



LIMITED REPORT

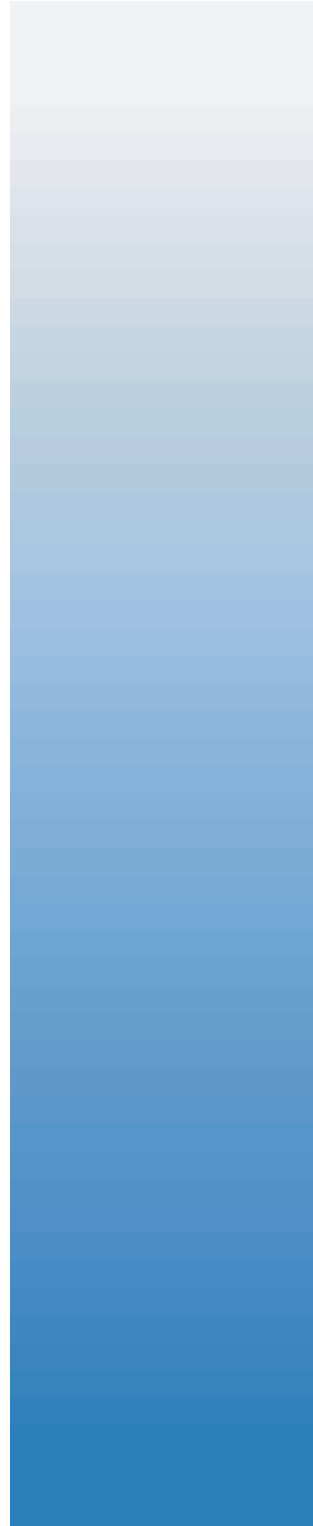
Geology and Groundwater Resources of the Shellbrook Area (73G), Saskatchewan

by

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**GEOLOGY AND GROUNDWATER RESOURCES
OF THE SHELLBROOK AREA (73G), SASKATCHEWAN**

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INTRODUCTION

Geological mapping, test drilling, and observation well measurements have been completed for the entire settled area of Saskatchewan during the past 30 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 has worked cooperatively with the Saskatchewan Water Corporation to complete a new Geology and Groundwater Resources map series corresponding to the 1:250,000 NTS areas of southern Saskatchewan. For the Shellbrook area (73G), SRC, SWC, and the Geological Survey of Canada, through the Canada - Saskatchewan Mineral Development Agreement, has provided funding for the current work.

The present report accompanies the preliminary maps and cross sections that depict the geology and groundwater resources in the Shellbrook area (73G). This work, which is an update of maps published during the late 1960's and 1970's, in particular Christiansen (1973), indicates the location, extent, and depth of aquifers 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.

Compilation for the current work was completed at a scale of 1:250,000. Control was provided by stratigraphic cross sections that are spaced 14 to

19 kilometres apart; ideally, one cross section every one and one-half townships, which results in about 15 cross sections per map. The original cross sections (horizontal scale = 1:125,000; vertical exaggeration = 50X) were constructed by fixing reduced copies of testhole logs to the topographic section. The testhole logs used were obtained from records stored at SRC and include records such as oil and potash exploration holes (electrical logs only), testholes drilled by SRC (comprised of electrical logs, driller's logs, and geologist's descriptions), and farm or municipal water-well testholes (comprised of electrical logs and driller's logs) drilled with the assistance of SWC, or formerly, the Family Farm Improvement Branch.

Separate sheets are compiled for each stratigraphic level at which aquifers, or potential aquifers (i.e. sands and gravels) are known to occur. In some cases, where there are few, or only minor occurrences of these stratified deposits at different stratigraphic levels, aquifers at different levels may be shown on a single sheet. Information included on the aquifer maps consists the surface elevation of the site, depth to and thickness of the deposit, and static water level, when known.

Upon completion of the map compilations, the cross sections were reduced by 50 per cent in order to make them easier to work with.

GEOLOGY

General

All sediments between the bedrock surface and the present surface are considered to be "glacial drift". The drift in the Shellbrook area ranges in recorded thickness from 85 m, near Muskeg Lake, to 272 m in the Waskesiu Hills. The bedrock surface slopes generally towards the northeast with recorded elevations ranging from 340 to 570 metres ASL.

The glacial ice eroded pre-existing sediments, but also deposited material, mainly 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 resulting in the deposition of 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 subdivided into three groups; Empress Group, Sutherland Group, and Saskatoon Group. The Empress Group consists of stratified gravels, sands, silts, and clays that lie between the bedrock surface and the lowest till unit. The Sutherland Group, as well as the Saskatoon Group, consists of several till and associated 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 (1992) and Whitaker and Christiansen (1972).

Bedrock

Fine-grained marine sediments, deposited in epeiric seas during the Cretaceous Period, form the bedrock surface in the Shellbrook area. These sediments include the Upper Colorado Group, which, for the purposes of this report, has been combined with the Lea Park Formation, and the Lower Colorado Group and its lithostratigraphic equivalent, the Ashville Formation.

Ashville Formation - Lower Colorado Group

No differentiation has been attempted during this study between the Cretaceous sediments that comprise the Lower Colorado Group in Saskatchewan and their lateral equivalents that comprise the Ashville Formation in Manitoba (McNeil and Caldwell, 1981). This unit, which is composed primarily of noncalcareous, dark gray or black, silt and clay, forms the bedrock surface throughout the eastern and northern part of the Shellbrook area.

Lea Park Formation and Upper Colorado Group

For the purposes of this report, the Lea Park Formation and the Upper Colorado Group have been considered as one unit consisting of gray, marine silt and clay and bentonite beds. The upper part of this unit (Lea Park Formation) is noncalcareous, whereas the lower part (Upper Colorado Group) includes calcareous, white-speckled shales. The bottom of this unit is marked by the base of the Second White Speckled Shale.

Drift

Empress Group

The Empress Group (Whitaker and Christiansen, 1972) lies between the bedrock surface and the lowest till. In the Shellbrook area, the Empress Group sediments, comprised of stratified gravels, sands, silts, and clays, are found in the Hatfield Valley. This buried valley was formed immediately prior to the first glaciation (Christiansen *et al.*, 1981). The maximum recorded thickness of Empress Group sediments (49 m) in the Shellbrook area is found near Ladder Valley.

Sutherland Group

The Sutherland Group (Christiansen, 1992) lies beneath the Saskatoon Group and on top of bedrock or the Empress Group. This group comprises at least three till units and associated stratified deposits, which, where the data makes it possible, have been delineated on the cross sections. In areas where the data is sparse, or ambiguous, the formations comprising the Sutherland Group (Warman, Dundurn, and Mennon) have not been delineated. In the Shellbrook area, the Sutherland Group varies in recorded thickness from about 15 m to about 130 m.

The tills of the Sutherland Group are commonly clayier, harder, less resistive electrically, and are more difficult to penetrate by drilling than are tills of the Saskatoon Group. These two groups are also differentiated by geochemical means (Schreiner, 1990), the presence of clay pebbles in the till, and

a weathering zone separating the two groups. The weathering is signified by leaching, oxidation, staining, and other alteration features.

Saskatoon Group

The Saskatoon Group (Christiansen, 1992) includes all sediments lying between the Sutherland Group and the present surface. The Saskatoon Group includes the Floral Formation, which itself consists of multiple tills and associated stratified units, as well as the Battleford Formation and "Surficial Stratified Deposits". The recorded thickness of the Saskatoon Group in the Shellbrook area ranges from about 20 m to 145 m.

The tills of the Saskatoon Group are commonly more sandy, more resistive electrically, and have a higher carbonate content than the tills of the Sutherland Group. "Surficial Stratified Deposits" occur as glaciolacustrine and glaciofluvial sediments and as alluvial sediments that were deposited by modern streams and rivers.

GROUNDWATER RESOURCES

General

Groundwater originates from precipitation the 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 aquifers, aquitards, and aquifer systems are discussed by Meneley (1983). The Empress Group and intertill sands and gravels form the major aquifers in the Shellbrook area. Till units and bedrock clays form aquitards.

Groundwater moves through inter-granular openings and fractures in the sediments. The water moves under the 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 static water level in a well. If the layers are vertical and of large areal extent, such as in the Shellbrook area, the water tends to move vertically in aquitards while in aquifers it moves horizontally. The distribution of the hydraulic head, which is controlled by factors such as topography, stratigraphic setting, and the type of material forming the aquifers and aquitards, determines the direction of flow.

Surficial Aquifers

Many shallow seepage wells, generally less than 15 m deep, have been constructed throughout the area. These wells have been completed in "Surficial Stratified Deposits" and in stratified materials that are part of the Battleford Formation. Sheet 5 and the accompanying cross sections illustrate the primary areas in which surficial aquifers are likely to occur.

Intertill Aquifers

Intertill aquifers are defined stratigraphically rather than topographically. Thus, in some areas the depth to 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. Intertill aquifers can be quite variable in thickness, and where these stratified deposits are interbedded with till, or where insufficient data exist, the aquifers are not shown.

The stratified deposits that are classed as shallow intertill aquifers (Sheet 4 and cross sections) occur at two stratigraphic positions within the Floral Formation: between the Floral tills and below the lower till of the Floral Formation. Shallow intertill sands and gravels occur throughout the Shellbrook area, with the lower unit being the most extensive. The shallow intertill aquifers are found at depths that rarely exceed 60 m.

The stratified deposits that are classed as deep intertill aquifers (Sheet 3 and cross sections) occur at two stratigraphic positions within the Sutherland Group: between the tills of the Warman and Dundurn formations and between tills of the Dundurn and Mennon formations. While the deposits that form these aquifers are found throughout the Shellbrook area, they are generally less extensive than those classed as shallow intertill aquifers. The deep intertill aquifers are generally found at depths in excess of 75 m.

Empress Group Aquifers

Silts, sands, and gravels of the Empress Group (Sheet 2 and cross sections) are found in the Hatfield Valley. The sediments contained in this buried valley, which trends north-northwest from the southeast corner of the Shellbrook area, are generally found at depths exceeding 120 m.

Flowing Wells

Flowing wells, where the static water level is above the ground surface, generally indicate an upward groundwater flow. Appendix I lists the flowing wells in the Shellbrook area including the land location, depth of well, and likely aquifer in which the well is completed. The records for these wells are stored in SRC's testhole database along with the records of all other wells and testholes used for this work. Appendix II lists wells and testholes used for the cross sections in this report.

REFERENCES

- Christiansen, E.A. (1992): Pleistocene stratigraphy of the Saskatoon area, Saskatchewan, Canada: an update. *Canadian Journal of Earth Sciences*, v.29, n.8, p 1767-1778.
- _____ (1973): *Geology and Groundwater Resources of the Shellbrook Area*. Saskatchewan Research Council, Geology Division, Map No. 17.
- Christiansen, E.A., Acton, D.F., Long, R.J., Meneley, W.A., and Sauer, E.K. (1981): *Fort Qu'Appelle Geolog: The Valleys - Past and Present*. Saskatchewan Museum of Natural History, Saskatchewan Culture and Youth, Interpretive Report No. 2, 83 p.
- McNeil, D.H. and Caldwell, W.G.E. (1981): *Cretaceous Rocks and Their Foraminifera in the Manitoba Escarpment*. Geological Association of Canada, Special Paper 21, 437 p.
- Meneley, W.A. (1977): *Groundwater Level Trends in Southern Saskatchewan*. Saskatchewan Research Council, Geology Division, 5 p.
- _____ (1983): *Hydrogeology of the Eastend to Ravenscrag Formations in Southern Saskatchewan*. Report submitted to water Rights Branch, Saskatchewan Environment by W.A. Meneley Consultants Ltd., 30 p.
- Schreiner, B.T. (1990): *Lithostratigraphic Correlation of Saskatchewan Tills, a Mirror Image of Cretaceous Bedrock: Volume I - Report*. Saskatchewan Research Council Publication R-1210-3-E-90, 114 p.
- Whitaker, S.H. and Christiansen, E.A. (1972): *The Empress Group in Southern Saskatchewan*, *Canadian Journal of Earth Sciences*, v.9, n.4, p 353-360.

APPENDIX I

Flowing Wells in the Shellbrook Area (73G)

I-1

Location	Aquifer Class./Strat. Position	Completion Depth
NE 24-51-1W3	Deep Intertill / Lower Sutherland	101 m
SE 24-51-2W3	Deep Intertill / Lower Sutherland	98 m
NE 8-49-5W3	Buried valley / Empress Group	134 m
SE 17-50-5W3	Buried valley / Empress Group	127 m
SW 26-50-5W3	Buried valley / Empress Group	147 m
NE 21-52-7W3	Deep Intertill / Lower Sutherland	70 m

APPENDIX II

Index of Cross Section Logs

II-1

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, PWD, EPD, DIA, CAMECO, and DTRR.
2. The Oil - Potash logs consist of geophysical logs only. These logs are listed as OIL.
3. The SWC file contains records 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 program later administered under the SWC. These logs are listed as SWC.

73G

Log No.	Log Type/Name	Land Location
1	SWC	NW22-57-14W3
2	OIL Canadian Seaboard	1-18-57-12W3
3	OIL Shell Meadow Lake	12-1-58-9-W3
4	OIL Shell Meadow Lake	6-1-58-9W3
5	OIL Shell Delorande Lake	2-1-58-9W3
6	OIL Shell Meadow Lake	6-31-57-8W3
7	SWC	NW3-57-7W3
8	SWC	NW12-57-7W3
9	SWC	NW28-56-6W3
10	SRC Waskesiu Hills	SE12-22-57-3W3
11	DTRR Chitek Lake	SE16-55-12W3
12	DTRR Leoville	16-10-55-11W3
13	OIL Shell Otter Lake	4-31-55-10W3
14	SRC Bodmin	SE3-18-55-8W3
15	SWC	NW8-55-8W3
16	SWC	SE12-14-55-8W3
17	OIL Big River #2	4-30-55-7W3
18	SWC	14-16-55-7W3
19	SRC Ladder Valley	SE1-25-55-7W3
20	SRC Ladder Valley	SW4-2-56-6W3
21	SWC	NE19-53-13W3
22	OIL Albercan Crown	11-21-53-13W3
23	SWC	12-25-53-13W3
24	SWC	SE27-53-12W3
25	SWC	NW15-53-11W3
26	SWC	1-16-53-10W3
27	OIL Ceja Ormeaux	13-33-52-7W3
28	SWC	SE1-3-53-7W3
29	SWC	NE8-52-6W3
30	OIL Ceja Mattes	4-15-52-6W3
31	EPD Debden	15-23-52-6W3
32	SWC	9-6-53-4W3
33	SWC	4-19-52-3W3
34	SRC Cookson	SE2-29-52-3W3

Log No.	Log Type/Name	Land Location
35	SRC Cookson	NE16-35-52-3W3
36	SWC	SE2-26-52-2W3
37	SWC	4-19-51-13W3
38	SWC	4-35-51-13W3
39	OIL Empire St. L. Buffalo	13-25-51-12W3
40	SWC	13-2-52-11W3
41	SWC	15-32-51-10W3
42	SWC	4-34-51-10W3
43	EPD Glenbush	13-10-50-14W3
44	SWC	15-12-50-14W3
45	EPD Glenbush	16-12-50-14W3
46	SWC	4-18-50-13W3
47	EPD Belbutte	12-16-50-13W3
48	SWC	SW15-50-13W3
49	SWC	SE30-50-12W3
50	OIL Dome Spiritwood	14-29-50-11W3
51	SWC	5-32-50-11W3
52	SWC	NE32-50-11W3
53	SWC	1-4-51-11W3
54	SWC	NW34-50-11W3
55	SWC	NW36-50-11W3
56	SWC	7-4-51-10W3
57	EPD Spiritwood	14-34-50-10W3
58	SWC	9-36-50-10W3
59	SWC	3-5-51-9W3
60	EPD Mildred	14-32-50-9W3
61	SWC	SE32-50-9W3
62	EPD Mildred	13-15-50-9W3
63	SWC	4-14-50-9W3
64	SWC	15-5-50-8W3
65	EPD Shell Lake	13-4-50-8W3
66	OIL Shell Lake #1	12-12-50-8W3
67	SRC Mont Nebo	SE5-5-50-6W3
68	SWC	13-25-50-6W3
69	SWC	3-32-50-5W3
70	SWC	3-26-50-5W3

Log No.	Log Type/Name	Land Location
71	SWC	16-25-50-5W3
72	OIL Ceja Canwood	12-3-51-4W3
73	SWC	5-13-51-4W3
74	EPD Foxdale	10-17-51-3W3
75	OIL Mobil Oil Sturgeon Valley	13-19-51-2W3
76	SWC	NW20-51-2W3
77	SWC	10-14-51-2W3
78	SWC	SW24-51-2W3
79	SWC	SE24-51-2W3
80	SWC	16-13-51-2W3
81	SWC	11-8-51-1W3
82	SWC	SE9-51-1W3
83	EPD Sturgeon Lake 3	SE12-2-51-1W3
84	EPD Sturgeon Lake 4	SE14-1-51-1W3
85	SWC	SW21-48-14W3
86	SWC	13-21-48-13W3
87	SWC	15-22-48-13W3
88	EPD Rabbit Lake	12-1-49-13W3
89	SWC	1-8-49-12W3
90	SWC	13-4-49-12W3
91	EPD Meeting Lake	5-12-49-12W3
92	OIL Pheas Jeff Lake Norburg	4-20-49-10W3
93	SWC	NW22-49-10W3
94	SWC	2-21-49-9W3
95	OIL Western Warner Shell Lake	2-6-49-8W3
96	SWC	6-8-49-8W3
97	SWC	7-8-49-8W3
98	SWC	8-10-49-8W3
99	SWC	NW7-49-7W3
100	SWC	4-18-49-6W3
101	DIA Mistawasis IR 06	NW4-10-49-6W3
102	DIA Mistawasis IR 02	NW16-11-49-6W3
103	SWC	NE8-49-5W3
104	SWC	1-29-49-4W3
105	SWC	2-14-49-4W3
106	SWC	4-17-49-3W3

Log No.	Log Type/Name	Land Location
107	PWD Shellbrook	SE4-16-49-3W3
108	SRC Shellbrook	SW13-9-49-3W3
109	SWC	4-14-49-3W3
110	SWC	2-27-49-2W3
111	SWC	4-19-49-1W3
112	SRC Buckland	5-14-49-28W2
113	SWC	13-1-47-13W3
114	PWD Mayfair	2-2-47-11W3
115	EPD Mayfair	16-5-47-10W3
116	SWC	3-6-47-9W3
117	SWC	1-17-47-7W3
118	SWC	SE16-47-7W3
119	DIA Muskeg Lake	1-12-47-7W3
120	SWC	5-11-47-6W3
121	SWC	1-1-47-6W3
122	EPD Leask	13-31-46-5W3
123	CAMECO Leask	5-4-47-5W3
124	OIL Britalta Brightholme #1	5-29-47-3W3
125	OIL Britalta North Cabin #1	16-26-47-2W3
126	OIL Carpet Duck Lake	11-15-46-1W3
127	SWC	9-14-46-1W3
128	OIL Shell Rio Tinto Whitkow #2	14-34-47-13W3
129	SWC	1-9-48-13W3
130	EPD Rabbit Lake	8-5-49-13W3
131	SWC	SW17-49-13W3
132	SWC	5-5-50-13W3
133	SWC	SE17-50-13W3
134	SWC	6-21-50-13W3
135	SWC	15-20-50-13W3
136	SWC	16-29-50-13W3
137	SWC	NW33-50-13W3
138	SWC	15-34-50-13W3
139	SWC	4-2-51-13W3
140	EPD Belbutte	12-12-51-13W3
141	EPD Junor	11-16-53-13W3
142	DIA Chitek Lake	NW15-24-54-13W3

Log No.	Log Type/Name	Land Location
143	SWC	5-3-55-12W3
144	SRC Chitek Lake	NW11-16-55-12W3
145	SWC	SW3-15-47-10W3
146	SWC	SW6-15-47-10W3
147	SWC	NE22-47-10W3
148	SWC	NW8-32-49-10W3
149	SWC	NE3-5-50-10W3
150	SWC	14-8-50-10W3
151	SWC	SW17-50-10W3
152	EPD Mildred	4-21-50-10W3
153	OIL United Canadian Valentia #1	1-29-50-10W3
154	SWC	13-2-51-10W3
155	EPD Spiritwood	16-10-51-10W3
156	OIL Ceja Laventure	4-14-52-10W3
157	SWC	SE27-53-10W3
158	EPD Capasin	SW4-26-53-10W3
159	OIL Ceja Cunliffe	14-33-53-9W3
160	SWC	NW11-54-10W3
161	SWC	3-16-49-8W3
162	SWC	SW21-49-8W3
163	SWC	4-34-49-8W3
164	SWC	13-33-49-8W3
165	SWC	16-8-50-8W3
166	SWC	6-20-50-8W3
167	EPD Shell Lake	1-25-50-9W3
168	SWC	8-34-50-8W3
169	SWC	NE33-50-8W3
170	OIL Ceja Victoire	4-33-51-8W3
171	DIA Muskeg Lake IR 102	1-36-46-7W3
172	DIA Muskeg Lake IR 102	8-36-46-7W3
173	DIA Muskeg Lake IR 102	5-31-46-7W3
174	DIA Muskeg Lake IR 102	11-31-46-6W3
175	DIA Muskeg Lake IR 102	13-31-46-6W3
176	DIA Muskeg Lake IR 102	53-6-47-6W3
177	SWC	9-23-47-7W3
178	SWC	3-35-47-7W3

Log No.	Log Type/Name	Land Location
179	DIA Mistawasis IR 04	4-8-48-6W3
180	DIA Mistawasis IR 05	1-16-48-6W3
181	DIA Mistawasis IR 08	15-29-48-6W3
182	SWC	15-20-49-6W3
183	SWC	16-21-52-7W3
184	OIL Consumers Co-operative #2	1-19-53-7W3
185	SWC	7-27-53-7W3
186	OIL Consumers Co-operative #4	SW4-4-54-7W3
187	OIL Consumers Co-operative #5	NW13-5-54-7W3
188	SWC	NE9-54-7W3
189	OIL Consumers Co-operative #7	16-17-54-7W3
190	OIL Consumers Co-operative #8	9-27-54-7W3
191	OIL Big River 6	5-10-55-7W3
192	SWC	13-10-55-7W3
193	OIL Big River #3	7-32-55-7W3
194	SWC	SE5-56-7W3
195	SWC	2-7-56-7W3
196	OIL Big River #1	7-7-56-7W3
197	SWC	2-18-56-7W3
198	SWC	1-19-56-7W3
199	SWC	1-4-57-7W3
200	SWC	SW10-58-7W3
201	OIL Shell Delorande	12-11-58-7W3
202	SWC	SW16-47-5W3
203	SWC	NE19-47-5W3
204	OIL Union Oil Parkside	8-3-48-5W3
205	SWC	3-21-48-5W3
206	SWC	6-28-49-5W3
207	SRC Ordale	SE4-32-49-5W3
208	SWC	2-17-50-5W3
209	SWC	3-5-51-5W3
210	SWC	9-6-51-5W3
211	SWC	NW7-51-5W3
212	SWC	16-13-51-6W3
213	SWC	1-31-51-5W3
214	SWC	13-36-52-6W3

Log No.	Log Type/Name	Land Location
215	OIL Debden	14-31-53-5W3
216	SWC	15-36-53-6W3
217	SWC	5-34-54-6W3
218	SWC	SE35-55-6W3
219	CAMECO Brightholme 1	NW29-46-3W3
220	SWC	13-23-48-4W3
221	EPD Wild Rose	4-19-50-2W3
222	EPD Foxdale	5-32-51-3W3
223	SWC	3-1-52-4W3
224	SWC	2-1-52-5W3
225	OIL Western Warner Filion Lake	8-24-52-5W3
226	SWC	1-36-52-5W3
227	SWC	14-12-46-1W3
228	DTRR Macdowall	SE27-46-1W3
229	SWC	13-24-47-1W3
230	SWC	SW3-49-1W3
231	OIL Hudson's Bay Wildrose #1	12-14-50-2W3
232	SWC	10-36-50-2W3
233	SWC	5-5-51-1W3
234	SWC	SW8-51-1W3
235	SWC	13-20-51-1W3
236	SWC	4-30-51-1W3
237	OIL Mobil Oil	8-15-52-2W3