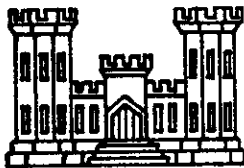


**HORIZONTAL AND
VERTICAL CONTROL**

**FLOOD STUDY FOR
DESCHUTES COUNTY
AND CITY OF
BEND, OREGON**

DACW57-84-C-0108



**U.S. ARMY CORPS OF ENGINEERS
PORTLAND DISTRICT
PORTLAND, OREGON**

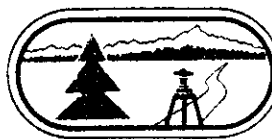
SUMMER, 1984



DAVID EVANS AND ASSOCIATES, Inc.
2626 SW CORBETT AVENUE • PORTLAND, OREGON 97201 • 503/223-6663

Timberland

ENGINEERS • SURVEYORS



McCullough

FORESTERS • PLANNERS

Offices in Albany • Bend • McMinnville • Sunriver

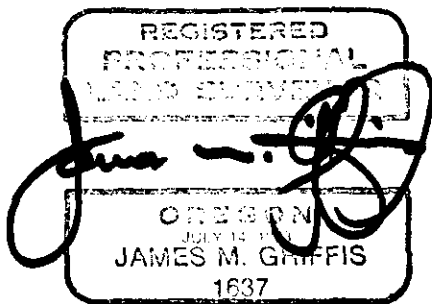
This work was performed for and at the instance of David Evans and Associates acting as a contractor to the Portland District Corps of Engineers.

The scope of work was to provide a flood study of the Deschutes and specific tributaries ranging from Tumalo on the north end to La Pine on the south. The four detailed study areas constituted the bulk of the work and are shown here as an aid to those who might be working within the floodplain.

Individually, the areas will be broken down into categories depicting the different facets of the job. Specifically, these are: 1) Brief Explanation; 2) Computations; 3) Final Published Horizontal & Vertical; 4) Elevation Reference Marks; and 5) Aerial photos -- to be used as an aid in location of any given point.

All vertical work (bench marks, elevation reference marks & elevation reference points established) was done to third-order accuracy ($0.05 \sqrt{D}$ where D equals the distance in miles). All horizontal closure was not less than one part in 40,000.

We strongly feel that a quality product deserves quality follow-up as well, and if we can be of any assistance now or in the future, kindly give us a call.



James M. Griffis
Project Manager, Survey
Timberland-McCullough/David Evans & Assoc.

TUMALO

Tumalo, being a smaller, almost isolated area of the job, was set up on a local grid. Bearings shown are based upon a magnetic reference. Distances are true geodetic and elevations are mean sea level.

All traverse points and cross section reference points set are 5/8" x 30" iron rods with aluminum caps (Surv-Kaps). These are identified on the accompanying photographs as a future aid to location. In cases where acceptable (to the land owner), a metal fence post with a "nearby survey marker" sign is next to the monument. Concrete bridges will have a standard USACE brass disc grouted in place for a bench mark.

TUMALO DETAILED STUDY AREA

Primary Control

August 1984

<u>STATION</u>	<u>COORDINATES</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
TUM-1	10,000.000 10,000.000	3,208.81	5/8" I.R. w/Surv-Kap
TUM-2	17,183.513 10,557.820	3,197.27	5/8" I.R. w/Surv-Kap
TUM-3	19,695.936 10,523.610	3,278.38	5/8" I.R. w/Surv-Kap
TUM-4	17,887.901 13,057.502	3,288.55	5/8" I.R. w/Surv-Kap
TUM-5	12,992.879 8,903.716	3,180.15	5/8" I.R. w/Surv-Kap
TUM-6	10,524.855 8,169.613	3,192.93	5/8" I.R. w/Surv-Kap

TUMALO DETAILED STUDY AREA

X-Section Control

<u>X-Section #</u>	<u>Approx R/M</u>	<u>Elevation</u>	<u>Description</u>
1	156.0	3149.05	5/8" I.R. w/Surv-Kap
2	156.1	3149.60	5/8" I.R. w/Surv-Kap
3	156.2	3150.34	5/8" I.R. w/Surv-Kap
4	156.3	3164.26	5/8" I.R. w/Surv-Kap
5	156.4	3164.74	5/8" I.R. w/Surv-Kap
6	156.5	3160.39	5/8" I.R. w/Surv-Kap
7	156.6	3164.32	5/8" I.R. w/Surv-Kap
8	156.7	3165.62	5/8" I.R. w/Surv-Kap
9	156.8	3166.32	5/8" I.R. w/Surv-Kap
10	156.9	3173.33	5/8" I.R. w/Surv-Kap
11	157.0	3167.08	5/8" I.R. w/Surv-Kap
11A	157.1	3177.95	5/8" I.R. w/Surv-Kap
12	157.2	3168.20	5/8" I.R. w/Surv-Kap
13	157.3	3172.32	5/8" I.R. w/Surv-Kap
14	157.4	3173.86	5/8" I.R. w/Surv-Kap
15	157.5	3173.43	5/8" I.R. w/Surv-Kap
16	157.7	3184.20	5/8" I.R. w/Surv-Kap
17	157.8	3187.36	5/8" I.R. w/Surv-Kap
18	158.0	3189.82	5/8" I.R. w/Surv-Kap

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
K-1	3274.66	USGS Brass disk in buried concrete post 2.3 miles west of "Deschutes" (old town) on Tumalo Market Road 8.5 feet NE of intersection with old Redmond-Bend Hwy. one foot SW of fence, set witness post between monument and fence. Disk stamped "3274.8". Datum K-1 1928, elevation 1928 was 3274.774 feet, 1947 was 3274.663 feet.
U418	3139.89	USGS 1946 Brass disk cemented in top of large boulder. Along Deschutes River about 1.6 miles north of Tumalo, set in huge boulder on east bank of river, at lower end of short stretch of rapids, across river from a prominent rock cliff, at edge of water about 6 feet above high water mark, 20 feet SW of a 2 ft. juniper tree, about 10 ft. south of the largest and most northerly of a group of very large boulders, below power line that crosses river.
Tumalo	3173.50	OSHD Brass disk in concrete at SW corner of bridge over Deschutes River on Tumalo-Deschutes Road near intersection with Cline Falls Hwy.
Tum-Hwy	3190.20	OSHD Brass disk in concrete at NE corner of bridge over Deschutes River on Hwy. 20 1/2 mile south of Tumalo at base of hill.
Tum-1	3208.81	USCE Al. cap on 5/8" I.R., in ditch on east side of Hwy 20 +100' South of guard rail, at "Do Not Pass" sign, south of bridge over River.
Tum-2	3197.27	USCE Al. cap on 5/8" I.R., +175' north of Beaver Lane, 23' east of Centerline of Cline Falls Hwy.
Tum-3	3278.38	USCE Al. cap on 5/8" I.R., 41' east of Centerline of Cline Falls Hwy +200' south of a cemetery at top of hill.
Tum-4	3288.57	USCE Al. cap on 5/8" I.R., N 75°W 75' from Centerline of intersection of Swalley Rd. & Deschutes Market Rd., 13.5' south of fence.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration




TUMALO

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
Tum-5	3108.15	USCE Al. cap on 5/8" I.R. 23' west of centerline of Cline Falls Road, N 10°W 56.5 feet to nail in base of twin juniper by canal.
Tum-6	3192.93	<p>USCE Al. cap on 5/8" I.R. 0.47 miles south on small country road directly behind Tumalo Emporium from Bailey Road, on west side of road 0.5 feet above ground.</p> <p>1984 Tum 6 Tum 5 B Datum</p>
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Federal Insurance Administration TUMALO		ELEVATION REFERENCE MARKS

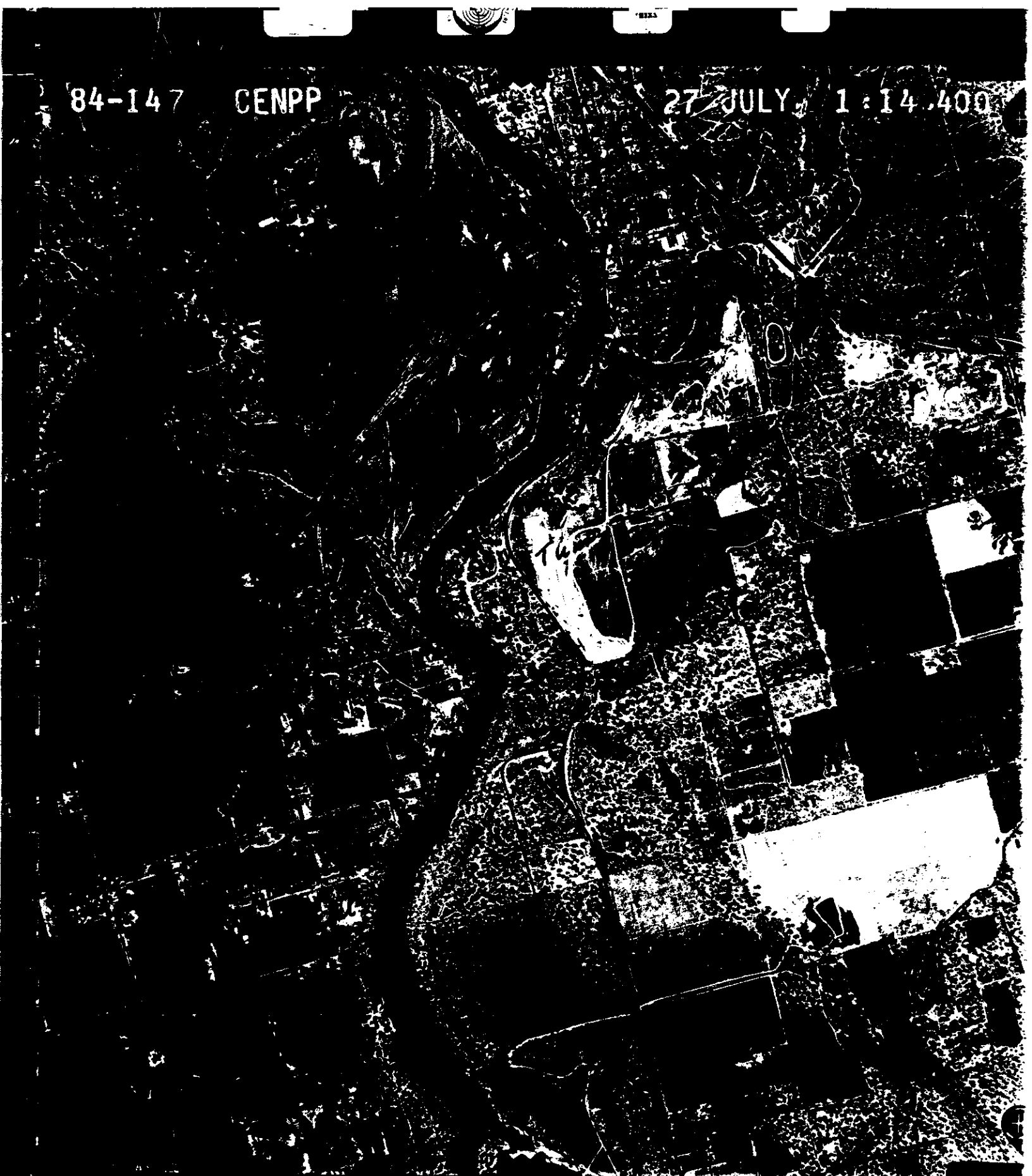
AERIAL PHOTOGRAPHS

LEGEND

-  - Traverse Stations
-  - Elevation Reference Points
-  - Elevation Reference Marks

84-147 CENPP

27 JULY 1:14:40



MC

84-146 CENPP

27 JULY 1:14.400



BEND

All coordinate values given for the Bend area are Lambert Grid Coordinates Oregon South Zone. This was done in order to utilize control from two prior mapping projects performed by this firm. Elevations, again, are mean sea level.

All traverse points and cross section reference points set are 5/8" x 30" iron rods with aluminum caps (Surv-Kaps). These are all identified on the accompanying photographs as a future aid to location. In cases where acceptable (to the land owner), a metal fence post with a "nearby survey marker" sign is next to the monument. Concrete bridges will have a standard USACE brass disc grouted in place for a bench mark.

BEND DETAILED STUDY

Primary Control

August 1984

<u>STATION</u>	<u>MAO-27</u> <u>COORDINATES</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
BND 1	860,939.191 1,784,780.613	3,792.33	5/8" I.R. w/Surv-Kap
BND 2	867,403.003 1,780,765.407	3,679.09	5/8" I.R. w/Surv-Kap
BND 3	864,504.053 1,779,884.215	3,770.30	5/8" I.R. w/Surv-Kap
BND 4	879,405.929 1,785,751.463	3,731.34	5/8" I.R. w/Surv-Kap
BND 5	876,187.391 1,785,555.235	3,652.56	5/8" I.R. w/Surv-Kap
BND 6	885,898.560 1,780,604.623	3,562.74	5/8" I.R. w/Surv-Kap
TMI9A	860,789.460 1,780,061.770	3,831.35	5/8" I.R. w/Surv-Kap

BEND
 DETAILED STUDY AREA
 X-Section Control

<u>X-Section #</u>	<u>Approx R/M</u>	<u>Elevation</u>	<u>Description</u>
1	162.0	3348.84	5/8" I.R. w/Surv-Kap
2	162.4	3404.67	5/8" I.R. w/Surv-Kap
3	162.6	3399.12	5/8" I.R. w/Surv-Kap
4	162.8	3424.28	5/8" I.R. w/Surv-Kap
5	162.9	3436.54	5/8" I.R. w/Surv-Kap
6	163.0	3442.99	5/8" I.R. w/Surv-Kap
7	163.1	3460.44	5/8" I.R. w/Surv-Kap
8	163.2	3464.34	5/8" I.R. w/Surv-Kap
9	163.3	3478.16	5/8" I.R. w/Surv-Kap
10	163.4	3491.18	5/8" I.R. w/Surv-Kap
11	163.5	3490.07	5/8" I.R. w/Surv-Kap
12	163.7	3495.25	5/8" I.R. w/Surv-Kap
13	163.9	3499.14	5/8" I.R. w/Surv-Kap
14	164.0	3502.78	5/8" I.R. w/Surv-Kap
15	164.1	3515.84	5/8" I.R. w/Surv-Kap
16	164.2	3514.32	5/8" I.R. w/Surv-Kap
17	164.4	3508.22	5/8" I.R. w/Surv-Kap
18	164.5	3521.85	5/8" I.R. w/Surv-Kap
<u>19</u>	164.7	3524.16	5/8" I.R. w/Surv-KAP
<u>20</u>	164.8	3559.07	5/8" I.R. w/Surv-Kap
<u>21</u>	164.9	3564.19	5/8" I.R. w/Surv-Kap
22	165.1	3570.05	5/8" I.R. w/Surv-Kap
23	165.4	3567.52	5/8" I.R. w/Surv-Kap
24	165.5	3571.68	5/8" I.R. w/Surv-Kap
24A	165.7	3568.60	5/8" I.R. w/Surv-Kap
25	165.8	3573.49	5/8" I.R. w/Surv-Kap
26	165.9	3576.64	5/8" I.R. w/Surv-Kap
27	166.0	3577.20	5/8" I.R. w/Surv-Kap
28	166.1	3581.77	5/8" I.R. w/Surv-Kap
29	166.2	3581.61	5/8" I.R. w/Surv-Kap
30	166.3	3601.90	P.K. Nail

<u>X-Section #</u>	<u>Approx R/M</u>	<u>Elevation</u>	<u>Description</u>
31	166.4	3595.25	Hub Tack
32	166.5	3597.80	60 d Nail w/Shiner
33	166.6	3595.37	Hub Tack
34	166.8	3597.80	Hub Tack
35	166.9	3594.90	Hub Tack
36	167.0	3597.63	5/8" I.R. w/Surv-Kap
37	167.1	3597.22	5/8" I.R. w/Surv-Kap
38	167.4	3595.90	5/8" I.R. w/Surv-Kap
39	167.5	3598.40	5/8" I.R. w/Surv-Kap
40	167.8	3606.11	5/8" I.R. w/Surv-Kap
41	167.9	3605.78	5/8" I.R. w/Surv-Kap
42	168.0	3606.11	5/8" I.R. w/Surv-Kap
43	168.2	3606.95	5/8" I.R. w/Surv-Kap
44	168.3	3611.93	5/8" I.R. w/Surv-Kap
45	168.4	3611.93	5/8" I.R. w/Surv-Kap
46	168.6	3607.82	5/8" I.R. w/Surv-Kap
47	168.8	3606.74	5/8" I.R. w/Surv-Kap
48	169.0	3607.76	5/8" I.R. w/Surv-Kap
49	169.2	3612.50	5/8" I.R. w/Surv-Kap
50	169.4	3627.88	5/8" I.R. w/Surv-Kap
51	169.5	3630.21	5/8" I.R. w/Surv-Kap

0022 GIS 0022
0023 GIS 0023

3598.43

○

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
TMI-2	3529.93	Al. cap on 5/8" I.R. in Centerline of Briggs Road, 0.3 miles from Jct. O.B. Riley Road.
TBM "Nut"	3492.64	Most easterly bolt on a 6"x10" wood curb on east bridge over Deschutes River at Briggs Road. Elevation at top of nut.
BND-6	3562.74	USCE Al. cap on 5/8" I.R. in Centerline of Canal Road, above Awbrey Heights Subdivision, from C.O.C.C. go north into Awbrey Heights (pass canal) on Putnam Street, take second paved road to right (Brogan Street) up the hill, turn left on Canal Road and go 0.4 miles to BND-6, fence post south of point 8.6 ft.
TMI-3	3543.13	PK nail set 5' east of west edge of pavement SW across Hwy 97 from Izzy's Pizza, white "+" painted on pavement, witness post westerly 9.5', 2.6 feet west of Fogline, approx. 80 feet south of southerly entrance to Riverhouse Motel, set R.P. nail and Alum. Flasher in 16" P. Pine S 74°W 35.10 feet.
BND-4	3731.34	USCE Al. cap on 5/8" I.R. located 0.8 miles westerly from bridge at south end Riverhouse Motel, cross canal on dirt road and follow up hill, north edge of a clearing (burned area), 30 feet south of tree line and 150 feet west of road, NW of large boulder patch; set witness post.
TMI-1	3504.92	Al. cap on 5/8" I.R. in Centerline of Glen Vista Road 0.35 miles from Jct. O.B. Riley Road.
RHB *	3530.81	USCE Brass disk set in concrete on NE corner of bridge just south of Riverhouse Motel.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

BEND

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
Awbrey Az.	3513.51	USCGS Brass disk, 1946, set in top of the most southerly group of boulders at north end of small parking lot on east bank of the Deschutes River in Sawyer Park 83.5 ft. west of centerline of O.B. Riley Road, about 56 feet east of abrupt edge of river bank.
Port	3586.68	Brass disk in concrete at NW corner of Portland Street bridge.
PP&L Dam	3595.17	PP&L Brass disk, 1926, on east wing wall of dam, one foot north of top of stairway by powerhouse.
Y-369	3753.35	USCGS Brass disk, 1942, in 7'x10' boulder, east of Century Drive, at entrance to Mt. Bachelor at Village, S 62°E 43 ft. from SHRW monument.
BND-3	3770.30	USCE Al. cap on 5/8" I.R. located 49 feet west of centerline of Century Drive near south end of Mt. Bachelor Village Condos, 101 ft. north of huge sign "Cascade Lakes Recreation Area" wilderness post.
BND-2	3679.09	USCE Al. cap on 5/8" I.R. located 0.2 miles west of Century Drive on old Brooks=Scanlon haul road from overpass near P.I. of curve 20 feet north of centerline, 250' west of entrance to landfill site, 8 feet south of witness post.
BND-1	3792.33	USCE Al. cap on 5/8" I.R. located 0.2 miles south of intersection of Blakely and Powers Road, 23' west of centerline of Blakeley S 25°W 21' from power pole #082202 witness post.
BND-5	3652.56	USCE Al. cap on 5/8" I.R. set in centerline of Awbrey Street approx. 120 feet north of intersection with Utica Street, painted cross.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration




ELEVATION REFERENCE MARKS

BEND

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
TMI-12V	3764.60	PK Nail in asphalt, 6.5 feet west of fog line Hwy 97, south of Sonoma Spas Store. South end of Bend.
TMI-9A	3831.35	USCE A1. cap on 5/8" I.R., go south on old Brooks-Scanlon haul road 0.37 miles from Blakely Rd. to dirt road. Opposite paved driveway, go westerly on dirt road 0.6 miles keeping right at all "y"'s in road. At intersection with N-S road turn north and go .05 miles to stub road, turn west, pt. is on east rock rim overlooking Deschutes River.
Y-263	3601.93	Brass disk in sidewalk, left bank of river on D/S side of Galveston bridge, 20' west of end.
Newp	3608.98	USCE brass disk in SE corner of Newport Bridge in sidewalk.
RR Trestle	3604.21	USCE brass disk in concrete footing of trestle, right bank, west side of asphalt bike path, D/S from Colorado Street bridge.
PP&L "F"	3596.48	Brass disk in rock in Drake Park between restrooms & river, by flagpole.
DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT Federal Insurance Administration		ELEVATION REFERENCE MARKS
BEND		

AERIAL PHOTOGRAPHS

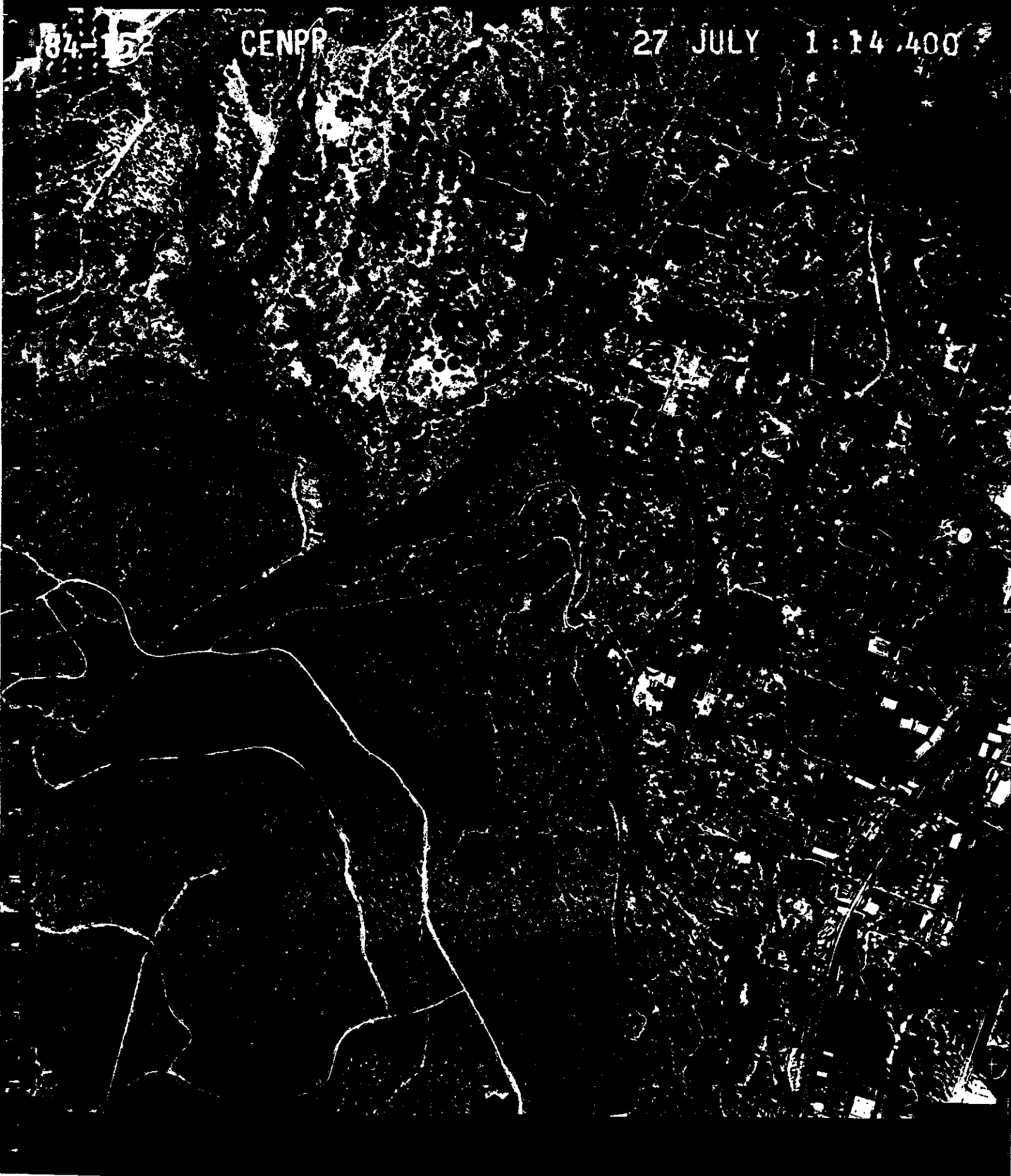
LEGEND

-  - Traverse Stations
-  - Elevation Reference Points
-  - Elevation Reference Marks

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27 JULY 1:14.400



84-154

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84-161

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84-163

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BNP-2



84-164

CENPP

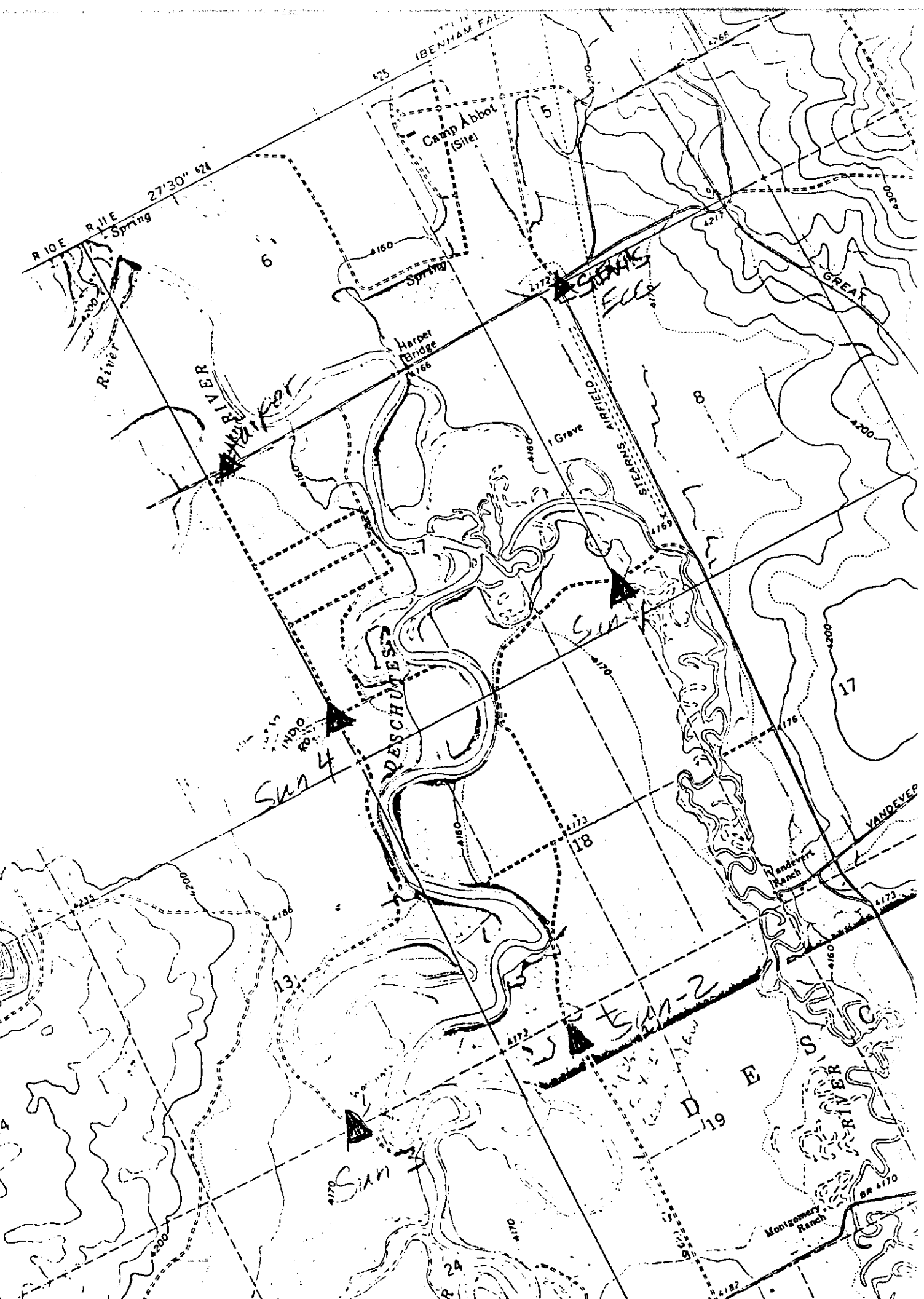
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SUNRIVER

All coordinate values given for this area are based upon the existing Sunriver control network which has been established and expanded by this firm since 1971. Elevations, again, are mean sea level.

All traverse points and cross section reference points set are 5/8" x 30" iron rods with aluminum caps (Surv-Kaps). These are all identified on the accompanying photographs as a future aid to location. In cases where acceptable (to the land owner), a metal fence post with a "nearby survey marker" sign is next to the monument. Concrete bridges will have a standard USACE brass disc grouted in place for a bench mark.



SUNRIVER DETAILED STUDY

Primary Control

August 1984

<u>STATION</u>	<u>COORDINATES</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
LODGE II	24,086.377 14,609.409	4,158.36	5/8" I.R. w/Surv-Kap
HUSKY DUTY	36,306.542 16,682.935	4,175.08	5/8" I.R. w/Surv-Kap
STEARNS ECC	20,059.125 16,136.757	4,170.01	5/8" I.R. w/Surv-Kap
SUN-1	15,175.863 14,833.309	4,161.30	5/8" I.R. w/Surv-Kap
SUN-2	9,590.172 11,839.492	4,173.32	5/8" I.R. w/Surv-Kap
SUN-3	9,592.750 7,317.010	4,179.44	5/8" I.R. w/Surv-Kap
SUN-4	15,384.636 9,513.365	4,175.27	5/8" I.R. w/Surv-Kap
S/R WEST	35,852.135 13,174.008	4,166.42	5/8" I.R. w/Surv-Kap
PUMP	34,195.048 16,160.485	4,170.08	2" I.P. & Brass Cap
BEAVER	27,929.955 9,722.665	4,180.81	2" I.P. & Brass Cap
SPRING	24,692.126 9,843.652	4,190.99	2" I.P. & Brass Cap
PINE	22,521.835 10,216.951	4,157.37	2" I.P. & Brass Cap
HARPER	19,876.680 9,992.180	4,169.95	2" I.P. & Brass Cap
ROCK	30,240.68 19,022.75	4,275.13	2" I.P. & Brass Cap

SUNRIVER HOMESITES
 DETAILED STUDY AREA

X-Section Control

<u>X-Section #</u>	<u>Approx R/M</u>	<u>Elevation</u>	<u>Description</u>
1	185.7	4154.86	5/8" I.R. w/Surv-Kap
2	185.9	4151.30	5/8" I.R. w/Surv-Kap
3	186.1	4153.76	5/8" I.R. w/Surv-Kap
4	186.2	4153.37	5/8" I.R. w/Surv-Kap
5	186.5	4152.65	5/8" I.R. w/Surv-Kap
6	186.8	4154.66	5/8" I.R. w/Surv-Kap
7	187.0	4152.77	5/8" I.R. w/Surv-Kap
8	187.2	4153.33	5/8" I.R. w/Surv-Kap
9	187.4	4154.45	5/8" I.R. w/Surv-Kap
10	187.7	4151.85	5/8" I.R. w/Surv-Kap
11	188.0	4152.86	5/8" I.R. w/Surv-Kap
12	188.3	4152.77	5/8" I.R. w/Surv-Kap
13	188.7	4155.68	5/8" I.R. w/Surv-Kap
14	188.8	4154.93	5/8" I.R. w/Surv-Kap
15	189.5	4156.31	5/8" I.R. w/Surv-Kap
16	189.9	4155.87	5/8" I.R. w/Surv-Kap
17	190.3	4158.00	5/8" I.R. w/Surv-Kap
18	190.6	4155.55	5/8" I.R. w/Surv-Kap
19	190.8	4157.73	5/8" I.R. w/Surv-KAP
20	191.0	4157.03	5/8" I.R. w/Surv-Kap
21	191.2	4164.70	5/8" I.R. w/Surv-Kap
22	191.7	4157.01	5/8" I.R. w/Surv-Kap
23	192.0	4157.82	5/8" I.R. w/Surv-Kap
24	192.5	4157.45	5/8" I.R. w/Surv-Kap
25	192.7	4159.58	5/8" I.R. w/Surv-Kap
26	193.1	4159.75	5/8" I.R. w/Surv-Kap
27	193.4	4159.67	5/8" I.R. w/Surv-Kap
28	193.7	4162.00	5/8" I.R. w/Surv-Kap
29	194.0	4173.73	5/8" I.R. w/Surv-Kap
30	194.3	4159.55	5/8" I.R. w/Surv-Kap
31	194.9	4159.58	5/8" I.R. w/Surv-Kap
32	195.1	4162.62	5/8" I.R. w/Surv-Kap
33	195.3	4159.88	5/8" I.R. w/Surv-Kap

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
Sun-1	4161.30	USCE Al. cap on 5/8" I.R., from Spring River Road go south 0.85 mi. to private road going west, from gate go 1/4 mile across Little Deschutes River to cap on south side of road +100'.
Sun-2	4173.32	USCE Al. cap on 5/8" I.R. at NE corner of intersection of Kildeer and Blackduck Road next to street sign.
Sun-4	4175.27	USCE Al. cap on 5/8" I.R., on east side of Solar Dr. 100' north of centerline on Indio Road.
Sun-3	4179.44	USCE Al. cap on 5/8" I.R., on north side of Upland Road 23' north of centerline, 120' west of a 24" P. Pine in centerline of road, across Upland from centerline of Buchanan driveway.
Stearns ECC	4170.01	USCE Al. cap on 5/8" I.R., 6.5' north of pavement at intersection of Spring River Road and South Century Drive.
Harper Bridge	4165.62	Brass disk on SW corner of Harper Bridge.
H-1	4172.43	Brass disk in concrete, 100' east of intersection of Marsh Hawk and Curlew, 30' south of centerline of Curlew.
1-DWR-A	4175.54	Brass disk at NE corner of bridge over Little Deschutes River on Tholstrup Road, just east of 1000 Trails.
Harper	4169.95	BC in fence line north of Spring River Road, 200' east of inter-section with Solar Drive.
Junction	4152.00	BC at NW corner of intersection of road going to marina and service road, at River Road.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
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SUNRIVER

ELEVATION REFERENCE MARKS

REFERENCE MARK

ELEVATION
IN FEET (NGVD)

DESCRIPTION OF LOCATION

S/R West

4166.42

USCE Al. cap on 5/8" I.R. set in clearing, go 0.3 miles west from Cardinal Landing bridge over Deschutes River across meadow to clearing and road jct., go north 0.4 mi. on F.S. Spur #5 to Jct. dirt road, take right fork at clearing 250' to picture point.

Lodge II

4158.36

USCE Al. cap on 5/8" I.R., point is south 12' of S/R Control Pt. Brass cap marked "Lodge", point is at west end of parking lot on north side of Sunriver Lodge +100' in landscaping at turnaround.

Husky Duty

4175.08

USCE Al. cap on 5/8" I.R., point is north 20' from S/R Control Point. Brass cap marked "Husky" set in rock. From Circle 6 go north 0.24 mi. on West Cascade Road, pt. is 25' west of abandoned military road.

Pump

4170.08

Brass cap, 800' south of Circle 6 on west side of West Cascade Road, across from intersection Top Flite Ln., 10' east of abandoned military road, NE of pump station at mouth of outfall line.

Rock

4275.13

Brass cap in Fork Rock Park, north of ballfield, north of bike path, west of tennis courts, + 50' west of S/R observatory.

Pine

4157.37

Brass cap in cow pasture, 150' south of lone pine, 1/2' north of Spring River Road on left bank, south of Jct. of Spring River & Deschutes River.

Spring

4190.00

Brasscap, 100' downstream from mouth of Spring River, + 400' west of Deschutes River, 10' west of dirt road off of F.S. Road #1824, 600' south of Section line 36 crossing F.S. Rd. #1808.

Beaver

4180.81

Brass cap, near west section line of Sec. 31, just north of W 1/4 corner and old bridge crossing, 70' west of F.S. Rd. #1808 in cinder pit.




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SUNRIVER

ELEVATION REFERENCE MARKS

AERIAL PHOTOGRAPHS

LEGEND

-  - Traverse Stations
-  - Elevation Reference Points
-  - Elevation Reference Marks

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27 JULY

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84-171

CENPP

27 JULY 1:14:40



4-180

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27 JULY 1:14.400



84-181

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DESCHUTES RIVER HOMESITES

Coordinate values for this particular detailed study area are based upon the "Bates Butte" cadastral survey performed by this firm in the fall/winter of 1980-1981. Bearings are true north, and a direct tie can be made to all public land survey corners within the realm of this particular cadastral project. Elevations again are mean sea level.

All traverse points and cross section reference points set are 5/8" x 30" iron rods with aluminum caps (Surv-Kaps). These are all identified on the accompanying photographs as a future aid to location. In cases where acceptable (to the land owner), a metal fence post with a "nearby survey marker" sign is next to the monument. Concrete bridges will have a standard USACE brass disc grouted in place for a bench mark.

DESCHUTES RIVER HOMESITES
DETAILED STUDY AREA

Primary Control

August 1984

<u>STATION</u>	<u>COORDINATES</u>	<u>ELEVATION</u>	<u>DESCRIPTION</u>
DRH-23	20,500.629 8,217.653	4534.89	5/8" I.R. w/Surv-Kap
W-E-E 1/256	20,095.837 13,675.572	4188.64	2 1/2" I.R. w/Brass Cap
DRH-5	12,188.065 9,814.769	4215.60	5/8" I.R. w/Surv-Kap
DRH-17	7,106.260 7,898.564	4224.59	5/8" I.R. w/Surv-Kap
<u>4</u> <u>3</u> <u>9</u> <u>10</u>	9,591.497 4,060.773	4190.89	3 1/2" B.L.M. Brass Cap
DL-6	16,200.685 8,585.076	4198.77	Hub & Tack
DL-7	17,048.445 8,763.455	4192.20	Hub & Tack

DESCHUTES RIVER HOMESITES
 DETAILED STUDY AREA

X-Section Control

<u>X-Section #</u>	<u>Approx R/M</u>	<u>Elevation</u>	<u>Description</u>
1	200.9	4168.29	5/8" I.R. w/Surv-Kap
2	201.1	4173.11	5/8" I.R. w/Surv-Kap
3	201.4	4189.45	5/8" I.R. w/Surv-Kap
4	201.6	4190.26	5/8" I.R. w/Surv-Kap
5	201.7	4179.01	5/8" I.R. w/Surv-Kap
6	201.9	4184.37	5/8" I.R. w/Surv-Kap
7	202.2	4171.80	5/8" I.R. w/Surv-Kap
8	202.6	4183.36	5/8" I.R. w/Surv-Kap
9	203.0	4169.91	5/8" I.R. w/Surv-Kap
10	203.4	4181.14	5/8" I.R. w/Surv-Kap
11	203.8	4172.41	5/8" I.R. w/Surv-Kap
12	204.1	4169.68	5/8" I.R. w/Surv-Kap
13	204.5	4169.16	5/8" I.R. w/Surv-Kap
WC to E 1/16 $\frac{S34}{S3}$	204.5	4175.02	Brass Cap
14	204.4	4175.55	5/8" I.R. w/Surv-Kap
14-2	204.4	4168.58	5/8" I.R. w/Surv-Kap
15	205.1	4170.65	5/8" I.R. w/Surv-Kap
15-2	205.1	4170.98	5/8" I.R. w/Surv-Kap
16	205.3	4174.11	5/8" I.R. w/Surv-Kap
16-2	205.3	4168.99	5/8" I.R. w/Surv-Kap
17	205.5	4176.66	5/8" I.R. w/Surv-Kap
18	205.6	4178.71	5/8" I.R. w/Surv-Kap
18-2	205.6	4169.34	5/8" I.R. w/Surv-Kap
18A	205.9	4185.10	5/8" I.R. w/Surv-KAP
18A-2	205.9	4174.97	5/8" I.R. w/Surv-Kap
19	206.1	4170.33	5/8" I.R. w/Surv-Kap
20	206.3	4172.15	5/8" I.R. w/Surv-Kap
21	206.5	4171.87	5/8" I.R. w/Surv-Kap
22	206.6	4171.22	5/8" I.R. w/Surv-Kap
23	206.7	4176.49	5/8" I.R. w/Surv-Kap
24	206.8	4222.69	5/8" I.R. w/Surv-Kap
25	207.0	4172.89	5/8" I.R. w/Surv-Kap
26	207.1	4171.74	5/8" I.R. w/Surv-Kap

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
DRH-23	4534.89	USCE Al. Cap on 5/8" I.R. on south slope of Bates Butte, from line crossing at north end of Forest River estates go north on F.S. Road .5 miles to dirt, go west staying to left at fork and drive to end, walk NW on old skid road to point.
CR-2	4193.93	Brass disk in concrete, ± 200' south of sec. cor. $26 \frac{25}{35} \frac{700}{36}$ east of Forest Service Road #4205 where it crosses posted section line.
WEE 1/256 $\frac{26}{35}$	4188.64	Brass cap in fence line 200' west of Forest Service Road #4205 at posted line crossing.
Bates	4178.80	RR spike in base of 24" P. pine at SW corner of intersection of Bates Road and Forest Lane.
Duck	4178.44	RR spike in base of power pole at intersection of Willow and Mallard, east side of road.
DL-7	4192.20	Hub & tack on west side of Forest Lane, 270 feet south of Jct. with Willow.
DL-6	4198.77	Hub & tack on east side of Forest Lane 480' South of Jct. with Mallard.
DRH-5	4215.60	USCE Al. cap on 5/8" I.R., north of intersection of Forest Service Road #4205 and Gray Squirrel Drive at south edge of dirt track, 10" L.P. Pine bears S 16°W 10.6'.
Sheep	4177.93	USCE Brass disk set in SE corner of bridge.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
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DESCHUTES RIVER HOMESITES

ELEVATION REFERENCE MARKS

ELEVATION REFERENCE MARKS

REFERENCE MARK	ELEVATION IN FEET (NGVD)	DESCRIPTION OF LOCATION
H-2	4185.35	Brass disk in concrete, 0.2 miles east on Whitetail Drive from Silver Fox Drive, 30' South of Centerline of Whitetail Drive.
DRH-17	4224.59	USCE AL. cap on 5/8" I.R., 0.8' north of pavement on road to LaPine State Park, +150' westerly of Park sign.
LAP	4194.27	OSHD Brass disk set on NW corner of bridge over Deschutes River by LaPine State Park.
Sec Cor $\frac{4 \ 3}{9 \ 10}$	4190.89	1958 BLM Brasscap, from river overview downstream from bridge walk down stream on the right bank 1000' to corner which sits on west side of trail.
W 1/16 $\frac{35}{2}$	4183.26	AL. cap at end of Silver Fox Dr., east side of road.
"64"	4176.10	RR spike in base of 16" P. Pine with double top +102' west of E-W 1/64 $\frac{35}{2}$ + 100' east of river.
Nita	4189.92	RR spike in base of 20" P. Pine along edge of river where Forest Service Road #4205 first hits river just south of houses.
Bird	4168.19	RR spike in top of 8" stump at edge of high water, 350' SW off the end of Breaver Drive.
WC E 1/16 $\frac{34}{3}$	4175.02	Brass cap, left bank, 29' from water. From locked gate at end of Forest Lane go 600' south on road, go east to river 200'.
W 1/16 $\frac{26}{35}$	4170.46	Brass cap, 300' west of river, 275' east of Forest Lane at posted line crossing.




DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
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DESCHUTES RIVER HOMESITES

ELEVATION REFERENCE MARKS

AERIAL PHOTOGRAPHS

LEGEND

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-  - Elevation Reference Marks

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