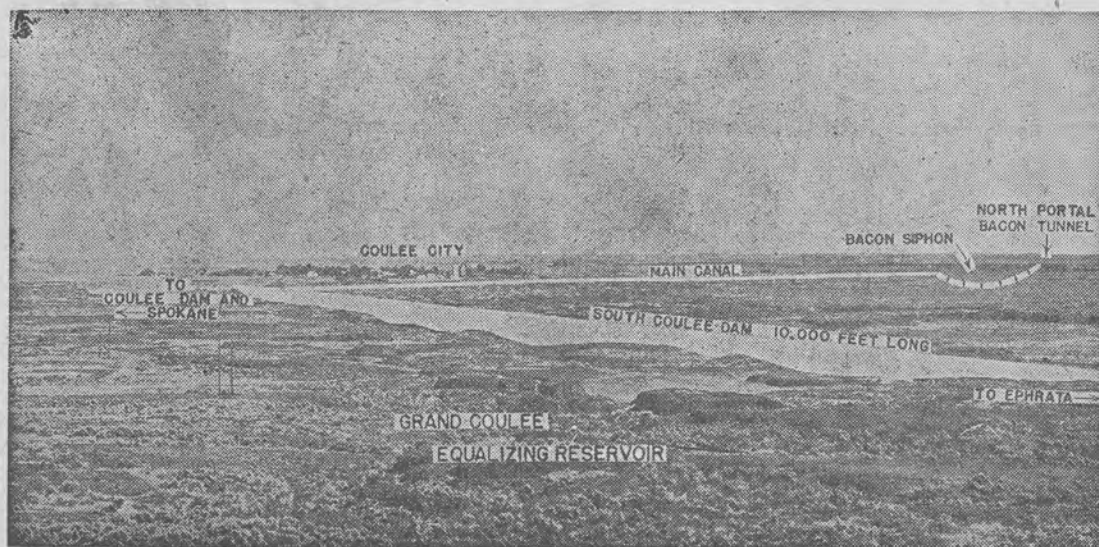
ber, 1952. Detroit dam is scheduled for operation in 1950 and its construction camp will accommodate a peak of 1700 workers.

First of the estimated four Snake river dams would be ready for operation in October, 1952, Walsh believed.

Mr. Glenn
note
9/20/13

B

Prospective of Columbia Basin Project



In Eastern Washington, the nation's largest, single irrigation development—the Columbia Basin project—is taking shape, and this is an artist's impression of how some of the structures in the vicinity of Coulee City will appear when completed. Stretching for nearly two miles across the upper Grand Coulee is the South Coulee dam, which will help form a 27-mile reservoir for the million-acre irrigation development of the Bureau of Reclamation. The dam will carry U. S. highway 10-A across its top. In the distance the river-size main canal is shown taking off from the dam toward the project lands. The Bacon siphon, in the right background, will convey the water across a deep coulee and into the Bacon tunnel, 23 feet in diameter, which will pierce a lava barrier for 10,000 feet. The South dam is one of four earth-and-rock dams to be created by the bureau of reclamation in building an irrigation system capable of serving a million acres which will be divided into 12,000 to 15,000 family-size farms for veterans and others. Work is underway on all structures shown in this view, under contracts totaling more than \$7,800,000.

BB

JA
16
194

8731

Saint Paul, December 3, 1946

MR. H. E. SEEVERS:
MR. J. T. HERRICK:
MR. H. B. THOMAS:

I am transmitting to you herewith a print copy of a statement prepared by James O'Sullivan of the Columbia Basin Commission, 303 Columbia Bldg., Spokane, giving status of the basin appropriations and construction.

The original was sent to me by Mr. Haw and we had the print copies made.

cc-Mr. J. W. Haw

bb/s

att.

Saint Paul, December 3, 1946

MR. J. W. BAW.

Your recent note transmitting a typed statement by James O' Sullivan, giving status of the COLUMBIA BASIN appropriations and construction:

I find that this typed statement prints very well, and I am sending you herewith the original copy and three prints thereof which you may desire to supply to others.

I am also sending copies to Messrs. Stevens, Derrig, and Tremaine.

bb/s

att.3

Mr. Blum:



This can be blueprinted as you will
note from copy attached but must be run slow
on account of the thickness of the paper.

T.R.G.

2- R.W.C.
H.E.S.
J.T.D.
H.M.T

B.B.
J.M.H.
(7)



Main Street of the Northwest

B. Blinn

This is an excellent summary of Col. Basin statistics and no doubt would be valuable to have on several files now at the General office.

What do you think of having it reproduced? Can it be reproduced in blue print form? If not I'll have it stenciled when we have slack time.

J. M. Maw



THE ART TRAVEL HORTENH PACIFIC

C O P Y

STATUS OF COLUMBIA BASIN APPROPRIATIONS AND CONSTRUCTION

By James O'Sullivan
Administrative Assistant
Columbia Basin Commission
303 Columbia Building
Spokane, Washington

October 24, 1946

Appropriations and Allocations for the Columbia Basin Project for Bureau of Reclamation, Coulee Dam, Washington

For fiscal years 1933 to 1943, inclusive:

State of Washington for investigations	\$ 313,439.53
National Industrial Recovery Act	15,000,000.00
Emergency Relief Act	20,050,000.00
F.W.A. Act	12,005,000.00
General Treasury funds	<u>131,592,459.19</u>
Subtotal	\$ <u>178,960,898.72</u>

For fiscal years 1944 to 1947, inclusive:

General Treasury funds for fiscal year	1945	1,900,000.00
" " " " " "	1946	16,275,000.00
" " " " " "	1947	<u>18,000,000.00</u>

Total for construction, surveys and land
purchase 215,135,898.72

If to this sum is added appropriations from the General Treasury for operation and maintenance for the fiscal years 1942 and 1943 in the sum of \$830,215.81 and power revenues used for the same purpose for the fiscal years 1944-47 inclusive in the sum of \$3,853,000, the total of all funds made available for the project to date is \$219,819,114.53.

Project Funds Available for Fiscal Year 1947

In a summary of work included under the curtailed \$85,000,000 construction program (moratorium of August 2, 1946) issued by the National Reclamation Association on October 9, 1945, the following figures on the Columbia Basin Project are given:

Estimated construction cost	-----	\$582,839,000
Expenditures to June 30, 1946	-----	187,306,000
Balance to complete	-----	395,533,000

Funds available for fiscal year 1947, appropriation
plus carry-over ----- \$30,846,084

*1940 estimated cost plus an increase of \$95,000,000 estimated on basis of prices in 1945 by the Bureau of Reclamation.

*This is the approximate sum available for 1947 fiscal year. The project funds received to date less the expenditures to June 30, 1946 indicate a balance of \$32,513,114.53.

Sum Available Under Moratorium of August 2, 1946

The N.R.A. summary gives the following estimated sum available for Basin construction for the fiscal year 1947 under the moratorium order of the President made on August 2, 1946:

Construction contracts now awarded	-----	4,503,000
Supply contracts now awarded	-----	5,500,000
Force account work now underway	-----	4,205,000
Additional contracts to maintain above	-----	1,421,000
Total	-----	\$15,629,000

Moratorium Revised

On or about October 23, 1946, the Federal Budget Bureau increased the permissible expenditures on federal reclamation projects for the fiscal year 1947 from \$85,000,000 to \$110,000,000, an increase of \$25,000,000. How much of this increase the Columbia Basin Project will get is not yet disclosed.

Status of Project Contracts to August 21, 1946

Under date of August 21, 1946, the Bureau of Reclamation, Coulee Dam, Washington supplied the Columbia Basin Commission with the following data:

Project expenditures from June 30, 1943 to June 30, 1946 totalled approximately \$30,000,000, which included substantial payments made on contracts awarded prior to the fiscal year 1943.

The following sum total of major contracts awarded during the fiscal years 1943-1947 and up to August 21, 1946 does not include minor contracts and other expenditures for materials, supplies and equipment, land purchase contracts and

condemnations, administrative expenses at Washington, Denver and Boise incurred for the project, government force account work done on the project and payrolls and items of operation and maintenance not absorbed by power revenues.

During 1943-1947, the project contracts awarded amounted to \$17,139,267.71 of which \$2,813,918.85 was for the Grand Coulee Dam and power plant, equipment for repairs to the bucket of the dam, etc., and \$14,375,348.86 for construction of the irrigation works.

The contracts awarded for irrigation construction consisted of the following:

Six pumps for Grand Coulee pumping plant -----	\$1,049,325.00
Excavation of $6\frac{1}{2}$ miles of main canal in vicinity of Adrian and Stratford, Washington -----	619,000.00
Pumps for Pasco pumping plant -----	19,800.00
Pasco pumping unit laterals -----	714,223.00
South Coulee dam near Coulee City -----	2,771,887.50
Pasco pumping plant discharge pipe -----	46,000.00
Main canal - earthwork, tunnel, concrete lining and structures - from South Coulee dam to Long Lake -----	5,042,480.00
West canal from a point near Adrian to Soap Lake -----	2,871,796.50
Drilling water supply well for Moses Lake predevelopment farm -	17,538.75
Pasco pumping plant -----	188,537.68
Trash racks for Grand Coulee pumping plant -----	49,500.00
Preparation of concrete aggregates for Odair deposits -----	172,600.00
Cement, 310,000 bbls. -----	736,180.00
Reinforcing steel, 3,000,000 lbs. -----	76,480.43
Total -----	\$14,375,348.86

Contracts Not Awarded by August 21, 1946

The proposed contracts not awarded by August 21, 1946 amount to \$22,640,075.75, of which \$5,859,137 is for the Grand Coulee dam and power plant, including three turbines and generators for the right (east) powerhouse and \$16,780,938.75 is for irrigation construction as follows:

Six coaster gates for Grand Coulee dam pumping plant -----	\$ 200,207.00
Twelve discharge pipes for Grand Coulee pumping plant -----	1,208,000.00
18-inch pipe for main canal crossing at station 8 +30 -----	2,465.00
Six hoists for coaster gates, Grand Coulee pumping plant -----	125,352.00
70-ton Gantry crane for installing above coaster gates -----	127,300.00
Long Lake dam -----	1,770,592.00
Potholes dam -----	9,359,011.00
Structural steel for N.P. bridge crossing main canal -----	10,875.00
Check, main canal, about $2\frac{1}{2}$ miles north of Adrian, and about 12.3 miles of east low canal -----	3,977,136.75
Total -----	\$16,780,938.75

Bids and Contracts Since August 21, 1946

The Commission has not received a complete list of bids received and contracts awarded since August 21, 1946. From releases issued by the Bureau of Reclamation and received by the Commission, the following bids have been received since that date. Where it appears that contracts have been awarded it will be so stated.

Material for steel warehouse (133x300 feet) at Grand Coulee Dam	\$ 60,971.00
Two 1500 H.P. motors, Pasco pumping plant	27,730.00
Three switching units " " "	8,176.00
Seven relift pumps, Pasco unit	17,117.00
Equipment for unloading, storing and batching bulk cement, Odair, Washington	60,762.00
Illuminating railings, etc., Grand Coulee Dam	
Bids were to be opened Sept. 20, 1946	
Portable oil filter, Grand Coulee power plant.	
Bids were to be opened Sept. 12, 1946	
Six 65,000 H.P. motors for Grand Coulee pumps. about	2,500,000.00
One 20-ton traveling crane for warehouse "B" at Grand Coulee Dam	16,740.00
Standard steel for glass-block windows, Bureau machine shop at Grand Coulee Dam	2,295.00
One 10-ton traveling crane, Pasco pumping plant.	
Bids were to be opened Sept. 23, 1946	
Freight elevator, block 64, Grand Coulee Dam.	
Bids were to be opened Sept. 5, 1946	
Preparation of concrete aggregate for work in Stratford-Adrian-Soap Lake area	373,612.50
Two 100-ton traveling cranes for Grand Coulee pumping plant	140,000.00
One 60-ton traveling crane for above	71,000.00
Transformer and additional switching equipment, Pasco pumping plant. Bids were to be opened Oct. 21, 1946	
Electric substations to be used in repairing Grand Coulee bucket	13,377.13
Six hydraulic hoists for Grand Coulee pumping plant	
Contract awarded	128,362.00
Drilling well for Pasco 48-acre predevelopment farm	
Bids to be opened Nov. 12, 1946	
Miscellaneous supplies for project. Contract awarded	33,104.48
Total above list of low bids received and contracts let since August 21, 1946	*\$3,453,247.12

*Of this total \$161,466.48 represents contracts awarded and \$3,291,780.64 bids received and not yet awarded.

Progress of Construction

A press release from Coulee Dam, Washington, dated September 28, 1946, in which the Bureau of Reclamation is quoted, gives the following status of project construction. Construction was then under way on the Grand Coulee pumping plant, six Grand Coulee pumps, the caisson for repairing the bucket of Grand Coulee dam, the feeder canal, South Coulee dam, the 20-mile main canal from the South Coulee dam to a point north of Adrian, the west canal to Soap Lake, the laterals and pumping plant for the Pasoc unit, and the water supply well for the Moses Lake predevelopment farm.

Under date of October 25, 1946, a dispatch from Washington, D.C., quotes W.E. Marne, Assistant Commissioner, Bureau of Reclamation as saying:-

" . . . that with the new allocation of money, making a \$110,000,000 total, work (on the Columbia Basin) could go ahead on generators and pumping plants, the South Coulee dam, the main canal, the tunnel (Bacon) and west canal and other work regarded as essential."

Reclamation Funds Increased to \$145,581,057

In a bulletin dated October 23, 1946 the National Reclamation Association says:-

"Upon receipt of the above release from the Bureau of the Budget (re increase of reclamation funds for 1947 to \$110,000,000), the Secretary-Manager contacted officials of the Bureau of Reclamation and learned from them that they had received 'the green light' on their A and B programs, which include:

A Program - construction work under way	-----	\$84,850,000
B Program - additional work to maintain an orderly program	-----	60,731,057
Total	-----	145,581,057

"It appears, that notwithstanding a present ceiling of \$110,000,000, project construction of approximately \$145,000,000 will be immediately undertaken. It is quite evident that the Bureau of the Budget intends to make further modifications in the ceiling as construction work proceeds and necessity arises."

Basin Construction as of October 26, 1946

A release for publication by the Bureau of Reclamation, Coulee Dam, Washington, dated October 26, 1946, says, in part, as follows:-

"Approximately \$25,000,000 in dams, canals, siphons, and heavy machinery are in the Bureau's 'pending' files, and awards of contracts covering these

items will be made 'as rapidly as feasible and within the limits of the Bureau to meet progress payments as authorized work proceeds,' commented District Engineer Frank A. Banks.

"The construction moratorium, called nearly three months ago, did not affect work on several key structures in the multi-million dollar irrigation system, such as the 10,000-foot South dam, the gigantic Bacon Tunnel, a portion of the west canal, the river-size main canal, and the Pasco pumping plant and distributing system."

The release further says that Basin contractors have more than six hundred men employed and predicts that this number will be doubled by next summer; that this number will be increased on contracts yet to be granted by the Bureau; and that among the jobs where bids have been received and the Bureau has not yet announced contracts are the Potholes dam, Long Lake dam, aggregates at Adrian, portion of the east low canal, six 65000 H.P. motors for Grand Coulee pumps, discharge pipes for Grand Coulee pumping plant, and three turbines and generators for the right (east) power house.

Conclusion

Aside from work now under construction as heretofore listed, it will not be definitely known what amount of work may be undertaken during the fiscal year 1947 until the Bureau of Reclamation is able to release information thereon. \$31,000,000 is available for payments on construction during the fiscal year 1947. It appears that construction on the Columbia Basin might be allowed to proceed on a much larger scale than fixed by the moratorium of August 2, 1946. In such case the following total work may be allowed to proceed during the fiscal year 1947:-

Contracts let to date	\$ 17,350,734.19
Contracts not awarded to date (for which bids have been received)	25,931,856.39
	*\$43,282,590.58

*This sum is exclusive of force account payrolls on the Grand Coulee dam bucket, the Grand Coulee pumping station, and the feeder canal.

Additional Contracts Just Awarded

On October 28, 1946, Frank T. Bell stated that he had been reliably informed that the following Basin contracts had been awarded:-

Potholes dam	\$ 9,359,011.00
Long Lake Dam	1,770,592.00
Subtotal	11,129,603.00

Check and 12.3 miles of east low canal	2,977,136.75
Total	\$15,106,739.75

On October 29, 1946, a dispatch to the Spokane Chronicle from the Boise office of the Bureau of Reclamation stated that the contracts for the Potholes and Long Lake dams had been awarded.

The above total is nearly equal to the \$15,629,000 allowed for Basin construction for the fiscal year 1947 under the moratorium of August 2, 1946, making a total allowed to date of \$30,735,739.75. If the Budget Bureau has or will allow an additional sum of but \$12,546,850.83, all of the Basin contracts awarded and proposed to be awarded in the sum of \$43,282,590.58 as listed in this statement will be under construction during the fiscal year 1947.

C O P Y

STATUS OF COLUMBIA BASIN APPROPRIATIONS AND CONSTRUCTION

By James O'Sullivan
Administrative Assistant
Columbia Basin Commission
303 Columbia Building
Spokane, Washington

October 24, 1946

Appropriations and Allocations for the Columbia Basin Project for Bureau of Reclamation, Coulee Dam, Washington

For fiscal years 1933 to 1943, inclusive:

State of Washington for investigations	\$ 313,439.53
National Industrial Recovery Act	15,000,000.00
Emergency Relief Act	20,050,000.00
P.W.A. Act	12,005,000.00
General Treasury funds	<u>131,592,459.19</u>
Subtotal	\$ <u>178,960,898.72</u>

For fiscal years 1944 to 1947, inclusive:

General Treasury funds for fiscal year	1945	1,900,000.00
" " " " " "	1946	16,275,000.00
" " " " " "	1947	<u>18,000,000.00</u>

Total for construction, surveys and land purchase	<u>215,135,898.72</u>
---	-----------------------

If to this sum is added appropriations from the General Treasury for operation and maintenance for the fiscal years 1942 and 1943 in the sum of \$830,215.81 and power revenues used for the same purpose for the fiscal years 1944-47 inclusive in the sum of \$3,853,000, the total of all funds made available for the project to date is \$219,819,114.53.

Project Funds Available for Fiscal Year 1947

In a summary of work included under the curtailed \$85,000,000 construction program (moratorium of August 2, 1946) issued by the National Reclamation Association on October 9, 1945, the following figures on the Columbia Basin Project are given:

Estimated construction cost	-----	*\$582,839,000
Expenditures to June 30, 1946	-----	187,306,000
Balance to complete	-----	395,533,000

Funds available for fiscal year 1947, appropriation
plus carry-over ----- **\$30,866,084

*1940 estimated cost plus an increase of \$95,000,000 estimated on basis of prices in 1945 by the Bureau of Reclamation.

**This is the approximate sum available for 1947 fiscal year. The project funds received to date less the expenditures to June 30, 1946 indicate a balance of \$32,513,114.53.

Sum Available Under Moratorium of August 2, 1946

The N.R.A. summary gives the following estimated sum available for Basin construction for the fiscal year 1947 under the moratorium order of the President made on August 2, 1946:

Construction contracts now awarded	-----	4,503,000
Supply contracts now awarded	-----	5,500,000
Force account work now underway	-----	4,205,000
Additional contracts to maintain above	-----	1,421,000
Total	-----	\$15,629,000

Moratorium Revised

On or about October 23, 1946, the Federal Budget Bureau increased the permissible expenditures on federal reclamation projects for the fiscal year 1947 from \$85,000,000 to \$110,000,000, an increase of \$25,000,000. How much of this increase the Columbia Basin Project will get is not yet disclosed.

Status of Project Contracts to August 21, 1946

Under date of August 21, 1946, the Bureau of Reclamation, Coulee Dam, Washington supplied the Columbia Basin Commission with the following data:

Project expenditures from June 30, 1943 to June 30, 1946 totalled approximately \$30,000,000, which included substantial payments made on contracts awarded prior to the fiscal year 1943.

The following sum total of major contracts awarded during the fiscal years 1943-1947 and up to August 21, 1946 does not include minor contracts and other expenditures for materials, supplies and equipment, land purchase contracts and

condemnations, administrative expenses at Washington, Denver and Boise incurred for the project, government force account work done on the project and payrolls and items of operation and maintenance not absorbed by power revenues.

During 1943-1947, the project contracts awarded amounted to \$17,139,267.71 of which \$2,813,918.85 was for the Grand Coulee Dam and power plant, equipment for repairs to the bucket of the dam, etc., and \$14,375,348.86 for construction of the irrigation works.

The contracts awarded for irrigation construction consisted of the following:

Six pumps for Grand Coulee pumping plant -----	\$1,049,325.00
Excavation of 6½ miles of main canal in vicinity of Adrian and Stratford, Washington -----	619,000.00
Pumps for Pasco pumping plant -----	19,800.00
Pasco pumping unit laterals -----	714,223.00
South Coulee dam near Coulee City -----	2,771,887.50
Pasco pumping plant discharge pipe -----	46,000.00
Main canal - earthwork, tunnel, concrete lining and structures - from South Coulee dam to Long Lake -----	5,042,480.00
West canal from a point near Adrian to Soap Lake -----	2,871,796.50
Drilling water supply well for Moses Lake predevelopment farm -	17,538.75
Pasco pumping plant -----	188,537.68
Trash racks for Grand Coulee pumping plant -----	49,500.00
Preparation of concrete aggregates for Odair deposits -----	172,600.00
Cement, 310,000 bbls. -----	736,180.00
Reinforcing steel, 3,000,000 lbs. -----	76,480.43
Total -----	\$14,375,348.86

Contracts Not Awarded by August 21, 1946

The proposed contracts not awarded by August 21, 1946 amount to \$22,640,075.75, of which \$5,859,137 is for the Grand Coulee dam and power plant, including three turbines and generators for the right (east) powerhouse and \$16,780,938.75 is for irrigation construction as follows:

Six coaster gates for Grand Coulee dam pumping plant -----	\$ 200,207.00
Twelve discharge pipes for Grand Coulee pumping plant -----	1,208,000.00
18-inch pipe for main canal crossing at station 8 +30 -----	2,465.00
Six hoists for coaster gates, Grand Coulee pumping plant -----	125,352.00
70-ton Gantry crane for installing above coaster gates -----	127,300.00
Long Lake dam -----	1,770,592.00
Potholes dam -----	9,359,011.00
Structural steel for N.P. bridge crossing main canal -----	10,875.00
Check, main canal, about 2½ miles north of Adrian, and about 12.3 miles of east low canal -----	3,977,136.75
Total -----	\$16,780,938.75

Bids and Contracts Since August 21, 1946

The Commission has not received a complete list of bids received and contracts awarded since August 21, 1946. From releases issued by the Bureau of Reclamation and received by the Commission, the following bids have been received since that date. Where it appears that contracts have been awarded it will be so stated.

Material for steel warehouse (133½x300 feet) at Grand Coulee Dam	\$ 60,971.00
Two 1500 H.P. motors, Pasco pumping plant	27,730.00
Three switching units " " "	8,176.00
Seven relift pumps, Pasco unit	17,117.00
Equipment for unloading, storing and batching bulk cement, Odair, Washington	60,762.00
Illuminating railings, etc., Grand Coulee Dam	
Bids were to be opened Sept. 20, 1946	
Portable oil filter, Grand Coulee power plant.	
Bids were to be opened Sept. 12, 1946	
Six 65,000 H.P. motors for Grand Coulee pumps. about	2,500,000.00
One 20-ton traveling crane for warehouse "B" at Grand Coulee Dam	16,740.00
Standard steel for glass-block windows, Bureau machine shop at Grand Coulee Dam	2,295.00
One 10-ton traveling crane, Pasco pumping plant.	
Bids were to be opened Sept. 23, 1946	
Freight elevator, block 64, Grand Coulee Dam.	
Bids were to be opened Sept. 5, 1946	
Preparation of concrete aggregate for work in Stratford-Adrian-Soap Lake area	373,612.50
Two 100-ton traveling cranes for Grand Coulee pumping plant	140,000.00
One 60-ton traveling crane for above	71,000.00
Transformer and additional switching equipment, Pasco pumping plant. Bids were to be opened Oct. 21, 1946	
Electric substations to be used in repairing Grand Coulee bucket	13,377.13
Six hydraulic hoists for Grand Coulee pumping plant	
Contract awarded	128,362.00
Drilling well for Pasco 48-acre predevelopment farm	
Bids to be opened Nov. 12, 1946	
Miscellaneous supplies for project. Contract awarded	33,104.48
Total above list of low bids received and contracts let since August 21, 1946	*\$3,453,247.12

*Of this total \$161,466.48 represents contracts awarded and \$3,291,780.64 bids received and not yet awarded.

Progress of Construction

A press release from Coulee Dam, Washington, dated September 28, 1946, in which the Bureau of Reclamation is quoted, gives the following status of project construction. Construction was then under way on the Grand Coulee pumping plant, six Grand Coulee pumps, the caisson for repairing the bucket of Grand Coulee dam, the feeder canal, South Coulee dam, the 20-mile main canal from the South Coulee dam to a point north of Adrian, the west canal to Soap Lake, the laterals and pumping plant for the Pasco unit, and the water supply well for the Moses Lake predevelopment farm.

Under date of October 25, 1946, a dispatch from Washington, D.C., quotes W.E. Warne, Assistant Commissioner, Bureau of Reclamation as saying:-
" . . . that with the new allocation of money, making a \$110,000,000 total, work (on the Columbia Basin) could go ahead on generators and pumping plants, the South Coulee dam, the main canal, the tunnel (Bacon) and west canal and other work regarded as essential."

Reclamation Funds Increased to \$145,581,057?

In a bulletin dated October 23, 1946 the National Reclamation Association says:-

"Upon receipt of the above release from the Bureau of the Budget (re increase of reclamation funds for 1947 to \$110,000,000), the Secretary--Manager contacted officials of the Bureau of Reclamation and learned from them that they had received 'the green light' on their A and B programs, which include:

A Program - construction work under way -----	\$84,850,000
B Program - additional work to maintain an orderly program -----	60,731,057
Total -----	145,581,057

"It appears, that notwithstanding a present ceiling of \$110,000,000, project construction of approximately \$145,000,000 will be immediately undertaken. It is quite evident that the Bureau of the Budget intends to make further modifications in the ceiling as construction work proceeds and necessity arises."

Basin Construction as of October 26, 1946

A release for publication by the Bureau of Reclamation, Coulee Dam, Washington, dated October 26, 1946, says, in part, as follows:-

"Approximately \$25,000,000 in dams, canals, siphons, and heavy machinery are in the Bureau's 'pending' files, and awards of contracts covering these

items will be made 'as rapidly as feasible and within the limits of the Bureau to meet progress payments as authorized work proceeds,' commented District Engineer Frank A. Banks.

"The construction moratorium, called nearly three months ago, did not affect work on several key structures in the multi-million dollar irrigation system, such as the 10,000-foot South dam, the gigantic Bacon Tunnel, a portion of the west canal, the river-size main canal, and the Pasco pumping plant and distributing system."

The release further says that Basin contractors have more than six hundred men employed and predicts that this number will be doubled by next summer; that this number will be increased on contracts yet to be granted by the Bureau; and that among the jobs where bids have been received and the Bureau has not yet announced contracts are the Potholes dam, Long Lake dam, aggregates at Adrian, portion of the east low canal, six 65000 H.P. motors for Grand Coulee pumps, discharge pipes for Grand Coulee pumping plant, and three turbines and generators for the right (east) power house.

Conclusion

Aside from work now under construction as heretofore listed, it will not be definitely known what amount of work may be undertaken during the fiscal year 1947 until the Bureau of Reclamation is able to release information thereon. \$31,000,000 is available for payments on construction during the fiscal year 1947. It appears that construction on the Columbia Basin might be allowed to proceed on a much larger scale than fixed by the moratorium of August 2, 1946. In such case the following total work may be allowed to proceed during the fiscal year 1947:-

Contracts let to date	\$ 17,350,734.19
Contracts not awarded to date (for which bids have been received)	25,931,856.39
	*\$43,282,590.58

*This sum is exclusive of force account payrolls on the Grand Coulee dam bucket, the Grand Coulee pumping station, and the feeder canal.

Additional Contracts Just Awarded

On October 28, 1946, Frank T. Bell stated that he had been reliably informed that the following Basin contracts had been awarded:-

Potholes dam	\$ 9,359,011.00
Long Lake Dam	1,770,592.00
Subtotal	11,129,603.00

Check and 12.3 miles of east low canal -----	3,977,136.75
Total -----	\$15,106,739.75

On October 29, 1946, a dispatch to the Spokane Chronicle from the Boise office of the Bureau of Reclamation stated that the contracts for the Potholes and Long Lake dams had been awarded.

The above total is nearly equal to the \$15,629,000 allowed for Basin construction for the fiscal year 1947 under the moratorium of August 2, 1946, making a total allowed to date of \$30,735,739.75. If the Budget Bureau has or will allow an additional sum of but \$12,546,850.83, all of the Basin contracts awarded and proposed to be awarded in the sum of \$43,282,590.58 as listed in this statement will be under construction during the fiscal year 1947.

8731

Seattle Journal of Commerce - November 27, 1946

POTHOLES DAM WORK SLATED

MOSES LAKE.— Temporary headquarters will be established in Moses Lake within two weeks by contractors on the \$9,359,011 Pot-holes dam project and preliminary work will begin before the end of the year.

This was the announcement made by F. W. Case, office manager for the contractors, C. F. Lytle Const. Co., Sioux City; Green Const. Co., Des Moines, and Amis Const. Co., Oklahoma City. Case, W. H. De-Butts, chief engineer, and M. J. Stych, assistant engineer for the Lytle firm, all have arrived in Grant county to make preliminary arrangements for beginning work on the project.

Approximately 100 men will be employed at first, and the peak employment when full-scale operations begin about March 1, will be 300, Case revealed. Reason for the relatively small labor force, he explained, is that most of the work on the earth and rock-fill dam will be done by heavy equipment.

*Mr Blum
note J.D. 26*

D

RECEIVED
CHIEF NOV 30 1946
PAC RY

M. B. L.
note 12/14
8/29

RECLAMATION BUREAU OKEHS FIVE CONTRACTS TOTALING \$22,000,000

WASHINGTON.—The bureau of reclamation yesterday announced its has officially awarded more than \$22,000,000 in contracts for construction, equipment and supplies under the recently-liberalized government construction program.

The contracts, covering five bureau of reclamation projects, include work on two big dams—a \$9,359,011 contract for Potholes dam, one of the key irrigation features of the Columbia Basin project, and a \$1,770,592 dam at Long Lake, Wn.

Besides the Columbia Basin, the contracts include work on the Deschutes in Oregon. The Columbia Basin project gets the bulk of the benefits, more than \$16,000,000

worth of work, while the central valley will get nearly \$3,500,000.

\$25,000,000 Available

The contract awards were made possible under the recent \$25,000,000 increase in appropriations for reclamation, flood control and other public construction. The last congress appropriated \$170,000,000 for such work. President Truman ordered the amount cut in half as part of an economy drive, then restored an additional \$25,000,000.

The largest single contract was for the Potholes dam to be built across Crab creek, 15 miles west of Warden. It will be about 19,000 feet long and 200 feet high. The reservoir, covering an area of 47 square miles, will have a gross storage capacity of 615,000 acre-feet.

The contract was awarded to a group of two corporations and a partnership. They include C. F. Lyttle Co., Sioux City, Iowa. Green Const. Co., Des Moines, Iowa, and Amis Const. Co., Oklahoma. The job will take about four years.

Canal Work Okehed

The second largest contract, for \$3,977,316, calls for the building the first 12.3 miles of the east low canal of the Columbia Basin project. It was awarded to the Utah Const. Co., San Francisco, and the Winston Brothers Co., Los Angeles. The contract for the Long lake dam, about 2½ miles northeast of Stratford, Wash., was awarded to J. A. Tertel-

B

MBlum

8731

Spokane, Washington
November 14, 1946

Mr. J. T. Perrig:

Herewith two clippings from the Spokesman-Review of November 14th, one telling of the award of about \$22,000,000 worth of additional contracts on the irrigation system and the other telling of the award for pumping equipment.

(Signed) H. M. TREMAINE
District Engineer

HMT:lcb
cc-Mr. Bernard Blum(2)✓
Encs.(2)

*Antel
11/17*

✓ *Mr. Stevens*
B.B.
11/18
h

1911-12-13

SECRET

5115

BIG RECLAMATION WORKS GO AHEAD

Basin Gets Big Share
of \$22,000,000 in
Contracts.

By Associated Press.

WASHINGTON, Nov. 13.—Secretary of Interior J. A. Krug announced today nine reclamation construction and equipment contract awards totaling more than \$22,000,000. The contracts, awarded under the liberalized restriction by President Truman on reclamation construction, provide for spending more than \$16,000,000 of the total on the Columbia basin project in Washington.

Largest single contract was for \$9,359,011. It went to C. F. Lytel company, Sioux City, Iowa, Green Construction company, Des Moines, Iowa, and Amis Construction company, Oklahoma City, for construction of the 19,000-foot long, 200-foot high Potholes dam across Crab creek, 15 miles west of Warden, Wash.

Key Basin Project.

This dam, a key irrigation feature of the Columbia basin project, will create a reservoir 47 square miles in area, with a gross storage capacity of 615,000 acre feet. Construction will require about four years.

A \$3,977,136 contract for construction of the first 12.3 miles of the 130-mile East Low canal on the Columbia basin project, was awarded to the Utah Construction company, San Francisco, and the Winston Brothers company, Los Angeles. The twenty-six month project will help irrigate 252,000 acres of land.

A third contract for the Columbia basin amounting to \$1,770,592, calls for the construction of Long Lake dam, about two and a half miles northeast of Stratford, Wash., at the south end of Long lake basin. The dam will be 111 feet high, 1900 feet long and will create a reservoir five and a half miles long. The contract was awarded to J. A. Terteling & Sons, Inc., Boise, Idaho.

Big Pipe Order.

A fourth contract for the Columbia basin for 12 steel pipes for the Grand Coulee pumping plant, amounting to \$1,272,854, was awarded to the Western Pipe and Steel company, San Francisco. The pipes, 12 feet in diameter and 800 feet long, will be used to carry water from Lake Franklin D. Roosevelt into a feeder canal leading to an equalizing reservoir 280 feet higher than the lake.

Two contracts affecting the central valley project call for construction of 11.2 miles of the Delta-Mendota canal, including the mountain house road siphon, near Tracy, Calif., and for supplying 200,000 barrels of cement.

The construction contract was awarded to the Morrison-Knudsen company, Boise, Idaho, and M. H. Hasler, Los Angeles, on a low bid of \$3,025,181. The Delta-Mendota canal will be a 120-mile unit in the system carrying Sacramento river water to the San Joaquin valley. The cement contract was awarded to the Calaveras Cement company, San Francisco.

A \$602,832 contract to Adler Construction company of Seattle provides for construction of 11.7 miles of the north unit main canal on the Deschutes project in Oregon. The project will bring 50,000 acres of new land under irrigation.

A \$602,832 contract provides for construction of 11.7 miles of the north unit main canal on the Deschutes project in Oregon. The project will bring 50,000 acres of new land under irrigation.

Boise Firm Wins Again.

A contract for construction of 8.9 miles of the lateral system of the Hudson canal and the Troutman-Smith and Harris laterals in the Tucumcari project in New Mexico was awarded to J. A. Terteling & Sons, Boise, for a low bid of \$934,948. The Tucumcari project will provide irrigation for 45,000 acres.

Another \$732,756 contract calling for steel penstocks for Mary's Lake and Estes Park power plants on the Colorado-Big Thompson project was awarded to the Darby Products of Steel Plate corporation, Kansas City, Kan. The two power plants will develop 240,000,000 kilowatt hours annually.

6 HUGE PUMPS FOR BASIN JOB

\$2,527,032 in Contracts Let
for Coulee Equipment.

WASHINGTON, Nov. 13. (AP)—The bureau of reclamation announced today that it has ordered half a dozen motors to drive the six largest water pumps ever designed.

A part of the huge Grand Coulee dam project, the pumps five years hence are to start providing water for 400,000 semi-desert acres of central Washington, the first block of more than 1,000,000 acres of the Columbia river basin to be irrigated by the Grand Coulee gravity canal system.

Two contracts totaling \$2,527,032 were awarded for the 65,000-horse power motors, each capable of driving a centrifugal pump able to lift 1350 cubic feet of water per second to a height of 310 feet.

Westinghouse, G. E. Win.

A \$1,652,671 contract for four motors was awarded Westinghouse Electric corporation, Denver, and the other \$874,361 for two motors, was given the General Electric company, Denver. The \$1,062,975 contract for the six pumps was awarded last June.

William E. Warne, acting commissioner of reclamation, said that while the six pumps will not begin functioning until 1951, a Pasco (Wash.) pumping plant will bring 8000 acres of project lands under irrigation in 1947 with water pumped directly from the Columbia river.

Six More Later.

Ultimately six more pumps will be installed at Grand Coulee dam. The 12 pumps will lift 7,000,000 gallons of water per minute from Lake Franklin D. Roosevelt, the reservoir, to an equalizing reservoir 280 feet higher than the lake, from which water will flow through gravity canals to new farms.

The new settlements are expected to bring 300,000 residents into the sparsely settled Columbia river basin, Warne said.

Columbia Basin Awards Total Over \$15,000,000

COULEE DAM, Oct. 30.—Secretary of the Interior J. A. Krug has authorized the granting of \$15,106,739 in contracts to cover construction of the first 12.3 miles of the East Low Canal for the Columbia Basin project, the Long Lake dam, and the Potholes dam, District Engineer Frank A. Banks said today.

Mr. Banks said the authority to grant the jobs to the lowest bidders had been given Chief Engineer Walker R. Young's office in Denver. Low bidders on the 3½-mile Potholes dam, fourth longest in the United States, were the C. F. Lytle Construction Co., Sioux City, Iowa; Green Construction Co., Des Moines, Iowa; and Amis Construction Co., Oklahoma City, Okla. Their bid was \$9,359,011.

Low bidder on the 1,900-foot Long Lake dam was J. A. Terteling &

Sons, Inc., Boise, at \$1,770,592. The low bid of \$3,977,136 on the first section of the East Low Canal was submitted jointly by the Utah Construction Co. of San Francisco and Winston Brothers Co., Los Angeles.

When the jobs are awarded, the irrigation construction contracts in force on the Columbia Basin project will total \$28,945,844.

Granting of the \$9,359,011 Potholes dam contract will be the largest single job authorized for the Columbia Basin project since the beginning of the Grand Coulee dam, key structure to the million-acre development in Eastern Washington.

Blocking off the Crab Creek channel and other channels near the center of the project, the Potholes dam will contain an estimated 9,000,000 cubic yards of earth and rock—a volume nearly as great as the concrete in the Grand Coulee dam. It will be about 12 miles west of Warden, Grant county, and must be completed within three years and 10 months after the contractors receive orders to proceed.

The 47-square-mile reservoir created by the Potholes dam will impound water for irrigating 270,000 acres in the southern part of the project, Mr. Banks explained.

Long Lake dam, another earth-and-rock structure, will be 2½ miles northeast of Stratford, also in Grant county, and will block a coulee occupied by Long lake, Pot lake, and Coffee Pot lake. The dam will create a reservoir 5½ miles long which will form part of the main canal for the irrigation system and save 5½ miles of costly canal construction. The contractor will have two years and 10 weeks to build the dam.

Terteling & Sons, low bidders on Long Lake dam, recently began work under a \$1,548,060 contract for 5.6 miles of the Main canal north of Long lake. This firm also is building the lateral system for the 5,397-acres Pasco Unit under \$714,223 contract. The Pasco Unit is scheduled to receive irrigation water next year, said Supervising Engineer H. A. Parker of the project's irrigation division.

Utah Construction Co. and Winston Brothers, low bidders on the East Low Canal job will be required to build a 12.3 mile section of canal which includes three concrete-lined siphons totaling 6,600 feet. Each will be 20 feet in diameter. The East Low Canal, ultimately to be 130 miles long, will begin east of Soap lake and will extend to the Snake River valley, eight miles northeast of Pasco, in Franklin county. Capable of carrying sufficient water for 252,000 acres, the East Low Canal will have a maximum bottom width of 73 feet and a water-level width of 120 feet.

Utah and Winston, now building a 6½-mile section of the project's West Canal under a \$2,871,796 contract, will have two years and 10 weeks to complete its part of the East Low Canal.

*Mr. Blair
note PD 10/31*

CHIEF OF FILE
NOV 4
1946
FOR PAC (M)
SLIP

8731

Seattle Journal of Commerce, Oct 29th, 1946

POTHOLES DAM AWARD SLATED FOR THIS WEEK

The Potholes dam contract will be let this week.

This was the word from bureau of reclamation sources, following the announcement from Washington, D. C., that funds for reclamation projects in the western states had been increased by \$25,000,000.

Awarding of the contract on the \$9,300,000 Potholes project six miles south of Moses Lake had been held up by an \$85,000,000 limitation put on all reclamation projects last August by the administration.

Reason for the rush to award it now is that the low bidders have an option to withdraw their offer

if the contract is not signed by Nov. 1.

All other work on the Columbia basin project held up by the limitation order will go ahead rapidly now, according to wires received from Washington's two senators from Interior Secretary J. A. Krug and William E. Warne, deputy commissioner of the bureau of reclamation.

H. A. Parker, bureau of reclamation irrigation engineer in charge of the Columbia basin development, said there is no indication yet as to exactly what portion of the \$25,000,000 increase will go to the basin project.

Low bidders on the Potholes dam, which will be the fourth largest in the U. S., are C. F. Lytle Co., Sioux City, S. D. Green Const. Co., Des Moines, Iowa, and Amis Const. Co., Oklahoma City.

Mr. Blum
note filed 10/29

B

1961
NOV 1
10 10

Army Engineer Head Explains Dam Development of Columbia River Basin

PORTLAND.—Lt. Gen. Raymond A. Wheeler, chief of the army engineers, has told the Inland Waterways association that development of the Columbia river basin should be controlled by the people of the basin.

"We know that it is possible to develop without dominating the economy of an area, and it is our consistent aim to render federal service without encroaching on the functions and services belonging to

000 kilowatts, and Wheeler said that 60 miles of slack water for through traffic to Pasco, Wn., will be created. He also referred to authorized construction of a series of dams to provide slack water navigation from the McNary pool up the Snake river to Lewiston, Idaho.

states or private institutions of the localities we serve," Wheeler stated.

Wheeler said that work on the McNary dam will begin as soon as budgetary limitations are lifted. An initial \$2,600,000 has been budgeted to the engineers for preliminary work on the dam, he reported. The entire project will cost \$180,000,000.

The power producing capacity of the dam has been estimated at 960,-

Mr. Blum
89 10/28

13

U.S. DEPARTMENT OF COMMERCE, WASHINGTON, D.C.



BASIN PROJECT IRRIGATION PLANS REVISED

COULEE DAM.—Changes are being made from time to time in the designs for the irrigation features of the Columbia basin project, as field men discover ways of accomplishing its purposes at reduced cost, or take advantage of natural conditions to prevent unnecessary construction.

The two-mile south dam of the balancing reservoir, for instance, is being built nearly two miles south of the location originally proposed.

There has been a major change in plans for the Potholes dam, which is the largest of the four earth-and-rock dams projected for the irrigation system, and will be when com-

pleted the fourth longest dam in the United States.

As originally designed, the Potholes dam, which will block off the reservoir in the center of the district including Moses lake as enlarged, was to be a straight earth fill. Under the new plan the dam will follow a rock ridge, reducing materially the volume of earth and rock required to construct it.

Purpose of the Moses lake reservoir, decided upon only five years ago, is to cut the amount of water to be stored in upper Grand Coulee, and to serve as a run-off catcher.

"Southwesterly part of the project," as explained by Frank A. Banks, supervising engineer, "will be irrigated with water impounded behind the Potholes dam, instead of that coming directly from the major reservoir north of Coulee City.

"Potholes dam will be approximately $3\frac{1}{2}$ miles long, and 200 feet high from lowest bedrock. It will require approximately 9,190,000 cubic yards of material—a volume nearly as great as that of Grand Coulee dam.

"The dam site is near the center of the project—12 miles west of the town of Warden, and five miles south of the lower end of Moses lake. The dam will close the so-called Drummheller channels, which were cut through the Frenchman hills by the same glacial flood waters that carved Grand Coulee.

"The resulting Potholes reservoir will cover 47 square miles of sand dunes and other waste land, will have a gross storage of 615,000 acre-feet."

Mr. Blum
10/28

B

001
31
191
OR PAC RY

Spokane, Washington
October 26, 1946

Mr. J. T. Derrig:

Herewith clipping from the Spokane Chronicle of
October 24th telling of the change in title for Mr. Banks
and his assistants on the Columbia Basin and Coulee Dam
Projects.

(Signed) ELM TREMAUNE
District Engineer

HMT:lcb
cc-Mr. Bernard Blum ✓
Enc.

B

Umo
O-1

3

FRANK A. BANKS HAS NEW TITLE

Frank A. Banks has a new title—district engineer of the Columbia basin project, it was announced today at Coulee Dam. His former title was supervising engineer.

The new title, it was explained, is for administrative purposes only and does not affect his responsibilities or the area of his jurisdiction. Use of the new title, it was said, conforms to new designations adopted by the federal reclamation bureau for region 1, of which the Columbia basin is a part.

Other new titles include: R. B. Williams, assistant district engineer; A. F. Darland, supervising engineer of the Coulee Dam division, which extends from Grand Coulee dam to and including South dam at Coulee City, and H. A. Parker, supervising engineer of the irrigation division, extending southerly from South dam.

Call for Drilling Bids.

The bureau has announced a call for bids for drilling of a water well on a 48-acre "predevelopment farm" in the 5397-acre Pasco division, which is to be brought under irrigation next summer.

The bureau announced the following purchases:

Lighting units, conduit and heaters, General Electric Supply corporation, Spokane, \$11,229.79; building equipment, G. W. Paulson company, Spokane, \$1651; cooling units, Lawyer Electric company, Wenatchee, \$2098.87; drills, Cragin & Co., Seattle, \$1037.12; heaters, Montgomery Brothers, Seattle, \$2079; drill steel, Bitco, Inc., Coulee City, \$1650; hoists, David Round & Son, Cleveland, Ohio, \$4010.08; wire rope, Columbia Steel company, San Francisco, \$7060.25, and Diesel locomotive parts, Davenport Besler corporation, Davenport, Iowa, \$2288.37.

Spokane, Washington
October 2, 1946

B

For your dossier on the Columbia Basin I am attaching hereto clipping from the Spokesman-Review of September 28th, telling of the status of the existing contracts.

You will note the account of the demonstration farm 2 miles east of Moses Lake. This is the first I had heard of this and I think it must be on the flat about the elevation of our track just west of Wheeler where I saw a well drilling rig the other day without identifying.

I will get the dope on this demonstration farm as quickly as convenient and let you have it.

[Signature]
District Engineer

HMT:lcb
Enc.

RECEIVED
OCT 1946
FBI

Spokane, Washington
October 2, 1946

Mr. Bernard Shaw:

For your dossier on the Columbia Basin I am attaching
hereto clipping from the Spokesman-Review of September 28, 1946,
telling of the status of the existing contracts.

You will note the account of the demonstration farm
to which about 2000 men came. This is the first I had heard of
this and I think it must be on the basis of the information
that I received from the Spokesman-Review that I saw a well drilling rig
the other day without identifying.

I have set the date on this demonstration farm as
probably as convenient and let you have it.

Respectfully,
Director

WHL:lpb
Enc.

Spokane, Washington
October 2, 1946

Mr. Bernard Blum:

For your dossier on the Columbia Basin I am attaching hereto clipping from the Spokesman-Review of September 28th, telling of the status of the existing contracts.

You will note the account of the demonstration farm 2 miles east of Moses Lake. This is the first I had heard of this and I think it must be on the flat about the elevation of our track just west of Wheeler where I saw a well drilling rig the other day without identifying.

I will get the dope on this demonstration farm as quickly as convenient and let you have it.

(Signed) U. A. TREMAINE

District Engineer

HMT:lcb
Enc.

Spokane Review
Sept 29, 1946

NINE-POINT BASIN JOB UNDER WAY

Four More Sections of Big Irrigation Project Start

COULEE DAM, Wash., Sept. 28.—Under orders issued this week by the bureau of reclamation, additional work has been started at four points on construction of the irrigation features of the multi-million Columbia basin power and reclamation project, according to Frank A. Banks, supervising engineer.

As new contracts are let, piecemeal information about the project has been given out, but not until the visit this week of the inter-agency committee, representing the several government bureaus interested and all the basin states except Washington, has a general summary of the work now in hand been available.

Another Superlative.

Work now going on here consists of first steps on the world's largest pumping plant, and one of the world's largest floating caissons. The world's largest dam was completed in 1941, just in time for its power to be used in the war effort. While the largest pumping plant is built here the world's largest pumps are also being constructed by the Pelton company and Byron Jackson Pump companies, both in San Francisco.

Thus in about two years there will be added another superlative to the record-breaking accomplishments of the engineers who designed and built the dam. And all these are incidental to still another unique undertaking, the world's largest irrigation project.

To drive the mammoth pumps, the world's largest motors are being designed. Each will be rated at 65,000 h. p., and bids have been called on the first.

Working at Many Spots.

Nearest to this point of the irrigation jobs under way is that at Coulee City, some 30 miles south, at the mouth of the upper coulee. The south dam of the equalizing reservoir is being built there by Roy L. Bair & Co. and James Crick & Sons, both of Spokane, under a \$2,771,000 contract.

"The south dam," as Engineer Banks explains it, "will be 10,000 feet long, with a maximum height of 65 feet. United States 10-A highway will be carried along the crest. The contractors have already relocated two miles of the highway and have carried out clearing and stripping operations along the axis of the dam.

"They also are grouting existing exploratory diamond drill holes along the axis, and are drilling and blasting for the core wall at the west end.

"The main canal will run southerly from the south dam approximately 20 miles to a point about four miles north of Adrian, Grant county, where it will divide into the east low and the west canals. Construction of the first 2400 feet is included in the south dam contract, because the excavated materials will be needed for the dam.

"Last Monday, orders to proceed

were issued to the two contracting firms on extending the main canal 7.7 miles to Long Lake. They already had set up camps and assembled equipment. J. A. Terteling & Sons of Boise will excavate and line 5.6 miles of open canal, under a \$1,548,060 contract.

"The first 1.8 miles must be carved out of solid rock, and will require nearly 1,500,000 cubic yards of rock excavation. This section of the main canal will be 50 feet wide at the bottom, with a water depth of nearly 36 feet, and a capacity of 13,200 second-feet.

"From the Long Lake dam, the main canal will extend six and one-half miles westerly to headworks of the east low canal and the west canal. The Morrison-Knudsen company of Seattle is making good progress under a \$619,000 excavation contract on this section of the canal, which will be of 9700 second-foot capacity. Since early June, the contractor has completed nearly 30 per cent of his contract, although less than 10 per cent of his allotted time has elapsed.

"The west canal will wind along near the northern and western boundaries of the project for about 80 miles, passing close to Soap Lake, Ephrata and Quincy. A 9150-foot tunnel will carry it through the Frenchman Hills, from where it will branch east and west to water the Royal Slope. The west canal, with a capacity of 5100 second-feet, will irrigate 281,000 acres.

On West Canal, Too.

"Utah Construction company and Winston Brothers, low bidders at \$2,871,796, were given go-ahead order August 26 for the first 5½ miles of this canal. They have moved in considerable construction equipment and materials, and are constructing a field office.

"Their contract includes construction of two siphons 24½ feet in diameter—the largest in the Pacific northwest. The siphons, to be constructed of reinforced concrete, will extend more than a mile across ancient river channels cut through basalt.

"As several years would be required to extend the main irrigation system to the southern end of the project, a lateral system and a temporary pumping plant now are under construction near Pasco to serve 5397 acres in the near future. If materials and equipment can be obtained, the contractors expect to complete their contracts next summer.

"On this tract, J. A. Terteling & Sons have a \$714,223 contract for construction of 23 miles of laterals and waterways. They have completed more than 1½ miles of excavation for the 9.4-mile main lateral which will be 16 feet wide at the water surface and 5 feet wide at the bottom.

"James Construction company of Seattle has a \$188,537 contract for constructing the pumping plant, which will lift 126 cubic feet of water per second from Columbia river, a vertical distance of 167 feet. This company has nearly completed heavy excavation for the pumping plant.

Demonstration Farm.

"Hosack & Son, a Nampa (Idaho) firm, is drilling a water supply well for an 80-acre predevelopment demonstration farm about two miles east of Moses Lake. A 98-acre demonstration farm is planned 12 miles northwest of Pasco. Both farms will be operated jointly by the bureau of reclamation, the bureau of plant industry, and the Washington State college experiment station, to demonstrate good farming and irrigation practices to project settlers.

"Bureau offices for the irrigation division have been established at Ephrata, Pasco and Coulee City. There the staff is directing the work of contractors on structures for the irrigation distribution system, testing soils along canal and waterway routes, designing lateral systems and other structures, obtaining rights-of-way, and studying various problems in connection with planning for development and settlement of project lands."

Award of Dam Contract Pends Fund Allocation

COULEE DAM. — Awarding of a contract to a three-firm combine which bid a low of \$9,359,011 about the middle of August for construction of the 3½ miles-long Potholes dam, Columbia basin project, hinges upon the allocation of \$85,000,000 allowed the Columbia basin project for 1947, according to S. E. Hutton, project information officer. The combine which submitted the low bid to Frank A. Banks, supervisor here, is composed of C. F. Lytle Const. Co., Sioux City, Iowa; Green Const. Co., Des Moines, Iowa; and the Amis Const. Co., Oklahoma City.

Mr. Banks
Note
9/23/46

B

UNITED STATES
OCT 7 1946
RY

SPOKANE FIRM LOW BIDDER ON AGGREGATE JOB

H. F. Green & Co., Spokane; is low bidder at \$373,612 for preparing concrete aggregates for the Columbia basin project construction program in the Stratford-Adrian-Soap Lake area of Grant county. Thirteen firms submitted offers for the work which involves 120,000 cubic yards of stripping overburden, and the preparation and stockpiling of 170,000 cubic yards of sand and 295,000 cubic yards of course aggregate.

Other bidders and the amounts: Miles Co. and Woodworth & Co., Tacoma, \$735,150; Max J. Kuney &

Co. Spokane, \$645,750; J. G. Shotwell, Albuquerque, N. M., \$669,750; C & F Trucking & Contracting Co., Butte, \$538,200; J. A. Terteling & Sons, Inc., Boise, \$547,500; Colonial Const. Co., Spokane, \$598,900; Sather & Sons and Curtis Gravel Co., both of Spokane, \$438,000; Winston Bros. Co. and Utah Const. Co., both of San Francisco, \$552,900; E. B. Bishop, Orland, Calif., \$570,750; Millay & McBride Co., Denver, Colo., \$463,050; M. E. Nelson Const. Co., Ephrata, \$557,350; and F. R. Hewitt Co., Parkwater, \$628,500.

R. B. Williams, acting supervising engineer for the bureau of reclamation, who opened the bids, said the materials will be used in building portions of the main canal, the east low canal, and the west canal, which will serve the irrigation system in south-central Washington. When completed, the distribution works will carry water for 12,000 to 15,000 family-size farms.

The bureau of reclamation also announced that a low bid of \$27,730 has been submitted by Elliott & Co. of Jeannette, Pa., for building two motors to operate pumps at the Pasco pumping plant, Columbia basin project, and the Wolfe & Mann Mfg. Co. of Baltimore is low at \$8176 for providing switchgear for the installation.

In another announcement, the bureau reported that bids will be opened at its Denver offices Oct. 21 for providing a transformer and additional switching equipment for the plant, now under construction near the southerly end of the Columbia basin. This unit, with its distribution system, will serve 5397 acres northwest of Pasco, by pumping water from the nearby Columbia river. If necessary equipment can be obtained in time, water will be distributed to the first acreage in the Pasco area next summer.

Handwritten:
H. F. Green
10/2
note 9/25/46

Handwritten:
B

OCT

7

1948

RY

CONFIDENTIAL - SECURITY INFORMATION

29-5

8731

Seattle Journal of Commerce, Sept 26th, 1946

Irrigation Canal Work Progresses

SOAP LAKE.—Work is progressing rapidly on the six and one-half mile segment of the main canal east of Soap Lake. This important life-line of the Columbia basin irrigation system is now 40 per cent finished, according to Roy Johnson, superintendent of the Morrison-Knudsen Const. Co. of Boise.

"We haven't run into any difficulties that weren't expected," said Johnson. "Of course, we are having to dynamite some big rocks in the line of the canal."

At the present time, there are 125 men employed on the huge construction job. The work is on a "round the clock" basis now, with men working eight-hour shifts.

Johnson said the work would not be finished, that is the leveling of the banks and the scraping of the walls in preparation for the concrete, until the entire length of the canal is dug.

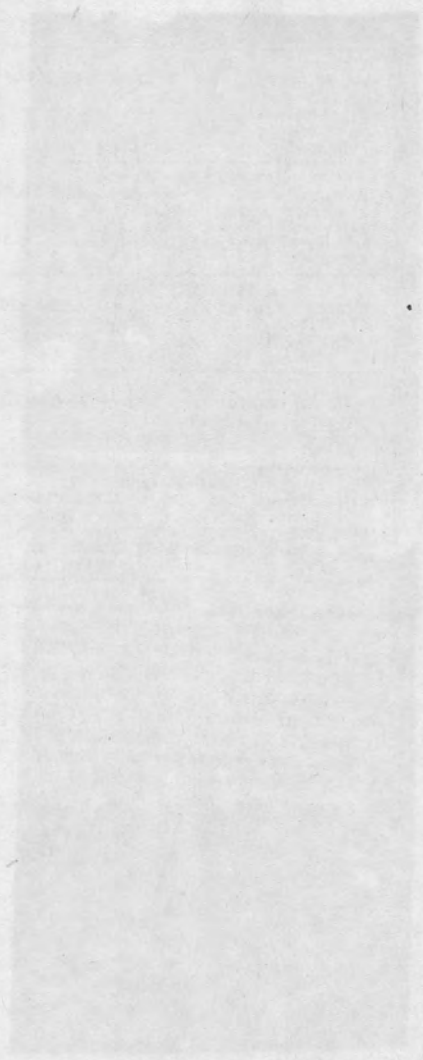
Gilbert Griffith, district manager of the Morrison-Knudsen Co., was expected to fly to the job this week for a regular inspection trip.

Mr. Blum
noted 9/27/46

B

1

SEP 13 1971
CH



Columbia Basin Committee to Conserve Funds

SPOKANE, Sept. 24. — (UP) — With a presidential order requiring reductions in expenditures and personnel curtailing progress, members of the Columbia Basin inter-agency committee today decided to hold their present funds until the government put new money into the basin development.

Robert J. Newell of Boise, regional director for the bureau of reclamation, said that the four per cent reduction of personnel was more restrictive than the cut in other expenditures.

"We have to see that our contractors don't work too fast," he said.

Hope was expressed by Col. The-ron D. Weaver, Portland, chairman of the committee and northwest divisional army engineer, that funds for project planning will be released shortly.

Frank A. Banks, engineer at Grand Coulee dam, predicted that a large section of the Columbia Basin will be under irrigation "within four or five years."

Construction on the Foster Creek dam will be restricted to six months during the first year because of river diversion problems, according to Col. Leland H. Hewitt, chief of the Seattle office of army engineers. He said it was not practical to construct diversion dams high enough to prevent flooding during high water.

Mr. Blevins
note g
9/25
B

SE 108

COLUMBIA BASIN FACTORS CITED BY MACFARLANE

Estimating an ultimate population of 500,000 within the area of Columbia Basin project, Robert S. Macfarlane, vice president of the Northern Pacific railway and president of the Seattle Chamber of Commerce, told the members of the National Security Traders' Assn. that the 17,000 farm units of the completed project would be equivalent to bringing a new farm state into the Union.

Speaking to the delegates of the association from all sections of the United States, the railroad executive held their attention while he

emphasized the economic effect on the Columbia Basin development on the Pacific Northwest. At the same time he impressed on his listeners the regional and national need for increased food production.

Any consideration of the future

of the Pacific Northwest, he said, requires understanding of this great reclamation project. As the timber, fisheries and mining industries of this region reach and, perhaps, pass their peak, the need of manufacturing and agricultural development, regenerative in character, becomes more evident.

Population Growth

Twenty-five years ago Macfarlane said there was much discussion here of the need of more population in order to justify manufacturing so far from the major centers of the country. Today the percentage of growth in population and the performance of industries since the beginning of World War II have centered attention on this territory. The population growth continues. Most of those who came during the war plan to remain in this part of the United States. This increase reveals many shortages, notably in agricultural products.

When the 1,000,000 acres of the Columbia Basin project are irrigated and under cultivation the volume or value of the farm production from that area will approximate that of the present 25,000 farms in Utah, the 38,000 in Maine, or the 61,000 in Oregon.

In answer to the question as to the sound economics of bringing such vast production into the markets of this region and the nation, Macfarlane pointed out that here and throughout the country a shortage of food and fiber products is being experienced. This is partly due to contracting our agricultural plant. For several years prior to and during the war we had become a net importing nation of agricultural products. The true situation has been obscured largely by discussion of four surplus commodities, of which wheat and cotton are the principal ones.

Acreage Requirements

Inviting his listeners to do with him a little "horseback figuring," the Northern Pacific vice president took the 2.5 acres of harvested crop lands computed in 1920 as the requirement for food and fiber of the average consumer. The population has grown 38,000,000 since 1920. To maintain the same productive ratio 93,000,000 acres of additional crop land should have been brought in during the period. But it is startling to find that the additional acreage is only 10,000,000. During the 26 years the state of Washington increased about 50 per cent, or 700,000 in population.

Basin Project Cost

The entire Columbia Basin project, including dam and power installations, will cost an estimated \$400,000,000. Except for flood control and navigation costs assumed by the federal government, the dam and power plant are to be paid for out of power revenues in 50 years and the irrigation system by levies on water users and power revenues. In 50 years no region in the judgment of Macfarlane will have shown greater percentage increase over present levels in population, value of manufactured products or value of agricultural products than the Pacific Northwest.

B
Mr. Blum
notes
9/19

SEP 19 1951
CH 10

originals of documents
which are in the
files of the
State Department.
The documents are
now in the files of
the State Department.
The documents are
now in the files of
the State Department.

any consideration of the
subject.

8731

Seattle, Wash.
Sept. 18, 1946

B

Columbia Basin Project

Mr. Bernard Blum:

I heretofore advised you that Mr. Banks stated to me that it might be necessary to curtail some of the work now under contract due to a cut in the Reclamation Department's appropriation.

I am now quoting copy of article from the Seattle Journal of Commerce, September 18, 1946, referring to this curtailment:

RECLAMATION CONTRACTS MAY BE CANCELLED

BOISE, Ida., Sept. 17.—(UP)— President Truman's order calling for a drastic cut in reclamation construction expenditures may result in cancellation of various contracts throughout the West, Kenneth Markwell, assistant commissioner of reclamation, declared here today.

Markwell said Secretary of Interior Julius Krug has appealed to the U. S. budget bureau in an attempt to lift the president's limitation of \$85,000,000 for construction work in this fiscal year.

"We are waiting for results of that appeal," Markwell said. "If the president's limitation stands, we will then be forced to cancel contracts."

Markwell said the congress had appropriated \$215,000,000 for the reclamation bureau and about \$200,000,000 in contracts already have been let. He explained that the bureau had mapped out, and congress had approved, \$2,000,000,000 in reclamation projects for the 11 western states for future construction.

The award of the contract for the construction of the third step for the main canal leading to the Gloyd&Wheeler area has not as yet been awarded, although bids were received for the work some time ago.


Assistant Chief Engineer

JTD:p

cc RSM FRB JLB DSC

Seattle, Wash.
Sept. 18, 1946

Columbia Basin Project

Mr. Bernard Blum:

I heretofore advised you that Mr. Banks stated to me that it might be necessary to curtail some of the work now under contract due to a cut in the Reclamation Department's appropriation.

I am now quoting copy of article from the Seattle Journal of Commerce, September 18, 1946, referring to this curtailment:

RECLAMATION CONTRACTS MAY BE CANCELLED

BOISE, Ida., Sept. 17.--(UP)-- President Truman's order calling for a drastic cut in reclamation construction expenditures may result in cancellation of various contracts throughout the West, Kenneth Hariswell, assistant commissioner of reclamation, declared here today.

Hariswell said Secretary of Interior Julius Krug has appealed to the U. S. budget bureau in an attempt to lift the president's limitation of \$85,000,000 for construction work in this fiscal year.

"We are waiting for results of that appeal," Hariswell said. "If the president's limitation stands, we will then be forced to cancel contracts."

Hariswell said the congress had appropriated \$215,000,000 for the reclamation bureau and about \$200,000,000 in contracts already have been let. He explained that the bureau had mapped out, and congress had approved, \$2,000,000,000 in reclamation projects for the 11 western states for future construction.

The award of the contract for the construction of the third step for the main canal leading to the Gloyd & Wheeler area has not as yet been awarded, although bids were received for the work some time ago.

J. T. DERRIG

Assistant Chief Engineer

JTD:p

cc RSM FRB JLB DSC

8731

Seattle, Wn.
Aug. 23, 1946

Columbia Basin Project

Mr. Bernard Blum:

For your information I am quoting herewith, from the Seattle Daily Journal of Commerce, August 21, 1946, notation in reference to low bids for the 12.3 miles of the east low canal on the Grand Coulee Project:

EAST LOW CANAL BIDS RECEIVED AT
COULEE DAM

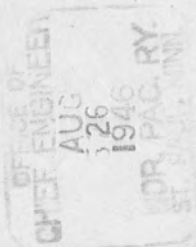
Coulee Dam, Aug. 20 - (UP) - The Utah Constr. Co. of Salt Lake City and Winston Brothers Co. of Minneapolis submitted a joint low bid of \$3,977,136 today for construction of the first 12.3 miles of the 130-mile East Low Canal for the Columbia Basin project.

Other bidders were: J. A. Terteling & Sons, Boise, \$4,061,706; Guy F. Atkinson Co., Portland, W. E. Kier Constr. Co., Los Angeles, and Bressi and Bevanda Constructors Inc., Los Angeles, \$4,324,345; Mossison Knudsen Co., Inc., Seattle, \$4,588,423.

The East Low Canal, with a capacity of 4500 cubic feet per second, will carry water to 252,000 acres of dry land in the East Columbia and South Columbia Basin irrigation districts. The bid included three concrete siphons, totaling 6500 feet in length, to carry water across ravines.


Assistant Chief Engineer

JTD:p



Seattle, Wn.
Aug. 23, 1946

Columbia Basin Project

Mr. Bernard Shaw:

For your information I am enclosing herewith, from the Seattle Daily Journal of Commerce, August 21, 1946, notation in reference to low bids for the 12.3 miles of the east low canal on the Grand Coulee Project.

WEST LOW CANAL BIDS RECEIVED AT
COUNTY DUN

Coulee Dam, Aug. 20 - (UP) - The West Coulee Co., of Salt Lake City and Winston Brothers Co., of Minneapolis submitted a joint low bid of \$3,977,136 today for construction of the first 12.3 miles of the 130-mile West Low Canal for the Columbia Basin project.

Other bidders were: J. J. Trenchard & Son, Boise, \$4,001,706; Coy E. Johnson Co., Portland, \$4,001,706; Coulee Co., Los Angeles, and Hessel and Sevenson Construction Inc., Los Angeles, \$4,324,347; Johnson & Johnson Co., Inc., Seattle, \$4,738,423.

The West Low Canal, with a capacity of 4700 cubic feet per second, will carry water to 252,000 acres of dry land in the East Columbia and South Columbia Basin irrigation districts. The bid included three concrete siphons, totaling 8500 feet in length, to carry water across ravines.

Assistant Chief Engineer

Seattle, Wn.
Aug. 23, 1946

Columbia Basin Project

Mr. Bernard Blum:

For your information I am quoting herewith, from the Seattle Daily Journal of Commerce, August 21, 1946, notation in reference to low bids for the 12.3 miles of the east low canal on the Grand Coulee Project:

EAST LOW CANAL BIDS RECEIVED AT
COULEE DAM

Coulee Dam, Aug. 20 - (UP) - The Utah Constr. Co. of Salt Lake City and Winston Brothers Co. of Minneapolis submitted a joint low bid of \$3,977,136 today for construction of the first 12.3 miles of the 130-mile East Low Canal for the Columbia Basin project.

Other bidders were: J. A. Terteling & Sons, Boise, \$4,061,706; Guy F. Atkinson Co., Portland, W. E. Kier Constr. Co., Los Angeles, and Bressi and Bevanda Constructors Inc., Los Angeles, \$4,324,345; Mossison Knudsen Co., Inc., Seattle, \$4,588,423.

The East Low Canal, with a capacity of 4500 cubic feet per second, will carry water to 252,000 acres of dry land in the East Columbia and South Columbia Basin irrigation districts. The bid included three concrete siphons, totaling 6500 feet in length, to carry water across ravines.

J. T. DERRIG

Assistant Chief Engineer

JTD:p

8731

Seattle, August 21, 1946.

Mr. Bernard Blum:

Columbia Basin Project

I am attaching hereto a clipping from the Seattle Daily Journal of Commerce of August 19, 1946 concerning a joint low bid of \$9,359.011 by contractors C. F. Lytle Construction Co. of Sioux City, Iowa; Green Construction Co. of Des Moines, Iowa and Amis Construction Co. Oklahoma City, on construction of the Potholes Dam near Warden, Washington.

Also are clippings from the Journal of August 20, 1946 relative to bids being due as of August 20 on Columbia Basin East Low canal, and regarding bids submitted for Coulee motors by Westinghouse.

RSG/w

J. T. Denny,

B

CHIEF ENGINEER
AUG 24 1946
DR. PAC. DIV.
ST.

~~HAB~~ 8431

8731

Note
BB
30

Seattle, Wn.
Aug. 21, 1946

Columbia Basin Project

Mr. F. R. Bartles:

I am attaching hereto duplicate prints from negative of Reclamation Department map upon which is shown the location of the Government's main canals and irrigation dams contemplated in connection with this development.

There is also shown on this map the three projects under which it is contemplated to provide water under the initial unit of development, namely:

1. The project on either side of the Connell Branch in the vicinity of Wheeler.
2. Pasco Pumping Project.
3. Quincy Project along the Great Northern.

The Moses Lake Project is a separate and independent irrigation district.

There is also shown on this map reference to certain work now under contract and other projects for which bids have been received but contract has not been formally awarded such as Potholes Dam below Moses Lake.

The attached print will, I think, give you a comprehensive idea as to the project as a whole and also show the relation of the three projects now under consideration for immediate development.

J. T. DERRIG

Assistant Chief Engineer

JTD:p

cc RSM - 2 prints attached
BB - 1 " "
JLB - 2 " "
POE - 2 " "
JWH - 1 " "

BSC - 1 print attached
HMT - 1 " "
WPS - 1 " "



August 20, 1946

COLUMBIA BASIN EAST LOW CANAL BIDS DUE TODAY

Bids will be opened today at Coulee Dam by the bureau of reclamation for construction of the first 12.3 miles of the East Low canal in the Columbia basin irrigation system (Spec. 1422). The work will include three large syphons with an overall length of some 6600 feet.

Ultimately to be 130 miles long, the East Low canal will begin at the end of the main canal and extend south in south-central Washington the length of the project, terminating in the Snake river valley eight miles northeast of Pasco. It will have a capacity of 4550 cu. ft. per second, according to Frank A. Banks, supervising engineer for the bureau.

\$4 MILLION BID SUBMITTED FOR COULEE MOTORS

The Westinghouse Electric Corp. has submitted a low bid of over \$4,000,000 for six giant electric motors to be used for pumping water at Grand Coulee dam, according to the bureau of reclamation at Denver. The bid was \$810,476 per motor. Award of the contract is to be announced later in Washington, D. C.

The 65,000-horsepower motors, the largest ever built, will operate at 200 revolutions per minute. Each of the 13,600-volt, vertical-shaft, synchronous motors will turn a centrifugal pump to force water from Lake Roosevelt, behind Grand Coulee dam, into a feeder canal leading to the 27-mile equalizing reservoir in nearby Grand Coulee.

August 19, 1946

POTHOLES DAM PROJECT LEADS PUBLIC WORKS

A joint low bid of \$9,359,011 on a contract for construction of the Potholes dam near Warden, Wn., leads the list of outstanding public works project contracts pending or awarded in the Pacific Northwest last week.

C. F. Lytle Const. Co., Sioux City, Iowa; Green Const. Co., Des Moines, Iowa; and Amis Const. Co., Oklahoma City, submitted the low dam figure to the bureau of reclamation at Grand Coulee.

Washington state highway contracts awarded or pending totaled \$750,522. Of the 11 state highway contracts, two were awarded, bids on five held and offers on the remainder were rejected. A \$13,930 contract was awarded to Anderson & McAndrews, Tacoma, and a \$16,000 contract to Antonsen Painting Co., Tacoma.

On the projects on which the bids are being held, low figures were submitted by Northwest Const. Co., Seattle, \$63,759; Columbia Asphalt Co., Yakima, \$27,547; McRae Bros., Seattle, \$471,502, Peter Kiewit

Sons Co., Seattle, \$114,898, and Guy Norris, Seattle, \$42,986.

W. H. Lynch, division engineer of the public roads administration, awarded a \$230,157 contract for grading six miles of the Box Canyon road near Eugene to White Bros., Walla Walla. A similar contract was let to C. E. O'Neal, Ellensburg, on a proposal of \$149,124.

Another bureau of reclamation project bid upon was for construction of pump area No. 15, lateral distribution system, Roza division, Yakima project. The Osberg Const. Co., Seattle, offered a low figure of \$114,120.

The Seattle board of public works received bids on three street projects. Low bidders included the Pacific Const. Co., Seattle, \$8565, and \$6880, and the Superior Const. Co., Seattle, \$5342.

St. Paul, Minn., August 3, 1946.

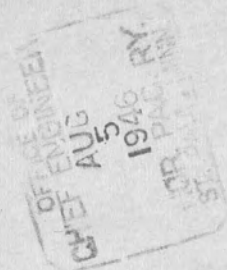
Mr. Bernard Blum:

Your letter of the 2nd advising Mr. Banks
desires to obtain prints of our right of way maps and
profiles from Hanson to Coulee City and from Odair to
Connell:

You may furnish.



SKB
Prints here with
as requested. JAS
Jm.



... ..

... ..

... ..

... ..

...

... ..

8731

Saint Paul, August 2, 1946

MR. J. T. DERRIG:

In accordance with your B-370 I am transmitting herewith
prints of right of way map and profiles of the line Hanson to
Coulee City and Odair to Connell, for delivery to Mr. F. A. Banks.

bb/s

att.

8731

Saint Paul, August 2, 1946

MR. H. B. STEVENS:

Mr. Derrig wires that Mr. Banks is requesting prints of our right of way maps and track profile from Hanson to Coulee City, and from Odair to Connell.

I presume there is no objection to furnishing.

db/s

P. A. L.,

1250-17

18

19.

1250-12

13

14.

1. Print each

Right of Way Map

Trails profile

Connell to Conlee City

Conlee City to Hanson

8/2

B. B.

N.P. RY. ST. PAUL
TELEGRAPH OFFICE

1946 AUG 2 PM 1 09

TELEGRAM

NP65CF MO SEATTLE 2 1102A

BERNARD BLUM STP

MR BANKS REQUESTING PRINT OF OUR RIGHT-OF-WAY MAP AND TRACK PROFILE
CONNELL TO COULEE CITY AND COULEE CITY TO HANSON PLEASE FURNISH
ONE PRINT I AM ARRANGING TO GET OZWALD NEGATIVE FROM MR BANKS
SHOWING DETAILS OF CANAL WORK ETC NOW UNDER CONSTRUCTION

D-370

J T DERRIG.

TELEGRAM

Saint Paul, July 19, 1946

MR. F. R. BARTLES:
MR. J. T. DERRIG:
MR. H. M. TREMAINE:

Attached in summary form is resume of work which Mr. Danks states will be in progress in the COLUMBIA BASIN area during the fiscal year of 1947, which terminates June 30.

I have seen from time to time publicity issues from the Bureau, but this concise statement probably gives you a better over-all picture of the situation as it now exists.

bb/s

att.

P.A.L.

Let me have
Banks letter

3 Blue Prints of Mr
attached.
R.B.

7/16

Mr. Blum
Heiwerth prints
P.H.

7/18

St. Paul, Minnesota
July 12, 1946

Mr. R. W. Clark
Vice President

Attached in summary form is a resume of work which will be in progress in the Columbia Basin area during the government fiscal year of 1947. Signed by Mr. Banks it is consequently authoritative.

Since it is difficult to assemble the various publicity releases into a concise statement, it occurs to me you may value this for future reference.

jwh k

att.

cc: Mr. H. E. Stevens
Mr. B. Blum
Mr. J. M. Hughes

J. M. Hughes

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COULEE DAM, WASHINGTON

June 27, 1946

Registered. Return Receipt Requested

Secretary,
South Columbia Basin Irrigation District,
Pasco, Washington

Gentlemen:

In conformity with the provisions of paragraph 6 (c) of the repayment contract dated October 9, 1945, between your District and the United States, this notice is issued to advise you of the proposed construction program for the Columbia Basin Project for the fiscal year beginning July 1, 1946, and the acreage to which water is expected to become available in the 1947 irrigation season.

Construction of the multiple-use and irrigation features of the project shown in the following program is proposed on the assumption that Congress will finally approve an appropriation of \$18,000,000 for fiscal year 1947.

Conditioned on the availability of funds, and our ability to procure materials and manpower, the work program for Fiscal Year 1947 for the Columbia Basin Project is as follows:

1. Primary pumping plant - The foundation and tunnels for this were constructed during the building of Grand Coulee Dam. Work has been in progress on the structure since the first of this year and will go forward through 1949. The contract for six pumps has been awarded, and bids for the motors for these pumps will be received on August 16, 1946. Installation of the first six pumps and motors will commence in the latter part of 1946 and should be substantially complete by the end of 1949.
2. Feeder Canal - Work commenced in March 1946. Now approximately 8% complete. Work will continue throughout 1946, 1947, and 1948.
3. North Dam - Equalizing Reservoir - No construction planned for this fiscal year. Contract is to be let in July 1947 and should be completed by May 1949.
4. South Dam - Equalizing Reservoir - Contract was awarded June 18, 1946. Specifications allow 900 days from date of receipt of notice to proceed in which to complete dam.

5. Main Canal - Three contracts already awarded, one for excavation of six and one-half miles of canal, and other two on excavation and lining of remainder of canal (allowing 900 days to complete contract from date of receipt of notice to proceed). One of the two contracts awarded on the excavation and lining includes construction of the Bacon siphon (one barrel) and Bacon tunnel (One bore). Long Lake Dam will be in effect a dam to divert main canal water from the natural channel at the south end of Long Lake. Contract for construction of Long Lake Dam to be awarded and construction to start early in Fiscal Year 1947.

6. West Canal - Bids opened and award pending on first section of canal, allowing 900 days to complete work. This first section of the West Canal includes Dry Coulee Siphons No. 1 and 2. Construction of Soap Lake Siphon to commence about December 1, 1946 and should be completed by December 1949. Construction should commence on section of canal from Soap Lake to Quincy about January, 1947 and be completed by the end of 1949.

7. East Low Canal - Invitation for bids on first section of canal to be issued about the first of July. Construction on second section should start about January, 1947. Both sections should be completed by the end of 1949.

8. Potholes Dam - Bids will be received on July 25, 1946, and construction completed by September 1950.

9. Potholes West Canal - Invitation for bids should be issued during July on first eight miles. The upper 35 miles should be completed by August, 1950.

10. Pasco Pumping Plant and Lateral System - This unit will furnish water in 1947 for the first block of approximately 6,000 acres, provided funds are available and necessary materials and manpower are obtainable. Bid opening dates, dates of award of contracts, and time allowed for contract completion on the various items of this unit are as follows:

<u>Item</u>	<u>Opening Bid</u>	<u>Date of Award</u>	<u>Days allowed to complete</u>
Lateral System	5/31/46	None yet	290
Pump Plant	5/24/46	None yet	270
Pumps	4/29/46	5/15/46	270
Discharge Pipe	5/24/46	6/20/46	240
Motors and Switchgear	None yet	Award to be made early in F.Y. 1947	
Relift Pumps	5/31/46	None yet	180

It is expected that awards will be made on all of these items in the near future.

11. Lateral System - First bid invitations on sections of the West, East Low and Mail canal lateral systems should be issued in the first part of 1947. Some work will be performed on these lateral systems in fiscal year 1947.

12. Ephrata Buildings - An office building, garage, warehouse and concrete laboratory are to be constructed at Ephrata during the next fiscal year. One bid was received and opened June 25, 1946 on the garage building.

Multi-purpose Facilities

1. Dam Completion Items - Major items of work to be carried on in the next fiscal year are repairs to the spillway face and spillway bucket, tailrace stabilization, and the completion of permanent shops and warehouses.

2. Power Plant Completion Items - Major items of work to be performed during the next fiscal year are completion of the removal of generators loaned by Shasta Dam for use during the war, work in connection with installation of the seventh, eighth, and ninth generators in the left powerhouse, and work in the switchyard on the right side of the dam. The first of the units for the right powerhouse is to be installed beginning approximately July, 1948.

Satisfactory progress on the foregoing program will result in making available irrigation water for approximately 6,000 acres in the south Columbia Basin Irrigation District to be served by the Pasco Pumping Unit during the summer of 1947.

If you feel that any modification of the above program should be made, your request for a hearing should be made to me in writing within fifteen days for the receipt of this notice.

Very truly yours,

F. A. Banks,
Supervising Engineer.

Saint Paul, June 19, 1946

MR. H. E. STEVENS:

I note from the recent release of the Bureau of Reclamation at Coulee City that J. G. Shotwell of Albuquerque is the low bidder on the preparation of concrete aggregates at the Bureau's Odair deposit two miles northeast of Coulee City - this material to be used to supply the south dam and other structures scheduled for Coulee City area under the Columbia Basin Project construction program.

I assume that this is the deposit in which Mr. Derrig and I were trying to interest the Bureau engineers when we were discussing a railroad location between Odair and the dam.

It may be there will be train haul on the material from this pit for lining canals and building siphons south and west of the Bacon tunnel.

cc-Mr. J. L. Burnham

bb/s

8731

Saint Paul, June 6, 1946

MR. H. M. TREMAINE:

Your letter of May 25 transmitting clipping from the Spokesman-Review of May 23 commenting on the speech of Mr. Haw:

What you say is of course entirely correct. The main element to take into account in establishing an industry is the natural resources and the labor. Each type of industry of course has its own problem - for example in the production of aluminum power is the main element, and as a result aluminum reduction plants have been established where there is plenty of cheap power; rubber industries must consider the availability of labor as the main element and as a result nearly all the tire manufacturers are established around Akron; the production of drygoods is principally confined to the New England area on account of the plentiful and cheap labor. On the other hand when a new fabric industry was developed, i.e. rayon, where labor had to be instructed, where did they turn but to the south where labor is cheap and plentiful.

Personally I do not look for a great influx of industrial development at Grand Coulee except possibly some type where power itself is the prime element of cost.

bb/s

BERNARD BLUM

Saint Paul, June 6, 1946

MR. R. M. TREMAINE:

Your letter of May 25 transmitting clipping from the Spokesman-Review of May 23 commenting on the speech of Mr. Haw:

What you say is of course entirely correct. The main element to take into account in establishing an industry is the natural resources and the labor. Each type of industry of course has its own problem - for example in the production of aluminum power is the main element, and as a result aluminum reduction plants have been established where there is plenty of cheap power; rubber industries must consider the availability of labor as the main element and as a result nearly all the tire manufacturers are established around Akron; the production of drygoods is principally confined to the New England area on account of the plentiful and cheap labor. On the other hand when a new fabric industry was developed, i.e. rayon, where labor had to be instructed, where did they turn but to the south where labor is cheap and plentiful.

Personally I do not look for a great influx of industrial development at Grand Coulee except possibly some type where power itself is the prime element of cost.

bb/s

8731

Spokane, Washington
June 4, 1946

NOTED BY
R.W.C. ☒
F.A.W. ☒
G.W.M. ☒

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of May 31st telling of award to J. A. Terteling and Sons for lining of the canal, which will serve the Pasco division of the Columbia Basin Project, for which James has the contract to install the pumping plant.

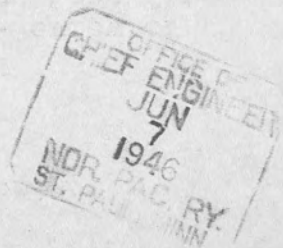
Burtinham
District Engineer

HMT:lc
Enc.

Mr R.W. Clark

*pls note BB
several hundred thousand dollars worth
for us the past 3 years*

*Terteling has done
6/9 Burtinham
Mr. to not done
noted LB*



8731

Spokane, Washington
June 4, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of May 31st telling of award to J. A. Terteling and Sons for lining of the canal, which will serve the Pasco division of the Columbia Basin Project, for which James has the contract to install the pumping plant.

(Signed) H. M. TREMAINE
District Engineer

HMT:lc
Enc.

Noted & RW Clark 6/9/46

TERTELING'S BID OF \$714,223 LOW

COULEE DAM, Wash., May 31.—J. A. Terteling & Sons, Boise, submitted a low bid of \$714,223 at Coulee Dam this morning for the construction of concrete and asphalt lined laterals for the 6000-acre Pasco division of the Columbia basin irrigation project.

The only other bid was \$730,121 submitted by Goodfellow Brothers, Inc., Wenatchee.

Roy B. Williams, acting supervising engineer for the Columbia basin project, said that if any other bids were received by mail, postmarked in advance of the opening hour, they would be considered.

The laterals will connect with a pumping plant discharge pipe, to be installed by separate contract for which bids were opened recently.

Water will be pumped 177 feet above the mean level of the Columbia river and will flow through nine and one-half miles of main laterals and several miles of connecting ditches.

Following the construction of the Potholes East canal from the Potholes reservoir and Moses lake, the pumping plant will be discontinued and water will be received from the Potholes canal.

290 Days for Job.

The contractor will have 290 days—nine and one-half months—in which to complete the canal system. Present plans call for delivery of water to the land in the summer of 1947.

The reclamation bureau has announced that it will experiment with three types of linings for the canal system. The first three miles of the main Pasco lateral will be lined with concrete and the remainder with asphalt. Some stub laterals will be lined with mortar, blown into place from a hose, and others with asphalt.

8731

Saint Paul, Minnesota
June 4, 1946

Mr. Bernard Blum
Chief Engineer
Building

B

Your memo of June 2 to Mr. Stevens which made record of the award to the James Construction Company for the construction of a pumping plant and appurtenant works for the irrigation of 6,000 acres on the bench lying to the northeast of Pasco. In this connection you state:

"I assume that this must be an improvement of the old Franklin County Irrigation Project."

Actually there is no connection between this development and the Franklin County District, except that it will be in part contiguous and in other parts adjacent thereto. This project is the first Columbia Basin Project unit to be constructed in the South district of the project. Three original units have been selected for construction - one in each of the three districts.

The Franklin County Irrigation District which was in such grave financial difficulty 12 or 15 years ago is now not only solvent but is entirely out of debt. Neither warrants nor bonds encumber the district at present. The district has successfully secured its exclusion from the Columbia Basin Project and will stand on its own - pumping as it does now directly out of the Columbia River.

We are fortunate in having the first unit of the Columbia Basin project come under water in our territory. The first units in the West and East districts cannot possibly come under irrigation before about 1950. They will get their water from Lake Roosevelt behind Grand Coulee Dam.

cc- Mr. R. W. Clark
Mr. H. E. Stevens

J. M. Law.

OFFICE OF
CHIEF ENGINEER
JUN 5 1946
NOR. P. C. RY.
S. F. P. U. MINN.

8731

Saint Paul, June 3, 1946

MR. H. E. STEVENS:

The Spokesman-Review of May 27 had an article that the low bid for the six-mile section of the west canal of the Columbia Basin Irrigation Project was given by the Utah Construction Company and Winston Bros. Co.

Five bids were submitted.

The work included 22370 feet of lined canal and 6685 feet of unlined; also two siphons across dry coulees, one 4520 feet long and the other 1175 feet long.

The low bid is \$2,871,796.

cc-Mr. J. W. Haw

bb/s

8731

Saint Paul, June 2, 1946

MR. H. E. STEVENS:

The Spokesman-Review of May 25th carried an article that the James Construction Company of Seattle submitted the low bid of \$188,547 for the completion of pumping plant and adjacent works for the irrigation of 6000 acres in the COLUMBIA BASIN PROJECT next year.

This was the low bid of two proposals made.

The article states that the installation is to be made on the shore of the Columbia River about 13 miles northwest of Pasco; and the project will provide water for 6000 acres on a low bench ranging to the southeast for a distance of about seven miles.

I assume that this must be an improvement of the old Franklin County Irrigation Project.

cc-Mr. R. W. Clark
Mr. J. W. Haw

bb/s

Spokane, Washington
May 28, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of
May 27th, telling of the low bid by the Utah Construction Co.
and Winston Bros. Company for a six mile section of the west
canal of the Columbia Basin Irrigation Project.

W. H. H. H. H.
District Engineer

HMT:lc
Enc.

OFFICE OF
CHIEF ENGINEER
MAY 13 1946
MCR PAC RY
ST. PAUL, MINN.

RECEIVED
MAY 22 1946

Mr. Bernard Wiers:

Enclosed clipping from the St. Paul Pioneer-Press of May 17, 1946, showing of the low bid by the Columbia Basin Irrigation Co. and Winston Bros. Company for a six mile section of the West
canal of the Columbia Basin Irrigation Project.

Respectfully,
District Engineer

W. W. Wiers
Mr. Wiers

Spokane, Washington
May 28, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of
May 27th, telling of the low bid by the Utah Construction Co.
and Winston Bros. Company for a six mile section of the west
canal of the Columbia Basin Irrigation Project.

(Signed) H. M. TERRELLANE

District Engineer

HMT:lc
Enc.

5/27/46

TWO FIRMS BID LOW ON COULEE CANAL PROJECT

A low bid of \$2,871,796.50 for construction of about six miles of the west canal of the Columbia basin irrigation project was submitted this morning at Coulee dam by the Utah Construction company of San Francisco and Winston Brothers of Los Angeles.

Each of five bidders submitted separate sets of figures on two divisions of the work to be done under the contract. The first was for construction of 22,370 feet of lined canal and 6685 feet of unlined canal. The second was for two siphons across branches of Dry coulee, one 4520 feet long and the other 1175 feet long.

The construction will be from the junction of the East Low and West canals, north of Adrian, to the east shore of Soap lake.

Bidders Listed.

Bidders and the amounts asked:
Utah & Winston—Schedule 1, \$1,662,802.50; schedule 2, \$1,208,994; total, \$2,871,796.50.

J. A. Terteling & Sons, San Francisco—Schedule 1, \$1,404,030; schedule 2, \$1,505,545; total, \$2,909,575.

Morrison & Knudsen, Seattle—Schedule 1, \$2,119,960; schedule 2, \$1,957,825.

W. C. Kier Construction company, Los Angeles; Guy F. Atkinson, South San Francisco; Bressi & Bevanda Constructors, Inc., Los Angeles, and David G. Gordon, Denver—Schedule 1, \$1,743,802.50; schedule 2, \$1,320,640.

N. Fiorito company, Seattle—Schedule 1, \$1,810,970.

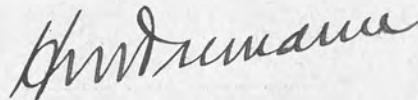
The canal to be constructed under the contract will run close to the Spokane-Ephrata state highway for nearly four miles westerly from the end of a 6½-mile section of the main canal, now being constructed by Morrison & Knudsen. It will then follow the rim of a plateau to the edge of the bluff about a half-mile north of the town of Soap Lake and just above the shore of Soap lake.

Spokane, Washington
May 27, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of May 25th telling that the James Construction Company are low bidders for a pumping plant building and works for the irrigation of 6,000 acres of the Columbia Basin Project next year.

You will note this plant is to be located about 13 miles northwest of Pasco and this is one of the first units to receive water. I understand that probably in the long range view this pumping plant may be abandoned when the gravity line is placed in operation.



District Engineer

HMT:lc
Enc.

NOV 1943
MAY 1943
CHIEF OF
ENGINEERING
OFFICE OF
THE
NAVY
DEPARTMENT
WASHINGTON, D.C.

Brooklyn, Washington
May 27, 1943

Mr. Bernard Blue:

Herewith clipping from the Spokane-Review of May 25th telling that the James Construction Company are low bidders for a pumping plant building and works for the irrigation of 3,000 acres of the Columbia Basin project next year.

You will note this plant is to be located about 13 miles northwest of Pasco and this is one of the first units to receive water. I understand that probably in the long range view this pumping plant may be abandoned when the gravity line is placed in operation.

District Engineer

RMH:lc
Enc.

Spokane, Washington
May 27, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokesman-Review of May 25th telling that the James Construction Company are low bidders for a pumping plant building and works for the irrigation of 6,000 acres of the Columbia Basin Project next year.

You will note this plant is to be located about 13 miles northwest of Pasco and this is one of the first units to receive water. I understand that probably in the long range view this pumping plant may be abandoned when the gravity line is placed in operation.

(Signed) H. M. TREMAINE
District Engineer

HMT:lc
Enc.

PUMPING PLANT LURES TWO BIDS

Seattle Firm Low on Coulee
Dam Construction.

COULEE DAM, Wash., May 24.
—The James Construction company, Seattle, submitted a low bid of \$188,547.68 at Coulee Dam this morning for the construction of a pumping plant building and adjacent works for the irrigation of 6000 acres of the Columbia basin project next year.

The only other bid received was from the Morrison-Knudsen company, Seattle, whose offer was \$306,244.15.

Roy B. Williams, assistant supervising engineer for the Columbia basin project, said other bids may have been delayed by the railroad strike. He said that if other bids, carrying postmarks indicating they would have been delivered in time under normal circumstances, are received, they will be considered.

Bids on Other Jobs.

Low bids, opened at Denver for other items of the Columbia basin project, were announced today at Coulee dam.

Western Machinery company, Spokane, submitted a low bid of \$18,601 for equipment for unloading, storing and batching cement at Odair siding, near Coulee City.

Anthony M. Myerstein, Long Island, N. Y., submitted a low bid of \$152,568 for "flow coaster gates" to be installed in the pumping plant at Grand Coulee dam.

The Pasco pumping plant will be located on the shore of the Columbia river about 13 miles northwest of Pasco.

It is scheduled to be in service in time to provide irrigation water for about 6000 acres of more or less flat land on a low bench ranging to the southeast for a distance of about seven miles.

Bids involve the construction of inlet works, a pump house and a discharge pipe, five feet in diameter, that will carry water about 1700 feet up a slope to the start of the main irrigation system lateral.

PERSONAL

Spokane, Washington
May 25, 1946

Mr. Bernard Blum:

Herewith a clipping from the Spokesman-Review of May 23rd, an editorial on a speech by Mr. Haw in which he voiced the thought that has been so prevalent to all of us who have given the matter careful analysis, that the cheap power was not the chief attraction for new industries in this region. Too much of this wrong way of thinking has been emphasized. It is quite obvious to most of us that this is the kind of thinking which leads to the Kaiser effort at Trentwood Aluminum Plant, which must, by all analytical signs, be doomed to failure unless subsidized.

I though you might like to have this view of Mr. Haw as I believe he is probably the best qualified man to express an opinion on this subject.

[Handwritten Signature]
District Engineer

HMT:lc
Enc.

There's a Future in Our Land

Spokane and the Inland Empire got a word of encouragement and a word of caution on Tuesday with the visit of two authorities interested in the development of the area.

In looking over the Grand Coulee dam and the prospects for reclamation of the Columbia basin, R. L. Cochran of the federal bureau of the budget voiced the belief that with the investment already made in the dam, the project deserves a high priority. This may mean that when the budget bureau next takes up the estimates for further construction work on the irrigation project, advocates of the basin may receive sympathetic consideration in their requests for substantial funds to finish the job.

While final decision on appropriations rests upon the house and the senate, the studies made by the bureau of the budget are prime factors in what the President will recommend for the project in future years. Local citizens are pleased with that bureau's willingness to get its facts at first hand.

The word of caution to local boosters who believe that this area is in for a vast industrial expansion was voiced by John W. Haw, agricultural development director of the Northern Pacific railroad. Mr. Haw says that cheap power will not be the chief attraction for new industries in this region, since labor costs and skilled labor supply are now the leading factors that influence the establishment of new industries in an area.

Mr. Haw believes that the economic mainstay of the region is in the land—another reason why development of the Columbia basin project will mean so much to the Inland Empire.

In any event, the immediate and the distant future look bright for the Inland Empire. The hard work and abiding faith in the area on the part of its civic leaders for the last 25 years are beginning to pay off for the new post-war generation. There is every reason to believe that these forward looking community efforts will continue, to the benefit of all citizens of the area.

B. B. B. B. B.
This is the
work list or
shortly the
list. H. S. R.

J. M.

B.

OFFICE OF
CHIEF ENGINEER
JUN 6
1946
NOR. PAC.
ST. PAUL, MINN.

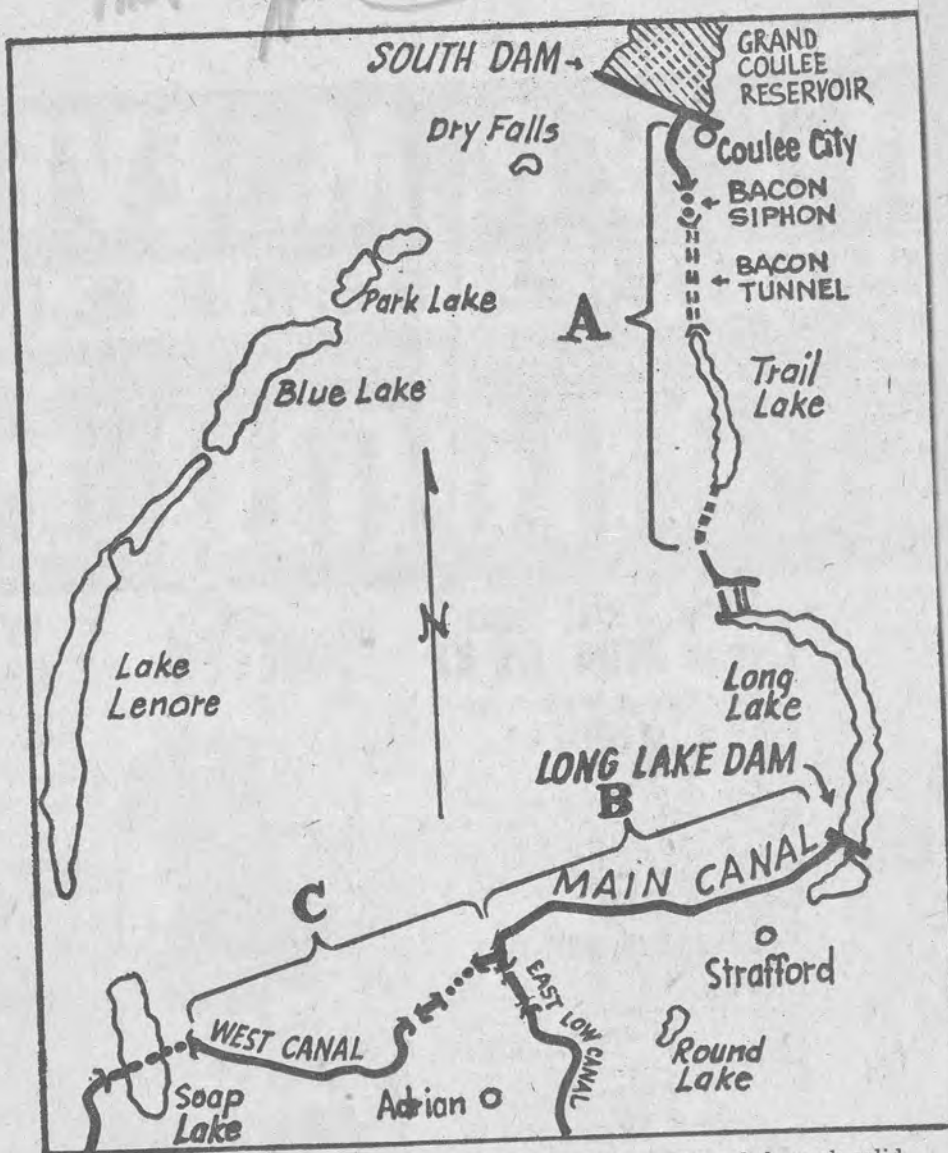
What's Happening on the Columbia Basin Project

The engineers and construction men are taking over. The dreamers and promoters are retiring.

This week the bureau of reclamation will open bids for the building of two great phases of the vast engineering works required to put water on the irrigable dry lands of the upper basin.

This map shows in simplified form the area where construction work will first start and the types of jobs for which numerous contractors have been bidding. The proposed South dam (at the top of the map) lies approximately 27 miles southwest of Grand Coulee dam, where the Columbia's waters will be pumped into the Grand Coulee to make a reservoir. Two Spokane firms, Roy L. Bair & Co. and James Crick & Sons, offered the low bid of \$2,771,887.50 for the South dam construction last Friday.

These barren areas will soon see thousands of men at work on the mammoth earth-moving jobs. But it will take years before water gets to the land and irrigation farmers cultivate their crops.



AREA A includes work on the two-mile-long Bacon tunnel through solid rock, the Bacon siphon across a coulee leading to the tunnel, and the main canal from a point near the South dam to a natural channel leading to Long lake. Contractors' bids on these jobs will be opened at Coulee dam at 10 a. m. Tuesday. ● **Area C** includes work on the west canal from a division point north of Adrian to Soap Lake, six and a half miles west. This will be a ditch 108 feet wide. Bids on this job will be opened at 10 a. m. Wednesday. ● The contract for excavating for the main canal (area B) has been let to the Morrison-Knudsen company of Seattle.

8731

St. Paul, Minn., May 25, 1946.

Mr. H. E. Stevens:

Your notation and returning your letter to Mr. daPonte and draft of letter to Mr. Banks to cover the matter of return of rail and fastenings loaned to the Reclamation Service for construction of the Grand Coulee Dam and Power Plant.

I think your letter to Mr. daPonte covers the situation, but I think that the supplementary paragraph to modify paragraph 20 of the contract of November 19, 1934, is a little too broad. I have in mind that after they construct the two impounding reservoirs, install the additional generating units and the pumps necessary to begin pumping and complete such construction activities as might be served by the government railroad, some situation might arise wherein they defer pumping water into the equalizing reservoir so that the irrigation project might lie dormant for a year or more with no necessity for the government railroad remaining in place.

Accordingly I would suggest the following:-

"The U.S. shall return to the Company without cost, f.o.b. cars at Odair, Washington, all rail, fastenings and other track material furnished to the U. S. by the Company in as good condition as when furnished to the U. S., ordinary wear and tear excepted, at such time as the impounding reservoirs have been constructed and facilities installed to provide water for Columbia Basin Irrigation Project".

BB/gtg
enc.

8731

Spokane, Washington
May 21, 1946

Mr. Bernard Blum:

Yours of May 18th about new projects for the Columbia Basin Irrigation District.

I have not seen anything on the letting of the contract for the North or Upper Dam of the impounding reservoir for this project. I cannot say just what these plans are, but I am going out there in an endeavor to get some good dope for you on these projects as quickly as I can.

Hendriks

District Engineer

HMT:lc

B



Washington, D.C.
May 21, 1946

Mr. Bernard Silver:

Yours of May 18th about new projects for the Columbia
Basin Irrigation District.

I have not seen anything on the letting of the contract
for the North or Upper Dam of the impending reservoir for this
project. I cannot say just what these plans are, but I am
going out there in an endeavor to get some good dope for you
on these projects as quickly as I can.

Respectfully,
District Engineer

WHT:10

Spokane, Washington
May 21, 1946

Mr. Bernard Blum:

Yours of May 18th about new projects for the Columbia Basin Irrigation District.

I have not seen anything on the letting of the contract for the North or Upper Dam of the impounding reservoir for this project. I cannot say just what these plans are, but I am going out there in an endeavor to get some good dope for you on these projects as quickly as I can.

(Signed) H. M. TEEMAN
District Engineer

HMT:lc

8731

Saint Paul, May 18, 1946

MR. H. M. TREMAINE:

Your letters of the 14th and 15th, transmitting clippings concerning new projects for the COLUMBIA BASIN irrigation district:

I do not recall having seen anything on the letting of contract for the north or upper dam at Grand Coulee Reservoir. Do they not figure on building that at this time?

You state that you are puzzled as to the statement that work is to be done on MP branches: the only thing I have had as yet is the reconstruction in permanent form of one of our bridges, between Odair and Bacon. We recently passed upon and approved their design for the steel and concrete bridge over their main canal. As I recall it was bridge 114.

bb/s

-BB

Do you think this
will take care
of it

W
5/24

ST. PAUL, MINN.
FOR PAC. RY.
1946
MAY 25
CHIEF
OFFICE OF
ENGINEERING

Train 4, Yellowstone division,
May 16, 1946

MR. H. E. STEVENS:

Your letter of the 14th about track metal which we own in the government railroad from Odair to Grand Coulee dam and which according to the contract of Nov. 20, 1934, is to be returned to the Northern Pacific on completion of the dam power plant:

While our agreement with the Government was related to the completion of the low dam under their contract with the MNAC Co. I think that we all had in mind that we would be perfectly willing to leave the track in place to permit its use in constructing the high dam and in addition the two impounding dams which are now to be constructed across the Dry Coulee. I think that is now somewhat of a moot question, as they are proceeding with the construction of the impounding dams which will force the removal of the railroad prior to the time they start pumping.

I assume that it will take at least two or three years to advance the irrigation project to a point where pumping will start. As a practical matter, viewed from both sides, I would say that the track should not be removed until just prior to the time they start their big pumps to fill up the reservoir. Accordingly, I would suggest a letter to Mr. Banks, ^{or to the} Chief Engineer of the Reclamation Bureau, to provide that on completion of the two impounding dams and the canal system to a point when water ^{is} delivered to the first irrigation unit of the Columbia Basin Project the Reclamation Service agree to deliver to us, on board cars at Odair, all the track metal in their possession which belongs to the Railway Company.

bb/s

Spokane, Washington
May 15, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokane Chronicle of May 14th giving statement as to the low bidders on three projects of the Columbia Basin.

I am a little bit puzzled by the statement that work is to be done on the Northern Pacific Branch Line as we have seen nothing on this requirement and do not know what is contemplated.


District Engineer

HMT:lc
Enc.

Spokane, Washington
May 12, 1948

Mr. Bernard Blum:

Herewith clipping from the Spokane Chronicle of
May 11th giving statement as to the low bid on the
project of the Columbia Basin.

I am a little bit puzzled by the statement that work
is to be done on the Northern Pacific Branch line as we have
seen nothing on this requirement and do not know what is
contemplated.

Respectfully,
District Engineer

W. B. L.
SMB

RECEIVED
MAY 19 1948
U.S. MAIL
BY AIR MAIL

Spokane, Washington
May 15, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokane Chronicle of May 14th giving statement as to the low bidders on three projects of the Columbia Basin.

I am a little bit puzzled by the statement that work is to be done on the Northern Pacific Branch Line as we have seen nothing on this requirement and do not know what is contemplated.

(Signed) E. M. TREMANNE
District Engineer

HMT:lc
Enc.

Chronicle May 14, 1946.

Nine Bid on Columbia Basin Project

Nine firms and combinations of contractors submitted bids at Coulee Dam this morning for construction of Columbia basin irrigation canal, a siphon, tunnel and open channel work from near Coulee City to Long lake. Actual bidding was on a basis of three separate contracts, called schedules 1, 2 and 3.

The schedules, explained in detail below, include: Schedule 1, canal construction through rock southwest of Coulee City; schedule 2, Bacon siphon and tunnel; schedule 3, work south of the tunnel. Low bids received for each of the three schedules were:

Schedule 1—J. A. Tourteling & Sons, Boise, \$971,990.

Schedule 2—C. E. Connaly, Inc., San Francisco, \$3,537,820.

Schedule 3—Tourteling, \$576,000.

The second set of low bids included: Schedule 1—N. Fiorito, Seattle, \$1,331,275; schedule 2—General Construction company, Seattle, and four other firms, \$4,088,744.30; schedule 3—Goodfellow Brothers, Inc., Wenatchee, \$579,660.

The third set of next low bids: Schedule 1—Guy F. Atkinson, San Francisco, \$1,588,700; schedule 2—Tourteling, \$4,646,020; schedule 3—Fiorito, \$819,560.

Bids submitted by each firm on each of the schedules were reported as follows:

Tourteling—\$971,990; \$4,646,020; \$576,070.

James Construction company, Seattle—\$916,755 on schedule 3.

Henry J. Kaiser, Inc.; Kaiser Company, Inc., and Walsh Construction company, \$3,299,135; \$3,454,209; \$2,111,520.

Goodfellow Brothers — \$579,660 on schedule 3.

Fiorito—\$1,331,275 on schedule 1; \$892,560 on schedule 3.

General Construction company, Shea & Co., Utah Construction company, Winston Brothers and Morrison-Knudsen — \$1,702,678.50; \$4,086,744.30; \$973,290.

F. S. Magoffin company and F. S. Magoffin—\$5,292,350 on schedule 2.

Guy F. Atkinson company, David G. Gordon, W. C. Kier Construction company, Dressi & Bandanda Construction company — \$1,588,700; \$4,873,815; \$952,030.

(Continued from page one.)

C. E. Donnaly, Inc.—\$3,537,820 on schedule 2.

Three separate "schedules of work" were estimated separately by contractors in submitting bids today. Involved is all canal construction necessary from a point a half mile south of South dam near Coulee City, to Long Lake dam, near Stratford.

Schedule 1 is for an irrigation canal from southwest of Coulee City to the north rim of Bacon coulee.

Schedule 2 is for Bacon coulee siphon and tunnel.

Schedule 3 is for all work southerly from Bacon coulee tunnel to Long lake.

The first 3500 feet of schedule 1 will be a trench about 50 feet deep and 50 feet wide at the base across a basal bench. This section of canal will not be lined.

The next 3000 feet or more involves a shallower and wider rock cut with some fills. The canal will be lined with concrete in this area.

Bacon siphon will be a reinforced concrete pipe, 23.3 feet in diameter and a thousand feet long, that will carry water down the north rim of Bacon coulee, across the floor and part way up the south slope.

Two-Mile Tunnel.

Bacon tunnel, 23 feet in diameter, will extend for nearly two miles through a rock bluff from the south end of the siphon to a usually dry valley known as Trail lake.

A short section of canal will be opened from the mouth of the tunnel toward Trail lake. The latter will serve as a natural channel for nearly three miles. Water will then flow through more than two miles of a natural channel, which will be improved, to a cliff above Long lake, where it will drop 165 feet.

Sections of a county road and a Northern Pacific branch line will be replaced and two bridges constructed.

Postponement to May 27 of the opening of bids for a 6½-mile section of the West canal, easterly from Soap lake, has been announced by the reclamation bureau. The postponement was caused by a change in wage scales.

Spokane, Washington
May 14, 1946

Mr. Bernard Blum:

Herewith a newspaper set up of the work now being contracted and advertised for the Columbia Basin Irrigation District.

Section B has already been awarded to Morrison-Knudsen of which I have advised you.

The low bidder on the South Dam is a Spokane firm composed of Roy Bair and James Crick. Award has not yet been made. I have given you previous advice on this.

Bids for Section A were advertised to be opened today but have been postponed a few days for the adjustment of certain wage schedules.

I will, as soon as possible, get some adequate maps of this situation and give you for your file.


District Engineer

HMT:lc
Encs.

Enc.
HMT:lc

District Engineer

of this attention and give you for your file.
I will, as soon as possible, get some adequate maps

of certain water schedules.
today but have been postponed a few days for the adjustment
Bids for Section A were advertised to be opened

made. I have given you previous advice on this.
composed of Roy Bair and James Grick. Award has not yet been
The low bidder on the South Dam is a Spokane firm

Knudsen of which I have advised you.
Section B has already been awarded to Morrison-

District.

contracted and advertised for the Columbia Basin Irrigation
Herewith a newspaper set up of the work now being

W. Bernard Blum:

Spokane, Washington
May 14, 1946



Spokane, Washington
May 14, 1946

Mr. Bernard Blum:

Herewith a newspaper set up of the work now being contracted and advertised for the Columbia Basin Irrigation District.

Section B has already been awarded to Morrison-Knudsen of which I have advised you.

The low bidder on the South Dam is a Spokane firm composed of Roy Bair and James Crick. Award has not yet been made. I have given you previous advice on this.

Bids for Section A were advertised to be opened today but have been postponed a few days for the adjustment of certain wage schedules.

I will, as soon as possible, get some adequate maps of this situation and give you for your file.

(Signed) H. M. TREMAINE

District Engineer

HMT:lc
Enc.

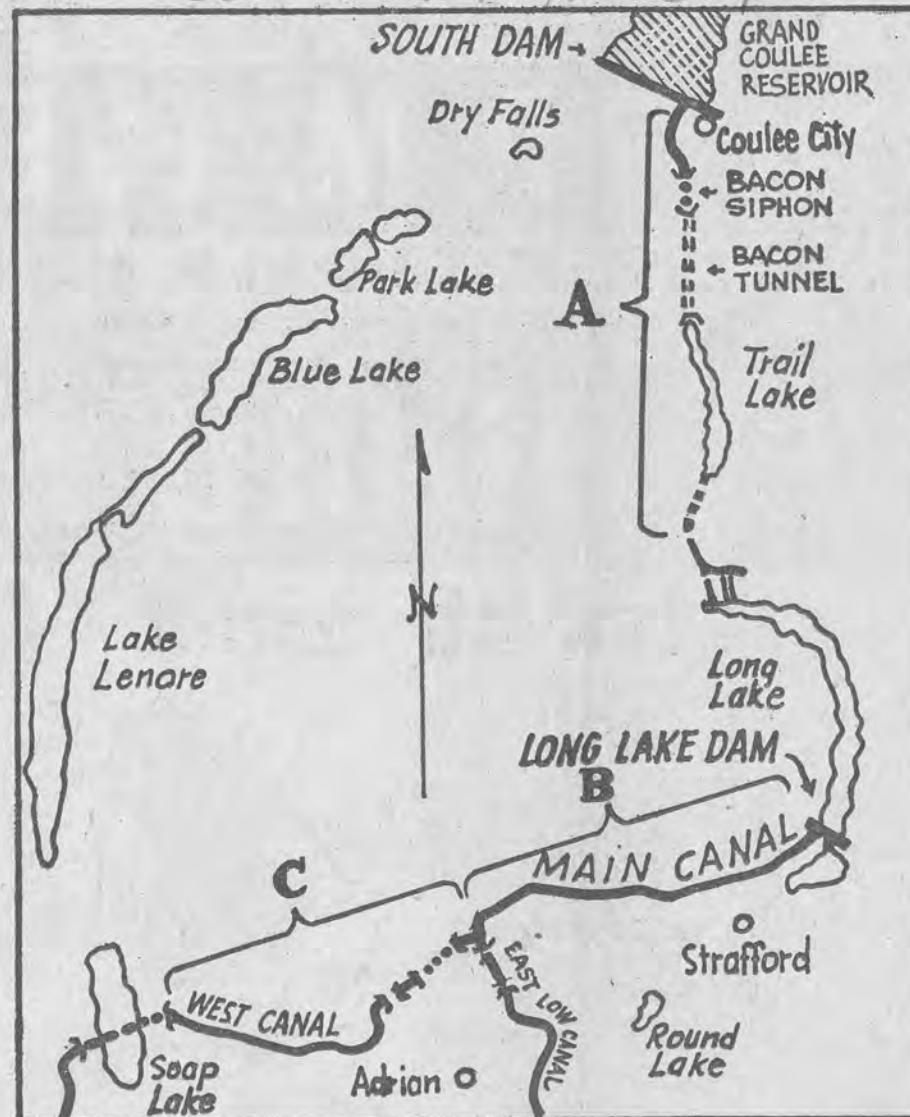
What's Happening on the Columbia Basin Project

The engineers and construction men are taking over. The dreamers and promoters are retiring.

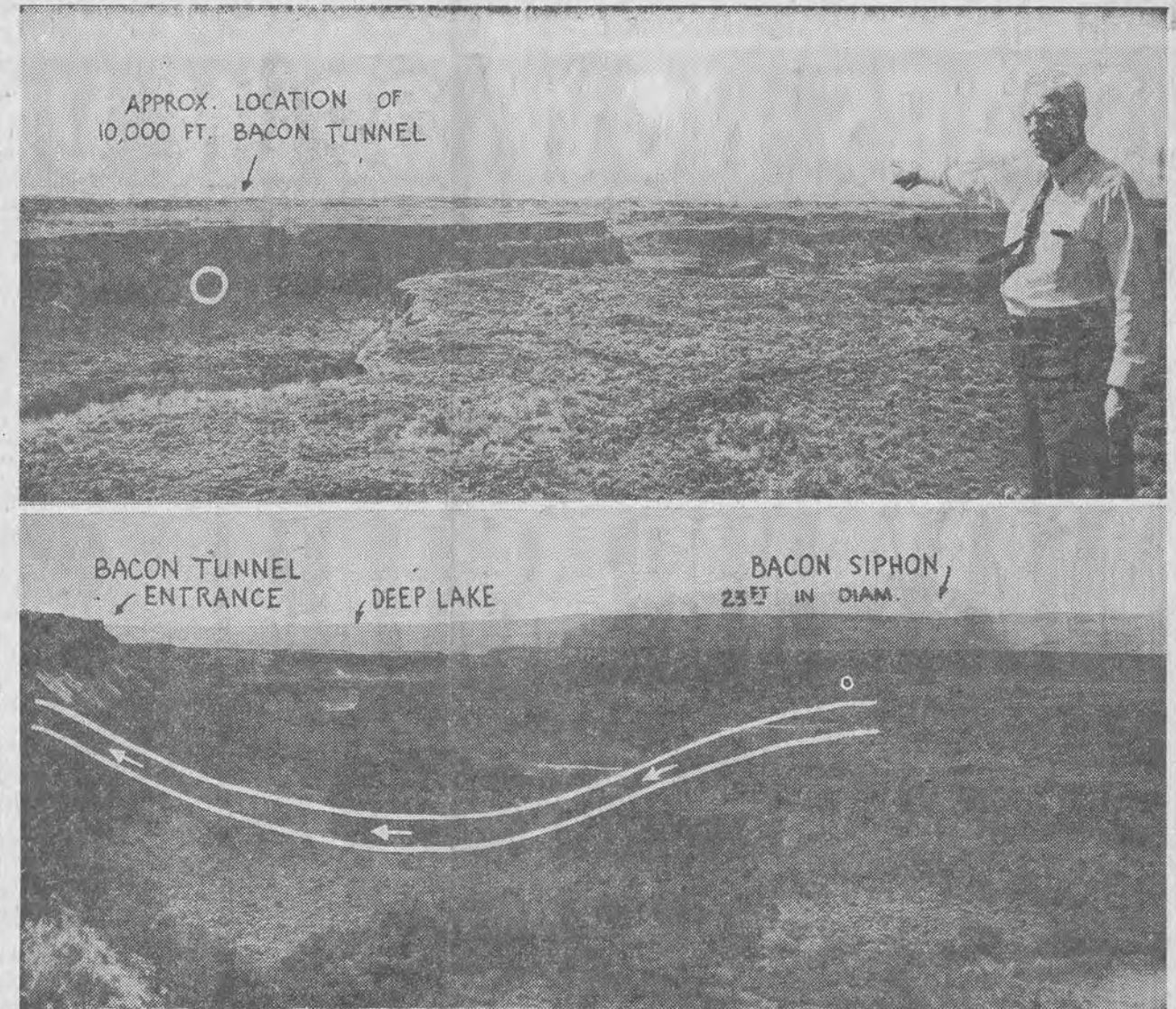
This week the bureau of reclamation will open bids for the building of two great phases of the vast engineering works required to put water on the irrigable dry lands of the upper basin.

This map shows in simplified form the area where construction work will first start and the types of jobs for which numerous contractors have been bidding. The proposed South dam (at the top of the map) lies approximately 27 miles southwest of Grand Coulee dam, where the Columbia's waters will be pumped into the Grand Coulee to make a reservoir. Two Spokane firms, Roy L. Bair & Co. and James Crick & Sons, offered the low bid of \$2,771,887.50 for the South dam construction last Friday.

These barren areas will soon see thousands of men at work on the mammoth earth-moving jobs. But it will take years before water gets to the land and irrigation farmers cultivate their crops.



AREA A includes work on the two-mile-long Bacon tunnel through solid rock, the Bacon siphon across a coulee leading to the tunnel, and the main canal from a point near the South dam to a natural channel leading to Long lake. Contractors' bids on these jobs will be opened at Coulee dam at 10 a. m. Tuesday. ● Area C includes work on the west canal from a division point north of Adrian to Soap Lake, six and a half miles west. This will be a ditch 108 feet wide. Bids on this job will be opened at 10 a. m. Wednesday. ● The contract for excavating for the main canal (area B) has been let to the Morrison-Knudsen company of Seattle.



ABOVE—Roger W. Robertson, bureau of reclamation resident engineer in charge of the construction indicated in area A, points toward the cliff a short distance from Coulee City, through which a tunnel 23 feet in diameter will be built. When completed, about three years from now, this tunnel will carry the waters of the Columbia southward toward Trail lake and Long lake. The tunnel will be concrete lined.

BELOW—This photo shows how the 1000-foot Bacon siphon will cross a coulee south of the town of Coulee City, to carry the Columbia river water from the main canal into the Bacon tunnel. The siphon will also be 23 feet in diameter—big enough to hold a large railroad locomotive, with room to spare. Bids will be opened at Coulee City Tuesday morning. (Photos by bureau of reclamation.)

St. Paul, Minn., May 14, 1946

Mr. Bernard Blum:

Your letter of the 2nd about status of the rail and track material furnished the Government for the construction of the Government Railway from Odair to the head of Grand Coulee:

I had no thought of seeking the return of the rail at this time but I do think we should have a more definite understanding than the statement in my letter to Mr. Walter of March 28, 1934 or Paragraph 20 of the contract of November 20, 1934. The completion and the filling of the equalizer reservoir will, of course, force the Government to pick up the railroad, or at least a greater part of it, but the date of the completion of the equalizer reservoir is uncertain and we have no assurance that the rail will be returned to the Northern Pacific even after the Government dismantles the railroad, this for the reason that the Government are apparently contending that the title of the contract, "Grand Coulee Dam and Power Plant, Columbia Basin Project" put the Railway on notice that the terms are applicable to the project as a whole, despite the fact that it was never intended to cover anything but the Low Dam construction contract M.W.A.K. Company.

What I have in mind is an exchange of letters with Mr. Banks or the Chief Engineer of the Reclamation Bureau which will definitely clear up the present uncertainty as to the status of the Northern Pacific track material used in the Government railway and I would appreciate your suggestion as to the items to be covered in such a letter.



CHIEF OF ENGINEERING
1946
S. PAUL, MINN.
FOR PAC. R.R.

8731

Spokane, Washington
May 11, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokane Chronicle of May 10th, telling of the opening of bids for the south dam of the impounding reservoir immediately above Coulee City as a part of the Columbia Basin Irrigation System.

I am rather surprised to see only six firms bid on this job.

HMT:lc
Enc.

~~Mr. Stevens~~ *Hindman*
District Engineer
noted
Mr. Clark *RMZ* *10517*

To note
B.B.
5/16

ST. PAUL, MINN. MAY 19 1944
MAY 19 1944
CHIEF OF POLICE

Spokane, Washington
May 11, 1944

Mr. Bernard Egan:

Herewith clipping from the Spokane Chronicle of
May 10, 1944, telling of the opening of bids for the south dam
at the impending reservoir immediately above Fort Shoshone
as a part of the Columbia Basin Irrigation Project.

I am further surprised to see only six bids
on this job.

Sincerely,
[Signature]

100-10
100-2

Spokane, Washington
May 11, 1946

Mr. Bernard Blum:

Herewith clipping from the Spokane Chronicle of May 10th, telling of the opening of bids for the south dam of the impounding reservoir immediately above Coulee City as a part of the Columbia Basin Irrigation System.

I am rather surprised to see only six firms bid on this job.

(Signed) E. M. TREMAINE
District Engineer

HMT:lc
Enc.

Spokane Firms' Bid Low on South Dam

Two Spokane firms—Roy L. Bair & Co. and James Crick & Sons—acting jointly, submitted the low bid at Coulee Dam this morning for construction of the south dam, near Coulee City, of the Columbia basin irrigation system.

The Bair-Crick bid for the 9880-foot dam and for excavation of the first half-mile of main canal south from the dam totaled \$2,771,887.50.

Six bids were opened shortly after 10 a. m. today by Frank A. Banks, supervising engineer for the Columbia basin project.

First on Major Jobs.

The bids were the first to be opened for construction of major dams in the basin project, and there was an air of tense expectancy in the small crowd which gathered for the ceremonies.

All bids will be sent to the reclamation bureau office in Denver for checking and from there to the head office in Washington, D. C., where the winning bid will be decided upon by the secretary of the interior.

Other Bids Listed.

Other bidders and their bids:

N. Florito company, Seattle, \$2,781,152.50.

J. A. Terteling & Sons, Inc., Boise, \$2,819,100.

Winston Brothers company, Los Angeles, and Utah Construction company, San Francisco, \$3,185,000.

Guy F. Atkinson company, San Francisco; David G. Gordon, Denver; W. E. Kier Construction company, Los Angeles, and Bressi & Bervanda Constructors, Inc., Los Angeles, \$3,333,000.

Morrison-Knudsen company, Seattle, \$3,773,545.

The Terteling bid contained a stipulation that it was based upon the government making an award of the contract within 20 days.

The Morrison-Knudsen company, the high bidder, was awarded a contract last week for construction of about six miles of main canal westerly from the Long lake dam site, north of Stratford.

Maximum Height 63 Feet.

South dam will extend in a westerly direction across the Grand coulee from Coulee City. The axis of the dam is just 60 feet north of a power line that parallels the state highway across the coulee.

It will be constructed of compacted earth and rock, and will have a maximum height of 63 feet. Together with the North dam, to be built just south of the city of Grand Coulee, it will form a 27-mile long balancing reservoir on the floor of the Grand coulee. The lake will contain 700,000 acre feet of usable storage.

The main irrigation canal will start in a southerly direction from a point about three blocks west of the Northern Pacific depot in Coulee City. The contract portion of the canal will be through solid rock and will not require concrete lining, according to reclamation bureau reports.

8731

*Mr. Yager**note B.B. 5/1*

St. Paul, Minn., May 4, 1946.

noted H.E. 5/1

Mr. F. R. Bartles:

It appears Mr. Yager interested himself in the possibility of it becoming necessary to set up a program for rehabilitation of the Connell Northern and in this connection obtained a copy of Roadmaster Zangar's letter to Mr. Colby of February 14, Mr. Ackerman's letter to Mr. Colby of February 19 and other correspondence with which you are no doubt familiar.

Mr. Yager's letter contains the following paragraph:

"The present prospects do not suggest any considerable movement over the Connell Branch from Connell north but rather from Adrian to Odair to handle construction material delivered to us by the Great Northern."

As you of course know, we have no joint rates in effect with the Great Northern via Adrian other than on cement originating at Concrete, Bellingham, Seattle and Grotto and do not intend to put in any. I wish you would make certain this is thoroughly understood by all our local operating people in order to insure no misinformation is given out or discussed.

In line with our verbal understanding, you were to keep in touch with Mr. Banks with respect to probable traffic requirements for the development of the Columbia Basin Irrigation Project as a whole to insure having ample time to set up whatever program is necessary for rehabilitation of either the Connell Northern or the Washington Central Branch, or both.

H. E. STEVENS¹

cc Mr. Bernard Blum

1918

12

Doc. 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 9

RECEIVED
MAY
6
1946

8731

Saint Paul, May 2, 1946

MR. H. E. STEVENS:

Your letter of the 30th about the rail and track material furnished the Government for construction of its railway from Odair to Coulee Dam:

The Government railroad from MP 5, from Odair, to the upper dam at MP 27 $\frac{1}{2}$ - which dam is now to be built to impound storage water in the Dry Coulee - would all be under water with a maximum level in the reservoir at elev. 1570. I would not care to give an estimate of the cost of relocating the railway to the extent necessary to avoid flooding as it would mean virtually reconstruction of the railroad from about MP 3 to Coulee Dam and a large part of the line would have to rest on the loose talus slope of lava rock that has fallen from the vertical side cliffs to the floor of the dry coulee.

I believe that in 1933 when this matter was under discussion some rough figures may have been furnished, but none of us had any experience with railroad construction on such material. In my opinion it would be a dangerous operation.

The matter was thoroughly discussed with the Reclamation officers and the Government decided that they would build the railroad on the floor of the dry coulee, with the full understanding that upon completion of the impounding dams and prior to the filling of the reservoir the track would be removed and the metal returned to the Northern Pacific.

It is my thought that we should not start negotiations with the Reclamation Service at this time, notwithstanding the fact that we are badly in need of such rail. I say this for the reason that this line may be of considerable importance in serving the construction activities on the two impounding dams, the Bacon tunnel, the lining material for their main canal, and the hauling in of new generators for the pumping load and the huge pumps themselves. It has been stated to me that each of these pumps which is to handle 6000 second-feet of water, will cost \$1,000,000. If the railroad were to be taken up before the additional generator machinery and pumps were installed it would require the Reclamation Service to devise trucks for hauling in this material by highway, and it is not inconceivable that this material might be hauled to the dam by barge on the lake, being brought there by the Great Northern to Marcus and then transferred by barge.

bb/s
2x

BERNARD BLUM

Saint Paul, May 2, 1946

MR. H. E. STEVENS:

Your letter of the 30th about the rail and track material furnished the Government for construction of its railway from Odair to Coulee Dam:

The Government railroad from MP 5, from Odair, to the upper dam at MP 27½ - which dam is now to be built to impound storage water in the Dry Coulee - would all be under water with a maximum level in the reservoir at elev. 1570. I would not care to give an estimate of the cost of relocating the railway to the extent necessary to avoid flooding as it would mean virtually reconstruction of the railroad from about MP 3 to Coulee Dam and a large part of the line would have to rest on the loose talus slope of lava rock that has fallen from the vertical side cliffs to the floor of the dry coulee.

I believe that in 1933 when this matter was under discussion some rough figures may have been furnished, but none of us had any experience with railroad construction on such material. In my opinion it would be a dangerous operation.

The matter was thoroughly discussed with the Reclamation officers and the Government decided that they would build the railroad on the floor of the dry coulee, with the full understanding that upon completion of the impounding dams and prior to the filling of the reservoir the track would be removed and the metal returned to the Northern Pacific.

It is my thought that we should not start negotiations with the Reclamation Service at this time, notwithstanding the fact that we are badly in need of such rail. I say this for the reason that this line may be of considerable importance in serving the construction activities on the two impounding dams, the Bacon tunnel, the lining material for their main canal, and the hauling in of new generators for the pumping load and the huge pumps themselves. It has been stated to me that each of these pumps which is to handle 6,000 second-feet of water, will cost \$1,000,000. If the railroad were to be taken up before the additional generator machinery and pumps were installed it would require the Reclamation Service to devise trucks for hauling in this material by highway, and it is not inconceivable that this material might be hauled to the dam by barge on the lake, being brought there by the Great Northern to Marcus and then transferred by barge.

bb/s
2x

St. Paul, Minn., April 30, 1946.

Mr. Bernard Blum:

Referring to your letter of April 19 advising the valuation of the rail and track material furnished the Government for the construction of their railway north of Odair amounts to \$161,363 at present OPA secondhand prices:

Attached is copy of Mr. daPonte's letter of April 23, my reply of April 26 and his letter of April 27 in which he advises he sees no objection to our undertaking to negotiate with the Government for a definite understanding as to the status of the track metal we furnished for the Government's Coulee Dam Railroad.

As you know, the Government propose to proceed with the construction of the equalizing reservoir in the Grand Coulee and I wish you would advise me what portions of the railroad, if any, would be flooded out by the filling of the equalizing reservoir.

Do we have anything to show the approximate cost of relocating the railway to the extent necessary to avoid flooding?

My letter to Mr. Walter dated March 28, 1934, was written on the assumption that the Government would return the rail and fittings to us on completion of the high dam, and certainly not later than on completion of the equalizing reservoir. This on the assumption that the power plant would be completed before the railway was flooded out.

In your further negotiations with the Reclamation Service in connection with completion of the November 19, 1934, contract did you have any more definite understanding as to final disposition of the rail and fittings?

A handwritten signature in dark ink, appearing to be "A. J. ...", is located at the bottom right of the page. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

PAUL M. J. RY
APR 30 1946
CHIEF OF ENGINEERING
OFFICE OF

C
O
P
Y

St. Paul, Minn., April 27, 1946.

Subject: (9343 Minn.)

Mr. H. E. Stevens:

I have your letter of the 26th. Countryman and I have considered whether there is any objection to initiating negotiations concerning the rail before the lawsuit has been decided. We are of the opinion that there is no reason why you should not at this time initiate negotiations concerning the rail.

You may be met with the contention by the Government that the said "High Dam" as used in paragraph 20 of the contract, includes the construction of the earthen dams at each end of Grand Coulee, and for that matter, the construction of the irrigation canals. In your letter of March 28, 1934, to Walter, it is described as "the High Dam project", which might give color to the Government's position that the High Dam "project" includes more than the words "High Dam" as used in the contract. Both the preliminary correspondence and contract contemplate two units, the Low Dam and the High Dam, and neither the correspondence nor the contract make any mention of the irrigation works to be constructed after the High Dam has been completed.

(Signed) L. B. daPonte
General Counsel

daP:b

~~2092~~

Saint Paul, April 30, 1946

MR. H. E. STEVENS:

In connection with the construction work now getting started on the development of the COLUMBIA BASIN PROJECT, I am attaching copy of Mr. Lager's letter of the 25th with copiss of letters from Messrs. Irving and Ackerman, and Mr. Ackerman's letter to Mr. Colby, and recommendation of Division Roadmaster Zanger to Mr. Colby, covering relays and ballasting on the line between Connell, Adrian, and Odair.

Since Mr. Irving's and Mr. Ackerman's letters were written the Reclamation Service has taken bids on some very heavy work contiguous to our line, such as the dams across the Dry Coulee for storing irrigation water and the Bacon 23' tunnel two miles long.

While it may be that during the present year not a great deal of construction material will move, most of the work being probably grading work, it will take some time to get our track in shape to handle heavy construction materials. Undoubtedly the Connell Northern will begin to develop traffic before construction activities cease, as undoubtedly the construction period will be of long duration and various units will be put in operation progressively so that more or less of a sustained business may be expected from this line.

bb/s

att.

x

St. Paul, Minn., April 26, 1946.

Mr. L. B. daPonte:

Your letter of the 23rd about rail and track material furnished the Reclamation Service for construction of a railway between Odair and Grand Coulee Dam in which you state:

"This condition was fulfilled and the high dam was constructed and completed."

The Reclamation Service may not agree with your statement. In any event, it is evident the Government will desire to operate the railway for several years to come for handling materials for completion of the power plant at the Dam, construction of the equalizing reservoir and other parts of the Columbia Basin Project.

We should have a definite understanding as to the status of the material we have furnished the Government for this railroad and, if you have no objection to undertaking to obtain such an understanding prior to final determination of the pending suit, I think we should immediately undertake negotiations to that end.

H. E. STEVENS

C
O
P
Y

St. Paul, Minn., April 23, 1946.

Subject: (9343 Minn.)

Mr. H. E. Stevens:

Thanks for your letter advising value of the rail for the Grand Coulee railroad still in possession of the Government.

Paragraph 20 of the contract of November 19, 1934, governs return of rail. It provides:

"Provided, that if, on completion of the dam and power plant, it appears probable that the United States will, within a few years thereafter, proceed with the work of increasing the height of said dam, the Company will not require return of the rail and fastenings until the said high dam has been completed."

This condition was fulfilled and the high dam was constructed and completed. The date of completion determined the date when the Northern Pacific was entitled to return of the rail by the Government, or at the Government's expense.

I think some decision should be reached concerning return of the rail; either that the rail be returned or some new arrangement be made for leaving it in place, if that be satisfactory. I am informed that the Government is proceeding with construction of dams at both ends of the Grand Coulee for irrigation systems, but I am not informed as to what extent the Government is using the railroad from Odair to the dam site, if at all.

(Signed) L. P. daPonte

General Counsel

daP:b

H.E.S.
At Spokane, Washington
April 25, 1946

Mr. Bernard Blum:

In discussing a number of matters with Messrs. Colby and Zanger today they brought up the issue related to transportation over a part of the Connell Branch, Adrian to Odair, related to the development of the Grand Coulee project for the irrigation portion of this large project. That is to say, the construction of a dam at the north and south ends of the Grand Coulee which is to form the main reservoir, and the construction of certain canals and other irrigation details.

I am attaching hereto, copy of Mr. Zanger's letter of February 14 to Mr. Colby outlining the desirable rehabilitation work on the line between Adrian and Odair in anticipation of hauling considerable construction material.

The present prospects do not suggest any considerable movement over the Connell Branch from Connell north but rather from Adrian to Odair to handle construction material delivered to us by the Great Northern.

We all would naturally be favorable to the recommendation for relaying the severe curvature with 90# rail as listed to the extent of 17,821 track feet. Unfortunately the status of our 90# rail is such as to make that impossible unless there is an unexpected improvement in the next twelve months. We can, however, quite likely make fairly prompt response in the way of providing tie plates, say 7" x 9", for all of the curves.

I am also attaching hereto, copy of Mr. F. L. Irving's report to Mr. Ackerman under date of February 23, and also copy of Mr. Ackerman's letter of February 19 to Mr. Colby. This traffic information is not sufficiently definite to warrant our making any plans. I am assuming that in due time Mr. Clark will communicate more reliable information on this subject.

Mr. Colby obtained for me from the Spokane Chamber of Commerce and the Northern Pacific Traffic Department some literature bearing on the Columbia Basis irrigation project based on the Grand Coulee dam. Included in these data is a map prepared by the Bureau of Reclamation dated Denver, Colo., June 10, 1943, showing the projected canal systems which quite clearly defines the areas to be irrigated. I believe we should place these on one of our maps so as to have a ready reference for future investigations as to traffic developments, branch line rehabilitation, etc. It is barely possible that Mr. Haw may have other data bearing on this subject.

LY:C

H. E. S.

OFFICE OF THE
CHIEF OF POLICE
APR 29 1960
RECEIVED

COPY

February 23rd, 1946
File J - Grand Coulee Dam.

Mr. L. M. Ackerman:

For your information, at Ephrata Thursday Messrs. Kopp, Stapleton and Edgell conferred with Mr. Parker, Bureau of Reclamation, and at the Dam with Messrs. R. B. Williams and T. Torkelson, re prospective tonnage to move for the work now starting in the Columbia Basin District, also procedure necessary if we desire to acquire additional strips of property at points along our Connell-Northern branch for future industrial development.

Excavation work is now underway in the Grand Coulee for the dams and water reservoir. Bids will be asked for March 12th for construction of the mile and a half dam just north of Coulee City, and for excavation of the long tunnel just south of Coulee City, the latter to carry the main channel through a high rocky formation. All materials will be furnished by the Bureau to the contractor at strategic points, such as Odair. At this point they expect to stockpile a lot of sand and gravel for the work around Coulee City, to be handled by the Government railroad from the Dam. The Dam at Coulee City will be of rock and dirt with a small concrete core. They do not expect we will be called upon to handle much material during 1946. Contractors, however, may have considerable construction machinery, etc., to move to the job which will be controlled by them.

As far as acquiring additional property for industrial purposes is concerned,- the opinion of the Bureau officials seems to be the best thing to do would be to anticipate just as soon as possible what property we will require and apply for it to be excluded from the irrigation project. This will, of course, be difficult for us to determine until such time as the State and Bureau definitely decide upon the location of the main and farm to market roads which has not yet been done.

F. L. Irving TFA

Copy DSC

NORTHERN PACIFIC RAILWAY COMPANY
Traffic Department

Spokane, Washington
February 19, 1946

File A 29-3

Mr. D. S. Colby
Spokane, Washington

Your letter of February 18 in regard to the prospective traffic over the Connell Northern branch in connection with the Columbia Basin Irrigation project.

I have some recent figures obtained from one of the cement companies which indicates that most of the cement to be used this year, amounting to approximately 350,000 barrels, will be used in the Grand Coulee and Coulee Dam area to construct a pumping plant and (earth) dam feeder canal at Grand Coulee and Coulee City main canal.

The only cement actually called for at the present time is 37,500 barrels for the Grand Coulee feeder canal.

Included in the first year's requirements, it is expected that a headquarters building will be erected at Ephrata, which is on the G.N. and a Pasco pumping plant and Pasco laterals. It is not likely that any of this business would move over the Connell Northern Branch.

Under date of October 27, 1945, Mr. Irving made a report to me on the amount of concrete work in the Columbia Basin that totals 4,292,524 cu. yds. Mr. Irving gave you a copy of his letter and no doubt you have this information on your file, but it is not likely that any of this work will be done this year, adjacent to the Connell Northern branch.

L. M. Ackerman

IMA:b

COPY

Spokane, Washington

Feb. 14, 1946

Condition branch lines

Mr. D. S. Colby:

The Columbia Basis irrigation project is going to be started in the near future, which means considerable traffic on our Adrian Branch between Odair and Adrian and over the Connell Northern between Connell and Adrian.

We have Extra Gang No. 3 on the Connell Northern between Connell and Adrian putting in ties and when renewals are completed this will have good ties, but this line is rough and needs spot surfacing, leveling up of track and lining over the entire 61 miles between Connell and Adrian and 12 miles between Bassett Junction and Schrag which will take a 35 man extra gang about $2\frac{1}{2}$ months. Also, the track bolts should be tightened over this branch.

"Our Adrian branch between Odair and Adrian is in poor shape. The 66# 3rd class rail laid at time this line was constructed is badly kinked and worn out and has no tie plates. Track is rough and has no ballast. At the time we were hauling material for the construction of the Coulee Dam we had derailments due to track conditions described above.

This line should be rehabilitated to take care of the traffic which is now anticipated and recommend as follows:

Relay curves 3° and over with 90# rail.

Curve 112	6°	1469	track	feet	
"	3°	2163	"	"	
" 118	4°	1262	"	"	
" 118A	3°	963	"	"	Over Bridge 118
"	Tangent	913	"	"	" " 118-1
" 118B	4°	1458	" _b	"	
"	Tangent	346	" _b	"	
" 119	6°	1358	"	"	
"	Tangent	419	"	"	
" 119A	4°30'	1257	"	"	
"	Tangent	291	"	"	
" 119B	6°	864	"	"	
"	Tangent	37	"	"	

Curve 119C	6°	1031	Track Feet	Over Bridge 119
"	Tangent	144	" "	
" 119D	4°	650	" "	
"	Tangent	36	" "	
" 120	6°	775	" "	Over Bridge 120
"	Tangent	19	" "	
" 120A	4°	506	" "	
"	Tangent	22	" "	
" 120B	6°	642	" "	
"	Tangent	55	" "	
" 120C	4°	1121	" "	
Total		17821	Track Feet	

Balance of curves should be plated out of face as follows:

Curve 109	2°	950'	length	1140 Pcs.
" 110	3°	2464	"	3040 pcs
" 111	3°	1067	"	1320 "
" 116	3°	2109	"	2680 "
" 116A	3°	1974	"	2420 "
" 120D	1°	719	"	987 "
" 121	2°	2050	"	2580 "
" 122	1°	1821	"	2370 "
" 123	2°	1740	"	2218 "
" 123A	3°	1407	"	1827 "
Total		16301'	"	20582 "

Also, track should be surfaced by applying about 1800 cubic yards pit run gravel to each mile for 19.38 miles for about 4" raise or total of 35,500 cubic yards. This pit run gravel can be loaded on the right of way between MP 101 and 102 between Hartline and Coulee City and part of it can be loaded between MP 123 and MP 124 near Adrian."

T. Zangar

Division Roadmaster

8731

Saint Paul, April 11, 1946

MR. J. T. DERRIG:

For your information I am attaching typewritten copy of release from the Bureau of Reclamation concerning activities at Coulee.

You will be interested in the start of the main reservoir

cc: Mr. Derrig

bb/s

att.

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

C.B.P. 150

COLUMBIA BASIN PROJECT
Ephrata, Wash.

EPHRATA, WASH., Friday, April 5, 1946.--The Bureau of Reclamation today called for bids on the 10,000-Foot South Grand Coulee Dam to block the abandoned ice-age bed of the Columbia River and create a 27-mile lake in the Grand Coulee to store water for the Columbia Basin Project Irrigation System, largest single development ever planned by the Federal Government.

Bid calls were issued by Chief Engineer Walker R. Young at Denver, who said that offers will be opened at Coulee Dam May 10.

An Earth-And-Rock Structure, the South Dam will extend nearly two miles across the lower reaches of the Grand Coulee near Coulee City, Grant County, and will require 1,500,000 cubic yards of material. It will have a maximum height of about 65 feet and will be approximately 450 feet wide at the base.

In Washington, D. C., Reclamation Commissioner Michael W. Straus commented that the call for bids on the first of four new dams to be built for the multi-million-dollar irrigation system is part of the Bureau's timetable to bring water to 400,000 acres of arid and semi-arid land in the Basin by 1950-51. Commissioner Straus said other dams on which bids will be called as quickly as possible are the North Dam in the Grand Coulee, the Long Lake Dam, and the Potholes Dam. The North Dam, at the northern end of the Coulee, is a companion structure to the South Dam.

Bert A. Hall, Construction Engineer at Coulee Dam, will direct the building of the South Dam and H. P. O'Donnell will be Resident Engineer in charge. Supervising Engineer Frank A. Banks said O'Donnell will establish Field Headquarters soon at Coulee City.

Reaching to bedrock, the heart of the South Dam will consist of compacted soil, sand, and gravel placed in 6-inch layers and rolled. On both sides of this core will be additional layers of mixed soil, sand, and gravel. The outer portion will be of similar composition and will have a rock riprap three feet thick on the reservoir side to prevent erosion by wave action.

Extending southeasterly from the Dam will be the Main Canal of the Irrigation System. The first 2,500 feet of this canal will occupy a channel which will be excavated in obtaining material used in construction of the dam.

Hall said the South Dam will block the Grand Coulee in a northwesterly-southeasterly direction with the southeasterly end extending to within $\frac{1}{4}$ mile of the heart of Coulee City. Several town lots have been acquired by the Bureau for the site.

A roadway will be constructed atop the Dam and might be used to carry Alternate U.S. Highway 10, a cross-state route to Spokane from Western Washington.

The 27-mile reservoir in the Grand Coulee will have a maximum depth of about 85 feet and will be from $2\frac{1}{2}$ to 3 miles wide in some places. The reservoir will be served by the world's largest pumps drawing water from Lake Roosevelt, behind Grand Coulee Dam. The North Grand Coulee Dam, on which bids are yet to be called, will be built across the Grand Coulee about two miles from Grand Coulee Dam.

8731

Mr. Hart
Have you seen this?
3/13/46

Spokane, Washington
March 23, 1946

Mr. J. T. Derrig:

For your information herewith clipping from this morning's Review telling of the selection of Ephrata as headquarters for the irrigation work by the U. S. Reclamation Bureau for the Columbia Basin Project.

(Signed) E. M. TREMAINE
District Engineer

HMT:lc
Enc.
cc-Mr. Bernard Blum

Mr. Blum
Sorry I can't
Bye - sorry I can't
not have time
W.P. P. J.M.

CHIEF OF ENGINEER
MAR 1946
OFFICE OF
CHIEF OF ENGINEER
MAR 1946
OFFICE OF
CHIEF OF ENGINEER
MAR 1946

CHIEF OF ENGINEER
APR 7 1946
OFFICE OF
CHIEF OF ENGINEER
APR 7 1946

COLUMBIA BASIN BASE IN EPHRATA

Is Officially Chosen by Reclamation Bureau.

BY ASHLEY HOLDEN.

EPHRATA, Wash., March 22.—Ephrata today became the official headquarters of the Columbia basin project from which the United States reclamation bureau, for the next 30 years or more, will direct the construction of reservoirs, canals and tunnels for the irrigation of more than 1,000,000 acres in this arid region of central Washington.

Under the direction of H. A. Parker, a headquarters staff of approximately 300 will be organized, with W. W. Johnston, assistant regional director, in charge of land development. Mr. Johnston, who conducted the land classification on the project several years ago, will move here from the regional office in Boise, Idaho.

Plan \$200,000 Building.

Temporary offices for the project have been established in the bureau's field headquarters here, pending the erection of a permanent fireproof headquarters building to cost in excess of \$200,000. This building, to be erected across the street from the Grant county courthouse, will be two stories high, with a frontage of 140 feet.

The bureau also announced plans for the erection of warehouses, automobile repair shops, storage garages and a concrete testing laboratory on a 10-acre tract near the present field headquarters. Augmenting these structures will be other buildings and warehouses which the bureau expects to obtain at the army air base nearby.

News Is Official.

Announcement that Ephrata will be headquarters for the bureau's reclamation program in the Columbia basin was made by William E. Warne of Washington, D. C., assistant commissioner of reclamation, at the opening of a two-day conference of bureau officials. Since the inception of the project this is the biggest gathering of bureau officials ever held in this area.

"This is it," said Assistant Commissioner Warne at the opening of the conference. "This is the zero hour so long awaited in the Columbia basin. For the next 30 years, shall I say, Ephrata will be the headquarters for our operations on this project."

Employ 2000 Men.

By July of this summer, Mr. Warne said, the bureau hoped to have not less than 2000 men at work on the project. During the fiscal year starting July 1, it is estimated \$35,000,000 will be spent on the construction of reservoirs and canals incident to getting water on the land. At least \$75,000,000 will be expended in 1947 and an equal sum in 1948.

Following that, the sums will taper off to about \$35,000,000 a year until 1951 when it is anticipated 400,000 acres will be under irrigation and settled.

Throughout the area between Coulee City and Ephrata preparations already are under way for the coming era of construction. Surveying crews are running lines for the relocation of highways, hammers and saws are busy everywhere building shacks and auto camps of every description to house the anticipated influx of workers. Here and there, isolated in the barren sagebrush wastes, cabins are rising as hopeful settlers move in preparatory to the coming of water.

Real Estate Booms.

Though an anti-speculation law prevents the hiking of land prices on the project, no such restrictions prevail in the booming towns which are assuming a frontier atmosphere. Here in Ephrata town lots which once sold for \$500 are selling now for as high as \$5000. A fever of excitement has gripped the town as its citizens look forward to becoming the metropolis of the Columbia Basin.

While the beginning of construction means a bonanza to Coulee City, Soap Lake, Ephrata, Quincy, Moses Lake and other towns in the project, there is a growing antagonism against the spread of bureaucracy which has led to bitter criticism of the bureau's plans to develop the lands in the basin. It is contended the reclamation officials have invaded the field of free enterprise in their blue prints for the project, with plans for model villages and ideal housing financed with government appropriations.

Notables at Confab.

Participating in the conference are Assistant Commissioner Warne, G. S. Ellsworth, assistant to the commissioner; William F. Kubach, chief accountant; Goodrich W. Lineweaver, director of operation and maintenance, and E. D. Eaton, assistant, all from Washington, D. C., together with Frank A. Banks, supervising engineer; S. A. Parker, irrigation engineer; Thoralf Torkelson, right of way engineer; P. R. Nalder, assistant officer engineer, and S. E. Hutton, information director, from Coulee Dam.

The regional office in Boise is represented by R. J. Newell, regional director; W. W. Johnston, assistant regional director; W. H. Tuller, operation and maintenance supervisor; Bilbert Stamm, E. N. Torbert and H. L. Stinson, regional counsel. Dr. H. P. Barrows, Chicago, planning consultant, also is taking part in the conference.

After visiting Grand Coulee dam Sunday the entire party will go to Spokane for a luncheon meeting Monday.

8731

Mr. Hahr
note
3/29
Spokane, Washington
March 21, 1946

X
Mr. J. T. Derrig:

Herewith clipping from this morning's Review, giving a list of bidders on the first unit of the Columbia Irrigation District Canal. You will note there is quite a wide range of prices, although a bunch of those who meant business were below \$700,000 and that Morrison-Knudsen are the low bidders.

(Signed) E. M. TREMAINE
District Engineer

HMT:lc

Enc.

cc-Mr. Bernard Blum ✓

APR 7 1946
OFFICE OF
CHIEF ENGINEER

OFFICE OF THE DIRECTOR
JAN 19 1964

M-K BID IS LOW ON BASIN CANAL

Offer to Build 6½ Miles for
\$619,000; 16 Bidders.

COULEE DAM, Wash., March 20.—Morrison-Knudsen company, Inc., Seattle, was low bidder at \$619,000 for excavating 6½ miles of the main canal for the Columbia basin irrigation project of south-central Washington when first bids called in the \$300,000,000 construction program were opened here today. Sixteen firms entered bids.

The second low bid was \$635,000 by Marshall & Haas, San Mateo, Calif.

Other Bids Listed.

Other bids received were:

Nat McDougall, Portland, \$1,173,000.

F. R. Hewitt company, Spokane, \$869,000.

Peter Kewett & Son, Seattle, \$775,000.

Axel Osberg and Colonial Construction company, Spokane, \$889,000.

Guy F. Atkinson, Portland, \$842,600.

M. E. Nelson Construction Co., Inc., Ephrata, \$659,000.

McNutt Brothers, Eugene, Ore., \$869,000.

General Construction company, Seattle, \$666,000.

Florito Brothers, Seattle, \$888,000.

McLaughlin, Inc., and Union Construction company, Great Falls, Mont., \$819,000.

N. Florito company, Seattle, \$664,500.

K. L. Goulter & Co., Seattle, \$663,000.

Matthew S. Ross, Los Angeles, \$780,400.

J. A. Terteling & Son, Inc., Boise, \$667,000.

Subject to Review.

Results of the bidding were announced by Roy B. Williams, acting supervising engineer for the bureau of reclamation, and Irrigation Engineer H. A. Parker. The bids will be sent to the Denver offices of the bureau for review. If a successful bidder is chosen, the award will be made by Reclamation Commissioner Michael W. Straus in Washington, D. C.

The successful bidder would be required to begin work within 30 days after receiving orders to begin excavating a channel for the largest irrigation canal ever built in the Pacific northwest. More than 2,000,000 cubic yards of earth and rock would have to be moved in slightly more than two years, Parker said.

Cutting through basalt and earth, the man-made gorge will extend from the proposed Long Lake dam near Stratford to the vicinity of Adrian in Grant county. The concrete-lined canal which will occupy the channel could handle the combined flow of several large rivers and is destined to carry virtually all the water for serving hundreds of thousands of parched acres in the Big Bend region of the Columbia.

Bids for lining the canal will be called later, Williams said.

Ends 25 Years of Planning.

William E. Warne of Washington, D. C., assistant commissioner of the bureau, now in the Pacific northwest attending planning conferences regarding the Columbia basin project, commented that today's bid opening "culminates more than a quarter of a century of planning by Pacific northwest residents who have fought constantly for this great, self-liquidating development."

"Many thousands of dollars have been donated willingly by these people over the years to bring nationwide attention to the need for Grand Coulee dam and importance of bringing water to the basin," Warne added. "Their money will be repaid many times over in the coming years as the big irrigation system takes shape and then begins carrying water to an area that will increase from a few thousand population to more than 350,000."

May Employ 7000.

Excavation for the canal and other work to be performed under private contract may result in the employment of 2000 men in the basin by midsummer, Warne stated. He added that the bureau hopes to let \$40,000,000 in contracts during the next few months and predicted that employment on the project may reach 7000 a year hence.

Today's bid call covered excavation of 1,700,000 cubic yards of earth and 340,000 cubic yards of rock, 100,000 station cubic yards of overhaul, and about 300,000 cubic yards of compacting embankment.

8731

February 28, 1946

Mr. Phillips Morrison
C/o Pioneer Sand & Gravel Co.
801 Fairview
S e a t t l e

Dear Phil:

You will recall that you mentioned to me the fact that the Bureau of Reclamation had taken up with the Great Northern and the Milwaukee the matter of service at their stations in the Columbia Basin in connection with the proposed irrigation construction work, and I told you that we had not been so approached - except in the matter of hauling sand and aggregate from Coulee Dam to Adrian.

I am now in receipt of a release from the Bureau of Reclamation to the effect that bids will be opened March 12 on the first construction work on the canal system, and that the work is to be done in the vicinity of Stafford and Adrian.

The major items are:

- 1,700,000 c.y. of excavation
- 340,000 c.y. of rock
- 100,000 c.y. of over-haul
- 300,000 c.y. of compacting embankment

The release also states that three areas are to be irrigated initially: one northeast of Moses Lake (which is Milwaukee territory) one near Quincy (in GN territory) one near Pasco, to be served by local pumping until the main canal system is extended to that area. This latter is tributary to our line.

Very truly yours,

bb/s

8731

Train 3, Yellowstone division,
January 26, 1946

MR. J. W. HAN:

Thank you for sending me the statement of the Bureau of Reclamation, Coulee Dam, about all the money Mr. Banks is going to spend and what he is going to do. I am glad to have this statement.

I think that that project at least has some background for supporting it. I quite agree with you in your remarks on another pamphlet concerning the Davis Dam on the Colorado River. *File 2925*

bb/s

8731
From Sen. B. F. Wheeler

79TH CONGRESS
1ST SESSION

S. 1716

B

IN THE SENATE OF THE UNITED STATES

DECEMBER 20 (legislative day, DECEMBER 19), 1945

Mr. MITCHELL introduced the following bill; which was read twice and referred to the Committee on Commerce

A BILL

To establish a Columbia Valley Authority to provide for integrated water control and resource development on the Columbia River, its tributaries, and the surrounding region in the interest of the control and prevention of floods, the irrigation and reclamation of lands, the promotion of navigation, the providing of employment, the strengthening of the national defense, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*
3 That this Act may be cited as the "Columbia Valley Author-
4 ity Act".

5

DECLARATION OF POLICY

6

SEC. 2. In order to safeguard the navigable waters in

1 the Columbia Valley region and to promote navigation, to
 2 provide for the control and prevention of floods and the
 3 reclamation of lands, and to encourage the fuller develop-
 4 ment and utilization of the resources of the region, all for
 5 the purpose of fostering and protecting commerce among
 6 the several States, strengthening the national defense, con-
 7 serving the water, soil, mineral, and forest resources of the
 8 Nation, relieving unemployment, and promoting the general
 9 welfare of the United States, it is hereby declared to be the
 10 policy of the United States that—

11 (a) The Federal Government shall establish and main-
 12 tain a broad program of integrated water control and resource
 13 development for the Columbia Valley region, consisting of
 14 that portion of the Columbia River, its tributaries, and water-
 15 shed which is within the boundaries of the United States,
 16 those portions of the States of Oregon, Washington, and
 17 Idaho which are not within such watershed, and such addi-
 18 tional adjoining territory as may be related to or materially
 19 affected by the development consequent to this Act, and shall
 20 consult and negotiate, and, through the State Department,
 21 may agree with the Dominion of Canada or any Province
 22 or political subdivision thereof concerning the conservation,
 23 utilization, and control of the waters of the Columbia River
 24 Basin.

1 (b) The administration of such a multipurpose program
 2 shall be entrusted to a Federal regional agency.

3 (c) Such a regional agency—

4 (1) shall recognize the doctrine of beneficial con-
 5 sumptive use of water, and in the event of any conflict
 6 between the purposes for which the waters of the Co-
 7 lumbia Valley region may be used, such waters shall be
 8 devoted to (I) domestic, irrigation, mining, and indus-
 9 trial purposes; (II) flood control; (III) navigation;
 10 and (IV) power, in that order of priority;

11 (2) shall acquire the electric or water system of any
 12 municipality only if such acquisition is agreeable to the
 13 municipality;

14 (3) shall make its power and water projects col-
 15 lectively self-supporting and self-liquidating;

16 (4) shall recognize and utilize to the fullest possible
 17 extent the authorities, advice, assistance, and cooperation
 18 of the people of the region and their public and private
 19 organizations—local, State, and Federal.

20 (d) No provision for works of irrigation in or under this
 21 Act shall be construed as affecting or intended to affect or
 22 to in any way interfere with the laws of any State relating
 23 to the control, appropriation, use, or distribution of water
 24 used for domestic, irrigation, mining, or industrial purposes,

1 or any vested right acquired thereunder, and the Corpora-
 2 tion, in carrying out the provisions of this Act, shall proceed
 3 in conformity with such laws, and nothing herein shall in
 4 any way affect any right of any State or of the Federal
 5 Government or of any land-owner, appropriator, or user of
 6 water in, to, or from any interstate stream or the water
 7 thereof: *Provided*, That the right to the use of water ac-
 8 quired for irrigation under the provisions of this Act shall
 9 be appurtenant to the land irrigated, and beneficial use
 10 shall be the basis, the measure, and the limit of the right:
 11 *Provided further*, That nothing in this subsection shall limit
 12 the authority of the Corporation to acquire by purchase,
 13 lease, condemnation, exchange, transfer pursuant to section
 14 9 of this Act, or donation, real or personal property, or any
 15 interest therein.

16 COLUMBIA VALLEY AUTHORITY

17 SEC. 3. (a) To carry out the purposes and policy of
 18 this Act, there is hereby created a body corporate which
 19 shall be known as the "Columbia Valley Authority" (here-
 20 inafter referred to as the "Corporation") and it shall be an
 21 instrumentality of the United States. The Board of Di-
 22 rectors first appointed shall be deemed the incorporators, and
 23 the incorporation shall be held to have been effected from
 24 the date of the first meeting of the Board.

25 (b) The Corporation shall maintain its principal office

1 at a convenient place centrally located in the territory in
 2 which its activities are conducted. Upon selecting the lo-
 3 cation of its principal office, and in the event it later makes
 4 a change in such location, the Corporation shall file with the
 5 Secretary of State public notice of such selection or change.

6 DIRECTORS OF CORPORATION

7 SEC. 4. (a) The Corporation shall be directed and con-
 8 trolled by a board of three directors, who shall be appointed
 9 by the President, by and with the advice and consent of the
 10 Senate. In appointing the members of the Board, the Pres-
 11 ident shall designate the Chairman. All other officials,
 12 agents, and employees shall be designated and selected by
 13 the Corporation. All matters of policy shall be considered
 14 and determined by the Board of Directors acting as a board.
 15 Each member of the Board, before entering upon the duties
 16 of his office, shall subscribe to an oath (or affirmation) to
 17 support the Constitution of the United States, and to per-
 18 form faithfully and impartially the duties imposed upon him
 19 by this Act. Each director shall maintain his residence in
 20 the Columbia Valley region.

21 (b) The terms of office of the members first taking
 22 office after the approval of this Act shall expire as designated
 23 by the President at the time of nomination, one at the end
 24 of the third year, one at the end of the sixth year, and one
 25 at the end of the ninth year after the date of approval of

1 this Act. A successor to a member of the Board shall be
2 appointed in the same manner as the original members
3 and, except for instances in which subsection (c) of this
4 section is applicable, shall have a term of office expiring
5 nine years from the date of the expiration of the term for
6 which his predecessor was appointed.

7 (c) Any member appointed to fill a vacancy in the
8 Board occurring prior to the expiration of the term for which
9 his predecessor was appointed shall be appointed for the
10 remainder of such term.

11 (d) Vacancies in the Board, so long as there shall be
12 two members in office, shall not impair the powers of the
13 Board to execute the functions of the Corporation, and two
14 of the members in office shall constitute a quorum for the
15 transaction of the business of the Board.

16 (e) Each of the members of the Board shall be a citizen
17 of the United States and shall receive a salary at the rate
18 of \$15,000 a year, to be paid by the Corporation as current
19 expenses. Members of the Board shall be reimbursed by
20 the Corporation for actual expenses (including traveling
21 expenses) incurred by them in the performance of the
22 duties vested in the Board by this Act: *Provided*, That
23 they may receive a per diem of \$10 per day in lieu of actual
24 subsistence expenses. No member of said Board shall,
25 during his continuance in office, be engaged in any other

1 business, but each member shall devote himself to the work
2 of the Corporation.

3 (f) No director shall, during his continuance in office,
4 have a financial interest in any public-utility company en-
5 gaged in the business of generating, transmitting, distribution,
6 or selling power to the public; nor in any holding company
7 or subsidiary company of a holding company as those terms
8 are defined in the Public Utility Holding Company Act
9 of 1935; nor in any business that may be substantially
10 affected by the success of the Corporation.

11 (g) Any member of the Board may be removed from
12 office at any time by the President or a concurrent resolu-
13 tion of the Senate and House of Representatives.

14 COOPERATION WITH STATE AND LOCAL AGENCIES

15 SEC. 5. The Corporation, in carrying out the programs
16 authorized in this Act in accordance with purposes and
17 policies set forth herein, and particularly section 2 (c) (4),
18 shall develop formal and informal procedures by which the
19 advice, assistance, and participation of the people of the
20 region and their State and local governments and organiza-
21 tions, public and private, shall be obtained to the fullest
22 possible extent to assist the Board of the Corporation in the
23 formulation of policies designed to carry out the basic pro-
24 visions of this Act. To this end the Corporation shall estab-
25 lish procedures for regular consultation and interchange of

1 views on matters of policy with one or more representatives
 2 of each of the States of Idaho, Montana, Oregon, and Wash-
 3 ington (as designated by the respective Governors thereof),
 4 representatives of the business, agricultural, and labor inter-
 5 ests of the region, appropriate officers of representative
 6 local and State agencies and institutions, with which the
 7 Corporation has cooperative arrangements, contracts, and
 8 agreements, and representatives of the general public of the
 9 region. Such designated representatives and officials shall
 10 receive the amount of \$10 per day for subsistence expenses,
 11 and their actual travel expenses for the periods during which
 12 they consult with the Corporation away from their regular
 13 places of work.

14 CORPORATE POWERS

15 SEC. 6. Subject to the provisions of this Act, the Cor-
 16 poration—

17 (a) Shall have succession in its corporate name;

18 (b) May adopt and use a corporate seal which shall be
 19 judicially noticed;

20 (c) May adopt, amend, and repeal bylaws;

21 (d) May sue and be sued in its corporate name and may
 22 settle and adjust claims held by it against other parties or
 23 persons and by other parties and persons against it;

24 (e) Shall have power to acquire, by purchase, lease,
 25 condemnation, exchange, transfer pursuant to section 9 of

1 this Act, or donation such real and personal property and
 2 any interest therein, including water rights, and may sell,
 3 lease, or otherwise dispose of any real and personal property
 4 and any interest therein, as in its judgment may be neces-
 5 sary or appropriate in carrying out the purposes of the Cor-
 6 poration under this Act or under any other law of the
 7 United States, subject to the following:

8 (1) The provisions of section 355, Revised Statutes
 9 (40 U. S. C. 255), as amended, other than the provisions
 10 contained in the last paragraph of said section, shall be in-
 11 applicable to acquisitions by the Corporation.

12 (2) The Corporation may not acquire the electric or
 13 water system of any municipality through the exercise of
 14 the power of eminent domain if the municipality opposes
 15 such acquisition: *Provided*, That the foregoing shall not
 16 preclude the Corporation from exercising the power of
 17 eminent domain to acquire an easement for a right-of-way
 18 over, under, or across a municipal electric or water system
 19 or portion thereof for the electric or water transmission
 20 system of the Corporation, nor shall it preclude the Cor-
 21 poration from acquiring any such system or part thereof
 22 when the construction or operation of a dam or reservoir
 23 by the Corporation will render useless the system or the
 24 part thereof sought to be acquired.

1 (3) Except as provided in section 15 (e) of this Act,
 2 the Corporation shall not dispose of any real property on
 3 which is located a permanent dam, hydraulic power plant,
 4 or munitions plant heretofore or hereafter constructed by
 5 or on behalf of the United States or the Corporation, or
 6 which has a value in excess of \$1,000,000.

7 The Corporation may exercise the power of eminent
 8 domain in carrying out any of the purposes of this Act, ex-
 9 cept as otherwise provided in this section and section 13
 10 hereof. All condemnation proceedings shall be had in the
 11 name of the Corporation. In connection with any such
 12 proceeding, the Corporation shall have the rights conferred
 13 upon the United States by the Act of February 26, 1931
 14 (46 Stat. 1421), and upon the Tennessee Valley Authority
 15 by section 25 of the Tennessee Valley Authority Act of
 16 1933 (48 Stat. 70), the provisions of both of which are
 17 hereby declared to be applicable to proceedings brought by
 18 the Corporation in its own name to the same extent as
 19 though it were expressly mentioned therein, except insofar
 20 as they are inconsistent with this section, and are declared
 21 also to be applicable to proceedings for the condemnation
 22 of personal property in the same manner as proceedings
 23 for the condemnation of lands, easements, or rights-of-way:
 24 *Provided*, That commissioners shall receive such compensa-
 25 tion as the court deems reasonable, including a per diem

1 allowance in lieu of subsistence expenses while away from
 2 their homes for time actually spent, and their actual traveling
 3 expenses incurred in performing their duties as commis-
 4 sioners: *Provided further*, That the court may order an
 5 award in favor of a minor, insane person, or incompetent
 6 person to be paid to the natural guardian of, or directly to
 7 such minor, insane person, or incompetent person. Title to
 8 all property, with the exception of that owned by the United
 9 States and entrusted to the Corporation as agent of the United
 10 States, shall be taken in the name of the Corporation. Con-
 11 veyances of real and personal property, or interests therein,
 12 shall be in the name of the Corporation or the United States
 13 of America, depending on the holder of the title, and may
 14 be by warranty deed, bill of sale with warranty of title, or
 15 otherwise, which may be executed by any director, or by
 16 such other person or persons as the board may designate,
 17 such designation to be filed with the Director of the Division
 18 of the Federal Register, the National Archives, and to be
 19 published in the Federal Register.

20 (f) Shall have power to acquire, without reimbursement,
 21 any properties defined as surplus under the Surplus Property
 22 Act of 1944 (Public Law 457, Seventy-eighth Congress),
 23 and to maintain, repair, alter, use, and operate such properties
 24 and any other properties which the United States may place

1 in its custody, whether or not for the purposes of this Act,
2 until other proper disposition be made thereof.

3 (g) Shall have power to produce, transmit, sell, and dis-
4 pose of electric power and water, as hereinafter specified.

5 (h) Shall have power to purchase and acquire such in-
6 surance as it deems necessary or appropriate to carry out the
7 powers now or hereafter conferred upon it by law.

8 (i) Shall have power to enter into such contracts and
9 agreements and to exercise such powers and do such things
10 as it may determine to be necessary or appropriate to carry
11 out the powers now or hereafter conferred upon it by law.

12 VENUE AND JURISDICTION

13 SEC. 7. The Corporation shall be held to be an in-
14 habitant and resident, within the meaning of the laws of
15 the United States relating to the venue of civil suits, of
16 the judicial district in which its principal office is located at
17 the time of the commencement of suit. The district courts
18 of the United States shall have original jurisdiction, with-
19 out regard to the amount in controversy, over any proceed-
20 ing brought by or against the Corporation. Any proceeding
21 brought against the Corporation in a court of any State
22 may be removed by the Corporation to the district court
23 of the United States for the district in which the proceeding
24 is pending, and, to effect such removal, it shall not be neces-
25 sary that any other party or parties defendant join in the

1 petition for removal. Except as otherwise provided herein,
2 the procedure for removal shall be according to the applicable
3 laws of the United States relating to removal.

4 SUBMISSION OF PLANS TO THE PRESIDENT AND CONGRESS

5 SEC. 8. (a) The Corporation is hereby authorized and
6 directed, after giving due consideration to existing surveys
7 and plans relating to water control and resource develop-
8 ment for various purposes, conducting such additional sur-
9 veys and investigations as it deems necessary or proper, and
10 enlisting the advice and assistance of appropriate local,
11 State, and Federal governmental agencies, educational in-
12 stitutions, and private organizations, to formulate and report
13 to the President and Congress with the utmost expedition,
14 and in any event not later than two years from the enact-
15 ment of this Act its recommendations for the unified de-
16 velopment of the Columbia Valley region in accordance with
17 the purposes and policy of this Act. Such recommenda-
18 tions shall include a plan for the integrated control and
19 utilization of the waters of the Columbia Valley region, which
20 will reconcile and harmonize, as far as may be practicable
21 within the policy prescribed in section 2 (c) (1) of this
22 Act, the requirements for flood control, navigation, reclama-
23 tion, power, and other needs, and which will promote soil
24 conservation, afforestation and reforestation, mineral de-
25 velopment, preservation of fishing and game resources, and

1 recreation and recreational facilities, in such a way as to
2 secure the maximum public benefit for the region and Na-
3 tion. Particular consideration in such a plan and recom-
4 mendations shall be given to projects and activities which
5 shall serve the following purposes:

6 (1) The control and prevention of floods which impair
7 and disrupt navigation, the facilities of interstate commerce,
8 the properties and functions of the United States, and ag-
9 ricultural and industrial properties and production, by,
10 among other means, the storage, control, and disposition
11 of flood and surplus waters, and the control and retardation
12 of water run-off and the restoration and improvement of
13 the absorption and infiltration capacity of the soil. Projects
14 for such purposes shall include, but not by way of limitation,
15 dams, reservoirs, levees, spillways, and floodways; improved
16 methods and conditions of soil conservation, utilization,
17 fertilization, and cultivation; and the conservation of forests
18 and afforestation and reforestation of lands.

19 (2) The promotion of navigation by, among other
20 means, the improvement of the channels of navigable rivers
21 and their tributaries; the prevention of siltation of such wa-
22 ters; the regulation of stream flow; and the development
23 and coordination of navigation facilities.

24 (3) The reclamation of arid, semiarid, swampy, wet,
25 logged off, and cut-over lands by, among other means, the

1 irrigation, drainage, or clearing of lands, and the advance-
2 ment of their economic use through improved water-utiliza-
3 tion and soil-conservation procedures.

4 (4) The safeguarding of navigable waters and their use
5 by, among other means, the prevention and abatement of
6 pollution of navigable streams and their tributaries, the
7 provision of sewage-disposal and water-purification works
8 and structures and facilities in connection therewith, and the
9 adoption of other appropriate sanitation practices.

10 (5) So far as may be consistent with or necessary or
11 appropriate for the control and prevention of floods, the
12 promotion of navigation, the safeguarding of navigable
13 waters, and the reclamation of lands, as provided in sub-
14 section (a), plans shall give due regard to the following,
15 among other considerations: (I) The present and future
16 development and conservation of water for power, irriga-
17 tion, and other beneficial uses; (II) the prudent husbandry
18 of soil, mineral, and forest resources and their conservation
19 for recreation, the protection of wild game and fish, and
20 other beneficial uses; (III) the preventing of irreparable
21 waste of the Nation's resources from droughts, winds, dust-
22 storms, and soil erosion; (IV) the integration and inter-
23 connection of projects and activities, the development of
24 their multiple purposes, and the equitable distribution of
25 the benefits thereof; and (V) equitable contributions to cost

1 by States and subdivisions and agencies thereof specially
2 benefited by the projects and activities.

3 (b) The Corporation is further authorized, after fol-
4 lowing the procedure prescribed in subsection (a) hereof,
5 to formulate and report to the President and Congress, at
6 such time or times as it deems advisable, its further recom-
7 mendations for the unified development of the Columbia
8 Valley region in accordance with the purposes and policy
9 of this Act. Such recommendations may include additions
10 to or modifications of the plan provided in subsection (a)
11 hereof.

12 (c) The plans and recommendations authorized in sub-
13 sections (a) and (b) hereof shall be in sufficient detail to
14 provide the President, the Congress, and the people and in-
15 stitutions of the region with reasonably specific information
16 as to—

17 (1) the water control and utilization policy and
18 program which would be established and maintained;

19 (2) the nature, scope, and general location of the
20 projects and activities recommended, and the estimated
21 cost and benefits thereof;

22 (3) the order of preference and priority which
23 should be followed in the construction and carrying out

1 of such projects and activities in the light of postwar con-
2 ditions existing and anticipated at the time of the report.

3 (d) The plans and recommendations authorized in sub-
4 sections (a) and (b) hereof shall be forwarded to the Presi-
5 dent and to Congress while it is in session. The plans and
6 recommendations shall lie before the Congress for its consid-
7 eration for a period of not to exceed one hundred and twenty
8 calendar days during which Congress is in session. An ad-
9 journment of more than three days to a day certain by either
10 House or an adjournment of the Congress sine die shall inter-
11 rupt the one-hundred-and-twenty-day period, but in either
12 case the remainder of the period shall begin to run on the first
13 day on which both Houses are again in session: *Provided*,
14 That if a resolution with respect to such plans and recom-
15 mendations has been passed by one House and sent to the
16 other, no interruption shall occur by reason of adjournment
17 of the first House taken thereafter. If not affirmatively dis-
18 approved by the Congress by concurrent resolution within
19 the one-hundred-and-twenty-day period, each of said plans
20 and recommendations shall be deemed to be effective at the
21 end of such period, and the provisions thereof shall be carried
22 out in accordance with their terms subject to the provisions
23 of this Act.

1 TRANSFER OF PROJECTS, PROPERTY, AND FUNCTIONS
2 TO CORPORATION

3 SEC. 9. (a) On the first day of the third calendar
4 month following the effective date of this Act, or on the first
5 day of the calendar month following the appointment and
6 confirmation of the directors of the Corporation, whichever
7 is later—

8 (1) the exclusive use, possession, and control of
9 the Bonneville project, including the Bonneville Dam,
10 the Columbia Basin project, including the Grand Coulee
11 Dam, the Hungry Horse project, including the Hungry
12 Horse Dam, the Umatilla project, including the McNary
13 Dam, the Snake River project, including the dams con-
14 templated by the plans submitted in House Document
15 Numbered 704, Seventy-fifth Congress, as modified pur-
16 suant to the Act of March 2, 1945 (Public Law 14,
17 Seventy-ninth Congress), and the Bonneville transmis-
18 sion system, together with all real estate, buildings,
19 powerhouses, hydroelectric and operating appurtenances
20 (including the locks), books, records, and correspond-
21 ence connected therewith, all tools and machinery, equip-
22 ment, accessories, and materials belonging thereto, and
23 all laboratories and plants used as auxiliaries thereto,
24 shall be entrusted to the Corporation for the purposes
25 of this Act: *Provided*, That the Corporation may operate

1 each such project or portion thereof through the agency
2 from which it is hereby transferred, including the Bureau
3 of Reclamation and the Corps of Engineers. At the
4 same time the employees of the Bonneville Power Ad-
5 ministration shall be transferred to the Corporation, and
6 any employees of the Bureau of Reclamation and the
7 Corps of Engineers who are employed in connection
8 with the foregoing projects and property may be trans-
9 ferred to the Corporation at its option;

10 (2) the unexpended balances of the appropriations
11 of the Department of the Interior and the Department
12 of War for the construction, operation, and maintenance
13 of said projects and transmission system shall be trans-
14 ferred to the Corporation and shall be placed in a single
15 account with, and shall be available for expenditure in
16 carrying out the purposes of this Act in the same manner
17 and to the same extent as, all other funds of the Cor-
18 poration;

19 (3) the Corporation shall complete and administer
20 the Columbia Basin, Hungry Horse, and McNary proj-
21 ects, and the Snake River projects authorized by the
22 Act of March 2, 1945 (Public Law 14, Seventy-ninth
23 Congress), in accordance with the purposes and policies
24 of this Act: *Provided*, That the Corporation is complet-
25 ing and administering the irrigation and reclamation fea-

1 tures of the Columbia Basin project shall be governed
 2 by the Columbia Basin Project Act (57 Stat. 14), ex-
 3 cept to the extent that it is inconsistent with this Act,
 4 and all the powers and functions of the Secretary of the
 5 Interior as provided in said Columbia Basin Project Act
 6 shall be transferred to and may be exercised by the
 7 Corporation: *Provided further*, That the Corporation
 8 and the Bureau of Reclamation are hereby directed to
 9 work out such arrangements and schedules as are neces-
 10 sary to insure the prompt completion of the Columbia
 11 Basin project and to insure that construction will pro-
 12 ceed as soon as materials and manpower become
 13 available.

14 (b) The President is authorized, whenever in his
 15 judgment the purposes of this Act and the interests of
 16 economy and efficiency will be served thereby, to transfer
 17 to the Corporation the use, possession, control, and operation
 18 of any dam or water control project, together with appur-
 19 tenant works and transmission facilities, constructed, or under
 20 construction, or hereafter constructed by or in behalf of the
 21 United States or its instrumentalities in the Columbia Valley
 22 region, and of such other real or personal property of the
 23 United States, or any agency thereof, and any functions,
 24 duties, powers, and responsibilities conferred by law upon
 25 any executive department or agency of the United States

1 which pertain to projects or activities within or affecting the
 2 region and which are within the scope of or related to any
 3 functions, duties, powers, or responsibilities conferred upon
 4 the Corporation by this Act, as he may from time to time
 5 deem necessary or proper to carry out the purposes and
 6 policy of this Act. All contractual obligations of the trans-
 7 ferring department or agency pertaining to the use of such
 8 dams, projects, works, facilities, and other properties or to
 9 the disposition of the products thereof, including water for
 10 irrigation, shall be assumed by the Corporation. In con-
 11 nection with any such transfer the President shall make such
 12 provision as he deems necessary or appropriate for the
 13 transfer to the Corporation of unexpended balances of ap-
 14 propriations available for use in respect of such dams, proj-
 15 ects, works, facilities, other properties, and such functions,
 16 duties, powers, or responsibilities, together with personnel,
 17 equipment, books, records, correspondence, and any powers,
 18 duties, and other obligations pertaining thereto. All such
 19 unexpended balances shall be placed in a single account and
 20 shall be available for expenditure in carrying out the pur-
 21 poses of this Act in the same manner and to the same ex-
 22 tent as all other funds of the Corporation.

23 GENERAL POWERS AND DUTIES OF CORPORATION

24 SEC. 10. (a) The Corporation is hereby authorized and
 25 directed to construct, operate, and carry out such projects

1 and activities in the Columbia Valley region as will best
 2 serve to control and prevent floods, to safeguard the navi-
 3 gable waters, and to promote navigation and the reclama-
 4 tion of the lands. In order to effectuate such primary
 5 purposes with the greatest public benefit, to create employ-
 6 ment, and, so far as is consistent with such primary pur-
 7 poses and the policy prescribed in section 2 (c) (1) of
 8 this Act, to avoid the waste of water, water power, and
 9 other property of the United States, the Corporation shall
 10 have such powers as may be necessary or appropriate to
 11 construct by contract, force account or otherwise, operate,
 12 and carry out such projects or activities so as to accomplish
 13 the purposes of this Act, including but without limitation,
 14 the power—

15 (1) to acquire, construct, operate, maintain, and im-
 16 prove dams, locks, reservoirs, levees, spillways, flood-
 17 ways, fishways, conduits, canals, roads, roadways, docks,
 18 wharves, terminals, sewage-disposal, water-purification
 19 and other sanitation works, and recreation facilities, and
 20 structures, equipment and facilities incidental thereto;

21 (2) to acquire, construct, operate, maintain, and
 22 improve such canals, conduits, powerhouses, steam-
 23 generating plants, transmission lines, rural electric lines
 24 and substations, and such machinery, equipment, struc-
 25 tures, and facilities, for the storage and transportation

1 of water or for the generation and transmission of electric
 2 energy as the Corporation deems necessary or appro-
 3 priate to supply existing and potential markets;

4 (3) to develop and provide such methods and con-
 5 ditions of water and land utilization as the Corporation
 6 deems necessary or appropriate to prevent and abate
 7 floods and droughts.

8 In order to further effectuate such primary purposes in
 9 the construction and operation of dams for projects entrusted
 10 to it, the Corporation, insofar as practicable, shall make
 11 provision, in the construction of any dam, for such founda-
 12 tions, sluices, penstocks, and other works as may be neces-
 13 sary or appropriate to prevent the waste of water power at
 14 such dam and to make possible the economical future devel-
 15 opment of water power at such dam.

16 (b) The Corporation is authorized to negotiate, execute,
 17 and carry out contracts with States, counties, municipalities,
 18 and all State agencies and with railroads, railroad corpora-
 19 tions, common carriers, and all public-utility commissions
 20 and any other person, firm, or corporation, for the relocation
 21 of railroad tracks, highways, highway bridges, mills, ferries,
 22 electric-light plants, and any and all other properties, enter-
 23 prises, and projects, the protection, alteration, reconstruction,
 24 relocation, replacement, or removal of which may be neces-
 25 sary in order to carry out the provisions of this Act. The

1 Corporation is further authorized to exercise the power of
2 eminent domain to carry out the purposes of this subsection.

3 (c) The Corporation is authorized to advise and co-
4 operate in the readjustment of the population displaced by
5 the construction of dams, the protection of watersheds, the
6 acquisition of land, and other necessary operations, in order
7 to effectuate the purposes of this Act; and may cooperate
8 with Federal, State, and local agencies to that end.

9 (d) The Corporation is authorized, if in its judgment
10 the interest of economy and efficiency will be served
11 thereby, to construct or operate any project or conduct any
12 activity entrusted to it through, or in cooperation with
13 other departments and agencies of the United States and
14 through or in cooperation with States, counties, munic-
15 ipalities, cooperatives, individuals, educational and scientific
16 institutions, or other bodies, agencies, and organizations,
17 public or private. The departments and agencies of the
18 United States are hereby authorized to participate in the
19 construction or operation of such projects or the conduct
20 of such activities on terms mutually agreeable to such
21 department or agency and the Corporation.

22 DISPOSITION OF SURPLUS ELECTRIC ENERGY

23 SEC. 11. (a) The Corporation is hereby authorized to
24 sell and dispose of surplus electric energy generated by it, not
25 used in its operations or for operation of locks and other

1 works or in the case of reclamation projects for reclamation
2 of public lands, to Federal agencies, States, counties, dis-
3 tricts, municipalities, corporations, cooperatives, partner-
4 ships, and individuals, according to the policies hereinafter
5 set forth; to provide for emergencies, break-down relief,
6 increased stability and economy in operations, and conserva-
7 tion of stored water, the Corporation may enter into con-
8 tracts or arrangements upon suitable terms with public and
9 private power systems for the purchase or mutual exchange
10 of electric energy, or both, and for reciprocal use of trans-
11 mission facilities.

12 (b) To encourage the widest possible use of available
13 electric energy, to provide adequate markets and outlets
14 therefor, and to prevent the monopolization thereof by lim-
15 ited groups or localities, the Corporation shall acquire, con-
16 struct, operate, maintain, and improve such electric-trans-
17 mission lines, rural-electric lines, substations, and other struc-
18 tures and facilities as it deems necessary or appropriate to
19 bring electric energy available for sale, from its projects to
20 existing and potential markets, and to interconnect such proj-
21 ects with other public or private projects for the disposition,
22 purchase, or exchange of electric energy.

23 (c) To insure the disposition of the electric energy de-
24 veloped at a project for the benefit of the general public, and

1 particularly of domestic and rural consumers, the Corporation
 2 shall, in disposing of electric energy after meeting the needs
 3 of Federal agencies, give preference and priority to States,
 4 districts, counties, and municipalities, including agencies, in-
 5 strumentalities, or political or governmental subdivisions
 6 thereof or of two or more States (in this Act called public
 7 agencies), and to cooperative and other organizations organ-
 8 ized or administered not for profit but primarily for the pur-
 9 pose of supplying electric energy to their members as nearly
 10 as possible at cost (in this Act called cooperative agencies).

11 In the event of competing applications by public or coopera-
 12 tive agencies (whether or not formally organized) on the one
 13 hand, and other persons or agencies on the other hand, the
 14 Corporation, in order to preserve and protect the preferential
 15 rights and priorities of such public and cooperative agencies,
 16 shall allow to people and communities, when within such
 17 distance from such project as to render practicable the trans-
 18 mission of power therefrom, reasonable opportunity and time
 19 to acquire, purchase, or construct the necessary facilities for
 20 the use or distribution of such electric energy, including
 21 reasonable opportunity and time to create and finance such
 22 public or cooperative agencies under the laws of the several
 23 States.

24 (d) Subject to the provisions of this Act, the Corpora-
 25 tion may enter into contracts for the sale or disposition at

1 wholesale of electric energy, whether for resale or direct con-
 2 sumption, to Federal agencies, to public and cooperative agen-
 3 cies, and to private agencies and persons. Contracts entered
 4 into under this subsection shall be binding in accordance with
 5 the terms thereof and shall be effective for such period or
 6 periods, including renewals or extensions, as may be pro-
 7 vided therein, not exceeding in the aggregate twenty years
 8 from the respective dates of the making of such contracts.
 9 Such contracts shall contain appropriate provisions, to be
 10 agreed upon between the Corporation and the purchaser,
 11 for the equitable adjustment of rates at appropriate inter-
 12 vals. In the case of contracts with private agencies or per-
 13 sons who resell the bulk of the electric energy purchased,
 14 the contracts shall contain appropriate provisions authoriz-
 15 ing the Corporation to cancel the contract, in whole or in
 16 part, upon three years' notice in writing whenever in its
 17 judgment there is reasonable likelihood that part of the
 18 electric energy purchased under such contract will be needed
 19 to satisfy the preferential rights and priorities of public or
 20 cooperative agencies under this Act.

21 (e) Contracts for the sale of electric energy shall con-
 22 tain such terms and conditions, including provisions to in-
 23 sure that resale to the ultimate consumer shall be at rates
 24 which are reasonable and nondiscriminatory, as the Corpo-
 25 ration may deem necessary or desirable for carrying out

1 the purposes of this Act, and in case the purchaser shall
2 fail to comply with any such terms and conditions, said con-
3 tract may provide that it may be canceled at the election of
4 the Corporation.

5 (f) Schedules of rates at which electric energy will be
6 contracted for sale shall be published by the Corporation and
7 may be changed, withdrawn, or added to from time to time.
8 All contracts for the sale or disposition of electric energy,
9 other than for exchanges, shall provide for payment pursuant
10 to a schedule or schedules so published. Subject to the provi-
11 sions of section 14, the Corporation shall publish such rate
12 schedules as it finds necessary or appropriate to provide ade-
13 quate markets and outlets for electric energy and to encour-
14 age the widest possible use of electric energy: *Provided*, That
15 its rate schedules collectively shall have regard (upon the
16 basis of the application of such rate schedules to the capacity
17 of the contemplated electric facilities of the Corporation) to
18 the recovery of the costs of generating and transmitting such
19 electric energy, including appropriate reserves for mainte-
20 nance and upkeep and the higher of the following:

21 (1) amortization over a reasonable period of years
22 of the capital investment allocated to commercial power,
23 plus interest on the unamortized portion of such invest-
24 ment at an annual rate not less than the annual cost of
25 money to the Treasury Department on Treasury bonds

1 having a maturity date of ten years or more issued during
2 the period in which the unamortized investment was
3 incurred; or

4 (2) amortization over a reasonable period of years
5 of the capital investment allocated to commercial power
6 plus the capital investment allocated to purposes other
7 than commercial power but assigned to be repaid out of
8 power revenues.

9 In order to distribute the benefits of integrated transmis-
10 sion systems and to promote the equitable distribution of
11 electric energy, rate schedules shall provide for uniform
12 rates, or rates uniform throughout prescribed transmission
13 areas.

14 RECLAMATION PROVISIONS

15 SEC. 12. (a) For the purpose of stabilizing the agri-
16 cultural economy of the region, making more secure the
17 tenure of settlers on the land, and providing family-type
18 farming operations on farms consisting wholly or partly
19 of reclaimed lands, the Corporation may undertake projects
20 for the reclamation of lands, including logged or cut-over
21 lands, by irrigation, drainage, or land clearing in the region.
22 Such projects shall be constructed, operated, and main-
23 tained by the Corporation, and reimbursement therefor shall
24 be made by the water users or other beneficiaries in accord-
25 ance with the provisions of the Federal reclamation laws

1 (Act of June 17, 1902, 32 Stat. 388, and Acts amendatory
 2 thereof or supplementary thereto), so far as such provisions
 3 are consistent with this Act and are otherwise applicable:
 4 *Provided*, That where a reclamation project has been in-
 5 cluded in a plan submitted to the Congress under section 8
 6 of this Act, no further report thereon, nor findings of
 7 feasibility with respect thereto, shall be required for the
 8 authorization of the project under the Federal reclamation
 9 laws.

10 (b) The Corporation shall establish the maximum size of
 11 farm units within each project for the reclamation of lands
 12 in accordance with its findings as to the area sufficient in
 13 size to constitute a productive, owner-operated farm or ade-
 14 quately to supplement adjacent grazing or dry farming lands.
 15 No benefits from any such project shall be made available
 16 to the owners of lands whose individual holdings exceed the
 17 maximum area so prescribed by the Corporation until and
 18 unless such owners shall have agreed for and in behalf of
 19 themselves, their heirs, executors, and assigns, by contracts
 20 in form, substance, and legal sufficiency satisfactory to the
 21 Corporation—

22 (1) that they will sell such part of their lands as
 23 may exceed the maximum area so prescribed by the
 24 Corporation at the appraised value thereof, as deter-
 25 mined by the Corporation, without reference to or in-

1 crement on account of the construction of the project;
 2 and

3 (2) that the Corporation shall have an irrevocable
 4 power of attorney to sell in their behalf any such excess
 5 lands, not theretofore disposed of by said landowners, at
 6 the appraised value thereof: *Provided*, That any sales
 7 by the Corporation pursuant to such power of attorney
 8 shall, unless otherwise provided in writing by the land-
 9 owner, be only for cash and only upon terms that will
 10 require the landowner to surrender possession of all of
 11 his excess lands at substantially the same time: *Provided*
 12 further, That the provisions of this section shall not be
 13 applicable to the Columbia Basin project to the extent
 14 that they are inconsistent with the Columbia Basin
 15 Project Act.

16 LAND SETTLEMENT; VETERANS' PREFERENCE

17 SEC. 13. (a) For a period of twenty years following
 18 the effective date of this Act, veterans shall have a ninety-
 19 day preferred right of purchase with respect to lands made
 20 available for settlement by the Corporation on projects
 21 constructed, operated, or maintained by it. The Corpo-
 22 ration shall advise the Veterans' Administration of the avail-
 23 ability of lands for settlement; and the Administrator of
 24 Veterans' Affairs shall inform veterans of settlement op-
 25 portunities on such lands. As used in this section the term

1 "veteran" means any person who served in the active mili-
 2 tary or naval service during a time of war and who shall
 3 have been discharged or released therefrom under conditions
 4 other than dishonorable.

5 (b) The Corporation may acquire, but not by con-
 6 demnation, such lands in the region as it deems necessary
 7 or proper for disposition to veterans and others desiring to
 8 settle thereon. Such lands shall be disposed or to such
 9 settlers in economic family-sized farming units determined
 10 in accordance with the provisions of subsection (b) of sec-
 11 tion 12 of this Act.

12 (c) To expedite the settlement and use of lands trans-
 13 ferred to the Corporation or acquired under this section, the
 14 Corporation may improve such lands and may erect and
 15 provide thereon such structures and facilities as may be
 16 necessary or desirable for the use thereof.

17 (d) Contracts for the sale of land under this section shall
 18 be on a basis that, in the judgment of the Board, will provide
 19 the return in a reasonable period of years of the appraised
 20 value of the land and the improvements thereon, including
 21 structures and facilities, as determined by the Corporation,
 22 consideration being given in such appraisal to the normal
 23 earning capacity of the property. Such sales of land as may
 24 be made by the Corporation for prices insufficient to recover

1 total investments therein shall be listed by the Corporation in
 2 its annual report to the Congress.

3 ALLOCATION OF COSTS

4 SEC. 14. (a) The Corporation shall make a thorough
 5 investigation of the costs to the United States of each dam,
 6 steam plant, electric or water transmission system, or other
 7 similar facilities constructed or acquired by or turned over to
 8 the Corporation for its management and control for the purpose
 9 of allocating on a region-wide basis the unamortized portion
 10 of such costs among the various purposes served by the facili-
 11 ties—such as navigation, flood control, irrigation, commercial
 12 power, or other types of development, as the case may be.
 13 Costs of facilities serving only one purpose shall be allocated
 14 to that purpose. Costs of facilities serving more than one
 15 purpose shall be equitably allocated among such purposes in
 16 such manner as the Corporation deems proper.

17 (b) Costs allocated to purposes which do not directly
 18 produce revenues, such as flood control and navigation,
 19 shall not be reimbursable. All other costs shall be reim-
 20 bursable and shall be assigned for reimbursement among
 21 revenue-producing purposes, upon a region-wide basis, in
 22 such manner as the Corporation deems necessary or ap-
 23 propriate to promote a sound national economy, to encourage
 24 the widest possible economic use of water for irrigation and

1 municipal purposes and of electric energy for domestic,
 2 rural, and industrial needs, and to avoid the imposition upon
 3 any one purpose of a greater share of joint costs than such
 4 purpose can and should fairly bear. The Corporation shall
 5 also determine the appropriate periods and rates of amorti-
 6 zation to be applied to the capital investment to be repaid
 7 by revenue-producing purposes. The allocation of costs,
 8 the assignment of reimbursement obligations, and the periods
 9 and rates of amortization so determined by the Corporation,
 10 when approved by the President, shall be final and shall be
 11 used thereafter in keeping the books of the Corporation.

12 (c) The Corporation shall, within five years from the
 13 date of enactment of this Act, file with Congress a state-
 14 ment of its allocation of the costs and assignment of reim-
 15 bursement obligations of all such properties constructed,
 16 acquired, or turned over to said Corporation and which have
 17 been completed prior thereto. The Corporation shall also
 18 file a statement of its allocation of the costs and assign-
 19 ment of reimbursement obligations of such other properties
 20 as have been constructed, acquired, or turned over to the
 21 Corporation and have been completed during any fiscal year
 22 in its annual report to Congress for the succeeding fiscal year.

23 (d) For the purpose of accumulating data useful to
 24 the Congress in the formulation of legislative policy in mat-
 25 ters relating to the generation, transmission, and distribu-

1 tion of electric energy, and to the Federal Power Commis-
 2 sion and other Federal and State agencies, and to the public,
 3 the Corporation shall keep complete accounts of its costs of
 4 generation, transmission, and distribution of electric energy
 5 and shall keep a complete account of the total cost of
 6 generation and transmission facilities constructed or other-
 7 wise acquired by the Corporation, and a description of the
 8 major components of such costs according to such uniform
 9 system of accounting for public utilities as may be prescribed
 10 by the Federal Power Commission, with such modifications
 11 as may be deemed by the Corporation and Federal
 12 Power Commission to be necessary or desirable by
 13 reason of the nature and character of the Corpora-
 14 tion and its operations, together with records of such
 15 other physical data and operating statistics of the Cor-
 16 poration as may be helpful in determining the actual
 17 cost and value of services, and the practices, methods,
 18 facilities, equipment, appliances, and standards, and sizes,
 19 types, location, and geographical and economic integration
 20 of plants and systems best suited to promote the public in-
 21 terest, efficiency, and the wider and more economical use
 22 of electric energy. Such data shall be reported to the Con-
 23 gress by the Corporation from time to time with appropriate
 24 analyses and recommendations, and, so far as practicable,
 25 shall be made available to the Federal Power Commission

1 and other Federal and State agencies which may be con-
 2 cerned with the administration of legislation relating to the
 3 generation, transmission, or distribution of electric energy.

4 (e) The Corporation may treat any two or more proj-
 5 ects or any portions thereof, existing or planned, including
 6 transmission facilities, as a single unit, and it may credit the
 7 revenues derived from its integrated operations to the indi-
 8 vidual projects or portions thereof in such manner as it deems
 9 appropriate.

10 FACILITATING DISPOSITION OF SURPLUS POWER

11 SEC. 15. In order to facilitate the dispositon of the sur-
 12 plus power of the Corporation according to the policies set
 13 forth in this Act, to give effect to the priority herein accorded
 14 to public and cooperative agencies in the purchase of such
 15 power by enabling them to acquire facilities for the distribu-
 16 tion of such power, and at the same time to preserve existing
 17 distribution facilities as going concerns and avoid duplica-
 18 tion of such facilities wherever possible, the Corporation is
 19 authorized—

20 (a) to assist and render services for any existing or
 21 potential purchaser of electric energy in constructing, ac-
 22 quiring, improving, maintaining, and operating the elec-
 23 trical distribution lines and other facilities of such
 24 purchaser or potential purchaser;

25 (b) to advise and cooperate with public and coop-

1 erative agencies and local groups desiring to form such
 2 public and cooperative agencies, situated within trans-
 3 mission distance from any dam where such power is
 4 generated by the Corporation;

5 (c) to extend credit to, and to assist and render
 6 services for, such agencies and groups in constructing,
 7 acquiring, improving, maintaining, financing, and op-
 8 erating (1) distribution facilities and incidental works,
 9 including generating plants; and (2) interconnecting
 10 transmission lines, or in acquiring any interest in such
 11 facilities, incidental works, and lines;

12 (d) to acquire, operate, maintain, extend, and im-
 13 prove electric utility systems, the principal facilities or
 14 operations of which are in the Columbia Valley region,
 15 or parts of such systems and properties and assets reason-
 16 ably incidental thereto, or the acquisition thereof, and
 17 other generating, transmission, or distribution facilities,
 18 the acquisition of which will improve the operation of the
 19 Corporation's electric facilities in the region or facilitate
 20 the development of appropriate marketing outlets for the
 21 electric energy produced at any project under the Corpo-
 22 ration's control: *Provided*, That before the Corporation
 23 consummates the acquisition of a utility system or part
 24 thereof, the Corporation shall file with the Director of the
 25 Division of the Federal Register, the National Archives,

1 to be published in the Federal Register, a certification
 2 that public or cooperative agencies, or both, in a sub-
 3 stantial portion of the area served by such system or part
 4 thereof, have expressed their desire, through existing
 5 State laws, to purchase the distribution facilities included
 6 in such system or part thereof which are located in the
 7 area served by such agencies, that in its judgment the
 8 operation of such system or part thereof will increase the
 9 Corporation's power revenues in an amount estimated
 10 to be sufficient to pay the operation and maintenance
 11 costs thereof and the principal and interest charges on the
 12 investment therein, and that the value of the acquired
 13 system or part thereof will be sufficient upon any sale
 14 or disposition pursuant to subsection (e) of this section
 15 substantially to repay the investment therein;

16 (e) to sell or otherwise dispose of and to convey
 17 any distribution facilities acquired pursuant to subsec-
 18 tion (d) of this section, and any improvements thereof
 19 to public or cooperative agencies, and it is directed to
 20 do so as speedily as such sales or other disposition can
 21 reasonably be consummated, and it may sell or other-
 22 wise dispose of and convey to public or cooperative
 23 agencies such generating facilities and transmission lines
 24 acquired pursuant to the said subsection and any im-
 25 provements thereof as it determines can be more con-

1 veniently and economically operated by such public or
 2 cooperative agencies. The Corporation may also sell
 3 or otherwise dispose of and convey any incidental
 4 properties or assets acquired by it when acquiring,
 5 improving, or operating a utility system pursuant to
 6 the said subsection. All such sales or other dispositions
 7 shall be upon terms which in the judgment of the
 8 Corporation are reasonable and advantageous to the
 9 Government. In managing such facilities and prop-
 10 erties during the temporary ownership thereof by the
 11 Corporation, and in temporarily selling electricity at
 12 retail, the Corporation, notwithstanding any other pro-
 13 vision of law, may adopt and follow such business prac-
 14 tices, including bookkeeping, accounting, service, sales,
 15 and other practices as in its opinion are reasonable and
 16 are common and accepted in the utility business: *Pro-*
 17 *vided*, That it shall keep the accounts of its electric
 18 operations and sales in conformity with the requirements
 19 of the Federal Power Act and the regulations issued
 20 pursuant thereto by the Federal Power Commission.
 21 In order to effect the continuity of operation and service
 22 during its interim operation thereof, the Corporation
 23 may employ and fix the compensation of the persons
 24 who were employed in operating the said facilities and
 25 property and in selling electricity at retail through the

1 distribution facilities immediately prior to the Corpora-
 2 tion's acquisition thereof, and such other persons who
 3 may be necessary, without regard to any of the laws
 4 applicable to the employment or payment of employees
 5 of the United States. The Corporation may also enter
 6 into leases or management contracts of not to exceed
 7 one year's duration, providing for the temporary opera-
 8 tion, maintenance, extension, and improvement of the
 9 said facilities and properties for the sale of electricity
 10 at retail through the distribution facilities; and it may
 11 extend the said leases or management contracts for
 12 successive terms of not more than six months each.

13 FACILITATING DISPOSITION OF SURPLUS WATER

14 SEC. 16. In order to facilitate the disposition of the
 15 surplus water of the Corporation according to the policies
 16 set forth in this Act, the Corporation is authorized—

17 (a) to assist and render services for any existing
 18 or potential purchaser of water in constructing, acquir-
 19 ing, improving, maintaining, and operating the water,
 20 transmission, and distribution facilities of such pur-
 21 chaser or potential purchaser;

22 (b) to advise and cooperate with States, districts,
 23 counties, municipalities, cooperatives, and nonprofit or-
 24 ganizations, and local groups desiring to form such dis-
 25 tricts, municipalities, cooperatives, and nonprofit or-

1 ganizations within distance permitting practicable pur-
 2 chase and utilization of water stored and available for
 3 sale at any work or facility of the Corporation;

4 (c) to extend credit to, and to assist and render
 5 services for such agencies and organizations in con-
 6 structing, acquiring, improving, maintaining, financing,
 7 and operating canals, conduits, laterals, pipe lines,
 8 ditches, siphons, and incidental works and facilities,
 9 or in acquiring any interest therein.

10 INDIAN LANDS

11 SEC. 17. The Corporation may exercise any of its
 12 powers under this Act, including the power of eminent do-
 13 main, on Indian lands, irrespective of the manner in which
 14 title to such lands is held. In the event the Corporation
 15 acquires any Indian lands or receives by transfer any lands
 16 of the United States utilized for Indian purposes, the Cor-
 17 poration shall make available to the Office of Indian Affairs
 18 such sums as the Corporation, with the approval of the Sec-
 19 retary of the Interior, determines to be requisite for reha-
 20 bilitating and relocating the Indians displaced by such
 21 acquisition or transfer, and for replacing facilities, the use-
 22 fulness of which to the Indians has been destroyed or
 23 impaired through the operations of the Corporation, where
 24 the moneys paid for the lands would otherwise be inadequate
 25 to accomplish such purposes. The said sums, together with

1 moneys paid by the Corporation for Indian lands acquired
 2 by it, other than lands individually owned without restric-
 3 tions upon alienation, payments for which shall be made
 4 directly to the owner, shall be available, without further
 5 appropriation, for expenditure by the Office of Indian Affairs
 6 in rehabilitating and relocating the Indians so displaced, in
 7 replacing the facilities no longer useful to them, in acquiring
 8 for their benefit, by purchase or otherwise, lieu lands to re-
 9 place the lands acquired by the Corporation, and for such
 10 other purposes as are authorized by law. Lieu lands so
 11 acquired shall be held in the same status as those from which
 12 the funds were derived and shall be nontaxable until other-
 13 wise provided by the Congress.

14 REGIONAL DEVELOPMENT ACTIVITIES

15 SEC. 18. The Corporation, in order to encourage the
 16 preservation, discovery, and increase of natural resources, to
 17 promote proper resource development, to prevent soil
 18 erosion and floods, to encourage industry, and to stimulate
 19 the more efficacious use of the land, waters, and products
 20 thereof in the region, is hereby authorized with respect to—

21 (a) Research and scientific experimentation—

22 (1) to plan and to conduct economic, scientific, and
 23 technologic investigations, surveys, and studies, to estab-
 24 lish, maintain, and operate laboratories, research facili-
 25 ties and pilot plants, and to undertake experiments and

1 demonstrations, all for the purpose of developing new
 2 uses and new and improved techniques and methods for
 3 the discovery, extraction, production, processing, and use
 4 of the resources and products of the region, and of foster-
 5 ing the orderly and proper physical, economic, and social
 6 development thereof; and

7 (2) to sell any products purchased or otherwise
 8 acquired by the Corporation, or the products manufac-
 9 tured by the Corporation in the development of any proc-
 10 ess, as a part of its development program, and to make
 11 donations or other dispositions of any such products for
 12 experimentation, education, and introduction of the use
 13 of such products so as to obtain information as to their
 14 value.

15 (b) Fertilizers and chemicals—

16 (1) to acquire and make alterations, modifications,
 17 and improvements in existing plants and facilities, to
 18 construct new plants and facilities, and to operate and
 19 maintain such plants and facilities for the purpose of en-
 20 abling the Corporation to furnish chemical products for
 21 military purposes, and fertilizer components and prod-
 22 ucts for agricultural purposes; and in connection there-
 23 with, the Corporation may utilize, with or without re-
 24 imbursement, the mineral resources of the public lands

1 in the region which are suitable for the purposes herein
2 set forth;

3 (2) to contract with commercial producers for the
4 production of such fertilizer materials as may be needed
5 in the Corporation's program of development and intro-
6 duction. Such contracts may provide either for outright
7 purchase of materials by the Corporation or only for the
8 payment of carrying charges on special materials manu-
9 factured at the Corporation's request for its program;

10 (3) to arrange with farmers, farm organizations,
11 and other bodies for large-scale practical use of fertilizers
12 under conditions permitting an accurate measure of the
13 economic return they produce.

14 (c) Agriculture, forestry, grazing, and soil conser-
15 vation—

16 (1) to promote the use of land for the purposes
17 for which it may best be suited, including but not
18 limited to agricultural, forestry, and grazing purposes;
19 to foster the most efficient agricultural, forestry, grazing,
20 and soil-conservation practices; to assist in afforesting,
21 reforesting, seeding, and reseeding lands best suited
22 for forest or grazing purposes; and to promote soil
23 conservation by the use of crops, grasses, trees, and
24 other plants or by any other means;

25 (2) to arrange for the large-scale practical use

1 of new or improved varieties of crops, grasses, trees, and
2 other plants, and new or improved methods for grow-
3 ing, harvesting, processing, and marketing them during
4 the initial or experimental period, under conditions per-
5 mitting an accurate measure of the economic return
6 they produce; and

7 (3) to sell any crops, grasses, trees, or other plants
8 grown, or fertilizers purchased or otherwise acquired by
9 the Corporation or the products manufactured by it, as
10 a part of its program of development of soil conservation,
11 or to make donations or other dispositions to be fairly
12 and equitably distributed through the agency of experi-
13 mental stations, county demonstration agents, agricul-
14 tural schools or colleges, farmers' cooperatives, or
15 associations of owners, users, or operators of lands or of
16 processors of products therefrom, or otherwise, as the
17 Corporation may determine, for experimentation, edu-
18 cation, and introduction of the use of such items and
19 products.

20 (d) Fish and wildlife—

21 (1) to provide for the conservation, management,
22 and rehabilitation of all species of birds, fish, mammals,
23 and other classes of wild animals through the develop-
24 ment, protection, rearing, stocking, and management of
25 such wildlife, the resources thereof and their habitat,

1 the control of losses of the same from diseases or other
 2 causes and through minimizing damages from predators
 3 and overabundant species, but not in conflict with the
 4 provisions of the laws relating to the protection of migra-
 5 tory birds or the programs administered under such laws,
 6 which shall continue to be administered as presently pro-
 7 vided by law;

8 (2) to provide in connection with impoundments,
 9 diversions, water-control facilities, and any other works,
 10 suitable and necessary means, measures, and management
 11 areas to conserve, manage, rehabilitate, and prevent loss
 12 of and damage to birds, fish, mammals, and other classes
 13 of wild animals dependent upon the waters, lands, and
 14 habitat affected by such works; and

15 (3) to cooperate with, and give and sell fish, game,
 16 and other wildlife to, States, counties, districts, munici-
 17 palities, and governmental subdivisions and agencies of
 18 any of them, and educational and scientific institutions.

19 (e) Recreation—

20 (1) to construct, establish, maintain, develop, and
 21 operate, in conjunction with any of the programs and
 22 activities authorized under this Act, recreational areas
 23 and facilities, and to make such areas and facilities
 24 available for public use upon such terms and conditions

1 as the Corporation may determine to be appropriate;

2 and

3 (2) to assist cooperating organizations in develop-
 4 ing and executing recreational and health programs.

5 PERSONNEL

6 SEC. 19. (a) The Corporation shall, without regard to
 7 any other laws, rules, or regulations relating to the em-
 8 ployment or payment of employees of the United States
 9 except the Veterans' Preference Act of 1944 to the extent
 10 that it otherwise is applicable, employ and fix the compen-
 11 sation of such managers, assistant managers, officers, em-
 12 ployees, attorneys, agents, and consultants as are necessary
 13 for the transaction of its business, define their duties, require
 14 bonds of such of them as the Board may designate, the
 15 premiums for which shall be paid by the Corporation, and
 16 provide a system of organization to fix responsibility and
 17 promote efficiency. Any employee of the Corporation may
 18 be removed in the discretion of the Board. No regular
 19 officer or employee of the Corporation shall receive a salary
 20 in excess of that received by the directors. Subject to
 21 the provisions of this Act, the Corporation is authorized
 22 to deal collectively with its employees through representa-
 23 tives of their own choosing and is authorized to enter into
 24 written or oral contracts with such employee representatives.

1 (b) Employees of the Corporation shall have rights with
 2 respect to security of tenure comparable to those provided
 3 by the civil-service laws, and shall be protected to sub-
 4 stantially the same extent as persons subject to such laws.
 5 Employees acquired by transfer from other establishments
 6 or agencies of the United States shall retain all pay, leave,
 7 and retirement credits which they held at the time of such
 8 transfer, and in case they subsequently are retransferred to
 9 positions under the civil-service laws, shall be credited for
 10 the purpose of seniority with the time spent as an employee
 11 of the Corporation.

12 (c) In the employment, selection, classification, and pro-
 13 motion of officers and employees of the Corporation, no polit-
 14 ical test or qualification shall be permitted or given considera-
 15 tion, but all such employments and promotions shall be given
 16 and made on the basis of merit and efficiency. It shall be
 17 unlawful for the Board to make or assist in the making of or
 18 cause to be made any employment, selection, classification,
 19 or promotion of any officer or employee of the Corporation
 20 on the basis of or because of any political qualification or
 21 test, and if any director violates this provision he shall be
 22 guilty of an offense against the United States, and upon con-
 23 viction thereof shall be fined not more than \$5,000 or im-
 24 prisoned not more than one year, or both. Any officer or
 25 employee of the Corporation who is found to be guilty of a

1 violation of this subsection shall be removed from office by
 2 the Board.

3 (d) The benefits of the Act entitled "An Act to pro-
 4 vide compensation for employees of the United States suffer-
 5 ing injuries while in the performance of their duties, and for
 6 other purposes", approved September 7, 1916, as amended,
 7 shall extend to persons given employment under the provi-
 8 sions of this Act; and the remedies afforded by such Act of
 9 September 7, 1916, as amended, shall be exclusive and in
 10 lieu of any other remedy for injuries or death against the
 11 United States or the Corporation.

12 (e) All persons given employment under this Act, other
 13 than (1) laborers, mechanics, and workmen employed in
 14 connection with construction work or the operation and
 15 maintenance of the Corporation's properties and facilities
 16 to whom the Act of May 29, 1930 (46 Stat. 468), as
 17 amended, does not otherwise apply, and (2) employees re-
 18 tained or hired in connection with interim operations under
 19 section 15 of this Act, shall be deemed to be "employees"
 20 within the meaning of that term in the said Act of May 29,
 21 1930 (46 Stat. 468), as amended.

22 (f) Section 1426 of the Internal Revenue Code, as
 23 amended, is amended by adding at the end thereof the fol-
 24 lowing new subsection:

25 "(k) CERTAIN EMPLOYEES OF COLUMBIA VALLEY

1 AUTHORITY.—The term 'employment' shall include such
 2 service as is determined by the Columbia Valley Authority
 3 (hereinafter called the Authority) to be performed after
 4 December 31, 1946, by (1) a laborer, mechanic, or work-
 5 man, in connection with construction work or the operation
 6 and maintenance of the Authority's properties and facilities,
 7 or (2) an employee retained or hired in connection with
 8 interim operations under section 15 of the Columbia Valley
 9 Authority Act, as an employee performing service for the
 10 Authority, but shall not include any service performed by
 11 such a laborer, mechanic, or workman to whom the Act of
 12 May 29, 1930 (46 Stat. 468), as amended, applies. The
 13 term 'wages' means, with respect to service which constitutes
 14 employment by reason of this subsection, such amount of
 15 remuneration as is determined (subject to the provisions
 16 of this section) by the Authority to be paid for such service.
 17 The Authority is authorized and directed to comply with
 18 provisions of the internal revenue laws as the employer of
 19 individuals whose service constitutes employment by reason
 20 of this subsection."

21 (g) Section 209 of the Social Security Act, as amended,
 22 is amended by adding at the end thereof the following new
 23 subsection:

24 "(q) (1) The term 'employment' shall include such
 25 service as is determined by the Columbia Valley Authority

1 (hereinafter called the Authority) to be performed after
 2 December 31, 1946, by (1) a laborer, a mechanic, or
 3 workman, in connection with construction work or the op-
 4 eration and maintenance of the Authority's properties and
 5 facilities, or (2) an employee retained or hired in connection
 6 with interim operations under section 15 of the Columbia
 7 Valley Authority Act, as an employee performing service
 8 for the Authority, but shall not include any service per-
 9 formed by such a laborer, mechanic, or workman, to whom
 10 the Act of May 29, 1930 (46 Stat. 468), as amended,
 11 applies.

12 "(2) The Social Security Board shall not make de-
 13 terminations as to whether an individual has performed ser-
 14 vices which are employment by reason of this subsection,
 15 the periods of such services, the amounts of remuneration for
 16 such services which constitute 'wages' under the provision of
 17 this section, or the periods in which or for which such wages
 18 were paid, but shall accept the determinations with respect
 19 thereto of the Authority, and such agents as it may desig-
 20 nate, as evidenced by returns filed by the Authority as an
 21 employer pursuant to section 1426 (k) of the Internal Rev-
 22 enue Code and certifications made pursuant to this subsec-
 23 tion. Such determinations shall be final and conclusive.

24 "(3) The Authority is authorized and directed, upon
 25 written request of the Social Security Board, to make cer-

1 tification to it with respect to any matter determinable for
2 the Board by the Authority under this subsection, which the
3 Board finds necessary in administering this title."

4 (h) Section 1606 of the Internal Revenue Code, as
5 amended, is amended by adding at the end thereof the fol-
6 lowing new subsection:

7 " (f) The legislature of any State may, with respect to
8 service to be performed after December 31, 1946, by (1)
9 a laborer, mechanic, or workman, in connection with con-
10 struction work or the operation and maintenance of the
11 Authority's properties and facilities, or (2) an employee
12 retained or hired in connection with interim operations under
13 section 15 of the Columbia Valley Authority Act, as an
14 employee performing service for the Columbia Valley Au-
15 thority (hereinafter called the Authority), require the
16 Authority, and any such employee, to make contributions
17 to an unemployment fund under a State unemployment
18 compensation law approved by the Board under section
19 1603 and to comply otherwise with such law. Such per-
20 mission is subject to the conditions imposed by subsection
21 (b) of this section upon permission to State legislatures to
22 require contributions from instrumentalities of the United
23 States. The Authority is authorized and directed to comply
24 with the provisions of any applicable State unemployment
25 compensation law as the employer of individuals whose

1 service constitutes employment under such law by reason
2 of this subsection."

3 (i) Section 1607 of the Internal Revenue Code, as
4 amended, is amended by adding at the end thereof the
5 following new subsection:

6 "(n) CERTAIN EMPLOYEES OF COLUMBIA VALLEY
7 AUTHORITY.—The term 'employment' shall include such
8 service as is determined by the Columbia Valley Authority
9 (hereinafter called the Authority) to be performed after
10 December 31, 1946, by (1) a laborer, mechanic, or work-
11 man, in connection with construction work or the operation
12 and maintenance of the Authority's properties and facilities,
13 or (2) an employee retained or hired in connection with
14 interim operations under section 15 of the Columbia Valley
15 Authority Act, as an employee performing service for the
16 Authority. The term 'wages' means, with respect to serv-
17 ice which constitutes employment by reason of this sub-
18 section, such amount of remuneration as is determined (sub-
19 ject to the provisions of this section) by the Authority to
20 be paid for such service. The Authority is authorized and
21 directed to comply with the provisions of the internal
22 revenue laws as the employer of individuals whose service
23 constitutes employment by reason of this subsection."

24 (j) All contracts to which the Corporation is a party
25 and which require the employment of laborers and me-

1 chanics in the construction, alteration, maintenance, or repair
 2 of buildings, dams, locks, or other structures or facilities,
 3 shall contain a provision that not less than the prevailing
 4 rate of wages for work of a similar nature in the vicinity
 5 shall be paid to such laborers or mechanics. In the event
 6 any dispute arises as to what are the prevailing rates of
 7 wages, the question shall be referred to the Secretary of
 8 Labor for determination, and his decision shall be final. In
 9 the determination of such prevailing rate or rates, due re-
 10 gard shall be given to those rates which have been secured
 11 through collective agreement by representatives of employers
 12 and employees.

13 (k) The Corporation is authorized to request the assist-
 14 ance and advice of any officer, agent, or employee of any
 15 executive department, independent office, or agency of the
 16 United States, to enable the Corporation the better to carry
 17 out its powers successfully. The executive departments
 18 and independent offices and agencies of the United States
 19 are authorized to make such officers, agents, and employees
 20 available to the Corporation with or without reimbursement
 21 upon terms mutually agreeable to such department, inde-
 22 pendent office, or agency and the Corporation. The Cor-
 23 poration may accept and utilize such voluntary and uncom-
 24 pensated services as it finds helpful in carrying out the
 25 purposes of this Act; and in connection with the utilization

1 of such services reasonable payments may be allowed for
 2 necessary travel and other expenses. The Corporation,
 3 upon the basis of such authorization or approval as the
 4 Board may determine, may pay the expenses for travel
 5 of an employee and for transportation of his household
 6 effects, in connection with a change in his official station.

7 FINANCE, AUDITS, ACCOUNTS, AND REPORTS

8 SEC. 20. (a) The proceeds for each fiscal year derived
 9 by the Corporation from the sale of electric energy, the
 10 returns from water contracts, and the sale of any products
 11 manufactured by the Corporation and from any other activ-
 12 ities of the Corporation, including the disposition of any
 13 real or personal property, shall be used for the following
 14 purposes and in the following order of priority:

15 (1) For payment of the expenses of the Corporation for
 16 operation and maintenance of dams and reservoirs and for
 17 conducting its business in generating, transmitting, and dis-
 18 tributing electrical energy; for the establishment and mainte-
 19 nance of reserves for such purposes in amounts determined
 20 by the Corporation to be necessary and reasonable; and for a
 21 continuing emergency fund of \$1,000,000 to defray emer-
 22 gency expenses and to insure continuous operation: *Provided,*
 23 That the funds covering such reserves shall be used only for
 24 the purposes for which they are maintained and shall not be
 25 impaired by any other payments authorized by this Act.

1 (2) For payments in lieu of taxes pursuant to section 23
2 of this Act.

3 (3) Subject to the provisions of section 21 of this Act,
4 for payments of interest and the principal of all outstanding
5 revenue bonds of the Corporation as the same may become
6 due and payable according to their terms, and for any sinking
7 fund payments and the creation of any reserves required by
8 the terms of the said bonds, or of any indenture agreement
9 or instrument executed in connection therewith.

10 (4) For covering into the Treasury of the United States
11 annually the appropriate payment on the reimbursement
12 obligations established by the Corporation and approved by
13 the President pursuant to section 14 of this Act: *Provided*,
14 That in any fiscal year in which the Corporation's revenues
15 are not sufficient to cover into the Treasury the said sum in
16 whole or in part, the unpaid amount shall be carried forward
17 as a continuing obligation of the Corporation to pay and shall
18 thereafter be paid to the Treasury in the same manner as
19 the annual payments herein provided for.

20 (5) Subject to the provisions of section 21 of this Act,
21 for purchasing and retiring before maturity any of the Cor-
22 poration's outstanding revenue bonds and for covering into
23 the Treasury for the purpose of making advance payments
24 on the reimbursement obligations established pursuant to
25 section 14 of this Act.

1 (6) All remaining revenues shall be paid into the
2 Treasury of the United States at the end of each calendar
3 year.

4 (b) The Corporation shall at all times maintain com-
5 plete and accurate books of account. In January of each
6 year the board shall file with the President and the Congress
7 a financial statement and a report as to the business of the
8 Corporation covering the preceding governmental fiscal year.

9 (c) Subject to the provisions of this section, the Cor-
10 poration shall determine and prescribe the manner in which
11 its obligations and expenses shall be incurred, allowed, paid,
12 and audited: *Provided*, That in addition to such audits by
13 others as the Corporation may deem necessary or desirable,
14 if any, the Comptroller General of the United States shall
15 audit the transactions of the Corporation at such times as he
16 shall determine, but not less frequently than once each gov-
17 ernmental fiscal year, with personnel of his selection. In such
18 connection he and his representatives shall have free and
19 open access to all papers, books, records, files, accounts,
20 plants, warehouses, offices, and all other things, property,
21 and places belonging to or under the control of or used or
22 employed by the Corporation, and shall be afforded full
23 facilities for counting all cash and verifying transactions
24 with and balances in depositaries. He shall make report of
25 each such audit in quadruplicate, one copy for the President

1 of the United States, one for the Chairman of the Board,
 2 one for public inspection at the principal office of the Cor-
 3 poration, and the other to be submitted by him to the Con-
 4 gress: *Provided*, That such report shall not be made until
 5 the Corporation shall have had reasonable opportunity to
 6 examine the exceptions and criticisms of the Comptroller
 7 General or the General Accounting Office, to point out er-
 8 rors therein, explain or answer the same, and to file a
 9 statement which shall be submitted by the Comptroller Gen-
 10 eral with his report. The expenses for each such audit shall
 11 be paid from any appropriation or appropriations for the
 12 General Accounting Office, and such part of such expenses
 13 as may be allocated to the cost of generating, transmitting,
 14 and distributing electric energy shall be reimbursed promptly
 15 by the Corporation as billed by the Comptroller General.
 16 The Comptroller General shall make special report to the
 17 President of the United States and to the Congress of any
 18 transaction or condition found by him to be in conflict with
 19 the power or duties entrusted to the Corporation by law.

20 (d) Nothing in this Act shall be construed to relieve the
 21 treasurer or other accountable officers or employees of the
 22 Corporation from compliance with the provision of existing
 23 law requiring the rendition of accounts for adjustment and
 24 settlement pursuant to section 236, Revised Statutes, as
 25 amended by section 305 of the Budget and Accounting Act,

1 1921 (42 Stat. 24), and accounts for all receipts and dis-
 2 bursements by or for the Corporation shall be rendered ac-
 3 cordingly: *Provided*, That subject only to the provisions
 4 of this Act, the Corporation is authorized to enter into such
 5 contracts, agreements, and arrangements, including the
 6 amendment, modification, adjustment, or cancellation there-
 7 of, and the compromise or final settlement of any claim
 8 arising thereunder, and of all litigation by or against the Cor-
 9 poration, and to make such expenditures, upon such terms
 10 and conditions and in such manner, as it may deem neces-
 11 sary and, notwithstanding the provisions of any other law
 12 governing the expenditure of public funds, the General Ac-
 13 counting Office, in the settlement of the accounts of the
 14 treasurer or other accountable officer or employee of the
 15 Corporation, shall not disallow credit for, nor withhold funds
 16 because of, any expenditure which the Board shall deter-
 17 mine to have been necessary to carry out the provisions
 18 of said Act.

19 (e) The Corporation shall determine its own system of
 20 administrative accounts and the forms and contents of its
 21 contracts and other business documents except as otherwise
 22 provided in this Act.

23 (f) All funds required by the Corporation in addition
 24 to those derived and expended pursuant to subsection (a)
 25 hereof shall be provided by appropriation in accordance

1 with the procedures of the Budget and Accounting Act of
 2 1921 (42 Stat. 20), as amended, except as otherwise pro-
 3 vided herein. All appropriations necessary to carry out the
 4 provisions of this Act are hereby authorized.

5 REVENUE BONDS AND USE OF PROCEEDS

6 SEC. 21. The Corporation is authorized to issue and
 7 sell or exchange from time to time revenue bonds, revenue
 8 notes, and revenue obligations (all of which are hereinafter
 9 referred to as revenue bonds), and to use the proceeds thereof
 10 for the acquisitions authorized by section 15 (d) of this Act,
 11 for providing funds for the rehabilitation of properties ac-
 12 quired pursuant thereto and working capital with which
 13 to commence operation thereof, but not more than 5 per
 14 centum of the amount paid in any acquisition may be used
 15 for such purposes, and for purchasing, refunding, or redeem-
 16 ing outstanding revenue bonds. The interest and principal
 17 and other charges on such revenue bonds shall be paid only
 18 from the revenues from the Corporation's generation, trans-
 19 mission, and sale of electric energy pursuant to this Act, and
 20 from the proceeds of the sales or other dispositions author-
 21 ized by section 15 (e) of this Act. The said revenue bonds
 22 shall express on their face that they are not direct obliga-
 23 tions of the United States, and that the payment of the prin-
 24 cipal and interest on the bonds is not guaranteed by the
 25 United States. Such revenue bonds shall be issued in such

1 series and in such forms and denominations, shall mature
 2 within such period not more than fifty years from the date
 3 of their issue, may provide for redemption before maturity
 4 at the option of the Corporation or through the operation of
 5 any sinking fund in such manner and on such terms as may
 6 be stipulated therein, may carry such registration and con-
 7 version provisions, shall contain such provisions with respect
 8 to negotiability, may require the establishment of such sink-
 9 ing funds, shall bear such rates of interest, shall include such
 10 terms, conditions, and covenants not inconsistent with this
 11 Act, shall be issued in such manner and amount, and shall
 12 be sold at such prices and in such manner as may be pre-
 13 scribed by the Corporation: *Provided*, That none of the
 14 properties or moneys of the Corporation or of the United
 15 States which are entrusted to the Corporation, other than
 16 power revenues and the proceeds of the sales or other dis-
 17 positions authorized by section 15 (e) of this Act, shall be
 18 pledged or mortgaged as security for any such revenue bonds
 19 or for any other purpose. The Corporation is authorized
 20 to execute such indentures, agreements, and other instru-
 21 ments as it may determine to be necessary to set forth the
 22 terms and conditions upon which revenue bonds are or may
 23 be issued under this Act. Such revenue bonds shall be law-
 24 ful investments, and may be accepted as security for all
 25 fiduciary, trust, and public funds, the investment or deposit

1 of which shall be under the authority or control of the United
 2 States, or any officer or officers thereof. The Reconstruc-
 3 tion Finance Corporation and the Secretary of the Treasury
 4 in their discretion are authorized to purchase any revenue
 5 bonds issued hereunder, and for such purpose the Secretary
 6 of the Treasury is authorized to use as a public-debt transac-
 7 tion the proceeds from the sale of any securities hereafter
 8 issued under the Second Liberty Bond Act, as amended,
 9 and the purposes for which securities may be issued under
 10 said Act, as amended, are extended to include any purchases
 11 of the Corporation's revenue bonds hereunder. The Recon-
 12 struction Finance Corporation and the Secretary of the
 13 Treasury may, at any time, sell any of the revenue bonds
 14 of the Corporation acquired by them under this section. All
 15 purchases and sales by the Secretary of the Treasury of the
 16 revenue bonds of the Corporation shall be treated as public-
 17 debt transactions of the United States. The Corporation
 18 shall have the power to purchase such revenue bonds in the
 19 open market at any time and at any price.

20 PROCUREMENT OF SUPPLIES AND SERVICES

21 SEC. 22. The Corporation may cause to be performed
 22 by contract any construction work authorized by this Act.
 23 All purchases and contracts for supplies or services, except
 24 for personal services, made by the Corporation shall be made
 25 after advertising, in such manner and at such times suffi-

1 ciently in advance of opening bids, as the Board shall
 2 determine to be adequate to insure notice and opportunity
 3 for competition: *Provided, however,* That advertisement
 4 shall not be required when (1) the Corporation determines
 5 that an emergency or insurance of continuous operation re-
 6 quires immediate delivery of the supplies or performance
 7 of the services; or (2) parts, accessories, supplemental
 8 equipment, extensions, additions, or services are required
 9 for supplies, facilities, or services previously furnished, con-
 10 structed, or contracted for; or (3) the aggregate amount
 11 involved in any purchase of supplies or procurement of serv-
 12 ices does not exceed \$500; in which cases such purchases
 13 of supplies or procurement of services may be made in the
 14 open market in the manner common among businessmen.
 15 In comparing bids and in making awards, the Board may
 16 consider such factors as relative quality and adaptability of
 17 supplies or services, the bidder's financial responsibility,
 18 plant, equipment and facilities, skill, experience, record
 19 of integrity in dealing, previous record of performance and
 20 compliance with specifications, and ability to furnish re-
 21 pairs and maintenance services, and the time of delivery
 22 or performance offered.

23 PAYMENTS IN LIEU OF TAXES

24 SEC. 23. (a) Subject to the provisions of this section,

1 the Corporation is authorized and directed to make the fol-
2 lowing payments in lieu of taxes:

3 (1) Payments shall be made in lieu of real and per-
4 sonal property taxes on any electric utility system or other
5 property acquired by the Corporation pursuant to section
6 15 (d) of this Act.

7 (2) Payments shall be made in lieu of business, fran-
8 chise, excise, and other similar State and local taxes allocable
9 to any electric distribution or related facilities acquired by
10 the Corporation pursuant to section 15 (d) of this Act and
11 temporarily operated by the Corporation.

12 (3) Whenever the Corporation determines that the tax
13 revenues of any State, county, district, or other taxing unit
14 have been substantially affected by the acquisition of real
15 or personal property or any interest therein by the Corpora-
16 tion other than property subject to clauses (1) and (2)
17 of this subsection, and that the loss sustained thereby by
18 such taxing unit has not been offset by gains derived by that
19 unit from the operations of the Corporation, payment in an
20 amount equal to the excess of such loss over such gains shall
21 be made in lieu of real and personal property taxes on such
22 property.

23 (b) As soon as practicable after the Corporation ac-
24 quires property on, or by virtue of the operation of, which
25 payments in lieu of taxes are to be made, the Corporation

1 shall determine the average amount of the taxes paid or pay-
2 able to the taxing unit by the previous owners on or by virtue
3 of the operation of such property during the last three years,
4 or such portion thereof as the property was subject to tax-
5 ation, preceding the Corporation's acquisition thereof. On
6 the date or dates on which each such tax is next due and pay-
7 able according to law, or as soon thereafter as practicable, and
8 at the corresponding time or times during each succeeding
9 year, the Corporation shall pay such average amount so deter-
10 mined, or such lesser amount as may be required by subdivi-
11 sion (3) of subsection (a) of this section, to the respective
12 officers or agencies to which said taxes would be paid had the
13 property remained in private ownership, such payments to be
14 distributed in the same manner and in the same proportions
15 as the taxes in lieu of which the payments are made or in such
16 other manner or proportion as the State legislature may
17 direct.

18 (c) If the United States or any agency or instrumen-
19 tality thereof is required by statute or agreement authorized
20 by statute to make any payments in lieu of taxes on any prop-
21 erty, or to pay any portion of the revenue derived from any
22 property, the use thereof or any products produced therefrom,
23 transferred to the Corporation pursuant to section 9 of this
24 Act, the Corporation shall continue to make such payments
25 after the consummation of the transfer. The payments pro-

1 vided by this subsection shall be in lieu of any payments
2 otherwise authorized by this section.

3 (d) No payment authorized by this section in lieu of
4 any tax shall be made on account of properties which the
5 Corporation shall have disposed of prior to the date on
6 which such tax becomes due and payable. For the pur-
7 poses of this section property owned or acquired by the
8 United States shall be deemed to have been acquired by and
9 to be the property of the Corporation. The determination
10 of the Corporation of the necessity of making any payments
11 under this section and of the amounts thereof shall be final.

12 (e) The payments authorized under this section are in
13 lieu of taxation and the Corporation, its property, fran-
14 chises, and income are hereby expressly exempted from
15 taxation in any manner or form by any State, county,
16 municipality, or any subdivision or district thereof.

17 (f) The Corporation shall, not later than five years
18 after the enactment of this Act, submit to the Congress a
19 report on the operation of the provisions of this section,
20 including a statement of the distribution to the various tax-
21 ing units hereunder; the effect of the operation of the pro-
22 visions of this section on State and local finances; and
23 appraisal of the benefits of the program of the Corporation
24 to the States receiving payments hereunder, and the effect
25 of such benefits in increasing taxable values within such

1 States; and such other data, information, and recommenda-
2 tions as may be pertinent to future legislation.

3 USE OF PATENTS

4 SEC. 24. (a) The Corporation, as an instrumentality
5 of the Government of the United States, shall have access
6 to the Patent Office of the United States for the purpose
7 of studying, ascertaining, and copying all methods, formulas,
8 and scientific information (not including access to pending
9 applications for patents) necessary to enable the Corpora-
10 tion to use and employ the most efficacious and economical
11 processes in the course of its operations. Except as pro-
12 vided in subsection (b), any owner of a patent whose patent
13 rights may have been thus in any way copied, used, in-
14 fringed, or employed by the exercise of this authority by
15 the Corporation shall have as the exclusive remedy a cause
16 of action against the Corporation, to be instituted and prose-
17 cuted in the appropriate district court of the United States
18 for the recovery of reasonable compensation for such in-
19 fringement. The Commissioner of Patents shall furnish to
20 the Corporation, at its request and without payment of fees,
21 copies of documents on file in his office.

22 (b) Any invention or discovery made by virtue of and
23 incidental to service to the Corporation by an employee of
24 the Government of the United States pursuant to section
25 19 of this Act or otherwise, or by any employee of the

1 Corporation, together with any patents which may be
 2 granted thereon, shall be the sole and exclusive property of
 3 the Corporation, which is hereby authorized to grant licenses
 4 thereunder, and under any other patents owned by it. The
 5 Corporation may pay to the employee making any such
 6 invention or discovery such sum from, -or percentage of,
 7 the income from the sale of licenses as it may deem proper.

8 STATE COMPACTS

9 Sec. 25. The consent of the Congress, subject to the pro-
 10 visions of this section, is hereby given the several States to
 11 enter into agreements and compacts between or among any
 12 two or more States (1) to further and supplement on behalf
 13 of the States the purpose of this Act, and (2) to carry out
 14 on behalf of the States appropriate projects and activities in
 15 relation thereto: *Provided, however,* That no such agreement
 16 or compact shall become effective or binding upon the States
 17 parties thereto unless and until it shall have been submitted
 18 to the Corporation and ratified by Congress. The Corpora-
 19 tion shall recommend the ratification of any such agreement
 20 or compact if it finds such agreement or compact and the
 21 projects and activities contemplated thereby, to be feasible,
 22 practicable, and appropriate to and consistent with the poli-
 23 cies and purposes of this Act, and shall, insofar as practicable,
 24 cooperate with and furnish information and assistance to the
 25 States for the purposes of negotiating, entering into, and

1 carrying out agreements and compacts pursuant to this sec-
 2 tion.

3 PENAL PROVISIONS

4 Sec. 26. (a) All general penal statutes relating to the
 5 larceny, embezzlement, conversion, or to the improper han-
 6 dling, retention, use, or disposal of public moneys or property
 7 of the United States shall apply to the moneys and property
 8 of the Corporation and to moneys and properties of the
 9 United States entrusted to the Corporation.

10 (b) Any person who, with intent to defraud the Cor-
 11 poration, or to deceive any director, officer, or employee of
 12 the Corporation or any officer or employee of the United
 13 States, (1) makes any false entry in any books of the Cor-
 14 poration, or (2) makes any false report or statement for
 15 the Corporation, shall, upon conviction thereof, be fined
 16 not more than \$10,000 or imprisoned not more than five
 17 years, or both.

18 (c) Any person who shall receive any compensation,
 19 rebate, or reward, or shall enter into any conspiracy, col-
 20 lusion, or agreement, express or implied, with intent to
 21 defraud the Corporation or wrongfully and unlawfully to
 22 defeat its purposes, shall, upon conviction thereof, be fined
 23 not more than \$5,000 or imprisoned not more than five
 24 years, or both.

1 REPEALER PROVISIONS

2 SEC. 27. All Acts or parts of Acts in conflict herewith
3 are hereby repealed, so far as they affect the operations
4 contemplated by this Act. Effective as of the date the
5 transfers authorized by section 9 (a) of this Act become
6 effective, the Act of August 20, 1937, entitled "An Act
7 to authorize the completion, maintenance, and operation of
8 Bonneville project for navigation, and for other purposes"
9 (50 Stat. 731), as amended, is hereby repealed.

10 SEPARABILITY PROVISIONS

11 SEC. 28. If any provision of this Act or the application
12 of such provision to any person or circumstances shall be
13 held invalid, the remainder of the Act and the application
14 of such provision to persons or circumstances other than
15 those to which it is held invalid shall not be affected thereby.

16 CONSTRUCTION OF ACT

17 SEC. 29. This Act shall be liberally construed to carry
18 out the purposes of Congress to provide for the disposition
19 of and make needful rules and regulations respecting Gov-
20 ernment properties entrusted to the Corporation, provide
21 for the national defense, improve navigation, control de-
22 structive floods, and promote interstate commerce and
23 general welfare.

79TH CONGRESS
1ST SESSION

S. 1716

A BILL

To establish a Columbia Valley Authority to provide for integrated water control and resource development on the Columbia River, its tributaries, and the surrounding region in the interest of the control and prevention of floods, the irrigation and reclamation of lands, the promotion of navigation, the providing of employment, the strengthening of the national defense, and for other purposes.

By Mr. MITCHELL

DECEMBER 20 (legislative day, DECEMBER 19), 1945
Read twice and referred to the Committee on Commerce



Saint Paul, Minnesota
January 25, 1946

Mr. Bernard Blum
Chief Engineer

You may wish to review and place on file the attached official statement of work on the Columbia Basin project to be carried on during the next six months. At least the Bureau has the authority and funds for the work provided it can be gotten under contract.

JMAw

Encl.



St. Paul, Minnesota
January 25, 1946

Mr. Bernard Blum
Chief of Police

You may wish to review and place on file the attached
official statement of work on the Columbia Basin project
to be carried on during the next six months. At least
the Bureau has the authority and funds for the work pro-
vided it can be better when contrast.

Yours,

DEPARTMENT OF THE INTERIOR
Bureau of Reclamation
Coulee Dam, Wash.

For release Thursday, January 10, 1946.

COULEE DAM, WASH., Thursday, Jan. 10, 1946.--Work on 12 major structures in the Columbia Basin Project of south-central Washington probably will be authorized by the Bureau of Reclamation during the first six months of 1946, Supervising Engineer Frank A. Banks announced today. He said they will result in employment of "several thousand men" and ultimately will cost more than \$100,000,000.

In revealing the schedule tentatively adopted for launching the biggest construction job ever contemplated in the Pacific Northwest, Mr. Banks explained that the building of the irrigation system for serving 17,000 new farms in an arid and semi-arid region will extend over a period of several years. He added that 1946 "will only be the beginning."

The proposed program for the coming six months, made possible by a recent \$10,500,000 supplemental appropriation by Congress, calls for the start of 3 dams, 3 principal canals, 3 siphons, 1 tunnel, and 2 pumping plants.

Of the total supplemental money available in the first half of this year, about \$8,000,000 will be for irrigation features and \$2,000,000 for inaugurating a land-purchase program. Excess land will be acquired by the Government, divided into family-size farm units, and resold (prior to the time water becomes available) to the first of the many thousands of settlers who will establish homes in the Basin.

In describing the immensity of the building program, Mr. Banks said that by midsummer construction probably will be under way "at several points from Grand Coulee Dam southward to Pasco, 150 miles away."

Because no project approaching the Columbia Basin development has been undertaken in the Pacific Northwest, Mr. Banks explained that the amount of earth and rock to be handled--135,000,000 tons--will weigh six times more than Grand Coulee Dam, largest man-made concrete structure in the world and kingpin for the irrigation system. During the construction period, he asserted, the project will provide 240,000,000 man-hours of on-site and off-site employment. Of this total, more than 125,000,000 man-hours will be in direct employment in the Basin and 115,000,000 man-hours will be spread throughout the United States as industries manufacture the tremendous quantities of steel, cement, machinery, explosives, and other materials necessary for completing the irrigation structures.

"Two Grand Coulee Dams could be built with the man-hours of on-site work to be provided by the construction program," Mr. Banks commented. "Beneficial effects of the construction job will be felt in every State of the Union."

The supervising engineer has reported to Reclamation Commissioner Michael W. Straus that the 1946 construction timetable will be influenced by several factors, chiefly the availability of machinery, materials, and workers. Mr. Banks said the Bureau hopes to have portions of the permanent irrigation system ready to serve acreage in all three districts of the Basin by 1950 or 1951. Prior to that, however, the Bureau estimates it will begin providing water for about 6,000 acres in the Pasco region in 1947 by pumping water from the Columbia River. The pumping plant will be about 14 miles northwest of Pasco.

As outlined by Mr. Banks, the Bureau's tentative schedule during the coming six months calls for initial work on the following structures:

Grand Coulee Dam Pumping Plant--Considerable work is contemplated in preparing the rock wall at the pumping plant site immediately above Grand Coulee Dam, near the west abutment. Placing of some concrete also is planned. The pumping plant, to be built by Government forces, will house the world's largest pumps to serve the irrigation network. Installation of the first pump is planned to start in November, 1948, with others to follow at 60-day intervals. These pumps will force water from Lake Roosevelt (formerly the Columbia River Reservoir) into the Grand Coulee, where two earth-and-rock dams, 27 miles apart, will impound the water.

Feeder Canal--This immense, concrete-lined channel will lead from the pumping plant outlet to the North Dam in the Grand Coulee and will be capable of handling 120,000 gallons of water (1,000,000 pounds) each second. Because much of the work will be seasonal, the job will be completed by Government forces.

South Dam--This dam, an earth-and-rock structure, will extend across the Grand Coulee in the vicinity of Coulee City and will impound water in the Grand Coulee Equalizing Reservoir for the irrigation system. It will be about 10,000 feet long, have a maximum height of 60 feet, and is to contain approximately 1,400,000 cubic yards of material.

Long Lake Dam--This dam, located about 12 miles south of Coulee City, will save several miles of costly canal construction by permitting use of an abandoned channel of the Columbia River. It will be about 1,650 feet long, have a maximum height of 100 feet, and require about 1,000,000 cubic yards of earth and rock.

Main Canal--Far larger than most rivers, this canal will be approximately 25 miles long. It will begin at the South Dam, near Coulee City, and carry water to a point about 2 miles north of Adrian, Grant County, where it will separate into the West Canal and the East Low Canal. Parts of this canal

will be capable of carrying 13,200 cubic feet of water per second, greater than the combined average flows of the Methow, Chelan, Entiat, Wenatchee, and Yakima Rivers of Eastern Washington.

Potholes Dam--Nearly 3 miles long, this dam will be near the central portion of the project and is intended to capture seepage and return flow from irrigated lands tributary to it. The Potholes Dam will require about 11,000,000 cubic yards of earth and rock and will have a maximum height of 110 feet.

West Canal--Branching from the main canal near Adrian, the West Canal will be 88 miles long and will carry water sufficient for 280,000 acres in the westerly portion of the project. It could handle the combined average flows of the Entiat and Yakima Rivers of Washington.

East Low Canal--Longest in the irrigation system, this canal will weave its way through the eastern portion of the project for 130 miles and will be capable of serving 252,000 acres.

Pasco Pumping Plant--This pumping plant will be the first to be completed. It will lift water about 177 feet from the Columbia and will be capable of serving about 6,000 acres northwest of Pasco.

Pasco Laterals--A complete system of laterals will be built to serve the 6,000 acres supplied by the Pasco Pumping Plant. About 100 farms will receive water through this system of small canals.

Headquarters Building at Ephrata--A permanent office building will be built at Ephrata, county seat of Grant County, to accommodate an enlarged staff of Bureau of Reclamation employees who will plan and help supervise construction of the irrigation system.

Highway Relocation--Use of the Grand Coulee as a storage reservoir will necessitate abandonment of the secondary State highway now running along the Coulee floor. About 28 miles of new highway will be built at a higher elevation near the east wall of the Coulee and will follow a route complying with State Highway Department standards. The State will let contracts on the work and the Federal Government will pay a large portion of the construction costs representing the replacement of present facilities in kind. State officials have indicated that contracts will be let separately for different sections. A $1\frac{1}{2}$ -mile portion of the new route will involve exceedingly heavy rock work, the Bureau reports.

Mr. Banks said that some of the 1946 supplemental funds will be used for work at Grand Coulee Dam, including road relocation and the building of additional storage facilities and related structures.

- - -

9423

B

St Paul, January 15 1945

Mr R W Clark:

I attach for your information and file, a detailed map of the Columbia Basin irrigation system, showing principal engineering features, canal lines and location of irrigable land.

There are many changes over earlier maps. This is the result of three years of topographic and canal location studies.

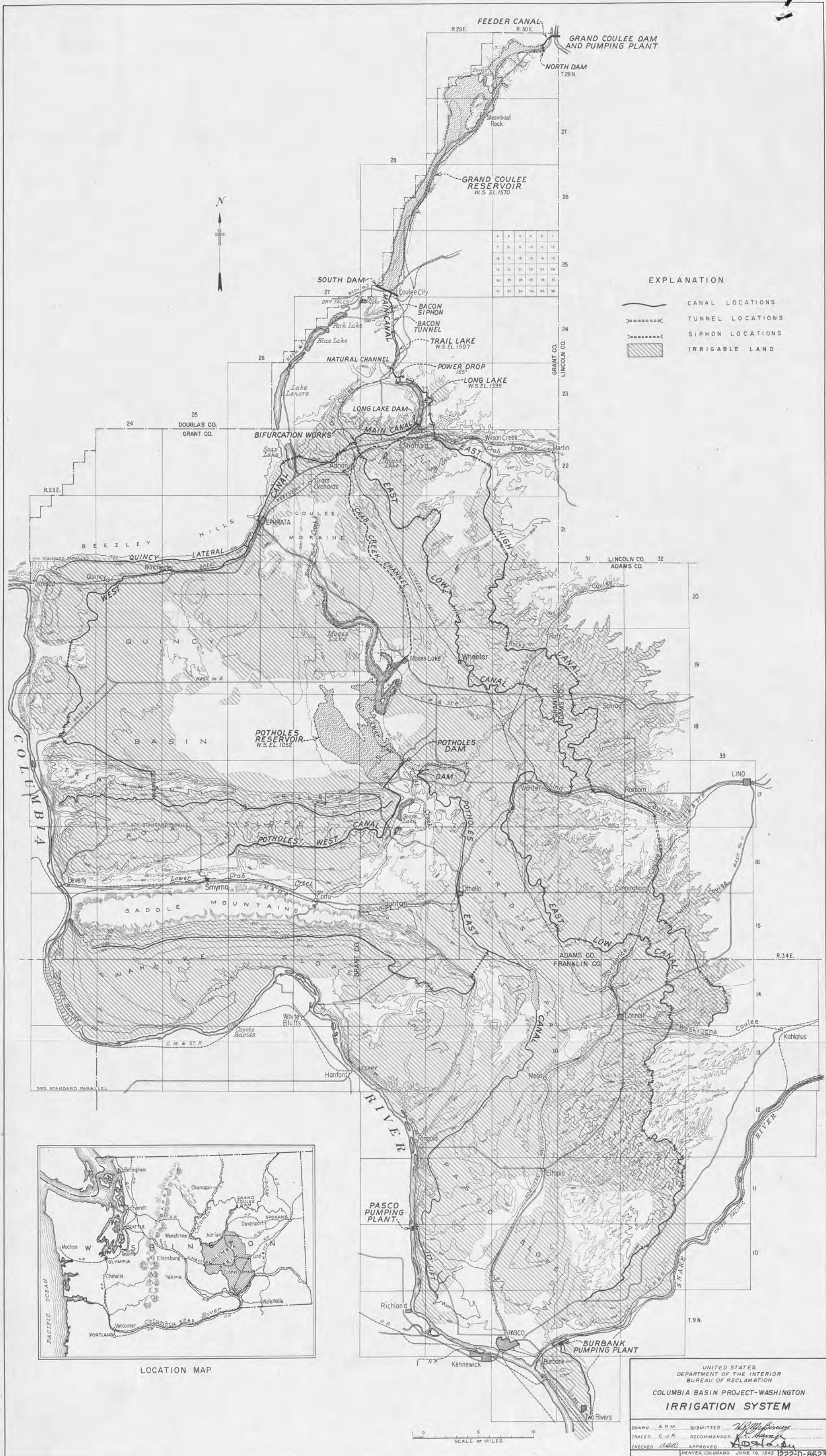
While the map is dated June 10, 1943, Mr Frank Banks, in transmitting, indicated that very recent revisions had been made and had been approved for release within the last few days.

J. M. Haw

CC - Mr C E Denney
Mr H E Stevens
Mr B Blum ✓
Mr J M Hughes.

CHIEF ENGINEER
JAN 4 1951

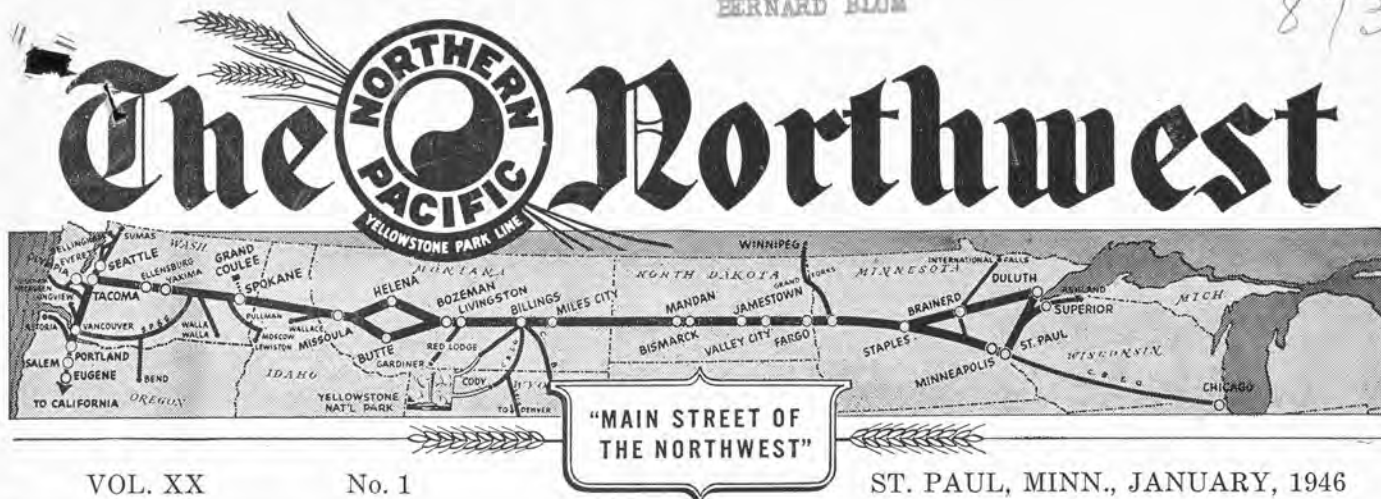




UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA BASIN PROJECT-WASHINGTON
IRRIGATION SYSTEM

DRAWN A.R.M. SUBMITTED *[Signature]*
TRACED C.M.R. RECOMMENDED *[Signature]*
CHECKED *[Signature]* APPROVED *[Signature]*

DENVER, COLORADO JUNE 10, 1943 222-D-8623



VOL. XX

No. 1

ST. PAUL, MINN., JANUARY, 1946

Columbia Basin Will Irrigate Next Year

In a class with the Panama Canal, because it involves eventually vast amounts of excavation, the Columbia Basin Irrigation project in the state of Washington at last is under construction.

Start of the Pacific Northwest's colossal peace-time job was signaled by operations during the fall on Soap lake, where drilling to determine foundation conditions was done preliminary to completing plans for a syphon 5,800 feet long and 19 feet in diameter to carry one of the project canals across that body of water. Full-scale building is due to begin soon at several locations in the basin.

A buzz of interest spread over the West recently when it was announced that first land to be irrigated on the giant 1,029,000-acre Columbia Basin will receive water in 1947. True, it is only a small patch, 6,000 acres in the South Columbia Basin district, near Pasco, but it is a beginning. And strangely, it is farther away from the source of water, at Roosevelt lake, back of Grand Coulee dam, than almost any other land on the project.

It may be many years before canals carry water from the head of the project to the Pasco area. But U. S. Bureau of Reclamation engineers, who are in charge, have set their mark at watering 6,000 acres next year by building a pumping plant in the Columbia river upstream from Pasco and \$250,000 of presently available funds have been earmarked to begin that work. Thus water will flow on land in that area two years, according to present schedules, before it will in either of the other

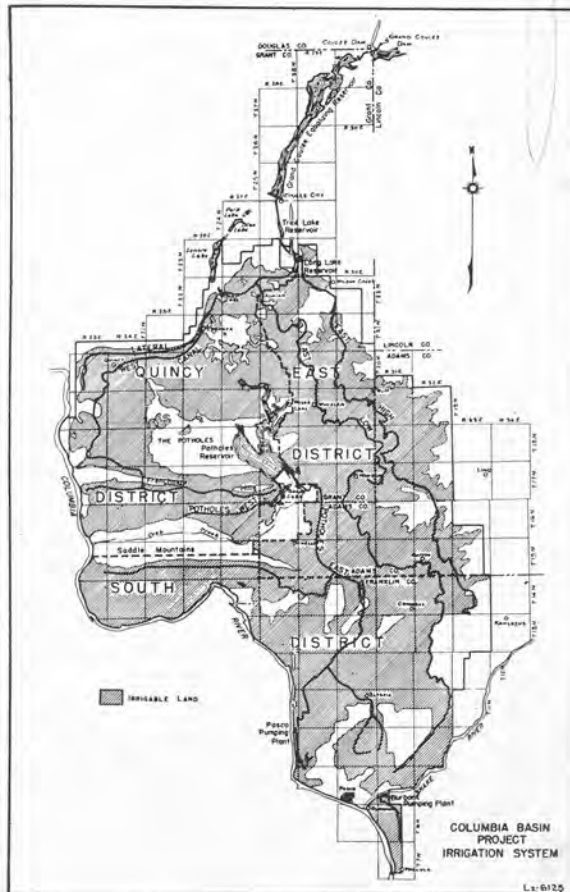
districts, which are nearer the main canal of the project.

The deficiency bill, passed recently in Congress, provides \$10,050,000 for immediate use on the Columbia Basin Irrigation project. For some time Bureau engineers have been preparing data preliminary to letting contracts. Orders have been placed for pumping equipment, and government forces, requiring no advertising of specifications, will begin within a month to build the pumping plant, at Grand Coulee dam, which will raise water out of the lake into an equalizing reservoir at the head of the project. Similar forces will start at the same time to construct a feeder canal from the pumping plant to the equalizing reservoir. This reservoir requires a dam at either end of an old stream bed, the Grand Coulee, so that it will impound a supply from Roosevelt lake. Funds are at hand to begin both of those dams.

Engineers' plans call for a main canal out of the equalizing reservoir several miles to a point near Adrian, Wash., where it will divide into west canal and east low canal. To begin work at an early date on the main canal a fund of \$1,800,000 has been set aside. This particular con-

struction involves a two-mile tunnel 27 feet in diameter, one of the first items to be contracted. Another sum of \$1,800,000 has been marked to begin digging the west canal and the east low canal. Soap lake stands squarely athwart the west canal. The man-made water course can't go around the lake that natural forces

(Continued on page 2)





Published Monthly by the
Department of Agricultural Development

NORTHERN PACIFIC RAILWAY

J. W. HAW	St. Paul, Minn.
Director	
W. J. HUNT	St. Paul, Minn.
Assistant to the Director	
A. J. DEXTER	St. Paul, Minn.
Agricultural Development Agent	
A. R. MIESEN	St. Paul, Minn.
Agricultural Development Agent	
H. W. BYERLY	St. Paul, Minn.
Immigration Agent	
L. S. MacDONALD	Missoula, Mont.
Agricultural Development Agent	
W. P. STAPLETON	Seattle, Wash.
Western Agricultural Development Agent	
JOHN L. MAGUIRE	Seattle, Wash.
Agricultural Development Agent	

This magazine is sent free for five months to those indicating an interest in the Northwest states. On expiration of that period it may be obtained on a yearly basis by sending 25 cents in postage stamps, war savings stamps, coin or money order made out to Northern Pacific Railway. If you wish to renew on a complimentary basis for five months, this may be done by making a written request.

JANUARY, 1946

(Continued from page 1)

made. Existing terrain does not allow it. Engineers, however, are undismayed. They will bridge the lake with a syphon pipe 5,800 feet long and 19 feet in diameter, the design calling for a 225-foot head. The syphon is to be supported either by a rock fill in Soap lake, or on concrete piers anchored on the floor of the lake. This large task already has been undertaken.

Can you imagine beneficially using the same water twice? The Bureau of Reclamation engineers can and they will by harnessing "The Potholes," just below Moses lake. A scab rock area, "The Potholes" will be dammed at a point not far above Goose lake. In a reservoir thus created in "The Potholes," will be accumulated water which has irrigated 450,000 acres to the north and has drained to the south and found its way to a rallying place in the reservoir, out of which it again will be turned into canals to irrigate on lands south of "The Potholes." To build "The Potholes" dam, an earth and rock structure, will require 10,000,000 cubic yards of material, almost identical with the volume of Grand

Coulee dam. An important difference, of course, is that Grand Coulee contains all concrete and steel, not earth and rock. "The Potholes" dam is to reach entirely across a three-mile valley and it will go 100 feet into the air at its maximum height. This reservoir has been justified because it will save some pumping and water handling and because it will furnish an important supply close to the lower portion of the project, which means principally in the South Columbia Basin district. Construction of this reservoir is on the schedule for an early beginning.

Construction also will be started in 1946 on permanent headquarters for the administration staff of the Bureau at Ephrata. H. A. Parker, who is known by many Northwest irrigators, is in charge of construction of the project, working under F. A. Banks, the man who built Grand Coulee dam.

To build the Columbia Basin Irrigation project's canals, laterals and sublaterals to reach each of the 17,000 new farms contemplated on 1,029,000 acres will require 4,000 miles of ditches, big and little. From start to finish of the project, there will be 77,000,000 cubic yards of common excavation and 19,000,000 yards of rock excavation, a total of 96,000,000 yards, which compares, roughly, with 240,000,000 cubic yards required to bring the Panama Canal into operation, which makes the job about two-fifths the size of the Panama Canal.

So there you have what the engineers plan to do immediately in the Columbia Basin. Their funds are for the period Jan. 1 to June 30, 1946. Much more money, of course, will be required after that to carry on the job. The present amount makes only a start. At 1940 costs, the completed project would run into a total of \$280,000,000.

The current work has nothing directly to do with Grand Coulee dam, which was finished before the war. The dam impounds water and will furnish power to pump it out of the Columbia River canyon to the equalizing reservoir, referred to earlier in this article.

CLOSE-UPS

Short Paragraphs About Agriculture in
Northern Pacific Territory

S. B. Hall has been a county agricultural agent for 30 years in Multnomah county, Oregon. Hall also is a farmer, owning 160 acres and an outstanding Holstein herd.

H. H. Paasch, Billings county, North Dakota, put up 22 stacks of hay last summer, twice as much as he needs this winter. The idea, he says, is to save half of it, maybe a year, maybe two years or more—until a short crop comes along.

A machine that defrosts frozen foods in two minutes and leaves them in good condition for serving has been installed at Oregon State college. The machine passes electrons through the frozen food, treating the inside of the package as quickly as the outside.

In LaMoure county, North Dakota, Fred Peterson tilled 100 acres 13 times last year. All that activity was directed at killing quack grass and, he reported, that's what it did. Some of his heaviest 1945 crops were on land he gave similar quack grass treatment the year before.

With 90 acres of tree fruit and a harvest labor requirement of 80 workers at the peak, O. L. Dearing, Yakima valley, Washington, built and equipped a cafeteria for the hired hands' use. Dearing also provides modern restroom facilities and a spick-and-span shower room.

Speaking of hired hands. We heard about one working by the month for Harold Hagen, in the Bitter Root valley, western Montana, who bought a Palomino stallion for \$1,000 cash. The farm laborer, who has no source of income other than his work, said he bought this fancy horse as an investment.

The University of Idaho's college of agriculture sold a Hereford bull for \$2,000.

A 71-acre orchard in the Lower Naches section of the Yakima valley in Washington, the James Fraser place, was sold recently for \$100,000, without buildings. With the exception of eight acres of pears, the orchard consists of apples.

John Parker, in the Bitter Root valley, western Montana, will plant 50 acres of sour cherries this spring. It will take 5,000 trees and labor and trees will cost \$3,500. Parker owns a commercial cannery.

One hundred demonstration farms will be established in the state of Washington to study postwar rural use of electricity.

8731

Spokane, Washington
November 27, 1945

Mr. J. T. Derrig:

Herewith clipping from the Spokesman-Review of November 21st, telling of the relinquishment by Mr. Banks of his job as Regional Director of the Reclamation Bureau in the Pacific Northwest and his taking over of his old job at Coulee Dam.

(Signed) E. M. BERNARDINE

District Engineer

HMT:lc
cc-Mr. Bernard Blum
Enc.

RECEIVED
FEB 20 1962
U.S. DEPARTMENT OF
THE TREASURY

Shawnee, Kansas, Mo.
November 27, 1961

Mr. J. D. Phillips

known as coming from the Bureau of
November 27, 1961, being of the telephone
of his job as regional director of the
in the field, however and his taking over of his old
job as Dallas, Tex.

Respectfully,
Director, Kansas

Very truly,
J. D. Phillips

BANKS TO DIRECT GREAT BASIN JOB

Devotes Full Time
to Irrigation Project
at Coulee.

By Associated Press.

WASHINGTON, Nov. 21.—Frank A. Banks, a veteran in the development of western water resources, today was named supervising engineer of the 1,000,000-acre Columbia basin irrigation project.

Interior Secretary Ickes also announced appointment of Robert J. Newell as regional director for the reclamation bureau in the Pacific



Frank A. Banks.

northwest, with headquarters at Boise, Idaho. Newell, who has served as assistant and associate director since the region was established in 1943, succeeds Banks as regional director.

Banks was supervising engineer for construction of Grand Coulee dam. He now will devote full time to completing the irrigation and power facilities of the Columbia basin project.

AT OWN REQUEST.

BOISE, Idaho, Nov. 21. (AP)—Frank A. Banks of Coulee Dam, Wash., was relieved of his duties as northwest regional director of the bureau of reclamation today at his own request so that he can "devote full time to initiating and carrying on construction of the 1,000,000-acre Columbia basin project," the regional office here reported.

R. J. Newell of Boise was appointed to the post of regional director today by Secretary Ickes. Newell has been associate director of the region and acting for Banks since the fall of 1943, while Banks devoted most of his time to the duties as supervising engineer of the Columbia basin project, a post he retains.

Retained Coulee Home.

A statement by the regional office here said:

"Although the regional office is situated in Boise, Mr. Banks has retained his residence at Grand Coulee dam because of the heavy work load involved in supervising the installation of huge hydroelectric generators to provide urgently needed power for growing war industries of the Pacific northwest, and in preparing for the resumption of construction of several hundred million dollars' worth of irrigation facilities in the post-war period.

"Several weeks ago he requested Commissioner of Reclamation Harry W. Bashore to relieve him of the added responsibility of supervising bureau activities elsewhere in region 1, which embraces the states of Oregon, Washington, Idaho, that part of Montana west of the continental divide, and small portions of Wyoming and Nevada. The commissioner recommended the action to Secretary Ickes.

Key Men Gone.

"Mr. Banks told the commissioner that he felt he could best serve the bureau by confining his work to the Columbia basin project. He said that 'since accepting the position of regional director there have been several losses among the key men in the project organization with only one replacement, so that it has become necessary for me to concentrate more and more on project affairs at the expense of regional affairs.'

Rob B. Williams, the new assistant supervising engineer, has been with the bureau 33 years. A graduate of Montana State college in 1911, Williams joined the bureau in 1912 and spent the next 13 years in Montana on the Flathead and Sun River reclamation projects. From 1924 to 1932, Williams resided at Ellensburg. He had direct charge of all final construction work of the Kittitas division and he supervised the operation and maintenance of the project when it was completed.

Directed Big Job.

After a year as an inspection engineer at Boulder dam on the Colorado river, Williams spent 1933 and 1934 on field investigations in the Phoenix, Ariz., region. From 1934 to 1937 he directed the construction of Imperial dam and the all-American canal of the Boulder canyon project.

Williams' latest assignment found him in charge of construction of the Friant dam of the Central Valley project and building of the Friant-Kern and Madera canals of that project in California.

8226
~~10555~~

November 6, 1945

SALLY E. SCROGIN,
c/o T. M. C. Martin
Electrical Engineer, Industrial
and Resources Development Divn.
BONNEVILLE POWER ADMINISTRATION
Portland 8, Oregon

Dear Miss Scrogin:

I acknowledge with many thanks receipt of your letter of October 31, together with map showing the COLUMBIA BASIN DEVELOPMENT.

I am very glad to have this comprehensive map of the power development contemplated in the Northwest, and am hanging it on my office wall for quick reference.

Thank you very much for your trouble.

Very truly yours,

bb/s

cc-Mr. J.T.Derrig



IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BONNEVILLE POWER ADMINISTRATION
PORTLAND 8, OREGON

October 31, 1945

701.11

Mr. Bernard Blum, Chief Engineer
Northern Pacific Railway Company
5th & Jackson Streets
St. Paul, Minnesota

Dear Mr. Blum:

At the request of Mr. Derrig, your Assistant Chief Engineer in Seattle, we are pleased to send you, under separate cover, a map showing the Columbia Basin Development.

Sincerely yours,

Lilly E. Scrogin

For T. M. C. MARTIN
Electrical Engineer
Industrial & Resources
Development Division

USE OF
CHIEF ENGINEER
NOV 23 1945
NDR PAC. PY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF POWER ADMINISTRATION
PORTLAND, OREGON

October 31, 1945

At the request of Mr. [Name], your Assistant Chief Engineer in charge, to be placed to [Name], under separate cover, a map showing the [Name] main develop-

Sincerely yours,

For [Name], Chief Engineer
Industrial & Resources
Development Division

4 BIG COLUMBIA DAMS PLANNED

Four huge dams, two of them longer than the Grand Coulee Dam, are planned for the Columbia Basin irrigation project, it was disclosed here yesterday.

Construction of the entire system, which will include more than 4,000 miles of canals, will cost approximately \$280,000,000.

H. A. Parker, irrigation engineer of the Bureau of Reclamation, who arrived here last night, said the largest of the projected dams would be the Potholes Dam, 15,000 feet long, in the central portion of the Columbia Basin. It would be approximately three and one half times the length of the 4,173-foot-long Grand Coulee structure.

Three Other Dams Planned

Three other dams, measuring 9,880, 1,650 and 1,360 feet in length, would be built at South Coulee, North Coulee and Long Lake.

Completion of the project is contingent upon a favorable vote Saturday, when owners of land within the 1,000,000 acres in the project will vote on a repayment contract.

Besides the dams and canals, the system would include 66 siphons to carry water across valleys and coulees and almost five miles of tunnels to convey the water through hills and mountains. One of the tunnels, 9,150 feet long, would cut through the west end of Frenchman Hills, in Grant County.

Big Canal at Coulee

The largest canal would be a feeder channel from the pumping plant outlet at Grand Coulee Dam to the north end of the Grand Coulee equalizing reservoir, the storage lake for the water-distribution system in the Grand Coulee. This lake would be formed by the North and South Dams, and would be in the Grand Coulee itself, surrounding Steamboat Rock, a familiar landmark.

The capacity of the canal would be 16,000 cubic feet of water a second.

The repayment contract up for approval Saturday was to be explained at meetings at the Seattle Chamber of Commerce at 2 and 8 o'clock today.

STRONG BASIN VOTE NEEDED

SPOKANE, July 16. — (AP) — Washington congressional delegation members today urged qualified landowners to vote in person or by absentee ballot in the Columbia Basin project repayment contract election next Saturday.

The election will determine whether a 280 million dollar irrigation development will be built to serve more than a million acres of arid and semi-arid land in South Central Washington, officers of the Washington State Columbia Basin Commission said.

Senators Warren G. Magnuson and Hugh Mitchell and Congressmen Walt Horan and Hal Holmes said in a statement released by the commission that a strong election vote would "serve as ammunition for seeking funds from Congress if the U. S. Bureau of Reclamation is authorized to undertake the construction of the greatest single irrigation system ever attempted in the United States."

The joint statement said that "a light vote would only serve as a target for possible opponents of this meritorious postwar plan. Completion of the project will be of lasting benefit not only to the people of the entire state but the Pacific Northwest and the United States as well. It can be a bulwark for stabilization of our economy in the difficult postwar adjustment period."

Basin Project to Have World's Largest Pumps

SPOKANE, July 16. — (AP) — Contingent on a favorable vote of the landowners in the July 2 repayment contract election, the U. S. bureau of reclamation will call for bids for the manufacture of the world's largest pumps for the Columbia Basin irrigation district, Charles E. Cone, Spokane, research assistant or the Washington State Columbia Basin Commission, said today.

Plans provide for installation ultimately of 12 of the mammoth pumping units, any one of them capable of pumping enough water to meet the domestic requirements of New York City, Cone said.

Landowners will ballot on the proposition of entering into an agreement with the federal government to repay part of the cost of the proposed 220 million dollar long-range postwar development project.

Each pump would have a capacity of 1,600 cubic feet or 12,000 gallons a second, Cone said.

Each would be driven by a 65,000 horse power motor, also a record for size.

Cone said the function of the pumps would be to lift the water required to irrigate a million acres of land 280 feet, from Lake Roosevelt, behind Grand Coulee Dam, to an equalizing channel of the Columbia River.

The research official said the call for bids, provided landowners authorize the project, will contain only general specifications for the type of machine required. Detailed designing will be left to the bidding manufacturers. This method was employed in ordering the 108,000-kilowatt generators for the power plant.

1213
JUL 1943

8731

Mr Derrig;

You may be interested in

this/

WOLFRAM HILL

NOV 16 1941

COLUMBIA BASIN

JOINT INVESTIGATIONS

CHARACTER AND SCOPE



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA BASIN JOINT INVESTIGATIONS

Character and Scope



**United States
Department of the Interior
Harold L. Ickes, Secretary**

**Bureau of Reclamation
John C. Page, Commissioner**

CHARACTER AND SCOPE of Columbia Basin Joint Investigations

CONTENTS

	Page
Introduction	1
General Plan	2
Participants	4
Divisions, Problems and Investigations	6
I. Basic Surveys	6
II. Types of Farm Economy	6
III. Water Requirements	9
IV. Size of Farm Units	10
V. Lay-out and Equipment of Farms	11
VI. Allocation of Costs and Repayments	14
VII. Control of Project Lands	16
VIII. Rate of Development	17
IX. Villages	19
X. Roads and Other Transportation Facilities	21
XI. Underground Waters	23
XII. Rural and Village Electrification	23
XIII. Manufactures	24
XIV. Recreational Resources and Needs	25
XV. Rural Community Centers	27
XVI. Governmental Organization, Public Works Programming and Financing	28

+

United States Government Printing Office
Washington : 1941

JOINT INVESTIGATIONS

Columbia Basin Irrigation Project

CHARACTER AND SCOPE OF INVESTIGATIONS

The Columbia Basin Irrigation project is expected to transform a vast area of dry land, much of it unsettled and unproductive, into a well-watered, compactly settled, and highly productive region. With full development the project should attain a total population, rural and urban, of 350,000 to 400,000.

The Bureau of Reclamation has recognized from the inception of the project that the task of the Bureau will not be completed when it has built the reservoirs, pumping plants, canals, laterals, and other structures by which life-giving water for irrigation can be conveyed from the Columbia River to the thirsty lands of the project area. Its task will not be completed until the project has been made in truth a land of new opportunity for the multitudes who will there seek economic security and social welfare. If the project is to be not merely a land of hope but also a land of attainable hopes, within reason, for people of industry and integrity, many problems must be solved before the advent of settlers. A pattern of successful life, rural life and urban life alike, cannot develop in the project by chance. Individual initiative will not suffice.

The tragic stories of hundreds of pioneers who individually invaded the more arid western part of the project area during a short period of supernormal rainfall near the turn of the century and there unwisely attempted dry-land farming must not be matched in the future by stories of settlers who attempted irrigation farming in the same area under conditions and in ways that precluded success. The availability of an adequate supply of water for irrigation will not alone insure to the capable settler reasonable prospects of success. Some settlers on the project inevitably will fail, no matter how carefully a judicious program of settler selection may be administered, no matter how favorable may be the conditions of life. The great majority of the settlers will succeed under conditions which it is possible and reasonable to establish in their behalf. The Bureau of Reclamation proposes that those conditions shall be established.

How many acres will a competent farmer need to earn a suitable living for an averaged-sized family on each of the several classes of land to be irrigated within the project, or on one of the numerous combinations of those classes? What type of farm economy should he practice? How can he best develop his land initially and later maintain its productivity? To what transport and market facilities will he need to adjust his activities? How much irrigation water per acre per year will he need, in view of the character of the soils he will

till and the crops he will grow? How may he obtain maximum utility from the water? How may he obtain reasonable financial assistance in providing necessary fixed improvements on his land? How may he reduce his commitments and expenditures through cooperation with neighbor farmers, or otherwise, and have essential equipments and suitable conveniences and comforts? At what rate may he reasonably hope to raise his level of living? How can he best be helped to help himself?

What practicable and equitable means may be used to insure proper land use, as determined in advance of settlement? What industries can advantageously be located within the project, especially industries that will utilize farm products? Where should the industrial plants be located? What types of plants and how many plants of each type should be established in the successive irrigation blocks? How may the optimum number best be encouraged, and how may overdevelopment most effectively be discouraged? Where will new villages be needed? How may village functions and farm life best be integrated to their mutual and maximum advantage? How may communities and local governmental units best anticipate and meet their social needs?

The foregoing questions merely illustrate the varied kinds of questions that call insistently for answers. The extent to which these questions and the host of other pertinent questions are answered correctly by the individuals, groups, and governmental agencies concerned with them will largely determine the measure of success which awaits the project, the largest and most complex of its kind in the history of the Nation. Faith in the future of the project, however great, is not enough. Wishful conjecture is hazardous. Unwise action today may prevent, impede, or restrict wise action tomorrow. Effective planning for the settlement and development of the project must be based on adequate and reliable data of all relevant kinds.

Recognizing the complexity and magnitude of the investigations needed to provide a sound plan and program for the settlement and development of the project, the Bureau of Reclamation sought the assistance of many agencies and organizations, Federal, State, regional and local, on matters falling within the domains of their special interest and competency. In every instance these agencies and organizations promptly and enthusiastically agreed to participate as requested in the proposed cooperative surveys and studies.

The general plan of the "Joint Investigations, Columbia Basin Irrigation project" is set forth in the remainder of this bulletin. Later bulletins will present reports on individual problems.

GENERAL PLAN OF INVESTIGATIONS

The objects of the joint investigations are to provide a general plan for the development and settlement of the Columbia Basin area as a whole, and detailed plans for areas to be irrigated relatively soon.

The planning program has been superimposed on the usual topographic surveys and land classifications of the Bureau of Reclamation which here serve as a base.

There follows an outline of the plan for the joint investigations in which 28 separate problems in addition to the basic engineering surveys are set up for study. For convenience, the problems of the investigation are divided into 16 divisions. The basic surveys, land classifications and appraisals together with a temperature recording program constitute the first division. The second division is designed to provide information on applicable types of farm economy. The problems under this division seek information concerning types of crops, crop combinations, and crop rotations on other northwestern irrigation projects; the types of agricultural programs best suited to the project area; and practicable and equitable means, if any, to insure proper land use as determined.

Two investigations are included in the third division to determine the water requirements of the irrigable lands for the crop and land use programs recommended, and a study of ways of preventing excessive use of water.

The size of farm units is the subject of two studies in the next division, the first being a study designed to determine the optimum size of farm units, having in mind the type of crops and crop programs which are recommended, and the second designed to determine whether there is need for special "labor units" of small size to accommodate part-time farmers or part-time laborers.

Another division poses additional questions. There are three problems on the lay-out and equipment of farms: One, to delimit the sections where it may be desirable to lay out the farms in adjustment to topography; two, to determine feasible means to help insure an adequate standard of living and to minimize the financial commitments of needy families in providing suitable and essential improvements; and, three, the advantages, economic and social, in farm lay-out and farm work which might result from concentration of settlers in small communities or from grouping farmhouses on corners of the farms.

Four problems related to the allocation of costs and to repayment of costs are: A study of the allocation of the costs of Grand Coulee Dam and the primary irrigation works; how can equitable payments toward the cost of the primary irrigation works best be secured directly or indirectly from nonrural settlers; is it desirable and practicable to assign different repayment charges against lands of different classifications; and what are the best means of extending financial aid in conservatively adequate amounts to needy settlers within the project area?

An investigation of methods for establishing the requisite control of privately owned lands, whether by Federal purchase or some other

means, and a similar study related to the State, county, and railroad lands are included.

To estimate in the light of all relevant factors, the annual rate at which lands should be brought in during the first few years after water becomes available is the assignment given to another group of investigators.

Division 9 is concerned with villages, and its problem is to determine the optimum number of new villages for the project area and their most advantageous placement.

Three problems related to roads and other transportation facilities are included, the first being to plan desirable additions to the road net; the second being to plan desirable additions to railroad facilities; and the third being a study of the significance to the project area of the Columbia River as a commercial route.

A study is being made of underground waters for the purpose of determining the best source of domestic water within the project area.

Division 12 contemplates a study of rural and village electrification.

Division 13 deals with manufactures, and its problem is to define the opportunities for village and neighborhood industries in the parts of the project apt to be settled relatively soon and to determine what steps should be taken to promote the development of industries of promise.

Recreational resources and needs are approached in an effort to locate and plan the lay-out and improvement of rural parks and recreational grounds within the project area, and to formulate plans to promote the recreational use of the great reservoir now forming above Grand Coulee Dam.

Division 15 involves rural community centers, and is designed to plan the location and, insofar as practicable, the improvement of sites for rural schools, churches, community halls, market centers, athletic fields, and the like.

The last division encompasses a study of governmental organization and public works programming and financing, the problem being to develop the most advantageous pattern of local governmental units to meet prospective public needs, having in mind the need to program and finance the public improvements in such a way as to eliminate or minimize the possibility of an excessive tax burden.

THE PARTICIPANTS

The names and addresses of those participating in the joint investigations are listed under each problem in which they have a responsibility, either as an investigator or an adviser.

In various instances several agencies or individuals are listed in connection with a particular investigation. In every such instance it is

understood that the agency or individual first named in the list of investigators will act as leader of the group. Leadership involves assumption of the initiative and the major responsibility (a) for developing a suitable plan for the requisite studies, including determination of the method or methods of investigation to be employed and the allocation of different phases of the undertaking to members of the cooperating group; (b) for effective collaboration with other groups dealing with closely related problems (an essential procedure that will be facilitated by the interlocking membership of various investigation groups); (c) for timing the work with respect to its completion upon the date indicated in this outline or, if not indicated, to be agreed upon by the investigators, the Planning Consultant and the Chief of Information; and (d) for the preparation of a report on the results of the investigation, setting forth the findings and recommendations, with the requisite supporting factual data, evidence, and opinions. Emphasis of the responsibilities of leadership does not, of course, imply either a lack of responsibility on the part of other agencies and individuals participating in a given investigation or a failure to appreciate the importance of the contributions they will make.

It is understood that the group investigating each problem will be free to seek (*and should seek*) data, opinions, and advice from any agency or individual not listed in the following outline that may be thought to be in a position to render substantial assistance. It is impossible at the outset, before the more complicated problems have been broken down into their multifarious aspects by those who will investigate them, to list all agencies and individuals whose assistance may later be urgently needed.

Dr. E. N. Torbert, with headquarters at Ephrata, Wash., has been appointed field coordinator for the joint investigations. He acts as a full-time assistant to Planning Consultant Harlan H. Barrows and Chief of Information William E. Warne, who represent the Bureau of Reclamation in planning and promoting the joint investigations. Dr. Torbert's counsel and aid are available to all participants in the investigations. It is his chief duty to facilitate in all practicable ways close cooperation among the members of particular investigation groups and among the leaders of different groups concerned with interdependent problems. He is available at important group and intergroup conferences in the area. He circulates information and memoranda of general interest and utility to participants in the investigations. He helps to furnish information to the public of the region, through the information officer of the project, on the nature and progress of the investigations.

Mr. Marion Clawson of the Bureau of Agricultural Economics has been designated by the Secretary of Agriculture as the field representative of that Department for the joint investigations. He has

the general responsibility of coordinating the phases of the joint investigations which have been assigned to bureaus of the Department of Agriculture. Mr. Clawson has established his headquarters at 315 Welch Building, Spokane, Wash.

A board of review may be appointed later by the Commissioner, Bureau of Reclamation, to study the reports on various of the investigations, to appraise plans of settlement and development based on the reports, and to recommend appropriate action programs for carrying out accepted proposals.

DIVISIONS, PROBLEMS AND INVESTIGATIONS

I. BASIC SURVEYS

Basic surveys comprise the topographic survey, the land classification survey, the localization of requisite works for the gravity and supplemental pumping systems (mains, laterals, pumping plants, etc.), determination of the feasibility of direct pumping from the Columbia River or Snake River (or both), determination of the requirements with respect to main drainage outlets, and the land-appraisal survey (in accordance with the provisions of the Anti-Speculation Act). These surveys and studies are being made by the Bureau of Reclamation. The lands have been appraised by a special Land Appraisal Board.

The topographic survey was completed in April 1941, the land-classification survey was completed in August, and the appraisal of land shortly thereafter. As the work progresses, field maps and data in hand will be available in the office of the Bureau of Reclamation at Ephrata, Wash., to those participating in other investigations.

II. TYPES OF FARM ECONOMY.

The objective of the investigations of farm economy is to determine, in general, the best types of irrigation farming for different parts of the project area and in particular the best types for the northern part, where the earlier units served by gravity and the earlier lands served by supplemental pumping undoubtedly will be, and the southern end, where lands possibly may be served relatively soon by pumping directly from one or both of the rivers.

It is understood, of course, that unforeseeable developments and conditions may affect the agricultural utility of parts of the project that probably cannot be brought in advantageously for 15, 20, or more years. Lessons learned from experience in farm economy and in other matters on project units that are opened to settlement relatively early may prove useful in the modification or refinement of initial plans for later units.

Problem No. 1.—On other northwestern irrigation projects where basic conditions are similar to those which will be encountered on the earlier units of the Columbia Basin project, what types of farm economy (including crops and crop programs) have been successful? Most successful? Unsuccessful, if any?

Investigator:

Bureau of Reclamation:

Mr. R. J. Newell,
Construction Engineer,
Bureau of Reclamation, Boise, Idaho.

Adviser (on methodology):

Bureau of Agricultural Economics:

Mr. Sherman E. Johnson,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Report submitted: April 16, 1941.

NOTE.—By "success" in irrigation farming is meant, in principle, the attainment of a suitable standard of living. The definition of what constitutes a suitable standard of living, determination of how it may best be measured, and the development of means by which the standards of living on different projects may be compared satisfactorily, present difficult antecedent problems.

Problem No. 2.—What types of farm economy are best suited to the project area (particularly its northernmost and southernmost parts) in view of the soils, climate, topography, competitive and complementary relationships with other irrigated and nonirrigated areas of the Pacific Northwest, foreseeable market conditions and opportunities, transportation facilities (existent and prospective), freight rates, the possibility of effective integration of some phases of farming with village or neighborhood industries of promise, and other relevant factors?

Investigators:

Washington State College and Experiment Station:

Prof. B. H. Pubols,
Head of Department of Farm Management and Agricultural
Economics, State College of Washington, Pullman, Wash.

Dr. E. F. Dummeier,
Agricultural Economist, State College of Washington, Pullman,
Wash.

Prof. Howard Hackedorn,
Head of the Department of Animal Husbandry, State College
of Washington, Pullman, Wash.

Prof. E. V. Ellington,
Head of the Department of Dairy Husbandry,
State College of Washington, Pullman, Wash.

Prof. E. G. Schafer,
Head of the Department of Agronomy,
State College of Washington, Pullman, Wash.

Dr. E. L. Overholser,
Head of Department of Horticulture,
State College of Washington, Pullman, Wash.

Investigators—Continued.

Washington State College and Experiment Station—Continued.

Prof. L. J. Smith,
Head of the Department of Agricultural Engineering,
State College of Washington, Pullman, Wash.

Prof. J. S. Carver,
Head of Department of Poultry Husbandry,
State College of Washington, Pullman, Wash.

Dr. L. C. Wheeting,
Research Professor of Soils,
State College of Washington, Pullman, Wash.

Mr. H. P. Singleton,
Superintendent, Irrigation Branch Station,
Prosser, Wash.

Bureau of Agricultural Economics:

Mr. Sherman E. Johnson,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Dr. Walter A. Fuhrman,
Bureau of Agricultural Economics, State College of Washington,
Pullman, Wash.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse,
Portland, Oreg.

Bureau of Reclamation:

Mr. R. J. Newell,
Construction Engineer,
Bureau of Reclamation, Boise, Idaho.

Advisers (on markets, transportation facilities and costs, etc.):

Representatives of railroads serving the area:

Mr. Paul T. Wilson,
Chicago, Milwaukee, St. Paul & Pacific Ry., Seattle, Wash.

Mr. E. B. Duncan,
Great Northern Railway Co., Seattle, Wash.

Mr. W. P. Stapleton,
Northern Pacific Railway Co., Seattle, Wash.

Mr. Kenneth C. Miller,
Spokane, Portland & Seattle Railway System, Portland, Oreg.

Mr. Joseph W. Jarvis,
Union Pacific Railroad System, Omaha, Nebr.

Bonneville Administration:

Mr. Ivan Bloch,
Market Development Section, The Bonneville Power Administration,
Portland, Oreg.

Report due: July 1, 1941.

Problem No. 3.—What practicable and equitable means, if any, may be used to insure proper land use, as determined? This inquiry should include, but not be restricted to, a study of the suitability and efficacy of cooperative marketing organizations, soil conservation districts, and county zoning.

Investigators:

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Bureau of Reclamation:

Mr. R. J. Newell,
Construction Engineer,
Bureau of Reclamation, Boise, Idaho.

Soil Conservation Service:

Mr. Austin Patrick,
Soil Conservation Service, Washington, D. C.

University of Washington:

Mr. Alfred Harsch,
University of Washington, Seattle, Wash.

Mr. John B. Sholley,
University of Washington, Seattle, Wash.

Report due: March 1, 1941.

III. WATER REQUIREMENTS

Problem No. 4.—What are the normal water requirements for the crop and land-use programs recommended by the investigators of Problem No. 2 for different parts of the project area?

Investigators:

Bureau of Reclamation:

Mr. R. J. Newell,
Construction Engineer,
Bureau of Reclamation, Boise, Idaho.

Soil Conservation Service:

Mr. Austin Patrick,
Soil Conservation Service, Washington, D. C.

Bureau of Plant Industry:

Mr. Carl S. Scofield,
Bureau of Plant Industry, Department of Agriculture, Washington, D. C.

Washington State College and Experiment Station:

Mr. H. P. Singleton,
Superintendent,
Irrigation Station, Prosser, Wash.

Mr. Harry G. Nickle,
Agricultural Experiment Station, Prosser, Wash.

Mr. L. C. Wheeting,
Research Professor of Soils,
State College of Washington, Pullman, Wash.

Report due: August 1, 1941.

Problem No. 5.—What is the most practicable way of preventing excessive use of water?

Investigators:

Bureau of Reclamation:

Mr. H. A. Parker,
Irrigation Engineer,
Bureau of Reclamation, Ephrata, Wash.

Investigators—Continued.

University of Washington:

Mr. R. B. Van Horn,

University of Washington, Seattle, Wash.

Adviser:

Soil Conservation Service:

Mr. Harry G. Ade,

Soil Conservation Service, Washington, D. C.

Report submitted December 9, 1940.

IV. SIZE OF FARM UNITS

Problem No. 6.—What is the optimum size of farm units for the type or types of farm economy recommended by the investigators of Problem No. 2? Should there be more elasticity in fixing the maximum size of farm units, particularly those consisting chiefly of "Class 3 land," than present law permits? If so, what changes are desirable? What practicable measures could be adopted for the *retention* of units of optimum size, once they are established?

Investigators:

Bureau of Reclamation:

Mr. R. J. Newell,

Construction Engineer, Bureau of Reclamation, Boise, Idaho.

Washington State College:

Prof. B. H. Pubols,

Head of Department of Farm Management and Agricultural Economics,

State College of Washington, Pullman, Wash.

Bureau of Agricultural Economics:

Mr. Sherman E. Johnson,

Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C.

Report due: October 1, 1941.

NOTE.—It is possible, perhaps probable, that final conclusions on this problem must await the results of experience by settlers under the present law on some of the earlier units.

Problem No. 7.—Is there need for provision on areas to be settled relatively soon of special land units of *small size* to accommodate seasonal laborers, workers desiring plots for residence and part of their subsistence, and the like? If so, what proportion of the area of the earlier project units should be allocated to them? Where should they be located? How much land should individual plots include?

Investigators:

Bureau of Reclamation:

Mr. William E. Warne,

Chief, Division of Information,

Bureau of Reclamation, Washington, D. C.

Washington State Planning Council:

Mr. B. H. Kizer,

Chairman,

Washington State Planning Council, Spokane, Wash.

Investigators—Continued.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,

Counselor,

National Resources Planning Board, Federal Courthouse, Portland, Oreg.

Advisers:

Washington State College:

Prof. B. H. Pubols,

Head of Department of Farm Management and Agricultural Economics,

State College of Washington, Pullman, Wash.

Farm Security Administration:

Mr. E. G. Arnold,

Farm Security Administration, Washington, D. C.

Bureau of Agricultural Economics:

Dr. Carl C. Taylor,

Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C.

Report due: As soon as practicable; but not later than December 31, 1941.

V. LAY-OUT AND EQUIPMENT OF FARMS

It is unanimously agreed by all persons and agencies consulted (*a*) that in the areas of uneven surface the land to be irrigated should be subdivided into farms in conformity with topography and therefore with the pattern of canals, laterals, drains, and the like, rather than with conventional property lines, and (*b*) that a policy should be adopted which envisages planning to meet initially only *essential minimum requirements* in farm equipment and to do so at lowest practicable cost to the settler.

Problem No. 8.—To delimit the sections within which it is desirable that farms be laid out in adjustment to topography and to topographically controlled features.

Investigator:

Bureau of Reclamation:

Mr. H. A. Parker,

Irrigation Engineer,

Bureau of Reclamation, Ephrata, Wash.

Adviser:

Soil Conservation Service:

Mr. Harry G. Ade,

Assistant Regional Conservator,

Soil Conservation Service, Spokane, Wash.

Report submitted January 28, 1941.

Problem No. 9.—What feasible means could be adopted or created (*a*) to help insure an adequate level of living, and (*b*) to minimize the financial commitments of needy settlers in providing *suitable* and *essential* improvements?

Essential improvements include, of course, land leveling, farm ditches, houses, stock, wells or other sources of water for domestic use

and for stock, and implements. Means of minimizing the initial investment in them might include such diversified aids as heavy leveling on a large scale; acquisition by cooperative organizations of heavy machinery, for use at cost by member farmers; the design of inexpensive houses of materials and styles suited to the climate and the mode of life involved, houses to the first units of which harmonious additions could later be made by the owners; facilities for purchase of building materials at low unit cost; provisions to pipe water under pressure from a single well to the common corners of several farm units at or near which the buildings of the group of farms might be clustered conveniently to effectuate various economies and conveniences; and procurement at cost from the Clarke-McNary nursery at Pullman or from other nurseries of trees and shrubs for the homesteads.

Investigators:

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Bureau of Reclamation:

Mr. H. A. Parker,
Irrigation Engineer,
Bureau of Reclamation, Ephrata, Wash.

Federal Housing Administration:

Mr. Clark R. Jackson,
State Director,
Federal Housing Administration, 837 Exchange Building,
Seattle, Wash.

United States Housing Authority:

Mr. Langdon Post,
Regional Director,
United States Housing Authority, Humboldt Bank Bldg., San
Francisco, Calif.

Miss Catherine Bauer,
United States Housing Authority, 2632 B Hyde Street, San
Francisco, Calif.

Farm Credit Administration:

Dr. E. C. Johnson,
Farm Credit Administration, Washington, D. C.

Dr. O. H. Maughan,
Director of Research,
Farm Credit Administration, Spokane, Wash.

Farm Security Administration:

Mr. E. G. Arnold,
Farm Security Administration, Washington, D. C.

Washington State College:

Prof. L. J. Smith,
Head of the Department of Agricultural Engineering, State
College of Washington, Pullman, Wash.

Investigators—Continued.

Washington State College—Continued.

Prof. Stanley A. Smith,
Head of the Department of Architectural Engineering, State
College of Washington, Pullman, Wash.

Prof. E. H. Steffan,
Head of the Department of Forestry and Range Management,
State College of Washington, Pullman, Wash.

Mr. Stanley E. Wadsworth,
Instructor in Landscape Gardening and Floriculture, State Col-
lege of Washington, Pullman, Wash.

Bureau of Agricultural Economics:

Dr. Carl C. Taylor,
Bureau of Agricultural Economics,
Department of Agriculture, Washington, D. C.

University of Washington:

Prof. H. B. Preston,
University of Washington, Seattle, Wash.

Prof. W. L. Shattuck,
University of Washington, Seattle, Wash.

Prof. J. F. Steiner,
University of Washington, Seattle, Wash.

Prof. H. Woolston,
University of Washington, Seattle, Wash.

Report due: Some phases of this problem, readily separable, can be solved comparatively soon, as, for example, the study of heavy-leveling and perhaps the design of inexpensive extensible farm houses. In such instances, separate reports should be made as soon as practicable, and the full report will be due June 30, 1941.

Problem No. 10.—What advantages, economic and social, and what disadvantages, if any, in farm lay-out and farm work might result from the concentration of settlers in small communities or nuclear hamlets? Should experiments be made on some of the earlier project units with such farm community centers?

Investigators:

Bureau of Agricultural Economics:

Dr. Carl C. Taylor,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Mr. Sherman E. Johnson,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Rural Electrification Administration:

Mr. Harry Slattery,
Administrator,
Rural Electrification Administration, 2000 Massachusetts Ave-
nue, Washington, D. C.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Investigators—Continued.

Washington State College:

Dr. E. F. Dummeier,
Agricultural Economist,
State College of Washington, Pullman, Wash.

Dr. Paul H. Landis,
Associate Rural Sociologist and Head of Division of Rural
Sociology,
State College of Washington, Pullman, Wash.

Washington State Department of Health:

Donald G. Evans, M. D.,
State Director of Health, Seattle, Wash.

Bureau of Reclamation:

Mr. R. J. Newell,
Construction Engineer, Bureau of Reclamation, Boise, Idaho.

Farm Security Administration:

Mr. E. G. Arnold,
Farm Security Administration, Washington, D. C.

Report due: October 1, 1941.

VI. ALLOCATION OF COSTS AND REPAYMENTS

Problem No. 11.—What modifications, if any, should be made in present plans for the allocation of the cost of Grand Coulee Dam and of the primary irrigation works? Should power projects downstream, Columbia River navigation, flood control, general social benefits, and the like, be assigned an equitable share of the cost of the dam?

Investigators:

Bureau of Reclamation:

Mr. E. B. Debler,
Bureau of Reclamation, Denver, Colo.

Corps of Engineers:

Col. Richard Park,
Division Office, Corps of Engineers, Portland, Oreg.

Bonneville Administration:

Mr. Paul J. Raver,
Administrator,
Bonneville Power Administration, Portland, Oreg.

Report due: April 1, 1941.

Problem No. 12.—How many equitable payments toward the cost of the primary irrigation works best be secured, directly or indirectly, from nonrural settlers (villagers, etc.) in the project area?

Investigators:

Bureau of Reclamation:

Paul Lemargie,
Bureau of Reclamation, Coulee Dam, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Investigators—Continued.

Washington State Department of Conservation and Development:

Mr. Edward Davis,
Director,

Department of Conservation and Development, Olympia, Wash.

Report due: April 1, 1941.

NOTE.—For some years the proposition that nonagricultural settlers *should* make such payments has been affirmed by the Bureau of Reclamation and by certain other Federal agencies and recently it has been carried into effect in connection with the Colorado-Big Thompson project in Colorado.

Problem No. 13.—Is it desirable and practicable to assign different repayment charges against lands of classes 1, 2, and 3 (as these terms are used in the land-classification survey of the project area)? If so, what is the best method?

Investigator:

Bureau of Reclamation:

Mr. W. W. Johnston,
Bureau of Reclamation, Ephrata, Wash.

Advisers:

Washington State College:

Dr. E. F. Dummeier,
Agricultural Economist,
State College of Washington, Pullman, Wash.

Soil Conservation Service:

Mr. Austin Patrick,
Soil Conservation Service, Washington, D. C.

Bureau of Agricultural Economics:

Mr. M. M. Kelso,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Farm Credit Administration:

Dr. O. H. Maughan,
Director of Research,
Farm Credit Administration, Spokane, Wash.

Report due: As soon as practicable; but not later than December 31, 1941.

Problem No. 14.—How may financial aid best be extended in conservatively adequate amounts to needy settlers beyond that which may accrue to them along the lines involved in problems numbered 9, 10, 11, 12, and 13?

Investigators:

Bureau of Reclamation:

Mr. H. H. Johnson,
Superintendent,
Bureau of Reclamation, Malta, Mont.

Farm Security Administration:

Mr. E. G. Arnold,
Farm Security Administration, Washington, D. C.

Farm Credit Administration:

Dr. E. C. Johnson,
Chief, Economic and Credit Research,
Farm Credit Administration, Washington, D. C.

Investigators—Continued.

Farm Credit Administration—Continued.

Dr. O. H. Maughan,
Director of Research,
Farm Credit Administration, Washington, D. C.

Washington State Department of Conservation and Development:

Mr. Edward Davis,
Director,
Department of Conservation and Development, Olympia, Wash.

Bureau of Agricultural Economics:

Dr. Carl C. Taylor,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

Adviser:

United States Housing Authority:

Mr. Winters Haydock,
Regional Director,
United States Housing Authority, 585 Bush Street, San Francisco, Calif.

Miss Catherine Bauer,
United States Housing Authority, 2632 B Hyde Street, San Francisco, Calif.

Report due: July 1, 1941.

NOTE.—Provision must be made for many poor or even destitute settlers. Both public opinion and official opinion demand it. The possibility of setting up a system under which settlers could pay over a relatively long period for the land and for essential improvements, as outlined in those problems under Division V, Lay-out and Equipment of Farms, much as they would repay water right charges under the Reclamation Project Act of 1939 should be explored thoroughly. It has been suggested that poor farmers *inexperienced* in irrigation enterprises be placed as tenants on lands owned by the Federal Government or by the State during an experimental period of a few years in which they could find out whether or not they can practice irrigation farming successfully. This suggestion merits careful consideration.

VII. CONTROL OF PROJECT LANDS

Effective control of project lands is regarded by all persons and agencies thus far consulted to be an indispensable prerequisite to the successful development and settlements of the project.

Problem No. 15.—What methods exist or could be developed for establishing the requisite control of privately owned lands? What are the advantages and disadvantages of each method? What method, all relevant factors considered, would be best? What policy or policies should be adopted with respect to the administration or disposal of lands brought under effective control?

Investigators:

Bureau of Reclamation:

Mr. B. E. Stoutemyer,
District Counsel,
Bureau of Reclamation, Portland, Oreg.

Investigators—Continued.

Bureau of Reclamation—Continued.

Mr. Fred Cunningham,
Old National Bank Building, Spokane, Wash.

Washington State Planning Council:

Mr. B. H. Kizer,
Chairman,
Washington State Planning Council, Spokane, Wash.

Final report submitted April 25, 1941.

NOTE.—Among possible methods are Federal acquisition of title, State acquisition of title, joint Federal-State acquisition of title, and acquisition of title by an appropriate public or quasi-public corporation. In theory, lands purchased through the use of any such method, whether farm lands or village lands, could later be sold or leased (for definite periods or for indeterminate periods) as might be found best in particular instances and areas.

Problem No. 16.—How may the requisite control of State lands, county lands, and railroad lands best be secured?

Investigators:

Washington State Department of Conservation and Development:

Mr. Edward Davis,
Director,
Department of Conservation and Development, Olympia, Wash.

Washington State Land Commission:

Mr. Jack Taylor,
Washington State Land Commissioner, Olympia, Wash.

Bureau of Reclamation:

Mr. B. E. Stoutemyer,
District Counsel,
Bureau of Reclamation, Portland, Oreg.

Northern Pacific Railway Co.:

Mr. W. E. Holt,
Northern Pacific Railway Co., Seattle, Wash.

Report due: March 15, 1941.

VIII. RATE OF DEVELOPMENT.

The optimum rate at which project units can be developed and opened to settlement following the availability of water for the initial units will be affected not only by such primary factors as the size of Congressional appropriations for developmental work, the need for land, and the requirements of orderly and economical development, but also by various secondary factors. The success of the project is the chief end to be sought. Its attainment will be promoted by balanced development and systematic settlement at a conservative, unhurried rate. Development should not be geared primarily to the present demand for land by needy migrants. The entire project, if open today to occupation, could accommodate only a small part of such people currently seeking land on the Pacific coast. The demand for land may fluctuate greatly up or down in a few years. Searching consideration should be given to avoidance of serious disturbance to

the agricultural structure of other parts of the Northwest and to prospective market demands for products that are found suitable for the project area (problems No. 1 and No. 2). Everyone who has been consulted holds the opinion that the rate at which project lands are opened to settlement during the first few years should not be rapid and that the lands so opened should be preponderantly of high grade. The rate adopted for early years may be altered if experience makes it desirable.

Problem No. 17.—To estimate, in the light of all relevant factors, the annual rate at which lands should be brought in during the first few years (six, perhaps) after water becomes available.

Investigators and advisers:

Bureau of Reclamation:

Mr. H. A. Parker,
Irrigation Engineer,
Bureau of Reclamation, Ephrata, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
Washington State Planning Council, Old Capitol Building,
Olympia, Wash.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse, Portland, Oreg.

Directors, Columbia Basin Irrigation Districts:

East Columbia Basin Irrigation District:

Mr. Don Damon,
Director and President,
Cunningham, Wash.
Mr. C. H. Brittenham,
Secretary and Attorney,
Lind, Wash.
Mr. Gus Olander,
Director,
Wheeler, Wash.
Mr. John Getzinger,
Director,
Warden, Wash.
Mr. J. B. Finkbeiner,
Director,
Othello, Wash.
Mr. David Phillips,
Director,
Lind, Wash.

Quincy-Columbia Basin Irrigation District:

Mr. J. A. Weber,
Director and President,
Quincy, Wash.

Investigators and advisers—Continued.

Directors, Columbia Basin Irrigation Districts—Continued.

Quincy-Columbia Basin Irrigation Districts—Continued.

Mr. E. E. Huffman,
Director and Vice President,
Quincy, Wash.
Mr. James O'Sullivan,
Secretary,
Ephrata, Wash.
Mr. Matt De Shaw,
Director,
Winchester, Wash.
Mr. C. A. Kennedy,
Director,
Stratford, Wash.
Mr. V. E. Bjorklund,
Director,
Ephrata, Wash.
Mr. William Clapp,
Attorney,
Ephrata, Wash.

South Columbia Basin Irrigation District:

Mr. D. W. Neff,
Director and President,
Pasco, Wash.
Mr. H. de Schepper,
Secretary,
Pasco, Wash.
Mr. W. L. Marshall,
Director,
Connell, Wash.
Mr. A. D. Olson,
Director,
Beverly, Wash.
Mr. Leon L. Bailie,
Director,
Mesa, Wash.
Mr. P. O. Hailey,
Director,
Eltopia, Wash.

Report due: August 1, 1941.

IX. VILLAGES

Problem No. 18.—To assist appropriate local officials and agencies in formulating plans for the orderly and effective development of existing cities and villages within the project area. To determine the optimum number of new villages for the project area and their most advantageous placement; to design for them an appropriate number of *suitable* types of expansible patterns, with due regard to various land uses (commercial, industrial, recreational, institutional, etc.), to reasonable minimum requirements for buildings, to building lines, the arrangement and width of streets, and the like; and to plan,

insofar as practicable, essential public facilities, such as lighting systems, waterworks, and sewage-disposal systems.

Investigators and advisers:

Bureau of Reclamation:

Dr. E. N. Torbert,
Field Coordinator,
Bureau of Reclamation, Ephrata, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse, Portland, Oreg.

Representatives of the railroads:

Mr. A. L. Sedgwick,
Chicago, Milwaukee, St. Paul & Pacific Ry., Seattle, Wash.
Mr. E. B. Duncan,
Great Northern Railway Co., St. Paul, Minn.
Mr. W. P. Stapleton,
Northern Pacific Railway, Seattle, Wash.
Mr. K. C. Miller,
Spokane, Portland & Seattle Railway System, Portland, Oreg.
Mr. Joseph W. Jarvis,
Union Pacific Railroad System, Omaha, Nebr.

Bureau of Reclamation:

Mr. F. A. Banks,
Supervising Engineer,
Bureau of Reclamation, Coulee Dam, Wash.

Federal Housing Administration:

Mr. Charles Clark,
Regional Director,
Land Planning, Federal Housing Administration, 756 South
Spring Street, Los Angeles, Calif.

United States Housing Authority:

Mr. Langdon Post,
Regional Director,
United States Housing Authority, Humboldt Bank Bldg., San
Francisco, Calif.
Miss Catherine Bauer,
United States Housing Authority, 2632B Hyde Street, San
Francisco, Calif.

Federal Works Agency:

Mr. John M. Carmody,
Administrator,
Federal Works Agency, Washington, D. C.

Washington State College:

Mr. Paul H. Landis,
Head of Division of Rural Sociology,
Washington State College, Pullman, Wash.

Investigators—Continued.

Washington State Department of Health:

Donald G. Evans, M. D.
State Director of Health,
Seattle, Wash.

University of Washington:

Mr. H. H. Martin,
University of Washington, Seattle, Wash.

Washington State Board of Education:

Pearl Wanamaker,
Superintendent of Public Instruction, Olympia, Wash.

Report due: As soon as practicable; but not later than December 31, 1941.

X. ROADS AND OTHER TRANSPORTATION FACILITIES

Problem No. 19.—To plan desirable additions to and modifications of the road net in adjustment to the irrigation system, village sites and patterns, farm hamlets (farmstead clusters), and other features, and to prospective transportation needs.

Investigators and advisers:

Washington State Department of Highways:

Mr. C. E. Fritts,
State Department of Highways, Olympia, Wash.

County road commissioners:

Mr. Henry Denekas,
Adams County Road Commissioner, Ritzville, Wash.
Mr. Walter R. Johnson,
Adams County Road Commissioner, Hatton, Wash.
Mr. Edward F. Wahl,
Adams County Road Commissioner, Ritzville, Wash.
Mr. Clement O'Neil,
Grant County Road Commissioner, Almira, Wash.
Mr. J. B. Martin,
Grant County Road Commissioner, Quincy, Wash.
Mr. Chris Larsen,
Grant County Road Commissioner, Wilson Creek, Wash.
Mr. H. L. Blanton,
Franklin County Engineer, Pasco, Wash.

Bureau of Reclamation:

Mr. H. A. Parker,
Irrigation Engineer,
Bureau of Reclamation, Ephrata, Wash.

Representatives of the railroads:

Mr. G. S. Cooper,
Chicago, Milwaukee, St. Paul & Pacific Railway, Seattle, Wash.
Mr. E. B. Duncan,
Great Northern Railway Co., St. Paul, Minn.
Mr. W. P. Stapleton,
Northern Pacific Railway Co., Seattle, Wash.
Mr. K. C. Miller,
Spokane, Portland & Seattle Railway System, Portland, Oreg.
Mr. Joseph W. Jarvis,
Union Pacific Railroad System, Omaha, Nebr.

Investigators—Continued.
Bureau of Reclamation:

Bonneville Administration:

Dr. Paul J. Raver,
Administrator,

The Bonneville Power Administration, Portland, Oreg.

Report due: Primary network, March 15, 1941; secondary and tertiary systems as soon as practicable, but not later than December 31, 1941.

Problem No. 20.—To plan desirable additions to the railroad facilities of the project area, particularly in the form of branch lines and new shipping points, in mutual adjustment with such related items as new villages, prospective industries, the probable transportation needs of the future farm population, and the road net to be planned.

Investigators and advisers:

Representatives of the railroads:

Mr. E. B. Crane,

Milwaukee, St. Paul & Pacific Railroad Co., Seattle, Wash.

Mr. E. B. Duncan,

Great Northern Railway Co., St. Paul, Minn.

Mr. W. P. Stapleton,

Northern Pacific Railway Co., Seattle, Wash.

Mr. K. C. Miller,

Spokane, Portland & Seattle Railway System, Portland, Oreg.

Mr. Joseph W. Jarvis,

Union Pacific Railroad System, Omaha, Nebr.

Washington State Department of Highways:

Mr. C. E. Fritts,

State Department of Highway, Olympia, Wash.

Bureau of Reclamation:

Mr. F. A. Banks,

Supervising Engineer,

Bureau of Reclamation, Coulee Dam, Wash.

Bonneville Administration:

Dr. Paul J. Raver,

Administrator,

The Bonneville Power Administration, Portland, Oreg.

Report due: As soon as related investigations and the nature of this problem may permit; but not later than December 31, 1941.

Problem No. 21.—What is the significance to the project area of the Columbia River as a commercial route, if improved for navigation as proposed?

Investigators:

Corps of Engineers:

Lt. Col. C. R. Moore,

Division Office,

Corps of Engineers, Portland, Oreg.

Investigators—Continued.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,

Counselor, National Resources Planning Board, Federal Court-
house, Portland, Oreg.

Report due: When practicable; but not later than December 31, 1941.

XI. UNDERGROUND WATERS

Problem No. 22.—What are the essential facts with respect to the occurrence, movements, quantities, and qualities of underground waters throughout the project area? In dealing with this problem a contour map showing the depth to water at points of record is needed, and also estimates of (a) the effect of irrigation upon the water table and (b) permissible drafts on the supply in different sections.

Investigators:

United States Geological Survey, in cooperation with the State Department of Conservation and Development (under the "matching law"):

Mr. Arthur M. Piper,

Geological Survey, 606 Post Office Building, Portland, Oreg.

Mr. Ed Davis,

Director,

Department of Conservation and Development, Olympia, Wash.

Advisers:

Bureau of Reclamation:

Mr. H. A. Parker,

Irrigation Engineer,

Bureau of Reclamation, Ephrata, Wash.

Washington State Geologist:

Dr. Harold E. Culver,

Head of Department of Geology and State Geologist,

Washington State College, Pullman, Wash.

Report due: For areas of relatively early development and settlement, May 1, 1941; for the remainder of the area, as soon as practicable.

XII. RURAL AND VILLAGE ELECTRIFICATION

It has been hoped that the farms and villages of the project area would constitute in time one of the principal markets for power developed at Grand Coulee Dam. Certainly the area, as progressively settled and developed, should have every available advantage of cheap power.

Problem No. 23.—To plan the facilities (transmission lines, distribution systems, etc.) needed to bring electric energy most advantageously to the various parts of the project area as progressively opened and settled.

Investigators:

Bureau of Reclamation:

Mr. George A. Fleming,

Bureau of Reclamation, Denver, Colo.

Investigators—Continued.

Rural electrification administration:

Mr. Harry Slattery,
Administrator,
Rural Electrification Administration, 2000 Massachusetts Ave-
nue, Washington, D. C.

Advisers:

Washington State College:

Prof. L. J. Smith,
Head of the Department of Agricultural Engineering,
State College of Washington, Pullman, Wash.
Mr. H. V. Carpenter,
Dean, College of Mechanic Arts and Engineering,
State College of Washington, Pullman, Wash.

Bonneville Power Administration:

Mr. Warren H. Marple,
Chief, Distribution Projects Section,
The Bonneville Power Administration, Portland, Oreg.

Report due: As soon as practicable; but not later than December 31, 1941.

XIII. MANUFACTURES

Problem No. 24.—What processing plants and other marketing facilities (number, type, size, and location) will be needed for efficient handling of the agricultural products of the area? How could such facilities be fitted to requirements during the early years of irrigation, and also to the mature development of the project? What other industries might be located advantageously in the parts of the project area likely to be settled relatively soon? What steps should be taken to promote or guide the development of such facilities and industries?

Investigators:

Bureau of Agricultural Economics:

Mr. Wendell T. Calhoun,
Bureau of Agricultural Economics, 719 Welch Building,
Spokane, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse,
Portland, Oreg.

Department of Agriculture—Western Regional Research Laboratory:

Dr. T. L. Swenson,
Director,
Western Regional Research Laboratory, Albany, Calif.
Dr. W. B. Van Arsdell,
Western Regional Research Laboratory, Albany, Calif.
Mr. H. C. Diehl,
Western Regional Research Laboratory, Albany, Calif.

Investigators—Continued.

Representatives of the railroads:

Mr. Dan B. Noble,
Chicago, Milwaukee, St. Paul & Pacific Railroad Co., Spokane,
Wash.
Mr. E. B. Duncan,
Great Northern Railway Co., St. Paul, Minn.
Mr. W. P. Stapleton,
Northern Pacific Railway Co., Seattle, Wash.
Mr. Joseph W. Jarvis,
Union Pacific Railroad System, Omaha, Nebr.

Bonneville Administration:

Dr. Paul J. Raver,
Administrator,
The Bonneville Power Administration, Portland, Oreg.

Washington State College:

Mr. G. E. Thornton,
Professor of Mechanical Engineering,
State College of Washington, Pullman, Wash.
Prof. A. E. Drucker,
Dean of the School of Mines and Geology,
State College of Washington, Pullman, Wash.

Bureau of Reclamation:

University of Washington:

Prof. H. K. Benson,
University of Washington, Seattle, Wash.

Farm Credit Administration:

A. C. Adams,
President,
Spokane Bank for Cooperatives, Spokane, Wash.

Report due: October 1, 1941.

NOTE.—Agriculture and industry within the project area appear to have interdependent possibilities of importance; seemingly each of them may help to support the other. Creameries and processing plants, for example, might help effectively to integrate farm and village economy in some sections. Agriculture might produce some of the raw materials needed by local or regional industries.

XIV. RECREATIONAL RESOURCES AND NEEDS

Problem No. 25.—To locate and plan the lay-out and improvement of rural parks and recreational grounds within the project area. Attractive spots, quickly and conveniently accessible, and without high agricultural utility insofar as practicable, seem to be indicated. Village parks and playgrounds are covered in Problem No. 18.

Investigators:

Bureau of Reclamation:

Mr. F. A. Banks,
Supervising Engineer,
Bureau of Reclamation, Coulee Dam, Wash.

Investigators—Continued.

National Park Service:

Mr. C. E. Greider,
State Superintendent,
National Park Service, 601 Sheldon Building, San Francisco,
Calif.

Washington State Department of Highways:

Mr. C. E. Fritts,
State Department of Highways, Olympia, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Washington State College:

Dr. Paul H. Landis,
Head of Division of Rural Sociology,
State College of Washington, Pullman, Wash.

University of Washington:

Prof. H. H. Martin,
University of Washington, Seattle, Wash.

Washington State Parks Committee:

Mr. W. G. Weigle,
Superintendent of State Parks, Seattle, Wash.

Report due: June 1, 1941.

Problem No. 26.—To formulate plans to promote the recreational use of the reservoir above Grand Coulee Dam and its shorelands, not in isolation but in effective interrelationship with the other diversified recreational assets of the Inland Empire and of contiguous areas, from all significant local, regional, and national points of view.

Investigators:

National Park Service:

Mr. C. E. Greider,
State Superintendent,
National Park Service, 712 Spaulding Building, Portland, Oreg.

United States Forest Service:

Mr. F. V. Horton,
United States Forest Service, Portland, Oreg.

United States Bureau of Biological Survey:

Dr. Victor B. Scheffer,
105 Anderson Hall, University of Washington, Seattle, Wash.

United States Bureau of Fisheries:

Mr. Fred J. Foster,
United States Bureau of Fisheries, 2725 Mont Lake Boulevard,
Seattle, Wash.

Corps of Engineers:

Col. Richard Park,
Division Office,
Corps of Engineers, Portland, Oreg.

Office of Indian Affairs:

Mr. Melvin L. Robertson,
Office of Indian Affairs, Colville Indian Agency, Nespelem,
Wash.

Investigators—Continued.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse, Portland, Oreg.

Washington State Parks Committee:

Mr. W. G. Weigle,
Superintendent of State Parks, Seattle, Wash.

Washington State Department of Conservation and Development:

Mr. Edward Davis,
Director,
Department of Conservation and Development, Olympia, Wash.

Washington State Land Commission:

Mr. Jack Taylor,
Washington State Land Commissioner, Olympia, Wash.

Washington State Game Commission:

Mr. Bernard T. McCauley,
Director,
State Game Commission, 1320 Smith Tower, Seattle, Wash.

Washington State Planning Council:

Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Washington State Department of Health:

Mr. Donald G. Evans, M. D.,
State Director of Health, Seattle, Wash.

Washington State Department of Highways:

Mr. C. E. Fritts,
State Department of Highways, Olympia, Wash.

Representative Chambers of Commerce:

Mr. James A. Ford,
Managing Secretary,
Spokane Chamber of Commerce, Spokane, Wash.

Mr. W. G. Mathews,
President,
Ephrata Chamber of Commerce, Ephrata, Wash.

Bureau of Reclamation:

Mr. F. A. Banks,
Supervising Engineer,
Bureau of Reclamation, Coulee Dam, Wash.

Report due: When practicable; but not later than December 31, 1941.

XV. RURAL COMMUNITY CENTERS

Problem No. 27.—To plan the location (first for the northern and the southernmost parts of the area), and, insofar as practicable, the improvement of sites for rural schools, churches, community halls, market centers, athletic field (compare problems No. 18 and No. 25) and the like. Selections might well be made of more sites than are likely to be utilized, with the idea that some of them will be released as unneeded after the settlement of the sections involved.

Investigators:

Bureau of Agricultural Economics:
Dr. Carl C. Taylor,
Bureau of Agricultural Economics, Washington, D. C.
Washington State Planning Council:
Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.
Washington State Board of Education:
Pearl Wanamaker,
Superintendent of Public Instruction, Olympia, Wash.
Washington State Department of Highways:
Mr. C. E. Fritts,
State Department of Highways, Olympia, Wash.
Bureau of Reclamation:
Mr. F. A. Banks,
Supervising Engineer,
Bureau of Reclamation, Coulee Dam, Wash.
Washington State College:
Dr. Paul H. Landis,
Head of Division of Rural Sociology,
State College of Washington, Pullman, Wash.
University of Washington:
Prof. R. G. Tyler,
University of Washington, Seattle, Wash.

Report due: September 1, 1941.

XVI. GOVERNMENTAL ORGANIZATION, PUBLIC WORKS PROGRAMMING AND FINANCING

The project area will in time require greatly augmented public services and facilities. Consequently, a considerable change in the structure of local governmental units probably is indicated. An appraisal of existing county, school district, and other governmental units should be made with reference to the prospective needs of the whole area and the contiguous territory. In due time, steps should be taken to organize or reorganize such units as may be needed, according to a plan which will provide maximum service at lowest feasible cost, and which will avoid the chaotic patterns of overlapping and conflicting taxing jurisdictions that have developed in some areas.

Problem No. 28.—To develop, in the light of all relevant factors, the most advantageous pattern of local governmental units to meet prospective public needs. This should be done with due regard to programming and financing public-improvements in such a way as to eliminate or minimize the possibility of an excessive tax burden.

Investigators:

Washington State Planning Council:
Mr. P. Hetherton,
Executive Officer,
State Planning Council, Old Capitol Building, Olympia, Wash.

Investigators—Continued.

Washington State Department of Conservation and Development:

Mr. Edward Davis,
Director,
Department of Conservation and Development, Olympia, Wash.

Federal Works Agency:

Mr. John M. Carmody,
Administrator,
Federal Works Agency, Washington, D. C.

Bureau of Agricultural Economics:

Mr. M. M. Kelso,
Bureau of Agricultural Economics, Department of Agriculture,
Washington, D. C.

University of Washington:

Dr. Donald H. Webster,
Executive Secretary,
Bureau of Governmental Research, University of Washington,
Seattle, Wash.

Pacific Northwest Regional Planning Commission:

Maj. R. F. Bessey,
Counselor,
National Resources Planning Board, Federal Courthouse, Portland, Oreg.

Adviser:

National Resources Planning Board:

Col. Henry M. Waite,
Chairman,
Public Works Committee, National Resources Planning Board,
North Interior Building, Washington, D. C.

Report due: September 1, 1941.

NOTE.—The study of this problem should be closely correlated with the work of investigating agencies dealing with various other problems, especially No. 18 and No. 27.

WILLIAM E. WARNE,
*Chief, Division of Information,
Bureau of Reclamation, Washington, D. C.*

HARLAN H. BARROWS,
*Planning Consultant, Bureau of Reclamation,
University of Chicago, Chicago, Ill.*



8731

Saint Paul, Minnesota
September 29, 1941

Mr. R. W. Clark,
Vice President

I attach copy of a recent Bureau of Reclamation release reporting on the final classification of the lands in the Columbia Basin area.

A map is attached to this release showing the location of the three classes of irrigable land. It will be valuable for you to have this map on file for later reference in connection with matters pertaining to development of the area. You will note that the percentage of Class 1 and 2 lands is relatively higher in the East and South districts than in the Quincy district. Northern Pacific interests are largely confined to the East and South districts; therefore shall have the highest percentage of Class 1 and 2 lands.

John I

cc- Mr. H. E. Stevens
Mr. Bernard Blum
Mr. J. M. Hughes
Mr. L. M. Ackerman
Mr. F. G. Cook

J. T. J.

note
10/3
15-13



DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

BUREAU OF RECLAMATION

For Release WEDNESDAY, AUGUST 27, 1941.

Completion of the land classification of the vast Columbia Basin in eastern Washington was reported today by Acting Commissioner Harry W. Bashore to Secretary of the Interior Harold L. Ickes.

Of the 1,913,000 acres classified in the area, approximately 1,234,000 acres were found suitable to receive water from the titanic Grand Coulee Dam in the Columbia River.

Soil experts of the Bureau of Reclamation divided the arable land into three classes--the best arable lands, the lands of intermediate or average value, and the least desirable lands for which it is proposed to provide water for irrigation. Classified 1, 2, and 3, the percentage of land in the three irrigation districts was as follows:

<u>District</u>	<u>Class 1</u>	<u>Class 2</u>	<u>Class 3</u>
Quincy	28	35	37
East	42	39	19
South	26	46	28
Entire project	33	40	27

The completed surveys provide a reliable basis for the determination of the allocation of construction costs on the basis of benefits, and for general project planning. They were begun in September 1937.

1

Immediate use was made of the findings by a Government appraisal board which followed the classifiers. Through the use of land classification maps and summaries of the areas in the different classes the board was able to make a uniform and detailed appraisal at low cost. The appraisal work will be completed late this autumn.

Investigators reported that the soil of the project is on the light-textured side with very little alkali present, and that it will respond well to irrigation and modern farm practices. With soil conditions varying greatly, it was necessary to carry the land classification to considerable detail to obtain a reliable inventory.

It was found desirable to consider the suitability of land for irrigation farming under three headings; first, the soil texture, depth, structure, nature of underlying materials, alkalinity, and surface rock; second, the topography, the degree of slope, the nature of the surface or the amount of leveling that would be required to put the land under irrigation; and third, the drainage conditions. Deficiencies in soil, topography, drainage, and loose rock in the plow zone placed land in the lower classes.

Elimination of unsuitable lands from the area was one of the most important parts of the land classification. Regardless of the high quality of the soil, lands with slopes in excess of 15 percent were eliminated, as were those where the surface is so rough that the cost of leveling would be prohibitive. Areas eliminated on account of drainage included narrow valleys which would obviously become waterlogged and which contain insufficient acreage to pay the cost of drainage, and also areas which had no surface outlet, where the cost of providing artificial outlets would obviously be in excess of the benefit. Also included in the nonarable class were certain small areas of good land lying within larger bodies of

nonarable land when they would obviously not make usable fields. Further elimination may be found necessary later where it proves infeasible to make water delivery. Final determination will be made when the canal system is fully planned.

The general scheme and methods of classification were reviewed by a board of consultants which included a representative of the soil department of the State experimental station and of the Division of Soil Surveys of the Department of Agriculture, and a third member who had had long experience in the development and management of irrigated farms in a nearby district.

Topographic maps on a scale of one inch to 400 feet made by the engineering forces of the Bureau of Reclamation were used as the basis for the field work on the classification. A soil test pit was dug in each 40 acres of the vast area except in areas obviously nonirrigable, and soil samples in adequate numbers to check field judgment were tested in a laboratory to determine texture and alkali content.

The pits were dug to a depth of five feet except where rock or gravel was encountered, and occasional holes were extended to a greater depth where the classifier felt it important to explore the deeper soil.

With headquarters in Ephrata, where the drafting and computing of the field results are still in progress, the field work was conducted by an average of four parties, which at one time or another during the course of the program maintained field offices at most of the towns in or near the project area. The only interruptions in the $3\frac{1}{2}$ years of work were a few two- or three-day layoffs caused by severe winter weather.

The work just completed is the second study of soils in the project area. In 1923 a reconnaissance land classification was made for the Bureau of Reclamation

by a group of soil specialists. Estimates of the irrigable area in the project have heretofore been based upon that classification.

The classification and appraisal are being made in accordance with the Anti-Speculation Act of 1937, designed to provide a maximum number of family size farm units at fair prices.

The project will provide homes for 25,000 to 40,000 families on the land, and for an equal number in towns in the irrigated areas. Water is not expected to be made available until 1944 or 1945 or later. Between 25,000 and 50,000 acres will be brought under cultivation each year.

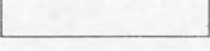
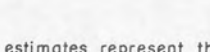
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA BASIN PROJECT, WASHINGTON

PROSPECTIVE DENSITY OF FARM POPULATION

The shadings below are used on the map: GENERALIZED LAND CLASSIFICATION (B-5746) to indicate areas in which different classes of land predominate. These same shadings denote the prospective densities of farm population per square mile presented below.

For Use With Map: GENERALIZED LAND CLASSIFICATION

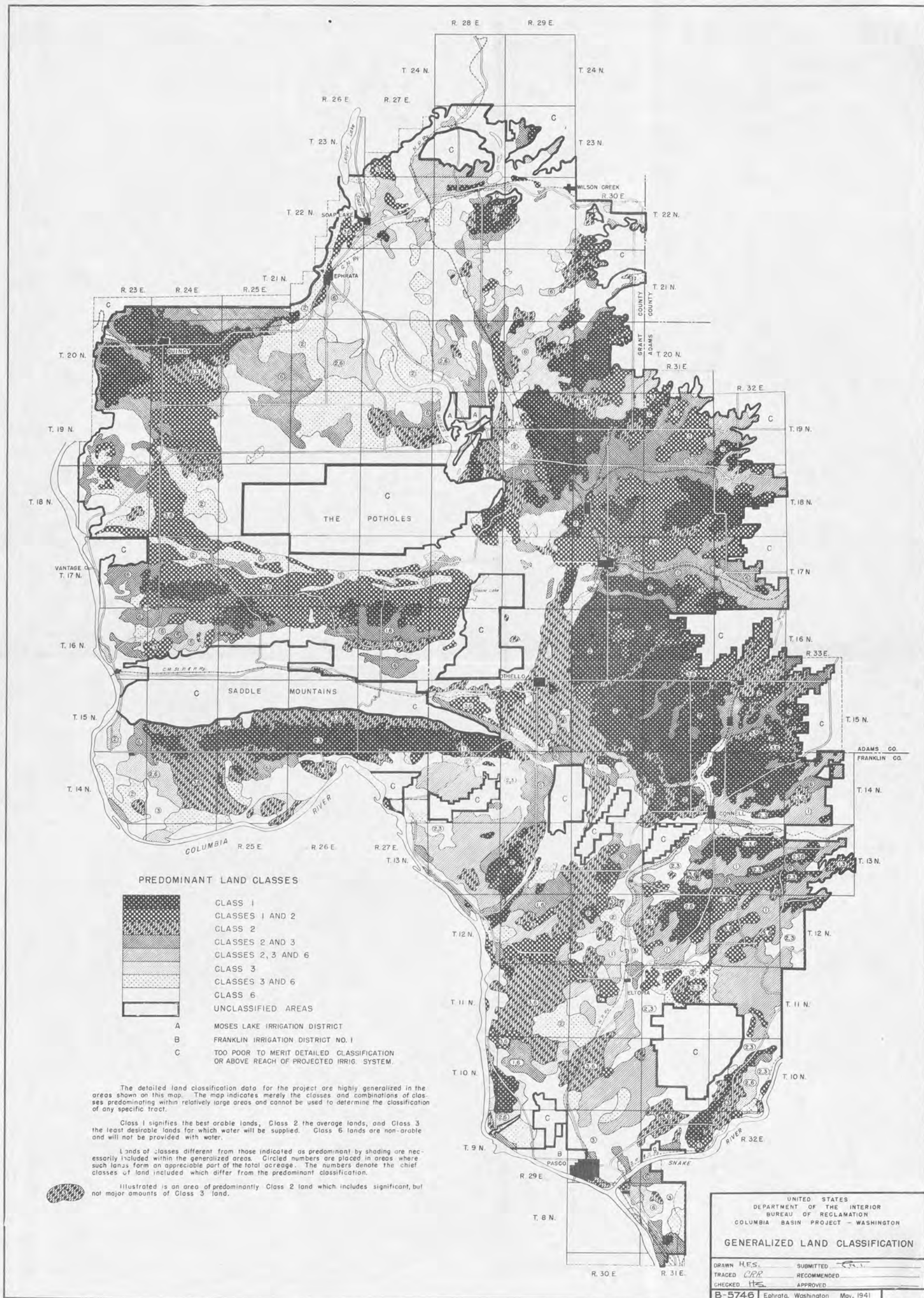
	PREDOMINANT LAND CLASSES	PROSPECTIVE DENSITY OF FARM POPULATION PER SQUARE MILE *
	Class 1	36-50
	Classes 1 and 2	34-46
	Class 2	32-42
	Classes 2 and 3	29-37
	Classes 2, 3, and 6	20-26 **
	Class 3	26-32 **
	Classes 3 and 6	12-16 **
	Class 6	0

* These estimates represent the prospective population on full-time, irrigated farms when the area is fully developed. The estimates include neither the prospective part-time farm population nor the non-farm population.

The estimates are based upon the preliminary, tentative assumptions: that an average of four persons will live on each unit; and that the average size of farm on each of the irrigable classes of land, with exceptions noted below, will lie within the following limits: Class 1, 50-70 acres; Class 2, 60-80 acres; Class 3, 80-100 acres.

** On Class 3 lands of the Wahluke and Pasco Slopes, it is estimated that the average size of farm will be closer to 80 than to 100 acres, and that the density of farm population will approach the maximum indicated for Class 3 lands.

** On Class 3 lands of the Coulee Fan and Burke Flats, it is estimated that the average size of farm will lie between 100 and 140 acres, and the density of farm population between 18 and 26 per square mile.



8731

Saint Paul, Minnesota
August 12, 1941

Mr. R. W. Clark,
Vice President

Attached release by the Bureau of Reclamation on areas to first be irrigated in the Columbia Basin is obviously of great importance and the papers should be on your file. Map is attached to release, showing location of the three blocks of land selected for primary development.

Thus officially the Bureau has recognized that a development program should run concurrently in each of the three Basin districts. Originally the plan was full development of the West District served by the west canal. This I opposed because of Northern Pacific interest as well as the fact that it would breed area jealousies with grave future implications.

As the plan now stands I shall not be surprised if the Pasco area gets away somewhat ahead of the areas around Moses Lake and Ephrata. The latter must await construction of the canal line down from the dam, while the Pasco area, pumping direct from the Columbia, can be put in any time at rather nominal expense even though the lift is high.

I had hoped that included in the Pasco area would be the 6,000 to 8,000 acres lying south of the Snake in Walla Walla county around Burbank and Attalia. Water would be pumped from the Snake for this land. We are still urging inclusion of this body of attractive land in the original South District development.

jwh 1
Encl.

cc - Mr. H. E. Stevens
Mr. Bernard Blum
Mr. J. M. Hughes

J. M. Haw

B

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22

1041
2131
VII
22



DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

BUREAU OF RECLAMATION

For Release WEDNESDAY, JULY 16, 1941

Determination of the three blocks of lands which most appropriately could be irrigated first in the area encompassed by the Columbia Basin Project was reported today by Commissioner John C. Page, Bureau of Reclamation, to Secretary of the Interior Harold L. Ickes.

The three blocks, one in each of the irrigation districts which have been organized to cover project lands, will be developed substantially concurrently, subject, of course, to appropriations by the Congress adequate to fulfill the plan. The three blocks would be irrigated before a second block is started in any of the three districts, according to the plan.

The combined area of these initial developments is 60,600 acres. Eventually it is contemplated to irrigate^W and develop in connection with the Grand Coulee Dam-Columbia Basin project 1,200,000 acres of land now dry and virtually unused. A quarter of a century may be required to complete this development, but in the end, about 350,000 persons are expected to be added to the population of the area as a result of irrigation of the land.

Selection of these first blocks grows out of the Columbia Basin Joint Investigations, sponsored by the Bureau of Reclamation, and participated in

by more than 40 agencies which are interested in the area and in the problems connected with its development.

The project lands lie between Pasco and Ephrata, Washington, in the big bend of the Columbia River. The three districts are the Quincy-Columbia Basin Irrigation District on the west, the East Columbia Basin Irrigation District, and the South Columbia Basin Irrigation District.

The area is so large, being as big as Delaware, that it has been determined to be desirable to begin the development at several points in various areas of the project to avoid uneconomic development of village, school, highway, and railroad patterns. For example, if all the early development should be made at the extreme of either side of the project, it is probable that urban and other developments would occur there to the great disadvantage for all time of the settlers on the later blocks at the far extremities of the project area, who might be forced to drive 60 miles for a Saturday night haircut.

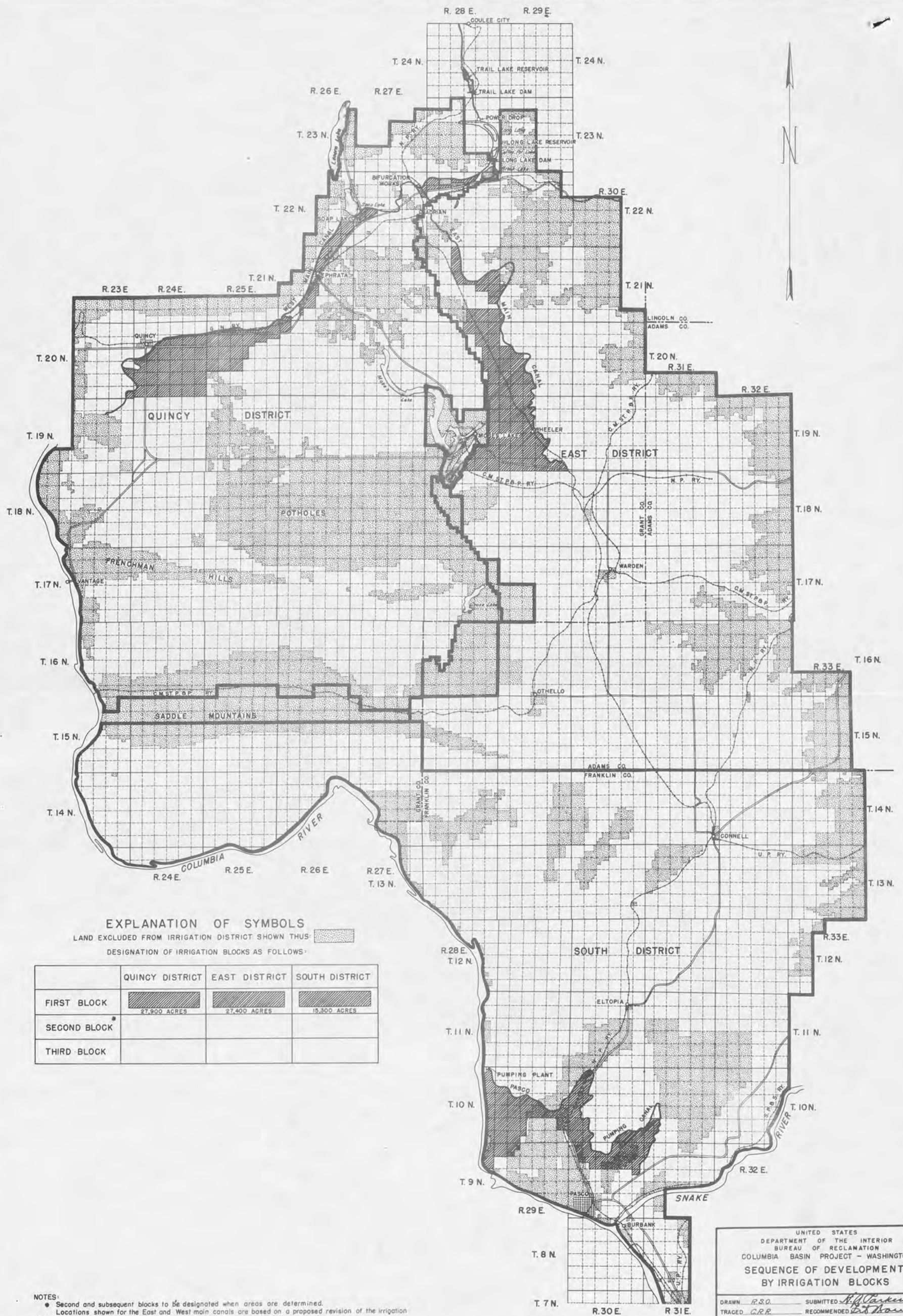
The initial blocks, as selected, are 27,000 acres in the Quincy-Columbia District, which will be served by the West Main Canal; 27,400 acres in the East District, which will be served by the East Main Canal, and 15,300 acres in the South District which will be served through the Pasco pumping canal. The attached map will give more detailed information as to the locations of the blocks. Other irrigation blocks, when later designated, will be shown on subsequent editions of this map.

Commissioner Page called attention to the requirements of the law which will not permit the expenditure of any funds for irrigation developments on the Columbia Basin project until repayment contracts have been executed with the irrigation districts. Negotiations affecting these contracts are under way and early action will permit construction to begin.

"Progress on the negotiations indicates that the way will be cleared for work on the construction of the pumping plant, and the dams and equalizing reservoir in the Grand Coulee during the fiscal year, 1942," Mr. Page said. "Authority has been granted to use \$2,000,000 of the appropriation made for Grand Coulee Dam in the Interior Department Appropriation Act to initiate this construction, if obstacles are removed.

"It is our hope that the way will be cleared so that construction can be advanced to bring water to the first blocks of the Columbia Basin lands in 1944 or not later than 1945."

The Commissioner cautioned against speculation in the lands, saying that the Government was bending every effort to see that actual settlers obtained their land at fair values. Impartial appraisals of most of the land have been completed by the Government. Information concerning the appraisals is available free on application to the Bureau of Reclamation, Coulee Dam, Washington.



✓
J.T. Derrig

Engr. Dept.

T.R. & J. Lee
per Mr. Blair
noted by Mr. Blair
ND 84

OCT 12 1940

ADDRESS CORRESPONDENCE TO G. E. LEES,
AUDITOR DISBURSEMENTS, ST. PAUL, MINN.

in

... \$98.70

AUG 3 4 1941
NDR. FAC. PY



DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

B

BUREAU OF RECLAMATION

For Release WEDNESDAY, JULY 16, 1941

Determination of the three blocks of lands which most appropriately could be irrigated first in the area encompassed by the Columbia Basin Project was reported today by Commissioner John C. Page, Bureau of Reclamation, to Secretary of the Interior Harold L. Ickes.

The three blocks, one in each of the irrigation districts which have been organized to cover project lands, will be developed substantially concurrently, subject, of course, to appropriations by the Congress adequate to fulfill the plan. The three blocks would be irrigated before a second block is started in any of the three districts, according to the plan.

The combined area of these initial developments is 60,600 acres. Eventually it is contemplated to irrigate and develop in connection with the Grand Coulee Dam-Columbia Basin project 1,200,000 acres of land now dry and virtually unused. A quarter of a century may be required to complete this development, but in the end, about 350,000 persons are expected to be added to the population of the area as a result of irrigation of the land.

Selection of these first blocks grows out of the Columbia Basin Joint Investigations, sponsored by the Bureau of Reclamation, and participated in

by more than 40 agencies which are interested in the area and in the problems connected with its development.

The project lands lie between Pasco and Ephrata, Washington, in the big bend of the Columbia River. The three districts are the Quincy-Columbia Basin Irrigation District on the west, the East Columbia Basin Irrigation District, and the South Columbia Basin Irrigation District.

The area is so large, being as big as Delaware, that it has been determined to be desirable to begin the development at several points in various areas of the project to avoid uneconomic development of village, school, highway, and railroad patterns. For example, if all the early development should be made at the extreme of either side of the project, it is probable that urban and other developments would occur there to the great disadvantage for all time of the settlers on the later blocks at the far extremities of the project area, who might be forced to drive 60 miles for a Saturday night haircut.

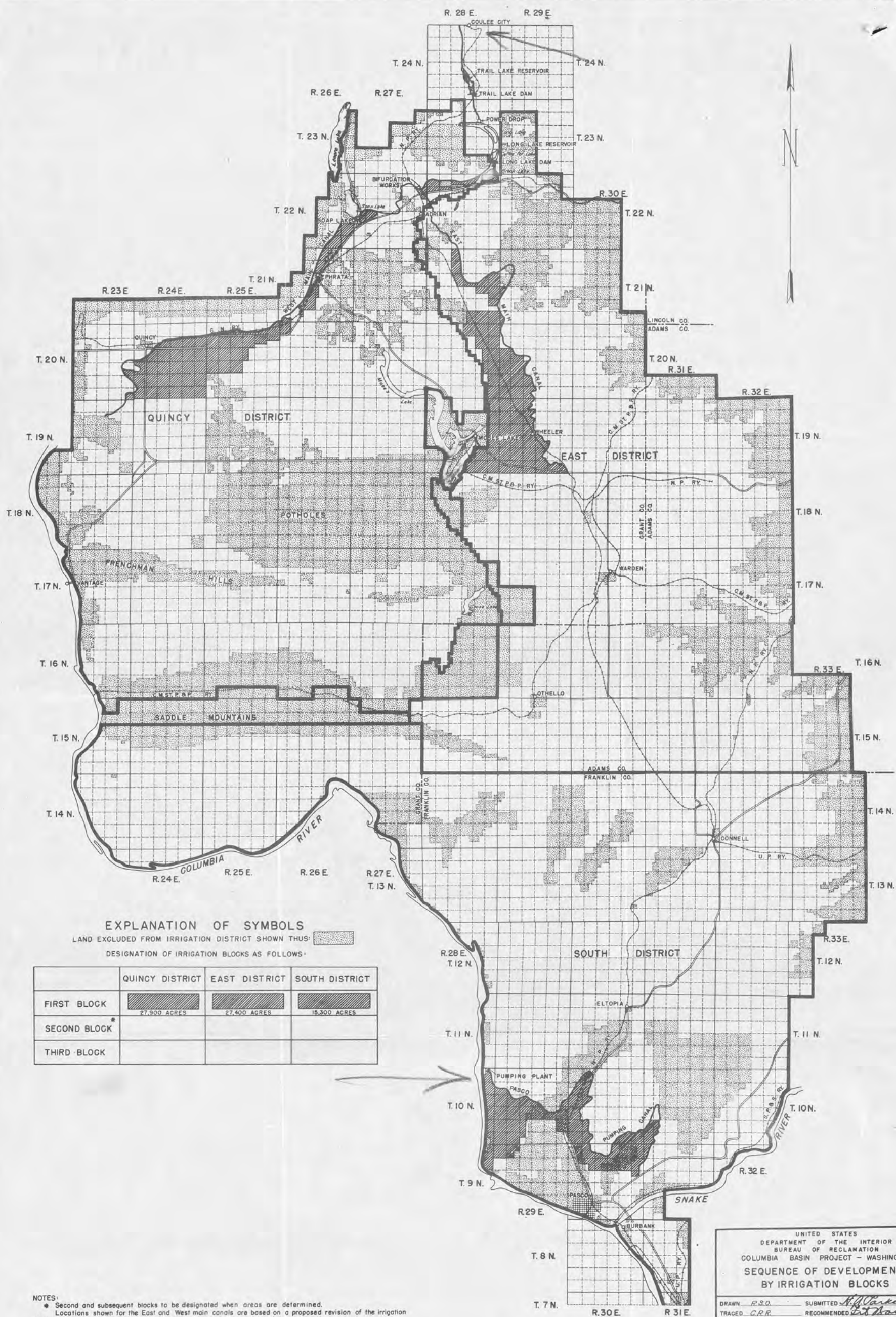
The initial blocks, as selected, are 27,000 acres in the Quincy-Columbia District, which will be served by the West Main Canal; 27,400 acres in the East District, which will be served by the East Main Canal, and 15,300 acres in the South District which will be served through the Pasco pumping canal. The attached map will give more detailed information as to the locations of the blocks. Other irrigation blocks, when later designated, will be shown on subsequent editions of this map.

Commissioner Page called attention to the requirements of the law which will not permit the expenditure of any funds for irrigation developments on the Columbia Basin project until repayment contracts have been executed with the irrigation districts. Negotiations affecting these contracts are under way and early action will permit construction to begin.

"Progress on the negotiations indicates that the way will be cleared for work on the construction of the pumping plant, and the dams and equalizing reservoir in the Grand Coulee during the fiscal year, 1942," Mr. Page said. "Authority has been granted to use \$2,000,000 of the appropriation made for Grand Coulee Dam in the Interior Department Appropriation Act to initiate this construction, if obstacles are removed.

"It is our hope that the way will be cleared so that construction can be advanced to bring water to the first blocks of the Columbia Basin lands in 1944 or not later than 1945."

The Commissioner cautioned against speculation in the lands, saying that the Government was bending every effort to see that actual settlers obtained their land at fair values. Impartial appraisals of most of the land have been completed by the Government. Information concerning the appraisals is available free on application to the Bureau of Reclamation, Coulee Dam, Washington.



8731

Spokane, Washington
July 29, 1941

Mr. Bernard Blum:

You have several times inquired
as to what we knew about the first of the Columbia
Basin lands to be irrigated. I am attaching
hereto clipping from the Spokane Chronicle of July
28th purporting to give this information.

H. H. H. H. H.
District Engineer

HMT-b
c Mr. A. F. Stotler
encl

B

Spokane, Washington
July 22, 1941

MR. EAC. BY
JUL 21 1941
AUG
CHIEF ENGINEER

Mr. Bernard H. H.

You have several times inquired
as to what we knew about the ship of the Columbia
Bath lands to be in the area. I am attaching
hereto clipping from the Spokane Chronicle of July
23rd purporting to give this information.

Chief Engineer

Mr. EAC. BY
JUL 21 1941
AUG
CHIEF ENGINEER

Spokane, Washington
July 29, 1941

Mr. Bernard Blum:

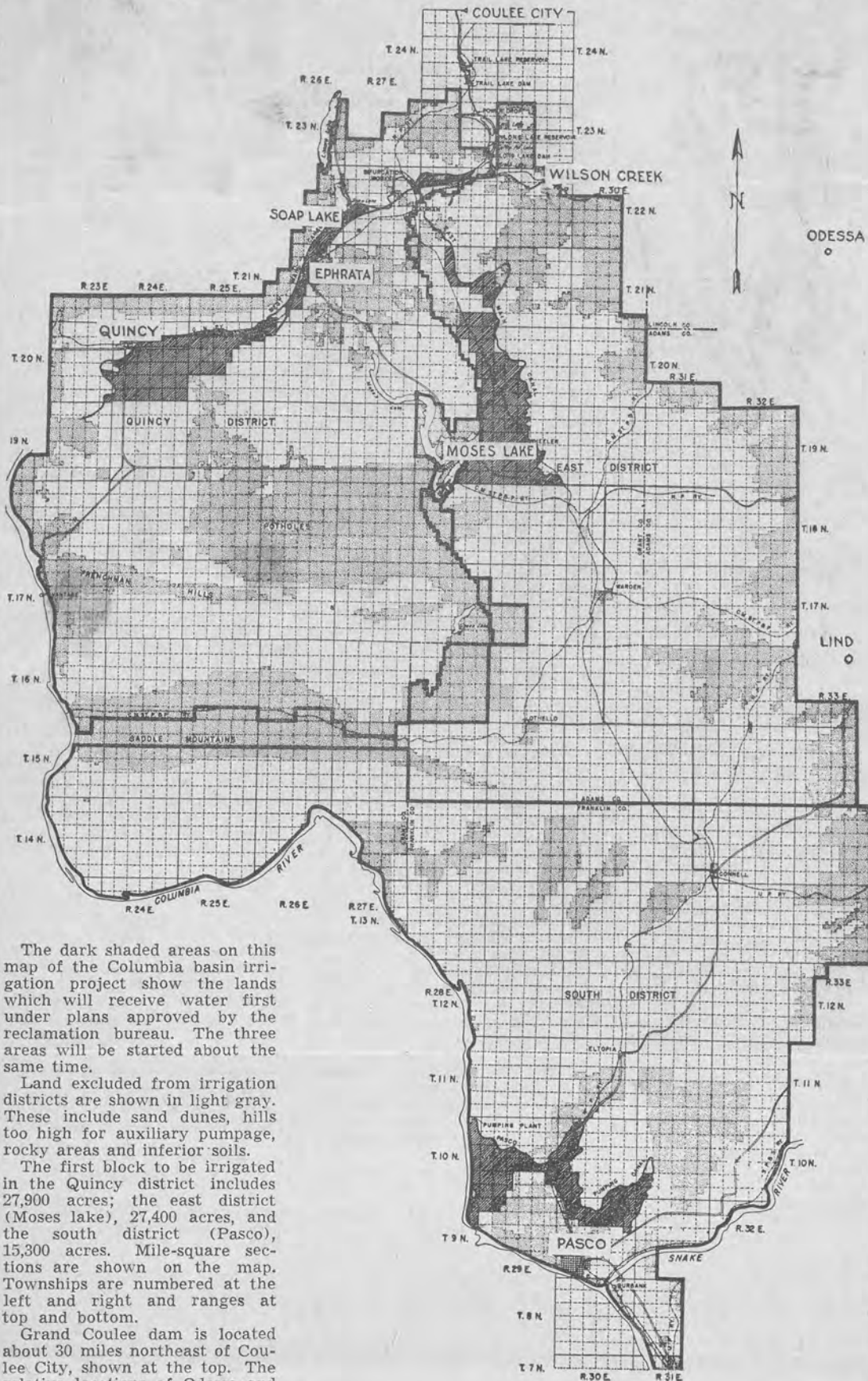
You have several times inquired as to what we knew about the first of the Columbia Basin lands to be irrigated. I am attaching hereto clipping from the Spokane Chronicle of July 28th purporting to give this information.

Signed, H. M. TREMAINE

District Engineer

HMT-b
c Mr. A. F. Stotler
encl

Where First Columbia Basin Lands Will Be Irrigated



The dark shaded areas on this map of the Columbia basin irrigation project show the lands which will receive water first under plans approved by the reclamation bureau. The three areas will be started about the same time.

Land excluded from irrigation districts are shown in light gray. These include sand dunes, hills too high for auxiliary pumpage, rocky areas and inferior soils.

The first block to be irrigated in the Quincy district includes 27,900 acres; the east district (Moses lake), 27,400 acres, and the south district (Pasco), 15,300 acres. Mile-square sections are shown on the map. Townships are numbered at the left and right and ranges at top and bottom.

Grand Coulee dam is located about 30 miles northeast of Coulee City, shown at the top. The relative locations of Odessa and Lind are shown at the upper right.

Mr Derrig
Here is some
hope from
the Spokane
News Bureau
about the
Coe. Basin

L. M. Ackerman

5/7/41

Page 4

APPROVE APPRAISALS OF COLUMBIA BASIN LAND

Spokane, Wash.- Secretary of the Interior Harold L. Ickes today approved appraisals of the land within the Quincy Columbia Basin Irrigation District which will be served by the Grand Coulee Dam in Washington.

The appraisals in this district cover an area of 469,119 acres or about a third of the entire Columbia Basin irrigation project. Valuations for the area totaled \$3,507,000. Land was appraised at \$2,574,000 and improvements at \$933,000.

The average land valuation per acre was found to be \$5.49; plus improvements the valuation was \$7.48 per acre on the average.

The appraisals were made by the Land Appraisal Board of three competent appraisers appointed by the Secretary, one representing the Bureau of Reclamation, the other local irrigation interests, and the third an appraiser agreeable to both the Government and local interests.

The main purpose of the appraisals is to determine the dry-land valuation of real properties in the area in order that they may be used to prevent speculation and boom values in view of potential irrigation. The Anti-Speculation Act of 1937 directed that these appraisals be made. The land was classified in advance of appraisal and it was determined that of the total area of the Quincy district, 337,404 acres

or about three-quarters of the district, could be appraised as arable or suitable for irrigation farming. This amount was of sufficient productive value to meet irrigation assessments. The other quarter consists of Class 6 land, which is designated as nonarable. The land classifications take into consideration the soil texture and depth, the slope, the presence of rock in the plow zone, and other factors.

The total area of the Columbia Basin, or Big Bend country as it is called in Washington, is about 2,500,000 acres, of which about 1,200,000 is expected to be included as irrigable land in the project. Canals to bring water to the project from the Columbia River now impounded by Grand Coulee Dam are being tentatively mapped by Reclamation engineers in preparation for preliminary location.

Water for irrigation will be made available gradually over a period of years as canals are located and constructed. Some parts of the project are not expected to be placed under irrigation until 1965 or 1970. The first land might be watered in 1944 or 1945.

Sponsored by the Bureau of Reclamation, more than 40 government, State, and private agencies are conducting joint investigations in the area and are planning its development with a view to successful settlement.

The Big Bend country lies east of the Columbia River and north and west of the Snake River, in Grant, Adams and Franklin counties.

Maximum width of the region is 60 miles, length about 85 miles. The Quincy District lies largely in Grant County. It is the western third of the project area. The other two districts are the East Columbia Basin Irrigation District and the South Columbia Basin Irrigation District, geographically located as indicated by the names.

About 85 percent of the project area is privately owned. The other 15 percent is owned by the Government, the State and the Northern Pacific Railway.

The area was originally homesteaded in the nineties. It was fairly well settled for a time. Experience proved, however, that nearly all the land in its natural state was unsuited for homesteading. The rainfall was too scant and uncertain for family-size farms operated by dry-farming methods. A large part of the area was abandoned, reverting to its original desert state.

Approximately 1,365,000 acres have been appraised to date in the project area. This is about 81 percent of the total which is to be appraised. The other 19 percent still being appraised lies in Paradise Flats and Rye Grass Flat, South District.

The work of classifying Columbia Basin project lands is nearly complete. More than 1,800,000 or 96 percent of the project lands which are to be classified have been classified to date as Class 1, 2 or 3 and arable, or as Class 6 and nonarable. Classes 4 and 5 are unused, anything below Class 3 being classed as unfit for irrigation.

(Copy)

J.T.D.
Note B.B.
9/19 9/20
Seattle, Washington
September 13, 1937
File 105

Blum
8731
MR. J. W. HAW:

In previous reports having to do with organization of proposed Columbia Basin Irrigation District you were advised of the general landowners' meeting held at Ephrata on July 28, of decision at that meeting to proceed with plans looking forward to the organization of an irrigation district or districts, and of the appointment of a committee of five to work out a plan to be presented at a later general meeting of landowners. You were advised of the personnel of this committee, the majority of whom reside on the extreme north and northwest corners of the project.

This committee held its first formal meeting at Ephrata on August 19 and you were advised of the conclusions reached as follows:

a. That district organization election would be postponed until landowners generally had had ample opportunity to become fully informed on the subject and to express their views. The committee did not set a tentative date for the election, feeling that decision in this matter could well be held in abeyance for the time being. A series of landowners meetings, two of which have already been held, was scheduled and these meetings will be referred to later in this memo.

Mr. Clapp of Ephrata, a member of the committee, strenuously opposed the above program on the theory that too much time would be lost. He felt that the election should be held without delay.

b. That the district, when organized, be turned over to the landowners free of any obligations for organization expense. It was estimated that cost of organization would not exceed \$3800. The state pledged \$1000 and the committee decided to attempt to raise the balance by appealing to railroads, contractors, important cities, etc.

I have previously indicated to you apprehension that those living in the general Ephrata territory would attempt to control the organization of the district and to control the affairs of the district after it is organized. The following is now brought to your attention:

a. Leaders living in that territory assume it to be a pretty well settled fact that the land served by the proposed west canal will be the first land to be irrigated in the Columbia Basin project. Reasons for this assumption are obvious and need no comment in this memo. They even point back to the late Dr. Mead's reported statement some years ago to the effect that "the Quincy Valley is the place to start the Columbia Basin project".

100-100000

- b. The Quincy Valley irrigation district, organized years ago when it was proposed to water that territory from another source, is still intact as an organization, containing in excess of 300,000 acres of irrigable land that is also included within the proposed Columbia Basin District. The Quincy people assume the attitude that it is unnecessary to organize a new district, that the proper procedure is to have the remainder of the Columbia Basin area annexed by their district. I believe, however, that at the meeting held at Quincy on September 4 most of those present were partially convinced that there would be nothing in particular gained by that procedure. For instance, Mr. Fink explained that the people living in the Pasco project might well take the same view and start a movement looking forward to annexing all of the Columbia Basin lands to their project. Of course there can be no doubt that the Quincy theory is that by starting out with the Quincy Valley Irrigation District as a base and then annexing the remainder of the territory they would, for the time being at least, have complete control of the situation.
- c. There is some ill feeling between Quincy and Ephrata. On the other hand, Mr. Clapp of Ephrata and Mr. Kennedy of Stratford are working together very closely. The committee itself is somewhat of a loose affair and as a result Messrs. Clapp and Kennedy have been strongly inclined to handle the affairs of and to speak for the committee without authorization. It can be taken for granted that Mr. Hoffman of Quincy will fall in line with the views of Messrs. Clapp and Kennedy insofar as the interests of that general territory are concerned.
- d. In spite of the recorded attitude of the committee concerning the time of holding the election, Mr. Clapp was reported in the Spokesman-Review a few days ago as stating that, unless something unforeseen happens, the election will probably be held on November 4.
- e. At the time of the election every landowner who is a citizen of the United States and a resident of the state of Washington will be entitled to one vote, regardless of the acreage of land that he owns. In other words, the owner of a town lot has exactly the same voice in the matter as the owner of several thousand acres of land. This is in accordance with state law. The town of Ephrata and I understand other towns in that general territory want to be included within the irrigation district. Still other towns, notably Pasco, do not want to be included, for reasons that are obvious and have been covered in other memos. Mr. Clapp told me that the only reason for including Ephrata in the district is to assure a substantial majority at the election, the theory being that practically all owners of real property located in the town will vote affirmatively. My own conclusion, which is supported by that of others, is that they wish to be included very largely because of the extent to which this may be helpful in keeping control of the district affairs in that territory.

I consider question of the inclusion of town lots within the district to be a most serious one and, while others with whom I have talked agree,

opposition to the idea has not been crystallized sufficiently to make itself really felt. It would seem, however, that in the final analysis there are many landowners, particularly successful wheat farmers, who will not be willing to subject their lands to assessments in a district which may in part be controlled by the owners of town lots.

f. At the original meeting held at Ephrata on July 28, motion authorizing appointment of the organization committee embodied a clause to the effect that the findings of this committee were to be reported at a general meeting of the landowners to be held at a later date. For some reason, the minutes of the meeting have never been made public and it appeared last week that an effort would be made to ignore this provision.

g. Letters to railroads and other organizations asking for contributions to the organization expense fund were prepared for Mr. Kennedy's signature in Mr. Fink's office and sent to him to sign and mail. The four railroads were to be asked for \$150 each. However, Mr. Kennedy decided not to mail these letters and, instead, Mr. Clapp who, incidentally, is local attorney for the Great Northern at Ephrata, called on Mr. Balmer, Vice President of the Great Northern, to discuss the matter. Mr. Clapp suggested to Mr. Balmer that he, Mr. Balmer, undertake to contact officials of other interested railroads, with the thought that the railroads would contribute all of the necessary expense money or else get the state to do it. In other words, Mr. Clapp told me that his idea was to have the railroads undertake the job of providing the necessary funds.

Mr. Fink and others who have the interests of the entire Columbia Basin project at heart are greatly concerned about the attitude of Messrs. Clapp and Kennedy. The position of the state, as expressed by Mr. Fink, is sound. He favors a program which calls for the securing of the complete confidence of the landowners. He feels that the committee should proceed with the original plan of education with the landowners, giving them full opportunity to get the complete picture and to express their views and that, finally, when the plan of organization is set up and presented at the general meeting of landowners, it should, insofar as is practical, reflect their wishes. He desires that sufficient time be taken to do the job properly. He feels that the district should be organized in such manner that its management will rest in the hands of those who own the land that is to be irrigated.

The Spokane people apparently are also greatly concerned about the Ephrata influence and Jim Ford told me a few days ago that, unless the organization of the district was handled along lines that were obviously for the good of the project as a whole, landowners living tributary to the proposed east canal would start a program looking forward to the organization of a separate district. He told me confidentially that Mr. Insinger of Spokane was calling a meeting of certain Spokane landowners to consider this matter.

I cannot escape the conviction that matters are now in the making in connection with Columbia Basin which will have a far-reaching influence on our interests. If the program that Mr. Clapp and his associates seem to have in mind goes through, landowners living in the general Ephrata territory will

control the situation and funds collected from land owners throughout the entire district will in effect be used to promote the irrigation of that territory as the first unit of the Columbia Basin project. There is reason to believe that if this plan goes through, the affairs of the Columbia Basin district will in an important measure be influenced by owners of city lots. Certainly the tendency will be to forget the interests of landowners in those parts of the project in which our company has a vital interest. For a good many years to come they may be in the position of contributing through annual assessments to the development of a foreign territory, in the hope that eventually water will come to them.

I am convinced that our company should take an aggressive, diplomatic interest in the organization of the Columbia Basin Irrigation District and that we should actively support state officials and others whose interest lies in the welfare of the project as a whole.

I have just recently discussed this matter with Messrs. Coman, Burnham, Plummer, and Holt. Mr. Coman will indicate to Governor Martin his approval of the manner in which the state is attempting to handle the situation. Messrs. Holt and Miller, as well as the writer, will be present at all important public meetings and hearings having to do with the organization of the district. At meetings and between meetings important landowners will be contacted with the thought of stimulating interest and activity. We will keep in close touch with members of the committee, particularly those whose interest is that of the welfare of the project as a whole, and be prepared to take such action as is necessary for the protection of this company's interests.

About 150 people attended the meeting held at Neppel last Saturday afternoon, while there were about half that many at the meeting at Quincy Saturday evening. Mr. Banks made the major talk at each place and was the only representative of the Reclamation Service on either program. There was little opportunity for discussion at the Neppel meeting, due to the fact that much of the time was taken up by general talks made by Congressman Hill and others. Because of the shorter formal program, the Quincy meeting was much better. Discussion on the part of landowners at both meetings was confined largely to questions of whether one or more than one district should be organized, assessments prior to irrigation, management of district affairs, joint liability, etc. At Quincy there was much discussion about the Quincy Valley Irrigation District, as referred to above. At both meetings the attitude of landowners seemed to be fair and reasonable and in general quite favorable to the organization of the district or districts. There is reason to believe that in order to assure local control, land owners may insist on more than one district.

You will be interested in knowing that Jim O'Sullivan is starting a series of meetings of his own; in fact he held one at Neppel on Saturday evening following the landowners' meeting which was held in the afternoon. He told me that at these meetings he expected to tell the "inside story of the Columbia Basin" and that he proposed to organize a league which would employ him to carry on the fight for the project. He told me frankly that he would be a candidate for secretary or manager of the district when organized. As yet I have

been unable to get any information as to what happened at his first meeting at Heppel.

The committee that is interested in irrigation of certain Franklin County lands by pumping expect to meet with Mr. Banks in the near future, as will another committee with respect to including a portion of Walla Walla County in the general Columbia Basin plan.

(SGD) W.P. STAPLETON

L

WPS FL

cc - Mr. W. E. Comen
Mr. J. L. Buraham
Mr. G. H. Plummer
Mr. S. J. Miller

8731

St. Paul, Minn. August 23, 1937

Mr. R. W. Clark,
General Traffic Manager

Attached find copy of Columbia Basin project map recently issued by the United States Reclamation Service. I do not know that it adds anything to our knowledge of the plans so far developed for the project, but it does show the relation of Columbia Basin area to other lands irrigated by the Bureau of Reclamation in the state of Washington.

J. M. Haw

Enc.

cc - Mr. Donnelly
Mr. Coman
Mr. Burnham
Mr. Sloan
Mr. Blum
Mr. Hughes
Mr. Stapleton

B



ST. PAUL, MINN.
NOR. PAC. RY.
1937
24
AUG
CHIEF ENGINEER

8731

Saint Paul, Minn.,
September 2, 1936

Mr. H. E. Stevens
Mr. J. W. Haw

The Bureau of Reclamation are making a topographic survey for the Columbia Basin development. I recently sent their Mr. Fred M. Berry, Associate Engineer, some engineering data for their use. Evidently the Bureau are getting ready for carrying out the complete project when it is authorized.

BB:h

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

~~COULEE DAM~~, WASHINGTON
Ephrata

August 29 1936

From F.M.Berry Assoc. Eng. U.S.B.R.
To Bernard Blum Chief Eng. N.R.R.R.Co.
Subject Maps and profiles Coulee City - Connell Br.

Wish to thank you for sending maps and profiles
of the Coulee City - Connell Branch of the Northern
Pacific Railway in Washington.

It is just what we want and will materially aid
us in the topographic survey that we are making
in connection with the Columbia Basin Developement.

Very truly yours

Fred M. Berry
Fred M. Berry



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
WASHINGTON, D.C.
Office

August 29 1955

From: E.A. Barry, Assoc. Engr. U.S.D.I.
To: Bernard River Chief Eng. N.R.R.Co.
Subject: Maps and profiles, Coulee City - Connell, W.

Is to thank you for sending maps and profiles
of the Coulee City - Connell branch of the Northern
Pacific Railway in Washington.

It is just what we want and will materially aid
us in the topographic survey that we are making
in connection with the Columbia Basin development.

Very truly yours

Ernest M. Barry

8731

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COULEE DAM, WASHINGTON

November 15, 1935

Mr. Bernard Blum
Chief Engineer
Northern Pacific Railway Co.,
St. Paul, Minnesota

Dear Sir:

Receipt is acknowledged of your letter under date of November 11, 1935 in regard to transmittal of prints of right-of-way maps requested in our letter of November 5, 1935. These prints have been received and your courtesy in furnishing same is very greatly appreciated.

Very truly yours,

F. A. Banks

F. A. Banks
Construction Engineer



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COOLIDGE DAM, WASHINGTON
November 12, 1932

1-1

Very truly yours,
J. P. McElroy
Chief Engineer

Enclosed is a copy of the report of the
investigation of the cause of the
collapse of the dam at St. Paul, Minn.,
dated October 1, 1932. The report
contains a detailed description of the
dam and the investigation, and a
copy of the report of the
investigation of the cause of the
collapse of the dam at St. Paul, Minn.,
dated October 1, 1932.

Very truly yours,
J. P. McElroy
Chief Engineer

8731

Nov. 11, 1935

Mr. F. A. Banks,
Construction Engineer,
Bureau of Reclamation,
Coulee Dam, Washington.

Dear Sir:

As requested in your letter of November 5th
I am sending you under separate cover print of our right
of way maps covering the district Pasco to Lind, Connell
to Coulee City and Bassett Junction to Schrag. Connell to
Kahlotus is on the C-W.

Yours truly,

LS:wp

cc Mr. Stotler
Mr. Tremaine

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COULEE DAM, WASHINGTON



November 5, 1935

Chief Engineer
Northern Pacific Railway
St. Paul, Minnesota

Dear Sir:

In connection with the investigation of the area proposed to be irrigated under the Columbia Basin Project, it is necessary for this office to have data regarding the alignment and width of all highway and railroad rights-of-way within this area.

We are enclosing a print of drawing No. 222-D-14 showing a general map of the area proposed to be irrigated under the project. It will be much appreciated if you will furnish us right-of-way maps for the Northern Pacific Railway within the area shown on the drawing, viz., from Pasco to Lind, from Connell to Coulee City, from Connell to Mahlotus, and from Bassett Junction to Schrag. O-W.

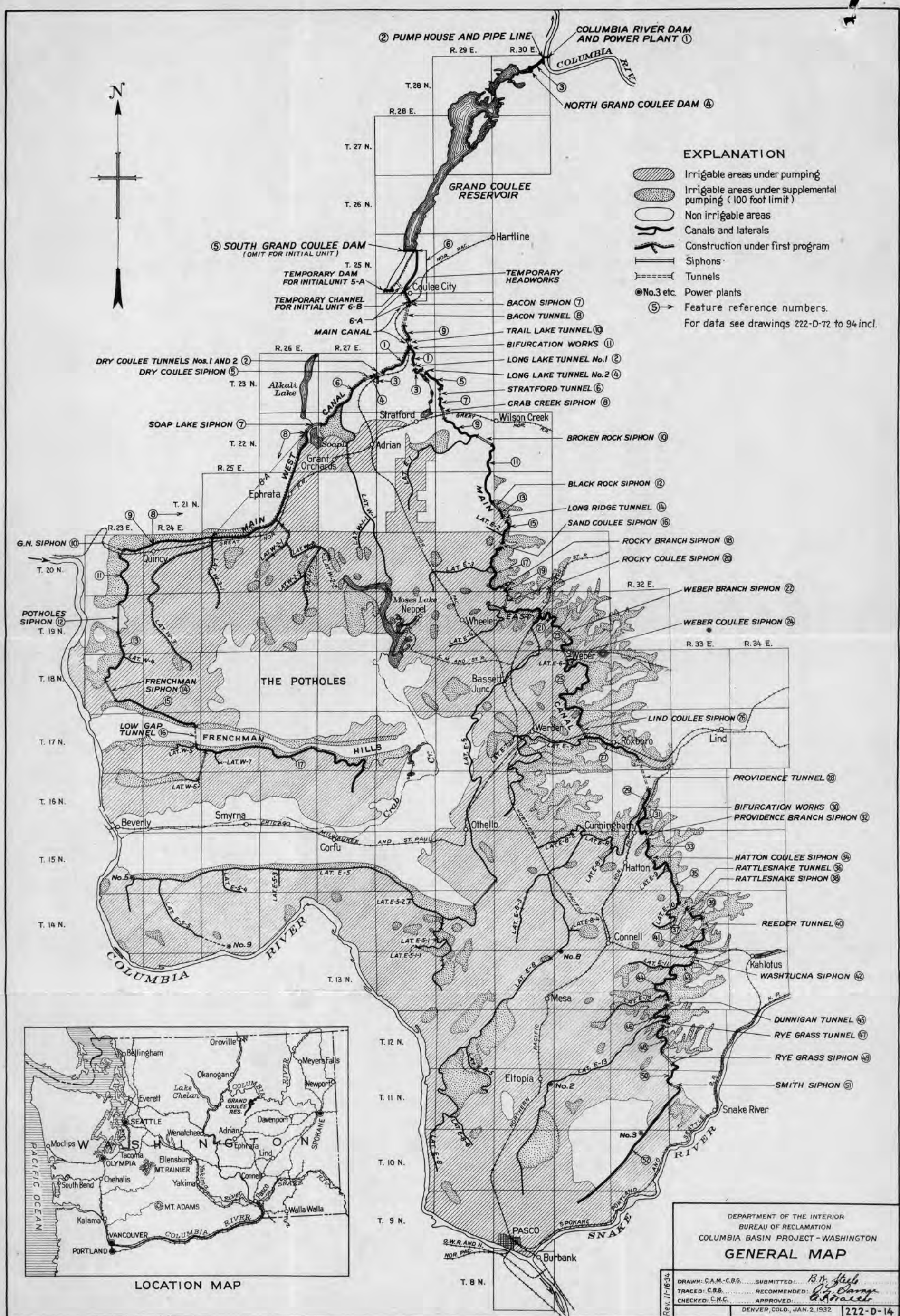
Very truly yours

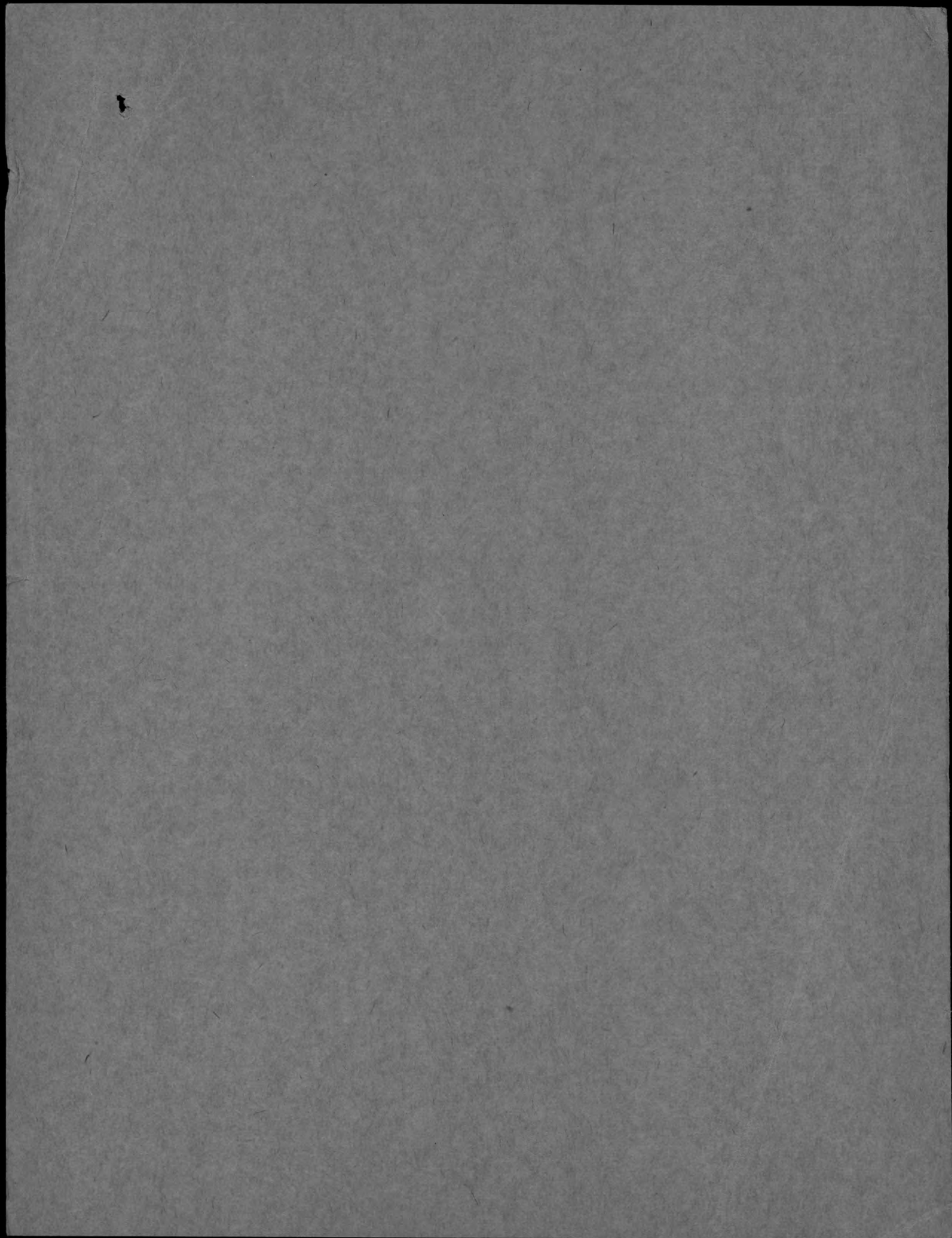
F. A. Banks
Construction Engineer

Encl.-dwg.222-D-14

PAK
11/14

L.S.-
Here with prints.
We can furnish not
furnish maps of the
O-W. line from Connell
to Mahlotus. PK.
11/14





8226

