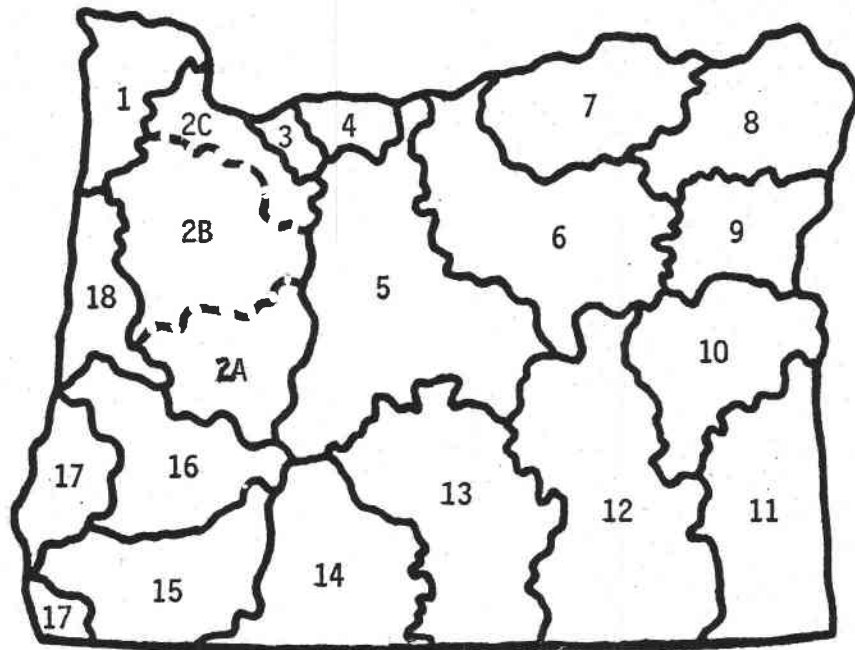


A RESOURCE SURVEY OF RIVER ENERGY
AND LOW-HEAD HYDROELECTRIC POWER POTENTIAL
IN OREGON

APPENDIX 9: POWDER BASIN



WATER RESOURCES RESEARCH INSTITUTE
Oregon State University
Corvallis, Oregon 97331

INDEX TO APPENDIX 9, POWDER BASIN

Drainage Basin Map 9-ii

Reach Hydro Potential Characteristics Sheets

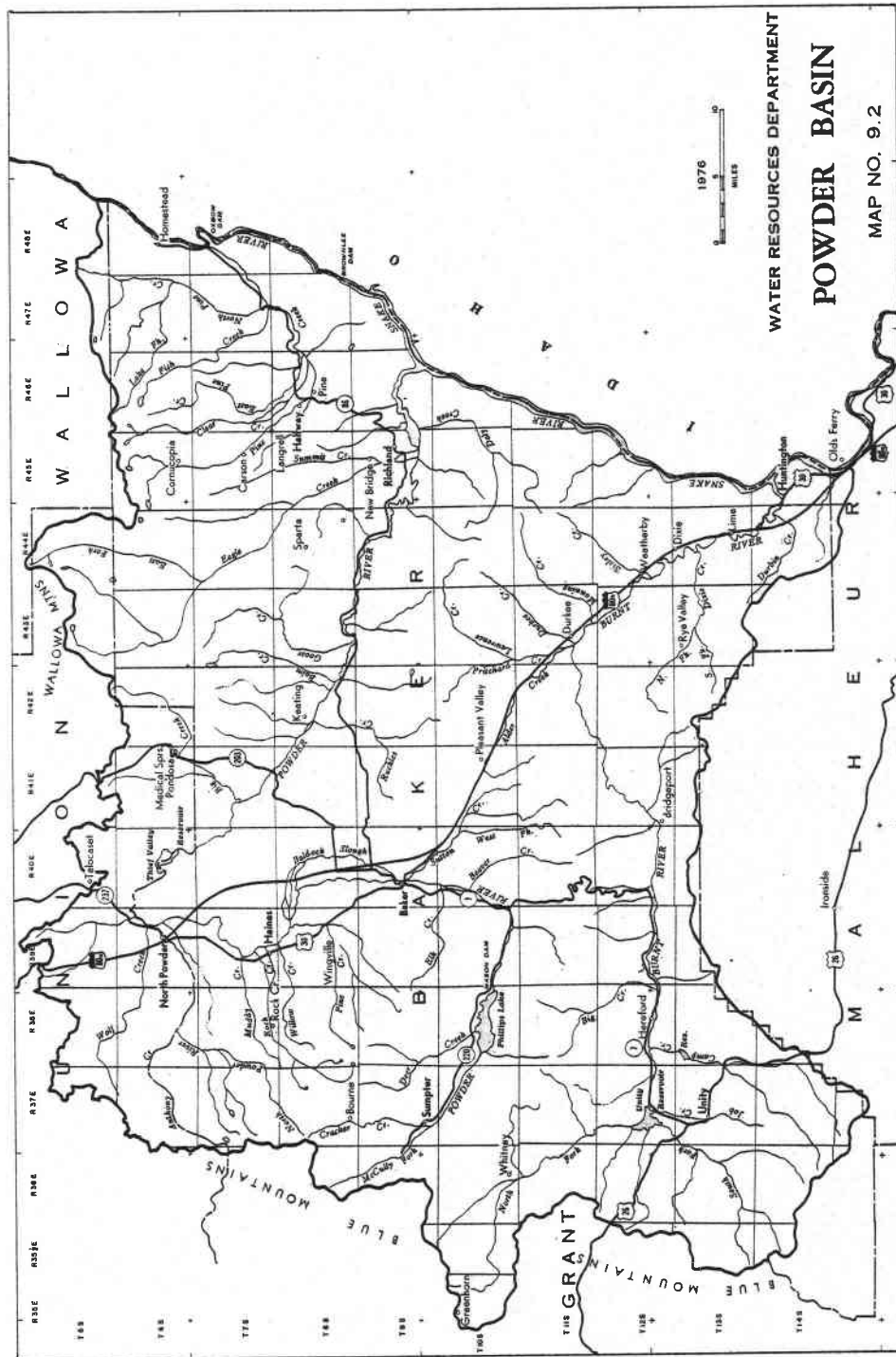
 Pine Creek 9-1 to 9-3

 Powder River Main Stem 9-4 to 9-17

 Eagle Creek 9-18 to 9-21

 Burnt River 9-22 to 9-31

Reach Feasibility Analysis Sheets 9-32 to 9-34



WATER RESOURCES DEPARTMENT
POWDER BASIN
 MAP NO. 9.2

REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-117-000-R0001

I. LOCATION

A. State	Oregon
B. County	Baker
C. Township, Range	Sec. 30, T7S, R48E
D. Latitude, Longitude	44° 56' N, 116° 54' W
E. Stream Name	Pine Creek
F. Major Basin Name	Powder
G. River Mile	0.0 to 7.8

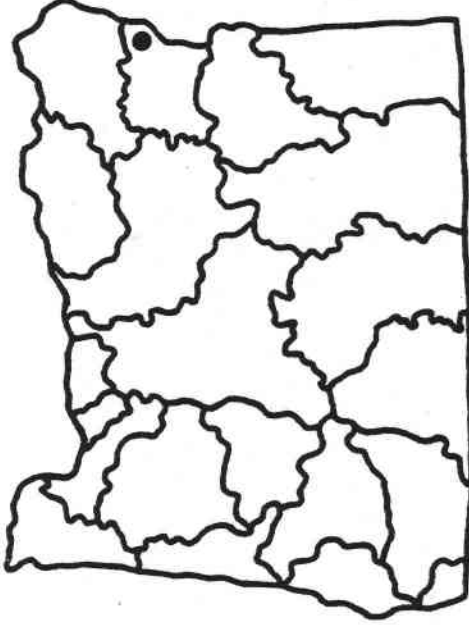
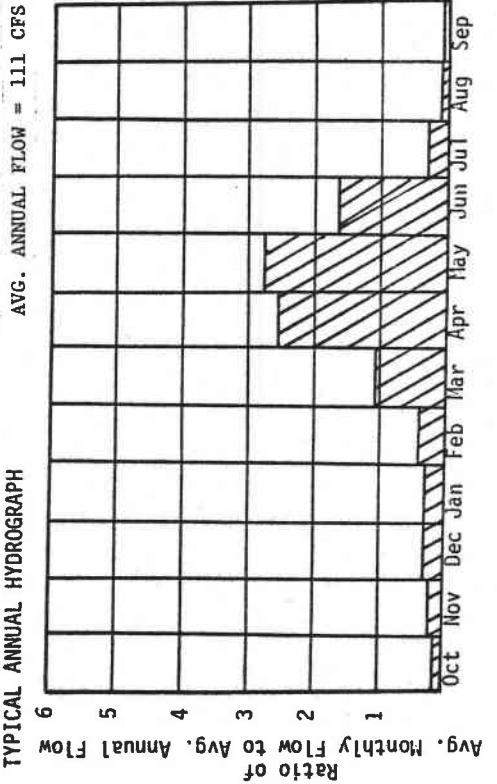
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	2240	Ft. MSL
B. Downstream Elevation of Reach	1680	Ft. MSL
C. Total Available Head in Reach	560	Ft.
D. Average Slope in Reach	71.8	Ft./Mi.
E. Drainage Area above Reach Mouth	302.1	Sq. Mi.
F. Inflow Classification	Natural	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 8.0 I	I .38 I	I 3.33 I	I 1.000 I
I 80 I	I 17.5 I	I .83 I	I 6.80 I	I .932 I
I 50 I	I 47.9 I	I 2.28 I	I 15.01 I	I .753 I
I 30 I	I 106.2 I	I 5.04 I	I 24.70 I	I .559 I
I 10 I	I 287.0 I	I 13.62 I	I 39.73 I	I .333 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-117-000-R0002

I. LOCATION

A. State	Oregon
B. County	Baker
C. Township, Range	Sec. 8, T8S, R47E
D. Latitude, Longitude	44° 52' N, 116° 59' W
E. Stream Name	Pine Creek
F. Major Basin Name	Powder
G. River Mile	7.8 to 14.4

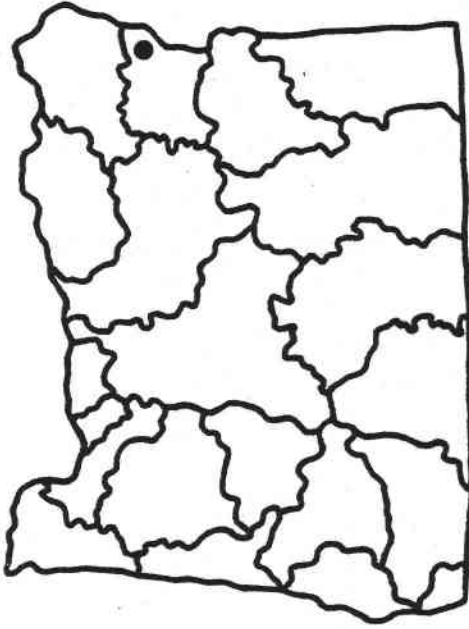
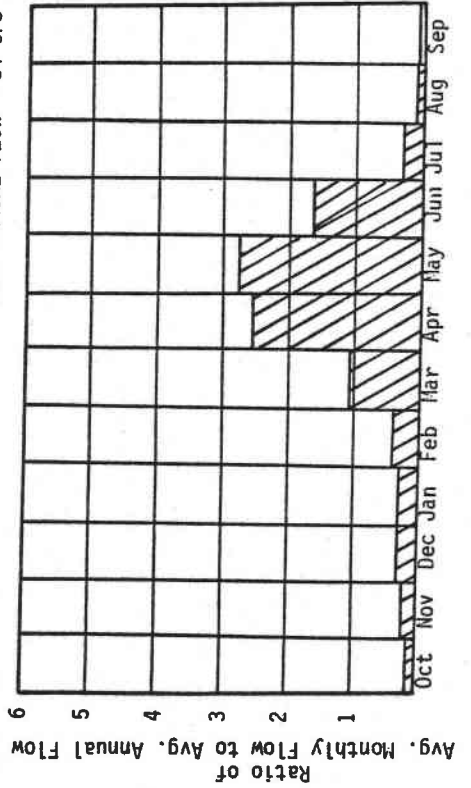
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	2430	Ft. MSL
B. Downstream Elevation of Reach	2240	Ft. MSL
C. Total Available Head in Reach	190	Ft.
D. Average Slope in Reach	28.8	Ft./Mi.
E. Drainage Area above Reach Mouth	197.0	Sq. Mi.
F. Inflow Classification	Natural	

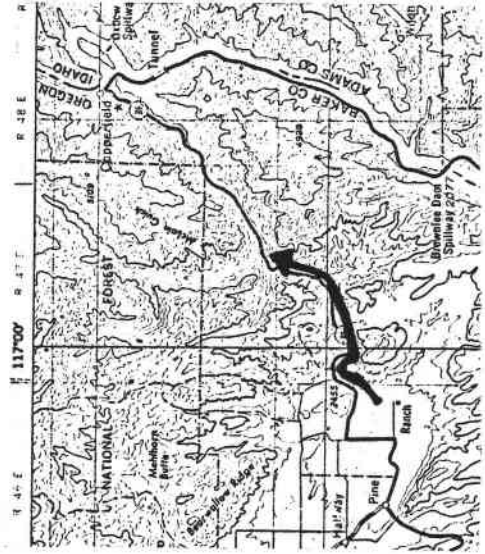
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE	I DISCHARGE I CFS	I THEORETICAL I PLANT SIZE I MW	I ANNUAL ENERGY I AVAILABLE I GWH	I PLANT I FACTOR I
I 95	I 6.0	I 1.0	I .84	I 1.000
I 80	I 13.4	I .22	I 1.76	I .931
I 50	I 37.7	I .61	I 3.99	I .750
I 30	I 80.8	I 1.30	I 6.42	I .563
I 10	I 209.1	I 3.37	I 10.04	I .340

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-117-000-R0003

I. LOCATION

A. State	Oregon
B. County	Baker
C. Township, Range	Sec. 18, T8S, R47E
D. Latitude, Longitude	44° 53' N, 117° 02' W
E. Stream Name	Pine Creek
F. Major Basin Name	Powder
G. River Mile	14.4 to H.W.

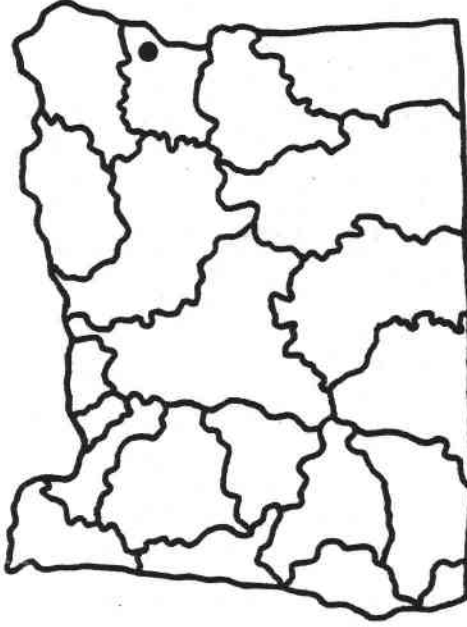
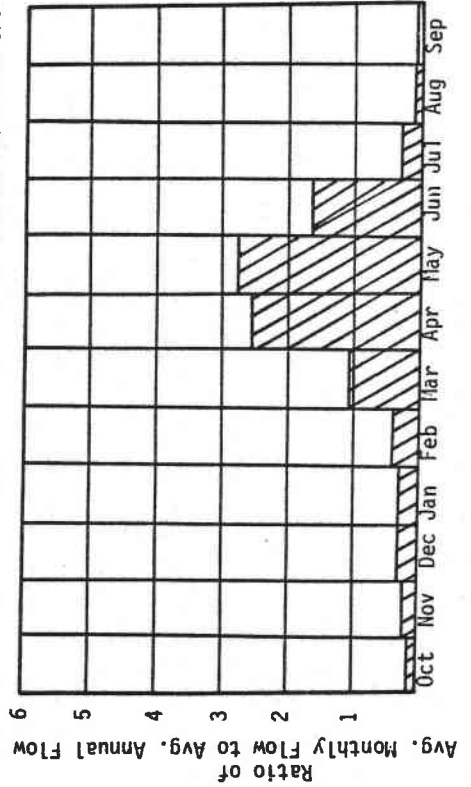
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	---	Ft. MSL
B. Downstream Elevation of Reach	---	Ft. MSL
C. Total Available Head in Reach	66	Ft.
D. Average Slope in Reach	---	Ft./Mi.
E. Drainage Area above Reach Mouth	157.2	Sq. Mi.
F. Inflow Classification	Natural	

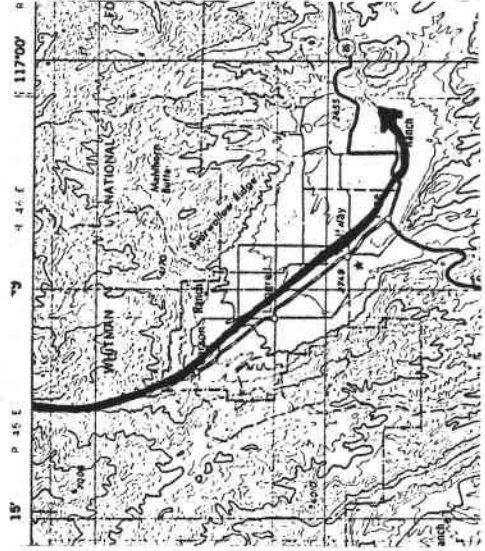
III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 5.8 I	I .03 I	I .28 I	I 1.000 I
I 80 I	I 13.0 I	I .07 I	I .59 I	I .931 I
I 50 I	I 36.7 I	I .21 I	I 1.35 I	I .750 I
I 30 I	I 78.4 I	I .44 I	I 2.17 I	I .564 I
I 10 I	I 202.0 I	I 1.13 I	I 3.38 I	I .341 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-120-000-R0002

I. LOCATION

A. State	Oregon
B. County	Baker
C. Township, Range	Sec. 29, T9S, R45E
D. Latitude, Longitude	44°45'N, 117°14'W
E. Stream Name	Powder River
F. Major Basin Name	Powder
G. River Mile	9.5 to 21.3

II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

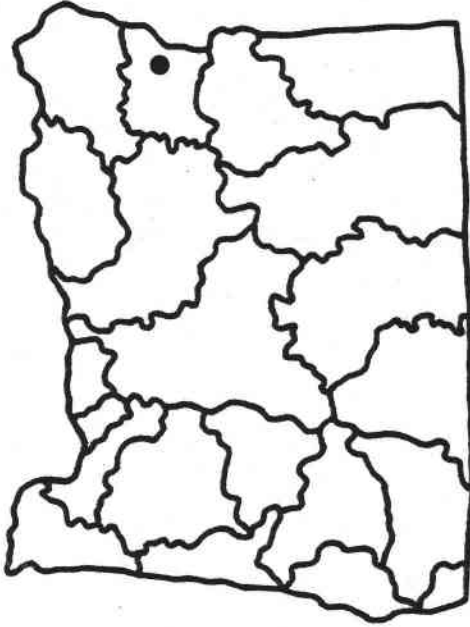
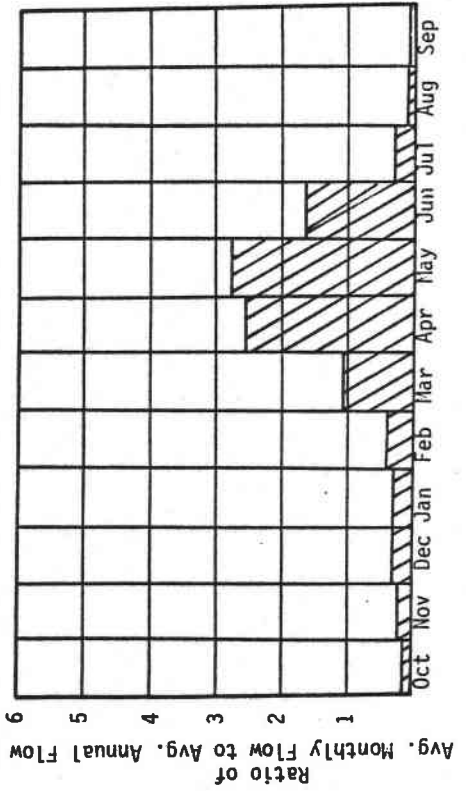
A. Upstream Elevation of Reach	2250	Ft. MSL
B. Downstream Elevation of Reach	2077	Ft. MSL
C. Total Available Head in Reach	173	Ft.
D. Average Slope in Reach	14.7	Ft./Mi.
E. Drainage Area above Reach Mouth	1414	Sq. Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

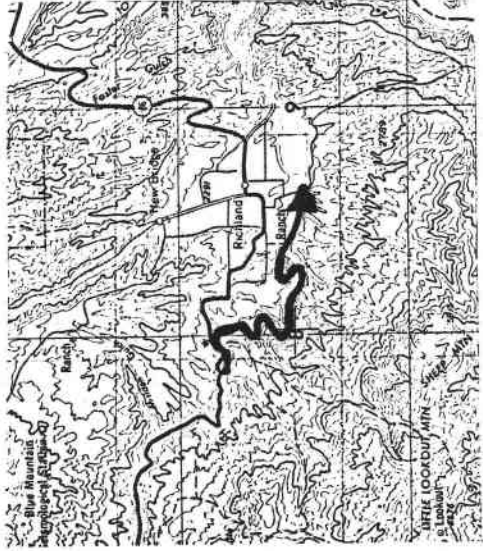
I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 18.4 I	I .27 I	I 2.36 I	I 1.000 I
I 80 I	I 37.5 I	I .55 I	I 4.51 I	I .936 I
I 50 I	I 95.2 I	I 1.40 I	I 9.32 I	I .763 I
I 30 I	I 231.3 I	I 3.39 I	I 16.32 I	I .549 I
I 10 I	I 707.4 I	I 10.37 I	I 28.55 I	I .314 I

IV. TYPICAL ANNUAL HYDROGRAPH

AVG. ANNUAL FLOW = 242 CFS



U. S. G. S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-120-000-R0003

I. LOCATION

A. State	Oregon
B. County	Baker
C. Township, Range	Sec. 5, T9S, R44E
D. Latitude, Longitude	44°48'N, 117°21'W
E. Stream Name	Powder River
F. Major Basin Name	Powder
G. River Mile	21.3 to 34.0

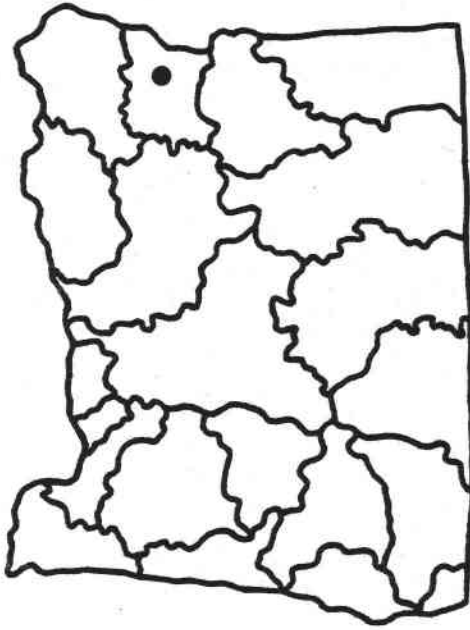
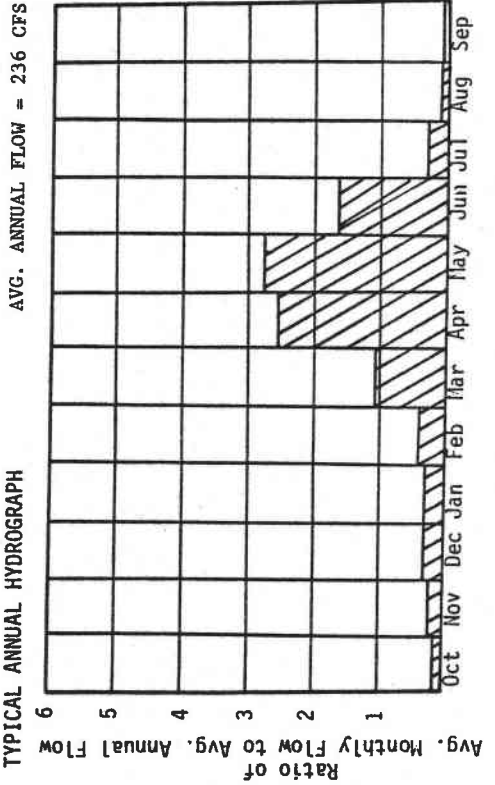
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

A. Upstream Elevation of Reach	2630	Ft. MSL
B. Downstream Elevation of Reach	2250	Ft. MSL
C. Total Available Head in Reach	380	Ft.
D. Average Slope in Reach	29.9	Ft./Mi.
E. Drainage Area above Reach Mouth	1352	Sq.Mi.
F. Inflow Classification	Regulated	

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I CWH I	I PLANT I FACTOR I
I 95 I	I 17.8 I	I .57 I	I 5.02 I	I 1.000 I
I 80 I	I 36.4 I	I 1.17 I	I 9.62 I	I .936 I
I 50 I	I 92.7 I	I 2.99 I	I 19.95 I	I .762 I
I 30 I	I 224.6 I	I 7.23 I	I 34.82 I	I .550 I
I 10 I	I 683.7 I	I 22.02 I	I 60.73 I	I .315 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER



REACH HYDRO POTENTIAL CHARACTERISTICS

REACH # 02-500-240-120-000-R0004

I. LOCATION

- A. State Oregon
- B. County Baker
- C. Township, Range Sec. 31, T8S, R43E
- D. Latitude, Longitude 44°44'N, 117°29'W
- E. Stream Name Powder River
- F. Major Basin Name Powder
- G. River Mile 34.0 to 43.0

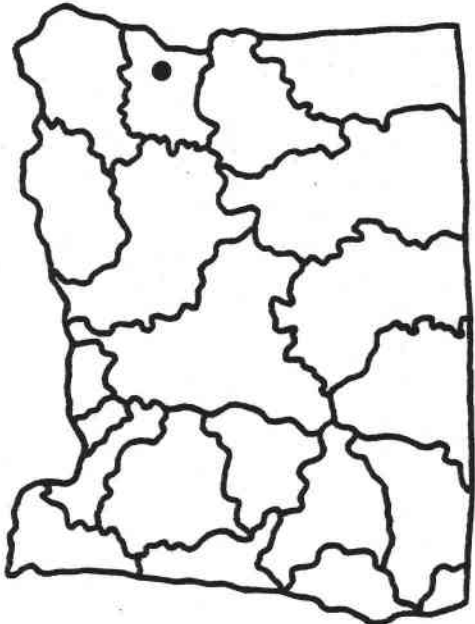
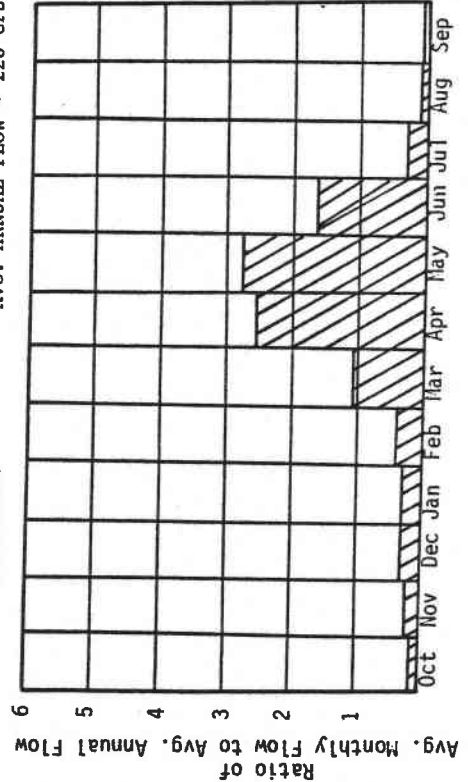
II. HYDROLOGIC AND HYDRAULIC CHARACTERISTICS

- A. Upstream Elevation of Reach 2650 Ft. MSL
- B. Downstream Elevation of Reach 2630 Ft. MSL
- C. Total Available Head in Reach 20 Ft.
- D. Average Slope in Reach 2.2 Ft./Mi.
- E. Drainage Area above Reach Mouth 12.77 Sq. Mi.
- F. Inflow Classification Regulated

III. REACH FLOW DURATION AND THEORETICAL POTENTIAL ENERGY CHARACTERISTICS

I EXCEEDANCE I PERCENTAGE I	I DISCHARGE I CFS I	I THEORETICAL I PLANT SIZE I MW I	I ANNUAL ENERGY I AVAILABLE I GWH I	I PLANT I FACTOR I
I 95 I	I 17.1 I	I .03 I	I .25 I	I 1.000 I
I 80 I	I 35.1 I	I .06 I	I .49 I	I .936 I
I 50 I	I 89.6 I	I .15 I	I 1.01 I	I .762 I
I 30 I	I 215.9 I	I .37 I	I 1.76 I	I .550 I
I 10 I	I 653.4 I	I 1.11 I	I 3.06 I	I .316 I

IV. TYPICAL ANNUAL HYDROGRAPH



U.S.G.S. TOPO. SERIES
1:250,000 SCALE
MAP NAME: BAKER

