

MAP SHOWING SAMPLE LOCATION SITES, BOURNE QUADRANGLE, BAKER COUNTY, OREGON 1984

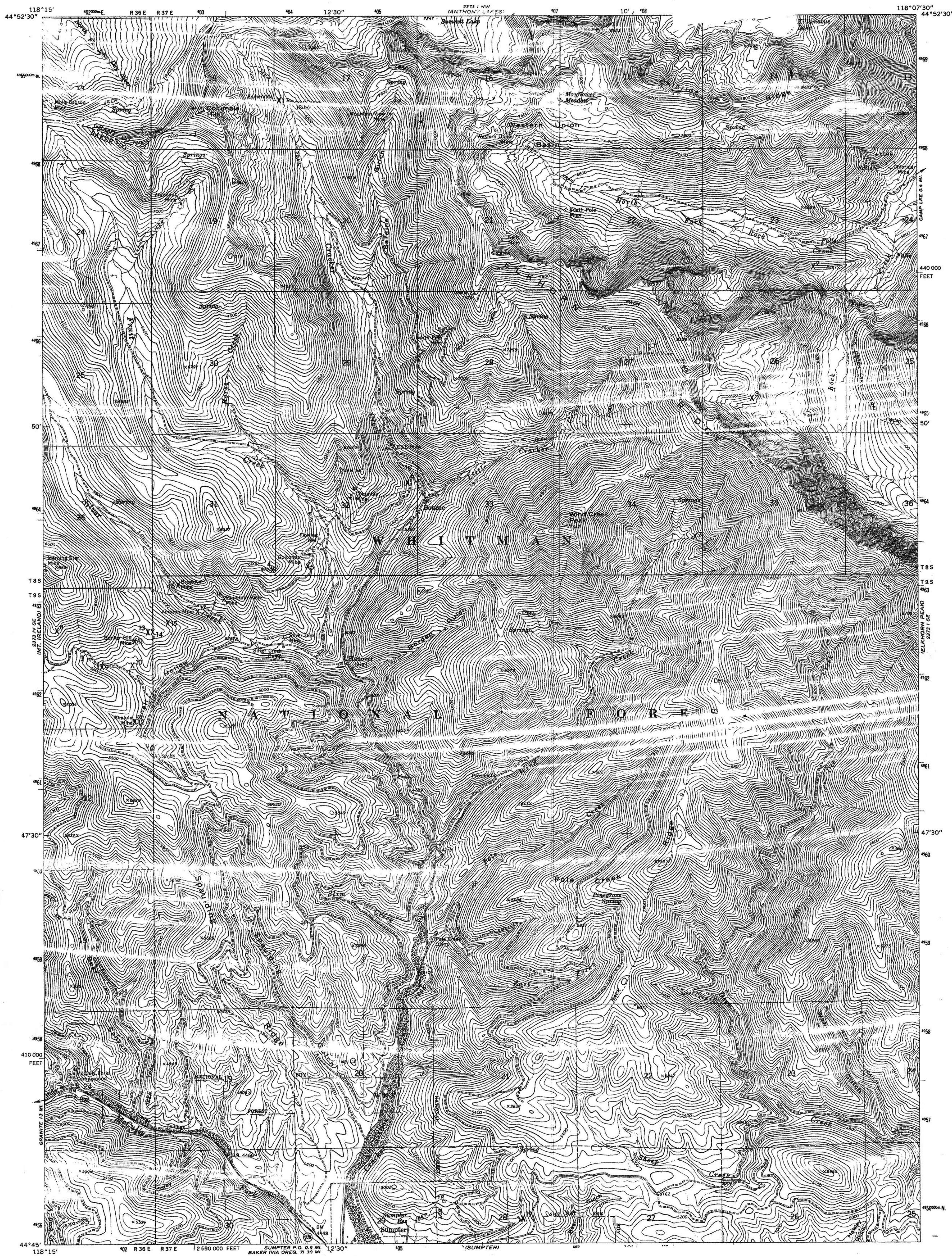
Open-File Report 0-84-3

PLATE 1

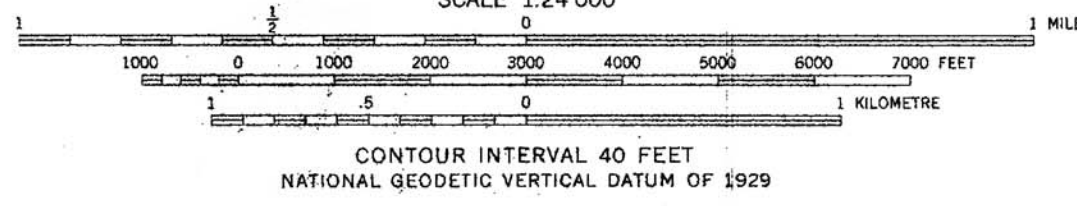
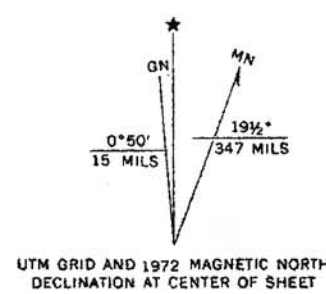
Geochemical data for the Bourne, Mt. Ireland,
Greenhorn, Granite, Bates NE, Bates NW, and
Bates SW 7½-minute quadrangles, Baker and
Grant Counties, Oregon

by M.L. Ferns, H.C. Brooks, and D.G. Avery
Funded in part by United States Department
of Agriculture--U.S. Forest Service

Bourne



Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1971. Field checked 1972
Projection and 10,000-foot grid ticks: Oregon coordinate
system, north zone (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks,
zone 11, shown 1927 North American datum
Where omitted, land lines have not been established



X Sample site

MAP SHOWING SAMPLE LOCATION SITES, MT. IRELAND QUADRANGLE, GRANT AND BAKER COUNTIES, OREGON

Open-File Report 0-84-3

PLATE 2

Geochemical data for the Bourne, Mt. Ireland, Greenhorn, Granite, Bates NE, Bates NW, and Bates SW 7½-minute quadrangles, Baker and Grant Counties, Oregon

by M.L. Ferns, H.C. Brooks, and D.G. Avery
Funded in part by United States Department of Agriculture--U.S. Forest Service

Mt. Ireland

1984



Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial
photographs taken 1971. Field checked 1972
Projection and 10,000-foot grid ticks: Oregon coordinate
system, north zone (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks,
zone 11, shown in blue. 1927 North American datum

UTM GRID AND 1972 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

SCALE 1:24,000
CONTOUR INTERVAL 40 FEET
NATIONAL GEODETTIC VERTICAL DATUM OF 1924

QUADRANGLE LOCATION

X¹² Sample site

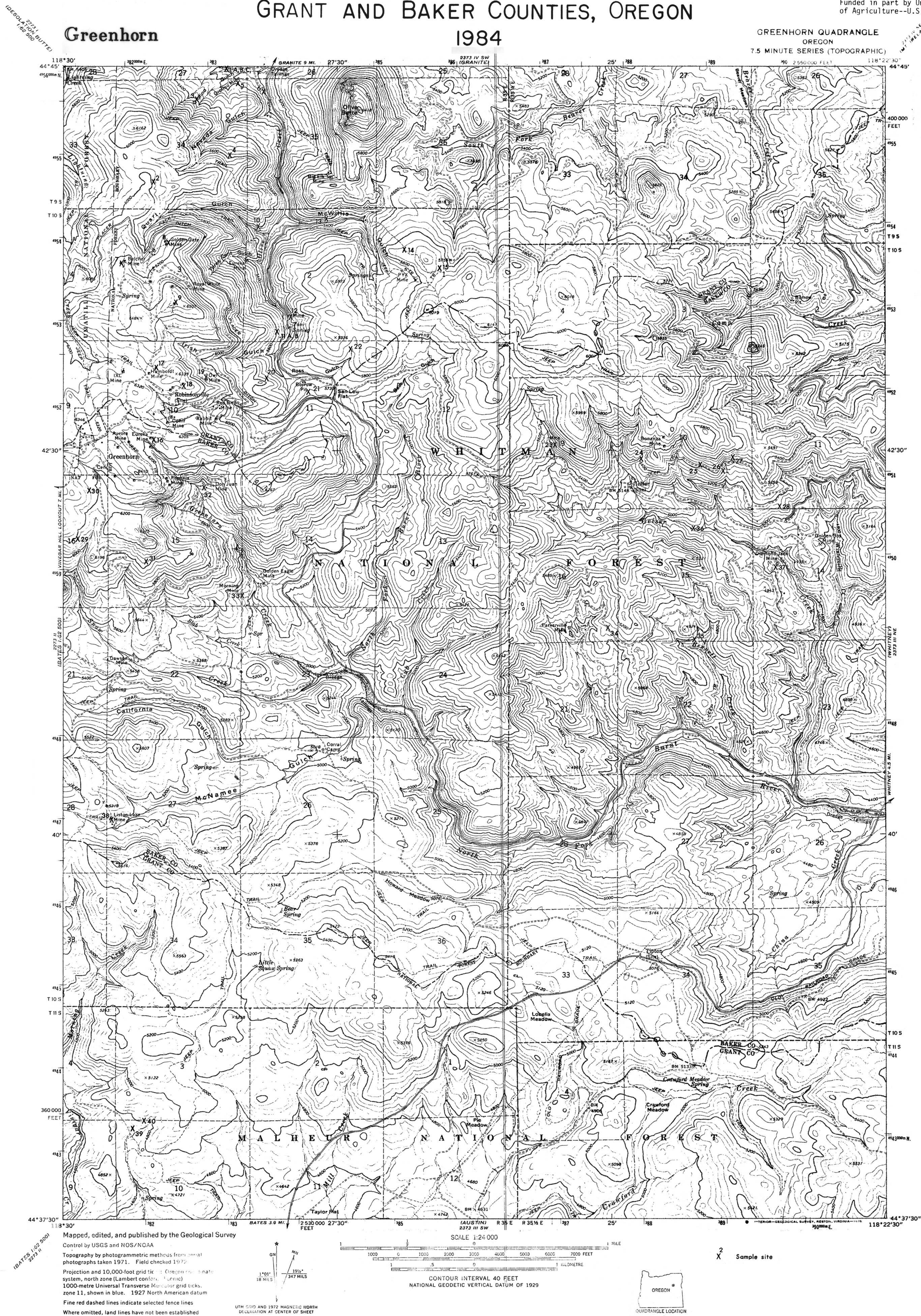
MAP SHOWING SAMPLE LOCATION SITES, GREENHORN QUADRANGLE, GRANT AND BAKER COUNTIES, OREGON

Open-File Report 0-84-3

PLATE 3

Geochemical data for the Bourne, Mt. Ireland,
Greenhorn, Granite, Bates NE, Bates NW, and
Bates SW 7½-minute quadrangles, Baker and
Grant Counties, Oregon

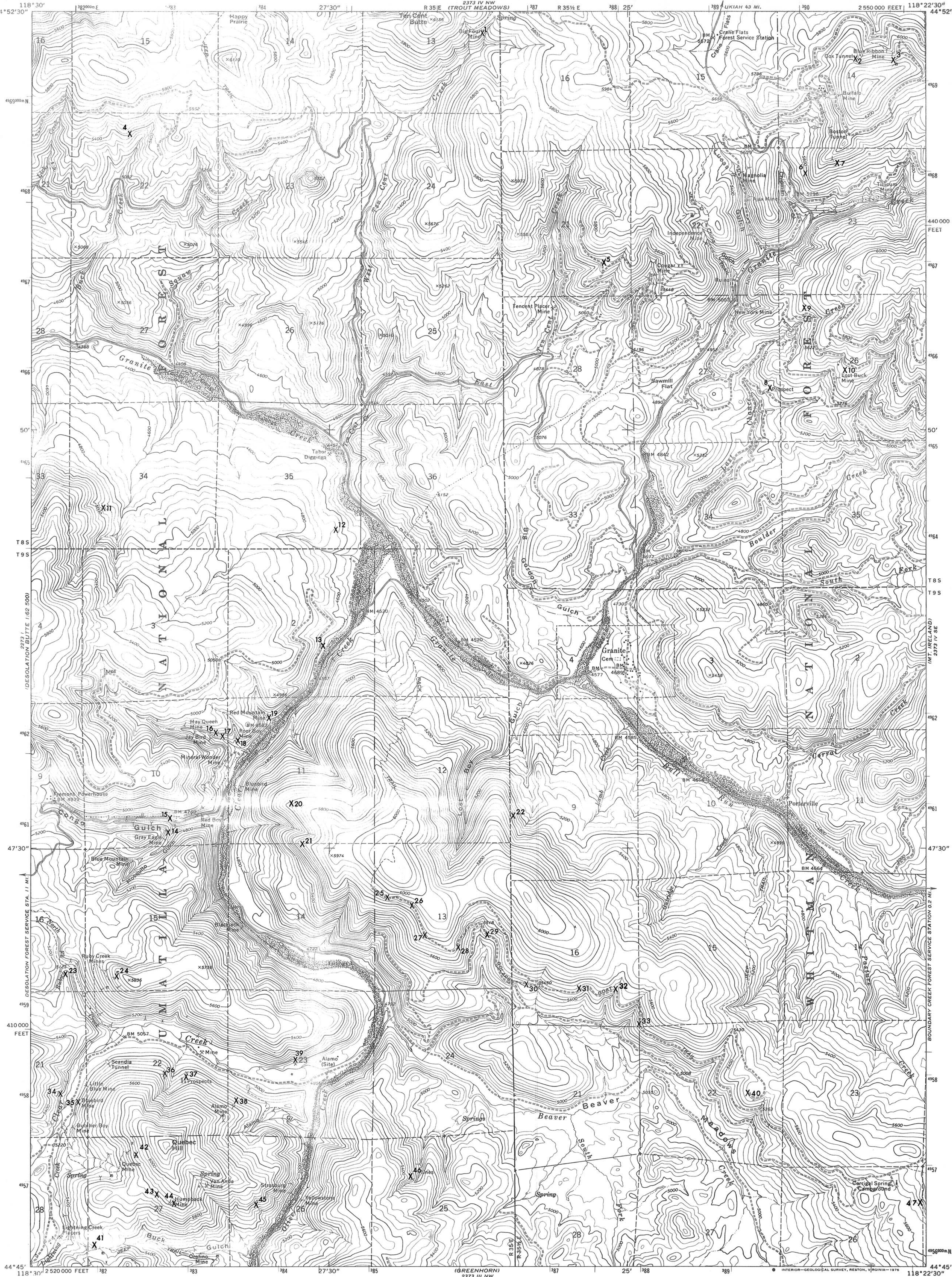
by M.L. Ferns, H.C. Brooks, and D.G. Avery
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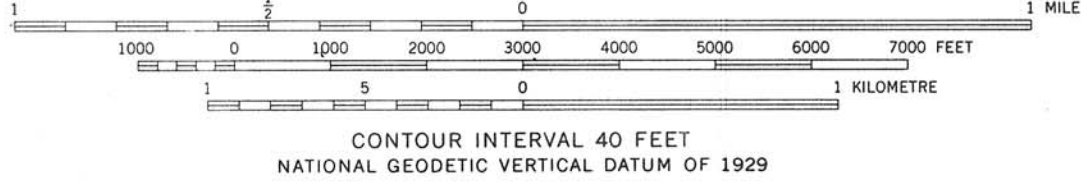
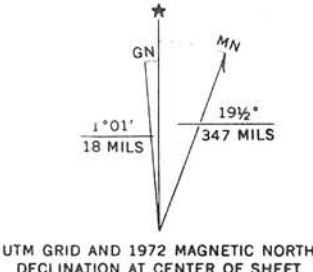
MAP SHOWING SAMPLE LOCATION SITES,
GRANITE QUADRANGLE,
GRANT COUNTY, OREGON
1984

Open-File Report 0-84-3
Geochemical data for the Bourne, Mt. Ireland, Greenhorn, Granite, Bates NE, Bates NW, and Bates SW 7½-minute quadrangles, Baker and Grant Counties, Oregon
by M.L. Ferns, H.C. Brooks, and D.G. Avery
Funded in part by United States Department of Agriculture--U.S. Forest Service

Granite



Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1971. Field checked 1972
Projection and 10,000-foot grid ticks: Oregon coordinate system, north zone (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks, zone 11, shown in blue. 1927 North American datum



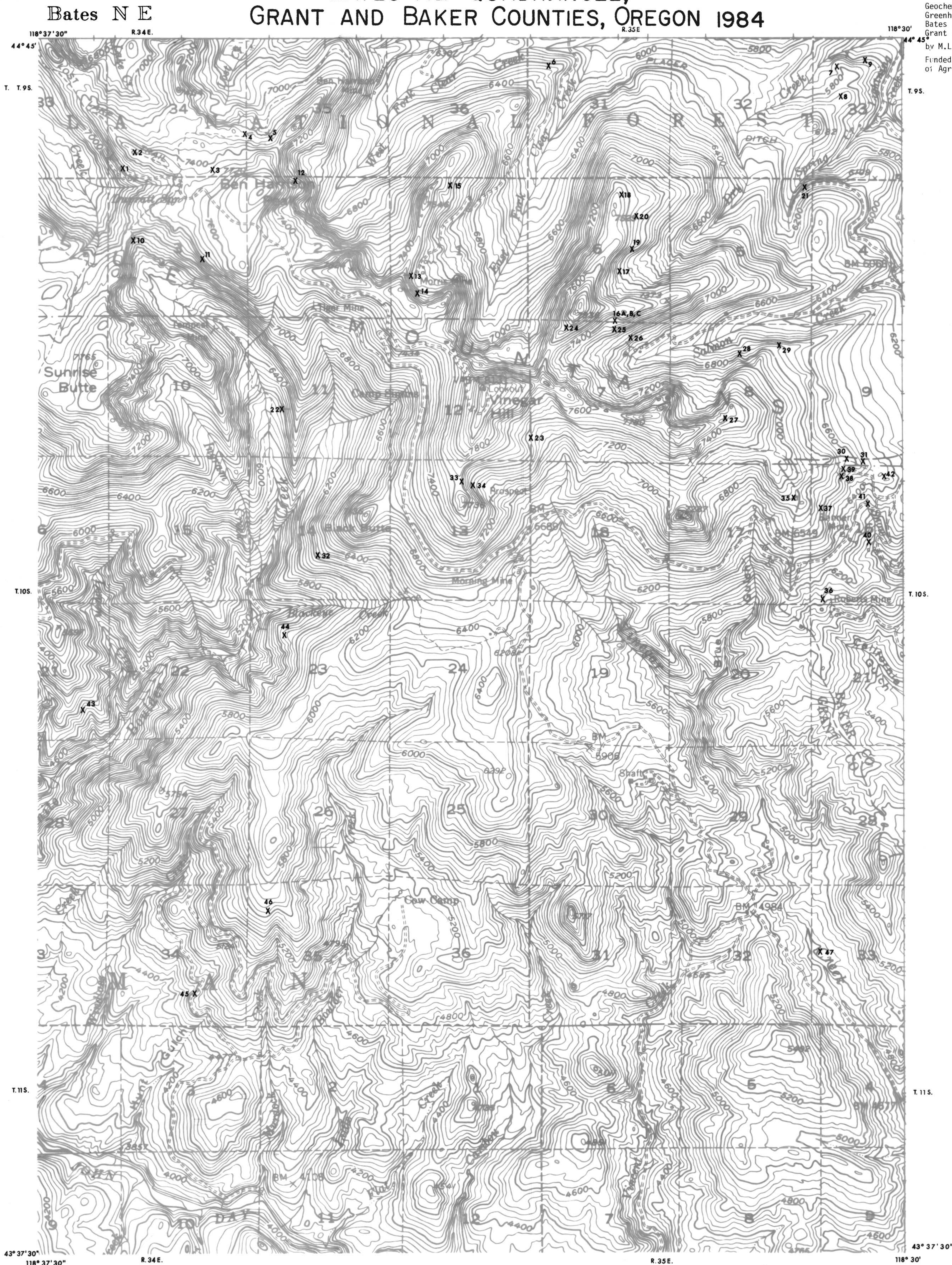
X^o Sample site

MAP SHOWING SAMPLE LOCATION SITES, BATES NE QUADRANGLE, GRANT AND BAKER COUNTIES, OREGON 1984

Open-File Report 0-84-3

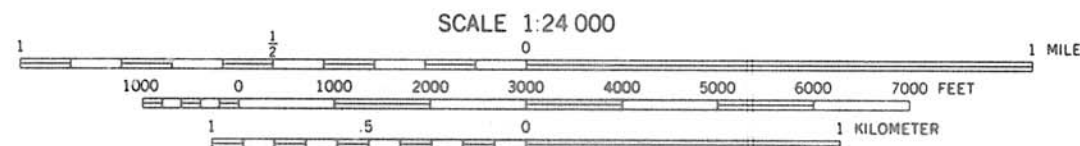
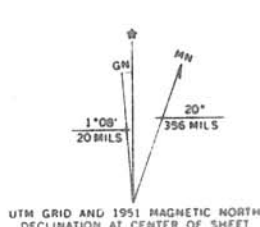
PLATE 5

Geochemical data for the Bourne, Mt. Ireland, Greenhorn, Granite, Bates NE, Bates NW, and Bates SW 7½-minute quadrangles, Baker and Grant Counties, Oregon
by M.L. Ferns, H.C. Brooks, and D.G. Avery
Funded in part by United States Department of Agriculture--U.S. Forest Service



Base map from U.S.G.S. 15' series (topographic)
enlarged to 7½' scale 1:24 000

Control by USGS and USC&GS
Topography from aerial photographs by multiple methods
Aerial photographs taken 1946. Field check 1951
Polyconic projection. 1927 North American datum
10,000-foot grid based on Oregon coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown
Dashed land lines indicate approximate locations



X² Sample site

MAP SHOWING SAMPLE LOCATION SITES, BATES NW QUADRANGLE, GRANT COUNTY, OREGON 1984

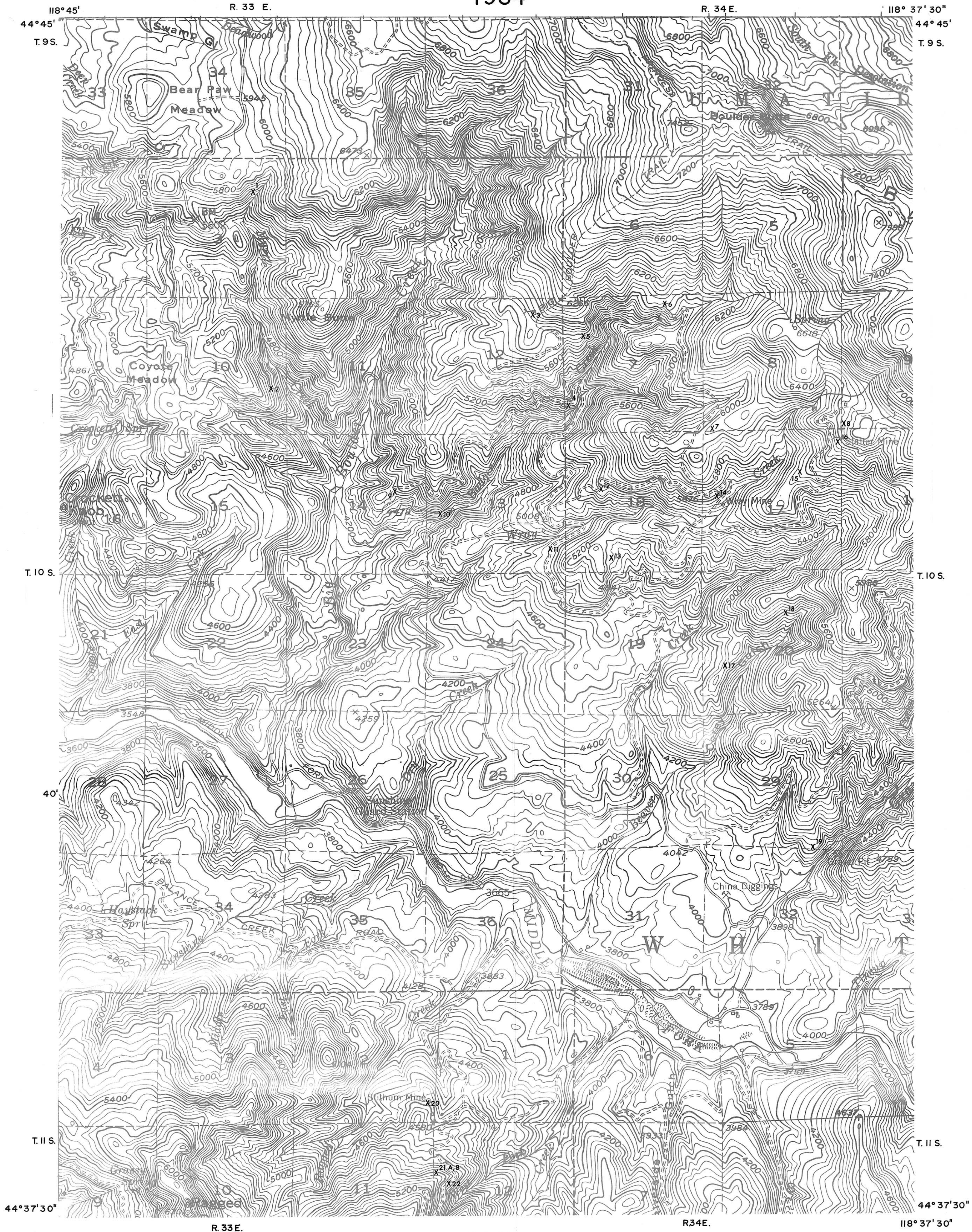
Open-File Report O-84-3

PLATE 6

Geochemical data for the Bourne, Mt. Ireland,
Greenhorn, Granite, Bates NE, Bates NW, and
Bates SW 7½-minute quadrangles, Baker and
Grant Counties, Oregon

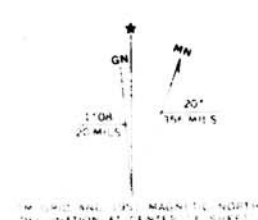
by M.L. Ferns, H.C. Brooks, and D.G. Avery
Funded in part by United States Department
of Agriculture--U.S. Forest Service

Bates NW



Base map from U.S.G.S. 15' series (topographic)
enlarged to 7½ scale 1:24 000

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The U.S. Forest Service is not responsible
for the accuracy or completeness of the
information presented on this map.



SCALE 1:24 000
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 FEET
1 2 3 4 5 6 KILOMETER



X² Sample site

MAP SHOWING SAMPLE LOCATION SITES,
BATES SW QUADRANGLE,
GRANT COUNTY, OREGON
1984

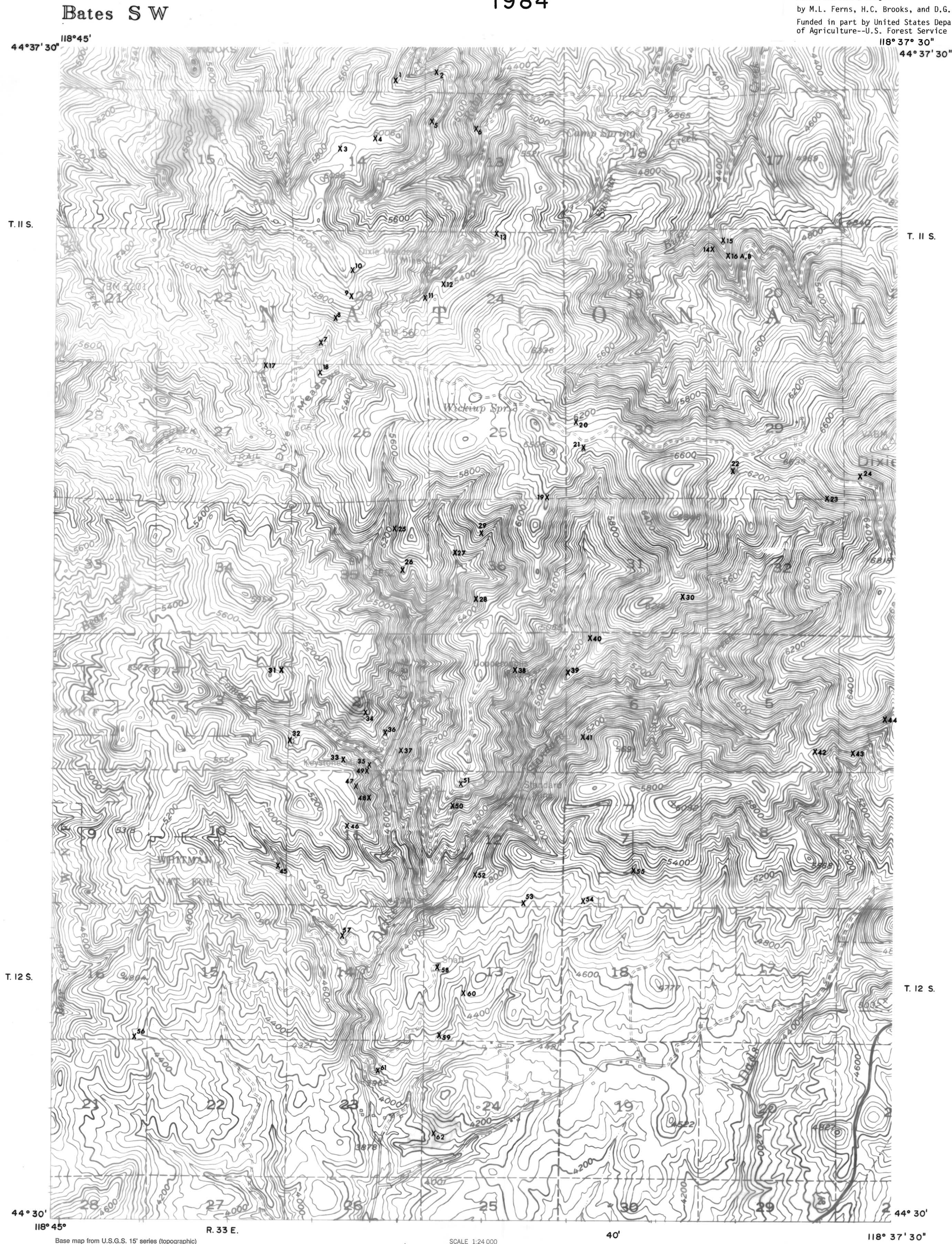
Open-File Report 0-84-3

PLATE 7

Geochemical data for the Bourne, Mt. Ireland, Greenhorn, Granite, Bates NE, Bates NW, and Bates SW 7½-minute quadrangles, Baker and Grant Counties, Oregon

by M.L. Ferns, H.C. Brooks, and D.G. Avery

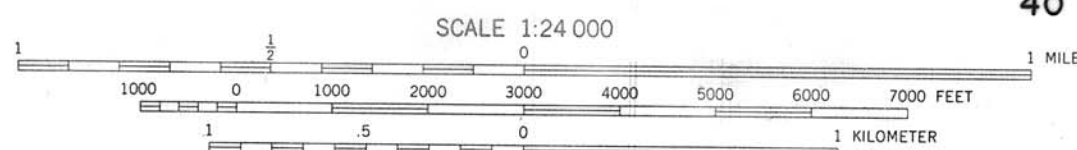
Funded in part by United States Department of Agriculture--U.S. Forest Service



Base map from U.S.G.S. 15' series (topographic)
enlarged to 7½' scale 1:24 000

Control by USGS and USC&GS
Topography from aerial photographs by multiplex methods
Aerial photographs taken 1946. Field check 1951
Polyconic projection. 1927 North American datum
10,800-foot grid based on Oregon coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown
Dashed land lines indicate approximate locations

UTM GRID AND 1911 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET



X Sample site

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
1005 State Office Building
Portland, Oregon 97201

OPEN-FILE REPORT O-84-3

GEOCHEMICAL DATA FOR THE BOURNE; MT. IRELAND; GRANITE;
GREENHORN; AND THE NORTHEAST, NORTHWEST, AND
SOUTHWEST QUARTERS OF THE BATES QUADRANGLES,
BAKER AND GRANT COUNTIES, OREGON

By M.L. Ferns, H.C. Brooks, and G.L. Baxter, Oregon Department of
Geology and Mineral Industries, and D.G. Avery, U.S. Forest Service

Funded in part by
U.S. Department of Agriculture
U.S. Forest Service

NOTICE

The Oregon Department of Geology and Mineral Industries is publishing this paper because the subject matter is consistent with the mission of the department.

To facilitate timely distribution of information, this paper has not been edited to our usual standards.

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2. Plate 7

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GEOCHEMICAL DATA FOR THE BOURNE; MT. IRELAND; GRANITE;
GREENHORN; AND THE NORTHEAST, NORTHWEST, AND
SOUTHWEST QUARTERS OF THE BATES QUADRANGLES,
BAKER AND GRANT COUNTIES, OREGON

INTRODUCTION

This report gives locations of and analytical data for 273 samples of mineralized rock collected as part of a geological mapping project in Baker and Grant Counties in the central part of the Blue Mountains of northeast Oregon. The seven 7½-minute quadrangles covered by the project and the resulting geologic maps are identified in Figure 1. Sample locations are shown on topographic maps printed on two microfiche accompanying this report. The geologic mapping was done during the 1980-83 field seasons. The project was funded in part by the U.S. Forest Service.

Although the geologic maps are not included in this report, they should be considered an integral part of it. Reference to them is required for interpretation of some of the data presented in the tables. Information concerning mineral deposits in the respective quadrangle areas is briefly summarized, and references to earlier published data are provided in the texts and tables of the corresponding geologic maps.

GEOLOGY

Rocks exposed in the project area include sedimentary, volcanic, and intrusive rocks of late Paleozoic and early Mesozoic age; intrusive rocks of Late Jurassic-Early Cretaceous age; and volcanic and volcanoclastic rocks of Tertiary age.

FIGURE 1.-INDEX TO QUADRANGLES AND GEOLOGIC MAPS

			GRANITE GMS-25	MT. IRELAND GMS-22	BOURNE GMS-19
NW BATES GMS-31	NE BATES GMS-29	GREENHORN GMS-28	 MAP AREA OREGON		
SW BATES GMS-35					

- GMS-19 Brooks, H.C., Ferns, M.L., Coward, R.I., Paul, E.K., and Nunlist, M., 1982, Geology and gold deposits of the Bourne quadrangle, Baker and Grant Counties, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-22 Ferns, M.L., Brooks, H.C., and Ducette, J., 1982, Geology and mineral resources map of the Mt. Ireland quadrangle, Baker and Grant Counties, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-25 Brooks, H.C., Ferns, M.L., and Mullen, E.D., 1983, Geology and gold deposits map of the Granite quadrangle, Grant County, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-28 Ferns, M.L., Brooks, H.C., and Avery, D.G., 1983, Geology and gold deposits map of the Greenhorn quadrangle, Baker and Grant Counties, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-29 Brooks, H.C., Ferns, M.L., Wheeler, G.R., and Avery, D.G., 1983, Geology and gold deposits map of the north-east quarter of the Bates quadrangle, Baker and Grant Counties, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-31 Ferns, M.L., Brooks, H.C., and Wheeler, G.R., 1984, Geology and gold deposits map of the northwest quarter of the Bates quadrangle, Grant County, Oregon: Oregon Department of Geology and Mineral Industries.
- GMS-35 Brooks, H.C., Ferns, M.L., and Avery, D.G., 1984, Geology and gold deposits map of the southwest quarter of the Bates quadrangle, Grant County, Oregon: Oregon Department of Geology and Mineral Industries.

The late Paleozoic and early Mesozoic rocks represent structurally disrupted and metamorphosed oceanic and island arc components including argillite, chert, serpentinitized ultramafic rocks, gabbro, diorite, quartz diorite, basalt, andesite, dacite, graywacke, conglomerate, and minor limestone. The widespread occurrence of serpentinite matrix mélangé and mixed rock zones and the association of ophiolitic ultramafic rocks and gabbro with chert, argillite, conglomerate, and limestone are evidence of intense structural disruption of the original oceanic stratigraphy. The Late Jurassic-Early Cretaceous intrusive rocks are mainly quartz diorite and granodiorite. Included in the map area are part of the Bald Mountain batholith, the Grays Peak and Sunrise Butte stocks, and many smaller bodies of similar composition and age. The Tertiary volcanic and volcanoclastic assemblage includes basalt and basaltic andesite of Miocene age and an older more widely exposed group of late Eocene-early Oligocene rocks ranging from basalt to rhyolite. Volcanic breccias and flows are the most abundant rock types.

MINERAL DEPOSITS

The map area includes all or parts of the historic Cracker Creek, Cable Cove, Granite, Greenhorn, and Quartzburg mining districts. Metallic mineral products have been mainly gold and silver and small amounts of copper, lead, and zinc as by-products of precious-metal mining. Total precious-metal production from mines in the project area is estimated at 892,000 oz of gold (673,000 from lode mines and 219,000 from placers) and 1,259,000 oz of silver. Most of the lode mine production was from mesothermal gold quartz veins and mineralized shear zones near the edges of the Late Jurassic-Early

Cretaceous intrusive bodies and may have formed in response to hydrothermal systems generated during cooling of the intrusives. Mining widths ranged up to 20 ft or more locally but averaged less than 4 ft in most deposits.

SAMPLING AND ANALYTICAL PROCEDURES

Dumps, prospect pits, and mineralized outcrops were selectively sampled as mapping progressed. Sample weights ranged between 2 and 6 lbs. High-grade material was selected from the dumps when possible on the premise that such material represents the mineralization targeted by exploration. Exposures of mineralized zones were sampled by random grab of material, including float, from various parts of the zones. Time constraints did not permit the collection of truly representative samples. Most of the samples are from mines and prospects about which there is little or no information in previous publications. The well-known mines and prospects were not sampled for assays.

About 0.5 kg of analytical sample (-100 mesh) was prepared from each field sample. To determine the base metals, atomic absorption spectrometry (AAS) was employed following acid dissolution.

In the early part of the project, gold and silver were determined by the usual fire assay (FA) method. Information from industry sources indicated that lower detection limits than typical of FA provides useful data. As a result, a FA-preconcentration/AAS method using palladium as a collector was instituted. The initial detection limit for gold was 0.013 ppm; this was later reduced to about 0.005 ppm.

Details of the methods employed are contained in Department files.

Table 1. Detection limit targets* (in ppm)

Method	Au	Ag	Cu	Pb	Zn	Mo	Co	Ni
AAS	--	--	30	20	20	2	20	20
FA/AAS	0.050	5	--	--	--	--	--	--

*The desired detection limits that could be routinely attained. The actual detection limits for the metals were less than shown but were not calculated.

QUALITY CONTROL

The reproducibility of the Department's laboratory analytical results was measured in-house by replicate analysis of about 8 percent of the samples. Original and replicate sample portions were dissolved and analyzed at different times to observe the resulting errors. An independent check on Department-generated data was obtained from commercial laboratory analyses (using the same methods) of sample splits. The precision data are presented in Table 9.

The accuracy of the results for all elements could not be directly measured because of lack of standards in the proper concentration ranges. The determination of the metals in U.S. Geological Survey (USGS) rock standards and Canadian Certified Reference Materials (ores), using the same methods, gave results that compared favorably with the certified or "usable" concentrations. Gold and silver standards were not available. Accuracy data are presented in Table 10.

KEY TO SYMBOLS AND COLUMN HEADINGS FOR TABLES 2-8

T.S. = Township South; R.E. = Range East; Sec. = section; $\frac{1}{4}$ = quarter section

Mine no.^d = Mine and prospect number on respective geologic map

Geologic unit^e = Geologic map unit that appears to be mineralized at sample site

- - = Not determined

^a = Fire assay by Department laboratory. Detection limits: 0.2 ppm Au, 7 ppm Ag

^b = Fire assay by outside laboratory. Detection limits: 0.2 ppm Au

^c = Fire assay by outside laboratory. Detection limits: 0.2 ppm Au, 0.7 ppm Ag

QC = Department replicate analysis (Table 9)

RQC = Commercial laboratory replicate analysis (Table 9)

TABLE 2. Analyses of samples from the Bourne quadrangle, Baker and Grant Counties, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	8	37	17	SW	0.450	4.8	150	44	210	15.1	18	33	ARB-35	Dump	55	TrPer
2.	8	37	23	SE	2.400 ^a	17.1 ^a	100	130	450	10.8	--	--	APB-30	Dump	59	TrPer
3.	8	37	26	SW	0.015	3.2	29	13	30	5.9	3	< 1	ARB-33	Outcrop	--	TrPer
4.	8	37	31	SE	0.046	3.5	41	10	16	3.9	4	< 1	ARB-37	Outcrop	--	TrPer
5.	8	37	32	SW	0.24 ^b	4.1 ^b	--	--	--	--	--	--	B-14802	Dump	34	TrPer
6.	8	37	32	NE	0.015	2.4	71	27	55	0.8	32	68	ARB-43	Dump	34	Pgb
7.	8	37	34	SE	0.07 ^b	1.0 ^b	--	--	--	--	--	--	B-14590	Dump	12	TrPer
8.	9	36	1	NW	0.420	5.9 ^b	390	220	89	4.8	6	< 1	ARB-38	Outcrop	--	TrPer
9.	9	36	1	SE	0.07 ^b	1.0 ^b	--	--	--	--	--	--	B-14807	Outcrop	--	TrPer
10.	9	36	1	SE	0.07 ^b	1.4 ^b	--	--	--	--	--	--	B-14806	Outcrop	--	TrPer
11.	9	36	1	NE	0.34 ^b	2.1 ^b	--	--	--	--	--	--	B-14805	Dump	--	TrPer
12.	9	36	1	SE	0.054	15.4	60	21	67	3.6	9	< 1	ARB-32	Dump	13	TrPer
13.	9	36	1	NE	1.220	2.2	15	8	6	1.5	2	< 1	ARB-34	Outcrop	--	TrPer
14.	9	36	1	NE	0.14 ^b	0.69 ^b	--	--	--	--	--	--	B-14803	Outcrop	--	TrPer
15.	9	37	6	NW	0.10 ^b	0.69 ^b	--	--	--	--	--	--	B-14804	Outcrop	--	TrPer
16.	9	37	6	NW	1.03 ^b	5.14 ^b	--	--	--	--	--	--	B-14592	Dump	21	TrPer
17.	9	37	6	NW	0.14 ^b	0.69 ^b	--	--	--	--	--	--	B-14589	Dump	19	TrPer
18.	9	37	6	NW	0.350	3.9	13	26	14	1.8	26	145	ARB-31	Dump	20	TePer
19.	9	37	28	SE	0.07 ^b	0.69 ^b	--	--	--	--	--	--	B-14588	Dump	3	TrPer

TABLE 3. Analyses of samples from the Mt. Ireland quadrangle, Baker and Grant Counties, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	8	36	16	NW	8.840	17.1	92	7,200	350	8.0	12	8	ARB-19	Dump	--	TrPer
2.	8	36	16	SE	72.8 ^a	166.0 ^a	370	1,100	120	4.5	--	--	APB-5	Outcrop	51	KJbm
3.	8	36	16	NE	7.160	39.0	400	620	5,200	2.3	18	12	ARB-46	Dump	52	KJbm
4.	8	36	16	NE	11.200 ^a	294.0 ^a	2,360	15,000	26,000	2.9	18	11	ARB-40	Dump	50	TrPer
5.	8	36	15	NE	0.300 ^a	165.0 ^a	24,300	860	1,400	3.2	38	8	ARB-36	Dump	75	KJbm
6.	8	36	15	SE	0.610 ^a	27.5 ^a	920	650	11,300	5.4	17	8	ARB-22	Dump	--	KJbm
7.	8	36	15	SE	11.0 ^a	82.0 ^a	730	3,000	8,800	46.7	--	--	APB-24	Dump	72	KJbm
8.	8	36	14	SW	16.0 ^a	51.0 ^a	260	9,600	4,200	19.5	--	--	APB-4	Dump	66	KJbm
9.	8	36	14	SW	9.1 ^a	27.0 ^a	60	8,700	2,000	6.6	--	--	APB-12	Dump	65	KJbm
10.	8	36	14	SW	11.0 ^a	48.0 ^a	550	4,000	1,600	108.0	--	--	APB-2	Dump	68	KJbm
11.	8	36	14	NW	26.200 ^a	120.0 ^a	890	9,500	1,100	17.6	21	1	ARB-21	Dump	70	KJbm
12.	8	36	14	SW	9.2 ^a	20.0 ^a	420	9,000	15,600	12.9	--	--	APB-1	Dump	--	KJbm
13.	8	36	14	SW	1.580	15.5	230	1,200	3,600	12.1	4	< 1	ARB-23	Dump	63	KJbm
14.	8	35½	24	NW	1.4 ^a	55.0 ^a	1,300	410	660	7.8	--	--	APB-45	Dump	45	KJbm
15.	8	36	20	NE	4.4 ^a	68.0 ^a	120	210	370	4.5	--	--	APB-44	Dump	48	KJbm
16.	8	36	21	NE	122.4 ^b	191.3 ^b	--	--	--	--	--	--	B-14593	Dump	53	KJbm
17.	8	36	22	SW	0.100	8.0 ^b	1,350	89	107	2.3	14	< 1	ARB-39	3-ft channel	58	KJbm
18.	8	36	28	NE	27.8 ^b	65.8 ^b	--	--	--	--	--	--	B-14591	Dump	57	KJbm
19.	8	36	36	SW	21.3 ^b	24.7 ^b	--	--	--	--	--	--	B-14594	Dump	39	TrPer
20.	9	36	5	SW	0.023	1.2	78	29	36	2.3	13	11	ARB-18	Outcrop	--	mt
21.	9	36	5	SE	0.023	2.1	52	53	101	< 0.6	74	450	ARB-41	Outcrop	--	mt
22.	9	36	5	SE	0.023	1.5 ^a	29	21	50	< 0.6	98	1,900	ARB-42	Outcrop	--	mt
23.	9	36	1	SW	0.2 ^a	< 7.0 ^a	70	10	330	20.0	--	--	APB-8	Outcrop	36	TrPer
24.	9	35½	12	NE	0.151	1.5	100	20	190	19.2	--	--	APB-9	Outcrop	22	TrPer
25.	9	36	19	NW	0.008	0.8	42	6	37	1.4	10	5	ARB-6	Outcrop	--	TrPer
26.	9	36	19	NW	0.013	0.9	40	< 10	10	9.7	--	--	APB-10	Dump	17	TrPer
27.	9	36	19	SE	2.7 ^a	< 7.0 ^a	80	20	60	14.4	--	--	APB-23	Dump	16	TrPer
28.	9	36	19	SE	0.015	2.4	12	2	7	0.4	< 1	< 1	ARB-4	Outcrop	--	TrPer
29.	9	36	19	SE	6.5 ^a	7.0 ^a	50	30	90	11.6	--	--	APB-3	Outcrop	15	TrPer
30.	9	36	20	SW	0.031	5.8	87	56	30	1.0	32	33	ARB-20	Outcrop	--	TrPer
31.	9	36	22	SW	0.023	2.0	56	14	34	1.8	4	6	ARB-28	Dump	6	TrPer

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TABLE 4. Analyses of samples from the Granite quadrangle, Grant County, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	8	35	13	NE	0.044	9.9	80	30	30	19.6	--	--	APB-22	Dump	1	TrPer
2.	8	35½	14	NE	0.760	54.0	126	290	310	3.0	6	5	ARB-24	Dump	2	TrPer
3.	8	35½	14	NE	1.350	48.0	102	135	320	2.5	12	14	ARB-17	Dump	4	TrPer
4.	8	35	22	NW	0.012	1.2	8	6	12	2.4	4	< 1	ARB-10	Outcrop	--	Pmv
5.	8	35½	21	SE	3.1 ^a	< 7. ^a	40	20	130	4.1	--	--	APB-6	Dump	8	TrPer
6.	8	35½	23	NW	0.164	2.4	80	50	110	3.1	--	--	APB-40	Dump	--	TrPer
7.	8	35½	23	NW	4.8 ^a	240.0 ^a	7,900	890	670	5.6	--	--	APB-34	Dump	--	TrPer
8.	8	35½	27	SE	2.7 ^a	38.0 ^a	80	1,100	30	6.7	--	--	APB-14	Dump	20	TrPer
9.	8	35½	26	NW	1.7 ^a	48.0 ^a	260	320	60	13.1	--	--	APB-7	Dump	21	KJi
10.	8	35½	26	C	0.3 ^a	< 7. ^a	260	40	30	10.9	--	--	APB-11	Dump	22	Kji
11.	8	35	34	SW	0.031	2.8	23	19	28	3.6	5	< 1	ARB-25	Dump	31	KJi
12.	8	35	35	SE	< 0.013	1.1	80	20	80	4.2	--	--	APB-39	Outcrop	--	TrPer
13.	9	35	2	SE	0.015	2.1	15	12	37	5.8	4	< 1	ARB-7	Dump	32	TrPer
14.	9	35	10	SE	0.046	3.5	98	15	107	3.7	48	93	ARB-1	Dump	45	TrPer
15.	9	35	10	SE	0.642	4.4	140	50	200	5.5	--	--	APB-41	Dump	42	TrPer
16.	9	35	10	NE	1.0 ^a	< 7. ^a	60	70	50	11.2	--	--	APB-21	Dump	34	TrPer
17.	9	35	10	NE	0.015	1.6	49	14	41	3.8	7	5	ARB-30	Dump	35	TrPer
18.	9	35	11	NW	0.600	1.9	60	20	50	9.3	--	--	APB-20	Dump	36	TrPer
19.	9	35	11	NW	0.3 ^a	< 7. ^a	90	30	40	7.4	--	--	APB-19	Outcrop	37	TrPer
20.	9	35	11	SW	0.2 ^a	< 7. ^a	260	20	160	6.4	--	--	APB-35	Outcrop	--	TrPer
21.	9	35	11	SE	2.0 ^a	< 7. ^a	110	20	60	9.7	--	--	APB-18	Outcrop	--	TrPer
22.	9	35½	9	SW	< 0.013	0.2	100	40	460	8.4	--	--	APB-31	Outcrop	--	TrPer
23.	9	35	16	SE	3.8 ^a	10.0 ^a	60	30	70	5.3	--	--	APB-27	Dump	50	TrPer
24.	9	35	15	SW	0.9 ^a	< 7. ^a	340	40	280	22.6	--	--	APB-29A	Dump	49	TrPer
25.	9	35	13	NW	< 0.2	< 0.7	--	--	--	--	--	--	AQB-1	Outcrop	--	TrPer
26.	9	35	13	NW	< 0.2	< 0.7	--	--	--	--	--	--	AQB-2	Outcrop	--	TrPer
27.	9	35	13	SW	< 0.2	< 0.7	--	--	--	--	--	--	AQB-3	Outcrop	--	TrPer
28.	9	35	13	SE	< 0.2	< 0.7	--	--	--	--	--	--	AQB-4	Outcrop	--	TrPer
29.	9	35	13	SE	< 0.2	< 0.7	--	--	--	--	--	--	AQB-5	Outcrop	--	TrPer
30.	9	35½	16	SW	< 0.2	< 0.7	--	--	--	--	--	--	AQB-6	Outcrop	--	TrPer
31.	9	35½	16	SE	< 0.2	< 0.7	--	--	--	--	--	--	AQB-7	Outcrop	--	TrPer
32.	9	35½	16	SE	< 0.2	< 0.7	--	--	--	--	--	--	AQB-8	Outcrop	--	TrPer
33.	9	35½	15	SW	< 0.2	< 0.7	--	--	--	--	--	--	AQB-9	Outcrop	--	TrPer
34.	9	35	21	SE	0.280	4.4	88	18	58	6.0	8	9	ARB-5	Outcrop	52	TrPer
35.	9	35	21	SE	0.046	3.5	85	4	77	2.9	11	10	ARB-3	Dump	54	TrPer
36.	9	35	22	SE	0.180	1.9	107	4	7	4.5	6	< 1	ARB-2	Dump	57	TrPer
37.	9	35	22	SE	0.540	2.0	110	9	101	3.3	10	9	ARB-49	Dump	59	TrPer
38.	9	35	23	NW	1.2 ^a	44.5 ^a	120	30	30	28.1	--	--	APB-15	Dump	61	TrPer
39.	9	35	23	NW	0.015	2.4	52	18	149	2.8	16	16	ARB-8	Dump	62	TrPer
40.	9	35½	22	NE	0.7 ^a	< 7. ^a	70	60	30	6.6	--	--	APB-13	Outcrop	76	TrPer
41.	9	35	27	SW	0.008	4.0	32	24	26	1.5	23	25	ARB-44	Dump	66	TrPer
42.	9	35	27	NW	0.7 ^a	< 7. ^a	40	30	40	3.5	--	--	APB-16	Dump	63	TrPer
43.	9	35	27	NW	0.490	10.4	41	8	17	2.6	6	< 1	ARB-16	Dump	67	KJi

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TABLE 4. Analyses of samples from the Granite quadrangle, Grant County, Oregon.--Continued.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
44.	9	35	27	NE	0.088	0.6	30	50	30	4.4	--	--	APB-26	Dump	68	KJi
45.	9	35	26	SW	0.025	0.3	50	30	60	2.2	--	--	APB-37	Dump	72	sp
46.	9	35	25	NW	0.700	0.8	130	30	150	11.0	--	--	APB-17	Outcrop	75	TrPer
47.	9	35½	26	NE	0.031	2.4	39	22	48	7.2	6	11	ARB-29	Dump	77	TrPer

TABLE 5. Analyses of samples from the Greenhorn quadrangle, Baker and Grant Counties, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1a.	9	35	27	SE	1.0 ^a	< 7. ^a	50	50	100	6.9	--	--	APB-25	Dump	1	Td
1b.	9	35	27	SE	< 0.2 ^a	7.0 ^a	60	50	90	6.4	--	--	APB-32	Dump	1	Td
1c.	9	35	27	SE	0.2	< 7. ^a	60	50	70	7.0	--	--	APB-33	Dump	1	Td
2.	9	35	34	SW	< 0.014	0.3	103	6	36	0.6	38	21	AQB-36	Dump	8	Pgb
3.	9	35	34	NE	0.201	0.6	30	90	60	4.4	--	--	APB-38	2-ft channel	2	Pgb
4.	9	35	34	SE	0.079	0.6	104	47	21	0.6	42	20	AQB-72	Dump	6	Pgb
5.	9	35	34	NE	< 0.2 ^a	< 7. ^a	30	40	60	2.4	--	--	APB-28	Outcrop	--	Td
6.	9	35	35	NW	0.013	1.0	170	60	60	3.6	--	--	APB-36	Dump	5	Pgb
7.	10	35	3	NW	0.039	0.3	114	37	32	1.0	37	47	AQB-78	Dump	12	Pgb
8.	10	35	3	NW	1.080	0.5	94	20	50	0.6	24	156	AQB-16	Dump	14	Pmv
9.	10	35	3	SW	0.220	0.5	168	20	68	1.4	20	35	AQB-35	Outcrop	16	Pmv
10.	10	35	2	NW	0.039	0.3	86	39	13	1.0	23	24	AQB-67	Dump	9	Pmv
11a.	10	35	2	SW	0.920	1.8	137	195	94	3.1	20	48	AQB-32	Dump	21	Pmv
11b.	10	35	2	SW	0.027	16.0	78	30	44	0.4	27	72	AQB-40	Dump	21	Pmv
12.	10	35	2	SW	0.025	90.0	270	370	730	11.4	--	--	APB-42	Dump	20	Pmv
13.	10	35	2	NE	< 0.014	0.4	622	14	19	15.3	10	15	AQB-14	Outcrop	19	TrPer
14.	10	35	1	NW	0.062	2.0	14	8	27	1.3	8	< 1	ARB-13	Dump	23	Pmv
15.	10	35	1	C	0.014	0.5	140	13	103	1.8	26	52	AQB-12	Outcrop	24	TrPer
16.	10	35	10	SW	0.066	1.2	62	30	25	0.6	48	795	AQB-68	Dump	31	Pgb
17.	10	35	10	NW	0.460	0.4	117	3	14	1.2	8	21	AQB-53	Dump	34	Pgb
18.	10	35	10	NE	0.510	3.2	127	100	18	0.8	3	11	AQB-15	Dump	36	Pgb
19.	10	35	10	NE	1.280	2.6	109	16	65	1.2	44	710	AQB-19	Dump	38	sp
20.	10	35	11	NW	< 0.013	< 0.1	111	24	47	1.8	79	1,360	AQB-74	Outcrop	42	sp
21.	10	35	11	NW	< 0.014	2.3	128	46	42	1.2	20	145	AQB-34	Dump	43	Kji
22.	10	35	11	NE	< 0.013	0.1	178	29	368	7.1	55	124	AQB-77	Dump	44	TrPer
23.	10	35½	9	C	< 0.013	0.2	146	9	22	1.6	14	24	AQB-73	Dump	66	sp
24.	10	35½	10	SW	0.013	0.5	120	30	80	12.6	--	--	APB-43	Dump	68	TrPer
25.	10	35½	10	SE	< 0.013	< 0.1	162	11	39	1.2	14	38	AQB-65	Dump	70	TrPer
26.	10	35½	10	SE	< 0.026	0.1	115	44	33	1.0	41	52	AQB-71	Dump	--	TrPer
27.	10	35½	10	SE	0.013	< 0.1	177	33	56	2.5	30	60	AQB-76	Dump	71	TrPer
28.	10	35½	11	SW	0.023	2.3	23	10	42	2.2	14	22	ARB-14	Outcrop	73	Tvs
29.	10	35	16	NE	< 0.013	0.4	162	13	19	1.8	107	1,540	AQB-61	Outcrop	--	sp
30.	10	35	16	NE	< 0.014	0.1	164	4	21	2.2	142	2,160	AQB-20	Outcrop	--	sp
31.	10	35	15	SW	0.008	2.3	11	19	29	0.4	59	1,560	ARB-45	Outcrop	54	sp
32.	10	35	15	NE	0.013	0.2	133	41	72	2.1	40	71	AQB-70	Dump	51	sp
33.	10	35	15	SE	3.770	1.9	107	133	32	0.6	34	18	AQB-30	Dump	57	TrPa
34.	10	35½	16	SE	0.015	3.4	37	38	63	< 0.6	59	160	ARB-56	Outcrop	--	Pmv
35.	10	35½	15	SE	< 0.026	0.1	182	16	50	2.0	18	35	AQB-66	Dump	77	Pam
36.	10	35½	15	NE	< 0.014	< 0.1	60	1	8	0.4	4	9	AQB-52	Outcrop	76	TrPer
37.	10	35½	14	NW	0.015	1.1	22	24	15	0.2	73	1,340	ARB-55	Outcrop	--	mt

TABLE 5. Analyses of samples from the Greenhorn quadrangle, Baker and Grant Counties, Oregon.--Continued.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
38.	10	35	27	SW	0.081	0.6	1,630	19	160	1.8	83	42	AQB-18	Dump	64	Pgb
39.	11	35	10	NW	< 0.014	< 0.1	173	6	9	2.0	7	31	AQB-42	Outcrop	84	Ts
40.	11	35	10	NW	< 0.014	0.3	32	2	5	< 1.	4	18	AQB-39	Outcrop	84	Ts

TABLE 6. Analyses of samples from the northeast quarter of the Bates quadrangle, Baker and Grant Counties, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	9	34	34	SW	0.190	68.3	710	7,880	1,810	11.5	34	50	AQB-55	Dump	2	TrPa
2.	9	34	34	SW	0.120	47.9	274	3,200	100	10.8	8	11	AQB-46	Outcrop	--	TrPa
3.	9	34	34	SE	0.290	6.6	102	25	44	< 0.6	52	240	ARB-11	Outcrop	--	TrPa
4.	9	34	34	SE	0.670	70.8	5,770	71	17,700	5.2	48	23	AQB-24	Dump	--	TrPa
5.	9	34	35	SW	0.93	138.0	7,570	83	16,900	20.4	34	19	AQB-26	Dump	4	TrPa
6.	9	35	31	NW	0.510	67.0	173	250	113	2.5	8	35	ARB-47	Dump	6	Pmv
7.	9	35	33	NW	0.490	13.2	176	8	16	1.8	28	362	AQB-64	Outcrop	8	TrPa
8.	9	35	33	NW	0.014	1.5	141	12	19	1.8	30	132	AQB-21	Outcrop	7	sp
9.	9	35	33	NW	0.085	4.5	62	8	17	1.6	63	1,100	ARB-15	Outcrop	--	sp
10.	10	34	3	NW	0.092	31.9	646	5,400	12,420	5.3	26	55	AQB-75	Dump	25	KJi
11.	10	34	3	SE	0.062	3.4	22	17	42	620.0	4	< 1	ARB-51	Dump	23	KJi
12.	10	34	2	NW	0.380	6.7	920	45	500	2.5	101	20	ARB-27	Dump	21	TrPa
13.	10	34	1	SW	4.280 ^a	326.0 ^a	1,220	1,100	9,400	3.1	48	12	ARB-9	Dump	16	KJi, TrPa
14.	10	34	1	SW	0.200 ^a	1,340.0 ^a	4,500	2,300	3,600	2.3	14	24	ARB-53	Dump	17	KJi, TrPa
15.	10	34	1	NE	0.110	2.0	26	< 2	20	2.4	12	6	ARB-12	Dump	--	TrPa
16a.	10	35	6	SE	0.580	6.4	18	34	61	10.9	10	17	ARB-50	Outcrop	--	TrPa
16b.	10	35	6	SE	0.230	7.8	108	43	115	1.2	59	189	AQB-27B	Outcrop	--	TrPa
16c.	10	35	6	SE	1.530	13.2	129	75	148	0.6	93	1,390	AQB-48	Dump	--	TrPa
17.	10	35	6	SE	0.380	27.5	258	139	190	5.4	70	67	AQB-28	Dump	--	Pgb
18.	10	35	6	NE	0.540	48.8	257	115	101	1.0	12	22	AQB-60	Outcrop	12	KJi
19.	10	35	6	SE	1.520	857.0	386	1,660	98	1.8	8	5	AQB-23	Dump	14	Pgb
20.	10	35	6	NE	0.013	0.2	69	34	50	< 1	73	1,270	AQB-59	Dump	--	TrPa
21.	10	35	5	NE	0.068	0.6	118	24	19	3.8	< 3	12	AQB-17	Dump	11	TrPa
22.	10	34	11	SW	1.090 ^a	445.0 ^a	2,600	3,000	6,200	2.2	28	13	ARB-26	Dump	29	TrPa
23.	10	35	7	SW	0.054	0.8	123	34	116	0.8	78	130	AQB-50	Dump	31	Pmv
24.	10	35	7	NW	0.310	5.2	110	21	54	1.6	40	31	AQB-22	Outcrop	--	Pgb
25.	10	35	7	NE	0.200	5.2	96	34	62	8.2	19	26	AQB-56	Outcrop	--	Pgb
26.	10	35	7	NE	< 0.014	0.8	139	12	17	1.8	4	18	AQB-13	Outcrop	--	Pmv
27.	10	35	8	SW	0.014	0.5	122	8	31	1.6	116	994	AQB-31	Outcrop	37	sp
28.	10	35	8	NW	< 0.013	0.3	112	24	25	0.2	70	1,060	AQB-58	Outcrop	35	sp
29.	10	35	8	NE	0.027	0.7	47	22	44	0.2	70	983	AQB-49	Outcrop	36	sp
30.	10	35	9	SW	< 0.013	0.3	25	29	26	0.4	104	2,010	AQB-41	Outcrop	--	sp
31.	10	35	9	SW	0.008	1.5	43	18	49	0.8	51	370	ARB-48	Dump	39	Pmv, sp
32.	10	34	14	SW	< 0.013	0.2	136	22	212	1.6	36	14	AQB-51	Outcrop	--	Pmv, TrPa
33.	10	34	13	NW	0.100	0.4	90	31	46	2.8	41	48	AQB-62	Outcrop	--	Pmv
34.	10	34	13	NE	0.280	2.0	97	31	78	3.2	50	44	AQB-45	Outcrop	--	Pmv
35.	10	35	17	NE	--	--	23	24	22	1.2	78	1,420	ARB-52	Dump	45	sp
36.	10	35	18	SW	0.100	0.2	141	19	21	1.6	31	523	AQB-63	Outcrop	36	sp
37.	10	35	18	NW	< 0.026	0.4	18	18	32	< 1.	90	2,000	AQB-57	Dump	--	sp
38.	10	35	18	NW	1.380	0.5	111	27	30	1.8	67	1,160	AQB-54	Dump	42	sp

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TABLE 6. Analyses of samples from the northeast quarter of the Bates quadrangle, Baker and Grant Counties, Oregon.--Continued.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
39.	10	35	18	NW	0.800	0.7	51	22	31	0.4	110	1,710	AQB-43	Dump	42	sp
40.	10	35	18	SW	6.040	8.5	402	2,160	47	1.1	68	788	AQB-44	Dump	43	Pmv
41.	10	35	18	NW	< 0.014	0.4	60	11	34	0.8	12	13	AQB-38	Dump	41	Pmv
42.	10	35	18	NE	0.014	1.7	322	836	470	1.4	64	892	AQB-47	Dump	40	sp, Pmv
43.	10	34	21	SE	< 0.013	0.4	93	23	118	7.6	30	21	AQB-69	Outcrop	--	TrPa
44.	10	34	23	NW	0.015	1.9	20	3	17	< 0.6	5	< 1	ARB-54	Outcrop	--	TrPa
45.	10	34	34	SE	0.200	0.7	88	147	186	1.0	69	226	AQB-37	Float	67	Tts
46.	10	34	35	NW	< 0.014	0.6	79	21	46	1.2	19	30	AQB-29	Outcrop	--	Tts
47.	10	35	33	NW	< 0.014	0.2	122	11	12	1.4	20	9	AQB-33	Outcrop	--	Pmv

TABLE 7. Analyses of samples from the northwest quarter of the Bates quadrangle, Grant County, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	10	33	3	NE	0.050	0.3	161	15	14	2.0	19	5	ARB-99	Dump	1	TrPa
2.	10	33	10	SE	0.031	3.9	12	6	16	1.7	2	< 1	ARB-57	Outcrop	--	TrPa
3.	10	33	12	NE	0.730	34.0	17,000	11	370	3.0	74	860	ARB-63	Dump	2	sp
4.	10	34	7	SW	0.013	0.9	23	5	40	1.0	8	1	ARB-69	Outcrop	--	TrPa
5.	10	34	7	NW	1.960	8.4	29	14	35	5.7	25	330	ARB-60	Outcrop	3	sp
6.	10	34	7	NE	1.190	62.6	63	273	233	24.4	6	4	ARB-65	Outcrop	4	KJi
7.	10	34	8	SW	0.026	2.0	19	9	36	2.5	6	8	ARB-71	Dump	--	TrPa
8.	10	34	9	SW	0.200	3.9	231	41	49	2.1	8	5	ARB-100	8-ft channel across structure	5	KJi
9.	10	33	14	NE	0.013	0.8	21	6	42	1.5	8	8	ARB-68	Outcrop	11	TrPa
10.	10	33	13	SW	0.350	0.5	157	22	126	1.6	36	8	AQB-25	Outcrop	--	TrPa
11.	10	33	13	SE	0.680	3.3	12	30	139	1.6	10	4	ARB-70	Outcrop	10	TrPa
12.	10	34	18	NW	0.026	0.9	15	3	3	4.9	3	2	ARB-67	Outcrop	8	TrPa
13.	10	34	18	SW	0.013	0.5	11	< 1	14	1.4	4	4	ARB-66	Outcrop	9	TrPa
14.	10	34	17	NW	0.054	8.5	59	4	23	3.7	38	440	ARB-62	Dump	6	sp
15.	10	34	17	NE	0.920	30.0 ^a	54	81	640	5.7	5	< 1	ARB-58	Dump	--	KJi
16.	10	34	17	NE	3.070	14.4	910	194	98	3.3	88	9	ARB-72	Dump	5	KJi
17.	10	34	20	SW	0.031	1.1	14	4	137	0.9	9	< 1	ARB-61	Composite across 40-ft outcrop	--	TrPa
18.	10	34	20	NE	0.023	0.6	30	11	33	10.3	9	9	ARB-59	Outcrop	--	TrPa
19.	10	34	29	SE	0.060	3.0	10	46	140	2.3	6	4	ARB-64	Dump	12	TrPa
20.	11	33	2	SE	7.670	38.0	104	177	188	5.6	24	14	ARB-73	Dump	15	TrPa
21a.	11	33	12	NW	0.230	26.6	57	17	100	47.8	7	6	ARB-124	Dump	16	TrPa
21b.	11	33	12	NW	0.013	1.7	47	13	55	16.5	8	3	ARB-125	Outcrop	16	TrPa
22.	11	33	12	NW	0.013	1.0	46	7	66	7.0	11	22	ARB-80	Outcrop	--	TrPa

(15)

TABLE 8. Analyses of samples from the southwest quarter of the Bates quadrangle, Grant County, Oregon. Symbols and column headings are explained on p. 6.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^d	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
1.	11	33	11	SE	0.013	1.7	33	1	11	1.6	5	3	ARB-78	Float	--	KJi
2.	11	33	12	SW	0.013	3.1	59	7	87	15.9	11	17	ARB-76	Outcrop	--	TrPs
3.	11	33	14	NW	0.046	1.8	67	10	16	6.7	3	1	ARB-75	Outcrop	1	KJi
4.	11	33	14	NE	0.038	0.9	20	4	11	1.1	4	< 1	ARB-105	Float	--	KJi
5.	11	33	13	NW	0.013	1.2	30	2	25	6.5	7	4	ARB-121	Outcrop	--	KJi,TrPs
6.	11	33	13	NW	0.039	1.6	13	18	20	1.4	67	1,324	ARB-83	Dump	2	sp
7.	11	33	23	SW	0.240	2.3	133	46	22	88.1	32	45	ARB-74	Dump	10	TrPs
8.	11	33	23	SW	0.006	0.7	22	1	8	2.5	4	2	ARB-102	Outcrop	--	Ki
9.	11	33	23	NW	0.013	0.9	25	7	81	2.1	16	9	ARB-101	Outcrop	--	Td
10.	11	33	23	NW	0.046	1.4	15	14	40	1.8	10	10	ARB-82	Outcrop	--	Td
11.	11	33	23	NE	5.660	8.8	84	30	125	4.4	11	17	ARB-81	Dump	7	TrPs
12.	11	33	24	NW	0.082	1.3	8	17	18	1.1	86	1,827	ARB-84	Outcrop	--	TrPs,sp
13.	11	33	24	NE	0.013	0.3	21	7	17	2.7	27	403	ARB-85	Outcrop	--	sp
14.	11	34	20	NW	0.200	1.2	18	12	36	6.3	6	< 1	ARB-103	Outcrop	--	Trdb
15.	11	34	20	NW	0.120	2.2	21	19	53	7.0	5	5	ARB-95	Outcrop	--	Trdb
16a.	11	34	20	NW	0.050	1.3	23	24	70	2.9	22	33	ARB-94	Dump	4	Trdb
16b.	11	34	20	NW	0.013	0.6	34	52	121	3.6	33	53	ARB-150	Dump	4	Trdb
17.	11	33	27	NE	0.013	0.6	31	2	68	1.5	29	18	ARB-79	Outcrop	12	Td
18.	11	33	26	NW	0.019	1.5	34	2	38	3.3	11	17	ARB-97	Outcrop	--	Td
19.	11	33	25	SE	0.019	0.2	65	18	57	1.4	44	169	ARB-86	Outcrop	13	Trdb
20.	11	34	30	NW	0.013	1.4	90	12	77	2.0	37	47	ARB-122	Outcrop	--	Trdb
21.	11	34	30	SW	0.006	0.6	97	< 1	4	22.8	24	21	ARB-96	Outcrop	14	Tas
22.	11	34	29	SW	0.075	1.5	336	19	263	3.4	40	14	ARB-87	Dump	15	Trdb
23.	11	34	29	SE	0.026	3.6	165	12	114	2.0	43	53	ARB-77	Outcrop	--	Trdb
24.	11	34	28	SW	0.110	3.3	16,200	12	287	5.5	148	161	ARB-110	Outcrop	17	Trdb
25.	11	33	35	NE	< 0.006	0.2	102	8	35	3.5	27	44	ARB-151	Outcrop	--	Trdb
26.	11	33	35	SE	0.019	12.5	13	4	42	1.7	14	11	ARB-112	Outcrop	--	Trdb,Kdc
27.	11	33	36	NW	0.006	1.2	174	6	29	5.7	33	19	ARB-115	3-ft channel	--	Kdc
28.	11	33	36	SW	0.025	0.5	357	8	24	1.3	24	10	ARB-141	Outcrop	--	Trdb
29.	11	33	36	NW	1.280	3.5	44	34	144	4.7	21	12	ARB-147	Dump	21	Trdb
30.	11	34	31	SE	0.025	1.1	14	34	114	2.8	9	3	ARB-111	Dump	19	Trdb
31.	12	33	3	NE	0.006	0.7	22	4	49	1.2	14	5	ARB-113	Outcrop	--	Tab
32.	12	33	2	SW	< 0.006	0.6	22	11	92	2.5	26	9	ARB-114	Outcrop	--	Trdb
33.	12	33	2	SW	0.130	0.6	12	6	81	1.0	12	14	ARB-130	Outcrop	--	Ji
34.	12	33	2	SE	0.100	2.8	194	19	89	1.9	27	35	ARB-119	Dump	--	Ji
35.	12	33	2	SE	4.340	13.1	2,920	52	301	4.7	38	54	ARB-116	Dump	24	Ji
36.	12	33	2	SE	7.170	20.6	2,840	24	256	7.2	60	48	ARB-142	Dump	22	Ji
37.	12	33	2	SE	4.210	25.3	318	163	1,120	3.7	21	13	ARB-140	Dump	25	Ji,Trdb
38.	12	33	1	NE	0.110	5.6	9,920	15	25	11.3	18	13	ARB-107	Dump	29	Trdb
39.	12	34	6	NW	0.088	0.3	153	6	43	2.8	16	9	ARB-108	Dump	30	Ji,Trdb

(91)

TABLE 8. Analyses of samples from the southwest quarter of the Bates quadrangle, Grant County, Oregon.--Continued.

Number	T.S.	R.E.	Sec.	1/4	ppm								Field no.	Sample type	Mine no. ^a	Geologic unit ^e
					Au	Ag	Cu	Pb	Zn	Mo	Co	Ni				
40.	12	34	6	NW	0.019	1.0	15	4	41	1.7	12	4	ARB-109	Float	--	Ji
41.	12	34	6	SW	0.160	1.1	19	4	48	2.7	5	4	ARB-106	Dump	31	Ji
42.	12	34	5	SE	0.380	0.2	125	12	56	4.8	29	65	ARB-88	Outcrop	--	Trdb
43.	12	34	4	SW	0.006	1.2	119	11	48	5.8	36	77	ARB-123	Outcrop	--	Trdb
44.	12	34	4	SW	1.380	17.0	11,500	47	857	4.8	141	219	ARB-118	Dump	32	Trdb
45.	12	33	10	SE	0.006	0.9	6	7	33	1.7	5	4	ARB-132	Outcrop	--	Td
46.	12	33	11	NW	0.025	0.7	105	8	692	58.0	20	101	ARB-133	Dump	52	Trdb
47.	12	33	11	NW	1.380	1.2	189	21	72	2.1	23	22	ARB-134	Dump	48	Trdb
48.	12	33	11	NE	127.400	25.8	4,690	124	203	7.5	101	22	ARB-127	Dump	49	Trdb
49.	12	33	11	NE	18.400	10.0	354	1,760	1,840	2.4	21	38	ARB-117	Dump	--	Trdb
50.	12	33	12	NW	0.520	3.9	210	6	243	3.4	23	7	ARB-120	Outcrop	--	Trdb
51.	12	33	12	NW	0.044	0.8	79	11	82	2.2	26	12	ARB-89	Dump	40	Trdb
52.	12	33	12	SW	0.240	12.1	23,300	10	236	3.7	34	20	ARB-98	Dump	34	Trdb
53.	12	33	12	SE	0.088	0.4	84	6	36	2.3	22	13	ARB-93	Dump	33	Trdb
54.	12	34	7	SW	0.190	0.8	24	5	57	2.6	10	2	ARB-92	Outcrop	--	Tab
55.	12	34	7	SE	0.069	0.6	29	6	72	1.2	13	1	ARB-104	Outcrop	--	Trdb
56.	12	33	16	SE	0.094	1.8	14	< 1	36	1.8	6	< 1	ARB-128	Outcrop	53	Tvs
57.	12	33	14	NW	0.063	1.5	16	9	31	1.5	13	< 1	ARB-126	Outcrop	56	Kji
58.	12	33	13	NW	0.110	1.2	35	5	18	9.3	8	5	ARB-91	Dump	58	Trdb
59.	12	33	13	SW	0.006	0.3	26	34	95	7.7	30	132	ARB-146	Dump	59	TrPs
60.	12	33	13	SW	0.013	1.8	20	9	39	4.4	11	21	ARB-90	Outcrop	--	Tab
61.	12	33	23	NE	0.044	2.0	36	4	6	1.3	4	3	ARB-148	Outcrop	--	Kji dike
62.	12	33	24	SW	0.019	0.3	20	14	44	0.9	74	1,350	ARB-149	Dump	61	sp Kji, TrPs, sp

(17)

TABLE 9. Quality-control analyses--reproducibility. All values are in parts per million.

Lab No.	Au	Ag	Cu	Pb	Zn	Mo	Co	Ni
APB-10	0.013	0.9	40	< 10	10	9.7	--	--
APB-10QC	< 0.013	0.6	--	--	--	10.0	--	--
APB-20	0.600	1.9	60	20	50	9.3	--	--
APB-20QC	0.640	0.8	--	--	--	9.2	--	--
APB-30	2.400	17.1	100	130	450	10.8	--	--
APB-30QC	2.770	3.2	--	--	--	10.9	--	--
APB-40	0.164	2.4	80	50	110	3.1	--	--
APB-40QC	0.176	3.2	--	--	--	3.2	--	--
AQB-21	0.014	1.5	141	12	19	1.8	30	132
AQB-21QC	0.020	1.2	130	9	20	1.0	22	130
AQB-21RQC	--	--	120	< 10	16	< 1	15	136
AQB-31	0.014	0.5	122	8	31	1.6	116	994
AQB-31QC	0.013	0.4	118	11	28	2.2	110	980
AQB-31RQC	--	--	109	2	35	< 1	105	1,200
AQB-41	< 0.014	0.3	25	29	26	0.4	104	2,010
AQB-41QC	< 0.013	< 0.1	25	25	26	0.4	110	2,010
AQB-41RQC	--	--	21	< 10	21	< 1	88	1,900
AQB-51	< 0.014	0.2	136	22	212	1.6	36	14
AQB-51QC	< 0.014	0.2	136	26	210	2.4	40	6
AQB-51RQC	--	--	114	< 10	201	< 1	8	23
AQB-60	0.540	48.8	257	115	101	1.0	12	22
AQB-60QC	0.300	85.9	270	117	102	2.2	14	19
AQB-60RQC	--	--	257	120	95	< 1	5	22
AQB-70	0.013	0.2	133	41	72	2.1	40	71
AQB-70QC	< 0.013	0.2	124	42	63	3.0	40	72
AQB-70RQC	--	--	106	2	59	< 1	16	71
ARB-10	0.012	1.2	8	6	12	2.4	4	< 1
ARB-10QC	0.023	5.2	8	8	10	2.5	5	< 1
ARB-10RQC	< 0.005	0.6	14	1	18	3.	1	1
ARB-20	0.031	5.8	87	56	30	1.0	32	33
ARB-20QC	0.046	1.4	82	49	31	0.8	32	39
ARB-20RQC	0.015	0.1	82	28	39	2.	18	32
ARB-30	0.015	1.6	49	14	41	3.8	7	5
ARB30QC	0.023	3.3	48	14	41	4.1	7	6
ARB-30RQC	< 0.005	0.3	52	7	54	4.	3	11
ARB-40	11.200	294.0	2,360	15,000	26,000	2.9	18	11
ARB-40QC	12.700	348.0	2,360	15,000	26,000	3.4	14	17
ARB-40RQC	10.000	> 100.0	2,450	> 10,000	> 10,000	3.	5	11
ARB-50	0.580	6.4	18	34	61	10.9	10	17

TABLE 9. Quality-control analyses--reproducibility.--Continued

Lab No.	Au	Ag	Cu	Pb	Zn	Mo	Co	Ni
ARB-50QC	0.550	5.1	19	40	65	10.6	9	17
ARB-50RQC	0.425	5.5	30	30	78	10.	3	10
ARB-60	1.960	8.4	29	14	35	5.7	25	330
ARB-60QC	1.960	7.5	29	16	36	5.6	25	320
ARB-60RQC	2.000	7.8	35	9	95	3.	26	285
ARB-70	0.680	3.3	12	30	139	1.6	10	4
ARB-70QC	0.470	3.2	11	30	140	1.6	11	2
ARB-70RQC	0.245	3.8	16	27	130	1.	7	2
ARB-80	0.013	1.0	46	7	66	7.0	11	22
ARB-80QC	0.006	0.2	46	7	66	7.2	12	25
ARB-80RQC	< 0.005	0.6	48	1	72	5.	6	20
ARB-91	0.110	1.2	35	5	18	9.3	8	5
ARB-91QC	0.340	2.6	36	1	20	9.3	8	5
ARB-91RQC	0.105	1.6	40	2	27	5.	1	4
ARB-100	0.200	3.9	231	41	49	2.1	8	5
ARB-100QC	0.160	4.1	209	38	46	2.5	7	3
ARB-100RQC	0.105	3.2	300	30	56	1.	5	2
ARB-110	0.110	3.3	16,200	12	287	5.5	148	161
ARB-110QC	0.230	5.2	15,900	12	276	6.0	149	160
ARB-110RQC	0.105	3.3	> 10,000	1	270	4.	109	128
ARB-118	1.380	17.0	11,500	47	857	4.8	141	219
ARB-118QC	1.510	12.0	12,200	47	908	5.0	154	236
ARB-118RQC	1.050	9.8	> 10,000	24	900	3.	105	193
ARB-150	0.013	1.2	34	52	121	3.6	32	53
ARB-150QC	0.019	0.2	35	37	117	3.6	32	53
ARB-150RQC	0.005	0.1	27	1	125	3.	9	26

TABLE 10. Quality-control analyses--accuracy. All values are in parts per million.

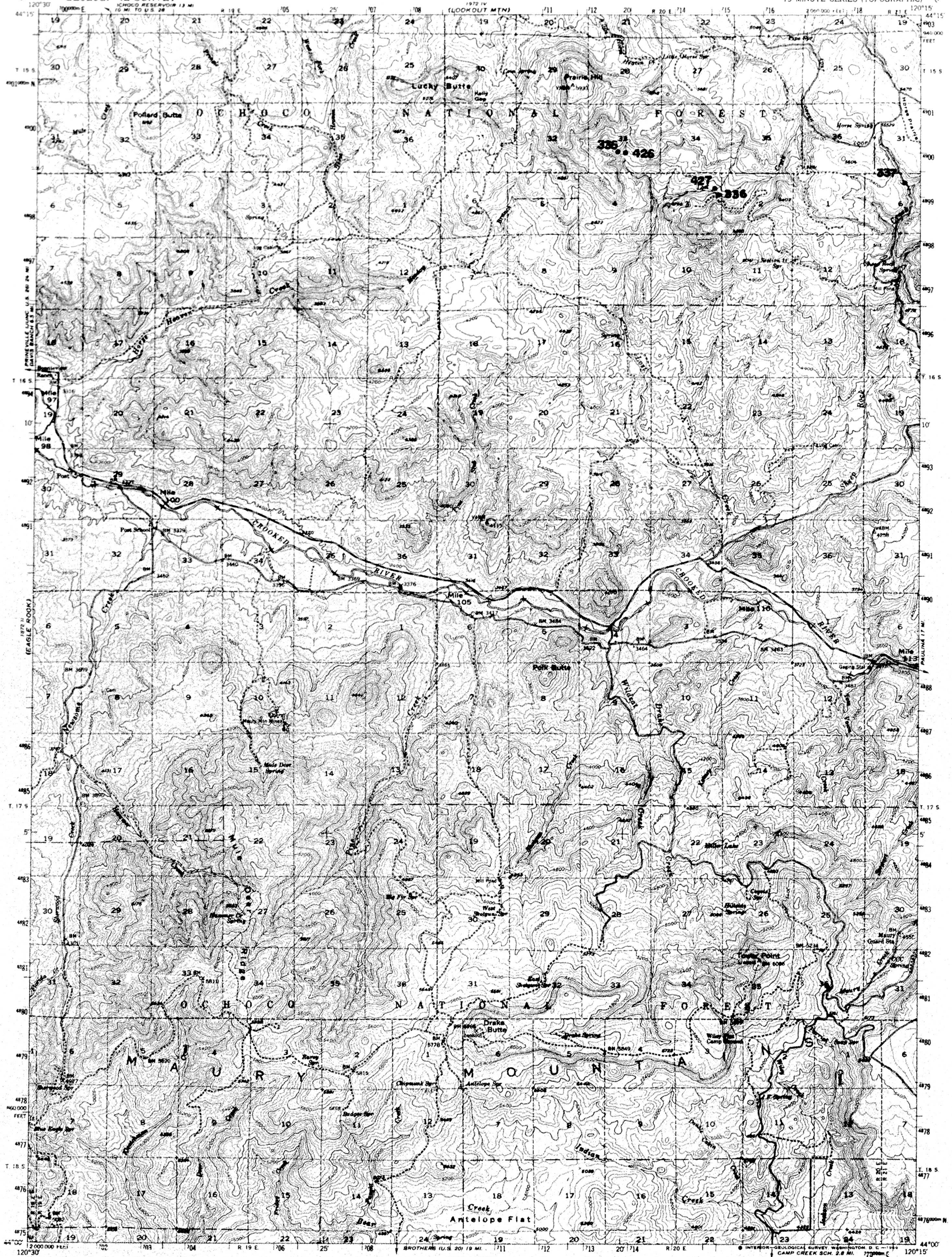
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Au	Standards not available		
Ag	Standards not available		
Cu	KC-1/Canadian ore	1,140	1,200
Cu	UM-1/Canadian ore	4,300	4,400
Cu	Su-1/Canadian ore	8,700	8,500
Cu	MP-1/Canadian ore	20,900	20,700
Pb	MP-1/Canadian ore	18,800	18,800
Zn	not checked		
Mo	BCR-1/USGS rock	3? ¹ 1.3 ²	1.9
Mo	MP-1/Canadian ore	140	148
Mo	PR-1/Canadian ore	5,900	5,890
Co	BCR-1/USGS rock	37 ¹	52
Co	UM-1/Canadian ore	350	368
Co	Su-1/Canadian ore	630	678
Ni	BCR-1/USGS rock	13 ¹	19.6
Ni	UM-1/Canadian ore	8,800	9,200
Ni	Su-1/Canadian ore	15,100	15,400

¹Abbey, S., 1973, Studies in "standard samples" of silicate rocks and minerals, Part 3: 1973 Extension and Revision of "usable" Values, Geological Survey of Canada, Paper 73-36.

²Flanagan, F.J., 1976, Description and analyses of eight new USGS Rock Standards: U.S. Geological Survey Professional Paper 840, p. 47-48.

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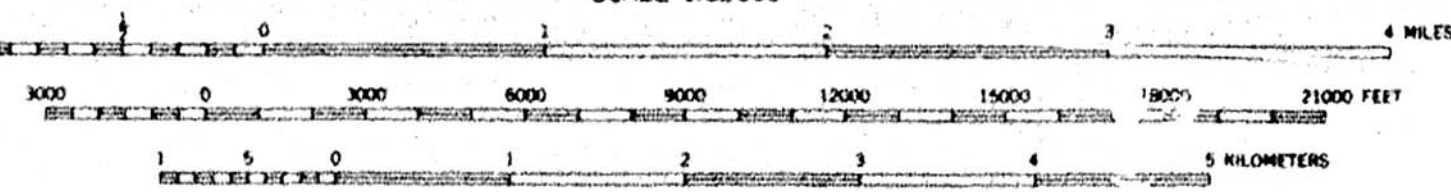
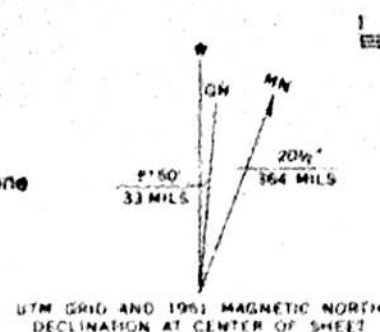


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Topography from aerial photographs by multiplex methods
Aerial photographs taken 1950. Field check 1951

Polyconic projection. 1927 North American datum
10,000-foot grid based on Oregon coordinate system, south zone
Dashed land lines indicate approximate locations

1000-meter Universal Transverse Mercator grid ticks,
zone 10, shown in blue



CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL



ROAD CLASSIFICATION
1944
Medium-duty ——— Light-duty ———
Unimproved dirt - - - - -

POST. OREG.
N4400-W12015/15

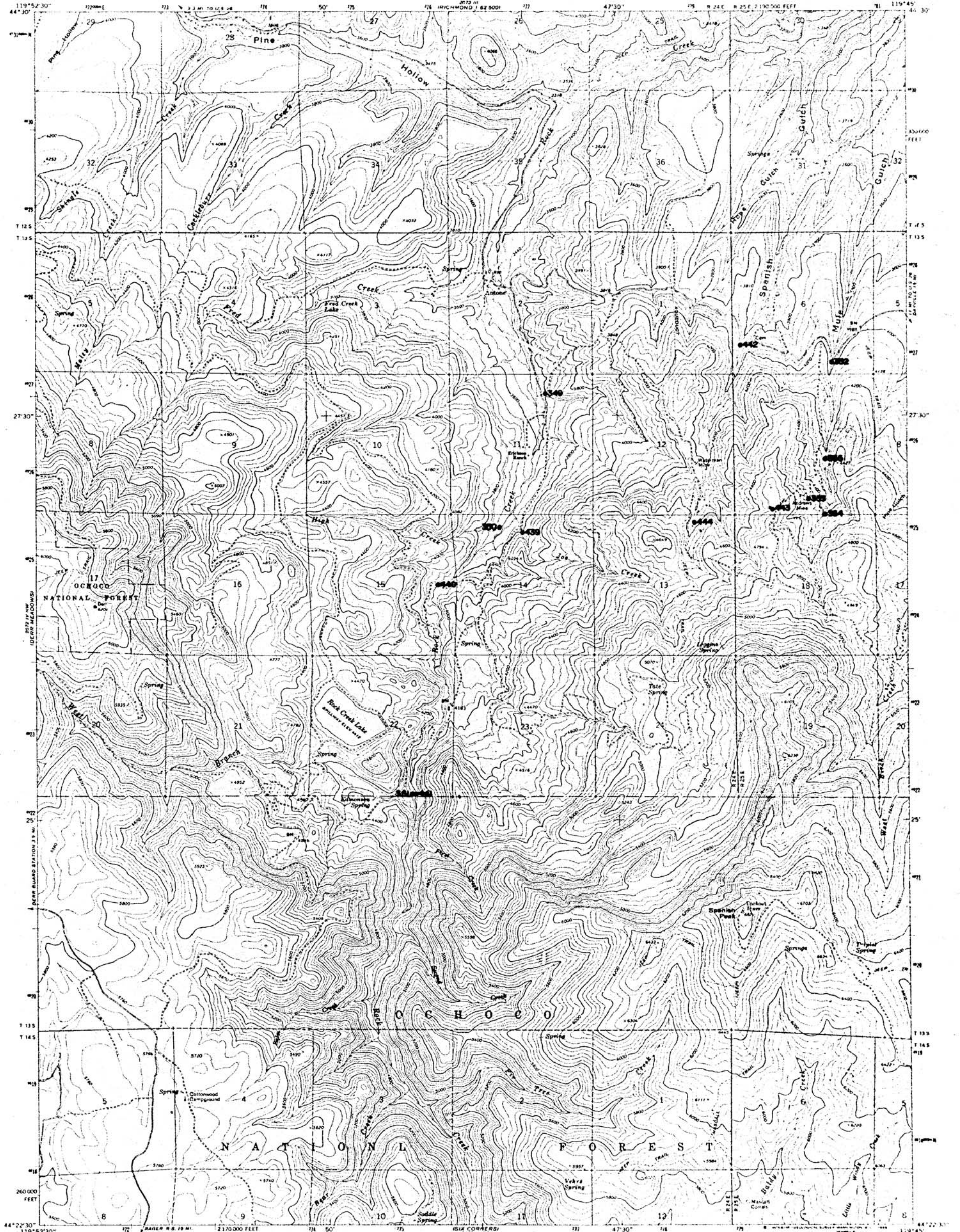
1951

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Topography by photogrammetric methods from aerial

photographs taken 1959. Field checked 1966

Projection: 1927 North American datum

10 000 foot grid based on Oregon coordinate system,

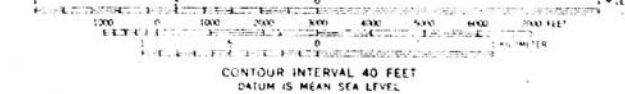
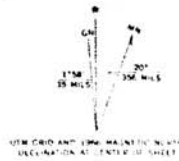
North zone

1000 meter Universal Transverse Mercator grid ticks,

zone 11, shown in blue

Fine dotted lines indicate selected fence lines

Where omitted, land lines have not been established



CONTOUR INTERVAL 40 FEET

DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION

Unimproved

Improved

Lightly

Heavily

Very heavily

Extremely

Unimproved

Improved

Lightly

Heavily

Very heavily

Extremely

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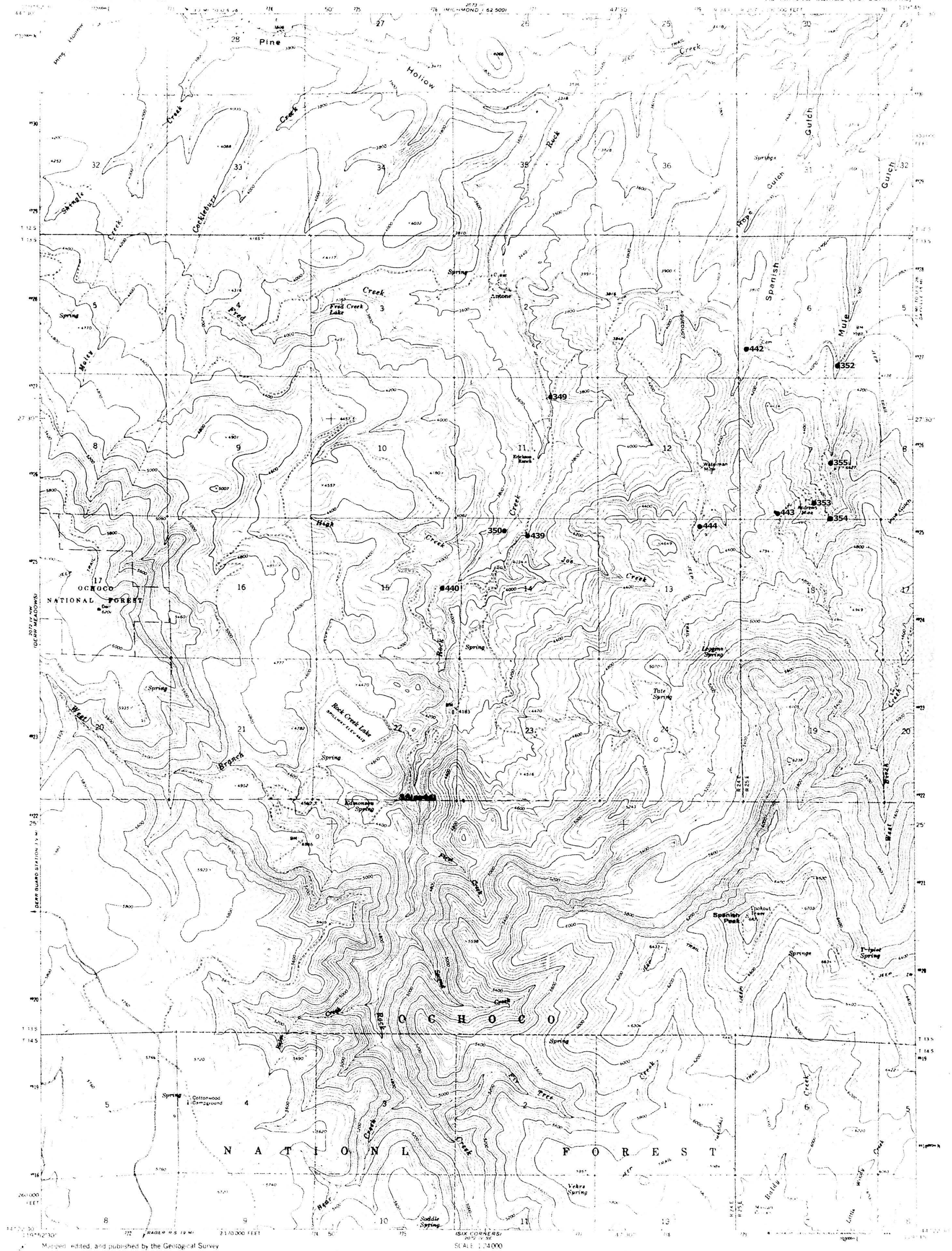
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ANTONE QUADRANGLE
OREGON - WHEELER CO
7.5 MINUTE SERIES (TOPOGRAPHIC)



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