

Managing Oil & Gas Development: A Municipal Perspective



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What We'll Cover Today

The Development Cycle

- Pre-development Considerations
- Development Considerations
- Post-Development Considerations

The Development Cycle

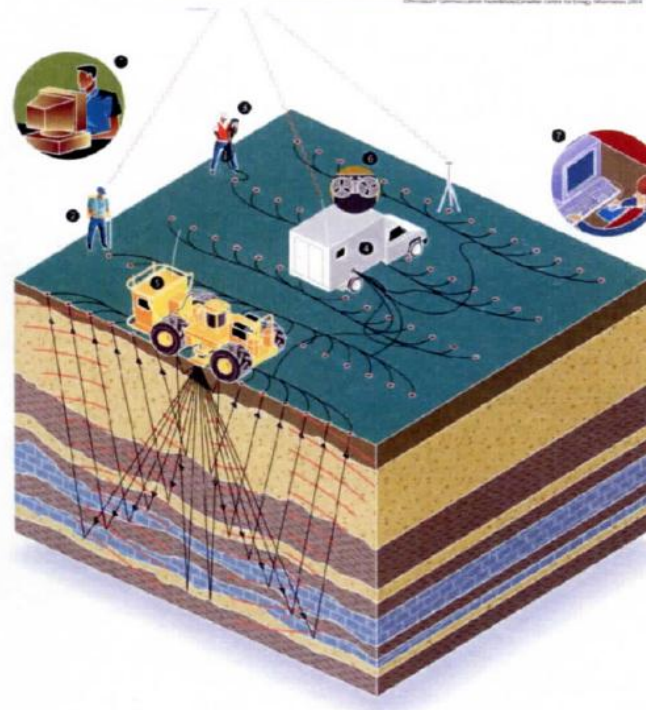
Step	Where the action?
Concept	In the office
Seismic Review (existing seismic)	In the office
Seismic (optional)	In the field – seismic lines
Exploration (are hydrocarbons present?)	One well or several scattered wells (unconventional play); no facilities
Evaluation/Pilots (can it be made economic)	Small, temporary facilities – but often have bigger impact (i.e. tanks might be on a pad, flaring)
Development (let's make some money)	Optimal facilities – pipeline, compression etc.
Infill (let's make more money)	Existing facilities, more wells.
'Uphole Development' (let's use the wellbores for another play)	No more wells, no more facilities, just field work.
Abandonment / Reclamation (let's put everything back)	Final field work



Planning

Seismic

- o Used primarily for exploration
 - 3d seismic sometimes used in development to find 'sweet spots'
- o Sound waves (vibration) reflect off of layers in the earth providing a 'picture'
- o Limits
 - Underground anomalies can affect interpretation
 - In most cases does not indicate porosity
 - In most cases does not indicate presence of hydrocarbons (often water is in the porosity)



Planning

Seismic – Can be intensive

- o With 3d seismic geophones can be placed in 50 m apart in both directions
- o Helicopters and large crews are involved

Issues

- o Noise
- o Vibration (explosions)
 - Water well complaints – but rarely a clear association
- o Traffic and activity
- o Shot holes



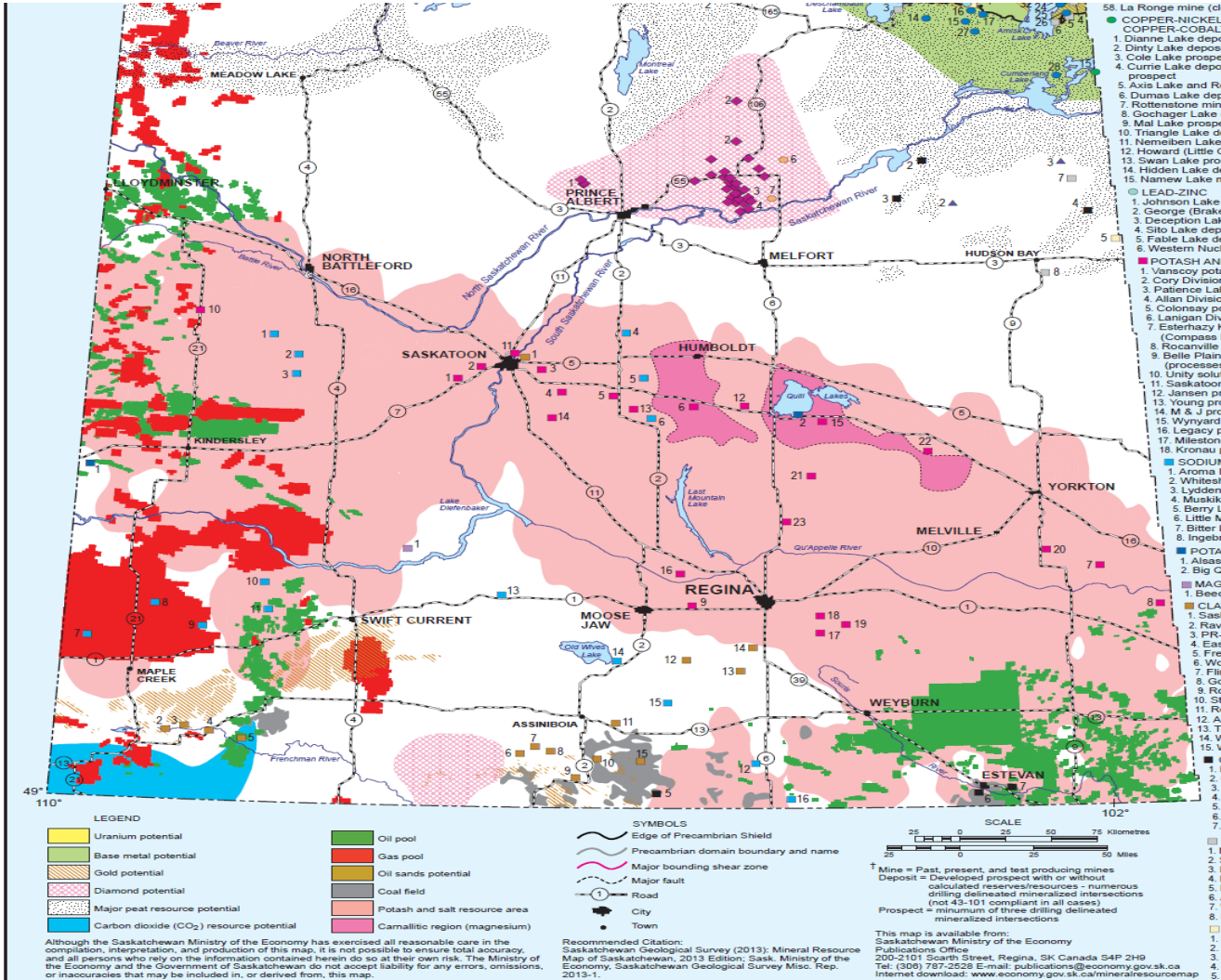
Seismic exploration - How are RMs involved?

- Notice of Intent
- Notice of Revision
- Notice of Cancellation
- Notice of Completion

Before it hits home...

- Oil and Gas Disposition
- Surface Rights and Access
- Provincial Well-drilling
Licensing
- Good office practices

Oil and Gas Pools in SK



Crown Land Sale Process and Results

SASKATCHEWAN MINISTRY OF THE ECONOMY - PETROLEUM AND NATURAL GAS DIVISION

EXPLORATION LICENCES - APRIL 8, 2013

BLOCK NO.	SUCCESSFUL BIDDER	PERCENTAGE	BONUS	HECTARES	ACRES
4622	NO BIDS				
4623	FEDERATED CO-OPERATIVES LIMITED	100.00	\$3,136,914.24	807.05	1,994.27
	TOTALS		\$3,136,914.24	807.05	1,994.27

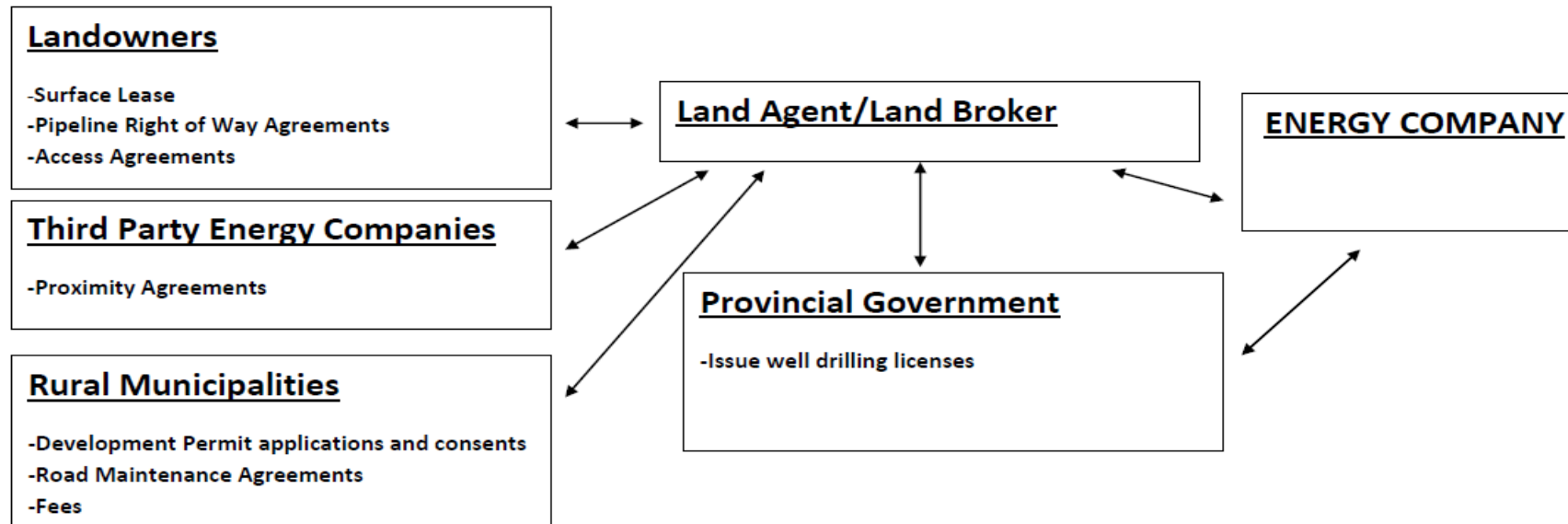
LEASE PARCELS - APRIL 8, 2013

PARCEL NO.	SUCCESSFUL BIDDER	PERCENTAGE	BONUS	HECTARES	ACRES
19	NO BIDS				
20	NO BIDS				
21	NO BIDS				
22	CANERA ENERGY CORP.	100.00	\$50,371.60	32.37	80.00
23	CANERA ENERGY CORP.	100.00	\$303,436.65	160.86	397.50
24	CANERA ENERGY CORP.	100.00	\$188,236.02	129.50	320.00
25	NO BIDS				

Laying the Groundwork

<u>Development</u>	<u>Associated Costs</u>
Exploration license / Seismic	Significant
Mineral Acquisition	\$5,000 to \$500,000
Land Broker costs (Surface lease acquisition, proximity requests, administration)	Ongoing
Survey New Development (Wells, pipelines)	\$3,000 to \$5,000 per well
Drilling Budget (Horizontal)	\$800,000 to \$1,200,000/well
Drilling License Application	\$500 per application / \$10,000 deposit (1 st time – Orphan Fund Fee)
Apply to RM for Development Permit	Licensing Fees, Operational Fees

Land Agent / Land Broker Role



-RM sign off is not required for provincial government to issue a drilling license but company must have proof protocols for proximities, RM notification was undertaken and included as part of “package”. (Spot audits)

Pre-development Considerations

Well-drilling licensing

- Who?
- Why?
- How?

Development permitting

- Who?
- Why?
- How?

WELL INDEX
DATE 11/12/15

MINISTRY OF ENERGY AND RESOURCES

PETROLEUM AND NATURAL GAS DIVISION

WELL BULLETIN

AMENDMENT

LOCATION: 91-13-12-06-13-2
(LC-LS-SC-TP-RG-M) (WX-S-T-R) (LEG NO)

LICENSE NUMBER: 11-L-031
DATE OF ISSUE: 2011/12/03
PREVIOUS UPDATE: / /

WELL NAME: CONSERVE WEYBURN 2HZ 2B12-12-13-12-6-13

COORDINATES: 790.0M S. OF N. AND 100.0M E. OF W. OF SECTION 12-06-13-2 GR ELEVATION 576.1

LEG LOCATIONS: LC-LS-SC-TP-RG-M WX-S-T-R LEG # LC-LS-SC-TP-RG-M WX-S-T-R LEG #
41-13-12-06-13-2 02

BOTTOM FORMATION: 433074 WEYBURN MIDALE AT 1433.0M

TARGET FORMATION: 433074 WEYBURN MIDALE AT 1433.0M

WELL CLASSIFICATION: 01 - DEVELOPMENT WELL

WELL OBJECTIVE: OIL WELL

CONFIDENTIAL PERIOD: 30 DAYS

LEASE INFORMATION: NUMBER PN25413

MINERAL OWNERSHIP: 100.00000 CROWN .00000 CROWN ACQUIRED .00000 FREEHOLD

FIELD OFFICE AREA: 4 ESTEVAN

RURAL MUNICIPALITY: 037

OWNER CODE: 13806 (REV. A/C #)

* CONTRACTOR CODE: 43044 (REV. A/C #5428958)

NAME: CONSERVE OIL & GAS NO. II CORPORATION
500, 340 - 12TH AVE SW

NAME: BIG SKY DRILLING
BOX 659

CALGARY AB
T2R1L5

OXBOW SK
S0C2B0

SAMPLES REQUESTED

* - INDICATES ONE OR MORE DATA ITEMS WITHIN THIS LINE HAS BEEN AMENDED

21

WELL INDEX
DATE 11/11/28

MINISTRY OF ENERGY AND RESOURCES

PETROLEUM AND NATURAL GAS DIVISION

WELL BULLETIN

CANCELLATION

15

LOCATION: CC-08-35-04-13-2
(LC-LS-SC-TP-RG-M) (WX-S-T-R) (LEG NO)

LICENSE NUMBER: 11-I-387
DATE OF ISSUE: 2011/09/27
PREVIOUS UPDATE: 2011/11/28

WELL NAME: BROWNSTONE ELSWICK W 2HZ 4D6-35-4D8-35-4-13

COORDINATES: 754.7M N. OF S. AND 756.2M E. OF W. OF SECTION 35-04-13-2 GR ELEVATION 581.4

LEG LOCATIONS: LC-LS-SC-TP-RG-M WX-S-T-R LEG # LC-LS-SC-TP-RG-M WX-S-T-R LEG #
CC-09-35-04-13-2 02

BOTTOM FORMATION: 433042 MIDALE AT 1560.0M

TARGET FORMATION: 433042 MIDALE AT 1560.0M

WELL CLASSIFICATION: 01 - DEVELOPMENT WELL

WELL OBJECTIVE: OIL WELL

CONFIDENTIAL PERIOD: OTHER

LEASE INFORMATION: NUMBER 00000

MINERAL OWNERSHIP: .00000 CROWN .00000 CROWN ACQUIRED 100.00000 FREEHOLD

FIELD OFFICE AREA: 4 ESTEVAN

RURAL MUNICIPALITY: 037

OWNER CODE: 05640 (REV. A/C #)

CONTRACTOR CODE: 11351 (REV. A/C #)

NAME: BROWNSTONE RESOURCES LTD.
1150 RAILWAY AVE

NAME: LASSO DRILLING CORPORATION
307 440 10816 MACLEOD TRAIL SE

WEYBURN SK
S4H0B3

CALGARY AB
T2P5H9

SAMPLES REQUESTED

Saskatchewan Ministry of the Economy - Complete Well List by Company Name												
April-13												
Owner Code	Licensee	Licence #	WID	Area	Grandfathered Reclamation Release	Acknowledgement of Reclamation	Exemption From Reclamation	Deemed Problem Site	Status	Status Description	Well Type	Well Type Description
09592	101033165 SASKATCHEWAN LTD.	09H083	CC-10-29-02-01-W2	4					C	Cancelled	10	Oil Well
09592	101033165 SASKATCHEWAN LTD.	90K001	41-13-29-02-01-W2 1	4				Y	9	Active (Producing/Injecting/ETC.)	40	Pressure Maintenance - Water Injector Well
09592	101033165 SASKATCHEWAN LTD.	84H117	31-15-29-02-01-W2	4					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	87J212	01-11-17-30-21-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	71B045	11-12-17-30-21-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	84H025	01-11-17-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	67L007	01-14-17-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	93L183	01-03-20-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	92J123	01-09-20-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well

<http://www.economy.gov.sk.ca/LLR>

11697	101045262 SASKATCHEWAN LTD.	84H026	01-09-21-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	83B024	20-10-21-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	84H027	01-11-21-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	84H028	01-13-21-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11697	101045262 SASKATCHEWAN LTD.	63H114	01-14-21-30-22-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11872	101107712 SASKATCHEWAN LTD.	09A123	21-01-30-05-14-W2	4					1	Abandoned dry	10	Oil Well
11872	101107712 SASKATCHEWAN LTD.	12D091	11-09-30-05-14-W2	4					1	Abandoned dry	10	Oil Well
11872	101107712 SASKATCHEWAN LTD.	11L155	C1-10-30-05-14-W2	4					C	Cancelled	10	Oil Well
11872	101107712 SASKATCHEWAN LTD.	08J448	CC-10-30-05-14-W2	4					C	Cancelled	10	Oil Well
12280	101119712 SASKATCHEWAN LTD.	08I195	CC-08-32-08-14-W2	4					C	Cancelled	10	Oil Well
13208	101133771 SASKATCHEWAN LTD.	13C138	11-15-27-26-29-W3	2					L	Licensed	10	Oil Well
13858	101173425 SASKATCHEWAN LTD.	83E047	01-07-16-31-28-W3	2					9	Active (Producing/Injecting/ETC.)	10	Oil Well
11997	1316751 ALBERTA LTD.	77J012	11-09-04-45-24-W3	1	Y				2	Abandoned Non-Producer	10	Oil Well
11997	1316751 ALBERTA LTD.	08C387	CC-09-04-45-24-W3 1	1					C	Cancelled	20	Gas Well
12158	1346645 ALBERTA LTD.	98C045	21-05-18-01-02-W2	4	Y				1	Abandoned dry	10	Oil Well
12158	1346645 ALBERTA LTD.	13A160	91-03-02-01-03-W2	4					L	Licensed	10	Oil Well
12158	1346645 ALBERTA LTD.	12K320	91-02-04-01-03-W2	4					9	Active (Producing/Injecting/ETC.)	10	Oil Well
12158	1346645 ALBERTA LTD.	64H027	01-11-10-01-03-W2	4					9	Active (Producing/Injecting/ETC.)	10	Oil Well

Pre-development Considerations

Well-drilling licensing

- Who?
- Why?
- How?

Development permitting

- Who?
- Why?
- How?

Oil Wells - 2011

Twp	Licence Number	Well Name & Location	Current Owner	Driller	Date Billed
4-13	11-D-326	2HZ 2A1-23-2A16-23-4-13	ZARGON	BIG SKY	MAY 20/11
	11-C-655	2HZ 2C5-25-1C7-26-4-13	BROWNSTON	ELASSO	APR 28/11
	11-I-387	2HZ 4D6-35-4D8-35-4-13	BROWNSTON	ELASSO	OCT 21/11
	11-D-152	1A1-36-2D16-31-4-12	ELSWICK	CANELSON	APR 28/11
4-14	11-F-139	1A2-26-4A10-23-4-14	BLUEBIRD	UNKNOWN	JUNE 30/11
5-13	11-J-222	4A13-9-1D5-16-5-13	LEGACY	UNKNOWN	OCT 24/11
	11-D-283	1C14-34-4B8-3-6-13	CENOVUS	PRECISION	MAY 20/11
5-14	11-L-219	1B3-19-3B6-18-5-14	ENERPLUS	BIG SKY	DEC 28/11
	11-L-155	21-10-30-5-14-2	10107712	ENSIGN	DEC 23/11
	11-I-198	2HZ 1C4-36-1C2-35-5-14	CONSERVE	UNKNOWN	OCT 21/11
6-13	11-K-024	3C10-1-3C4-7-6-12	CENOVUS	RED DOG	NOV 18/11
	11-I-213	2HZ 8B8-1-4D12-6-6-12	CENOVUS	PRECISION	OCT 2/11
	11-H-010	2HZ 3A10-1-1B4-7-6-12	CENOVUS	PRECISION	OCT 2/11
	11-D-215	6B14-4-1B8-9-6-13	CENOVUS	UNKNOWN	APR 28/11
	11-C-540	2B10-5-2B6-5-6-13	CENOVUS	RED DOG	APR 28/11
	11-C-481	6B14-8-4D8-7-6-13	CENOVUS	RED DOG	MAR 30/11
	11-D-243	7A8-9-4B14-10-6-13	CENOVUS	PRECISION	APR 28/11
	11-K-036	4D11-10-2A8-15-6-13	CENOVUS	RED DOG	NOV 18/11
	11-C-532	3C11-9-4C1-16-6-13	CENOVUS	PRECISION	APR 28/11
	11-D-242	4C14-9-4B8-16-6-13	CENOVUS	PRECISION	APR 28/11
	11-K-379	7D12-11-2D2-10-6-13	CENOVUS	RED DOG	DEC 9/11
	11-K-076	2B15-11-2B5-11-6-13	CRESCENT	RED DOG	NOV 18/11
	11-L-031	2HZ 2B12-12-3C13-12-6-13	CONSERVE	UNKNOWN	DEC 12/11
	11-L-027	2A3-13-4A16-12-6-13	CONSERVE	UNKNOWN	DEC 12/11
	11-L-050	2HZ 4A6-13-1D8-13-6-13	CENOVUS	UNKNOWN	DEC 12/11
	07-E-084	31-4-17-6-13-2	CENOVUS	PRECISION	DEC 19/11
	11-D-225	1B11-20-1C14-20-6-13	TYVAN	PANTHER	APR 28/11
	11-C-529	2HZ 2C4-23-2A11-23-6-14	CENOVUS	PRECISION	APR 28/11
	11-C-457	3B12-23-2D14-23-6-13	BLUEBIRD	UNKNOWN	MAR 30/11
	11-L-049	2HZ 2B3-25-4A12-24-6-13	CONSERVE	UNKNOWN	DEC 12/11
	11-A-411	2C8-25-4D13-30-6-13	CENOVUS	RED DOG	FEB 9/11
	11-B-207	1C10-25-3B4-31-6-13	CENOVUS	RED DOG	MAR 22/11
	11-K-073	2A7-28-2A13-21-6-13	CENOVUS	RED DOG	NOV 18/11
	11-C-335	4C4-30-3B10-30-6-13	CENOVUS	RED DOG	MAR 28/11
	11-A-247	8C7-30-6-13	CENOVUS	RED DOG	FEB 9/11
6-14	11-F-100	7A10-1-2B6-1-6-14	CENOVUS	PRECISION	JUNE 30/11
	11-J-121	5D13-1-1D7-12-6-14	CENOVUS	PRECISION	OCT 21/11
	11-C-654	42-2-16-6-14-2	ARC	TRINIDAD	APR 28/11
	11-B-359	4HZ 1D8-16-1D6-15-6-14	ALDON	LIASSO	MAR 22/11
	11-C-254	4D6-22-2D4-22-6-14	CRESCENT	EAGLE	MAR 22/11
	11-B-220	3A14-25-4D1-36-6-14	CENOVUS	RED DOG	MAR 22/11
	11-C-347	2D11-29-4B9-30-6-14	CAPRICE	PANTGER	MAR 28/11
6-15	11-L-027	2A3-13-4A16-12-6-13	CONSERVE	UNKNOWN	DEC 9/11
	11-I-018	2HZ 2A12-23-3A4-23-6-15	LONGVIEW	UNKNOWN	OCT 21/11
	11-K-235	2A1-29-3A1-29-6-15	CENOVUS	UNKNOWN	DEC 9/11
	96-I-174	2HZ 4B12-32-4C10-32-6-15	CRESCENT	SEDCO	APR 28/11
	10-L-255	4C5-33-1C13-33-6-15	DAVE OIL	EAGLE	FEB 9/11
47	TOTAL WELLS DRILLED				

Develop. Permit	Licence# Energy Net	9450 Fee	EIF	45 Award
HZ 12B8-14-3B6-14-25-15 Husky	✓	12-A-271	✓	#2802
HZ 2B8-14-3A16-14-25-15 "	✓	12-A-782	✓	#2800
HZ 101-26-3A9-23-25-15 "	✓	12-D-082	✓	#2723 2013
HZ 5D1-26-4B9-23-25-15 "	✓	12-D-114	✓	#2726 2013
HZ 3A9-14-3A1-14-24-15 Husky	✓	12-A-760	✓	2777
HZ 2A1-29-2A9-20-25-14 Home 1/4 B.	✓	12-B-249	✓	2706 2013
HZ 2D8-32-2D16-32-25-14 Home 1/4 B.	✓	12-B-244	✓	2708 2013
HZ 3C11-14-2D19-14-24-15 Husky	✓		✓	
HZ 6C11-14-2A9-14-24-15 Husky	✓		✓	
HZ 3D1-5-1B5-5-26-15-3 Flagstone	✓	12-A-810	✓	Cancel Jan 22/13
HZ 9D8-7-2B10-7-25-14-3 Flagstone	✓	12-A-274	✓	#2682 2013
HZ 2B13-35-2A16-35-25-15-W3	✓	12-A-019	✓	Cancel Jan 22/13
HZ 3B9-33-1B13-33-25-15-W3	✓	12-A-081	✓	Cancel Jan 22/13
HZ 2A3-3-2A11-34-25-14-W3 Home 1/4 Res	✓	12-B-245	✓	#2718 2013

Development Considerations.

- **Road Construction Agreements**
- **Road Maintenance Agreements**

Development Considerations

Road Construction Agreements

- **RM Rights and Responsibilities**
- **Components of a Road Construction Agreement**
- **Good Practices**

Road Maintenance Agreements

- RM Rights and Responsibilities
- Components of a Road Maintenance Agreements
- Dispute Resolution
- Good Practices



Development Considerations

Road Construction Agreements

- RM Rights and Responsibilities
- Components of a Road Construction Agreement
- Good Practices



Road Maintenance Agreements

- **RM Rights and Responsibilities**
- **Components of a Road Maintenance Agreements**
- **Dispute Resolution**
- **Good Practices**

Development Considerations.

- **Road Maintenance Agreement Enforcement**
- **Overweight Permitting, Road bans and Closures**

Post-development Considerations

- Well-site abandonment
- Well-site decommissioning
- Well-site reclamation

Abandonment and Reclamation

A. Well Status moves to Suspended/Inactive

- **Production equipment removed**
- **Can be re-entered with new technology (Screw pumps) or abandoned**

B. Well Status moves to Abandoned

- **Well is “cut and capped”**
- **Reclamation process begins**

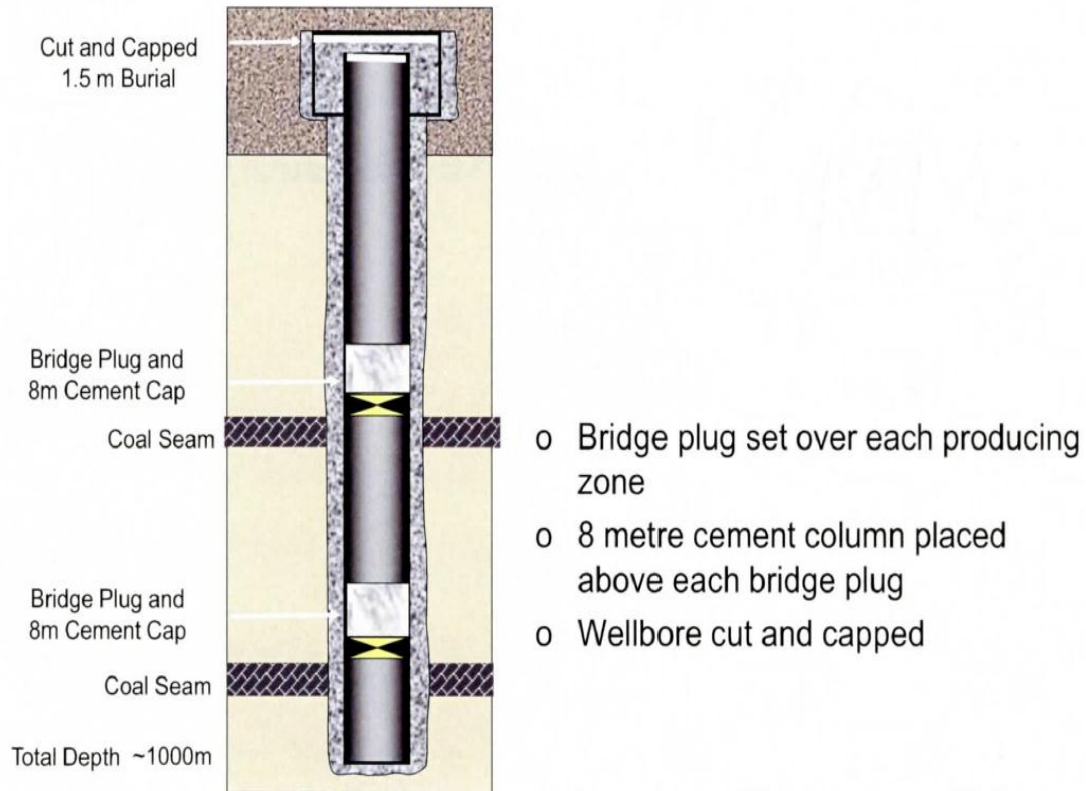
Suspended Facilities



Non-active Facilities



Abandonment and Reclamation



Abandonment and Reclamation Remediation



Abandonment and Reclamation

Reclamation

- o Objective is to put the cleaned up site back to meet reclamation criteria that define equivalent capability (landscape, soils, vegetation)



<http://economy.imaginesask.ca/LLR>

Licensee Liability Rating (LLR)

- Assets < Liabilities —→ Security deposit requirement.
- Assets > Liabilities —→ Business as usual
- Well and Facility Transfers. If Assets < Liabilities, company will not be allowed to acquire more wells or facilities from other companies without security deposit.

LLR cont'd...

Ministry of Energy and Resources
Petroleum and Natural Gas Division

<u>Code</u>	<u>Owner Name</u>	<u>Security Adjusted LLR</u>	<u>Security Desposit Received</u>
14179	RUGER ENERGY INC.	1.45	\$42,300.00
09535	RUNCIBLE OIL CORP.	1.09	\$0.00
14159	SAN TAN RESOURCES LTD.	3.30	\$0.00
12885	SANDBOX ENERGY CORP.	0.14	\$600,015.00
02567	SANFORD PETROLEUM LTD.	1.61	\$0.00
04475	SCHMIDT OIL LTD.	1.33	\$0.00
10969	SCIL RESOURCES INC.	0.96	\$163,625.87
11887	SCOLLARD ENERGY INC.	1.00	\$56,700.00
03567	SECO RESOURCES INC.	0.83	\$247,608.47
10579	SECOND WAVE PETROLEUM INC.	0.96	\$0.00
14160	SHACKLETON 2011 GP INC.	6.14	\$0.00
50341	SHAPCO RESOURCES LTD	1.02	\$0.00
00407	SHELL CANADA LIMITED		

Questions and Discussion



THANK YOU!!!