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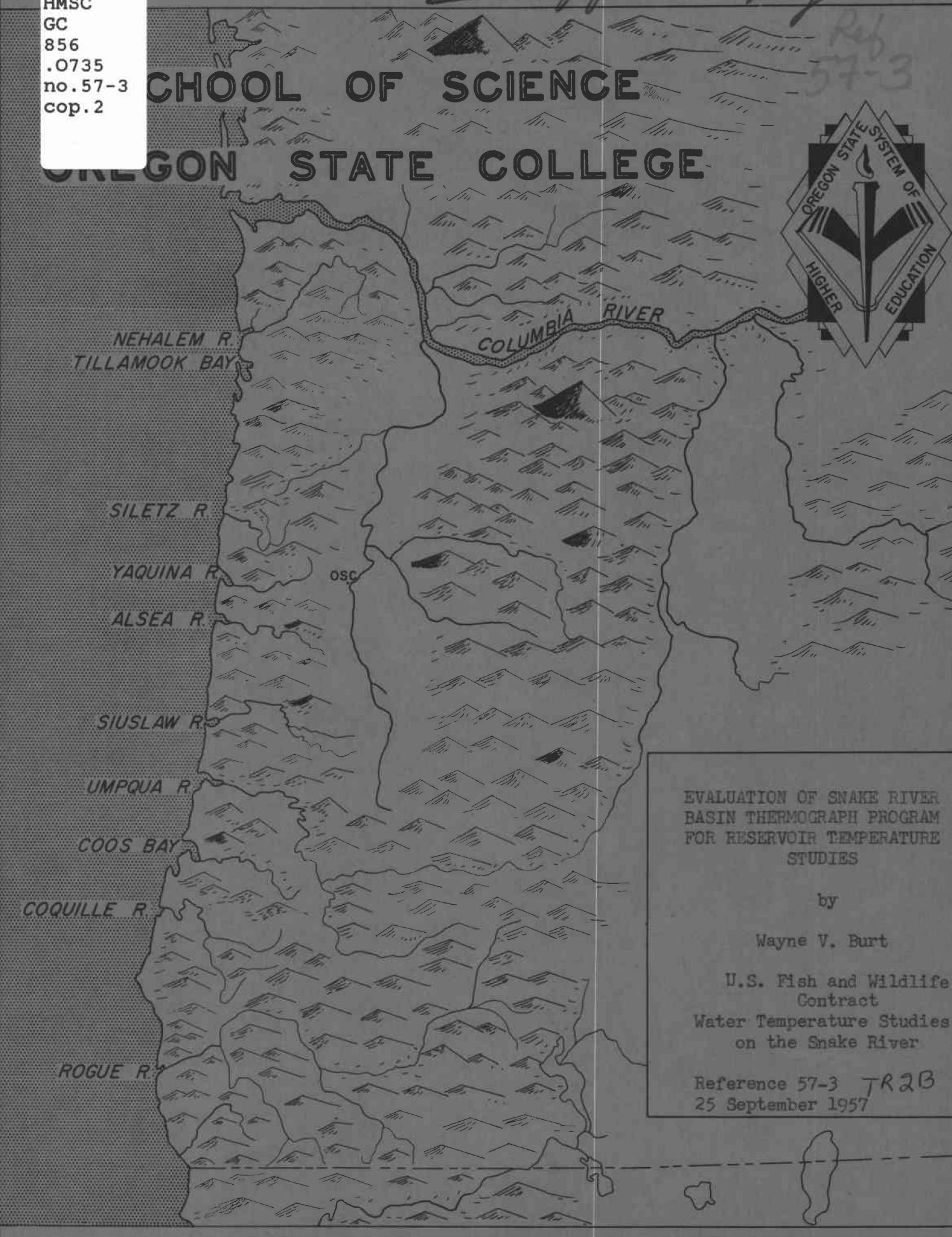

EVALUATION OF SNAKE RIVER BASIN THERMOGRAPH PROGRAM FOR RESERVOIR TEMPERATURE STUDIES

by

Wayne V. Burt

U.S. Fish and Wildlife
Contract
Water Temperature Studies
on the Snake River

Reference 57-3 TR2B
25 September 1957

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Corvallis, Oregon

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Technical Report No. 2 - B

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ABSTRACT

At the request of Dr. E.D. Perry, (23 August 1957), an evaluation was made of U.S. Fish and Wildlife Service River Basin Studies air and water temperature gathering program for the Snake River Basin. The only criteria was the desirability for data to be used to forecast temperature structures which will occur on the Salmon and Clearwater Rivers and the Snake River above Clarkston, Washington.

ORDER OF PREFERENCE

Most of the thermograph stations appearing on Plate 1 of USF & WLS (1957) are listed below in order of importance for present and future reservoir temperature studies on the main stems of the principal rivers. The list is further divided into four catagories: Necessary, Desirable, of Some Importance, and of Little Importance.

Approximate time of operation was taken from USF & WLS (1957). Per cent annual contribution to the main stem of the Snake River and of the main tributaries was approximated from USGS (1957).

Necessary

Over All Order of Preference	Station	River	Time Operated (years)	In Operation	% Snake River	% Tributary
1.	Oxbow (Air and Water)	Snake	3½	yes	100	—
2.	Swan Falls	Snake	3½	yes	100	—
3.	Clark-ston (Air and Water)	Snake	1	yes	100	—
4.	8 Mi. E. Riggins	Salmon	2	yes	28	96
5.	Kamiah	Clear-Water	1½	yes	—	50
6.	Black Canyon	Payette	1½	yes	18	—

Desirable

Over All Order of Preference	Station	River	Time Operated (years)	In Operation	% Snake River	% Tributary
7.	Pleasant Valley	Snake	2½	yes	100	—
8.	Lewiston	Clear-water	?	?	—	100
9.	Caldwell	Boise	0	?	8	—
10.	Weiser	Weiser R.	0	?	7	—
11.	Walters Ferry	Snake	1	yes	100	—
12.	Anatone, Washington	Grande Ronde	1	no	10	—

Some Importance

13.	Mt. Sheep	Snake	1	no	100	—
14.	Shoup	Salmon	1½	yes	—	18
15.	Brownlee	Snake	1	yes	100	—
16.	Garden Valley	Payette	1	no	7	—
17.	Troy	Grande Ronde	1½	yes	10	—
18.	Orofino	Clear-	0	?	—	49

Little Importance

19.	Imnaha	Imnaha R.	2	yes	3	—
20.	S. Fork	Salmon	0	?	6	15

Over All Order Of Preference	Station	River	Time Operated (years)	In Operation	% Snake River	% Tributary
21.	Middle Fork	Salmon	0	?	7	17
22.	Lowell	Lochsa	1½	yes	—	16
23.	Stanley	Salmon	0	?	3	9
24.	Council	Weiser	½	yes	2	—
25.	Salmon	Lemhi R.	1½	yes	1	2
26.	Riggins	Little Salmon	2	yes	1	2
27.	Elk City	S. Fork Clearwater	1½	yes	—	6
38.	Enter-prise	Wallowa	0	?	1	—

Notes on Individual Thermograph Stations

1. Oxbow air and water temperatures are the most valuable data available. It is highly recommended that the station be continued below the dam when it is built.

2. The Swan Falls station gives the best data for river water temperature above the Brownlee Reservoir. However, only 60% of the water entering Brownlee Reservoir passes Swan Falls. Walters Ferry (11) is little improvement over Swan Falls, due to the shorter length of record. A new station on the main stem between Huntington and Weiser just above the maximum elevation of the Brownlee Reservoir would be desirable in that very little water enters the Snake between Huntington and the mouth of the Salmon River.

3. Clarkston will show major changes in temperature to the river from all reservoirs up to, and including, Brownlee.

4. The station east of Riggins on the Salmon is desirable for estimation of temperatures and temperature changes between Riggins and the mouth of the Salmon whenever a reservoir is built on the lower Salmon.

5. Kamiah on the Clearwater is a key station for the Clearwater.

6. The station below Black Canyon on the Payette is important to check the contribution of the Payette to the Snake. Data in USF & WLS (1957) show this water to be much colder than that of the main stem.

7. — —

8. USF & WLS indicates that data are available for Lewiston on the Clearwater. If these data are not being taken now, the proposed station at Orofino might better be moved down to Lewiston, or, better yet, just below Spaulding. The Clearwater at Orofino contains only 50% of the average amount of water passing Lewiston, which is very little more than the amount passing Kamiah.

9. The proposed station at Caldwell on the Boise River would give the temperature contribution for the Boise River, approximately 8% of the main stem of the Snake.

10. The proposed station at Weiser on the Weiser River would give the temperature contribution for the Weiser, approximately 7% of the main stem of the Snake.

11. Walters Ferry on the Snake is a better location for the thermograph station than Swan Falls because it is some distance from the dam. The short record here, compared to the longer record of Swan Falls, rules in favor of the latter.

12. Grande Ronde at Anatone would give the temperature contribution for the Grande Ronde, which is 10% of the main stem. This station is more favorable than the one located at Troy because it gives more representative

temperatures for water entering the main stem. USF & WLS (1957) shows a large rise in temperature between Troy and Anatone during the critical warm part of the year.

13-18. All of these stations add to the general picture, and will help to fill in the details. They could, however, be dispensed with, if necessary.

19-28. These stations are of no practical value to the study of temperature in reservoirs in the lower Salmon and lower Clearwater or on the main stem of the Snake.

REFERENCES

1. USF & WLS, 1957, A preliminary progress report on air and water temperature studies, Middle Snake River Drainage, 1954-1956.

2. USGS, 1956, Compilation of records of surface waters of the United States through September 1950. Part 13, Snake River Basin.