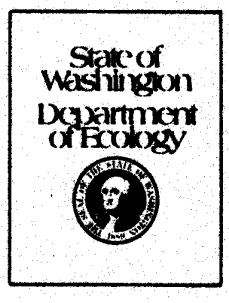


STATE WATER PROGRAM

W.W.I.R.P.P. SERIES-NO.6

PUYALLUP RIVER BASIN

INSTREAM RESOURCES PROTECTION PROGRAM

INCLUDING

PROPOSED ADMINISTRATIVE RULES

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

MARCH 1980

PUYALLUP RIVER BASIN

INSTREAM RESOURCES PROTECTION PROGRAM

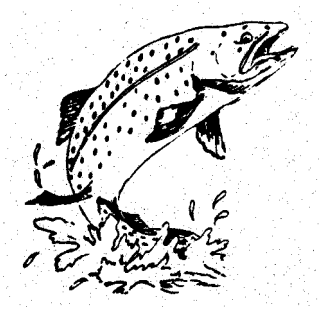
Including

PROPOSED ADMINISTRATIVE RULES

(Water Resources Inventory Area 10)

Prepared by
Water Resource Policy Development Section
Washington State Department of Ecology

Project Planner, Robert Kavanaugh
753-6875



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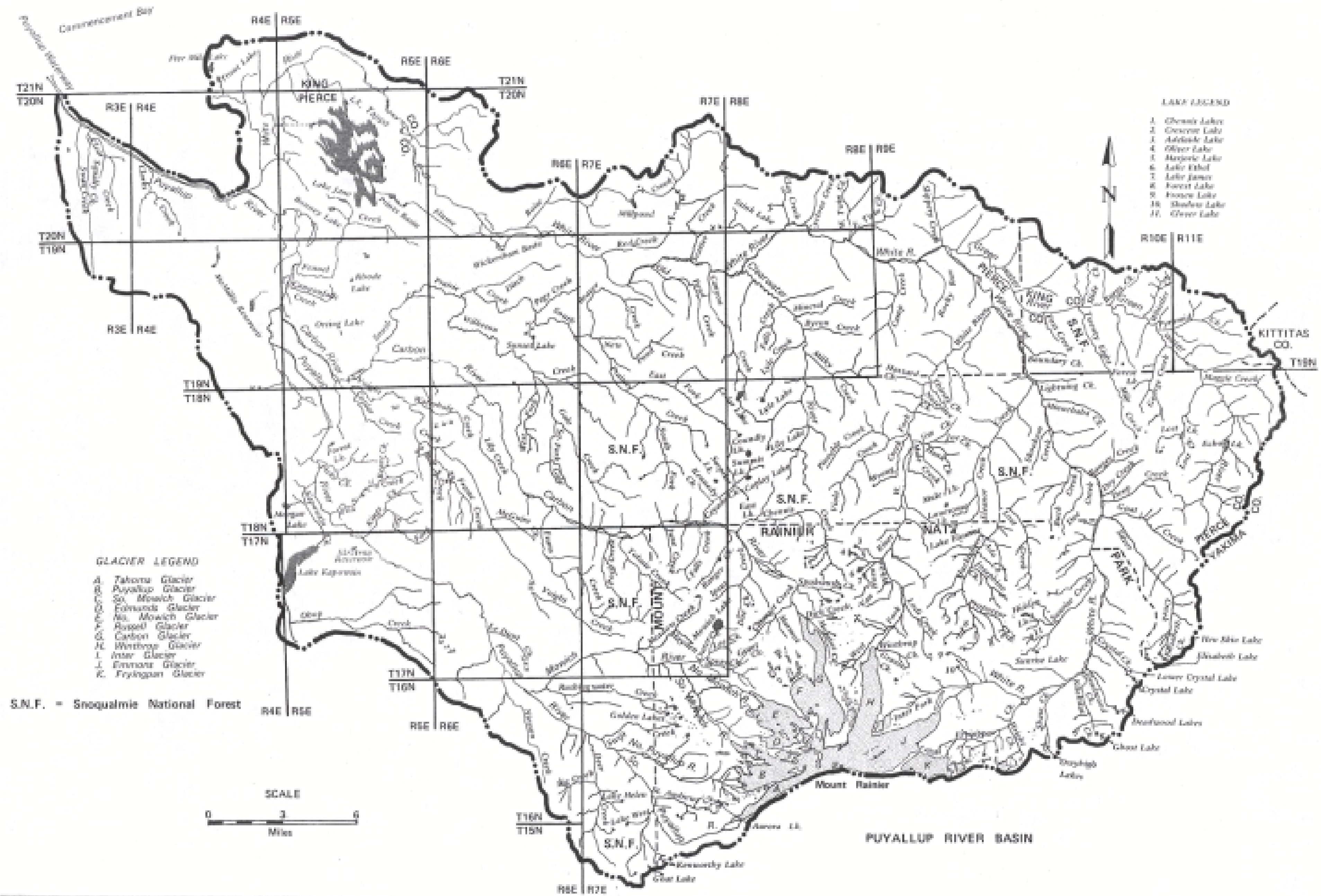

PUYALLUP RIVER BASIN
GLACIER LEGEND
A. Tahoma Glacier
B. Puyallup Glacier
C. So. Mowich Glacier
D. Edmunds Glacier
E. No. Mowich Glacier
F. Russell Glacier
G. Carbon Glacier
H. Winthrop Glacier
I. Inter Glacier
J. Emmons Glacier
K. Fryingpan Glacier
LAKE LEGEND
1. Chenuis Lakes
2. Crescent Lake
3. Adelaide Lake
4. Oliver Lake
5. Marjorie Lake
6. Lake Ethel
7. Lake James
8. Forest Lake
9. Frozen Lake
10. Shadow Lake
11. Clover Lake
S.N.F. = Snoqualmie National Forest
SCALE
0
3
6
Miles
N
Mount Rainier
KING
PIERCE
CO.
KITTITAS CO.
YAKIMA
Commencement Bay
S.N.F.
MOUNT
RAINIER
NAT'L
PARK

SUMMARY

The overall Western Washington Instream Resources Protection Program involves development of instream resource protection measures under Chapter 90.54 RCW, Chapter 90.22 RCW, and Chapter 173-500 WAC for the 26 water resource inventory areas found in Western Washington. The Department of Ecology, has formed an interdisciplinary and interagency planning team to determine the measures necessary to protect the instream resources. The final result of this planning effort, which also involves private, public, county, and federal agency coordination, will be the administrative rules designed to protect instream flow levels and minimize adverse impacts resulting from future water appropriations within the Puyallup River Basin.

For the purpose of this program, instream resources are defined as fish, wildlife, recreation, navigation, water quality, scenic and aesthetic values, and other environmental factors. These resources are adversely affected by both natural and man-caused factors within the Puyallup Basin.

As proposed under the draft WAC 173-510, South Prairie Creek, Kapowsin Creek, Kapowsin Lake, White River, and several other streams will be closed to further out-of-stream consumptive use. Minimum flows are established for both the Carbon and Puyallup rivers. Three control stations are designated within the program to monitor the flows of the Puyallup and Carbon rivers.

NO EXISTING WATER RIGHTS WILL BE AFFECTED BY THE PUYALLUP RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM.

I. PROGRAM OVERVIEW

An overall program proposal and EIS document has been drafted and circulated to the public and governmental agencies. (Copies available from Department of Ecology (DOE), Olympia). The conceptual approach and technical procedures used to determine the flows required a determination of the number of control stations to be located in the stream system. Flow levels will be monitored at these control stations and future water rights will be conditioned to instream flows measured at the specific control stations on the Puyallup, White, and Carbon rivers. Where possible, United States Geological Survey (USGS) gaging stations have been selected as control stations, providing a historical record of streamflow. Where tributaries of a higher order (smaller in size) are too remote from control stations to adequately judge the effects of future water appropriations, provisions have been made to establish new control stations nearer to those streams upon need.

Instream Flows

State law provides that perennial streams and rivers shall be retained with base flows necessary to provide for preservation of wildlife, fish, navigation, scenic, aesthetic, and other environmental and navigational values. (RCW 90.54.020(3)(a) 1971). The state may also establish minimum water flows or levels for streams, lakes, or other public waters, for the purposes of protecting fish, game, birds or other wildlife resources, or recreational or aesthetic values (RCW 90.22.010). These are flows that can be expected in the stream a relatively high percentage of the time. Each stream selected for regulation is evaluated by the departments of Ecology, Fish, and Game. A stream having greater environmental and scenic values, will require higher levels of flow protection. The Instream Resources .Protection Program does not affect any existing water rights and uses.

Public Participation

All interested individuals, private groups, and public agencies are encouraged to comment on any aspect of the recommended measures for streams in the Puyallup River Basin. Distribution of the draft program document and proposed administrative rules initiated public involvement activities for the Puyallup River Basin Instream Resource Protection Program. Public hearings were held at Puyallup and Enumclaw on January 15 and 17, 1980. An ongoing series of coordination meetings has been accomplished with local, county, state, and federal agencies.

Statutory Authority

The Department of Ecology shall, when requested by the departments of Fisheries or Game, establish minimum flows or levels as required to protect instream values and any fish, game, or wildlife resources (Chapter 90.22 RCW, Minimum Water Flows and Levels).

The Western Washington Instream Resource Protection Program is authorized under Chapter 90.54 RCW (Water Resources Act of 1971) and Chapter 173-500 WAC (Water Resources Management Program). The Water Resources Act states ". . . perennial rivers and streams of the

state shall be retained with base flows . . . ." (RCW 90.54.020). DOE feels that this program will satisfy the legislative direction included in Chapter 90.22 RCW and RCW 90.54.020.

Planning Assumptions: The first assumption made in the development of the Puyallup River Basin Instream Resources Protection Program is that adequate data is available at the present time upon which to develop a sound instream resources protection program. A second assumption is that no supplemental EIS is required because the overall program EIS has been prepared that adequately addresses all issues.

Puyallup Rv. near Orting Sept.

II. PUYALLUP RIVER BASIN ENVIRONMENTAL SETTING

Area Description

GEOGRAPHY - This basin encompasses all of Water Resource Inventory Area 10 (WRIA 10) which is located primarily in Pierce County with a small area in King County. Beginning at a point just west of Mirror Lake, the boundary runs southwesterly to a point near the southern edge of the city of Auburn; thence, along the ridge line between this basin and the White and Green river basin to the crest of the Cascade Mountains. Following this line south, the boundary turns westerly through Mount Rainier National Park; thence, northwesterly along the divide between this basin and the Nisqually River Basin. The basin line follows a northerly course that terminates along the western shore of Commencement Bay. See Figure 1.

The basin is divided generally into four land forms:

- Glacial moraines and terraces
- Old plateau
- Glacial valleys
- Mountainous regions

The mountainous region lies in that part of the basin east of Carbonado. Mountains generally range in height from 2,500 to 6,000 feet. An exception is Mount Rainier, which has an elevation of 14,410 feet. With its 15 prominent glaciers, this mountain has the greatest glacial field in any of the 48 contiguous states. The glaciers are a source for a considerable portion of the surface water in the basin. The mountain province occupies more than half of the basin's area.

In addition to the foregoing general features, local conditions have been modified by two identified mud flows from the flanks of Mount Rainier. The first of these, the Osceola Mudflow, underlies the plain adjacent to Enumclaw land Buckley. This mudflow also extends down South Prairie and Fennel creeks. The second, the Electron Mudflow, underlies portions of the Puyallup Valley floor from Electron to McMillin. (1)

CLIMATE - The Puyallup River Basin lies within the winter range of the mean Pacific Ocean storm track. Accordingly, abundant precipitation and mild temperatures are normal from mid-October through April. With the building of the Eastern Pacific anticyclone along the West Coast in late spring, the storm track is displaced northward and summers are usually very dry.

Terrain determines the distribution of precipitation throughout the basin. The lower elevations lie within the "shadow" of the southwesterly winds resulting in a dramatic increase of precipitation at higher elevations. Consequently, an individual storm that produces one inch of rain at Orting may yield a snowfall of four feet with an equivalent of five inches of rain on the Mowich Glacier. Furthermore, the melting of that snow may be delayed for several months while the rainwater enters Puget Sound within a few hours.

Departures from the "normal" are common. The winter pattern of recurrent storms is interrupted by more or less persistent regimes of high pressure with accompanying dry, cold weather. A long-wave trough may become stationary along the coast and cause a prolonged period of warm southerly winds. At such times the heavy rains at high elevations erode the snowpack, resulting in excessive runoff and flooding. Such events may occur any time from late fall to early spring, a potential which makes forecasting extended water supply uncertain and unreliable.

Precipitation may average 140 inches per annum (October-September) at the Mowich Glacier, and less than 40 at Orting. But actual totals may vary from 90" to 170" at the glacier, and from 25" to 50" at Puyallup.

Below 2,000 feet elevation precipitation generally falls as rain, and the occasional snows soon melt.

ECONOMY - To some extent, the economy of the basin is tied to institutions outside its borders, the major influence being the aerospace industry. While the Boeing Company has no plants within the basin, a number of residents commute to jobs with that company. Further, there are several subcontractors in the basin which are largely dependent upon Boeing for work.

Ranked by the size of the labor force, non-manufacturing is the largest segment of the economy in the basin. However, this category covers a wide variety of activities. Included are retail sales, service-oriented businesses, education, government, shipping and other transportation, and a number of other classifications, including agriculture.

Manufacturing ranks second. In an area which is almost 80 percent forested, it is obvious that wood products and byproducts would dominate manufacturing activities. Other employers of importance are the aerospace industry, primary metals production, ship and boatbuilding, and chemical manufacturing. Agriculture, which was once a dominant factor in the basin's economy, has diminished in importance with the spread of urban development. The Soil Conservation Service estimates no more than 8,000 acres are under irrigation.

POPULATION - Population projections for the Puyallup-Chambers Creek Basin indicate that by the year 2020 urban development will have reached near holding capacity. The eastern edge of development will probably extend to the Enumclaw-Buckley-Carbonado area, and only the mountainous region and west Enumclaw agricultural areas will remain sparsely populated. Currently, the major populated areas of the basin are Tacoma, Puyallup, and Sumner. Only a small part of Auburn is located in the basin, but the city is closely associated with the basin's economy. (2) Population projections are presented as follows:

*(1) Refers to selected reference 1. See Selected References, Page 44.

POPULATION PROJECTIONS
Puyallup

Area	1975	1990	2020
Puyallup Basin	200,700	315,000	600,000*

(Puyallup River Basin Sewage General Plan)

Current Resource Use

LAND USE - Present land use varies from intensely developed industrial areas (principally around Commencement Bay in Tacoma) through densely populated residential neighborhoods to rural and forest areas. Agricultural acreage is declining with the spread of urbanization. Forest land covers by far the largest segment of the basin; approximately 77.5 percent of the area. (1)

LAND USE

Land Use	Percent of Total
Cropland	4.8
Range Land	0.1
Forest Land	77.5
Rural, nonagricultural	3.4
Urban	12.7
Freshwater Acres	1.5
TOTAL	100.0

Ownership of the land in the basin is primarily in private hands, with the federal government a near second. Federal lands are for the most part made up of national forest and national parks. A further breakdown of landownership is shown as follows:

LAND OWNERSHIP

Owner	Percent of Total
Federal Government	39.4
State Government	2.4
County and City Government	1.7
Private	56.5
TOTAL	100.0

* Other population forecasts go as high as 675,000.

A major portion of the Puyallup Basin is forest covered. 449,150 acres of the basin, or 72%, is classified as forest land. Forests are located throughout the basin with the heavier stands concentrated in the central and eastern parts. Over 113,000 acres of the total forest land is in a

reserved classification nearly all of which is in Mount Rainier National Park. Resource zone classifications for the available forest land are shown below:

Zone	Area (acres)	Percent of Total
Woodland and Woodlot	52,530	12
Principal Forest	364,500	81
Upper Forest	30,320	7
Subalpine	1,800	0
Total available	449,150	100

The Puyallup Basin contains over 442,000 acres of commercial forest land capable of producing crops of industrial wood. The sawtimber inventory supported on these lands is 9.2 billion board feet, International ¼-inch Rule. This area and volume represents 8.8% of the Puget Sound Area's commercial forest land and 9.0% of the sawtimber volume. Private forest lands, located primarily in the central and western part of the Basin, contain some 293,860 acres. This is divided into 240,650 acres in large ownerships (corporate), 680 acres in medium sized ownerships and 52,530 acres is small ownerships. Public ownerships contain 148,200 acres of commercial forest. This is divided into 83% national forest, 9% other federal land, 8% state and county, and negligible amounts of Indian and municipal lands.

The Puyallup Basin supports a well-established forest products industry with a high output of timber products of all types. Of the 27 wood products plants located in the basin, 17 are located in Tacoma, two in Buckley, three in Sumner, two in Steilacoom, and one each in Orting, and Puyallup. By industry groupings there are 19 sawmills, two of which have wood preservation plants, four have reprocessing facilities, two have plywood plants, and one manufactures hardboard. The remaining eight plants manufacture plywood and hardboard; however, these also have facilities for reprocessing and preserving wood products. The forest products industry in the Puyallup Basin requires about 1,400,000 board feet of material per day. When market conditions warrant additional shifts at the largest plant in Tacoma, the raw material need increases by over one-half million board feet. (1)

Carbon Rv. near Orting, Wa. Sept.

III. WATER RESOURCES

Surface Water

The Puyallup Basin comprises 1,254 square miles, including 1,203 square miles of land and inland water. The largest and most important stream in the basin, the Puyallup River, drains 972 square miles, the upper part of which is rugged and mountainous and the lower part flat or rolling. The Puyallup River proper begins at the Puyallup and Tahoma glaciers on Mount Rainier, and flows northwestward about 46 miles to Commencement Bay at Tacoma, with a fall of more than 3,000 feet. For the first 20 miles, the flow is very rapid as it passes through a rugged country with no lowlands; the lower 8 miles of this section is a deep canyon. At the foot of the canyon the river flows out onto the flat valley and has a comparatively flat gradient from there to its mouth.

The principal tributary of the Puyallup is the White River, which rises at Mount Rainier's Emmons Glacier and enters the Puyallup at mile 10.5. From its sources at the northeastern glaciers of Mount Rainier and on the western slope of the Cascade Range to its emergence from the foothills onto the lowlands, the river flows for 57 miles in a northwesterly direction through a rather wide valley with a high, but comparatively uniform, gradient. Before 1906, the White River discharged partly into the Duwamish River to the north and partly into the Puyallup to the south. Since then, the entire flow has been diverted into the Puyallup. Greenwater River, the main tributary of the White, drains an area of 76 square miles. (1)

The Carbon River, about 30 miles in length and the second largest tributary to the Puyallup, joins the river about 2½ miles below the town of Orting. The Carbon River has its source at Carbon Glacier on the north slope of Mount Rainier at an altitude of about 3,600 feet. The Mowich River, the third largest tributary, originates at the North and South Mowich Glaciers on the west side of Mount Rainier at altitudes of about 5,500 and 4,800 feet, respectively. Flowing in a westerly direction, the Mowich enters the Puyallup River from the east about 22 miles above the mouth of the Carbon River, or 41 miles above the mouth of Puyallup. Stream slopes range from 75 feet per mile in the upper reaches to about 30 feet per mile in the lower valley, with generally steeper slopes on the principal tributaries.

Runoff Characteristics

The Puyallup River and most of its tributaries, including the White and Carbon rivers, drain approximately 60 percent of the slopes of Mt. Rainier, and the average annual contribution exceeds 120 inches. Runoff production near the mouth of this stream system is estimated to be about 20 inches annually. The mean runoff from the entire 1,203 square miles of this basin is estimated to be 41 inches, or 2.7 million acre-feet. (1) (Refer to figures 3, 4, and 5 for a graphic illustration of the base flows for the Puyallup, White, and Carbon rivers.)

On the main stem of the Puyallup River, records obtained at a gage near Electron indicate that the mean annual discharge from the western foothills and slopes of Mount Rainier is about 539 cfs, or about 390,000 acre-feet per year. Although this area has excellent exposure to prevailing storms, unit-runoff production is considerably less than that of the southern Olympic slopes in the West Sound Basin. Approximately 5.8 cfs per square mile is produced on these slopes of Mount Rainier compared to about 9.3 cfs per square mile from the South Fork of the Skokomish River drainage in the Olympic Mountains.

Unit runoff decreases rapidly below the Electron gage, and in the drainage area between this gage and the station near Orting, the mean annual unit discharge is only 2.1 cfs per square mile. In total, the mean annual runoff of the Puyallup River above the gage near Orting for the period 1931-60 is 703 cfs, or 509,000 acre-feet per year: this is equivalent to 4.1 cfs per square mile.

Runoff from the upper reaches of the Carbon River drainage is comparable to that of the Puyallup River above Electron. At the gaging station near Fairfax, mean annual discharge from the Carbon River was 426 cfs, or 309,060 acre-feet per year, during the period 1931-60. In terms of unit runoff, this is equivalent to 5.4 cfs per square mile.

Runoff from nearly one-half of this basin is measured at a gaging station on the White River near Buckley. During the 30-year period of record, mean annual discharge averaged 1,490 cfs or 1,080,000 acre-feet. Because production from both low and high altitude areas is sampled at this station, the runoff per square mile amounts to only 3.7 cfs.

Contributions from virtually the entire basin are measured at the gaging station on the Puyallup River at Puyallup. An excellent long-term record is available for this site, and it shows that the mean annual discharge during 1931-60 averaged 3,440 cfs, which is equivalent to a mean annual yield of 2,490,000 acre-feet. The average unit discharge and yield for the basin is 3.6 cfs per square mile. (2)

Historic flow records show that several consecutive years of below average or above average runoff occurred occasionally, but that in general, no definite pattern of cyclic fluctuation is apparent and the variations appear to be basically random. During the period of streamflow record for the Puyallup River, the maximum yearly mean discharge of 5,180 cfs occurred in the 1960 water year, and the minimum yearly mean discharge of 2,090 cfs occurred during the 1941 water year. These flows represent 151 percent and 61 percent, respectively, of the mean discharge of 1931-60. (1)

At the higher altitudes, monthly peaks are greater during the spring than winter. This results from the greater influence of snow accumulation and melt in these streams. Lower altitude streams exhibit nearly equal average monthly peaks during both periods. The range in peak flow variations is decidedly greater during the winter months, and is greatest in December.

The relatively high level of summer flows in this basin bears out the significance of glacial storage in maintaining streamflow during summer periods of deficient precipitation. The average low monthly flow normally occurs in September; however, glacial melt water from the alpine areas of Mount Rainier offers a great percentage contribution to summer runoff in the high elevation drainages, with the result that lowest mean monthly flows at the higher altitude gaging stations are often recorded during March. In contrast to the usual trend in Western Washington of generally increasing river flows in November, the lowest monthly flows in the Puyallup Basin usually occur during that month.

Streamflow characteristics are analyzed from records obtained at the stream gage on the Puyallup River at Puyallup, which measures runoff from 98 percent of the Puyallup Basin. Streamflow usually begins increasing in October to November from the average summer low flow of about 1,600 cfs. Runoff generally decreases from December through March as a result of reduced rainfall. As temperatures begin rising in April, snowmelt causes an increase in streamflow and averages about 5,300 cfs by the middle of June. Following the snowmelt peak, streamflow recedes to minimum low flow as snowpacks are depleted, usually before the end of September. Discharge is then sustained by ground water contribution and glacial melting.

Flood Characteristics

Floods caused by high rainfall and accompanying snowmelt are shown by characteristically sharp rises followed by recessions almost as rapid. Two or more flood peaks often occur within two weeks. The maximum discharge recorded at the Puyallup gage, 57,000 cfs, occurred on December 10, 1933. Mud Mountain Dam, a U.S. Corps of Engineers flood control project on the White River, has effectively reduced the magnitudes of large floods since 1942.

Low Flow Characteristics

Low flow characteristics of streams in the Puyallup Basin are compared using indexes from low flow frequency curves at 12 gaging stations. The low flow indexes are excellent in the upper Puyallup, White, and Carbon River basin. The indexes are fair for streams in the middle part of the basin and are poor for those that head in lowlands adjacent to Puget Sound. In general, the slope and spacing indexes, which show the variability of low flows, are less than the regional average, except for Kapowsin Creek. (17)

Storage

The total amount of storage in lakes and glaciers of the basin is not known, but surface areas can be used to provide at least an approximation of the amount of water that is stored. The total surface area of lakes is 10.5 square miles, of which 5.9 square miles consists of reservoirs. Glaciers are found in the basin on Mount Rainier, and their surface area is about 24.7 square miles.

Mud Mountain Dam provides 106,000 acre-feet of storage on the White River. The reservoir is kept empty most of the year and is used only for flood control. A large part of the flow of the White River is diverted into Lake Tapps. Water from Lake Tapps is used to generate electric power at the Puget Sound Power and Light Company's Dieringer Plant, after which it is returned to the White River. Approximately 20,000 acre-feet is withdrawn from Lake Tapps storage during January-March for power generation and is replaced in April and May. (2)

Major Diversions

The Puget Sound Power and Light Company diverts as much as 2,000 cfs from the White River about one mile east of Buckley for its hydroelectric plant at Dieringer on the White River. This diversion bypasses about 20 miles of the White River. A flow of 30 cfs is released below the White River diversion dam for fish attraction, transportation, and operation of the trapping facilities. (4)

The Puget Sound Power and Light Co. operates a second hydroelectric power generating plant near Electron. Water is supplied to this plant from the upper Puyallup River. About 400 cfs is diverted and is returned to the river about 11 miles downstream from the diversion. (4)

Three diversions of 5 cfs or more have been developed primarily for fish propagation in the Puyallup Basin. The State Department of Fisheries operates a hatchery about two miles southeast of Orting. This facility diverts about five cfs from Voight Creek at a point about 1 mile above the hatchery. The flow is returned to Voight Creek a short distance above its confluence with Carbon River. A privately operated hatchery about a mile east of McMillan is entitled to divert 7.98 cfs from Canyon Falls Creek. This water is returned to the stream within a few hundred feet of the point of diversion. (9)

The White River Lumber Company diverts about 4 cfs from Boise Creek near Enumclaw. Most of the water diverted is returned to the creek at a mill pond about half a mile downstream from the point of diversion.

Irrigation uses divert an estimated 8,700 acre-feet (SCS estimates) of water in the lower reaches of the White and Puyallup rivers. Much of this water is used for farm and home irrigation. Approximately 4,400 acres of land is irrigated within the Puyallup River Basin.

Ground Water

The ground water resources within the Puyallup River Basin are not yet fully quantified; however, it is believed that adequate supplies presently exist. Recharge is believed to be primarily by precipitation from within the basin and may amount to 725,000 acre-feet per year. Some saltwater intrusion has been experienced in the wells within the Commencement Bay industrial area. In other regions, problems are encountered with high iron and sodium content. (Lake Tapps - Buckley areas and in the Ohop region) (5)

Although the City of Tacoma relies primarily on surface water from the Green River, many of the outlying communities such as Orting, Puyallup, and Sumner utilize wells and springs. (7) Figures 2, 3, 4, and 5 illustrate schematic ground water profiles in the Puyallup Basin.

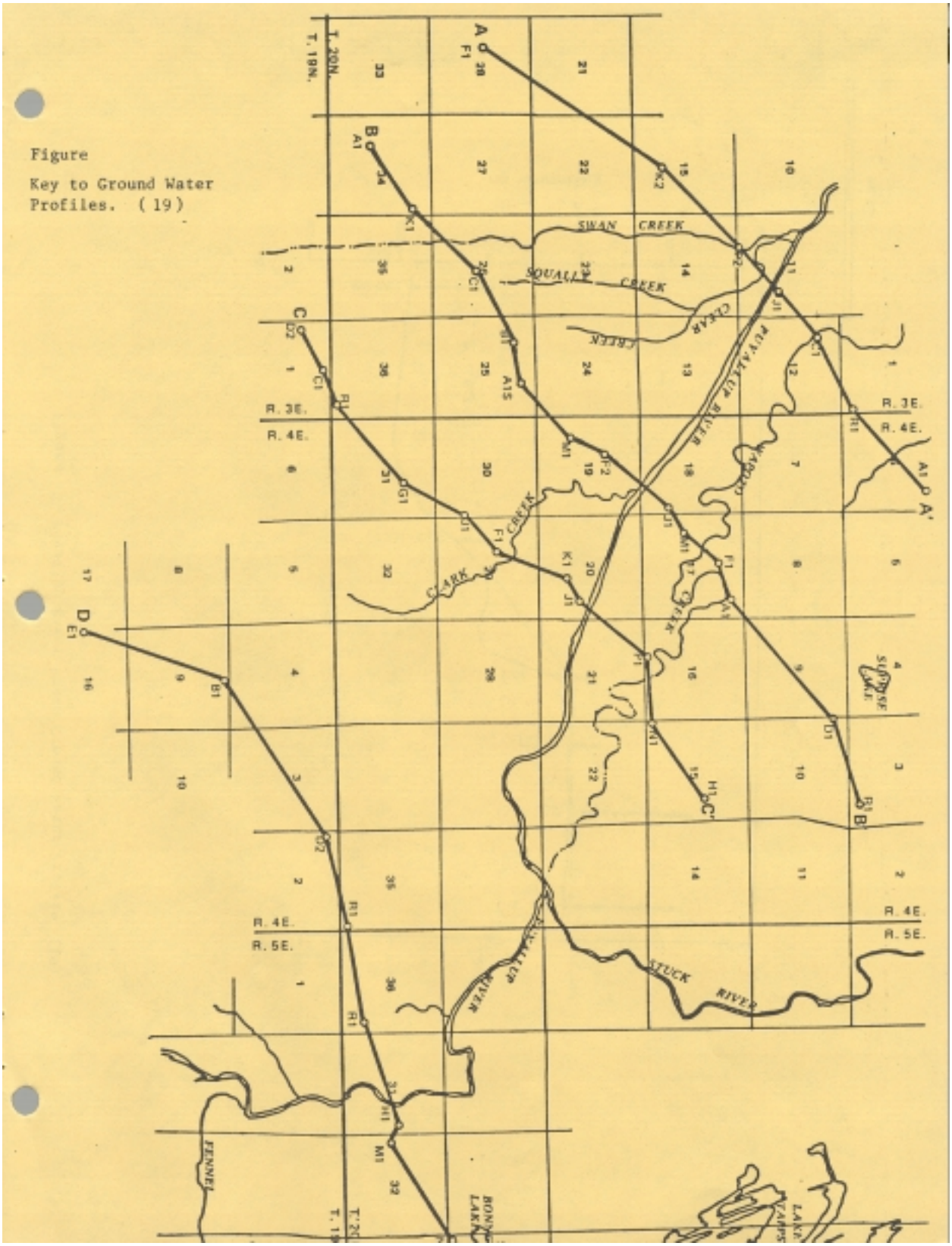
Freshwater aquifers are known to exist at depths down to 1,500 feet below sea level. Ground water can be tapped for well purposes at 100 feet or less in many parts of the basin.

Greatest ground water yields appear in the various alluvium zones that occur mainly on the White River floodplain from Auburn to Sumner and on the Puyallup floodplain from Orting to Commencement Bay. (5)

The important aquifers in the lowlands occur in coarse quaternary sediments; these deposits are nearly continuous over about 420 square miles. Locally, near Puget Sound, quaternary deposits exceed 2,000 feet in thickness. Freshwater aquifers exist at depths as great as 1,500 feet below sea level, but water is pumped mainly from aquifers less than 500 feet below sea level. Ground water can be obtained from depths less than 100 feet below land surface in most places. (3)

Figure

Key to Ground Water Profiles. (19)



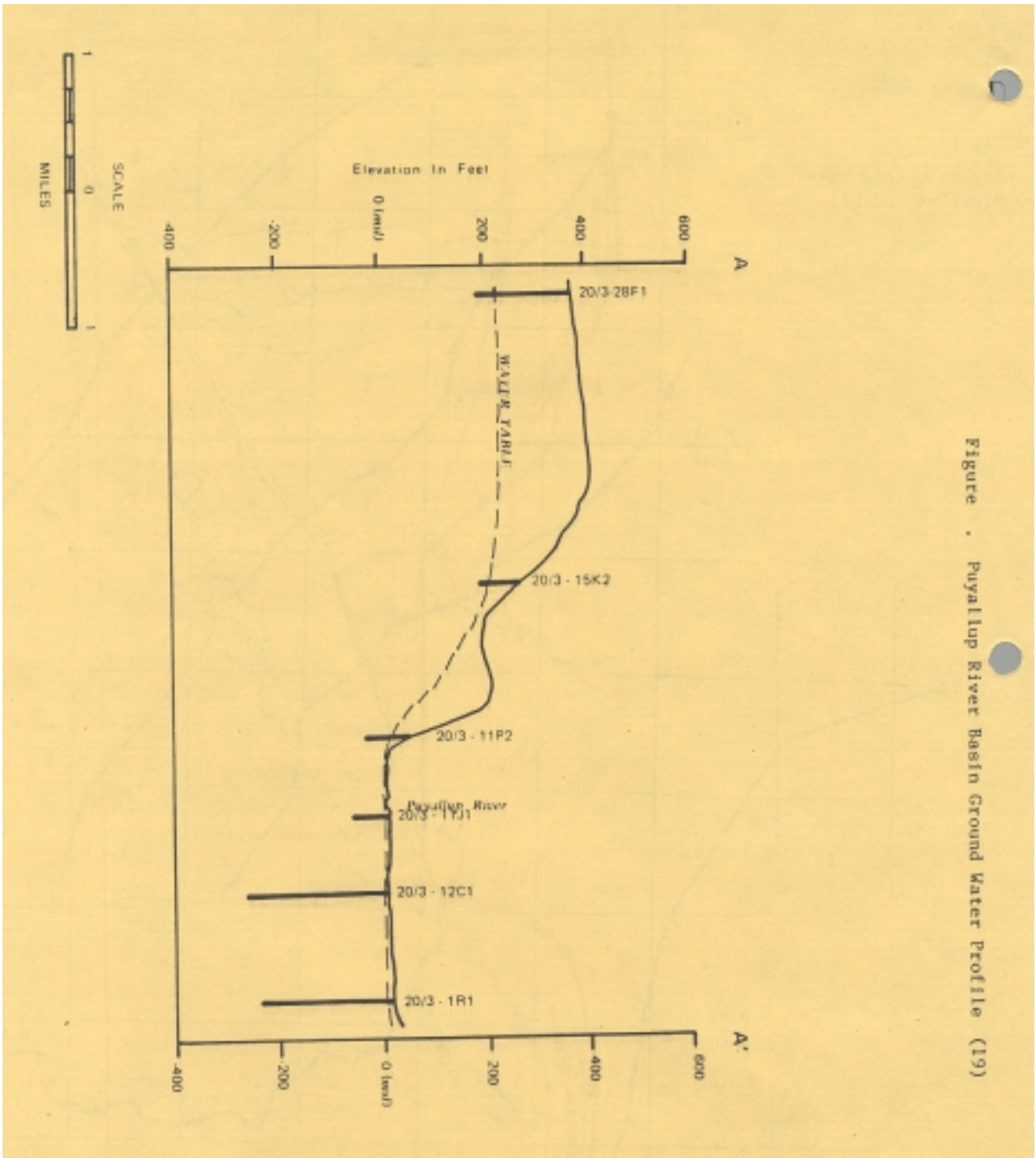


Figure . Puyallup River Basin Ground Water Profile (19)

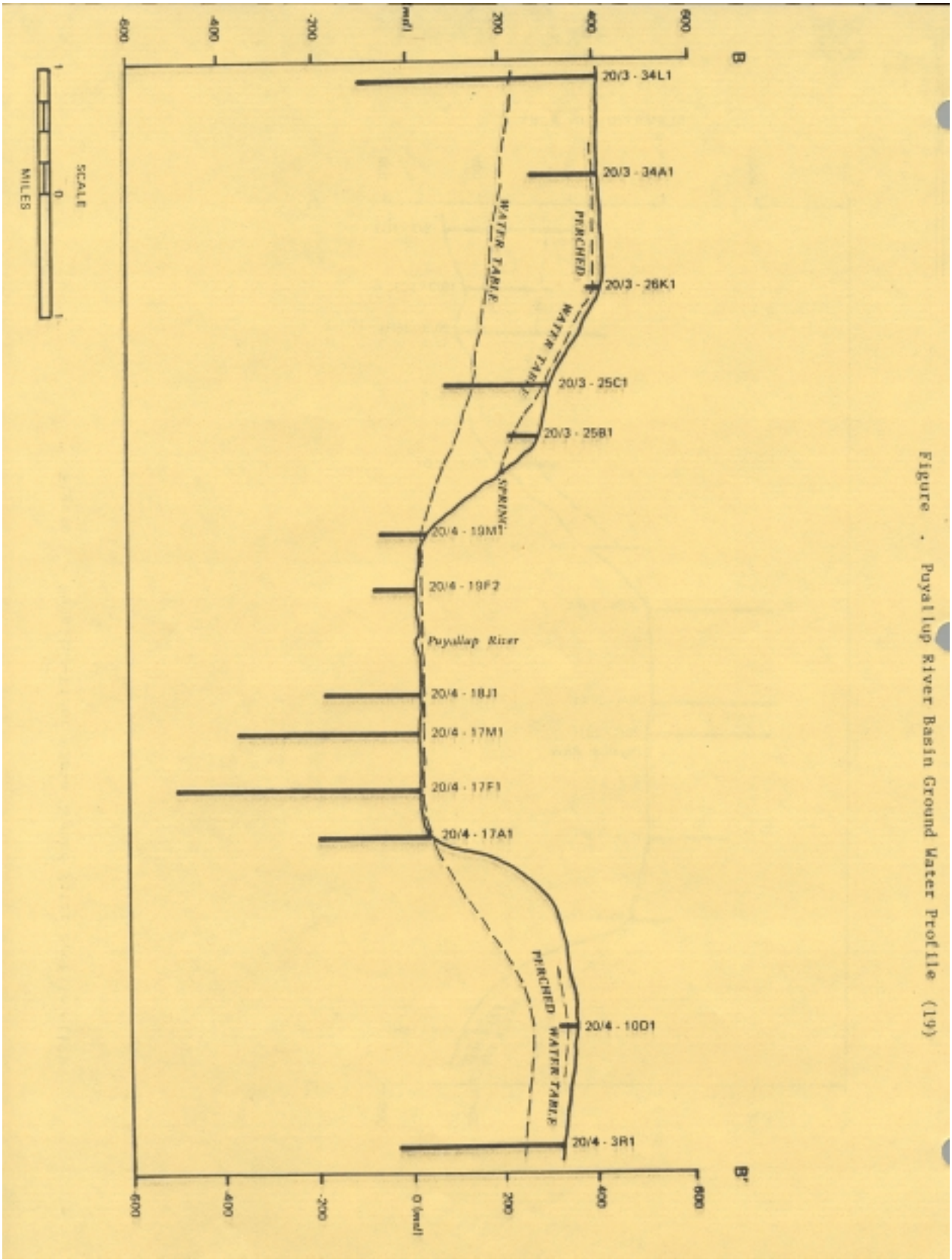


Figure . Puyallup River Basin Ground Water Profile (19)

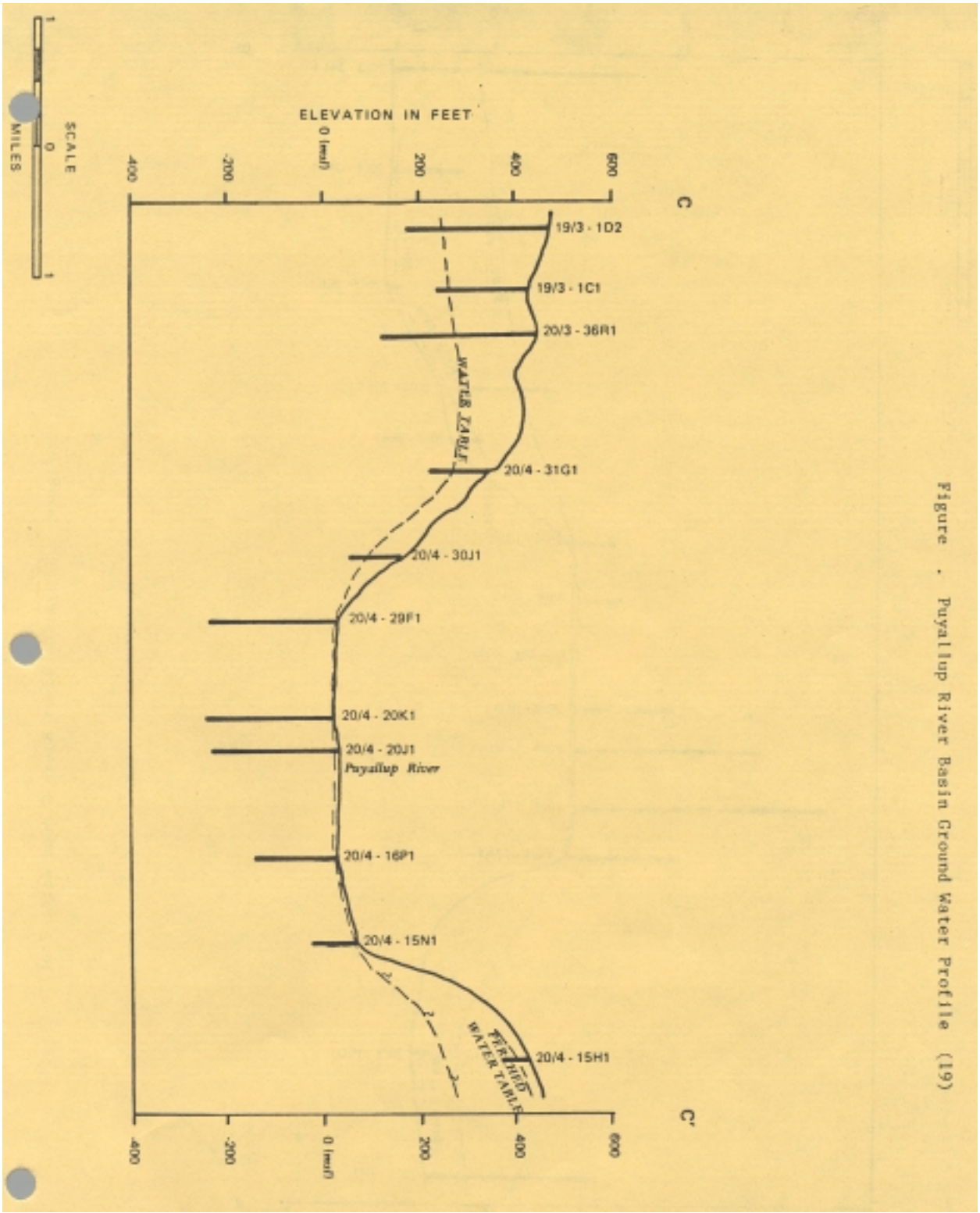


Figure . Puyallup River Basin Ground Water Profile (19)

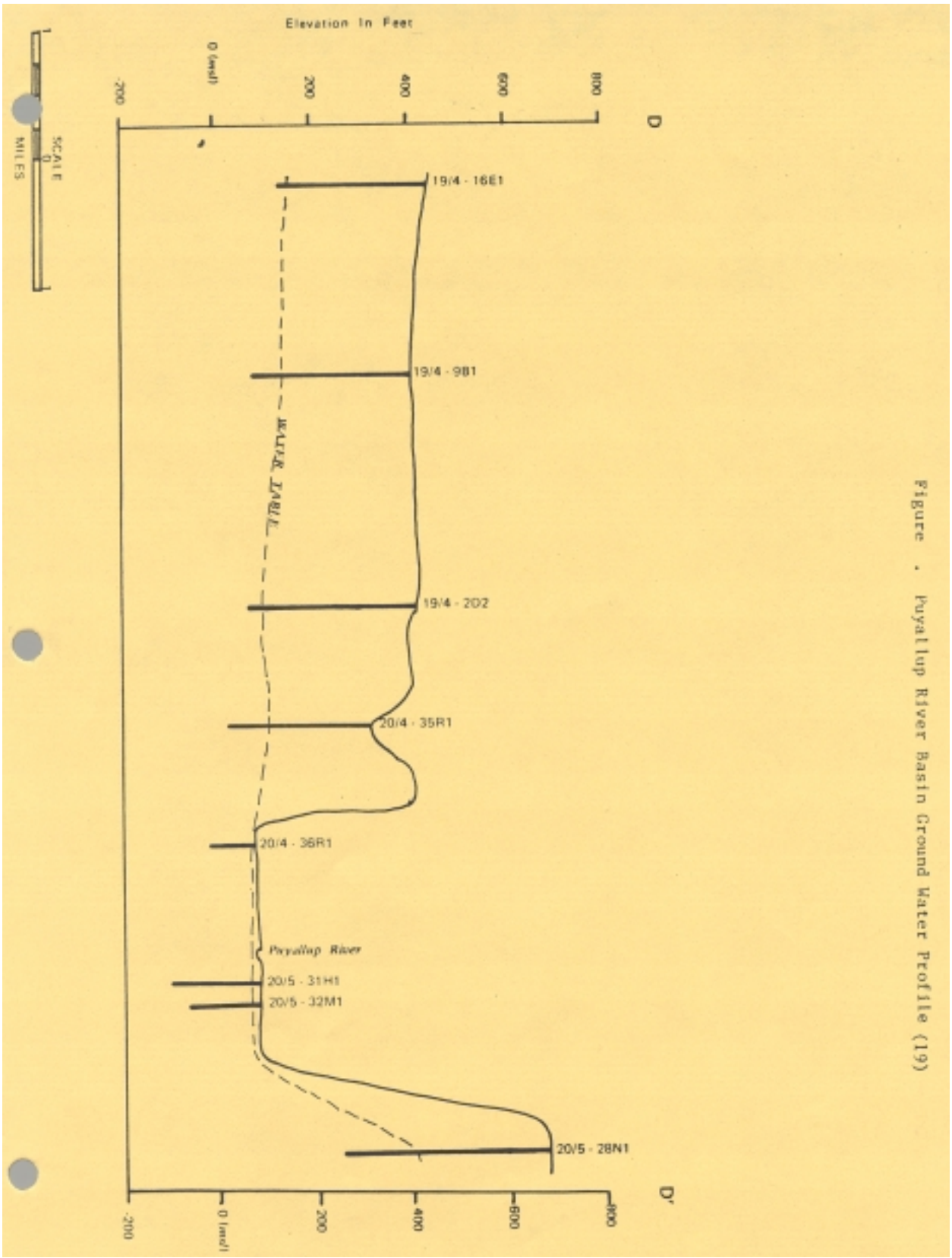


Figure . Puyallup River Basin Ground Water Profile (19)

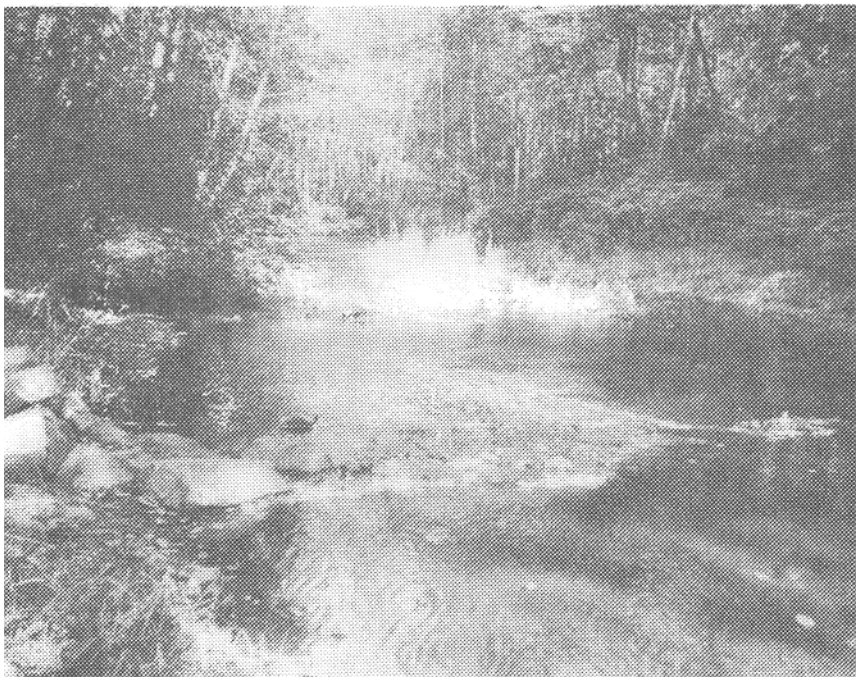
Alluvium occurs mainly on the White River floodplain from Auburn to Sumner, and on the Puyallup River floodplain from Orting to Commencement Bay. Upper zones in the alluvial materials contain silt, clay, and fine sand of low permeability. The alluvial deposits are at least 200 feet thick at Sumner, but at the mouth of the Puyallup River, their thickness probably exceeds 500 feet. Upstream from Sumner, the alluvium thins, but contains coarser materials. Alluvium is generally saturated to about river level, but the deeper alluvial aquifers are confined under artesian pressure. Alluvium everywhere may contain zones that yield appreciable quantities of water to wells. In the Puyallup Valley below Sumner, however, some of the deep wells with substantial yields may also obtain water from older quaternary units. (1)

Practically all recharge to the aquifers in the lowlands -- even those overlain by till or mudflows - is by infiltration of precipitation. Aquifers in the lowlands of the Puyallup Basin receive about 130,000 acre-feet of recharge annually on the average.

Aquifers are also commonly located within the quaternary sediments. There ground water sources yield substantial amounts of water to properly constructed wells. (2)

Recharge to the Puyallup Basin aquifers is accomplished primarily by infiltration and precipitation. Natural discharge is into the Puyallup and White rivers and probably plays an important part in maintaining streamflows during low flow periods.

The City of Puyallup reports ground water quality problems in both Salmon and Maplewood springs during low flow periods. The source is believed to be from septic tanks draining into well fields. (6)



Kapowsin Cr. Sept.

IV. WATER QUALITY

The status of water quality within the Puyallup Basin is continuously monitored by the Washington DOE. Stream and lake water quality ratings have been developed for all waters within the basin. All waters are classified as either AA, AB, or C with Commencement Bay having the lowest ratings and the higher tributaries rated as AA.

Water quality within the Puyallup River Basin is less than ideal both from natural and man-made causes. Factors adversely affecting the waters of this basin include a wide spectrum of causes. Beginning with glacial flows in higher reaches of the White, Puyallup, Mowich, and Carbon rivers, high degrees of turbidity and glacial sediment are experienced during the warmer months. June snowmelt flows reach up to 5,300 cfs at the mouth of the Carbon River. Measurements of suspended sediments have ranged from 10 to 60,000 ppm on the White River above Greenwater. (2) (Recent water quality factors are indicated on Table 1 and 2.) Water quality criteria is provided on Table 3.

At the mid and higher elevations, extensive clearcut logging operations on the tributaries of the White, Greenwater, and Clearwater rivers are probably contributing to the overall sediment load of these streams. One study indicated that during flooding periods, the Puyallup River was estimated to transport as much as 380,000 tons of sediment per day. (2) Approximately one million tons of suspended sediment are discharged during a year of normal streamflow within the Puyallup Basin. Other factors contributing to this high sediment flow are urban development

and agricultural activities within the floodplains. This region is as yet unprotected by a comprehensive land use program. Average turbidity for the White River near Sumner was 20 JTU; (Jackson Turbidity Units) for the lower Puyallup 25 JTU; and for the Carbon River 61 JTU. The maximum ranged from 85 to 370 JTU. Heavy deposits of silt are deposited within the Mud Mountain flood control storage reservoir. Subsequent flushing operations by the Corps of Engineers is causing an adverse impact on the fishery resource. (5) (8) (14)

At the mid and lower elevations within the Puyallup Basin, water quality is further degraded by occasional high fecal coliform discharges from various point sources, including municipal sewage systems and livestock operations. Bacteriological counts of streams within the Puyallup Basin varies from almost none up to one count of 240,000 MPN (Most Probable Number) of fecal coliform on Boise Creek near Buckley. The degree of bacteriological contamination within the ground water system is not well known but it is suspected that some contamination occurs from old and deteriorating sewer systems, drainfields, and septic tanks. (6) The municipalities of Puyallup and Tacoma both discharge wastes from their primary treatment plants into the Puyallup River. High bacteria counts are experienced during periods of high runoff when existing storm drains cannot adequately carry the runoff. Secondary treatment facilities will greatly improve this situation, as will the development of a comprehensive land use plan within the floodplain regions. Secondary treatment has recently been developed at Sumner and Buckley. (5)

The water quality within the area of Commencement Bay is being seriously degraded by many man-made factors. (14) Due to this area's heavy industrialized use, waste materials have been deposited either accidentally or knowingly over a period of many years. Specific problems include low dissolved oxygen, excess amounts of sulfate waste liquors, highly toxic carcinogenic chemical compounds, and dissolved heavy metals. High counts of fecal coliform are also experienced in Commencement Bay. Other activities that adversely affect water quality are dredging and construction activities within the marine estuary and intertidal regions. (5)

Lake waters within the Puyallup Basin, including Bonny Lake, Lake Tapps and Surprise Lake, occasionally experience high fecal coliform counts.

Principal factors affecting the basin's water quality will be growth in population, industry, agriculture, flood control, and recreation. Total population forecasts for the year 2020 are well over 600,000. Growth of major water-using industries in the Puyallup Basin is expected to realize a 3.7-fold increase between 1980-2020. The total projected raw organic wasteload for the Puyallup Basin is expected to reach 1,440,000 PE (population equivalent) by 2020. This may be over 5.4 times the present level. Additional heavy wasteloads are predicted for food processing plants, paper, allied products industry, and the municipalities. (2)

Recent water quality standards for the Puyallup River

TABLE 1

PUYALLUP RIVER AT MERIDIAN STREET BRIDGE

DATE FROM TO	TIME	STREAM FLOW CFS-AVG	WATER TEMP DEG-C	DISSOLVED OXYGEN MG/L	FECAL COLIFORM /100ML MF	pH STANDARD UNITS	TURBIDITY JKSN JTU	CONDUCTVY @ 25 C MICROMHOS	COLOR PT-CO UNITS
10/6/77	1325	2100.0	11.0	10.7	508	6.9	29.0	78	33
11/16/77	1305	5890.0	7.2	12.4	120	7.2	5.0	60	46
12/7/77	1250	1700.0	5.0	12.8	838	6.8	90.0	53	67
1/5/78	1225	4360.0	5.5	12.3	260	7.3	8.0	73	17
2/16/78	1400	2030.0	5.3	12.7	328	6.8	2.0	88	25
3/15/78	1100	1840.0	6.2	12.5	1808	7.1	45.0	90	46
4/19/78	1310	1750.0	9.8	11.2	1908	7.4	6.0	80	46
5/10/78	1335	2140.0	11.8	11.0	120	7.6		72	
6/14/78	1345	3640.0	13.8	10.4	2208	7.4	11.0	62	
7/26/78	1245	3210.0	15.9	9.3	3008	7.3	66.0	50	54
8/16/78	1345	2690.0	11.7	10.7	1808	7.4	700.0	54	OM
9/7/78	1300	2390.0	12.6	11.3	OM	7.5	39.0	73	54
10/11/78	1345		13.2	10.5	150	7.3	15.0	74	25
11/8/78	1300		9.0	11.0	1400B	7.5	90.0	55	67
12/6/78	1305		4.3	12.9	230B	7.2	8.0	69	38
1/31/79	1415		1.9	13.3	21B	6.9	6.0	61	29
2/22/79	1400		4.8	12.6	31	7.3	6.0	77	50
3/14/79	1350		8.1	12.2	17B	7.2	6.0	64	25
4/18/79	1315		8.0	12.2	49	7.5	4.0	68	46
5/23/79	1250		12.6	10.7	90B	7.5	8.0	52	25
6/20/79	1340		13.0	10.5	38	7.4	6.0	53	25
7/11/79	1300		14.4	10.4	113B	7.5	25.0	52	58
8/8/79	1300		15.2	9.8	240	7.4	56.0	89	63
9/6/79	1355		15.3	9.2	20	7.5	26.0	68	42

TABLE 2

WHITE RIVER AT SUMNER

DATE FROM TO	TIME	STREAM FLOW CFS-AVG	WATER TEMP DEG-C	DISSOLVED OXYGEN MG/L	FECAL COLIFORM /100ML MF	pH STANDARD UNITS	TURBIDITY JKSN JTU	CONDUCTVY @ 25 C MICROMHOS	COLOR PT-CO UNITS
10/6/77	1300	250.0	12.1	10.1	120B	6.8	35.0	71	38
11/16/77	1245	100.0	7.5	12.1	170	7.1	15.0	75	50
12/7/77	1220	100.0	5.2	12.8	60B	6.7	30.0	55	58
1/5/78	1200	950.0	4.5	12.3	260	7.3	10.0	78	42
2/16/78	1250	890.0	5.3	12.4	200	6.8	4.0	85	25
3/15/78	1040	830.0	5.8	11.4	100B	7.0	40.0	90	38
3/23/78	1150	090.0	9.9	10.2	200B	7.0	74.0	73	38
4/19/78	1215	500.0	10.2	10.6	280	7.2	6.0	103	46
5/10/78	1235	500.0	12.7	10.6	60B	7.6	6.0	70	46
6/14/78	1315	200.0	14.5	9.7	280	7.4	7.0	59	
7/26/78	1200	800.0	17.2	8.6	50B	7.2	25.0	53	33
8/16/78	1245	050.0	13.5	10.1	230B	7.5	260.0	63	284
9/7/78	1215	130.0	12.5	11.0	OM	7.4	51.0	73	58
10/11/78	1230		14.0	10.0	63	7.3	8.0	65	21
11/8/78	1200		10.1	10.4	760	7.2	16.0	49	17
12/6/78	1235		4.6	12.6	80B	7.2	9.0	72	71
1/31/79	1345		1.8	13.2	10B	7.0	11.0	63	29
2/22/79	1315		4.3	12.5	48	7.3	8.0	72	50
3/14/79	1315		7.1	12.0	31	7.3	9.0	58	25
4/18/79	1220		8.0	12.0	42	7.5	5.0	67	38
5/23/79	1200		14.7	10.3	20B	7.5	4.0	58	17
6/20/79	1235		14.1	10.0	31	7.5	5.0	56	17
7/11/79	1200		16.2	9.8	107B	7.5	19.0	59	42
8/8/79	1205		14.7	9.5	160B	7.2	36.0	73	38
9/6/79	1305		16.5	9.8	30	7.8	26.0	69	21

TABLE __

SUMMARY OF WATER QUALITY CRITERIA

Class Designation	Typical Uses	Fecal Coliform [1] (organisms/100 ml)	Dissolved [2] Oxygen (mg/l)	Temperature [3] (ºC)	pH (4)	Turbidity [5] (NTU)	Other
CLASS AA (Extraordinary							
Exceeds requirements for substantially all uses	Potable water supply; fishing; swimming; fish and shellfish reproduction and rearing						
Fresh Water		50/100	9.5	16	6.5-8.5	5/10%	(7)
Marine Water		14/43			7.0-805 (Var. 0.2)	5/10%	(7)
CLASS A (Excellent)							
Meets or exceeds requirements for substantially all uses	Potable water supply; fishing; swimming; fish and shellfish reproduction and rearing						
Fresh Water		100/200	8.0	18	6.5-8.5	5/10%	(7)
Marine Water		14/43	6.0	16	7.0-8.5 (Var. 0.5)	5/10%	(7)
CLASS B (Good)							
Meets or exceeds requirements for most uses	Industrial and agricultural water supply; fishing; shellfish reproduction and rearing						
Fresh Water		200/400	6.5	21	6.5-8.5	10/20%	(7)
Marine Water		100/200	5.0 (Min. 70% saturation)	19	7.0-8.5 (Var. 0.5)	10/20%	(7)
CLASS C (Fair)							
Meets or exceeds requirements of selected and essential uses	Cooling water; fish passage; commerce and navigation						
Fresh Water		N/A	N/A	24	6.5-9.0	10/20%	(7)
Marine Water		200/400	4.0 (Min. 50% saturation)	22	6.5-9.0 (Var. 0.5)	10/20%	(7)
LAKE CLASS							
Meets or exceeds requirements for all uses	Potable Water Supply; fishing; swimming; fish and shellfish reproduction and rearing	50/100	(6)	(6)	(6)	5	(7)

(1) Median values shall not exceed first value shown; no more than 10% of samples shall exceed second value shown.
(2) Shall exceed values shown, except that natural dissolved oxygen values for marine water can be degraded by up to 0.2 mg/1 by man-caused activities when natural upwelling occurs.
(3) Shall not exceed values shown. Note: additional criteria for temperature are found in the regulation.
(4) Shall be within range shown; man-caused variation shall be less than amount shown.
(5) Shall not exceed values shown over background when background turbidity is 50 NTU or less, or have more than indicated percent increase when background is more than 50 NTU.
(6) No measurable change from natural conditions.
(7) For all classes, the total dissolved gas concentration shall not exceed 110 percent of saturation. Qualitative statements for toxic, radioactive, or deleterious material concentrations; and for aesthetic values are included in the criteria for each class designation.

Source: WAC 173-201, revised 12/19/77

White Rv. Spring Chinook Salmon

V. INSTREAM RESOURCE USE

Instream Uses

Fisheries

Four Pacific salmon species populate the Puyallup Basin, including Chinook (fall and spring), coho, pink, and chum salmon. Adult or juvenile salmon and/or steelhead are present within the basin during the entire year. (Washington Department of Fisheries desired spawning and rearing discharge flows are provided on figure 6 and 7.)

Salmon production in the Puyallup Basin has been estimated to provide over 270,000 fish per year. The average adult salmon spawning population equals 63,000 fish. The Puyallup Indian fishing harvest has reached as high as 75,000 salmon in the lower river. Harvest figures for the Muckleshoot Tribe on the White River indicate a declining commercial harvest. (13)

Limiting factors for both salmon and steelhead include seasonal flooding, low summer flows, unstable stream beds, physical barriers, poor water quality, and overharvest of wild stocks. Low streamflows are experienced during many years. These low flows are aggravated by diversion of water for hydroelectric purposes on the Puyallup and White rivers. (14)

PREFERRED DISCHARGE

CARBON WRIA No. 10

TOE WIDTH: 73 ft.
at approx R.M. 4.3; 11/15/79

PREFERRED SPAWNING DISCHARGE: 280 CFS
(Fall Chinook & Chum)

UNIT SPAWNABLE AREA: APK = 55 sq ft/ft

PREFERRED REARING DISCHARGE: 70 CFS
(TOE WIDTH METHOD; USGS OPEN-FILE REPORT NO. 77-422)

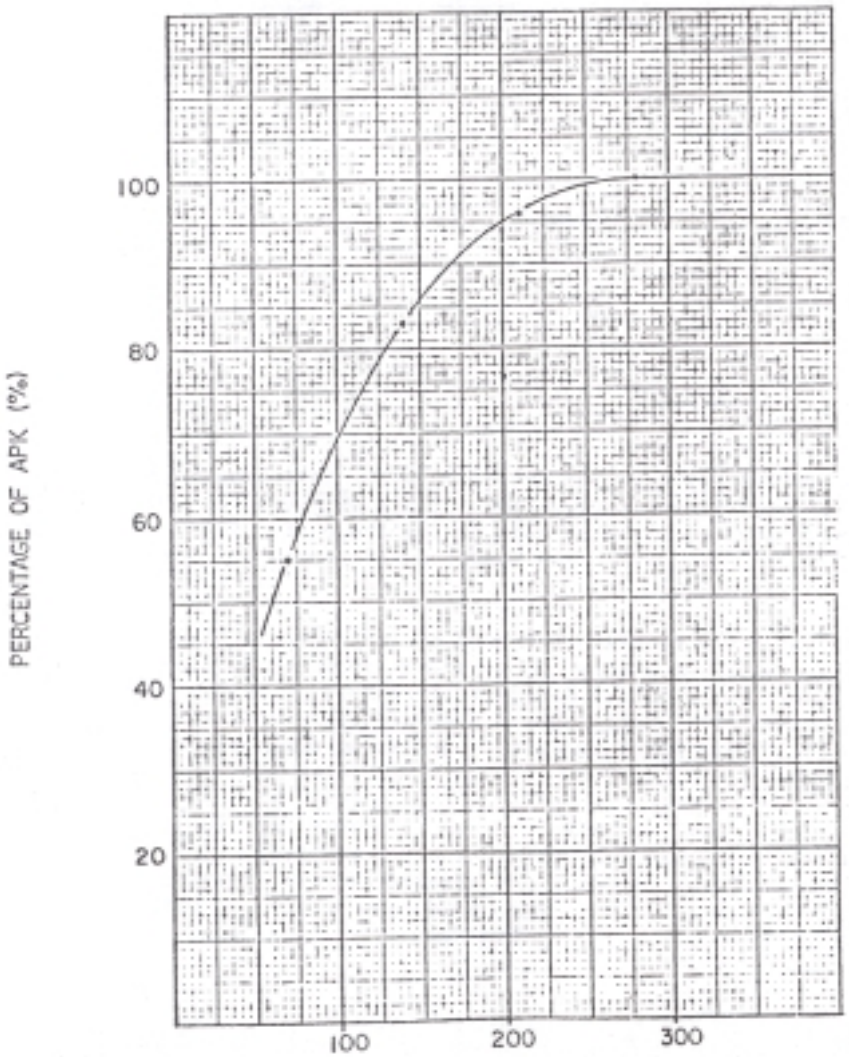


Figure 6

WASHINGTON DEPARTMENT OF FISHERIES

PREFERRED DISCHARGE

South Prairie Creek; WRIA 10

TOE WIDTH: 54 ft.
at approx. R.M. 1.3; 11/15/79

PREFERRED SPAWNING DISCHARGE: 190 CFS
(Fall Chinook & Chum)

UNIT SPAWNABLE AREA: APK = 40 sq ft/ft

PREFERRED REARING DISCHARGE: 45 CFS
(TOE WIDTH METHOD; USGS OPEN-FILE REPORT NO. 77-422)

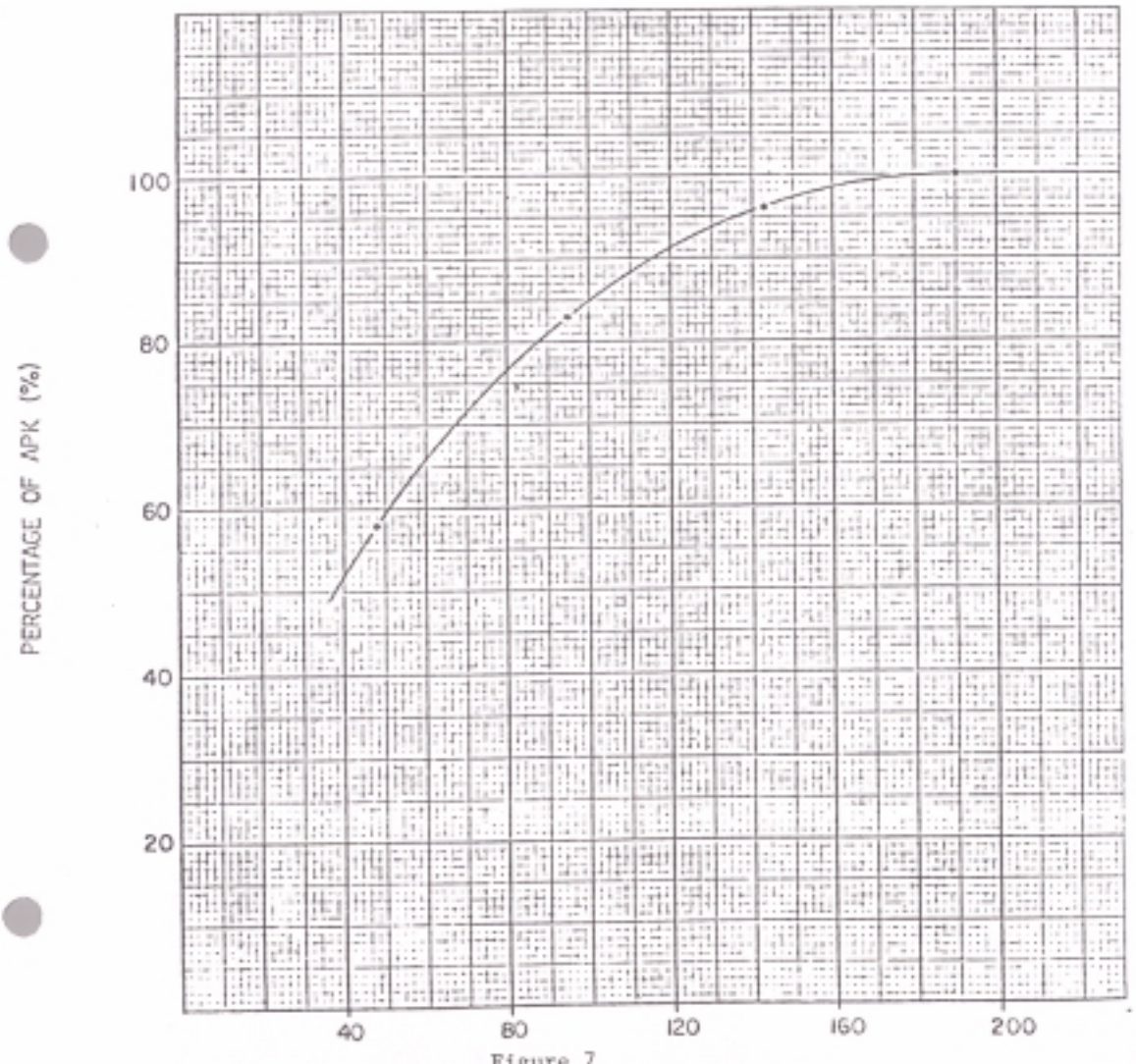
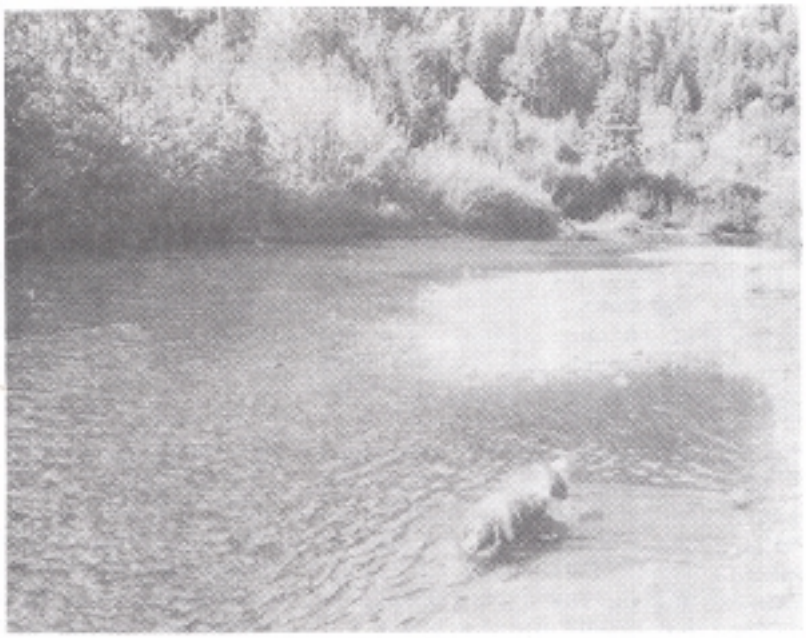
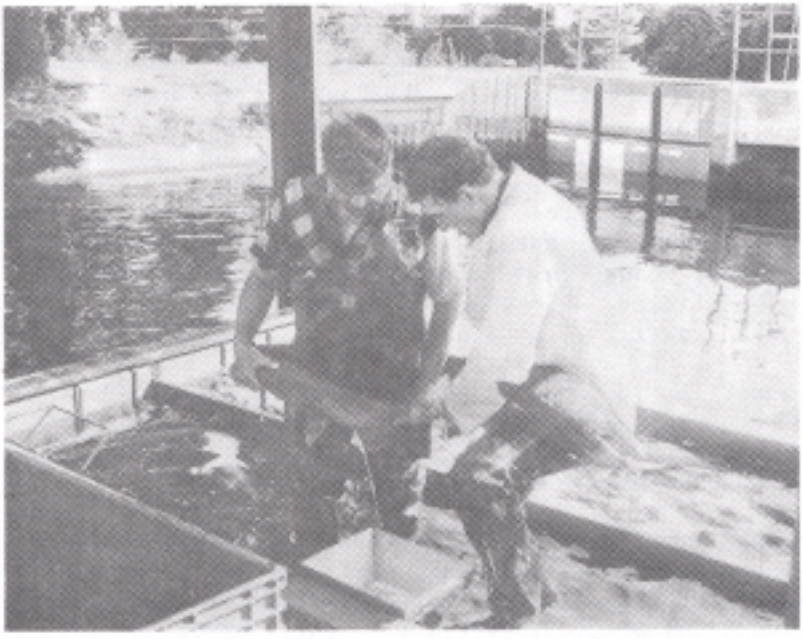


Figure 7

Figure 8



South Prairie Cr. Typical salmon spawning area.



Dept of Fisheries personnel at the Voights Cr. Hatchery

Physical barriers, both man-made and natural, pose a serious problem to anadromous fish movement within the Puyallup Basin. The Electron power canal diversion located at river mile 41.8 dewaters approximately 10 miles of potential passage, rearing and spawning area. (1) (8) (13)

The White River, although at one time an important salmon and steelhead producing river, has been adversely impacted by the development of hydroelectric, logging, and flood control projects. (11) (13) (14)

Beginning with the lower river from the mouth near Sumner up to the Dierenger powerhouse, the White River is presently important for transportation, spawning, and rearing of chinook, chum, and pink salmon. Steelhead are also present in this reach. The upstream migrants are transported around Mud Mountain Dam at the Buckley diversion and released near Greenwater to continue their migration upstream.

Although the flood control aspects of the operations of Mud Mt. Dam is very beneficial to the people of the lower valley and is even beneficial to the instream resources during flood periods, salmon productivity is adversely affected by the release of water carrying high silt and debris concentrations. The existing artificial minimum flow of 30 cfs presently sustained during low flow periods between Buckley and Dieringer is inadequate and not based on the minimum preservation needs of the salmon species within the White River (5)(8)(11)(12)(13). According to the Department of Fisheries, desirable preservation flows needed for passage and rearing of salmon are those natural flows represented within the White River. Fisheries has concluded that a minimum flow of 435 cfs must be maintained within the lower White River to insure the viability of salmon species. Other factors adversely affecting the salmon resources of the White River may include gravel mining on the lower river and withholding of water for hydroelectric "peak" power production operations at Dieringer. *C*omplete shutoff of water from Mud Mt. Dam adversely effects both the fishery resources and the generation of hydroelectric energy.

Above the Mud Mountain Dam, the White River continues to play an important part in salmon passage, rearing, and spawning. Such tributaries as the Clearwater River, West Fork of the White River, Greenwater River, and Huckleberry Creek produce both salmon and steelhead.

Major limiting factors within this reach are both man-caused and natural. Due to the glacial nature of this sector the White River experiences heavy silt loads, cold water temperatures, low summer flows, and at times, heavy turbidity. Man-caused limiting factors include improperly constructed logging roads and in some cases poor logging practices. (12)

In addition, it is noted that during the low flow periods, more water has been claimed for out-of-stream consumptive use than is normally available in the White River. (2,000 cfs allocated vs. 825 cfs minimum flow available August 1978).

Although it is recognized that no existing water rights or certificates can be affected by the WWIRP, it is necessary to reserve the remaining unallocated waters of the White River in order to insure the preservation and survival of the instream attributes of salmon and steelhead. It should be noted that this population of spring chinook are the last wild population in existence in the South Puget Sound Basin. (13)

Washington Department of Fisheries desired flows for the Carbon River, and South Prairie Creek are depicted on figures 6 and 7.

Another tributary of the Puyallup River possessing significant instream fish and wildlife resources is South Prairie Creek located a few miles east of Orting. South Prairie Creek is somewhat unique within the Puyallup Basin in that this stream is not influenced by glacial snowmelt activity. This stream still contains good stream side cover, excellent spawning gravels, and adequate water quality. On the negative side, natural low summer flows reduce available rearing habitat within the stream. In spite of this problem, South Prairie Creek is known to produce approximately 80 percent of the pink salmon within the Puyallup River Basin. In addition to pinks, chum, chinook, and coho salmon utilize South Prairie Creek. Steelhead trout are also present in good numbers in this tributary.

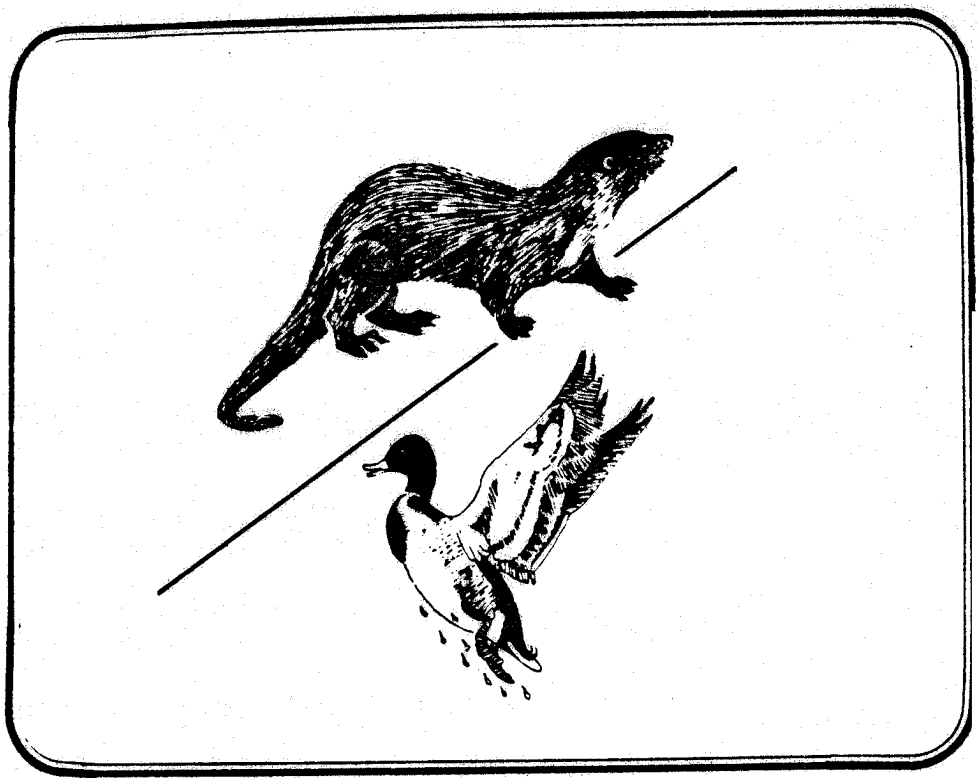
Out-of-stream use includes domestic water supply for Buckley, irrigation, and individual domestic consumption. South Prairie Creek is the site of an ecological study being conducted by the Evergreen State College to quantify the instream needs of wildlife with respect to minimum preservation flow needs.

Because South Prairie Creek is considered to be of such outstanding importance to the production of salmon and steelhead, this stream is proposed for closure to future water appropriations.

Kapowsin Creek and its tributaries, including Kapowsin Lake and Ohop Creek, represent another key water resource for the instream resources of salmon and wildlife. Pink, coho, chinook, and chum salmon utilize Kapowsin Creek. Kapowsin Lake, in addition to its recreational use, provides an important flow source for Kapowsin Creek that becomes highly important during low flow periods. Natural summer low flow conditions within Kapowsin Creek may become serious limiting factors in the continued productivity of this tributary. In order to provide a measure of future instream flow protection, the department proposes to close the Kapowsin system to future out-of-stream consumption.

Clarks Creek, located within the city limits of Puyallup, and nearby agricultural lands, has been heavily appropriated for out-of-stream consumptive use including farm irrigation, municipal water supply (Maplewood Springs), and domestic use. Water allocations presently exceed the normal minimum low flows. (15 cfs) Clarks Creek still manages to produce coho and chum salmon and steelhead trout. In order to insure some measure of future protection and allow local fishery enhancement projects to progress, the department proposes to close Clarks Creek to future water appropriations.

Other Puyallup River tributaries proposed for closure include the Le Dout Creek, Niesson Creek, Swan Creek, and Clear Creek. (Refer to Appendix C for complete listing)



WILDLIFE

While wildlife values within the Puyallup Basin remain a somewhat unquantified factor, it is generally agreed that this region possesses many important resources. Wildlife is defined for the purpose of this program as both vertebrate and invertebrate species that may be indigenous or migrate into the basin during various times of the year. Species of high interest to the Department of Game include steelhead trout, searun trout and other game fish. Waterfowl and furbearing mammals are also of importance. Although exact wildlife population data are not available, it is known that wildlife habitat within the Puyallup River Basin is rapidly being lost due to changes in land use from rural-agricultural to urban or industrial.

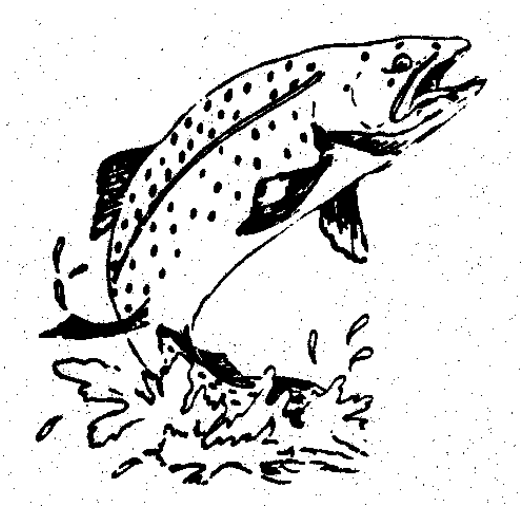
Areas of special interest with the I.R.P.P. are the maintenance of minimum flow levels to insure the survival of steelhead trout and other game fish. Retention of spawning, rearing, and passage flow is critical in some streams within the basin. Low flows caused by the hydroelectric projects may be the limiting factor within the Puyallup River and the White River. Other factors adversely affecting steelhead survival are siltation caused by the periodic flushing of the Mud Mountain Dam near Buckley on the White River. The Puyallup River is one of the most productive steelhead streams in Washington State and ranked fifth in numbers of fish caught in 1978. (8)

The marine waters of Commencement Bay offer an important habitat for marine fish and anadromous fish. Shellfish populations have been dramatically depleted within the bay due to industrial development and pollution problems. The marine waters of Commencement Bay are in turn affected by the flushing activities of the fresh waters of the Puyallup River. This fresh water action is important in helping to maintain a proper balance with respect to dissolved oxygen. (12) (1) The 250 ± lakes, marshes, and reservoirs contained within the Puyallup Basin, totalling over 6,170 surface acres, provide the aquatic habitat for game fish, waterfowl, shorebirds, and furbearing animals. Many of these lakes provide an important stopover place for migrating waterfowl.

Resident cutthroat, rainbow, Dolley Varden, and brook trout are found in many of the higher tributary streams where barriers prevent migrations of salmon and steelhead. Several important fish hatcheries are located in the basin, including the Voight Creek and Clarks Creek hatcheries. Future trends in wildlife populations will undoubtedly be downward as urbanization continues to make serious inroads on wildlife habitat. These factors make the Instream Resource Program all the more important in insuring the protection of minimum flows for fish and wildlife survival.

Nongame species observed within the Puyallup Basin include nesting bald eagles at Pt. Defiance and near the Carbon River. The Carbon River eagles have recently been observed between Voights Creek and the mouth of South Prairie Creek. (3) Wintering eagle sightings have shown a downward trend. Wintering bald eagles are highly dependent on the wild stocks of salmon and their frequency in the basin can be expected to drop as wild salmon populations drop. Several osprey nests have recently been observed in the vicinity of Lake Tapps. Nonconsumptive use of our wildlife resources is expected to increase in importance as a recreational past time. A number of other animal and plant species of special concern occur in the Puyallup Basin. (8) (15)

Key wildlife water resource areas identified by the Department of Game include the Carbon River, South Prairie Creek, Wilkeson Creek, White River, and Kapowsin Creek. Additional streams of importance to the Puyallup Indian Tribe include Swan Creek, Hylebos Creek, Clear Creek, and Clarks Creek.



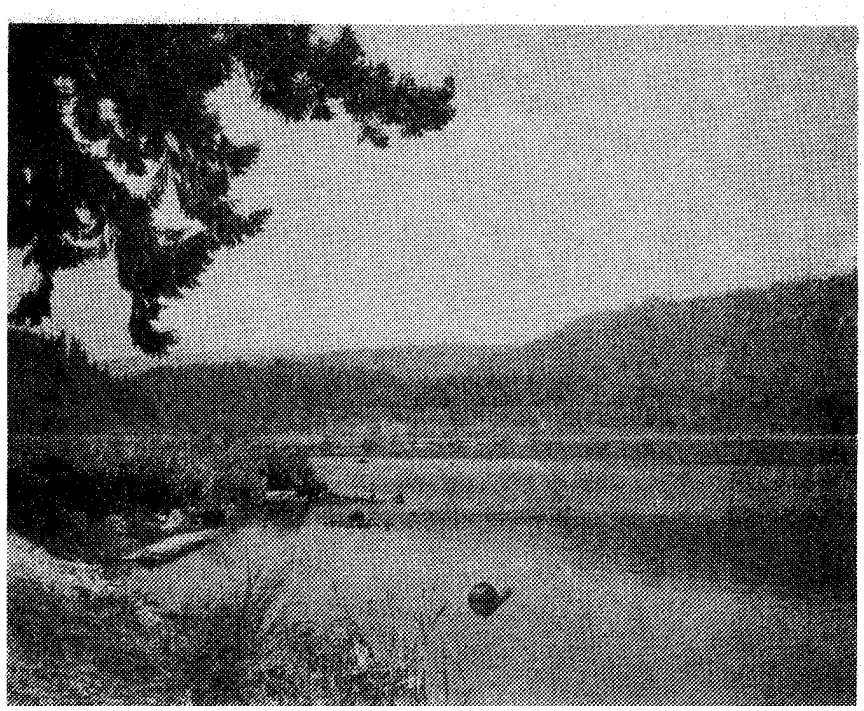
Recreation

Recreational features within the Puyallup River Basin are dominated by the waters and shorelines and the forests and mountains. Mt. Rainier National Park is known nationwide as a popular recreational and sightseeing area. Outdoor recreational opportunities are considered to be one of the major attractions in the region. An important form of recreation is winter sports with downhill skiing, sledding, and cross-country skiing all being popular. The Crystal Mountain ski area is located within the basin in the headwaters of the White River. (16)

Water-related outdoor recreation plays an important part in the total recreational field. Approximately 23,600 acres of salt water and 67,000 acres of lakes and rivers are available for fishing, swimming, and white water boating. About 85 miles of river are considered suitable for boating. Kayakers and canoeists use the Puyallup River from Electron to Orting for white water boating. (5)

The proximity of this outstanding recreational resource to major population centers of Seattle and Tacoma enhances the importance of the basin at a time of national fuel shortages. (8)

Outdoor recreational pressures can be expected to increase proportionately with the forecasted increase in human population. This may be tempered by the fuel shortage situation in some areas of recreation. In the area of water-related recreation, fishing is expected to increase to over three million recreational activity days by the year 2020. Boating may reach seven million recreational days. (1) Total water-related recreational days is expected to reach 18,000,000 by 2020. Future recreational problems may be experienced in the areas of water quality in the lower Puyallup River and within Commencement Bay. Water safety continues to be a problem on the lower White River during periods of heavy water releases from the Mud Mountain Dam, and there have been two fatalities in this area in recent years. (5)



Kapowsin Lake Pierce Co. Wa. 1980

Scenic and Aesthetic

The aesthetic qualities of this region, with the exception of the industrialized areas of Commencement Bay, are outstanding. Visual qualities are unsurpassed with the constant vista of Mt. Rainier on the eastern skyline. Numerous natural or wild and scenic areas still survive in Mt. Rainier Park where visitors can view nature in its unspoiled pristine condition. Contrastingly, there are vast areas of clear-cut timber lands that offer little to the recreationalist in the way of aesthetic experiences. However, these same lands are heavily used for big game hunting by Washington sportsmen during the deer and elk seasons. Upper tributary streams, rivers, and lakes within Mt. Rainier National Park offer the highest quality of aesthetic experiences.

Navigation

Deep water navigation within the Puyallup River Basin is confined to the waters of Commencement Bay, East Passage, Poverty Bay, and Delco Passage. This area takes in many miles of shoreline, but only Commencement Bay is considered suitable for harbor development. Commencement Bay is considered to be one of the West Coast's finest deep water ports. Small pleasure boats (canoes and kayaks) operate on much of the Puyallup River And its tributaries. Several important recreational boat marinas ar6 located along both flanks of Commencement Bay. (1)

Tacoma Harbor is located within Commencement Bay and has ample depth for most oceangoing vessels to operate. The Port of Tacoma is considered a highly important center for waterborne commerce. Recent trends indicate an emphasis on general cargo, forest products, and dry bulk, with forest products dominating the foreign export market.

Terminal and transfer facilities are considered to be adequate. Numerous small boat moorages are located in this area as well. Future navigation needs are estimated to require facilities to handle deep draft vessels. Land requirements call for 4,950 acres of port area by the year 2020. Waterborne commerce is expected to reach 22,200 short tons in the next 40 years.

Channel improvement projects are planned for the Hylebos Waterway, Sitcum Waterway, and the Port Industrial Waterway. The harbor area is subject to continuous dredging operations. Limiting factors for future navigational development includes limited land resources and critical marine-estuary environmental considerations. Water quality constraints may also be an influencing factor in this area. (1)

VI. OTHER WATER USES AND RELATED ASPECTS

Municipal and Industrial

Most of the water needed for municipal and industrial uses within the Puyallup River Basin is obtained from either surface waters of the Green River or from wells within the basin. (7) Although the City of Tacoma will continue to rely on surface water resources, increased pressure on the ground water supplies can be expected to increase as more wells are drilled to support and back up both municipal and industrial supplies. The City of Puyallup relies primarily upon Salmon and Maplewood Springs for its municipal water supplies. (6) In order to meet future water needs, the City of Puyallup may be required to purchase water from the City of Tacoma's surface water resources on the Green River.

Diversions

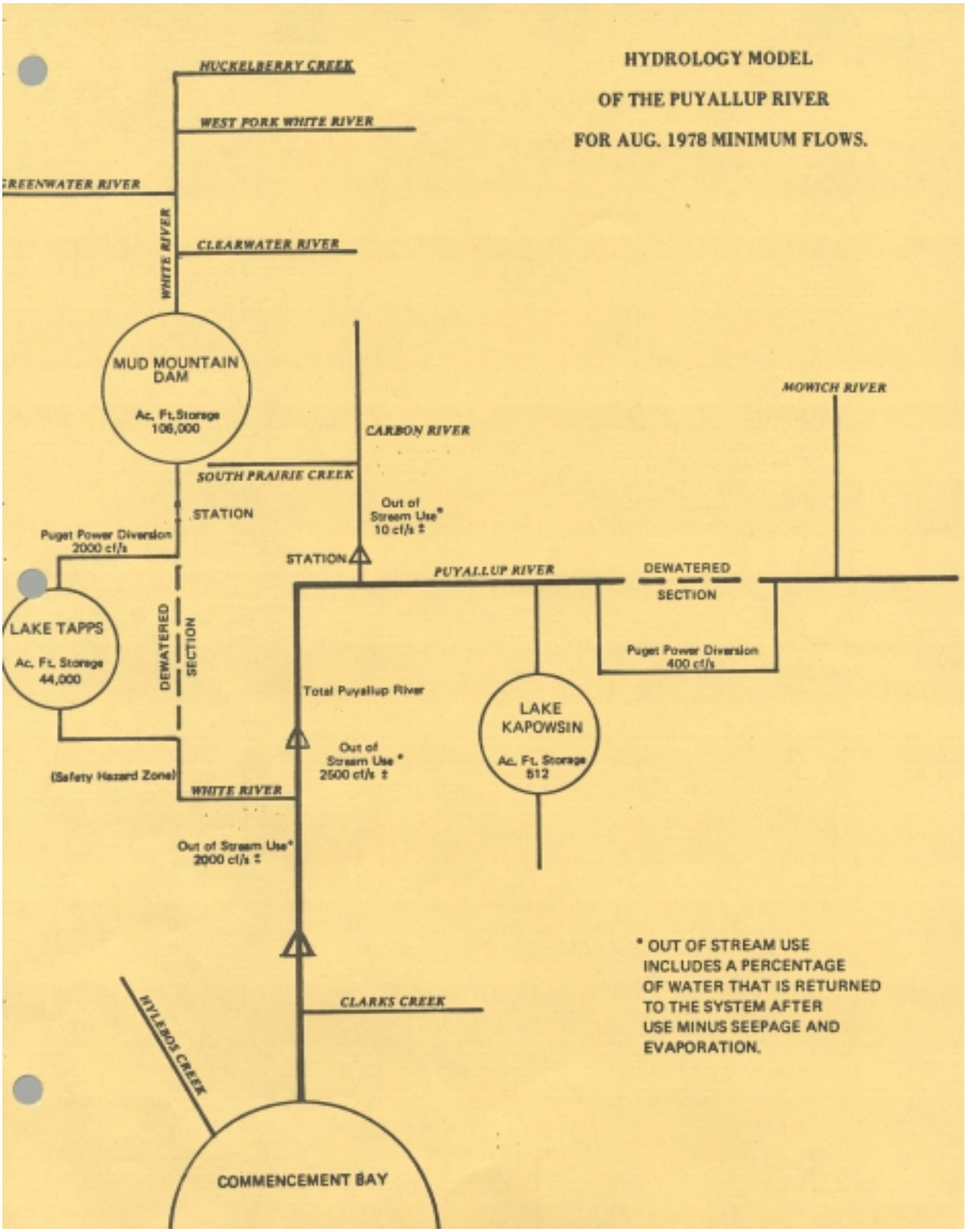
Puget Sound Power and Light Company can divert as much as 2,000 cfs from the White River about one mile east of Buckley for its hydroelectric plant at Dieringer. (1) This diversion creates a partially dewatered section of about 20 miles. Although inadequate for instream resource protection, a flow of 30 cfs must be maintained at the Dieringer outlet. Both the Department of Fisheries and Department of Game believe additional flows must be maintained within the White River to insure the preservation of the spring chinook salmon. Alternatives to the present operations include the potential in the future of reserving water in new or existing storage for timely release for salmon and steelhead passage, spawning, and rearing.

A second hydroelectric facility is located on the Puyallup River at Electron. About 400 cfs are diverted 11 miles upstream from Electron. This figure varies according to the energy needs of the area served by Puget Power. Again, this diversion has been the source of much concern over the reduced passage of salmon and steelhead beyond the dewatered section of the Puyallup River (1).

Hydroelectric Projects

The Electron hydroelectric project is located on the Puyallup River near Kapowsin, Pierce County, 23 miles southeast of Tacoma. The diversion dam is 14 river miles upstream from the powerhouse. The diversion dam, flume, and powerhouse with four 6,000 kw generating units were placed in operation on April 14, 1904. A new timber apron and concrete pier anchorage were added to the diversion dam in 1910. One of the original units was destroyed by lightning in June 1928 and was replaced with a 7,500 kw machine in April 1929. In November 1936, all of the generators were put out of service by a slide. Two units were put back in service in July 1938 and the entire station was returned to operation in December 1941. The diversion dam creates a reservoir having a capacity of 120 acre-feet of water. The diversion is at an elevation of about 1,620 feet above sea level and a 10.1-mile long flume follows the left bank of Puyallup River to the forebay. The forebay at the downstream end of the flume supplies water to four horizontal wood stave penstocks which change to steel at the brow of the hill and supply water to the main generating units. A smaller penstock supplies water for two exciter units. The turbines are of the twin impulse type, three developing 7,500 horsepower and one developing 10,000 horsepower. Three generators are 6,000 kw each and the fourth is 7,500 kw, giving a total plant installation of 25,500 kw.

(1) The White River hydroelectric project is on White River two miles north of Sumner, and six miles south of Auburn. The White River above the project drains the northeast slopes of Mount Rainier. The plant was completed originally in 1911, but its capacity was increased by rewinding in 1917. Additional units were installed in 1918 and 1924, and the capacities of these latter units were increased by rewinding in 1952 and 1956, resulting in a total installed capacity of 70,000 kw. A low timber diversion dam near Buckley diverts the water into a series of flumes and canals 14 miles long to Lake Tapps Reservoir. Four Francis type horizontal shaft turbines, two rated at 18,000 horsepower and two at 23,000 horsepower at the design head of 440 feet, are connected by horizontal shafts to the generators. (1) To insure that the important fishery resources of White River are not unduly impaired, the migrant fish are trapped and carried to Mud Mountain Dam, and small fish are guided past Lake Tapps Reservoir by means of a fish screen and bypass pipe. Lake Tapps Reservoir originally consisted of Lake Tapps, Lake Kirtley, Lake Crawford, and Church Lake. A series of dams with a total length of 2.5 miles raise the water 35 feet above the original elevation into one large lake, with a surface area of 2,566 acres and a capacity of 46,655 acre-feet. (1)(9)(17)


HYDROLOGY MODEL
OF THE PUYALLUP RIVER
FOR AUG. 1978 MINIMUM FLOWS.
HUCKELBERRY CREEK
WEST FORK WHITE RIVER
GREENWATER RIVER
WHITE RIVER
CLEARWATER RIVER
MUD MOUNTAIN DAM
Ac. Ft. Storage 106,000
CARBON RIVER
SOUTH PRAIRIE CREEK
MOWICH RIVER
STATION
Out of Stream Use* 10 cf/s ±
Puget Power Diversion 2000 cf/s
STATION
PUYALLUP RIVER
DEWATERED SECTION
LAKE TAPPS
Ac. Ft. Storage 44,000
DEWATERED SECTION
Puget Power Diversion 400 cf/s
Total Puyallup River
LAKE KAPOWSIN
Ac. Ft. Storage 512
Out of Stream Use * 2500 cf/s ±
(Safety Hazard Zone)
WHITE RIVER
Out of Stream Use* 2000 cf/s ±
CLARKS CREEK
HYLEBOS CREEK
COMMENCEMENT BAY
* OUT OF STREAM USE INCLUDES A PERCENTAGE OF WATER THAT IS RETURNED TO THE SYSTEM AFTER USE MINUS SEEPAGE AND EVAPORATION.

Irrigation

It is estimated that approximately 8,700 acre-feet of water are diverted from the Puyallup and White rivers for irrigation purposes. This figure will probably decrease as urbanization encroaches on the agricultural lands of the lower valleys. The highly productive agricultural lands of the Puyallup River Valley are in need of preservation according to the Soil Conservation Service. (18)

Flood Protective Works

Levees - Extensive levees have been constructed through the joint efforts of the City of Tacoma, the Inter-County Improvement Commission, the Washington State Department of Highways, and the federal government. The levees are below the town of Puyallup and from Sumner to Orting on the Puyallup River and along the White and Carbon rivers.

Channel Improvements - Prior to 1906, moderate flows on the White River overflowed into the Stuck River near Auburn. In 1906, a high-velocity over-bank flow on the White River permanently diverted the White into the Stuck and Puyallup rivers. As a result of these channel changes, King and Pierce counties formed an Inter-County Improvement District for the purpose of improving the new channels to carry increased flows. The improvement district made extensive channel improvements and placed revetments along both banks of the White and Puyallup rivers from the vicinity of Auburn downstream to the Tacoma city limits. (1)

A Corps of Engineers project, completed in 1950, improved the lower Puyallup River channel through Tacoma. The project increased the channel capacity to 45,000 cfs and included channel straightening, levees, revetments, and bridge alterations. The lower 3,800-foot-reach is the Puyallup Waterway. (1)

Bank Protection - The Corps of Engineers constructed extensive bank protective works along several reaches of the Puyallup River above Sumner and on the Carbon River and South Prairie Creek in 1936. Much of the original work is no longer effective; however, Pierce County has replaced some of these works in reaches where bank erosion was critical. The county also has provided channel rectification and bank stabilization works along the Carbon and Upper Puyallup rivers. These works appear to be effectively preventing bank erosion, but do not prevent inundation along the upper Puyallup during major floods.

Flood Control Storage - Mud Mountain Dam, a Corps of Engineers project on the White River, is approximately seven road miles upstream from Enumclaw. Operation of the project began in 1943. The reservoir has a storage capacity of 106,000 acre-feet to the crest of an uncontrolled spillway and is operated exclusively for flood control. No conservation pool is maintained for low flow augmentation. The project regulates floodflows to within safe channel capacities on the White River downstream from the dam and on the lower Puyallup below Sumner.

Flood Problems

Puyallup River - Flooding is confined largely to the upper floodplain, where steep mountain slopes suddenly level off to a relatively flat gradient. Major flooding occurs along the 5-mile

reach of the Puyallup upstream from its confluence with the Carbon River. In the lower 4-mile reach of the Carbon River, Orting and vicinity experience minor flooding. Sand and gravel deposited by both rivers reduce the channel capacity of the Puyallup and contribute to overbank flows. Continuous maintenance is required to retain the minimum channel capacity of the Puyallup in this reach. Present channel capacities are estimated to be 5,000 cfs for the Puyallup and 6,000 cfs for the Carbon River.

Tributary Streams - Small watersheds inundated by high flows on the Puyallup River are discussed in the following paragraphs:

Clear Creek and Clarks Creek enter the Puyallup River from the south at approximately river miles 3 and 6, respectively. High water in the river prevents normal drainage and the resulting backwater covers lowlying lands in the floodplain. Alderton Creek enters the Puyallup two miles south of Sumner at approximately river mile 13, and is similarly blocked by high water in the river. As a result of poor drainage, flooding also occurs along Lawrence Creek southeast of Orting and Fennel and Riverside creeks southeast of Sumner. These creeks overflow their banks almost annually, damaging crops, farm buildings, roads, bridges, and other improvements. (1)

White River - Several small tributaries of the White River overflow their banks each year because of inadequate channels, particularly in the populated areas along Salmon Creek near Sumner and the Pacific-Algona region west of Auburn. (1)

Carbon River - There is little cultivated land along the Carbon River or its principal tributary, Voight Creek. The land that is cultivated is near or a short distance upstream from Orting. High flows on Voight and Copler creeks have caused considerable damage in the Carbon River floodplain. In 1965, extensive damage was sustained by the Puyallup River Fish Hatchery and agricultural land upstream from the hatchery. (1)

South Prairie Creek - Above the junction of South Prairie Creek and the Carbon River, cultivated farm land borders the creek for about four miles in the vicinity of the village of South Prairie. The creek and its principal tributary, Wilkeson Creek, have a history of high velocity flows and severe erosion. After extensive damage in 1965, the Corps of Engineers placed riprap along the creek's banks to protect farm land. (1)

The floodplain downstream from Auburn on the White River and Sumner on the Puyallup River is protected from floods with a recurrence interval of 200 years or greater by upstream storage at Mud Mountain Dam and by levees and channelization. Above Sumner, the 10,500-acre floodplain contains numerous homes in Sumner and Orting and cultivated farm land. Levees provide protection against flood flows, with a recurrence interval of approximately 10 years below Orting, but Orting and vicinity are flooded frequently. Average annual flood damages are estimated to be $100,000 based on 1966 prices and conditions. (1)

Studies indicate that future flood damages may be expected to increase in proportion to the increase in economic activity in the floodplain if additional protection is not provided. The trend of development within the basin would result in future growth of flood damages approximating 3-3/4 percent compounded annually without flood control and will result in future growth of annual damages to $151,000 in 1980, $301,000 in 2000, and $602,000 in 2020. (1)

VII. PRESENT ADMINISTRATIVE STATUS

The adoption of this program will result in instream flows being established on selected springs, streams, creeks, and rivers within the Puyallup River Basin under the authority of Chapter 90.54 RCW and Chapter 90.22 RCW. In addition, Boise Creek, Fennel Creek, Hylebos Creek, Lawrence Creek, Voights Creek, and the White River would be closed to further water appropriations. North Lake has a minimum lake level established in 1947. (10) See Table 3.

Ground water remains open to appropriation on a case-by-case basis and is contingent on not impairing existing related surface water or ground water resources. This is tempered by the fact that some ground water resources are unfit for human consumption due to high mineral content. (2)

Existing restrictions are enforced only on a "complaint" basis. Periodic stream measurements are taken during low flow periods and voluntary compliance is requested when necessary. (5)

VIII. PROPOSED ADMINISTRATIVE STATUS

The department proposes to close the White River and all tributaries to future out-of-stream consumptive water appropriations. Other closures include South Prairie Creek, Kapowsin Creek, Kapowsin Lake, Clarks Creek, Ohop Creek, Clear Creek, Canyon Falls Creek, Fiske Creek, Hylebos Creek, LeDout Creek, Swan Creek, Nesson Creek, Wapato Creek, Strawberry Creek, and Kellog Creek. These stream closures are necessary, due to existing heavy out-of-stream use and/or importance to fish and wildlife attributes and maintenance of water quality. (See Appendix C.

The Department of Ecology concludes that a network of three control stations will provide adequate managerial control over future diversions from the remaining open surface water sources in the basin. The Department of Ecology has in the past set restrictions on some surface waters.

Proposed Stream Control Network (DOE)
WRIA No. 10 (Puyallup)

Control Station	Stream Management Reach	Gage No.	River Mile
A. Carbon River	Confluence with Puyallup to headwaters including all tributaries	12.0957.00	0.1
B. Upper Puyallup River	From confluence with White River to headwaters including all tributaries, excluding the Carbon River	12.0965.00	12.2
C. Lower Puyallup River	From influence of mean annual high tide at low base flow levels to confluence with White River including all tributaries and excluding the White River.	12.1015.00	6.6

IX. ALTERNATIVES

Alternatives considered in the management of the instream resources and the maintenance of minimum flows included the following.

a. No action. Maintain present administrative status. This course of action would leave all water resources not protected by existing low flows or closures open to unconditioned appropriation and as a result would riot provide protection for the instream resources in the long-term.

Out-of-stream consumptive uses would benefit by this course of action in that the as yet unappropriated waters could be used for irrigation, and power. Growth of heavy water-consuming industries would also be encouraged.

The use of ground water resources would continue as at present.

The surface water resources of Kapowsin Lake could be appropriated for industrial or municipal use.

Minimal enforcement would continue to be the rule and no additional enforcement efforts would be required of the Department of Ecology.

Flood control would continue as at present.

No existing water rights would be affected.

b. Partial closure of key instream resource areas:

Closure of the White River, South Prairie, Kapowsin Creek, Ohop Creek, and Kapowsin Lake. This course of action would provide additional instream resource protection above the present program by insuring minimum survival flows in key instream resource streams over the long-term.

Consumptive use would be curtailed requiring a heavier reliance on existing ground water resources. This could pose a problem in the Buckley and Ohop regions where ground water quality problems presently exist. Future hydroelectric projects would be limited if these projects required water to be diverted from the stream channel in order to gain adequate head for power generation. Future run of the river projects would not be affected.

Ground water utilization regulations would continue as at present; however, it is believed that there are adequate ground water resources to support future growth forecasts.

Department of Ecology regional personnel would be expected to step up enforcement measures and stream measurement during low flow periods.

No existing water rights would be affected.

Three stream gage stations would be utilized.

c. Total closure of all unappropriated water: All streams and lakes would be closed to further water appropriations. This course of action would provide the greatest measure of protection to the instream resources in the long-term.

   Out-of-stream consumptive use of otherwise available water would no longer be permitted in any of the basin's streams.

   A high dependence would be placed on ground water use.

   Existing out-of-stream uses would not be affected.

   No existing water rights would be affected.

d. Develop a Puyallup River Basin Plan. This option involves a more comprehensive water resources allocation program than exists with the Instream Resources Protection Program. The Basin Plan would involve making an estimate of all water required for instream and out-of-stream use and reserving water for those purposes.

The primary disadvantage of this last alternative is that it would take up to two years to complete a basin program and cause an additional delay in establishing the required instream resources protection for the Puyallup basin and the 24 other western Washington basins covered by the overall program.

A significant advantage of the basin program is that specific water allocation problems, such as the excessive diversions on the White River and the Puyallup, would be addressed. In addition, the adverse impacts of the operations of Mud Mountain Dam would be investigated. Mitigating measures might undoubtedly be devised and hopefully implemented before further damage to the instream resources occur.

ACKNOWLEDGMENTS

Primary credit for the development of the Puyallup River Basin Instream Resources Protection Program is given to the efforts of the multidisciplinary planning team members. Principal planning team members included Ray Johnson (Department of Fisheries), Hal Beecher (Department of Game). Nancy Nelson represented the U.S. Fish and Wildlife Service. Carla Hansmann and Steven Herman, Audubon Society, provided valuable information on bird species and habitat requirements. Gene Wallace, Pete Grimstad, Kris Kauffman, and Ken Slattery, from the Department of Ecology, provided technical advice and editing. Valuable advice and support was given by Vic Shaver and Walt Bergstrum from the DOE S.W. Regional Office. Both the Puyallup Tribe of Indians and the Muckleshoot Tribe contributed significant time and effort in stream survey and field work. Substantial biological documentation was provided by both tribes. Recognition is also given to all the other private, county, state, and federal representatives who gave their time and support in the preparation of the Puyallup River Basin I.R.P.P.

APPENDIX A

Stream Management Reach Information

A. Carbon River

The Carbon River is a major tributary to the Puyallup River. It heads in the Carbon Glacier on the north side of Mt. Rainier and flows northwest to empty into the Puyallup River. South Prairie Creek is the major tributary to this river, draining areas of lower elevation to the north of the main stem. The Carbon River has a drainage area of 230 square miles and has a calculated mean annual flow of 833 cfs. No gage exists on the lower Carbon River. Data from gages on South Prairie Creek and upstream on the Carbon River is used to determine the flow at the control station at the rivers mouth.

B. Puyallup River

The main stem of the Puyallup River heads in the southwestern portion of this basin in the glaciers of Mount Rainier. It travels from rugged mountainous terrain to lowlying floodplains and empties into Puget Sound. The Carbon River enters at R.M. 17.9. The White River, its principal tributary, enters at R.M. 10.4 The control station is at Alderton (R.M. 12.2) where the Puyallup drains 438 square miles and has a mean annual flow of 1614 cfs. The maximum discharge of record is 23,300 cfs on December 12, 1955; the minimum discharge is 150 cfs recorded on November 29 and December 1, 1952. Periods of record are 1914-1917 and 1943-1957.

Below this station, the river is channelized and provides mainly transportation to migratory fish. The station is above the confluence of the White River (Stuck) with the Puyallup. The lower reach of the Puyallup will be controlled by the proposed station. (Some spawning and rearing of salmonid species also occurs in the lower Puyallup River according to the WDF.

Puget Sound Power and Light has a diversion dam for power generation at R.M. 41.7 near Electron on the Puyallup. The dam blocks upstream migration of fish and has been in operation since 1904. The capacity for diversion is 400 cfs into flumes which carry the flow 10 miles downstream to the powerhouse. The annual average flow above the diversion is 531 cfs.

C. White River

The White River is located along the Pierce-King County borders. It joins the Puyallup River near Sumner, Washington. Prior to 1906 the White River flowed through the Green River Valley and joined the Black River to form the Duwamish River. In 1906 the White River changed course during a flood to flow into the Stuck River. Construction of a dam at Auburn made this changed course permanent. The maximum discharge recorded is 15,000 cfs on December 12, 1955 and the minimum is 28 cfs on November 1, 1958. The period of record is from January 1945 to June 1977.

At R.M. 23.4, Puget Sound Power and Light Company has a diversion dam. This dam diverts flow from the White to Lake Tapps via a series of flumes, canals and settling basins. The water is then channeled to Dieringer for use in a hydroelectric plant. The outfall from the diversion is at R.M. 34. Approximately 21 miles of the White River is substantially "dewatered." The Puget Sound Power and Light water claim is for 20,00 cfs at a point on the river where the annual average flow is 144.7 cfs. An average of 1000 to 1200 cfs is diverted. Puget Sound Power and Light is required by court order to pass 30 cfs at all times. Some of the variability in the flows in this reach is dye to the inability of the powerplant to utilize very silty waters. These waters are bypassed down the channel. A lawsuit currently on the docket of the federal ninth circuit court to determine whether the Federal Energy Regulatory Commission has licensing authority over the White River project.

Appendix C Chapter 173-510 WAC

Chapter 173-510 WAC
Instream Resources Protection Program--Puyallup River Basin,
Water Resource Inventory Area (WRIA) 10

NEW SECTION

WAC 173-510-010. GENERAL PROVISION. These rules apply to waters within the Puyallup River Basin, WRIA 10, as defined in WAC 173-500-040. This chapter is promulgated pursuant to chapter 90.54 RCW (Water Resources Act of 1971), chapter 90.22 RCW (Minimum Water Flows and Levels), and in accordance with chapter 173-500 WAC (Water Resources Management Program).

NEW SECTION

WAC 173-510-020. PURPOSE. The purpose of this chapter is to retain perennial rivers, streams, and lakes in the Puyallup River Basin with instream flows and levels necessary to provide protection for wildlife, fish, scenic-aesthetic, environmental values, recreation, navigation, and to preserve high water quality standards.

NEW SECTION

WAC 173-510-030. ESTABLISHMENT OF INSTREAM FLOWS. (1) Stream management units and associated control stations are established as follows:

Stream Management Unit Information

Control Station No. Stream Management Unit Name	Control Station by River Mile and Section, Township, and Range	Affected Stream Reach(es)
12-0965.00 Upper Puyallup River	12.2 25-20-4E	From confluence with White River to the headwaters including all tributaries.
12-0957.00 Carbon River	0.1 13-19-4E	From the confluence with the Puyallup River to the headwaters including all tributaries.
12-1015.00 Lower Puyallup River	6.6 20-20N-R4E	From the influence of mean annual high tide at low instream flow levels to the confluence with the White River including all tributaries and excluding the White River.

(2) Instream flows are established for the stream management units in WAC 173-510-030(1) as follows:

Instream Flows in the Puyallup River Basin
(in cubic feet per second)

Month	Day	12-0965.00 Puyallup River (At Alderton)	12-1015.00 Puyallup River	12-0957.00 Carbon River
Jan	1	700	1400	600
	15	700	1400	550
Feb	1	750	1400	550
	15	800	1500	550
Mar	1	800	1600	550
	15	850	1700	550
Apr	1	900	1800	600
	15	950	1900	700
May	1	950	2000	900
	15	1000	2000	900
Jun	1	1050	2000	600
	15	1050	2000	500
Jul	1	1050	2000	450
	15	1050	1750	400
Aug	1	900	1500	350
	15	800	1300	350
Sep	1	600	1150	350
	15	500	1000	350
Oct	1	500	1000	350
	15	500	1000	550
Nov	1	600	1000	550
	15	700	1100	600
Dec	1	700	1200	700
	15	700	1300	700

(3) Instream flow hydrographs, as represented in the document entitled "Puyallup River Basin Instream Resource Protection Program," shall be used for definition of instream flows on those days not specifically identified in WAC 173-510-030(2).

(4) All consumptive water rights hereafter established shall be expressly subject to instream flows established in WAC 173-510-0300) through (3).

(5) At such time as the department of fisheries and/or department of game and the department of ecology shall agree that additional stream management units should be identified other than those specified in WAC 173-510-030(l), the department of ecology shall identify additional control stations and management units on streams and tributaries within the basin and shall further protect instream flows where possible for those stations as provided in chapters 90.22 RCW and 90.54 RCW.

NEW SECTION

WAC 173-510-040 SURFACE WATER SOURCE LIMITATIONS TO FURTHER CONSUMPTIVE APPROPRIATIONS. (1) The department of ecology, having determined unlimited consumptive appropriations would harmfully impact instream values, adopts instream flows as follows confirming surface water source limitations previously established administratively under the authority of chapter 90.03 RCW and RCW 75.20.050.

Low Flow Limitations

Stream Number Stream Name Section, Township, Range of Stream Mouth or Lake Outlet	Limitation
10.0594 Unnamed stream, tributary to Puyallup River NE¼SE¼, Sec. 8, T.18N, R.5E	No diversion when flow falls to 0.10 cfs.
10.0415 Unnamed stream, (Taylor Creek) tributary of Carbon River NW¼SW¼, Sec. 33, T.19N., R.5E	No diversion when flow falls to 1.0 cfs.
10.0402 Unnamed stream, (Van Ogle Creek) tributary to Puyallup River NW¼SE¼, Sec. 30, T.20N, R.5E	No diversion when discharge into the Puyallup River drops to 1.0 cfs.
Unnamed stream, (Canyon Creek) tributary to Puyallup River SE¼NE¼, Sec. 24, T. 20N, R.3E	No diversion when flow falls to 1.0 cfs.

(2) The following stream and lake closures are adopted confirming surface water source limitations previously established administratively under the authority of chapter 90.03 RCW and RCW 75.20.050.

Existing Surface Water Closures

Stream Number Stream Name Section, Township, Range	Date of Closure	Period of Closure
10.0414 Voight Creek, tributary to Carbon River NW¼SW¼, Sec. 33, T. 19N., R.5E	2/26/75	All year
10.0589 Unnamed stream (Lawrence Creek), tributary to Puyallup River NW¼NE¼, Sec. 25, T.19N, R.4E	2/26/75	All year
Unnamed springs, tributary to Puyallup River SE¼,NE¼, Sec. 35, T.20N, R.4E	12/14/64	All year
10.0006 Hylebos Creek Hylebos Creek, drains into Commencement Bay and Puget Sound NW¼NE¼, Sec. 27, T.21N, R.3E	4/26/76	All year
10.0406 Fennel Creek, tributary to Puyallup River SE¼SE¼, Sec. 6, T.19N, R.SE	2/26/75	All year
North Lake Sec. 15, T.21N, R.4E	8/19/47	All year

(3) The department, having determined that further consumptive appropriations would harmfully impact instream values, closes the following streams and lakes in WRIA 10 to further consumptive appropriations.

New Surface Water Closures

Stream Number Stream or Lake Name Section, Township, Range of Stream Mouth or Lake Outlet	Period of Closure
10.0429 South Prairie Creek and all tributaries, tributary to Carbon River SW¼SE¼, Sec. 27, T.19N, R.5E	All year
10.0027 Clarks Creek and all tributaries, tributary to Puyallup River NE¼NE¼, Sec. 19, T.20N, R.4E	All year
10.0600 Kapowsin Creek and all tributaries, tributary to Puyallup River SW¼SW¼, Sec. 20, T.18N, R.5E	All year
10.0031 -.0397 White River and all tributaries SW¼SE¼, Sec 23, T.20N, R.4E	All year
Kapowsin Lake SE¼NE¼, Sec. 5, T.17N., R.5E	All year
10.0603 -.0607 Ohop Creek and all tributaries sources of Kapowsin Lake SE¼NW¼, Sec. 18, T.17N., R.3E	All year
10.0022 Clear Creek and all tributaries, tributary to Puyallup River NW¼SW¼, Sec. 11, T.20N., R.3E	All year
10.0410 Canyon Falls Creek and all tributaries, tributary to Puyallup River Sec. 7, T.19N., R.5E	All year
10.0596 Fiske Creek and all tributaries, tributary to Puyallup River SW¼SW¼, Sec. 17, T.18N., R.5E	All year
10.0006 Hylebos Creek and all tributaries, tributary to Commencement Bay NW¼NE¼, Sec. 27, T.21N., R.3E	All year
10.0620 Le Dout Creek and all tributaries, tributary to Puyallup River NW¼NW¼, Sec. 28, T.17N., R.6E	All year

New Surface Water Closures (Continued)

Stream Number Stream or Lake Name Section, Township, Range of Stream Mouth or Lake Outlet	Period of Closure
10.0622 Niesson Creek and all tributaries, tributary to Puyallup River NE¼SE¼, Sec. 33, T.17N., R.6E	All year
10.0017 Wapato Creek and all tributaries, tributary to Commencement Bay NW¼SW¼, Sec. 27, T.21N., R.3E	All year
10.0035 Unnamed Stream (Strawberry Creek), (Salmon Creek) and all tributaries, tributary to White River NE¼SE¼, Sec. 13, T.20N., R.4E	All year
10.0621 Kellogg Creek and all tributaries, tributary to Puyallup River SE¼SW¼, Sec. 28, T.17N., R.6E	All year

NEW SECTION

WAC 173-510-050 GROUND WATER. In future permitting actions relating to ground water withdrawals, particularly from shallow aquifers, a determination shall be made as to whether the proposed withdrawal will have a direct, and measurable, impact on stream flows in streams for which closures and instream flows have been adopted (WAC 173-510-040). If the determination affirms such interrelationship, the provisions of WAC 173-510-040 shall apply.

NEW SECTION

WAC 173-510-060 LAKES. In future permitting actions relating to withdrawal of lake waters, lakes and ponds shall be retained substantially in their natural condition. Withdrawals of water which would conflict therewith shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served.

NEW SECTION

WAC 173-510-070 EXEMPTIONS. (1) Nothing in this chapter shall affect water rights, riparian, appropriative, or otherwise existing on the effective date of this chapter, nor shall it affect existing rights relating to the operation of any navigation, hydroelectric, or water storage reservoir or related facilities.

(2) Domestic in-house use for a single residence and stock watering shall be exempt except that use related to feedlots.

NEW SECTION

WAC 173-510-080 FUTURE RIGHTS. No rights to divert or store public surface waters of the, Puyallup WRIA 10 shall hereafter be granted which shall conflict with the purpose of this chapter as stated in WAC 173-510-02.

NEW SECTION

WAC 173-510-090 ENFORCEMENT. In enforcement of this chapter, the department of ecology may impose such sanctions as appropriate under authorities vested in it, including but not limited to the issuance of regulatory orders under RCW 43.27A.190 and civil penalties under RCW 43.83B.335.

NEW SECTION

WAC 173-510-010 REGULATION REVIEW. The rules in this chapter shall be reviewed by the department of ecology at least once in every five years.

APPENDIX B

HYDROLOGIC BASE FLOW ANALYSIS

The hydrologic base flows for this basin have been determined in accordance with WRIS Technical Bulletin No. 11, dated January 1976.

The control station on the mouth of the Carbon River does not correspond to a gaging station. The necessary information for setting base flows at this station was derived in the following manner. The mean annual runoff per square mile in the lower Carbon River region was calculated by removing flows and drainage areas above gages 0935 on the Puyallup River, 0950 on South Prairie Creek, and 0940 upstream on the Carbon from gage 0965 downstream of the Carbon confluence on the Puyallup River. This value was used to determine the inflow to the Carbon below gages 0950 and 0940. The total mean annual flow at the mouth of the Carbon River then becomes the sum of the mean annual flows at 0940, 0950, and the inflow below these gages. The ratio between this flow and the sum of the mean annual flows of South Prairie Creek at 0950 and the Carbon at 0940 was determined. This ratio was applied to semimonthly sums of flows from the hydrographs at gages 0950 and 0940, both for base flows and 40 percent exceedence flows. This procedure increases the flow to account for the inflow on the lower Carbon River and gives weighted base flow and 50 percent exceedence lines whose shape takes into account the relative contributions of the upper Carbon River and South Prairie Creek regimes. The results of the hydrologic base flow analysis in numerical form are found on figure ii.

Table 4

Puyallup River Basin

Estimated Mean Monthly Flows cfs

Control Location	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Carbon River 12-0957	720	620	575	720	900	930	660	410	320	400	625	800
Puyallup River at* Alderton 12-0965	2000	2150	1560	1620	1970	2170	1660	1020	820	1340	1980	2440
Puyallup River at* Puyallup 12-1015	4020	4340	3330	3720	4570	5200	3760	2160	1580	3660	3870	4630

*Based on record: 1947-1956

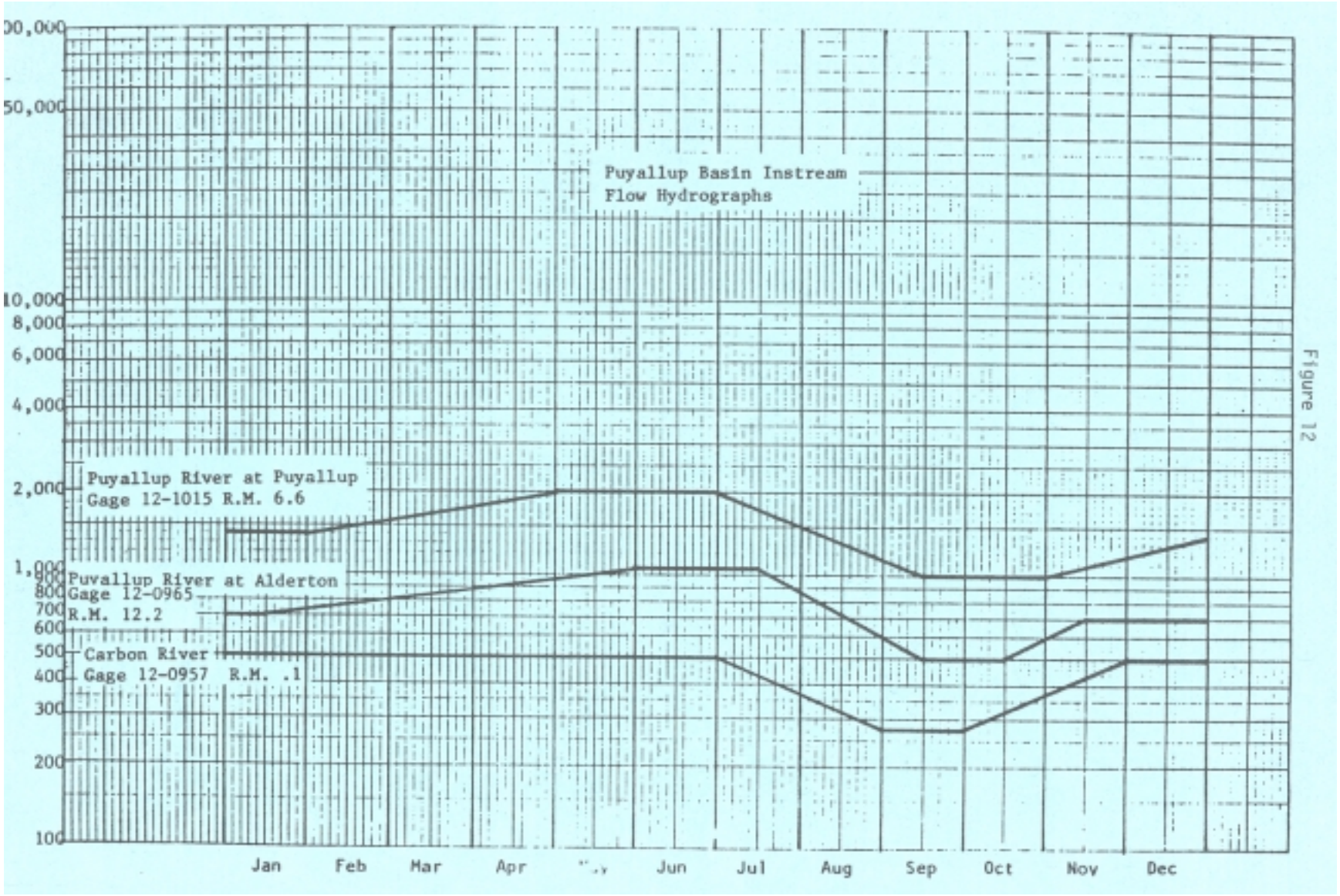

Puyallup Basin Instream
Flow Hydrographs
50,000
10,000
8,000
6,000
4,000
2,000
1,000
900
800
700
600
500
400
300
200
100
Puyallup River at Puyallup
Gage 12-1015 R.M. 6.6
Puyallup River at Alderton
Gage 12-0965
R.M. 12.2
Carbon River
Gage 12-0957 R.M. .1
Jan
Feb
Mar
Apr
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Figure 12

APPENDIX D

ECONOMIC STATEMENT

This assessment is based upon an examination of general conditions and likely future trends within the region. No attempt has been made to estimate quantitative impacts at this time.

Impacts on Future Economic Growth

The program proposes to close many surface water sources within the basin to future appropriation. Thus, future growth in demands for municipal and industrial water will fall upon ground water supplies. Although exact quantification of the ground water resource is lacking, present indications are that these supplies will be adequate to serve projected economic and population growth within the effected area.

Impacts on Future Energy Production

There are a number of potential sites for hydroelectric generation facilities within the basin. Best available information indicates that most of these are run-of-the-river type sites, with the most promising of these on the upper, higher reaches of streams within the basin. Although a case-by-case analysis against a proposed design is necessary to make definite statements, the proposed program should not severely affect future energy resource development. Projects located in upper stream reaches would not constitute barriers to downstream uses (fisheries, recreation, etc.). Maintaining required instream flows may have some impact upon the way in which projects are operated (particularly if the projects involve storage), but these effects would tend to occur only in relatively infrequent low flow periods.

In the area of forecasted human population trends in Pierce County, it is anticipated that a growth of 675,000 will be reached by the year 2000. It is also expected that the service industry will continue to be a dominating influence in the Basin's economy. (Washington State Office of Financial Management, Special Report #24.).

APPENDIX E

GLOSSARY

Aquifer

A geologic formation that is water-bearing and that transmits water from one point to another.

BOD

(Biochemical Oxygen Demand) The quantity of oxygen utilized in the biochemical oxidation of organic matter in a specified time and at a specified temperature. It is not related to the oxygen requirements in chemical combustion, but is determined entirely by the availability of the material as a biological food and by the amount of oxygen utilized by the micro-organisms during oxidation. Usually expressed in terms of BOD_5, it is the quantity of oxygen utilized in a five-day period at 20°C.

cfs

(Cubic Foot per Second) A unit of discharge for measurement of flowing liquid equal to a flow of one cubic foot per second past a given section. Also called second-foot.

COD

(Chemical Oxygen Demand) The quantity of oxygen utilized in the chemical oxidation of organic matter. It is a measure of the amount of such matter present.

Chlorination

The application of chlorine to water, sewage, or industrial wastes generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results.

Coliform Bacteria

A group of enterobacteriaceae from the tribe Escherichieae composed of three genera; namely Escherichia, Aerobacter, and Klebsiella.

DO

(Dissolved Oxygen) The oxygen dissolved in water or other liquid, usually expressed in milligrams per liter or percent of saturation.

Effluent

Municipal or industrial wastewater which is partially or completely treated or in its natural state, flowing from a process basin or treatment plant.

Eutrophication

The process of overfertilization of a body of water by nutrients which produce more organic matter than the self-purification process can overcome.

gpd

Gallons per day.

JTU

(Jackson Turbidity Units) the JTU, as the name implies, is a measurement of the turbidity, or lack of transparency, of water. It is measured by lighting a candle under a cylindrical transparent glass tube and then pouring a sample of water into the tube until an observer looking from the top of the tube cannot see the image of the candle flame. The number of JTUs varies inversely with the height of the sample (e.g., a sample which measures 2.3 cm has a turbidity of 1,000 JTU's whereas a sample measuring 72.9 cm has a turbidity of 25 JTU's.

mgd

Millions of gallons per day.

mg/l

Milligrams per liter

MPN

(most probable number) In the testing of bacterial density by the dilution method, that number of organisms per unit volume which, in accordance with statistical theory, would be more likely than any other possible number to yield the observed test result or which would yield the observed test result with the greatest frequency. Expressed as density of organisms per 100 ml.

MWe

Million watt electrical.

Population Equivalent (PE)

The average daily amount of BOD_5 exerted by the organic waste from one person. A value of 0.17 pounds of BOD_5 is normally equated to one PE.

ppm

Parts per million.

Primary Waste Treatment

The removal of settleable, suspended, and floatable solids from wastewater by the application of mechanical and/or gravitational forces. In primary treatment, unit processes such as sedimentation, flotation, screening, centrifugal action, vacuum filtration, dissolved air flotation, and others designed to remove settleable, suspended, and floating solids have been used. Generally, a reduction in dissolved or colloidal solids has been obtained in primary treatment, but this effect is incidental and not the planned purpose of primary treatment.

Runoff

That part of rainfall or other precipitation that reaches watercourses or drainage systems.

SWL

An abbreviation for sulfite waste liquor, a by-product of sulfite-type pulp and paper mills.

Salinity

The relative concentration of dissolved salts in seawater and is determined by various methods when compared to the international standard of Eau de Mer Normale. Usually expressed in parts per thousand = 0/00.

Secondary Treatment

The removal of dissolved and colloidal materials that, in their natural state as found in wastewater, are not amenable to separation through the application of primary treatment. Secondary treatment will generally reduce the BOD_5 of sewage by 85 percent.

Sediment

(1) Any material carried in suspension by water which will ultimately settle to the bottom after the water loses velocity. (2) Fine waterborne matter deposited or accumulated in beds.

Slope Index

The ratio of discharges at 2-year and 20-year recurrence intervals from the 7-day minimum frequency curve. A lower value indicates a small year-to-year difference in low flow.

TDS

Total dissolved solids.

Tertiary (Advanced) Treatment

Selective application of biological, physical, and chemical separation process to effect removal or organic and inorganic substances, primarily phosphorous and nitrogen, that resist conventional treatment practices.

CONVERSION TABLES
(U. S. and Metric)

VOLUME

Unit		Liters	U.S. Gallons	Cubic Feet	Cubic Meters	Acre-Feet
1 Liter	=	1.0	0.2642	0.0353	0.001	0.00000081
1 U.S. Gallon	=	3.785	1.0	0.134	0.00379	0.00000307
1 Cubic Foot (62.4 lbs water)	=	28.317	7.481	1.0	0.02832	0.0000230
1 Cubic Meter	=	1,000	264.2	35.315	1.0	0.0008107
1 Acre-Foot	=	1,233,500	325,851	43,560	1,233.5	1.0

1 U.S. Gallon - 231 cubic inches - 0.83 Imperial Gallons (= 8.3 pounds of water)
1 Liter - 1,000 cubic centimeters = 1.05 quarts (= 1,000 grams of water)
1 Cubic Hectometer = 810.7 acre-feet

RATE OF FLOW

Unit		gpm		mgd	cu m/sec	maf/yr
1 U.S. Gallon per Minute (gpm)	=	1.0	0.002228	0.001440	0.0000631	0.00000161
1 Cubic Foot per Second (cfs)	=	448.8	1.0	0.6463	0.02832	0.000724
1 Million U.S. Gallons per Day (mgd)	=	694.4	1.547	1.0	0.04381	0.00112
1 Cubic Meter per Second (cu m/sec)	=	15,850	35.31	22.82	1.0	0.0256
1 Million Acre-Feet per year (maf/yr)	=	619,960	1,381	892.9	39.1	1.0

1 Liter per second = 15.85 gallons per minute
1 Cubic Foot per Second = 1.98 acre-feet per day = 724 acre-feet per year

Other

1 Acre = 43,560 square feet (209 x 209 feet) = 0.405 hectare
1. Hectare = 10,000 square meters = 0.01 square kilometer = 2.47 acres
1 Kilowatt-hour (KWH) = 0.001 megawatt-hour (MWH) = 3,413 BTU

APPENDIX F

Public, Municipal, State, Federal
Comments and Memos

1.	Wa. Natural Heritage Program David Mladenoff.	28 Jan. 1980
2.	Pierce Co. John Comis	13 Feb. 1908
3.	City of Tacoma John Roller	16 Jan. 1980
4.	Wa. State Sports Council John Thomas	21 Jan. 1980
5.	Wa. Dept. of Fisheries Ray Johnson	25 Jan. 1980
6.	U.S.D.I. – U.S.F.&W.S. Robert Ringo	7 Feb. 1980
7.	Tahoma Audubon Carla Hansmann	7 Feb. 1980
8.	East Lake Audubon Society Leonard Steiner	17 Jan. 1980
8-8a.	Dept. of Game Jon Gilstrom	14 Jan. 1908
9-9a	Dept. of Fisheries Gordon Sandison	28 Jan. 1980
10-10a	Muckleshoot Indian Tribe Richard Reich	5 Feb. 1980
11.	Dept. of Game Jon Gilstrom	14 Feb. 1980
12.	USDA Soil Conservation Service Lynn Brown	29 Jan 1980
13.	Wayne G. Mosby	30 Jan. 1980
14.	Dept. of Game Hal Beecher	30 Nov. 1980
15-15a	Puget Power W.J. Finnegan	7 Feb. 1980
16-16a,	16 b, 16c. Puyallup Tribe of Indians Donald M. Matheson	5 Feb. 1908

17.	DOE Memo King County Coordination	5 Dec. 1979
17.	DOE Memo Program Update	6 March 1980
18.	DOE Memo City of Puyallup Coordination	6 Dec. 1980
19.	DOE Memo Water Quality	18 Oct. 1979
19.	Dept. of Game Memo Clarks Creek	16 Dec. 1979
20.	DOE Memo Pierce Co. Coordination	10 Jan. 1980
20.	DOE Memo Muckleshoot Tribal Coordination	17 Dec. 1979
21.	DOE Memo Dept. of Fisheries White River Coordination	31 Jan. 1980
21.	DOE Memo Enumclaw Public Hearing	21 Jan. 1980
21-21a	DOE Memo Workshop	4 Feb.
22.	DOE Memo Public Hearaing	16 Jan. 1980
23-23a	DOE Memo Management Meeting	16 Nov. 1979
24.	DOE Memo Program Progress Report	26 Nov. 1979

THE NATURE CONSERVANCY
WASHINGTON NATURAL HERITAGE PROGRAM

3111 SEMINARY BLDG NO
THE EVERGREEN STATE COLLEGE
OLYMPIA WASHINGTON 98505
206 753-2440

JAN 28 1 20 '80

Mr. John F. Spencer
Assistant Director
Office of Water Programs
Department of Ecology PV-11
Olympia, Washington 98504

January 24, 1980

Dear Mr. Spencer,

The Washington Natural Heritage Program was established as a cooperative effort of the Nature Conservancy and the State of Washington Departments of Natural Resources, Game, Ecology, and Parks and Recreation, to inventory the status of natural diversity in the state and make appropriate recommendations. As such the Program is concerned with rare and unique animals, plants and biotic communities in Washington.

Consequently, we are interested in the Puyallup River Instream Resources Protection Program as it affects the salmon population. We note with concern the rapid and drastic decline of spring chinook salmon in the White River, apparently victims of inadequate flows.

Furthermore, since the bald eagle is a Threatened species, the reduction of its food source, the salmon, is of concern to our program. As a result, we urge that every effort be made to protect the spring chinook salmon by assuring adequate flows in the White River.

Sincerely,

David Mladenoff,
Program Coordinator

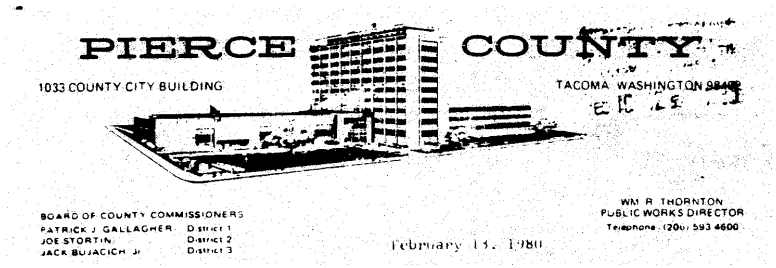
DM:md

Washington Natural Heritage Program letter dated January 24, 1980

David Mladenoff

1. Comments noted and your support is appreciated.

2. The imminent extinction of the spring chinook salmon within the White River is a matter of urgent concern to the departments of Ecology, Fisheries, and Game. Many believe that corrective mitigation is long overdue. Your comments will be forwarded to the Department of Fisheries and they will contact you in the near future.



Department of Ecology
Headquarters Office, PV-11
7272 Clearwater Lane
Olympia, Washington 98504

Attention: Mr. Robert Kavanaugh

RE: Puyallup River Basin Instream Resources Protection Program – Draft, December 1979

Dear Mr. Kavanaugh:

This letter is for further comment on the subject draft document which we addressed at the formal public hearings for WAC 173-510 on January 15, 1980.

I. Specific Comments

A. As stated throughout the draft report, there is not sufficient data available upon which to base the specific conclusions drawn for groundwater management. Therefore, redraft the groundwater section, WAC 173-510-040 as follows:

WAC 173-510-040 GROUNDWATER. In future permitting actions relating to groundwater withdrawals along perennial watercourses, the direct and substantial continuity of the groundwater withdrawal source shall be considered in water allocation permit decisions to assure that the surface water low flow within the watercourse is not significantly diminished.

C. At the time of this review, it is unclear exactly which streams are

D. Insofar as this program is plainly intended to address protecting instream resources from further depletion of the low flow regimen within the respective streams of WRIA 10, please _____ in the various sections of Chapter 173-510 WAC as _____in red on the enclosed draft copy.

II. General Comments

The intent and language of the draft document is generally acceptable to this department. We have attached our review copy with this letter as it has various comments worked in red throughout the chapters I-X. Please incorporate the comment or response as shown on pages:

12, 13, 14, 21, _____ REFERENCES.

Thank you for extending this opportunity for comment. Please contact this office if you have any questions concerning our comments.

Very truly yours,

JOHN COMIS
Planning Engineer

Pierce County letter dated February 13, 1980 John Comis.

1. Comments noted and your participation is appreciated.
2. The language in the ground water section has been changed, and the department is presently developing procedures for determining the effects of individual wells on surface water.
3. Your proposed language has not been included because it is clear to us that flood control and stormwater management are not within the scope or intent of the instream resources protection program.
4. In order to clarify exactly what streams we are referring to in WAC 173-510 we have added the legal description of the mouths of outlets of affected lakes and streams and a set of reference maps in the appendix.

City of Tacoma
WASHINGTON
DEPARTMENT OF PUBLIC UTILITIES
Paul J. Nolan, Director

Please address reply to
City of Tacoma
Department of Public Utilities
P. O. Box 11007
Tacoma, Washington 98411

JAN 21 10 24 AM '80

January 16, 1980

Department of Ecology
Attention: Hearing Officer
Olympia, Washington 98504

Gentlemen:

The City of Tacoma Water Division has reviewed the draft copy of your Puyallup River Basin Instream Resources Protection Program. The following two items within the report have a bearing on the water supply for the City of Tacoma:

1. On Page 31 of the report the statement is made that, "In order to meet future water needs, the City of Puyallup may be required to purchase water from the City of Tacoma's surface water resources on the Green River."

2. The report proposes to close Kapowsin Creek, Kapowsin Lake and Ohop Creek to future out of stream consumptive use. Kapowsin Lake has been one proposed site for municipal and industrial water for the City of Tacoma.

In addition to the mention you have made of the City of Puyallup, Tacoma frequently gets inquiries about the availability of water from groups both inside and outside the Puyallup basin. At the present time we are concentrating our efforts on further development of the Green River as the primary water source for Tacoma and its vicinity, including south King County.

Tacoma has no objections to the two items mentioned above, providing DOE gives adequate recognition to our regional needs for domestic water when establishing flows in the Green River.

Very truly yours,

John A. Roller
Superintendent
Water Division

JAR:GEN/smc

City of Tacoma letter dated January 16, 1980
John A. Roller

1. Comments noted and support appreciated.

2. Our point of contact on information pertaining to Puyallup City Water needs is the city engineer, Mr. Gray. 848-2396

3. The initial plan to use Lake Kapowsin has been dropped according to our contact with the City Engineer's office.

4. DOE will always consider future municipal and industrial water needs in each Instream Resource Protection Program that is developed. The scope of these programs remains rather limited as was the intent of the Water Resource Act of 1971. As you know we plan to conduct a Green River Basin Program in the next few years that will look into M & I water needs in great detail.

Mr. Robert Cavanaugh
Department of Ecology
Room 104
Olympia, WA98504

Dear Mr. Cavanaugh:

_____

We all believe strongly that current streamflow values (when they do exist) are inadequate when it comes to the environment, fish, wildlife and habitat protection. In many instances, because there was no limit on the amount of water pulled from a stream, or because streamflow values were set too low, entire runs of precious native salmon and steelhead have been put in jeopardy. Our largest concern is to make sure that adequate stream flows exist year-round to protect our native fish and wildlife resources and that presently, many of these streamflow requirements and values are established on the low side and do not adequately address the problem of migrating fish species. We believe the flows recommended by fish and game and by fisheries on the Puyallup to _____ in the right direction to protecting the entire fisheries resources and hope that you will adopt those minimum flow requirements for the good of all the citizens of the state who own the fish and wildlife resources.

As a further comment, we believe that flows currently in effect on the Green, Tolt and similarly _____ waters do not _____ protect migrating steelhead and salmon and would _____ to listen carefully to the representatives of both the fisheries and game departments…they have the management expertise and knowledge to aid you in your decisions and, hopefully, to establish those flows which would be of the best benefit to our natural resources. As outdoor persons, we are extremely concerned about the effect of additional water rights and, in many cases, those which already exist which are detrimental to fish and wildlife species, especially native runs and species which cannot be replaced once they are lost.

Sincerely yours,

John Thomas
Chairman, Washington State
Sports Council _____
Resources Committee

Eastside Steelheaders, Kirkland

Washington State Sports Council letter dated January 21, 1980

John Thomas

1. Comments noted and your support is appreciated.

2. Both the departments of Fisheries and Game play a vital and key role in our Instream Resources Protection Programs.

Statement of Washington Department of Fisheries
Puyallup River Basin
Instream Resources Protection Program

January 15, 1980

The Washington Department of Fisheries is appreciative of this opportunity to comment on the proposals presented n the Draft Puyallup River Basin Instream Resources Protection Program. We support the development of instream flow regulations in Western Washington streams, including those presented for the Puyallup Basin.

We have several comments of technical nature on your Draft document, as well as the offer of additional information that will hopefully be useful in preparing the final program document. Most of this material, however, is not directly pertinent to this hearing, and therefore will be submitted by separate letter. Our comments tonight will center on two areas we consider of most importance in the Puyallup River: 1) Fisheries problems in the White River, and 2) a request for consideration of closures on two small tributary streams not presently addressed.

The White River probably presents more problems to salmon resource production than any other individual stream in Puget Sound. Data collected over a number of years, together with biological observations, indicate several serious problems:

1) Mud Mountain Dam. Juvenile salmon migrants are delayed in their downstream migration and residualism occurs in the reservoir. Juveniles that successfully negotiate the dam face potential serious injury passing through outlet pipes and valves. When the adults return they musts be trapped and hauled around the dam, and the necessary handling and treatment places the fish under stress that affects survival and successful spawning. Operation of the dam results in the accumulation and retention of large amounts of sediment during periods of flooding. This material is subsequently flushed during periods of lower stream flow, when deposition can occur to impact downstream salmon habitat.

2) Logging in the upper watershed. Problems include long-term accumulation of debris and its effect on stream channels, impact on temperatures and streamflows, and displacement or redistribution of spawning populations.

3) Puget Power White River Project. Observed impacts on fish have been the dewatering of the river resulting in flows incapable of providing conditions for transportation, spawning and rearing. Other documented problems have been heavy losses of downstream migrants at fish screens on the diversion flume, and homing of returning adults to the Dieringer powerhouse instead of the White River.

4) Water quality problems. These are adequately covered in the draft document.

5) Flood control activities. Extensive bedload movement occurs in the basin, with heavy deposition in lower reaches. Annual gravel removal and channelization operations to relieve the danger of flooding have continued to contribute to streambed instability and have reduced the productivity of these areas.

The cumulative result of the above problems has been the precipitous decline in salmon and steelhead production, as clearly documented by the attached trapping and hauling records.

Stream flow in the White River has been identified as a critical factor regarding resource problems, and has been a subject of recent and unresolved proceedings involving the Federal Energy Regulatory Commission (FERC). The Department of Fisheries believes the State of Washington would be delinquent in not taking a clear position, under the Western Washington Instream Resources Protection Program and its supporting state laws, on establishing base flows for the White River. Present guaranteed release to the White River at the Buckley Diversion is 30 cfs. A study sponsored by the USFWS in 1973 determined the minimum spawning flow needs to be 190 cfs, with intermittent migration flows of 500 cfs required. These flows were presented in FERC hearings in 1974. Department of Fisheries calculations of preferred flows for salmon spawning have subsequently been made, and these are substantially higher than the minimum needs determined in the 1973 study. With the weight of this evidence against the existing flow regime, and the statutory intent of the Water Resources Act of 1971, we conclude that realistic instream flows must be established for all reaches of the White River.

In an area unrelated to the above discussion, the Department of Fisheries is concerned with two streams not included in the present or proposed Administrative Status. We believe the following streams should be considered for closure to future water appropriations, with justification noted:

1) Canyonfalls Creek. This is a short, spring-fed tributary entering the right bank at RM 16.2, a short distance upstream from Fennel Creek. This stream has the highest spawning density of chum salmon in the Puyallup River, and shares with Fennel Creek the reputation as the most important chum spawning area in the basin. Instantaneous counts of 400 to 70 spawners in less than ½ mile have been made in recent years. A Department of Fisheries natural production enhancement project to supplement and improve chum spawning area and production was completed in 1979. Canyonfalls Creek also supports a healthy coho run, but it is limited by its modest watershed size. Since this presently stable stream is small and is located in the lower basin, where high growth rate is anticipated, future requests for appropriation of water would be expected and these would have direct instream impact on fish resources.

2) Fiske Creek. Fiske Creek is a right bank tributary entering the Puyallup River at RM 26.7. It is a small but heavily used coho spawning and rearing stream. Department data dating back to 1956 document its consistent production and value as a nursery area. Since coho rearing extends throughout the year, and there is a direct relationship between streamflow and production, any future appropriations of water from this stream would directly result in a decline in run size.

Thank you for this opportunity to offer our views on this program and its proposals. We hope that our comments will be useful.

Statement of Department of Fisheries, dated January 15, 1980.

Mr. Ray Johnson

1. Comments noted and support appreciated.

2. The disruption to the life cycle of the chinook salmon in the White River caused by the operations of Mud Mt. Dam is recognized. It is hoped that the Department of Game, Department of Fisheries, Department of Ecology, and the Corps of Engineers can eventually develop a more efficient method of operation that will not adversely affect the White River chinook salmon runs.

3. Recent studies indicate that improperly constructed logging roads are the principle cause of downstream siltation. This may be the case in the White River drainage. However, no data is presently available to substantiate this view in the White River.

4. Disruptive impacts on salmon and steelhead caused by the diversion of water at the Buckley Puget Power diversion is recognized. Hopefully some more effective mitigation can be devised in future years by the departments of Fisheries, Game, Ecology, and Puget Power that will eliminate this problem. It is our view that Puget Power is not presently opposed to developing mitigation for this problem. We would suggest initial mitigation coordination meetings be chaired by the Department of Fisheries during spring of 1980.

5. Canyon Falls and Fiske creeks have been added to the list of streams proposed for closure in recognition to the important fishery resource.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Fisheries Assistance Office
2625 Parkmont Lane, Bldg. A
Olympia, Washington 98502

Mr. John F. Spencer, Ass't. Director
Office of Water Programs
Department of Ecology
Olympia, Washington 98504

ATTN: Hearing Officer

Dear Mr. Spencer:

We have reviewed the draft Puyallup River Basin Instream Resources Protection Program document. We share the opinion of other concerned groups that the complex nature of Puyallup Basin water-related resource problems should be assessed through the development of a Puyallup River Basin Comprehensive Plan. Such a plan could address the excessive Buckley Diversion of the White River, and it could determine if the Director of the Washington Department of Fisheries (WDF) should invoke RCW 75.08.040 to restore flows below the diversion.

We are aware of the WDF recommendation for a base spawning flow of 435 cfs for the White River below the Buckley Diversion, and we strongly endorse this recommendation. We also support the draft's recommendations for closures of the listed streams to future water allocations. We recommend that Canyon Falls Creek also be considered. It is confusing to list "unnamed streams" without a description of location. A good procedure would be to use the WRIA numbers in the WDF Stream Catalog when discussing unnamed streams.

WE appreciate this opportunity to contribute to this review process and if we can be of further assistance please contact us.

Sincerely,

Robert D. Ringo
Acting Project Leader

PW&EEK/cmd

cc: ES
Ray Johnson, WDF
Hal Beecher, WDG

Save Energy and You Serve America!

Department of the Interior, U.S. Fish and Wildlife Service letter dated February 7, 1980.

Robert D. Ringo

1. Comments noted and your interest is appreciated.

2. The Department of Ecology plans to develop a Puyallup River Basin Program within the next few years depending on the availability of staff planners and finances. Even a basin plan would not necessarily resolve the problem of inadequate flows in the White River due to the existing rights of Puget Power to divert water to the Dieringer Power Plant.

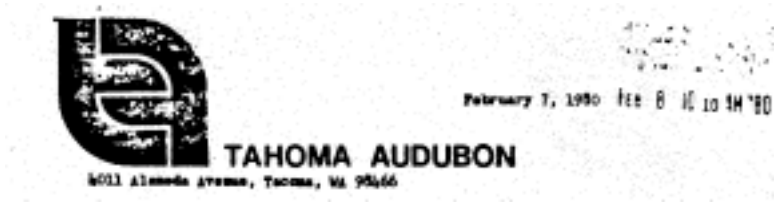
3. Your letter was sent to the Department of Fisheries for their view of the feasibility of RCW 75.08.040 to restore flows below the diversion.

4. The Department of Ecology proposes to close the entire White River.

5. Canyon Falls Creek has been added to the list of streams to be closed to further out of stream consumptive use.

6. Stream numbers listed in the DF Stream Catalog will be used when discussing unnamed streams. The legal description of the mouths or outlets of streams and lakes have been added.

7. Your future assistance will be appreciated.



John F. Spencer, Assistant Director
Office of Water Programs
Washington State Department of Ecology
Olympia, WA 98504

Dear Mr. Spencer:

We have been following the proposals for the Puyallup River Basin and are basically supportive of the DOE's Instream Resources Protection Program as given in the Draft document. We do not think it is as inclusive as it should be but this is a good start. We also ask that in addition to setting in-stream flows and closing streams as we have talked about in the workshops, a complete plan for the entire Basin must be started immediately. Because of the competition between the various users of the Basin waters, it is doubtful the integrity of the waters can be maintained for fish and wildlife without a complete plan.

Furthermore, we support additional stream closings particularly because they have important natural spawning gravels and wildlife habitat. We encourage DOE to look closely at those being requested by the Department of Game and the Puyallup Tribe of Indians. Our organization has lead many field trips into these areas and we have some data. However, a complete wildlife inventory is needed. We understand that some saltwater intrusion is occurring and groundwater supplies need to be defined. In addition, some towns are experiencing sewage problems. It would seem prudent to hold these waters in reserve until this basic information is available.

Finally, enforcement of this program is not defined well enough. This needs to be addressed so citizens can gauge how effective the proposed protection program will be.

Sincerely,

Carla M. Hansmann, President

Tahoma Audubon letter dated February 7, 1980

Carla M. Hansmann

1. Comments noted and your support is appreciated.

2. The Department of Ecology does plan to conduct a Puyallup River Basin Program within the next several years depending on the availability of staff planners and finances.

3. Additional stream closures have been proposed to include the White River.

4. Partial wildlife inventories are in progress by Evergreen College and the Department of Ecology – Department of Game under the Urban Stream Study Program.

5. Enforcement is at this time rather weak due to shortages in personnel. Citizen requests can be very helpful in this area.

6. Your letter was forwarded to the Department of Ecology Southwest Regional Headquarters.

13239 N. E. 100th
Kirkland, Wa 98083
January 17, 1980

Department of Ecology
Attn: Hearing Officer
Olympia, Wa. 98504

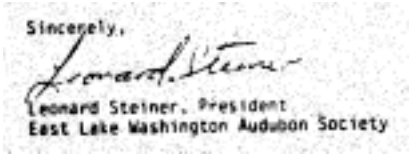
Re: Puyallup River Basin instream resources protection program

P. 36 "flood damages" the draft program state that future development in the flood plain will result in substantial damages to property from floods. It should be obvious to anyone that if they build in a flood plain they will suffer damages from floods. The thing that appalls me is that these people that build in flood plains ask us, the taxpayers to pay for their losses and then ask us to also spend vast amounts of money for flood control. It seems as if a select few have found a way to rob the Federal Treasury without the people having a say in the matter. It seems to me that all flood control projects should be brought to a vote of the people since they have to pay the bill.

P. 24 Wildlife

This brochure states that known data about wildlife does not exist for these river areas. We question how any management program can be carried on without knowing the needs of the natural inhabitants of the area. Many forms of wild life have specialized needs, such as frogs, snakes, butterflies, birds, and small mammals, that exist in riparian habitats!

We wholeheartedly support the closing of these streams and feel that many more detailed studies need to be undertaken to ensure the survival of many species of wildlife, in addition to fish.



East Lake Washington Audubon Society letter dated January 17, 1980

Leonard Steiner

1. Comments noted.

2. Although resolution of flood control problems are beyond the scope of the Puyallup River Basin Instream Resources Protection Program it is a subject of great interest to Pierce County Planners and the residents of the lower valleys. Your views will be sent to Pierce County.

3. Your comments on wildlife are valid and we are taking steps to obtain more data on this subject. Dr. Steve Herman, Evergreen State College, is conducting a one-year study of wildlife needs with respect to instream flows in the Puyallup Basin. I am sure he would welcome your support in gathering field data.

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF GAME
600 North Capitol Way, Olympia, WA 98504

January 14, 1980

John F. Spencer, Assistant Director
Office of Water Programs
Department of Ecology
Mail Stop PV-11
Olympia, Washington 98504

Dear Mr. Spencer:

The Puyallup River Instream Resources Protection Program is an important FIRST STEP in the protection of instream resources in the Puyallup basin. Further analysis and accounting of instream resources are necessary. Management of Washington's streams is complex, with many issues which are not directly addressed in the present program. A complete basin plan, addressing all the inter-related issues, including assessment of existing and remaining available water rights, should be a goal which is actively pursued by the Department of Ecology. Such a plan needs to incorporate effective enforcement provisions.

The Department of Game endorses the proposed closures and minimum flows, but additional protection is needed. We request the following additional closures to further consumptive appropriations:

Kellogg Creek
Ledoux Creek
Neisson Creek
Puyallup River in the Vicinity of Electron
Wilkeson Creek

Kellogg, Ledoux, and Neisson Creeks are tributaries of the Puyallup River in the vicinity of Electron. These streams are important spawning streams for steelhead. In these streams and in the adjacent segment of the Puyallup River, flow is critical and currently limits steelhead production. Total reproductive failure of steelhead in these streams in 1978 was caused by inadequate flow. Therefore, the Department of Game considers that closure of these waters is essential.

Willkeson Creek is another extremely important stream for steelhead spawning. Because of the small size of this stream, any appropriation of water would have an adverse impact on steelhead production. We, therefore, request that Wilkeson Creek be closed.

The goal of the Department of Game is to preserve, protect, perpetuate and enhance wildlife. Of special concern is the threatene3d bald eagle. Bald Eagles nest and winter in the Puyallup River basin, and these eagles depend, in part, upon wild salmon runs for food. For this reason we are gravely concerned over the drastic decline of spring chinook salmon in the White River. We believe this decline is primarily a result of inadequate flows and flow-related issues.

One of the assumptions upon which the Puyallup River Instream Resources Protection Program is based is that adequate data are available. This assumption is false on at least three counts: (1) game fish production, (2) the relationship of ground water to instream flow, (3) an accounting of existing water rights and available water.

(1) In the Puyallup River there is a statistically significant correlation (4=0.92 out of a maximum possible of 1.00) between number of steelhead caught by sport fishermen and the summer low flow 2½ years earlier. This is a very strong indication that summer low flows limit steelhead production. However, we do not know how many steelhead are lost for every cubic foot per second of flow that is lost. This will differ from stream to stream, and, of course, other factors also affect steelhead production. Stream flow also affects spawning habitat, but this relationship is more complex and less well understood. Low flows exacerbate many other adverse environmental impacts such as pollution, high temperature, and migration barriers. Adequate management requires that the relationship of game fish production to flow must be more fully and quantitatively understood.

(2) Ground water and instream flows are related, but the relationship varies from place to place. Adequate management of instream flows requires an assessment of ground water and surface water and their inter-relationship.

(3) The Department of Ecology has promised an accounting of existing water rights and available water rights. This is essential to adequate management of water.

The three areas of inadequate data are flags of caution; where we lack information we should allow an ample margin for error. Our fish and wildlife resources are a vital part of Washington State. Instream resources, once committed, cannot easily be recovered. Instream resources held in reserve at this time may be committed at a later date if it is determined that such commitment would not ___ instream values. Resources should be committed only when we know that they are available. This program should be conservative at this time, but that does not mean it is obstructive.

The Puyallup River Instream Resources Protection Program is the first step ___ urgent program. The Department of Game urges that the full protection effort ____ completed with due care and attention to detail.

Sincerely,

THE DEPARTMENT OF GAME

Jon Gilstrom, Program Manager
Habitat Management Division

JG:mb

Department of Game letter dated January 14, 1980.

Jon Gilstrom

1. Comments noted and support greatly appreciated.

2. The Department of Ecology plans to conduct a complete basin plan for the Puyallup within the next few years.

3. Kellogg, LeDout, Neisson Creek have been proposed for closure in the final program document. Wilkeson Creek is a tributary of South Prairie Creek and is already proposed for closure. Neisson and Kellogg creek are claimed by Puget Power although no consumptive use of these waters appears to have been made in the last 15 years.

4. Concern over reduced sightings of bald eagles within the Puyallup Basin is noted.

5. The relationship between low summer flows and steelhead rearing is recognized and it is hoped the additional closures and minimum flows will adequately protect the steelhead population in the Puyallup Basin.

6. Existing water right data is available to any interested person. Our technical section does not feel this information should be provided in the program documents at this time.

7. Your interest in nongame wildlife species is appreciated and shared by the Department of Ecology.

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF FISHERIES
115 General Administration Building, Olympia, Washington 98504

January 28, 1980

Mr. Robert Kavanaugh
Project Planner
Department of Ecology
Headquarters Office
Lacey, Washington 98504

Dear Mr. Kavanaugh:

Comments in this letter relate to your Draft Puyallup River Basin Instream Resources Protection Program, and supplement our statement at the Public Hearing at Puyallup on January 15, 1980. We have greatly appreciated the effort the Department of Ecology has put into the Puyallup program and this draft, and hope that the following comments will be useful in formulating the final document.

Early discussions on the Instream Flow Program in which we participated addressed certain terminology to be used, including whether we were to merely preserve fisheries resources or to protect them against further declines. It was agreed that preservation had the connotation of preventing the several species from being eliminated, and this was contrary to the clear intent of Chapter 90.54 RCW to protect the resource and to assure its perpetuation at a high level of production. While the title of the draft reads Puyallup River Basin Instream Resources Protection Program, the text consistently utilizes the terminology "preservation." Review of previous documents in this series does not reveal such terminology, and we question the change in direction at this point.

Most of our comments deal with the section on fisheries instream resource uses, on pages 18 through 24. Specific comments are as follows:

Page 18, paragraph 4. Your last sentence describes a growing commercial harvest by the Muckleshoot Tribe in the White River. This was true when the referenced Puget Sound Task Force Study was published in 1970. Harvests during recent years, however, have been depressed compared to former levels, and reflect the decline in White River production that we expressed as a major concern in our statement on your Puyallup Basin Program.

Page 18, paragraph 5. Overharvest of wild stocks is included as a limiting factor for salmon and steelhead production. While the harvest may have had a bearing on escapement and subsequent production, whether by state or tribal regulations over many years, we wonder if the inclusion here is appropriate. Opponents to flow regulation would be quick to point out that all fisheries problems are related to

historical unregulated Indian fishery activities. Indian catch statistics, incidentally, illustrate trends very similar to those of the overall basin production, with exceptions where department enhancement activities have contributed to catches:

Paragraph 18, paragraph 6. Of the dewatered area associated with the Electron power canal diversion, only a portion of the 10-mile section has potential spawning area. A major problem here is transportation for salmon, as well as steelhead. Dewatering also has obvious impacts on the value of the area for rearing.

Page 18, paragraph 7. Discussion centers on the decline of salmon and steelhead production and mentions natural factors as leading to diminished productivity. This is misleading. While natural occurrences such as physical terrain and climatological events influence productivity in all streams, they should not be related to declining trends, nor compared to man-caused factors.

Page 18, paragraph 8. It is not clear where fish are trapped for hauling around Mud Mountain Dam, and there may be the implication that this trapping occurs at the Dieringer powerhouse rather than the Buckley diversion. Some clarification might be useful. It could also be misconstrued that chum and pink salmon are trapped and hauled in this process, which is not true. Several salmon species still utilize the lower White River, however. We have reviewed spawning records in the area below Buckley diversion and have confirmed that spawning does occur in the area. For example, aerial surveys for fall chinook have been made since 1970 and spawning redds have been observed each year. Pink salmon redds were also observed in 1973. While conditions drastically limit salmonid production, pink and chum salmon, as well as fall chinook, still spawn in limited numbers in this area. Electro-fishing samples during the past two years also show the area to be presently used for rearing by coho and steelhead.

Page 21, paragraph 1. White River diversion bypass flow is stated as being 25 cfs (and at other locations in your draft). According to our records, this should read 30 cfs. In this same paragraph, the last sentence indicates that the withholding of water within Lake Tapps is an adverse problem for salmon resources. We do not believe this to be a problem. A problem does exist in Lake Tapps, however, where downstream migrant salmonids manage to get past the fish screens and residualize in the lake, or suffer a high rate of mortality if continuing downstream through the Dieringer turbines.

Page 24, paragraph 1. It is stated that DOE, WDG, and WDF propose the closure of South Prairie Creek to future water appropriation. Is this legally correct, since Game and Fisheries can only make recommendations for closures? The same comment applies to the following paragraph.

Page 24, paragraph 2. Poaching in Kapowsin Creek is mentioned as a serious limiting factor. We question if it is appropriately included in this text, since this is not a flow-related problem. Poaching is a serious problem and is widespread, but we infrequently consider it a serious limiting factor. The implication here could be that if poaching were controlled, perhaps there would be no need for closure of this stream.

Page 24, paragraph 3. We support the proposal for closure of Clark Creek to future water appropriations, but question using the word "surprisingly" in defining present production. Critics could assume that it is not necessary to give protection to streams until they become badly degraded.

Comments on other sections of your draft are few. On page 31 the problem of White River flows is again addressed, with Fisheries and Game supporting additional flows "to insure the preservation of spring chinook salmon". We again dislike the term "preservation", but in this case it may be appropriate. Presumably the existing flows in the White River were intended to "preserve" the run. If escapement trends continue as they have since trap-and-haul records began in 1940, this once valuable spring chinook stock will be totally lost.

In Appendix A, Page A-1, B, paragraph 2, the lower Puyallup River is stated as providing only transportation water to migratory fish. Some spawning occurs in this area, and these lower stream reaches still retain value as rearing area. Our previous comments regarding the fish use of the lower White River apply to other branches and the mainstem river. While transportation is a major use and concern, the Puyallup Basin Program would be in error in writing—off other fisheries instream uses in this lower mainstem area.

The Department of Fisheries statement on the Puyallup River Program at the Public Hearing on January 15, 1980 at Puyallup described flow problems in the White River, and asked that the State of Washington take a clear position on establishing realistic instream flows for fisheries production in all reaches of the river. Studies have determined the stream depths and velocities required for spawning salmon, and for flows required to provide those conditions. From these studies it has been calculated that the flow needed for spawning in the White River below the Buckley Diversion is 435 cfs, and it is our recommendation that this level be established in our instream flow regulations.

We very much appreciate your concerns for the instream resources of the Puyallup Basin, and in particular the fisheries resources.

Sincerely,

Gordon Sandison
Director

kn

Department of Fisheries, letter dated January 28, 1980

Gordon Sandison

1. Comments noted and support greatly appreciated.

2. The term preservation is used in the same context as protection.

3. Muckleshoot salmon harvest references have been changed to denote a declining catch in recent years.

4. The discussion of over harvest of our wild salmon stocks in a commonly held view among fishery biologists when viewed in the context of our emphasis on hatchery production.

5. The problem regarding the dewatering of the Puyallup River above Electron is noted.

6. The subject of fish transportation at the Buckley Diversion has been corrected. Salmon spawning in the mid and lower reaches of the White River is recognized.

7. 25 cfs has been changed to 30 cfs.

8. The proposed closure of South Prairie Creek is based on the recommendation of the departments of Fisheries and Game.

9. Puyallup Tribal members reported over 40 violations of salmon poaching occurred in 1979 in Kapowsin Creek. The tribe views this as a serious problem but not yet a limiting factor.

10. The White River has been designed to be closed to future out of stream consumptive use in the final program and WAC 173-510.

MUCKLESHOOT INDIAN TRIBE
39015 172ND AVENUE S.E. - AUBURN, WASHINGTON 98002 - (206) 939-3311

February 5, 1980

Washington Department of Ecology
Attn: Hearing Officer
Olympia, WA 98504

Dear Sir:

The Muckleshoot Indian Tribe appreciates this opportunity to comment on the proposals presented in the draft Puyallup River Basin Instream Resources Protection Program. We strongly support the overall goal of the program of providing sufficient flows for instream needs and, in particular, the proposed closure of the White River and all its tributaries to future out-of-stream consumptive water appropriations. Although the program document covers the entire Puyallup River basin, our comments will be directed towards the White River.

We are committed to protecting and enhancing the existing White River fish resource, particularly spring chinook salmon, but also coho salmon and steelhead. Although there are viable fish runs in the White, the river is threatened with more obstacles to natural salmonid production than any other river flowing into Puget Sound, including: (1) streamside and instream habitat destruction in the upper watershed through adverse past and present logging practices; (2) flooding of spawning grounds, delay, blockage and/or mortality or downstream migrant juvenile salmonids, blockage of upstream migrant adult salmonids, and silt accumulation and subsequent downstream release and deposition by Mud Mountain Dam (U.S. Army Corps of Engineers); (3) significant mortality of downstream migrant juvenile salmonids and insufficient downstream water releases at the Buckley Diversion Dam (Puget Power); (4) delay and/or mortality of upstream migrant adult salmonids at the Dieringer Outfall (Puget Power); and (5) instream habitat destruction in the lower watershed through channelization, diking and gravel removal. These problems have to various degrees contributed to the drastic decline in the natural production of salmon and steelhead. It is long past time that all involved parties strive to reverse this trend. This is particularly critical since the White River spring chinook salmon run is the last remaining vestage of spring chinook in central-south Puget Sound.

In addition, we wish to stress that the State has an obligation aside from that imposed by State law to protect Muckleshoot and Puyallup fisheries in the Puyallup basin from adverse impacts. This includes the obligation to regulate minimum stream flows in a manner which does not adversely impact the fisheries habitat. As you are aware, this right to the protection of the fishery is being litigated in Phase II of U.S. v. Washington.

Our specific comments concerning the draft document are as follows:

p. 13, para. 2 – The report states that Puget Power released a minimum of 25 cfs into the White River at the Buckley Diversion Dam. While the Tribe disputes the validity of Puget's claimed water rights and the condemnation decrees upon which Puget Power bases its claimed water right, those decrees do require a 30 cfs minimum release. Regardless, a release of 25 or 30 cfs is totally inadequate as noted by the report, and even this is not necessarily realized at any distance downstream from its input because of ground seepage.

p. 18, para. 4 – The statement concerning a growing commercial harvest by the Muckleshoot Tribe is false. Harvest figures have declined since the early 1940's, and, in fact, the Tribe has prohibited commercial fisheries for the past several years.

p. 21, para. 1 – The Tribe strongly supports the statement that present artificial flows between Buckley and Dieringer are totally inadequate to support passage spawning and rearing of salmonids, and that the desirable minimum flows are those occurring naturally in the river.

p. 21, para. 3 – While natural limiting factors are important in terms of "carrying capacity" and maximized small production per spawner, at the current level of salmonid escapement it is doubtful whether natural limiting factors are anything more than negligible relative to man-caused limiting factors.

p. 22, Figure 8 – The map omits a portion of the Muckleshoot Indian Reservation: Section 1, T 20 N, R 5E.

p. 27, para. 2 – The minimum flow requirements necessary insure adequate flushing of the esturine habitat in Commencement Bay should be considered.

MUCKLESHOOT INDIAN TRIBE
39015 172ND AVENUE S.E. - AUBURN, WASHINGTON 98002 - (206) 939-3311

p. 31. para. 1 – The Tribe seriously questions the anticipated need for 104-foot draft tankers in Puget Sound.

p. 34, para. 2 – The comments on adult and juvenile salmoind bypass facilities are inadequate relative to the recognized shortcomings of the facilities.

p. 35, para. 1 – Prior to 1906 the White River flowed primarily into the Duwamish-Green and thense Elliott Bay. After diversion of the White into the Puyallup, Pierce and King Counties constructed a concrete wall to permanently prevent it from returning to its former primary channel.

p. 37, para. 3 – The Tribe strongly supports the proposed closure of the White River and all its tributaries to future out-of-stream consumptive water appropriations.

Appendix C, WAC 173-510-020(2) – The table implies a minimum flow for the White River downstream from the Dieringer Outfall, obtained by subtracting the Puyallup River flows at station 12.0965.00 from those at station 12-1015. The Tribe believes that these values must be expressly stated to prevent misunderstanding and/or mis-use.

Appendix C, WAC 173-510-030 – The Tribe strongly urges that the White River downstream from the Dieringer Ooutfall also be closed to future out-of-stream consumptive water appropriations. The flow in this section is less than or equal to Ppuget Power's combined release at Buckley and Dieringer, and because it is subject to plant operations, no continuous flow is available.

Again, thank you for the opportunity to make the preceeding comment:

Sincerely,

Richard Reich
Tribal Attorney

Bruce D. Doble
Management Biologist

Dennis Moore
Enhancement Biologist

cc: Robert Kavanaugh

Muckleshoot Indian Tribe, letter dated February 5, 1980

Richard Reich, Bruce Doble, Dennis Moore

1. Comments noted and participation appreciated.

2. 25 cfs has been changed to 30 cfs.

3. Muckleshoot harvest have been changed to depict a decline in harvest.

4. Comment on importance of freshwater flushing in Commencement Bay has been added.

5. A complete closure of the White River is presently being proposed.

022634

Ken Sladky

United States Department of Agriculture

Soil Conservation Service

Room 360 U.S. Courthouse
Spokane, Washington 99201

FEB 1 [illegible]

January 29, 1980

John F. Spencer
Assistant Director
Office of Water Programs
Department of Ecology
Olympia, Washington 98504

Dear Mr. Spencer:

Thank you for sending us a copy of the Puyallup River Basin Instream Resources Protection Program document. Members of my staff have reviewed the document. Our comments follow: The reference to "no more than 8,000 acres of irrigated land on page 4 is less accurate than we would like in a document of this kind. In view of proposed adoption dates, a more accurate acreage may not be possible to obtain prior to final printing, however. We are reluctant to support the statement regarding loss of prime agricultural land to urbanization next to last paragraph, page 34. Perhaps a more positive statement regarding the need to preserve these areas could be included.

The 8,200 acre-feet of water seems low if 8,000 acres are irrigated. The actual amount appropriated for irrigation purposes may be more accurate than the estimate.

If you have questions regarding these comments, please contact me.

Sincerely,

LYNN A. BROWN
State Conservationist

cc: Karren M. Lee, Area Conservationist
SCS, Bellevue, Washington

8400

U.S. Department of Agriculture, Soil Conservation Service letter dated January 29, 1980.

Lynn A. Brown.

1. Comments noted and corrections made.

January 30, 1980

Public Hearing Officer
Department of Ecology
Mail Stop PV 11
Olympia Washington 98504

Gentlemen:

I attended on Tuesday evening, the 15th of January, the meeting held at the Puyallup library which dealt with PUYALLUP RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM.

In the minds of those who attended whom I spoke to, about 10 in number, the balance of the 45 people were employees of the State, thought the meeting should have been entitled, "SAVE THE FISH", or better yet "FISH BEFORE FLOODS." No one I am sure objected to the overall program of providing better conditions for the rearing of fish, but as populations expand, so shall their habits, and their habits are providing the unsanitary conditions for the ideal conditions for fish in all of the waters and tributaries.

I believe that the total efforts should be made where man knows what he is doing and where he does not know, do not create problems-which is what you are doing by exercising control over the various streams. Not that we will not have to do this later on, but without the knowledge of the control of the river itself. With the man made dykes confing its corriders, it would appear to us who live aling the rivers that the first order of business is to control the FLOODS, with no interdepartmental interference and with an all out effort from each department under one franchise to provide the necessary contribution to control the rivers especially the Stuck, the Carbon, the Puyallup and the Green and White rivers particularly where the rivers are running wild during certain times of the year when the river velocity increases and when the volume is in excess of the ability of the confines of the dykes to hold the water – two things happen: the river water with its increased velocity and momentum creates a force greater than the weight of the rocks which flow in the rivers base and thus rolls that rock in direct proportion to this created force. The net result is the rock moves from point A to point B creating a noise and vibrations which in my opinion is what is scaring the fish during sponing and at the same time creating river bars and thus taking the necessary space for the excess water and leaving the river with no alternative but to go over the dykes and flooding the country side. When we had do dykes, the rocks did not roll, the water just went helter skelter, fould its own boundries, the had no particular affect on the fish.

What I am trying to prove is "FLOODS BEFORE FISH". Culture the fish in known condition, set them free in every tributary as to their culture and concentrate on the control of the river. I feel that you are going at it just backwards in the order of importance, tax payers money, and for the fish. I believe the following should be persured expeditiously and the control over the tributaries shelved:

1. Establish standards for the maintainance of the rivers
   a. maximum heights of levy necessary for the 10o yr flood level
   b. establish the maximum heights that bars will be allowed to build up toin open rivers, constricted river bed areas, open to and including areas where constrictions create greater velocity
   c. Laws giving authority to one river control agency the exclusive responsibility to remove river bars based on established maximums
   d. Stop the rolling of rocks by creating resvoirs in stream thus checking all rock movement in time.

I have volenteered my time to serve on such a control group because my engineering experience and ability goes as faras anyones in the field. I feel that until Homes before fish is considered by controlling the floods, you are not doing the fish a favor and certainly not the tax payer.

Mr. Wayne G. Mosby, letter dated January 30, 1980.

1. Comments noted.

2. Your letter has been forwarded to both the Department of Ecology Southwest Regional Office, the Soil Conservation Service, and Pierce County.

STATE OF WASHINGTON

DEPARTMENT OF GAME

Dan Lee Ray
Governor

November 30, 1979

Mr. Bob Kavanaugh
Water Resource Policy Development Section
Department of Ecology
St. Martin's College Campus PV-11
Olympia, WA 98504

Dear Bob:

The Game Department's request for closure of the White River to further appropriation is based on the coincidence of the 50% exceedence flow with the Game Department's requested rearing flow: if there were no diversions the White River would have less than the preferred late summer rearing flow approximately half of the years. However, existing diversions preclude attainment of preferred rearing flows except in extraordinary years. Late summer rearing flow is, in most cases, the most critical flow in limiting the production of steelhead. Consequently, each and every additional diversion will cause a loss of steelhead production. This rationale applies also to our other closure requests.

In my letter of 19 November I intended to include Kellogg, Ledoux, and Neisson creeks in the request for closure of the Puyallup River in the vicinity of Electron and the Puget Power diversion. This is to clarify our request for closure.

I am returning to you the draft Puyallup Basin I. R. P. P. sections with a few comments.

THE DEPARTMENT OF GAME

Hal

Hal A. Beecher, Ph. D.
Research Analysist II

HAB:glm

Enclosure

DOE to tighten river usage

by Mary Welch

The state Department of Ecology will be denying water rights permits on certain Puyallup [illegible] streams for irrigation, real estate development and other large users under a draft regulation to be adopted in March.

Bob Kavanaugh, DOE planner, said the proposed rule will close some Puyallup area streams to further withdrawals and set minimum acceptable water levels on others as part of a comprehensive program to balance resources of Western Washington river basins.

So far, only Puget Power is said to be opposed to the DOE plan because it fears the restrictions will interfere with generating capacity at their Electron plant during peak demand.

Puyallup Tribal officials agree with the plan, but say they think it could go further.

Mandated by the 1971 Water Resources Act, the regulations will halt water withdrawals from the White River, South Prairie Creek, Kapowsin Creek, Kapowsin Lake, Clarks Creek and Ohop Creek and will establish minimum flows on the Puyallup and Carbon rivers.

Comments on the draft plan are due Feb. 17.

DOE planners rank the Puyallup River and its tributaries sixth in importance to fisheries and other resources in relation to the 24 river basins in Western Washington.

Plans for all 24, plus the White Salmon and the Klickitat rivers in Eastern Washington, will be prepared separately within a three-year period ending in 1982.

The city of Seattle initiated a court suit over a similar plan proposed for the Snohomish River Basin because closure of the Tolt River would restrict the city's ability to generate electricity.

But Kavanaugh expects no contest this here.

He said Puget Power's worries are based on a misunderstanding about the proposal's effect on existing water rights.

He said the proposal will not interfere with existing water rights or individual requests for domestic use.

Demand for irrigation water is likely to diminish because farmland will make way for residential and industrial development.

But at the same time, water for hydro-electric generation, flood control and development will be in greater demand. Kavanaugh believes enough groundwater will be available to meet demands into the 21st century.

The Puyallup basin plan is to be part of a complete water management program 10 years down the road, according to Kavanaugh.

The complete plan will determine existing water rights and future water availability and close even more streams to withdrawal.

Kavanaugh said preservation of wildlife, fish, navigation, aesthetic and water quality are measures to be balanced by the regulation.

These resources were given equal weight when representatives of Ecology, Fish and Game departments assigned a rating to individual streams. High rated streams require higher levels of flow protection.

Under the DOE rating scheme, South Prairie Creek and the Greenwater River received highest ratings, while the lower Puyallup from Sumner to Commencement Bay received the lowest rating.

Flow protection is important on the Greenwater River, for example, because of the possible extinction of spring chinook salmon.

Last year, the spring chinook dwindled to a population of 50 adults, Kavanaugh said.

South Prairie Creek, Kapowsin Creek and its tributaries Kapowsin Lake and Ohop Creek, are also considered to be important to [illegible] and steelhead and will be closed under the DOE action.

South Prairie Creek, known to produce [illegible] percent of the [illegible] salmon when the Puyallup basin, is currently under study by The Evergreen State College to [illegible] minimum flow needs of wildlife.

Clarks Creek has been proposed for [illegible] because allocations exceed minimum flow. Yet the stream which flows through Puyallup city lands still manages to produce coho and chum salmon and steelhead trout.

Other Puyallup River tributaries under consideration for closure include the Carbon River, Le Dou Creek, Nelson Creek, Swan Creek and Clear Creek.

Kavanaugh said water quality in the Puyallup and its tributaries is "less than ideal," even though the river is ranked fifth in number of fish caught in 1978.

Water quality is reduced by glacial [illegible] the summer months, logging, municipal [illegible] systems, livestock operations and the periodic flushing of Mud Mountain Dam near Buckley on the White River.

The city of Puyallup dumps wastes [illegible] primary treatment plant into the Puyallup River, resulting in high bacteria counts during periods of high runoff.

Fecal coliform counts taken in Bonne Creek near Buckley, White River at Sumner and Puyallup River at Meridian Street Bridge exceed from time to time a level considered [illegible] by the DOE.

Lake Tapps and Buckley area groundwater has a high naturally occurring iron content.

But the Puyallup basin has "no more water quality problems than anywhere else," Kavanaugh said.

First Assembly slates vocalist

PUGET
POWER

February 7, 1980

State of Washington
Department of Ecology
P. O. Box 829
Olympia, Washington 98504

Attn: Hearing Officer

Dear Sir:

Puyallup River Basin Instream Resources
Protection Program Draft Document

Puget Power has reviewed the draft document for the Puyallup River Basin Instream Resources Protection Program and the following comments are provided for your consideration in preparing the final document:

1. The subject program states that it will not affect existing water rights or the manner in which water is presently used. That such rights not be affected is critical since the designation of minimum flows in the lower reach of the White River would adversely impact peaking operation of Puget Power's White River Power Plant. Also, Neisson and Kellogg Creeks are cited for closure with no mention of Puget's existing water rights on these streams. The importance to the region and its inhabitants of Puget Power's two hydroelectric generating projects (White River and Electron) located in the Puyallup River Basin, cannot be overemphasized. Their operation must be preserved and protected since they represent one of the most valuable uses of the resource in this basin.

2. The program requires maintenance of minimum instantaneous flow, whereas most records are shown as daily average flow. The difference between daily average and instantaneous flows occuring within a 24 hour period can be considerable, especially in an artificially manipulated system such as the White River.

   For example, instantaneous flows may be "zero" below Mud Mountain Dam while the daily average for the same location is as high as 3,800 cfs (USGS data, White River Near Buckley, 1958-59).

PUGET
POWER

   Natural flows at Buckley would not meet minimum flow requirements 268 days of a 13 year record (1958-71) on a daily average. Presumably on an instantaneous basis minimum flows would be violated substantially more often. Augmentation from Puget and/or the Corps would be required, however, there is still no guarantee that such action would provide the sufficient amount of water.

3. No rationale is provided in the document for the recommended minimum flows.

4. The determination of proposed minimum flows should be clarified. For example, no specific minimum flow recommendations are given for the White River. Only through inference can an estimate of a minimum flow requirement for this river be made by subtracting from flows suggested at Puyallup River gates upstream and downstream from White River. The inferred minimum flow could only be attained by special operating restrictions on Puget's White River Power Plant.

5. Puget releases at least 30 cfs past the diversion facilities, not 25 cfs as stated in the document.

6. Puget's White River flume has a design capacity of 2,000 cfs, not 1,800 cfs as stated in the document.

7. Prior to 1906, the White River flowed directly into the Duwamish River and at times overflowed into the Stuck. The 1906 flood diverted the channel into the Stuck and this was made permanent by the King-Pierce Intercounty Commission.

8. The White River Plant is presently not a FERC licensed facility and Puget is not in a "relicensing" procedure as stated in the document.

PUGET
POWER

State of Washington
Department of Ecology
February 7, 1980
Page Three

9. The principle decrease in the White River and Puyallup River fisheries resource has occurred in the last 30 years. Both the White River (1912) and Electron (1904) Plants have operated substantially longer than 30 years with no apparent adverse affects on the fisheries resource. This fact suggests that other activities related to the river may be the cause of the decline of the fisheries resource rather than Puget's generating plants.

If you have any questions or would like further information regarding these comments please contact Dr. Robert Clubb or Virginia Howell, of my staff, at 453-6871 or 453-6838, respectively.

Very truly yours,

W. J. Finnegan, Director
Conservation & Environmental Affairs

Puget Power letter dated February 7, 1980

Mr. Finnigan

1. Your comments and interest is appreciated.

2. The peaking operation at the Dieringer Plant is recognized. The program does not affect the operation of the White River Power Plant because it is operated under a water right claim existing prior to the adoption of this program, presuming the claim is valid.

3. Neisson and Kellogg creeks have been included in streams proposed for closure. If PSP&L has valid existing rights on those streams you are not affected.

4. The importance of the Dieringer and Electron hydroelectric facilities is recognized. Unfortunately, you office could not or would not provide information on your plans for future run of the river hydroelectric sites within the Puyallup Basin. In the absence of better information, we assumed that both the Carbon and Mowich rivers have suitable sites.

5. The wide range of instantaneous flows on a stream with storage is recognized. On such a stream, a minimum instantaneous flow is particularly important to provide instream resources a base level of protection. We recognize the fact that this program cannot affect your existing water claims on the Puyallup and White rivers.

6. The Department of Fisheries has requested that the minimum flow within the White River be maintained at least 435 cfs. DOE is now proposing to close the entire White River.

7. We propose to close the White River to further consumptive appropriation.

8. Puget Power's release of 30 cfs at the diversion facilities is noted as is the flume capacity of 2,000 cfs.

9. Text corrected.

10. The existing trend in declining salmon runs within the White River is unfortunately a fact of life. It is presently the position of the departments of Fisheries and Game that the hydroelectric operations at Dieringer and Electron are causing an adverse impact on fishery resources. It is obvious to all that instantaneous "zero flows" from Mud Mt. Dam are equally damaging to our instream resources and hydroelectric power generation.

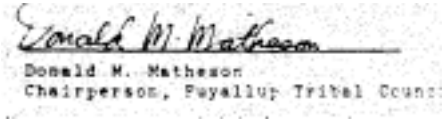
Puyallup Tribe of Indians
MEDICINE CREEK TREATY NATION

TO: Robert Kavanaugh

FROM: Puyallup Tribe of Indians

DATE: 5 Feb 80

Enclosed for your information and consideration is a copy of the Puyallup Tribe's "Instream Flow" memorandum. Thank-you for your time and effort.



Puyallup Tribe of Indian, letter dated February 5, 1980

Donald M. Matheson

1. Comments noted and participation appreciated.

2. Wapato Creek has been included in streams proposed for closure.

3. All tributaries of Clark Creek including Diru Creek are proposed for closure. Refer to the draft WAC 173-510 for additional stream closures, Appendix C. Puyallup Tribal fishery data and substantiation. We will continue to review the situation on the Puyallup and made additional closures as necessary in our next program review.

4. Low flows at Electron are caused by either natural low flows and/or by water being diverted 10 miles upstream for hydroelectric power generation. The Instream Resources Protection Program cannot affect any existing water right. (Redress may be available under RCW 75.08-.040 through the Department of Fisheries?)

5. Existing enforcement is admittedly weak due to personnel shortages at the Department of Ecologys Southwest Regional level, however, it is hoped that the departments of Fisheries, Game, and Tribal input and involvement will help to overcome this problem.

6. The Department of Ecology plans to conduct a Basin Plan within the next few years depending on the availability of staff planners and finances.

Puyallup Tribe of Indians
MEDICINE CREEK TREATY NATION

M E M O R A N D U M

TO: Department of Ecology

FROM: Puyallup Tribal Fisheries Division

DATE: February 4, 1980

SUBJECT: In Stream Flows

The Puyallup Tribe's basic management objective is to afford all native species of Puyallup River anadromous fish adequate protection to sustain a viable run. To accomplish this goal, the Puyallup Tribal Fisheries Management Division would like to see more streams closed to future consumptive appropriations in addition to those proposed in the Department of Ecology draft for the Puyallup River Basin. This is necessary because enough habitat has already been lost and that which remains is badly needed for instream resource use. Setting minimum flows in those streams given a low score by the rating committee will not be enough protection. For example, Wapato Creek is proposed to have a minimum flow of only 1 cfs, yet tribal fisheries personnel have seen portions of the creek get completely dewatered by local irrigation uses. While Wapato Creek has almost no spawning habitat, it does have adequate rearing habitat and like Hylebos Creek, is an independent drainage. If native stocks are to be protected, then that means that hatchery runs must not conflict with native runs during harvest times. Harvests of hatchery salmon could occur in the separate terminal areas of Hylebos and Blair waterway when native runs destined for the Puyallup River need protection. Survival of hatchery plants in Wapato and Hylebos Creek will be dependent upon good water quality and available flows for summertime rearing. The best estuary habitat is also located near these two waterways.

The Puyallup Tribe of Indians supports the Washington Department of Ecology in the establishment of further closures of surface water appropriations from several streams and lakes within the Puyallup Watershed. South Prairie Creek and its tributaries such as Wilkeson Creek, provide the majority of Pink salmon spawning and rearing habitat within the Puyallup Basin. This area also supports major chinook, coho and steelhead populations.

2nd Street • Tacoma Washington 98404 • 206 597-6200

Kapowsin Creek and its tributaries _____ spawning tributary to the Puyallup River _____ confluence of Kapowsin Creek, the mainstem of the Puyallup River is adversely effected by the _____ Project. Spawning and rearing habitat within Kapowsin Creek supports large chinook, pink, chum and coho salmon along with steelhead trout. This creek has undergone _____ projects by the Tribe and the Washington Department of Fisheries. Both the Tribe and WDF have also under_____ planting enhancement projects.

Clarks Creek and its tributaries support large populations of chinook, coho and chum salmon along with steelhead. The Tribe has undertaken an extensive planting program within these creeks. Clarks Creeks provides excellent summer rearing habitat due to its spring water source. The lower portion of Clarks Creek not only provides a water source for the Washington Department of Game Puyallup Hatchery but also available anadromous salmonid spawning habitat.

Diru Creek (10-0029), a tributary to Clarks Creek, provides the main water source for the Tribes Rainbow Springs hatchery. Natural spawning gravels are lacking due to low flows and heavy siltation.

The Puyallup Tribe of Indians recommend closure of the following streams within water Resource Inventory Area 10 to future out-of-stream water appropriations. These streams are additions to existing surface water closures and streams proposed for closure within the present Department of Ecology draft:

1) Clear Creek (10-0022) and all tributaries.
   Tributary to Puyallup River at RM 2.9.

2) Canyon falls Creek (10-0410)
   Tributary to Puyallup River at RM 16.2.

3) Fiske Creek (10-0596)
   Tributary to Puyallup River at RM 26.65.

4) All unnamed tributaries to Hylebos Creek.

5) Puyallup River and all tributaries to _____ the Mowich River (10-0624), above the Electron Diversion at RM 41.7.

6) Le Dout Creek (10-0620)
   Tributary to Puyallup River at RM 39.2.

7) Niesson Creek (10-0622)
   Tributary to Puyallup River at RM 41.1.

8) Wapato Creek)10-0017)
   Independent drainage to Blair Waterway, Commencement Bay.

9) Strawberry (Salmon) Creek (10-0035)
   Tributary to White River at RM 2.1.

Swan Creek (10-0023), which is a tributary to Clear Creek, is part of an intensive enhancement project supported by the Puyallup Tribe. The Tribe has planted both coho and chum fry in Swan Creek beginning in early 1976 (Table 1). Adult spawning ground counts for 1979 have shown a marked increase in both coho and chum over previous years.

Both Clear Creek and Swan Creek provide excellent rearing and spawning habitat for anadromous salmonids. Juvenile population estimates for Swan Creek during October, 1979, showed densities of coho fry per square meter from 0.41 to 0.81, dependent upon study section. These rather high densities of coho fry in relation to hatchery plants, indicates good quality rearing habitat availability.

Canyonfalls Creek provides both spawning and rearing habitat for salmonids. An upper section of this stream has undergone enhancement by the Washington Department of Fisheries to increase spawning habitat. The lower section of Canyon falls Creek provides deep pools and glides with high invertebrate production.

The Tribes out-plant program for Canyonfalls Creek has planted 183,150 chum fry in April, 1977; 48,100 chum fry in April, 1978; and 21,261 chum fry in May, 1979. Spawning ground counts have indicated an increased utilization in response to enhancement.

Fiske Creek has an excellent coho fry rearing capability. Juvenile population estimates for 1979 showed that this creek provided the highest density of coho fry per square meter of all the other study streams (0.93 coho fry/m^2).

A major factor of consideration is that Fiske Creek has not been planted since 1976, by either the Tribe or Washington Department of Fisheries. Spawning ground spot checks have failed to find adult utilization of spawning areas.

M	PEAK ADULT COUNTS IN 1979 (see river mi)				1979 TRIBAL PLANTS COHO	1979 TRIBAL PLANTS CHUM	1979 COHO fry/m^2	AVAILABLE SPAWNING HABITAT	AVAILABL REARING HABITAT
	CHINOOK	PINK	COHO	CHUM					
			12/3/79 6 live 6 dead below 12th St. culvert					Limited to upper tributaries	FAIR
TO CREEK									
BOS TRIB. 0-0013) .25 - 1.75			12/29/79 7 live		30,150	104,450	0.42	EXCELLENT	GOOD
I CREEK 10-0023)			12/3/79 8 live	12/3/79 28 live 2 dead	54,025	67,630	0.41 to 0.81	EXCELLENT	EXCELLEN
IKS CREEK 10-0027) 1.8 - 4.0			12/3/79 106 live 38 dead	12/3/79 81 dead 6 dead	95,048		Exceeds that in Fiske Cr.	Good, but limited by diversion	EXCELLEN
NEL CREEK 10-0406) 0.1 - 0.6				02/02/79 14 live 202 dead				GOOD	GOOD
YON FALLS 10-0410) 0.0 - 0.6			12/7/79 12 live	01/31/79 1 live 56 dead		87,482		GOOD, BUT LIMITED	GOOD
KE CREEK							0.93	EXCELLENT	EXCELLEN
OWSIN CREEK (10-0600) 0.0 - 1.1	10/11/ 6 live 26 dead	10/11/79 279 live 137 dead						EXCELLENT	EXCELLEN
ER KAPOWSIN (10-0600) 1.1 - 2.0	10/11/79 15 live 51 dead	10/11/79 189 live 33 dead	11/16/79 2 live 5 dead					EXCELLENT	EXCELLE
WER SO. PRAIRIE (10-0429) 1.1 - 2.3	10/2/79 90 live 17 dead	10/2/79 1355 live 846 dead						EXCELLENT	EXCELLE
DDLE SO. PRAIRIE (10-0429) 2.7 - 3.7	10/2/79 60 live 30 dead	10/2/79 952 live 1173 dead						EXCELLENT	EXCELLE
PER SO. PRAIRIE (10-0429) 8.0 - 8.3		10/15/79 21 live 441 dead						EXCELLENT	EXCELLE
LARSON					14,125			GOOD	GOOD

TABLE 1. Puyallup Tribal Hatchery out-plants into Swan Creek.

DATE	NUMBER OF COHO	NUMBER OF CHUM
4/6/76	---	144,094
4/14/76	12,000	---
4/13/77	75,200	---
4/25/77	---	214,875
4/27/78	---	28,363
4/11/78	52,725	---
5/7,8/79	---	44,752
5/18/79	---	22,868
6/5,6/79	54,025	---
TOTALS	193,950	454,952

TABLE 2. Puyallup Tribal Hatchery out-plants into tributary 10-0013 to Hylebos Creek.

DATE	NUMBER OF COHO	NUMBER OF CHUM
4/26/77	---	145,350
4/27/78	---	12,900
4/11/78	22,425	---
5/5/79	---	58,995
5/13/79	---	16,965
6/18/79	30,150	---
TOTALS	52,575	234,210

The unnamed tributaries to Hylebos Creek provide good rearing and spawning habitat. Hylebos Creek is presently closed but the tributaries have previously not received much notice. Tributary 10-0013 is part of an ongoing enhancement project through hatchery out-plants (Table 2). Juvenile population estimates for this tributary during October 1979, indicated a density of 0.42 coho fry per square meter.

Spawning ground counts for tributaries 10-0013 and 10-0014 have shown a marked increase in the number of adult chinook, coho and chum returning to yhr area over the past 4 years.

The Puyallup River above the Electron Diversion has sufficient flows to substain adult runs of anadromous salmonids. This area of the Puyallup River along with the Mowich River, contain suitable salmonid spawning gravel primarily within the 1 to 3 inch size range. Pool-to-riffle ratio is 1:9 and primarily a result of increased gradient and short shallow glides.

The Tribe recommends that minimum flows be required and maintained past the Electron Diversion to ensure full utilization of the prime quality habitat upstream. Presently, the mainstem of the Puyallup River below the diversion and until the confluence of Niesson Creek at river-mile 41.1, is virtually unusable by anadromous species due to lack of water. Except for natural springs, tributary streams and high water flow passage at the diversion, the mainstem and the Puyallup River remains dewatered until reintroduction of flows at the Electron Power Generating Plant.

Both LeDout Creek and Niesson Creek are effected by the dewatered section of the Puyallup River. While both of these creeks contain prime quality salmonid rearing and spawning habitat, low flows wihtin the Puyallup River make migration into and out-of these two creeks difficult to impossible during critical periods of adult and juvenile movements.

Juvenile population estimates over the past 4 years for LeDout Creek have found no utilization of rearing habitat by coho fry. These estimates have, however, shown utilization of the habitat by juvenile rainbow/steelhead trout.

Strawberry (Salmon) Creek (10-0035) provides excellent rearing habitat for coho fry. Juvenile population estimated collected 71 coho fry with an estimated 20% effectiveness of capture over the 300 foot study section. Heavy in-stream vegetation and debris made present electroshocking techniques unusable. Of primary importance is that this stream has not been planted by the Tribe or WDF.

Strawberry Creek meanders through livestock grazed pasture and small farm lots. Stream cover is good and spawning gravel is limited to a small stream area near the Puyallup-Sumner Highway. Stream bank stability is low. Summer low flows are, however, enhanced by numerous springs. Strawberry Creek shows excellent enhancement and maintenance possibilities. Future projects will include spawning gravel introduction and bank stability.

The Puyallup Tribe recommends that if only minimum flows are established upon certain streams within the watershed, enforcement for these regulations be conducted not only upon a complaint basis but also upon a patrol basis during critical periods. Streams such as Wapato Creek (10-0017) have a set minimum flow of 1.0cfs but is subjected to water removal during the summer by nearby residence for crop irrigation. The stream quickly becomes dewatered before a complaint, if any, is filed.

Enhancement and maintenance of streams, rivers and lakes within the Puyallup Watershed is one major objective of the Puyallup Tribe's Fisheries Division. Fisheries, wildlife and the aesthetic aspects of in-stream flow are important consideration factors in any project undertaken by the Tribe.

We feel that the above noted additional closures are necessary because the present DOE draft proposal does not go far enough in protecting and maintaining all in-stream resources. Enough prime quality habitat has already been lost through past water appropriations in important stream reaches.

The Puyallup Tribe further recommends that a complete Puyallup River Basin Plan be formulated as soon as possible. Such a program will involve a more intensive and comprehensive investigation into the basin's resources.

The submission of this report to the Department of Ecology (DOE) shall not be construed as a waiver of any right derived from any source and of any nature whatsoever which the Puyallup Tribe may now or at any time possess, to the ownership, possession, use, or regulation of any water. The Puyallup Tribe expressly declines to waive any water rights which it may possess.

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504 206-753-2800

M E M O R A N D U M

December 5, 1979

TO: Files

FROM: Robert Kavanaugh

SUBJECT: WASHINGTON DOE – KING COUNTY COORDINATION FOR THE PUYALLUP RIVER BASIN I.R.P.P.

1. Coordination with King County representative Rich Butler and Robert Kavanaugh, Program Planner, developed the following information:

   a. Mr. Richard Butler, King County representative, voiced the opinion that the County's interest in the White River would be minimal since no domestic municipal water supplies were available on the White River.

   b. Mr. Butler requested a copy of the program EIS, draft regulation, and program document. (I explained that no supplemental EIS would be prepared). King Co will be placed on DOE's mailing list.

   c. Kavanaugh and Butler discussed the low flow problems on the White River with respect to fisheries and wildlife.

2. King County was invited to participate in the program at any time. The dates of the public hearing in Enumclaw were provided.

REK:nld

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504 206-753-2800

M E M O R A N D U M

March 6, 1980

TO: Puyallup River Basin Instream Resources

FROM: Robert Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN INSTREAM PROGRAM UPDATE

1. The Puyallup River Basin Instream Program is proceeding on schedule with good participation by the public, tribal, and state agencies.

2. Comments from the public and local agencies have been incorporated within the Puyallup River Basin Program document wherever possible. The comments and information were very helpful and appreciated.

3. New information includes the groundwater profiles developed by our Water Resources Investigation section. In addition the wording of the groundwater section in 173-510-040 WAC has been changed to improve clarity. A copy of all public comments and responses is included within the final program in Appendix F.

4. Other highlights of the revised program include the addition of the White River and 14 Puyallup River tributaries on the list of streams to be closed to future out-of-stream consumptive use. These closures are considered essential in order to protect the instream resources of fish, wildlife, and water quality.

5. A copy of the program document and WAC 173-510 will be mailed to you within the next week. The public adoption hearing for the Puyallup River Basin Instream Resource Protection Program will be held on the 19th of March at 10:00 a.m. in Room 279 DOE Headquarters, St. Martins Campus. You are welcome to attend.

Robert E. Kavanaugh
Puyallup River Basin Planner
753-6875

RK:nld

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY

M E M O R A N D U M

December 6, 1979

TO: Files

FROM: Robert E. Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN WWIRPP COORDINATION BETWEEN WASHINGTON STATE DOE AND THE CITY OF PUYALLUP

1. A coordination meeting was conducted by DOE representative, Robert Kavanaugh, with City of Puyallup representative Gary Krugger and Mr. Gray, (City Planner and City Engineer). The following subjects were discussed: (Groundwater and the source of existing aquifers was covered but many questions remained. Irrigation needs were also discussed.)

   a. Mr. Kavanaugh reviewed the contents of the WWIRPP, EIS and answered specific questions for the city representatives. The issue of existing water rights security was discussed in detail with assurances that no existing water right would be affected.

   b. Following the questionnaire format provided by DOE the city representatives provided the following data:

      1) Population of the city is about 16,900 at the present time. Forecasts for the year 2000 are from 24,000 to 28,000. The city plans to expand its limits to the north and south. No figures for the year 2020 were available.

      2) Industrial development will not be substantial but commercial and light industry is likely to increase. The development of the valley freeway to Fife will determine to some degree how the area north of Puyallup develops.

      3) Municipal water needs for Puyallup are provided by a number of wells, Salmon springs and Maplewood springs. The city is presently pumping about 9.78 MGD. By the year 2000 this need will go to 14 MGD according to Mr. Gray. The source for municipal water will continue to focus on groundwater, however, at some point water will be purchased from Tacoma. In addition the city plans to increase its existing well capacity and also drill new wells.

      4) Sewage treatment facilities are presently overtaxed. A secondary treatment plant will be constructed next year. This plant will be adequate for about the next 10 years. The existing trunkage system is adequate.

      5) Water quality problems are experienced within the Puyallup River and during low flow periods within Salmon and Maplewood Springs. Gray's view is that septic tanks are contaminating wells which in turn contaminate the underground aquifers that feed the municipal water supplies. Mr. Gray feels that the valley floor is being saturated by urban runoff from the South Hill area to an increasing degree over a long period of time.

      6) The Clarks Creek watershed was discussed in detail. This area covers about 9 square miles and is already heavily developed. Recognizing the importance of protecting the Maplewood Springs area the city plans to restrict development here.

      7) Specific problem areas in the Clarks Creek watershed and related attributes are as follows:

         Surface water quantity remains adequate, however, the stream is overallocated.

         Water quality problems exist within the Meeker drainage ditch from non-point sources. (Drains from fair grounds and along 10th Street into Clarks Creek)

         Groundwater quality problems are experienced during the dry season.

         Recreation values are high in Clarks Creek near the city park with fishing and swimming being popular summer pasttimes.

         Fish production at the State Game Department hatchery is another important beneficial aspect of the Clarks Creek water resource. The city would favor any D.F. or Puyallup Tribal salmon enhancement projects according to Mr. Gray.

         Wildlife values are high with waterfowl utilizing the stream and adjacent state experimental form.

         Aesthetic values of Clarks Creek are high in the vicinity of the City Park.

2. The meeting adjourned with the understanding that the City of Puyallup would have an opportunity to review the draft regulation WAC 173-510 and the program document.

REK:nld

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY

M E M O R A N D U M

October 18, 1979

TO: Files

FROM: Robert Kavanaugh

SUBJECT: Water Quality Considerations within the Puyallup River Basin

1. Coordination with Mr. Robinson, S.W. Regional Office, indicated that the following water quality problems exist within the Puyallup River Basin:

   a. Of primary concern are the primary treatment sewage plants of Tacoma and Puyallup. Both plants are known to discharge sewage into the Puyallup River during periods of high storm runoff. The Tacoma plant does chlorinate but the chlorination may cause more harm than good.
   b. Commencement Bay has had a long history as a dumping area for highly toxic chemicals from the local industry. Recently bottom samples in this area are producing some very hazardous and toxic sludge.

2. Robinson briefly discussed the new treatment facilities in some of the smaller communities and suggested coordination with Dick Cunnigham.

REK:dh

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF GAME

December 26, 1979

MEMORANDUM

TO: Puyallup Tribal Fisheries

FROM: Fred W. Holm, Program Manager
Fisheries Management Division

RE: Closure of future water appropriations from Clarks Creek

The Washington State Department of Game concurs with your request to the Department of Ecology that a closure of all future appropriations of instream water from Clarks Creek is necessary.

However, our Department has long range plans to construct a steelhead rearing pond on our property below our water diversion dam. This may require some additional water, but the withdrawal would be of a nonconsumptive nature and would not effect the flows of Clarks Creek.

As long as the closure would not prohibit this “non-consumptive” withdrawal for fish rearing, we will agree to it.

FWH:meg
cc: Ray Johnson, DOF
Harry Hokanson, DOE
Jerry Smith, DOG
Ted Muller, DOG

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

M E M O R A N D U M

January 10, 1980

TO: Files

FROM: Robert Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN INSTREAM R.P.P. INFORMATION BRIEFING TO PIERCE COUNTY BY WASHINGTON STATE DEPARTMENT OF ECOLOGY

1. The Puyallup River Basin I.R.P.P. draft document was briefed to Pierce Co. officials. The following activities occurred.

   a. The draft program document and WAC 173-510 was presented to the group.

   b. Mr. Comis was concerned about the vague wording of the groundwater section 173-510 and desired stronger assurances that no unnecessary restrictions would be placed on the county.

   c. Other subjects of concern included the problem of flood control and the maintenance of flood control levees and channels within the Puyallup Basin.

   d. Mr. Thorton presented a schematic model of the impacts of stream bed gravel filling problems in the area of flood control.

2. County representatives were invited to attend the public hearings to present their views on flood control and groundwater on January 15.

3. Attendees included Mr. Bill Thorton, John Comis, _____, _____, Mr. Ken Slattery and Mr. Robert Kavanaugh.

RK:nld

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

M E M O R A N D U M

December 27, 1979

TO: Files

FROM: Robert Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN I.R.P.P. COORDINATION BETWEEN DOE AND THE MUCKLESHOOT INDIAN TRIBE

1. Mr. Riech, Muckelshoot Tribal attorney called to discuss low flow problems on the White River with respect to the W.W.I.R.P.P. The following discussion ensued:

   a. Mr. Riech requested a copy of the draft program document and regulation. Kavanaugh provided a brief summary to include the rationale for leaving the lower White River open to appropriation.

   b. Reich inquired if the DOE would at some future time be interested in intervening to ensure adequate flows were maintained. I explained that DOE was awaiting the outcome of the present FERC proceedings. It was the tribes belief that spawning would be more successful in the dewatered section of the White River if adequate water were available and the siltation problem were resolved.

   c. Riech stated that it was his belief that Puget Power was holding back diverted water within Lake Tapps, even during low flow periods, for recreational purposes. He elaborated that Puget Power had real estate interests in lake-side propterty and felt an obligation to keep the lake levels up for the lake-side residents recreational use. There was some doubt if Puget Power could legally use the diverted water for recreational purposes.

   d. Riech mentioned that the tribe had reached a settlement with the City of Auburn and would allow them to construct a storm drain system that would drain into the White River. He inquired if the DOE would be an appropriate agency to conduct water quality monitoring within the White River at the point of outflow? Kavanaugh provided him with the phone number of DOE S.W. Region.

2. Reich and Kavanaugh discussed the feasibility of resolving the siltation problems caused by the flushing operations of the CE at Mud Mt. Dam. One option discussed was to hold back flood waters within the dam for low flow period release for preservation of the instream resources. It was Kavanaugh's view that the CE would not be interested in such a proposal.

RE:nld

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

February 4, 1980

Memo to: Records

To: Puyallup River Basin IRPP Team Members

Subject: Puyallup River Basin Instream Resources Protection Program
Interdisciplinary Planning Team Workshop

1. The Puyallup River Basin IRPP Interdisciplinary Planning Team conducted a final workshop at 12:30 on January 29, 1980 at the Evergreen State College Campus. The following topics were discussed:

    a. Department of Fisheries (DOF) representative Ray Johnson reviewed the low flow problems of the White River and Puyallup River. Special concern over the spring chinook salmon on the White River was voiced. Specific adverse impacts caused by the hydroelectric operations at Buckley and the flood control operations at Mud Mt. Dam were reviewed in some detail. Mr. Johnson requested that Canyon Falls and Fiske Creek be closed to out of stream consumptive use in Chapter 173-510 WAC. Specific minimum flows desired for the White River were given as 435 cfs. (DOE flows amount to about 470 cfs.)

    b. Planning team comments included a review of the various alternatives that should be considered in the hydroelectric and flood control operations on the White River. The need for additional water during low flow periods was covered.

    c. Puget Power representatives indicated that the operation of Mud Mt. Dam causes a complete shutdown of their generating capability for as long as six weeks at a time during August and September on some occasions. Puget Power indicated that real river flows fluctuate drastically and that the hydrographs presented by DOE are not truly representative of White River flows. Further the Corps of Engineers (COE) flushing of sediments adversely affects Puget Power generating capabilities to the point that all generation must be stopped during COE Mud Mt. Dam flushing operations. Naturally occurring minimum flows were also illustrated by Puget Power.

    d. The United States Fish and Wildlife Service (USFWS) suggested that other operational solutions should be reviewed, including establishment of a conservation pool in Mud Mt. Dam, reclamation of sediments for commercial use, and redesign of the screens at Buckley.

2. The WDG reviewed the draft Puyallup River Basin IRPP to include significant problem areas and instream needs pertaining to wildlife. Mr. Beecher indicated that adequate data was lacking upon which to adequately assess instream flow needs for wildlife. He suggested a complete inventory of the aquatic habitat. Due to the WDG high interest in steelhead trout production, the emphasis on WDG comments centered around steelhead instream needs. Additional stream closures for Niession, LaDue, Kellogg, and the Puyallup rivers (at Electron) were advocated by the WDG. Beecher stated that it is now WDG policy to stress and emphasize wild steelhead production over hatchery steelhead production. The need to establish a margin of error on the side of wildlife preservation was stressed.

    a. Muckleshoot representatives inquired as to what were WDG goals for steelhead escapement?

    b. The WDG voiced concern over the critical low flow situation on the White River with emphasis on spring chinook salmon, steelhead trout and bald eagles. It was believed that the diminishing salmon runs were adversely impacting the bald eagle populations within the basin.

    c. Puget Power discussed their company's development of water resources at Electron and it was noted that they had a claim for Niesson Creek. Mr. Club mentioned that as far as the relinquishment law was concerned his attorneys had mentioned that there was an effort in the present legislative session to abolish this law. The requirement to prove use of the water resource within the recent 15 years was discussed. Niesson Creek has not been used since the 1930s. Mr. Club inquired if the relinquishment law has ever been tested.

    d. The Audubon representative stressed the importance of both game and nongame species and the need to act in a spirit of stewardship and trusteeship in protecting these species for future generations. The importance of maintaining a natural balanced ecosystem was advocated.

    e. Dr. Herman voiced the view that when asked what was the economic worth of a peregrine falcon, his response was "What would it cost Boeing to construct a flying peregrine falcon?" Dr. Herman reviewed his wildlife study program for the Puyallup Basin and cautioned that genetic native stocks cannot be renegotiated once they become extinct.

3. The Puyallup Tribe reviewed the draft Puyallup River Basin IRPP and made the following suggestions and comments:

a. In the area of fisheries enhancement the tribe stressed the importance of developing management programs that emphasized wild salmon stocks. (There is some concern over a potential overharvest of natural stocks.)

b. Additional stream closures were requested and substantiated by the tribe and included Swan, Canyon Falls, Strawberry, Niesson, Fennel, Diru, Fiske, Wapato, Clark creeks, all tributaries to Hylebos Creek, Puyallup River above Electron, and the Mowich River.

c. The tribe voiced concern over the apparent lack of enforcement capability on the part of DOE to manage the minimum flows and or closures advocated in Chapter 173-510 WAC. The role of the DOE Southwest Region in the area of enforcement was discussed by DOE representatives.

d. The tribe suggested that a moratorium on all out of stream consumptive use may be needed. DOE reviewed the various alternatives and the need to develop a balanced program to meet the needs of all the people in this rapidly growing basin. The sociopolitical implications of the closing to all out of stream consumptive use were discussed with relation to a possible curtailment in growth and development within the Puyallup Basin. The tribe presented a written review of the program to be included in the final program document.

4. The Muckelshoot Tribe presented a brief review of the draft Puyallup River Basin IRPP. The major emphasis of their discussion centered around the inadequate flows presently existing in the dewatered section of the White River and the adverse impacts caused by flushing siltation from Mud Mt. Dam. Written comments will be furnished by the tribe to DOE by February 7, 1980.

5. The team reviewed and summarized its views on the program. All attendees, except Puget Power, voiced various degrees of support for the program. Future actions, including the adoption hearing, SOP preparation, and the development of a basin management program, were outlined by DOE. It was agreed that the Puyallup River Basin Program provided a valuable first-step approach in protecting the state's instream resources of fish, wildlife, water quality, and recreation. The workshop adjourned at 3:00 p.m. A copy of the memo for record was to be provided to all attendees.

e. The Muckelshoot Tribe expressed concern over the low flow problem on the White River. Puget Power brought out the fact that although they might release 40 cfs at Buckley, that little or no water might reach downstream to the lower White River. Flows as low as 11 cfs have been recorded at the Buckley diversion during critical low flow periods.

f. DOE expressed the view that the Puyallup IRRP could not affect any existing water rights and that Puget Power has a claim for 2,000 cfs on the White River. All the proposed program could regulate was 30 cfs at the Buckley diversion. It was generally agreed by all participants that 30 cfs was not an adequate flow for the preservation of fish in the White River. Puget Power generates about 64 mg of power at Dieringer that can support up to 18,000 persons in the basin.

g. The Puyallup Tribe was concerned over the final status of the spring chinook fry taken from the 5 adult fish in the White River by DOF. DOF will provide the requested information to the tribe. The spring chinook on the White River can be considered a locally endangered species according to the DOF.

h. DOE inquired if Puget Power was presently conducting any operational studies to remedy the critical fisheries problem on the White River and if any future projects are planned for the basin.

Puget Power is deferring any studies until after completion of the FERC hearings. No existing plans to develop hydroelectric power within the basin are being considered by Puget Power according to Mr. Robert Barnes.

i. The Audubon Society representative, Carla Hansman, believed that the situation with respect to the spring chinook salmon was at a critical stage and that some immediate protective measures are needed in the near future. These included a total closure of the White River to out of stream consumptive use and the implementation of an overall Puyallup River Basin Program.

j. Post workshop discussions between DOE and the Puyallup Tribe developed the possibility of hiring the noted hydraulic engineer, Milo Bell, to conduct a “contract” study to identify problems and to develop mitigation for the multiple fisheries problems presently existing on the White River. Bell is noted for his contributions in reestablishing the sockeye salmon runs on the Fraser River in British Columbia.

6. Attendees included the following persons:

Mr. Ray Johnson, DOF, Biologist
Dr. N. Beecher, WDG, Biologist
Mrs. Carla Hansman, Tahoma Audubon Society President
Mrs. Ray, Public at Large
Ms. J. Kelly, DOE, Environmental Planner
Mr. J. Mesmoto, Puyallup Tribe, Biologist
Mr. Thayer, Ppuyallup Tribe, Biologist
Mr. Demming, Puyallup Tribe, Biologist
Mr. _____, Puyallup Tribe, Enforcement Officer
Mr. Halfmoon, USFWS, Biologist
Mr. Wampler, USFWS, Biologist
Mr. Dobie, Muckelshoot Tribe, Biologist
Mr. Moore, Muckelshoot Tribe, Biologist
Drd. Steven Herman, The Evergreen State College Biologist
Mr. R. Club, Puget Power, Biologist
Mr. R. Barnes, Puget Power, Water Quality
Robert Kavanaugh, DOE, Environmental Planner

M E M O R A N D U M

January 31, 1980

TO: Files

FROM: Robert Kavanaugh

SUBJECT: Department of Fisheries Minimum Flows for the Lower White River

Mr. Ray Johnson, Department of Fisheries representative, expressed his department's concern over the totally inadequate flows in the lower White River from Buckley to the rivers confluence with the Puyallup River. The primary man caused factor contributing to low flows within the river reach are the hydroelectric diversion at Buckley and the holding back of diverted water within Lake Tapps for peaking power operations at the Dieringer Plant.

Johnson's view is that a minimum of 435 cfs must be maintained at all times to insure survival and preservation of anadromous fish.

Minimum flows proposed in WAC 173-510 amount to approximately 470 cfs from the Dierrenger out flow to the White Rivers confluence with the Puyallup River according to the Department of Ecology, Water Policy Tech. Section supervisor, Stan Mahlum.

Therefore, it can be concluded that the White River minimum flows proposed in draft WAC 173-510 will meet and exceed those minimum flows desired by the Department of Fisheries.

RK:bjw

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

M E M O R A N D U M

January 21, 1980

TO: Files

FROM: Robert Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM PUBLIC HEARINGS AT ENUMCLAW, WASHINGTON JANUARY 17, 1980

1. The second of two public hearings were held on January 17 at Enumclaw, Washington. The following activities took place:
   a. Registration 7:00 – 7:30
   b. Welcoming remarks
   c. Overview of Western Washington Instream Resources Protection Program.
   d. Informal discussions with C.E.s and Muckelshoot representatives.
2. Mr. Adair, Washington Sportsmen Council, had called earlier to state his organization supported the program and the D.F. and D.G. min. flows.
3. The meeting was poorly attended which reflects on several possibilities:
   a. The public interest in the program may not be high.
   b. The meeting location was too remote from centers of populations where interest would be higher.
   c. Public awareness of the program may be low in the Enumclaw area indicating the need for greater P.R. coverage.

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504 206 753 2800

M E M O R A N D U M

January 16, 1980

TO: Files

FROM: Robert Kavanaugh

SUBJECT: PUYALLUP RIVER BASIN I.R.P.P. PUBLIC HEARING

1. The DOE conducted a public hearing on the proposed Puyallup River Basin I.R.P.P. on January 15, 1980 at 7:30 p.m. The following items were discussed:
   a. Overview of DOE goals presented by Kris Kauffman
   b. Overview of the W.W.I.R.P.P. presented by Ken Slattery
   c. Summary of the draft program document and WAC 173-510 presented by Robert Kavanaugh
2. Formal hearings stated at 8:00 p.m. with the summarizing of WAC 173-510. Public comments were then recorded. The following subjects were discussed:
   a. Flood control and river maintenance was a concern.
   b. Elaboration of the groundwater resources was requested by Pierce CO. A change in the wording of the groundwater section in WAC 173-510 was requested. A discussion of the storm water drainage system was also requested. Flood control discussions were considered to be inadequate according to Pierce CO.
   c. The need to conduct a Basin program was presented by the Audubon Society
   d. The Community of Bonney Lake was concerned about being restricted from drilling water wells in future years.
   e. The D.G. desired additional stream closures and/or minimum flows.
   f. The D.F. was highly concerned over the spring chinook salmon situation on the White River.
3. The informal panel discussions addressed some of the questions and concerns mentioned during the formal public hearings. Panel members included Kris Kauffman, W. Bergstrom, Ken Slattery, and Robert Kavanaugh representing DOE, Mr. R. Johnson represented Department of Fisheries and Hal Beecher represented Department of Game.
4. Agencies, individuals, and organizations represented at the hearings included Puget Power, SCS, Department of Recreation, Audubon Society, Puyallup Tribe, City of Tacoma, City of Puyallup, Bonney Lake and private citizens.
5. Written input was requested by DOE NLT March 7, 1980. The hearing adjourned at 9:00 a.m.

RK:nld
Enclosure: Agenda

State of Washington Department of Ecology

STATE WATER PROGRAM

WASHINGTON STATE WATER PROGRAM

A G E N D A

PUYALLUP RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM

7:00 – 7:30	REGISTRATION
7:30	WELCOMING REMARKS AND INTRODUCTION OF PANEL MEMBERS
7:35	OVERVIEW OF DEPARTMENT OF ECOLOGY GOALS
	Mr. Kris Kauffman – DOE
7:40	OVERVIEW OF WESTERN WASHINGTON INSTREAM RESOURCES PROTECTION PROGRAM GOALS
	Mr. Ken Slattery – DOE
7:45	OVERVIEW OF THE PUYALLUP RIVER BASIN INSTREAM RESOURCES PROTECTION PROGRAM
	Mr. Robert Kavanaugh – DOE
8:00	FORMAL PUBLIC HEARINGS ON WAC 173-510 AND PUBLIC COMMENTS
8:30	INFORMAL PANEL DISCUSSIONS AND RESPONSE TO QUESTIONS AND OPINIONS
	Hydrologic Methodology
	Mr. Kris Kauffman – Washington State DOE
	Water Quality, Surface and Groundwater Resources
	Mr. W. Bergstrom – Washington State DOE
	Fisheries Resources, Problem Areas and Instream Needs
	Mr. Ray Johnson – Washington State Department of Fisheries
	Wildlife Resources, Problem Areas and Instream Needs
	Mr. H. Beecher
	Western Washington Instream Resources Protection Program Past, Present, and Future Activities
	Mr. Ken Slattery

STATE OF WASHINGTON
Dixy Lee Ray
Governor

DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

November 16, 1979

MEMORANDUM FOR RECORD

TO: Files

SUBJECT: Puyallup River Basin Instream Resources Protection Program – Management Decision Meeting

1. Representatives from Department of Ecology (DOE), Department of Game (DG), and Department of Fisheries (DF) conducted a meeting to determine the Instream Resources flow needs within the Puyallup River Basin. The following subjects were discussed:

   A. A brief progress report on the status of the Puyallup River Basin Instream Resource Protection Program was presented by the Program Planner, Robert Kavanaugh. The review included information pertaining to the Programs data review, ongoing coordination, recon, milestones, and problem areas. Assumptions were that adequate data was available and that no supplemental EIS is required.

   B. Next, the group discussed the Instream Resource flow needs for fishery and wildlife within the main stem of the Puyallup, White River and Carbon River and tributaries. DF, DG, and DOE reviewed the hydrologic base flows, 50% exceedence flows, and the DF preferred flows. No DG preferred flows were presented, however, it was understood DG would develop flows for steelhead at a later date. (D.F. preferred flows for South Prairie Creek were presently under revision and not yet available for review.) The specific discussions are included as follows:

      C. Puyallup River and selected tributaries.

         1. Mr. Ray Johnson, DF representative, discussed the spawning, passage, and rearing flows needed for salmon survival. Both the DOE and DF flows were reviewed. Specific Instream Resource problems included low summer flows, flooding, siltation, dikes and channelization, water quality, lack of data, and the hydroelectric facilities at Electron and related diversions. The hydroelectric development was considered to be a limiting factor due to the resulting dewatering of the Puyallup between the diversion and the power facility at Electron. Other factors involved over harvest of the wild stock of salmon by both the Indian and commercial fishery according to Gerke.

         2. Next, Mr. Beecher and Gilstrum, DG representative, presented the views that steelhead production was adversely affected by low flows, flooding and the hydroelectric project at Electron. During some years steelhead are unable to pass the Electron project due to low water. Mr. Beecher believed that the river was an important wintering area for bald eagles with up to 300 being observed.

         3. Instream resource management options were reviewed for each of the tributaries. DF and DG recommended that Kapowsin Creek, Kellog Creek, Nision Creek, and LaDue Creek be closed to further water appropriations. Kapowsin Creek was identified as being a highly import chinook, pink salmon, and steelhead producing stream. DOE representatives agreed with this opinion.

      D. White River and Tributaries

         1. Mr. Bob Gerke, DF representative presented the DF's views on the White River Instream resource requirements of primary concern were the adverse impacts on salmon of the hydroelectric project at Buckley and the Mud Mt. Dam. The drastic decline in spring chinook populations was discussed in detail.

         2. The F.E.R.C. litigation between Puget Power and the DF and Muckelshoot Indian Tribe was covered by Gerke. He had little hope for a successful out come, hence any reliance on the F.E.R.C. litigation resolving the existing problem would not be beneficial for the instream resource within the White River.

         3. Spawning, passage, and rearing flows were reviewed. The DOE hydrologic base flows, 50% exceedence flows, and the DF preferred flows were compared. No DG flows were available. DG and DF requested that a recommended flow be included in the Puyallup Instream Program. DOE reminded the group that the program could not alter any existing water rights and that Puget Power was only required to release 30 cfs. at the Derringer out flow. It was agreed to include the preferred flow for the White River in the narrative portion of the program. DF will provide the "desired" minimum flow information within the next week.

         4. Limiting factors identified by DF and DG included low flow, siltation, gravel mining, and lack of data on steelhead trout.

         5. Instream resource management options were reviewed and the group unanimously recommended that the entire White River and tributaries be closed to future water appropriations. Consideration was given to future hydroelectric development, flood control, and energy production.

      E. Carbon River and Tributaries

         1. Kavanaugh briefly discussed the potential for future coal resource development on the Carbon River.

         2. Mr. Johnson discussed the spawning, passage, and rearing flows needed for salmon survival. Specific problems included low flows,

water quality, urban development, coal mine development and lack of available data.

3. Areas of great importance for fishery production according to Mr. Johnson were South Prairie Creek, the lower Carbon River and Voights Creek. It was Johnson's view that 80% of the pink salmon production in the Puyallup system occurred within South Prairie Creek.

4. Both DG and DF needed more time to develop stream measurement data. November 30 was listed as a reasonable due date.

5. Management options for the Carbon River and tributaries was reviewed. It was recommended and agreed to close South Prairie Creek to future water appropriations in order to protect the instream resources.

2. The meeting adjourned at 4:30 p.m. with the understanding that DG and DF would coordinate with Beecher and Bates working to develop the needed instream flows for steelhead. All data is to be provided to DOE not later than November 30, 1979. DOE representatives included Mr. Kris Kauffman, Ken Slattery, Carol Fleskes, Stacia Petersen, and Robert Kavanaugh. Department of Fisheries representatives included Mr. Ray Johnson, Robert Gerke, and Ken Bates. Department of Game representatives included Mr. John Silstrum and Dr. Hal Beecher.

STATE OF WASHINGTON
Dixy Lee Ray
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DEPARTMENT OF ECOLOGY
Olympia, Washington 98504

M E M O R A N D U M

26 Nov. 1979

TO: Puyallup River Basin Instream Resource Protection Program Participant

FROM: Bob Kavanaugh

SUBJECT: PROGRAM PROGRESS REPORT

The Puyallup River Basin Instream Resources Protection Program (PRBIRPP) is progressing on schedule. Local, state, federal and tribal agency coordination is continuing with a high level of participation.

Department of Fisheries has developed recommended minimum flows for the Puyallup, Carbon, and White Rivers. Both Department of Fisheries (DOF) and Department of Game (DOG) provided valuable input at the Department of Ecology (DOE) meeting held on November 16, 1979. Additional information on fisheries is pending. DF project planner is Ray Johnson (753-6650).

Wildlife low flow needs are being evaluated by a special study being conducted by Dr. Steven Herman of the Evergreen State Colege (866-6063). Dr. Herman will investigate the relationships between riparian vegetation, aquatic insects, aquatic vegetation, and key wildlife species with respect to the minimum instream flows experienced in the Puyallup River Basin.

DG representative Hal Beecher has identified both South Priarie and Kaposin Creek as being extremely important spawning streams. Beecher has also provided data on bald eagle populations and plant life within the basin (753-5734).

DOE Southwest Regional Office personnel are participating in the Puyallup Basin Program. Specific area of investigation have included both water quality and groundwater resources. More information in these areas is pending. Points of contact are Mr. Vic Shaver, Walt Bergstrom, and Mr. Pete Grimstad. Areas of special concern voiced at the November 13 coordinating meeting included low flow problems and siltation as a result of the operations of the Mud Mountain Dam on the White River. Water quality problems were also an area of concern voiced at this meeting.

Puyallup Indian Tribal fishery biologist voiced an interest in stream enhancement projects in some of the small semi-urbanized tributaries of the Puyallup. The tribe is concerned over deteriorating habitat, low flows, and urbanization problems. Primary tribal fishery harvest management is geared towards the wild stocks of salmon within the basin (Mr. Minamoto).

Muckelshoot Tribal biologists are extremely concerned over the debilitating impacts of siltation caused by the periodic flushing operations carried on at the Mud Mountain Dam. Of special concern is the survival of the White River run of spring chinook salmon (Mr. Dobel and Moore). Adults “Springers” returning during the 1979 year were reduced down to 55 individuals.

Pierce County representatives Mr. William Thorton and John Comis are especially concerned over flood control management on the White and Puyallup Rivers. They are highly supportive of maintaining a viable fishery in the more productive tributary streams. The county is highly interested in maintaining good water quality even though faced with increased growth and urbanization problems. They are in the process of developing watershed preservation areas in an effort to preserve natural wetlands and drainage areas. Groundwater supplies are an area of high interest to the county’s future development according to Comis.

Puget Power representative Virginia Howell and Bill Finnegan are primarily interested in maintaining and developing adequate hydroelectric power to support the basins forecasted growth needs Finnegan is interested in seeing a comprehensive environmental impact statement prepared for the PRBIRPP.

U.S. Fish and Wildlife Service (U.S. F and WS) representatives Nancy Nelson and Raph Boomer have been highly supportive of the program and can be expected to provide additional data on both fish and wildlife (Nelson is working with Hal Beecher on the Instream Study presently being conducted at Snow Creek).

Regional Soil Conservation Service representatives Richard Omli, Max Fullner, and Warren Lee provided data on irrigation, urban development, and habitat and soil protection measures. They are very much interested in the development of public recreation areas along the Puyallup River.

RCW 173-510 is presently in draft form and being reviewed by DOT staff. The document will list proposed minimum flows and new stream and lake closures for the Puyallup Basin. State Register publication date is December 5, 1979.

Initial public hearings are set for January 15, 1980 in Puyallup. Exact place and time are not yet set. Any input to be provided for the draft program is needed not later than December 5, 1979.

Thanks for your continued interest and participation.

SELECTED REFERENCES

PUYALLUP BASIN

(1) Puget Sound Task Force – Pacific Northwest River Basins Commission – Comprehensive Study of Water and Related Land Resources, Puget Sound and Adjacent Waters, 1970, Appendix III, IV, V, and XII.

(2) Consoer, Townsend and Associates – Puyallup River Basin Water Quality Management Plan – Water Resource Inventory Area 10, 1974.

(3) Consoer, Townsend and Associates – Puyallup River Basin Sewerage General Plan for Pierce County, Washington, 1971.

(4) U.S. Geological Survey – Water Resource Data for Washington, Water Year 1975, Water Data Report WA-75-1.

(5) DOE SW Region personal coordination and communications. 16 Nov. 1979.

(6) Gray, R. Puyallup City Engineer personal coordination. Nov. 1979.

(7) Commis J., Pierce County Planning Engineer. Oct. 1979.

(8) Beecher, H., Wash. Dept. of Game. Personal communications and memos. Nov. 1979.

(9) Puget Power. Personal communications. Oct. 1979.

(10) Technical Document; Puyallup River Basin Instream Resources Protection Program.

(11) Gerke R., D.F. personal communications. Nov. 1979.

(12) W.D.F. a Catalog of Washington Streams and Salmon Utilization. Vol. 1. Puget Sound. November 1975.

(13) Muckleshoot Indian Tribe. Personal conversations and coordination. December 1979. Dobel et al.

(14) USF and WS. Nov. 1979. Personal conversations.

(15) Tahoma Chapter Audubon Society. Personal communications. Dec. 1979

(16) D.O.E. Jim Scott. Personal communications. Dec. 1979.

(17) Reference Stream Index. An Assessment of Potential Hydroelectric Power and Energy for the State of Washington. Vol. I. Report No. 34. Sept. 1979. C Loman, J. Cassidy.

(18) Brown, L.A. USDA, Soil Conservation Service, letter dated January 1980.

(19) Tanaka, H. DOE Water Resources Investigation Section – Dec. 1979.