

State Department of Geology and Mineral Industries

702 Woodlark Building
Portland, Oregon

HARNEY COUNTY DEVELOPMENT COMPANY
(Magnesium brine wells)

BURNS DISTRICT, HARNEY COUNTY

Officers: O. T. Atwood, Box 258, Eugene (office, 309 Tiffany Bldg.) Gen. Mgr.;
Paul E. Peterson, Box 94, Burns, Oregon; Charles Backus, Princeton, Oregon;
Otto Gasch, Burns, Oregon.

Area: 39,000 acres located in Ts. 25 and 26 S., Rs. 31 and 32 E. Property leased
for five years April 14, 1941 to 1946.

Location of wells:

NE $\frac{1}{4}$ of Sec. 27, T. 25 S., R. 32 E., large pumped well, depth 72 feet.
SE $\frac{1}{4}$ Sec. 34, T. 25 S., R. 31 E., large pumped well, 72 feet deep.
NW corner of Sec. 2, T. 26 S., R. 31 E., wells No. 3, discovery and 3A deep well.
NE $\frac{1}{4}$ of Sec. 10, T. 26 S., R. 31 E., No. 4 large well.
SE $\frac{1}{4}$ of Sec. 3, T. 26 S., R. 31 E., large well. (see Piper well 292 ?)
SW $\frac{1}{4}$ of sec. 9, T. 26 S., R. 31 E., large well.
S $\frac{1}{2}$ SE $\frac{1}{4}$ Sec. 8, T. 26 S., R. 31 E., large well.

Numerous other shallow wells in this general area were drilled to depths
up to 20 feet.

General Geology: The area in which these wells are located is valley fill accord-
ing to Piper (39). The area lies north of Malheur Lake and south of Wrights
Point and mostly west of Sylvies River. The water table according to Piper is
at an elevation of around 4090 feet.

According to Atwood, the brine occurs in three fairly definite strata,
No. 1 lying at about 17 $\frac{1}{2}$ feet depth, No. 2 at 27 feet, and No. 3 between 68
and 72 feet. All three of these strata are said to have been pumped and have
developed large volumes of brine without appreciable signs of exhaustion.

Piper lists analysis of water from three wells in this area. Two of these
contain total solids and magnesium (in parts per million) as follows:

Well No. 238 - (Sec. 35, T. 25 S., R. 32 E.)	1731	98
294 - (Sec. 15, T. 26 S., R. 31 E.)	6370	25

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The third well is listed below together with analysis from well No. 3 of

Atwood:

Well #294 (SE $\frac{1}{4}$ Sec. 3,
T. 26 S., R. 31 E.)
Piper (39, p. 117)

Well No. 3- No. 2376, Charlton Laboratories, Feb. 8, 1941

(in parts per million)

Total solids	22,636	27,500
Ignition Loss	463	
Silica	237	
Iron	53	
Aluminum	53	
Calcium	403	717
<u>Magnesium</u>	<u>932</u>	<u>341</u>
Sodium	5026	8510
Potassium	94	
Manganese	.6	

Alkalinity:

Carbonate (as CaCO ₃)	0	153
as CaHCO ₃		
Bicarbonate ("E")	525	3,770
Cl	2984	4,850
SO ₄	10665	11,060
N	1	

Quantitative test, total 20,200

Magnesium 575

Well # 4-No. 76470 Laucks Laboratory, Seattle, Sept. 10, 1941, brine from No.

4 well. By weight, magnesium 0.175%, by volume, magnesium 0.180%.

Informant: O. T. Atwood

Reference: Piper, A. M. "Geology and Ground Water Resources of the Harney Basin": U.S.G.S., W.S.F., 849, 1939.

John Eliot Allen, July 16, 1942