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LIMITED REPORT

Geology and Groundwater Resources of the Melfort Area (73A), Saskatchewan

by

M.J. Millard

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INTRODUCTION

Geologic mapping, test drilling, and water well drilling and measurements have been done for the entire settled area of Saskatchewan during the past 25 years. This data provides a basis for the evaluation of the groundwater resources of Saskatchewan. The objective is to continuously improve the understanding of provincial groundwater resources in terms of occurrence, quality, and behaviour, in order to support the development, management, and protection of these water supplies.

With this need in mind, the Saskatchewan Research Council (SRC) has worked co-operatively with the Saskatchewan Institute of Pedology (SIP) and the Saskatchewan Water Corporation (SWC) to compile a new Geology and Groundwater Resource map series corresponding to the 1:250,000 NTS areas of Saskatchewan. The present report accompanies the preliminary maps and cross sections depicting the geology and groundwater resources in the Melfort area (73A). This work, which is an update of maps published during the late 1960's and 1970's, in particular Meneley (1967), indicates the location, extent, and depth of acquifers throughout the area. It also demonstrates the close relationship of soil salinity to geology and groundwater conditions and assists in evaluating irrigation potential and contamination hazards.

Preliminary compilation is done at a scale of 1:100,000. Control is provided by stratigraphic cross sections that are spaced approximately 14 to 19 km apart; ideally, one cross section every one and one-half townships, resulting in about 15 sections per map area. The original cross sections

(horizontal scale = 1:50,000; vertical exaggeration = 20x), are constructed by fixing reduced copies of testhole logs to the topographic section. The testhole logs used are taken from records stored at SRC and include primarily testholes with electrical logs, such as oil and potash testholes, and testholes and water wells drilled by SRC or with the assistance of SWC, or formerly, the Family Farm Improvement Branch. Records containing a driller's log only are used only in the few areas where other data are sparse or lacking.

In order to keep the work manageable, the area is divided into NE, SE, NW, and SW quarters. The maps with each quarter are at the 1:100,000 scale. Separate sheets are produced for each stratigraphic level that contains aquifers or potential aquifers (i.e. sands and gravels). In some cases, where there are few, or only minor, occurences of the deposits at different levels, aquifers at different levels may be shown on one sheet. Each area may have as many as 8 sheets per quarter, or 24 sheets for the total NTS area, including bedrock surface maps. Information on aquifer maps includes the surface elevation at the site, as well as depth to and thickness of the deposit, and the static water level when known.

When the maps are complete, the quarters are combined into one map and reduced to a scale of 1:200,000. The cross sections are reduced by 50% to a scale of 1:100,000. This provides a compilation of all the information at a more manageable size although the legibility of the final maps is reduced due to the small size of the type.

GEOLOGY

General

All sediments between the bedrock surface and the present surface are considered to be "drift". The drift in the Melfort area ranges in recorded thickness from 38 m to over 295 m. The drift is thickest in the west-central part of the area over the Hatfield Valley, which was incised into the bedrock immediately preceding the onset of glaciation (Christiansen et al., 1977). The drift is thinnest in the northeast near Tisdale. The bedrock surface generally slopes to the northeast. The bedrock surface elevation ranges from 285 m above sea level in the Hatfield Valley south of Bruno, (SRC Rutan; NE-13-24-35-25-W2) to 479 m above sea level southwest of Cudworth (FFIB SW-21-40-27-W2).

The glacial ice eroded but also deposited material, mainly glacial till, which is an unsorted mixture of sand, silt, clay, pebbles, and boulders accumulated by the glacier. As the ice retreated from the area much meltwater was released depositing stratified gravels, sands, silts, and clays. This process of erosion and deposition of till and stratified deposits occurred several times as the ice repeatedly advanced and retreated over the area. This sequence of events resulted in the drift stratigraphy that presently exists.

Where information makes it possible, the drift has been divided into three groups; Empress Group, Sutherland Group, and Saskatoon Group. The Empress Group consists of stratified gravels, sands, silts, and clays that occur between the bedrock surface and the till. The Sutherland Group, as well as

the Saskatoon Group, consists of several till units and stratified units that are not formally separated and identified here. The definition of these groups and the description of the typical drift units forming the stratigraphy are provided by Christiansen (1968) and Whitaker and Christiansen (1972).

At some localities the bedrock surface has been modified by the collapse of underlying sediments, similar to that described by Christiansen (1967). These structures are shown on the cross sections as schematic gravity faults.

Bedrock

Lea Park Formation and Upper Colorado Group

The Lea Park Formation and the Upper Colorado Group are considered to be a single unit for the purposes of this report. The Lea Park Formation and Upper Colorado Group is composed of gray marine silt and clay and bentonite beds. The upper part is noncalcareous, whereas the lower part is composed of calcareous, white, speckled shales. The bottom of the Upper Colorado Group is marked by the base of the Second White Speckled Shale.

Judith River Formation

The Judith River Formation (McLean, 1971) is composed of nonmarine, interbedded, very fine- to medium-grained sand, silt, and clay with carbonaceous and concretionary zones. In Saskatchewan, this unit thins generally towards the east and north. This unit occurs in the southwest corner of the Melfort area, commonly at elevations greater than 420 m, although in a

collapse structure located northwest of Meacham and shown on cross section S.W. E-E' (log #SW 109; SRC Prud'homme, NW 12-7-37-28-W2), this elevation is reduced to about 375 m. In the Melfort area the Judith River Formation attains a maximum recorded thickness of 28 m. Throughout the Melfort area, the edge of the Judith River Formation is erosional rather than depositional, although the formation would 'pinch-out' in the area were it not eroded.

Bearpaw Formation

The Bearpaw Formation is composed of soft, gray, noncalcareous silt and clay. This unit occurs in isolated locations near Prud'homme (e.g. log #SW 115; FFIB SW 33-38-28-W2) and Dana (e.g. log #SW 57; FFIB SW 4-38-26-W2) at elevations above 455 m. No testholes penetrate more than 4 m of the Bearpaw Formation.

Pierre Shale

The Pierre Shale is the stratigraphic equivalent of the Bearpaw, Judith River, and Lea Park formations. The noncalcareous silts and clays that comprise this unit are indistinguishable from those of the Bearpaw and Lea Park formations. The Pierre Shale occurs in the eastern part of the Melfort area, beyond the depositional 'pinch-out' of the Judith River Formation.

'Wynyard Formation'

The youngest bedrock deposit encountered in the Melfort area consists of yellow, gray, or white sand, silt, and clay. These sediments, informally designated as the 'Wynyard Formation' (Christiansen, 1970), occur as erosional remnants of the Tertiary bedrock. This unit is present in the Quill Lakes area where its maximum recorded thickness is 9 m (SRC Wimmer NW 13-21-35-17-W2).

Drift

Empress Group

Where it is differentiated, the Empress Group (Whitaker and Christiansen, 1972) lies between the bedrock surface and the lowest till. Although some blanket deposits occur in upland areas, most of the Empress Group sediments, comprising stratified gravels, sands, silts, and clays, are found in the Hatfield Valley, which formed immediately prior to glaciation. The maximum recorded thickness of the Empress Group (130 m) is found in the Hatfield Valley southeast of Meacham (SRC Rutan NE 13-24-35-25-W2), where the entire sequence consists of glaciogenic sediments. The Empress Group is much thinner, commonly less than 40 m, thick where it occurs as blanket deposits.

Sutherland Group

Where it is differentiated, the Sutherland Group (Christiansen, 1968) lies beneath the Saskatoon Group and on top of bedrock or Empress Group

deposits. The unit ranges from 0 to about 145 m in recorded thickness and comprises tills and stratified drift. The tills of the Sutherland Group are commonly clayier and harder, less resistive electrically, and are more difficult to penetrate by drilling than tills of the Saskatoon Group. These two groups are also differentiated on the basis of carbonate content, the presence of shale fragments in the till, and a weathering zone separating the two groups. The weathering is signified by leaching, oxidation, staining, and other alteration features. At some locations the top of the Sutherland Group is marked by stratified drift.

Saskatoon Group

The Saskatoon Group (Christiansen, 1968) includes all sediments lying between the Sutherland Group and the present surface. In the Melfort area this unit ranges from 15 m to about 185 m in recorded thickness and is composed of tills and stratified drift. The tills of the Saskatoon Group are commonly more sandy, more resistive electrically, and have a higher carbonate content than the Sutherland Groups tills. The Saskatoon Group comprises the Floral Formation, which itself consists of multiple tills and stratified units, as well as the Battleford Formation and Surficial Stratified Drift (Christiansen, 1968).

Surficial Stratified Drift occurs as glaciolacustrine and glaciofluvial sediments and as alluvial sediments that were deposited by modern streams and rivers, or in spillways that drained ice-marginal lakes. The Wakaw

Spillway and Kipabiskau Channel (Meneley, 1964) are examples of spillways in which glaciofluvial or alluvial sediments were deposited. Alluvial deposits are also found in the valley of the South Saskatchewan River.

GROUNDWATER RESOURCES

General

Groundwater originates from precipitation that infiltrates to the water table, moves downward and laterally under the influence of gravity, and eventually discharges back to the ground surface at some point of lower elevation (Meneley, 1977).

An aquifer is a layer in which a well can be constructed yielding sufficient water for production. Aquifers are separated by aquitards, which are layers sufficiently permeable to transmit water but not sufficiently permeable to allow completion of a production well. The inter-relationships between aquifer, aquitards, and aquifer systems are discussed by Meneley (1983). The Empress Group and intertill sands and gravels form the major aquifers in the Melfort area. Till units and bedrock clays form the aquitards in the area.

Groundwater moves through the intergranular openings and fractures in the sediments. The water moves under influence of gravity from regions of higher hydraulic head to regions of lower hydraulic head. The hydraulic head generally is expressed as the elevation above sea level of the water level in a well. If the layers are horizontal and of large areal extent, as in this area, the water tends to move vertically in aquitards while in aquifers it moves

horizontally. The distribution of the hydraulic head determines the direction of flow. The hydraulic head distribution in turn is controlled by factors such as topography, stratigraphical setting, and the type of material forming the aquitards and aquifers.

Surficial Aquifers

Many shallow seepage wells, generally less than 15 m deep, have been constructed throughout the area. These have been completed primarily in Surficial Stratified Drift, such as in the Kinistino Indian Reserve area, and in stratified deposits of the Battleford Formation, such as in the Minichinas Hills, west of Wakaw. Surficial aquifers (Sheet 1 and cross sections) are few and rather small in area.

Intertill Aquifers

Intertill aquifers are defined stratigraphically rather than topographically. Thus, in some areas the depth of the same intertill aquifer can vary from relatively shallow to deep. Where intertill aquifers are reasonably well defined they are shown on the cross sections. Where these stratified deposits are interbedded with till, or where insufficient data exist, the aquifers are not shown.

Intertill aquifers are recharged by downward flow through the overlying sediments. Where possible, using limited water-level data and based on the slope of the topography, the direction of groundwater flow in these aquifers has

been indicated schematically on the cross sections. In the absence of sufficient, reliable water-level data the direction of groundwater flow in the shallow intertill aquifers can only be inferred from the topographical setting.

Shallow intertill sands and gravels occur throughout the area where they provide water supplies at depths commonly less than 50 m (Sheet 1 and cross sections). The stratified deposits that form these aquifers occur at three stratigraphic positions within the upper part of the Floral Formation. Muskiki Lake is fed by discharge from aquifers that occur at two of these stratigraphic positions. These deposits are exposed at the surface at some locations.

Intertill sands and gravels of the lowest part of the Saskatoon Group (Sheet 2 and cross sections) and of the Sutherland Group (Sheet 3 and cross sections) are referred to as deep intertill aquifers. Although less numerous than those aquifers associated with the upper part of the Floral Formation, they are usually more extensive. Where insufficient data exist to properly define the aquifers they are not differentiated.

Empress Group Aquifers

Silts, sands and gravels of the Empress Group (Sheet 4 and cross sections) occur primarily in the Hatfield Valley, but also as blanket deposits that in some cases are contiguous with the valley fill (cross sections N.W. C-C', N.E. C-C'). The Hatfield Valley Aquifer commonly occurs at depths greater than 150 m. Water-level data is very limited for this aquifer in the Melfort area. It is assumed that groundwater movement is along the valley toward discharge

points. Water levels in the Hatfield Valley Aquifer are commonly lower than any surrounding aquifers and therefore, it may act as a drain intercepting flow from intertill and bedrock aquifers.

Two major blanket deposits have been differentiated. One, located in the St. Brieux - Pathlow area is connected to the Hatfield Valley Aquifer. Water levels recorded near St. Brieux from this blanket deposit indicate that the hydraulic head is high enough, about 60 m higher than that recorded in the Hatfield Valley near Hoey about 70 km away, to provide upward movement of water into Basin Lake. The other major blanket deposit of the Empress Group, located in the southwest corner of the area near Meacham, is not directly connected to the Hatfield Valley. However, these sediments rest directly upon those of the Judith River Formation (cross sections S.W D-D', E-E', F-F') and are considered to be part of the Judith River Aquifer.

Judith River Aquifer

The Judith River Aquifer occurs only in the southwest part of the Melfort area, commonly at depths greater than 100 m (Sheet 5 and cross sections). Only one well, which is located east of Meacham (cross section S.W. D-D', testhole # SW85; FFIB SE 21-36-26-W2), has been completed into this aquifer. Here the static water level is about 527 m above sea level. The Judith River Aquifer is not an important water supply in the Melfort area due to its rather limited extent and the availability of shallower aquifers.

Flowing Wells

Flowing wells, where the water level is above the ground surface, generally indicate an upward groundwater flow. Most flowing wells occur in the northeast part of the Melfort area. Appendix II lists the flowing wells for the Melfort area as compiled by Stewart (1983). Also included is the completion depth of the well and the classification and the stratigraphic position of the aquifer (if known).

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APPENDIX I

Aquifers in the Melfort Area (73A)

Surficial Aquifers - occur sporadically throughout the area as stratified drift within and above the Battleford Formation.

Shallow Intertill Aquifers - occur throughout the area as sand and gravel layers in the upper part of the Floral Formation. Depths are commonly less than 50 m. These aquifers are quite numerous but not very extensive.

Deep Intertill Aquifers - occur throughout the area as sand and gravel layers in the lower part of the Saskatoon Group and within the Sutherland Group. These are less numerous but more extensive than those associated with the upper part of the Floral Formation.

Empress Group Aquifers - occur as silt, sand and gravel in the Hatfield Valley, commonly at depths greater than 150 m. Blanket deposits found on upland areas also occur, commonly at depths less than 125 m. In some cases these are connected to the Hatfield Valley Aquifer.

Judith River Aquifer - occurs in the southwest part of the area, commonly at depths in excess of 100 m. This is not an important water supply in the Melfort area.

Aquitards - occur throughout the area as relatively impermeable till layers of the Saskatoon and Sutherland Groups and silt and clay layers of the Bearpaw Formation and Lea Park Formation.

APPENDIX II

Flowing Wells in the Melfort Area (73A)

LOCATION	AQUIFER CLASS./STRAT. POSITION	COMPLETION DEPTH
SE15-35-15-2	Deep / Basal Saskatoon Group	64 m
NE33-42-15-2	Deep / Basal Saskatoon Group	33 m
NE 1-45-15-2	Deep / Basal Saskatoon Group	?
SE 1-45-15-2	Deep / Basal Saskatoon Group	37 m
SE25-45-15-2	Deep / Basal Saskatoon Group	8 m
SW 3-36-17-2	Deep / Basal Saskatoon Group	51 m
SE20-46-17-2	Shallow / Middle Floral	<13 m
SE23-40-18-2	Shallow / Upper Floral	<14 m
NW27-40-18-2	Shallow / Upper Floral	<18 m
NW36-41-18-2	Surficial ?	<18 m
SE 4-44-18-2	Surficial ?	<15 m
NW31-45-18-2	Shallow / Middle Floral	<17 m
SW16-37-19-2	Shallow / ?	25 m
NW 6-41-19-2	Deep / Basal Saskatoon Group	61 m
NE32-41-19-2	Shallow / ?	<9 m
SE15-43-19-2	Deep / Sutherland Group ?	<70 m
SE25-45-19-2	Shallow / Middle Floral	<18 m
NE25-45-19-2	Shallow / Middle Floral	<18 m
NE36-45-19-2	Shallow / Middle Floral	<18 m
NW36-45-19-2	Shallow / Middle Floral	<17 m
SE36-45-19-2	Shallow / Middle Floral	<18 m
SE 1-46-19-2	Shallow / Middle Floral	?
SE12-41-20-2	Shallow / Basal Saskatoon Group (Controlled)	21 m
SE20-41-20-2	Shallow / ?	7 m
N 14-43-20-2	Empress Group	101 m
SW16-43-20-2	Empress Group	87 m
NE19-43-20-2	Empress Group	68 m
SE21-43-20-2	Empress Group	92 m
SW21-43-20-2	Empress Group	86 m
SW23-43-20-2	Empress Group	64 m
SW10-44-20-2	? / Sutherland Group (Controlled)	<29 m
SE16-44-20-2	Deep / Sutherland Group	35 m
SW25-44-20-2	Deep / Sutherland Group	<40 m
NE13-43-21-2	Empress Group	<58 m
SE25-43-21-2	Empress Group	62 m
NW1-44-21A-2	Empress Group	68 m
SW33-40-22-2	Deep / Basal Saskatoon Group	65 m
NW23-43-22-2	Shallow / Middle Floral	<1 m
SE32-42-23-2	Empress Group	124 m
SW35-43-24-2	Surficial ?	<4 m
SE 7-46-24-2	Shallow / ?	19 m
NW27-36-27-2	Shallow / ?	7 m
NE10-45A-27-2	Empress Group	122 m
NE12-45A-27-2	Empress Group	123 m

APPENDIX III

Index of Cross Section Logs

The following types of logs and records have been used for the compilation of this work.

1. The SRC file contains logs that include E-logs, driller's logs, geologist's description of the cutting samples, and often analytical results. These logs are listed as SRC, SPC, Hayter, EPD, and DIA.

2. The Oil - Potash logs consist of geophysical logs only. These logs are listed as OIL.

3. The SWC file contains logs consisting of E-logs, driller's logs, and information pertaining to well completion. Collection of this type of data was initiated under the Family Farm Improvement Branch (FFIB) Testhole Assistance Program, which was the forerunner of a similar program now administered by the SWC. These logs are listed as FFIB.

4. Records including only driller's logs and information pertaining to well completion are listed as DOE.

Log Log No. (NE)	Log Type/Name	Land Location
1	DOE	SE 35-44-21-W2
2	SRC Claggett-B	SW 1-8-45-20-W2
3	DOE	SW 7-45-19-W2
4	FFIB	NE 7-45-19-W2
5	SRC Melfort	2-11-45-19-W2
6	DOE	NW 1-45-19-W2
7	FFIB	SE 6-45-18-W2
8	FFIB	SW 5-45-18-W2
9	DOE	SW 4-45-18-W2
10	FFIB	NW 34-44-18-W2
11	DOE	SE 3-45-18-W2
12	DOE	SW 1-45-18-W2
13	DOE	SW 31-44-17-W2
14	SRC Nasberry	NW 16-32-44-17-W2
15	SRC Boulder Pavement	NE 16-32-44-17-W2
16	DOE	SE 3-45-17-W2
17	DOE	SW 2-45-17-W2
18	DOE	NE 1-45-17-W2
19	DOE	NE 5-45-16-W2
20	DOE	SE 3-45-16-W2
21	FFIB	NW 1-45-16-W2
22	DOE	NE 1-45-16-W2
23	DOE	NW 6-45-15-W2
24	DOE	SW 3-45-15-W2
25	DOE	NW 35-44-15-W2
26	DOE	SE 1-45-15-W2
27	FFIB	SE 6-45-14-W2
28	FFIB	SE 27-43-21-W2
29	FFIB	SE 25-43-21-W2
30	DOE	NE 19-43-20-W2
31	FFIB	SW 21-43-20-W2
32	FFIB	SE 21-43-20-W2
33	DOE	NE 15-43-20-W2
34	DOE	NW 13-43-20-W2
35	DOE	19-43-19-W2
36	DOE	NE 22-43-19-W2
37	DOE	SW 26-43-19-W2
38	SRC Clemens	NE 1-30-43-18-W2

Log Log No. (NE)	Log Type/Name	Land Location
39	DOE	SE 29-43-18-W2
40	DOE	SE 29-43-18-W2
41	DOE	SW 28-43-18-W2
42	DOE	SE 27-43-18-W2
43	DOE	NE 23-43-18-W2
44	DOE	NE 24-43-18-W2
45	DOE	NE 19-43-17-W2
46	DOE	NE 20-43-17-W2
47	DOE	NE 21-43-17-W2
48	FFIB	NE 26-43-17-W2
49	DOE	NE 19-43-16-W2
50	DOE	SE 29-43-16-W2
51	SRC South Star	NW 13-22-43-16-W2
52	DOE	SE 26-43-16-W2
53	Hayter Sylvania	NE 8-30-43-15-W2
54	DOE	NE 27-43-15-W2
55	DOE	NW 27-43-15-W2
56	FFIB	NE 16-25-43-15-W2
57	DOE	SW 20-42-21-W2
58	DOE	NE 16-42-21-W2
59	DOE	SE 22-42-21-W2
60	FFIB	NW 23-42-21-W2
61	FFIB	NW 19-42-20-W2
62	DOE	SE 20-42-20-W2
63	DOE	NW 16-42-20-W2
64	DOE	NE 12-42-20-W2
65	OIL Jeff Lake Oxy Silver Park	12-4-42-19-W2
66	OIL Dome Silver Park	16-13-42-19-W2
67	DOE	NE 18-42-19-W2
68	DOE	NE 4-42-18-W2
69	DOE	SE 13-42-18-W2
70	DOE	SW 20-42-17-W2
71	DOE	SW 22-42-17-W2
72	DOE	NW 23-42-17-W2
73	FFIB	SE 25-42-17-W2
74	DOE	NE 21-42-16-W2
75	FFIB	SW 26-42-16-W2
76	DOE	NW 24-42-16-W2
77	FFIB	SE 22-42-15-W2
78	FFIB	SE 23-42-15-W2
79	DOE	NE 13-42-15-W2
80	SRC Lenore Lake	NW 13-7-41-20-W2
81	FFIB	SW 18-41-20-W2

Log Log No. (NE)	Log Type/Name	Land Location
82	DOE	SE 25-41-21-W2
83	DOE	SE 36-41-21-W2
84	DOE	NE 36-41-21-W2
85	DOE	SE 12-42-21-W2
86	FFIB	SE 13-42-21-W2
87	DOE	NE 13-42-21-W2
88	FFIB	NE 25-42-21-W2
89	FFIB	SE 36-42-21-W2
90	SRC St. Brieux	SW 8-1-43-21-W2
91	FFIB	NW 30-43-20-W2
92	FFIB	SE 36-43-21-W2
93	DOE	NW 1-44-21-W2
94	DOE	NW 7-44-20-W2
95	FFIB	SE 18-44-20-W2
96	SRC Beatty	NW 5-33-45-20-W2
97	DOE	NE 3-46-20-W2
98	DOE	SW 23-46-20-W2
99	SRC Thaxted	SW 4-26-46-20-W2
100	DOE	NE 28-46-20-W2
101	DOE	NW 6-41-19-W2
102	DOE	SE 12-41-20-W2
103	DOE	NE 13-41-20-W2
104	DOE	NE 36-41-20-W2
105	DOE	NW 24-42-20-W2
106	DOE	SW 36-42-20-W2
107	SRC Pathlow South	SE 1-2-43-20-W2
108	DOE	NW 12-43-20-W2
109	DOE	SE 25-43-20-W2
110	DOE	NW 25-43-20-W2
111	DOE	NE 35-43-20-W2
112	FFIB	NW 1-44-20-W2
113	FFIB	NE 20-44-19-W2
114	DOE	SE 34-44-19-W2
115	DOE	13-45-19-W2
116	FFIB	SE 24-45-19-W2
117	FFIB	NE 24-45-19-W2
118	FFIB	SW 25-45-19-W2
119	DOE	NW 36-45-19-W2
120	FFIB	NW 1-46-19-W2
121	DOE	SW 18-46-18-W2
122	DOE	NW 19-46-18-W2
123	OIL Gulf Melfort STH6	13-29-46-18-W2

Log Log No. (NE)	Log Type/Name	Land Location
124	FFIB	NW 19-41-18-W2
125	DOE	SW 31-41-18-W2
126	DOE	NW 20-42-18-W2
127	DOE	NW 32-42-18-W2
128	EPD Silver Park	3-4-43-18-W2
129	DOE	NW 3-43-18-W2
130	DOE	NW 10-43-18-W2
131	DOE	NW 15-43-18-W2
132	DOE	NW 26-43-18-W2
133	DOE	NE 36-43-18-W2
134	DOE	NW 6-44-17-W2
135	FFIB	NW 7-44-17-W2
136	DOE	SE 24-44-18-W2
137	DOE	NW 19-44-17-W2
138	DOE	SW 30-44-17-W2
139	DOE	NE 1-45-18-W2
140	DOE	NE 12-45-18-W2
141	DOE	SW 20-45-17-W2
142	DOE	SW 30-45-17-W2
143	DOE	NW 30-45-17-W2
144	DOE	SW 6-46-17-W2
145	SRC Melfort Obs.	NE 8-7-46-17-W2
146	DOE	SW 19-46-17-W2
147	DOE	SW 30-46-17-W2
148	FFIB	NW 9-41-16-W2
149	DOE	NW 31-41-16-W2
150	FFIB	SE 25-42-17-W2
151	DOE	SE 36-42-17-W2
152	DOE	SE 21-43-16-W2
153	FFIB	SE 3-44-16-W2
154	DOE	SW 11-44-16-W2
155	DOE	SE 14-44-16-W2
156	DOE	SE 26-44-16-W2
157	FFIB	SE 23-45-16-W2
158	FFIB	SW 33-45-16-W2
159	DOE	NW 33-45-16-W2
160	DOE	SW 9-46-16-W2
161	DOE	SW 20-46-16-W2
162	DOE	NW 30-46-16-W2
163	DOE	SW 12-41-15-W2
164	SRC Sylvania	NW 4-25-41-15-W2
165	SRC Wallwort	SE 10-36-41-15-W2

Log Log No. (NE)	Log Type/Name	Land Location
166	FFIB	NE 1-42-15-W2
167	DOE	SE 36-42-15-W2
168	FFIB	NW 8-43-14-W2
169	DOE	NE 12-44-15-W2
170	DOE	SE 24-44-15-W2
171	SRC Tisdale	SE 10-24-44-15-W2
172	SWC	NW 30-44-14-W2
173	FFIB	NW 6-45-14-W2
174	FFIB	SE 13-45-15-W2
175	DOE	NE 13-45-15-W2
176	DOE	SE 24-45-15-W2
177	DOE	SE 25-45-15-W2
178	DOE	NE 25-45-15-W2
179	SRC Runciman 1963	SW 4-17-46-14-W2
180	SRC Runciman 1967	NE 9-24-46-15-W2

Log Log No. (NE)	Log Type/Name	Land Location
1	DOE	SE 16-45A-28-W2
2	DOE	SW 1-45-28-W2
3	DOE	SE 6-45-27-W2
4	DOE	SE 19-45A-27-W2
5	FFIB	SE 17-45A-27-W2
6	FFIB	NE 10-45A-27-W2
7	FFIB	SE 13-45A-27-W2
8	SRC Hoey	NE 16-7-45-26-W2
9	DOE	NW 15-45-26-W2
10	DOE	NE 24-45-26-W2
11	DOE	NW 28-45-25-W2
12	DOE	NW 27-45-25-W2
13	DOE	NW 26-45-25-W2
14	DOE	SW 25-45-25-W2
15	DOE	SW 30-45-24-W2
16	SRC Waitville	SW 4-17-45-24-W2
17	DOE	NE 10-45-24-W2
18	FFIB	NW 18-45-23-W2
19	DOE	NE 11-45-23-W2
20	DOE	SE 12-45-23-W2
21	DOE	SW 7-45A-22-W2
22	DOE	NW 5-45A-22-W2
23	DOE	NW 2-45A-22-W2
24	FFIB	NE 2-45A-22-W2
25	FFIB	NE 28-44-21-W2
26	DOE	NE 21-44-28-W2
27	DOE	NE 22-44-28-W2
28	DOE	SE 26-44-28-W2
29	SRC Bellevue	NE 1-25-44-28-W2
30	FFIB	SE 20-44-27-W2
31	DOE	NE 17-44-27-W2
32	DOE	SW 15-44-27-W2
33	OIL Grey Owl Domremy	16-10-44-27-W2
34	FFIB	NE 11-44-27-W2
35	DOE	SE 13-44-27-W2
36	SRC Domremy	SW 12-17-44-26-W2
37	EPD Domremy	8-17-44-26-W2
38	FFIB	SE 21-44-26-W2
39	FFIB	NE 24-44-26-W2
40	EPD Domremy	NW 1-30-44-25-W2
41	SRC Northern Light	SW 13-21-44-25-W2
42	DOE	SW 22-44-25-W2

Log No. (NW)	Log Type/Name	Land Location
43	DOE	SW 23-44-25-W2
44	DOE	SE 25-44-25-W2
45	DOE	SE 17-44-25-W2
46	DOE	NW 9-44-24-W2
47	SRC Tway	SW 12-11-44-24-W2
48	FFIB	NW 32-43-23-W2
49	EPD Yellow Creek	16-34-43-23-W2
50	DOE	SE 2-44-23-W2
51	DOE	NW 36-43-23-W2
52	DOE	NE 36-43-23-W2
53	DOE	SE 5-44-22-W2
54	DOE	SE 4-44-22-W2
55	FFIB	SW 1-44-22-W2
56	DOE	NW 36-43-22-W2
57	DIA One Arrow 06	SE 4-3-43-28-W2
58	DOE	SE 2-43-28-W2
59	DOE	SE 36-42-28-W2
60	DOE	SE 31-42-27-W2
61	EPD Wakaw 7	SW 13-28-42-27-W2
62	EPD Wakaw 1	SW 10-28-42-27-W2
63	SRC Wakaw	NW 5-25-42-27-W2
64	DOE	NE 25-42-27-W2
65	DOE	NE 30-42-26-W2
66	DOE	NW 29-42-26-W2
67	FFIB	NE 27-42-26-W2
68	DOE	NE 36-42-26-W2
69	FFIB	NE 31-42-25-W2
70	SRC Lepine	SW 1-27-42-25-W2
71	DOE	NW 23-42-25-W2
72	DOE	SW 25-42-25-W2
73	FFIB	SE 30-42-24-W2
74	DOE	SW 28-42-24-W2
75	DOE	SE 27-42-24-W2
76	DOE	SW 26-42-24-W2
77	SRC Basin Lake	SW 2-26-42-24-W2
78	DOE	SW 25-42-24-W2
79	SRC Hazel Lake	NE 14-29-42-23-W2
80	EPD Basin Lake	1-32-42-23-W2
81	DOE	SE 25-42-23-W2
82	DOE	NW 20-42-22-W2
83	DOE	NW 21-42-22-W2
84	DOE	NE 22-42-22-W2

Log No. (NW)	Log Type/Name	Land Location
85	FFIB	SE 26-42-22-W2
86	DOE	NE 24-42-22-W2
87	FFIB	NE 8-41-28-W2
88	DOE	NW 11-41-28-W2
89	DOE	SW 18-41-27-W2
90	DOE	SW 8-41-27-W2
91	DOE	SE 9-41-27-W2
92	DOE	SW 10-41-27-W2
93	DOE	NW 12-41-27-W2
94	FFIB	NW 4-41-26-W2
95	DOE	SE 10-41-26-W2
96	DOE	NW 12-41-26-W2
97	FFIB	NE 8-41-25-W2
98	DOE	SW 14-41-25-W2
99	DOE	NW 6-41-24-W2
100	DOE	NW 22-41-28-W2
101	DOE	SE 34-41-28-W2
102	DOE	NW 3-42-28-W2
103	DOE	NE 9-42-28-W2
104	DOE	SE 20-42-28-W2
105	DOE	SE 28-42-28-W2
106	DOE	SW 15-43-28-W2
107	DIA One Arrow 02	SW 15-22-43-28-W2
108	DOE	SW 35-22-43-28-W2
109	DOE	SE 3-44-28-W2
110	DOE	NW 10-44-28-W2
111	DOE	SW 27-44-28-W2
112	DOE	NW 27-44-28-W2
113	DOE	SW 35-44-28-W2
114	DOE	NW 2-45A-28-W2
115	DOE	SE 10-45A-28-W2
116	DOE	SE 15-45A-28-W2
117	FFIB	SE 10-45-28-W2
118	DOE	NW 24-45-28-W2
119	OIL Britalta Macdowell 1	2-1-46-28-W2
120	DOE	NW 1-46-28-W2
121	FFIB	NW 14-41-26-W2
122	DOE	SW 23-41-26-W2
123	DOE	NW 26-41-26-W2
124	OIL Calstan Gulf Leofnard	13-3-42-26-W2
125	DOE	NW 10-42-26-W2
126	DOE	SE 22-42-26-W2

Log No. (NW)	Log Type/Name	Land Location
127	EPD Wakaw Lake	1-27-42-26-W2
128	DOE	SW 2-43-26-W2
129	SRC Ens	SW 2-16-43-26-W2
130	FFIB	NE 16-43-26-W2
131	DOE	SW 22-43-26-W2
132	FFIB	NW 4-44-26-W2
133	FFIB	SE 20-44-26-W2
134	SRC Hoey	NE 16-30-44-26-W2
135	FFIB	15-31-44-26-W2
136	DOE	NE 18-45A-26-W2
137	DOE	NE 31-45A-26-W2
138	FFIB	NW 5-46A-26-W2
139	DOE	SE 17-46A-26-W2
140	DOE	NE 17-46A-26-W2
141	DOE	NW 16-46A-26-W2
142	FFIB	SE 27-46A-26-W2
143	DOE	NE 16-41-25-W2
144	DOE	SE 27-41-25-W2
145	DOE	SW 2-42-25-W2
146	DOE	SE 15-42-25-W2
147	FFIB	NW 22-42-25-W2
148	FFIB	SW 34-42-25-W2
149	FFIB	SW 11-43-25-W2
150	SRC Reynaud	SW 3-27-43-25-W2
151	DOE	SW 34-43-25-W2
152	DOE	SE 5-44-25-W2
153	DOE	NW 9-44-25-W2
154	FFIB	NW 28-44-25-W2
155	DOE	SW 33-44-25-W2
156	DOE	SW 16-45-25-W2
157	OIL Okalta Hagen	13-34-45-25-W2
158	DOE	SW 21-46A-25-W2
159	DOE	SE 28-46A-25-W2
160	DOE	NE 8-41-23-W2
161	DOE	NE 18-41-23-W2
162	DOE	SE 30-41-23-W2
163	DOE	NE 30-41-23-W2
164	DOE	SE 31-41-23-W2
165	DOE	NE 31-42-23-W2
166	DOE	SW 9-43-23-W2
167	DOE	NE 17-43-23-W2
168	Hayter Yellow Creek	SE 1-30-43-23-W2

Log No. (NW)	Log Type/Name	Land Location
169	SRC Crystal Springs	NE 12-29-44-23-W2
170	DOE	NE 25-45-24-W2
171	DOE	SE 13-46-24-W2
172	FFIB	NE 18-46-23-W2
173	Hayter Yellow Creek	NW 13-19-46-23-W2
174	DOE	NE 25-46-24-W2
175	DOE	NW 4-41-22-W2
176	DOE	SE 20-41-22-W2
177	DOE	NE 20-41-22-W2
178	FFIB	SW 33-41-22-W2
179	DOE	NE 5-42-22-W2
180	DOE	SW 33-42-22-W2
181	SRC McCloy Creek	SW 5-2-43-22-W2
182	DOE	SW 23-43-22-W2
183	DOE	NW 23-43-22-W2
184	DOE	SW 26-43-22-W2
185	DOE	SE 11-44-22-W2
186	DOE	NE 11-44-22-W2
187	FFIB	SE 16-44-22-W2
188	DOE	NW 23-44-22-W2
189	OIL Sun Kinistino	3-20-45-21-W2
190	SRC Kinistino	NW 13-33-45-21-W2

Log No. (SW)	Log Type/Name	Land Location
1	DOE	NW 32-40-24-W2
2	DOE	NE 28-40-24-W2
3	DOE	SE 35-40-24-W2
4	DOE	SE 36-40-24-W2
5	DOE	NE 31-40-23-W2
6	FFIB	NE 32-40-23-W2
7	DOE	NE 33-40-23-W2
8	DOE	NE 34-40-23-W2
9	DOE	NW 30-40-22-W2
10	DOE	SW 32-40-22-W2
11	DOE	SW 33-40-22-W2
12	DOE	NE 26-40-22-W2
13	DOE	SW 25-40-22-W2
14	DOE	NW 4-39-28-W2
15	FFIB	12-3-39-28-W2
16	DOE	NW 2-39-28-W2
17	DOE	SW 12-39-28-W2
18	DOE	SE 12-39-28-W2
19	DOE	SW 7-39-27-W2
20	DOE	SE 7-39-27-W2
21	EPD Prud'homme	3-8-39-27-W2
22	DOE	NE 4-39-27-W2
23	DOE	NW 2-39-27-W2
24	DOE	NE 2-39-27-W2
25	FFIB	NE 1-39-27-W2
26	SRC Muskiki Lake	NE 8-16-39-26-W2
27	FFIB	NE 24-39-26-W2
28	DOE	SW 21-39-26-W2
29	DOE	SW 22-39-25-W2
30	Hayter Bruno	NW 14-39-25-W2
31	DOE	NE 14-39-25-W2
32	DOE	NW 13-39-25-W2
33	DOE	NE 13-39-25-W2
34	DOE	NW 18-39-24-W2
35	DOE	SE 28-39-24-W2
36	DOE	SE 34-29-24-W2
37	DOE	SW 35-39-24-W2
38	SRC Pilger	NW 13-36-39-24-W2
39	DOE	SE 30-39-23-W2
40	DOE	NE 21-39-23-W2
41	FFIB	NW 23-39-23-W2
42	DOE	NW 13-39-23-W2

Log No. (SW)	Log Type/Name	Land Location
43	DOE	NW 7-39-22-W2
44	DOE	SW 10-39-22-W2
45	DOE	SW 2-39-22-W2
46	DOE	1-39-22-W2
47	OIL Can Gulf Lenore 1	NE 36-38-22-W2
48	DOE	SW 16-38-28-W2
49	DOE	SE 15-38-28-W2
50	SPC Prud'homme 2	SW 3-14-38-28-W2
51	SPC Prud'homme	SE 2-14-38-28-W2
52	SPC Prud'homme 1	NW 11-12-38-28-W2
53	DOE	NE 32-37-27-W2
54	FFIB	NW 34-37-27-W2
55	DOE	NW 35-37-27-W2
56	DOE	SW 6-38-26-W2
57	FFIB	SW 4-38-25-W2
58	DOE	SE 3-38-26-W2
59	DOE	NW 6-38-25-W2
60	FFIB	SE 8-38-25-W2
61	SRC Bruno	SE 14-9-38-25-W2
62	FFIB	SW 10-38-25-W2
63	DOE	NE 3-38-25-W2
64	DOE	SW 6-38-24-W2
65	FFIB	NE 32-37-24-W2
66	DOE	SE 4-38-24-W2
67	FFIB	NW 2-38-24-W2
68	DOE	SW 1-38-24-W2
69	DOE	NE 32-37-23-W2
70	FFIB	NE 27-37-23-W2
71	DOE	NW 31-37-22-W2
72	FFIB	SW 5-38-22-W2
73	DOE	SE 32-37-22-W2
74	DOE	SW 34-37-22-W2
75	Hayter Muenster	4-35-37-22-W2
76	DOE	NW 17-36-28-W2
77	FFIB	SW 16-36-28-W2
78	FFIB	SE 12-36-28-W2
79	DOE	NE 9-36-27-W2
80	DOE	SW 15-36-27-W2
81	DOE	SE 23-36-27-W2
82	DOE	NE 24-36-27-W2
83	SRC Meacham	SW 4-30-36-26-W2
84	DOE	NE 20-36-26-W2

Log No. (SW)	Log Type/Name	Land Location
85	FFIB	SE 21-36-26-W2
86	FFIB	NE 14-36-26-W2
87	FFIB	NE 5-36-25-W2
88	FFIB	NE 4-36-25-W2
89	FFIB	SE 10-36-25-W2
90	FFIB	NE 11-36-25-W2
91	FFIB	NE 18-36-24-W2
92	SRC Burr	NE 10-9-36-24-W2
93	FFIB	13-11-36-24-W2
94	DOE	SW 12-36-24-W2
95	DOE	NE 8-36-23-W2
96	DOE	16-36-23-W2
97	OIL Sunland Pollreis 1	16-14-36-23-W2
98	DOE	NW 18-36-22-W2
99	FFIB	SW 16-36-22-W2
100	FFIB	10-10-36-22-W2
101	DOE	SE 14-36-22-W2
102	FFIB	NE 17-35-28-W2
103	FFIB	NW 22-35-28-W2
104	DOE	NE 28-35-28-W2
105	DOE	SW 34-35-28-W2
106	DOE	SW 28-36-28-W2
107	FFIB	4-33-36-28-W2
108	FFIB	2-6-37-28-W2
109	SRC Prud'homme	NW 12-7-37-28-W2
110	DOE	NE 18-37-28-W2
111	DOE	NE 29-37-28-W2
112	DOE	SE 10-38-28-W2
113	DOE	SE 22-38-28-W2
114	DOE	NW 22-38-28-W2
115	FFIB	SW 33-38-28-W2
116	DOE	SW 16-39-28-W2
117	DOE	NE 16-39-28-W2
118	SRC Buffer Lake	NE 8-33-39-28-W2
119	DOE	NW 10-40-28-W2
120	FFIB	SW 22-40-28-W2
121	FFIB	SW 34-40-28-W2
122	OIL Imperial Saxby	4-19-35-26-W2
123	DOE	NE 19-35-26-W2
124	FFIB	13-32-35-26-W2
125	FFIB	NW 6-36-26-W2
126	FFIB	SW 19-36-26-W2

Log No. (SW)	Log Type/Name	Land Location
127	DOE	NW 6-37-26-W2
128	DOE	SW 17-37-26-W2
129	OIL Sunland Peterson 1	16-18-37-26-W2
130	DOE	SW 20-37-26-W2
131	DOE	NE 20-37-26-W2
132	DOE	NW 28-37-26-W2
133	DOE	NE 32-37-26-W2
134	DOE	SW 9-38-26-W2
135	DOE	NE 20-38-26-W2
136	DOE	NE 31-38-26-W2
137	DOE	SE 5-39-26-W2
138	DOE	NE 20-39-26-W2
139	OIL Pheas Shell Bremen	4-29-39-26-W2
140	DOE	SE 30-39-26-W2
141	DOE	NE 30-39-26-W2
142	DOE	SE 6-40-26-W2
143	DOE	NW 8-40-26-W2
144	DOE	NW 17-40-26-W2
145	DOE	SW 29-40-26-W2
146	DOE	NE 32-40-26-W2
147	DOE	NE 14-35-25-W2
148	SRC Rutan	NE 13-24-35-25-W2
149	OIL Dafoe Wolverine	1-35-35-25-W2
150	FFIB	1-2-36-25-W2
151	FFIB	13-34-36-25-W2
152	SRC Carmel	NE 16-12-37-25-W2
153	DOE	SE 26-37-25-W2
154	FFIB	3-35-37-25-W2
155	DOE	NW 3-38-25-W2
156	DOE	SE 16-38-25-W2
157	DOE	SW 22-38-25-W2
158	DOE	SE 27-38-25-W2
159	FFIB	SW 35-38-25-W2
160	DOE	SE 11-39-25-W2
161	DOE	NW 27-39-25-W2
162	DOE	SW 3-40-25-W2
163	DOE	NW 10-40-25-W2
164	DOE	NE 16-40-25-W2
165	DOE	SE 28-40-25-W2
166	DOE	SW 33-40-25-W2
167	DOE	SE 14-35-24-W2
168	FFIB	1-23-35-24-W2

Log No. (SW)	Log Type/Name	Land Location
169	DOE	NE 26-35-24-W2
170	DOE	SE 2-36-24-W2
171	DOE	SW 11-36-24-W2
172	FFIB	11-24-36-24-W2
173	DOE	NW 31-36-23-W2
174	OIL Thunderbird Humboldt	8-12-37-24-W2
175	DOE	NE 11-37-24-W2
176	DOE	NE 14-37-24-W2
177	FFIB	15-24-37-24-W2
178	FFIB	1-26-37-24-W2
179	DOE	SW 15-38-24-W2
180	FFIB	SW 21-38-24-W2
181	SRC Bruno	NE 16-33-38-24-W2
182	DOE	SW 2-39-24-W2
183	DOE	SE 2-39-24-W2
184	FFIB	NW 6-39-23-W2
185	DOE	NW 13-39-24-W2
186	DOE	SE 26-39-24-W2
187	DOE	SW 13-40-24-W2
188	DOE	SE 30-40-23-W2
189	FFIB	15-20-35-22-W2
190	DOE	NE 32-35-22-W2
191	OIL Pheas Arco Bay	5-21-36-22-W2
192	DOE	NE 20-36-22-W2
193	DOE	NW 32-36-22-W2
194	SRC Humboldt	SE 9-5-37-22-W2
195	DOE	SE 8-37-22-W2
196	DOE	SE 21-37-22-W2
197	FFIB	SW 27-37-22-W2
198	DOE	NW 2-38-22-W2
199	DOE	NW 10-38-22-W2
200	FFIB	SE 28-38-22-W2
201	DOE	NE 32-38-22-W2
202	DOE	SE 15-39-22-W2
203	DOE	NW 22-39-22-W2
204	DOE	NE 28-39-22-W2
205	DOE	SW 33-39-22-W2
206	DOE	SW 4-40-22-W2
207	DOE	NW 9-40-22-W2
208	DOE	NW 16-40-22-W2

Log No. (SE)	Log Type/Name	Land Location
1	DOE	SW 17-40-21-W2
2	DOE	NW 9-40-21-W2
3	DOE	NE 12-40-21-W2
4	DOE	SW 18-40-20-W2
5	DOE	NE 17-40-20-W2
6	OIL Can Gulf Schreiner	15-14-40-20-W2
7	FFIB	16-18-40-19-W2
8	DOE	SW 22-40-19-W2
9	DOE	NE 23-40-19-W2
10	DOE	NE 24-40-19-W2
11	DOE	NW 15-40-18-W2
12	FFIB	12-12-40-18-W2
13	DOE	NE 12-40-18-W2
14	DOE	SW 15-40-17-W2
15	OIL Pheas Jeff Lake Naicom	1-15-40-17-W2
16	FFIB	SW 14-40-17-W2
17	DOE	SE 13-40-17-W2
18	DOE	NW 8-40-16-W2
19	DOE	NE 9-40-16-W2
20	DOE	NE 10-40-16-W2
21	DOE	NW 7-40-15-W2
22	DOE	NE 7-40-15-W2
23	DOE	NW 8-40-15-W2
24	FFIB	1-15-40-15-W2
25	DOE	SW 14-40-15-W2
26	FFIB	NW 18-40-14-W2
27	DOE	SW 3-39-21-W2
28	DOE	NW 2-39-21-W2
29	DOE	SW 6-39-20-W2
30	DOE	NE 5-39-20-W2
31	DOE	NW 10-39-20-W2
32	DOE	NE 12-39-20-W2
33	DOE	SW 17-39-19-W2
34	DOE	NE 11-39-19-W2
35	DOE	SW 10-39-18-W2
36	DOE	NW 2-39-18-W2
37	DOE	NW 1-39-18-W2
38	DOE	SE 8-39-17-W2
39	DOE	SE 9-39-17-W2
40	DOE	SW 11-39-17-W2
41	DOE	NE 1-39-17-W2
42	DOE	SE 6-39-16-W2

Log No. (SE)	Log Type/Name	Land Location
43	DOE	NW 2-39-16-W2
44	DOE	NE 36-38-16-W2
45	FFIB	15-32-38-15-W2
46	DOE	SE 4-39-15-W2
47	DOE	NE 2-39-15-W2
48	FFIB	4-6-39-14-W2
49	DOE	NE 36-38-14-W2
50	DOE	SW 31-37-21-W2
51	DOE	NW 29-37-21-W2
52	FFIB	2-33-37-21-W2
53	DOE	SW 25-37-21-W2
54	DOE	NW 30-37-20-W2
55	DOE	SW 27-37-20-W2
56	DOE	SW 26-37-20-W2
57	DOE	SE 29-37-19-W2
58	DOE	SW 27-37-19-W2
59	FFIB	SW 23-37-19-W2
60	DOE	SE 25-37-19-W2
61	DOE	SW 32-37-18-W2
62	SRC Daphne	SE 14-34-37-18-W2
63	DOE	SW 2-38-18-W2
64	DOE	SW 6-38-17-W2
65	DOE	SW 3-38-17-W2
66	DOE	NW 36-37-17-W2
67	DOE	SE 5-38-16-W2
68	DOE	SE 3-38-16-W2
69	DOE	SE 6-38-15-W2
70	DOE	NE 32-37-15-W2
71	DOE	SE 33-37-15-W2
72	DOE	SW 35-37-15-W2
73	FFIB	12-25-37-15-W2
74	DOE	NE 24-37-15-W2
75	DOE	NE 7-36-21-W2
76	DOE	SW 9-36-21-W2
77	DOE	SW 10-36-21-W2
78	FFIB	15-2-36-21-W2
79	DOE	SE 1-36-21-W2
80	DOE	NW 5-36-20-W2
81	DOE	SE 9-36-20-W2
82	DOE	SE 10-36-20-W2
83	DOE	SW 13-36-20-W2
84	FFIB	16-8-36-19-W2

Log No. (SE)	Log Type/Name	Land Location
85	FFIB	16-9-36-19-W2
86	DOE	NE 15-36-19-W2
87	FFIB	SE 19-36-18-W2
88	SRC	SW 11-20-36-18-W2
89	DOE	SW 21-36-18-W2
90	DOE	NW 14-36-18-W2
91	FFIB	SW 17-36-17-W2
92	DOE	SW 9-36-17-W2
93	DOE	SE 10-36-17-W2
94	DOE	NE 11-36-17-W2
95	DOE	NW 8-36-16-W2
96	Hayter Quill Lake 1	NE 13-9-36-16-W2
97	FFIB	4-11-36-16-W2
98	DOE	SE 11-36-16-W2
99	DOE	SW 7-36-15-W2
100	DOE	NW 9-36-15-W2
101	FFIB	1-16-36-15-W2
102	DOE	SW 14-36-15-W2
103	DOE	NW 13-36-15-W2
104	DOE	SE 18-35-21-W2
105	OIL Alwinsa Caseyville	13-16-35-21-W2
106	DOE	SW 2-36-21-W2
107	FFIB	5-12-36-21-W2
108	DOE	NE 11-36-21-W2
109	DOE	NW 23-36-21-W2
110	DOE	NW 35-36-21-W2
111	OIL Honolulu Gregor	6-2-37-21-W2
112	DOE	SE 15-37-21-W2
113	DOE	SW 21-37-21-W2
114	DOE	SW 10-38-21-W2
115	DOE	SW 14-38-21-W2
116	DOE	NW 14-38-21-W2
117	DOE	NW 26-38-21-W2
118	DOE	SE 25-39-21-W2
119	DOE	NE 36-39-21-W2
120	DOE	NW 7-40-20-W2
121	DOE	NW 19-40-20-W2
122	DOE	SW 30-40-20-W2
123	DOE	SW 6-41-20-W2
124	DOE	SE 13-35-20-W2
125	FFIB	SW 19-35-19-W2
126	DOE	SW 33-35-19-W2

Log No. (SE)	Log Type/Name	Land Location
127	DOE	SE 5-36-19-W2
128	DOE	NW 5-36-19-W2
129	DOE	NE 17-36-19-W2
130	FFIB	3-29-36-19-W2
131	DOE	SW 34-36-19-W2
132	DOE	SW 3-37-19-W2
133	DOE	SE 9-37-19-W2
134	DOE	SW 16-37-19-W2
135	DOE	NE 20-37-19-W2
136	DOE	NW 28-37-19-W2
137	DOE	SW 4-38-19-W2
138	DOE	SE 7-38-19-W2
139	DOE	SW 19-38-19-W2
140	DOE	NE 29-38-19-W2
141	DOE	NE 5-39-19-W2
142	DOE	SE 19-39-19-W2
143	DOE	NE 26-39-20-W2
144	FFIB	NW 35-39-20-W2
145	DOE	NE 1-40-20-W2
146	DOE	SW 18-40-19-W2
147	DOE	NE 19-40-19-W2
148	OIL PCA Quill Lake	4-16-35-18-W2
149	DOE	NW 16-35-18-W2
150	DOE	29-35-18-W2
151	DOE	NE 33-35-18-W2
152	DOE	SE 9-36-18-W2
153	DOE	SE 5-37-18-W2
154	SRC Watson	NE 16-8-37-18-W2
155	OIL Cree Daphne	7-29-37-18-W2
156	DOE	SW 3-38-18-W2
157	DOE	SW 9-38-18-W2
158	DOE	NW 16-38-18-W2
159	OIL Sohio Quill Lake 5	5-28-38-18-W2
160	OIL Sun Spalding	13-14-39-18-W2
161	DOE	SE 27-39-18-W2
162	DOE	SW 1-40-18-W2
163	FFIB	SW 12-40-18-W2
164	OIL Sun Jeff Lake Naicam	4-24-40-18-W2
165	SRC Lac Vert	NE 16-27-40-18-W2
166	DOE	NE 33-40-18-W2
167	DOE	SW 4-41-18-W2
168	FFIB	SW 17-35-16-W2

Log No. (SE)	Log Type/Name	Land Location
169	DOE	SE 20-35-16-W2
170	SRC Quill Lake	SE 9-20-35-16-W2
171	Hayter Quill Lake 7	NE 29-35-16-W2
172	Hayter Quill Lake 4	NW 16-29-35-16-W2
173	Hayter Quill Lake 6	SE 32-35-16-W2
174	DOE	SE 5-36-16-W2
175	Hayter Quill Lake 3	SW 9-36-16-W2
176	Hayter Quill Lake 2	SW 16-36-16-W2
177	SRC Quill Lake 005	SW 15-16-36-16-W2
178	SRC Quill Lake 006	NW 15-16-36-16-W2
179	DOE	NE 29-36-16-W2
180	DOE	NE 32-36-16-W2
181	DOE	SW 7-37-16-W2
182	DOE	SE 13-37-17-W2
183	DOE	SE 23-37-17-W2
184	DOE	NE 26-37-17-W2
185	DOE	SW 1-38-17-W2
186	DOE	NW 1-38-17-W2
187	DOE	SW 12-38-17-W2
188	DOE	SE 15-38-17-W2
189	DOE	NE 22-38-17-W2
190	DOE	NW 35-38-17-W2
191	DOE	NW 11-39-17-W2
192	DOE	SE 22-39-17-W2
193	DOE	SE 26-39-17-W2
194	DOE	NW 30-39-16-W2
195	DOE	SE 7-40-16-W2
196	DOE	NE 18-40-16-W2
197	DOE	NW 32-40-16-W2
198	FFIB	8-15-35-15-W2
199	DOE	SE 21-35-15-W2
200	FFIB	1-29-35-15-W2
201	OIL Sohio Quill Lake 9	14-34-35-15-W2
202	DOE	SW 11-36-15-W2
203	DOE	SE 27-36-15-W2
204	DOE	NW 34-36-15-W2
205	OIL Bailey Quill Lake 10	16-9-37-15-W2
206	DOE	SW 23-37-15-W2
207	FFIB	12-31-37-14-W2
208	DOE	SE 25-39-15-W2
209	FFIB	SE 16-12-40-15-W2