INTRODUCTION

DEVELOPMENT OVERVIEW

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  o  4-D Seismic & Monitoring
  o  Well Design & Instrumentation
  o  Scheme Performance
  o  Pilots
  o  Future Plans

SURFACE OPERATIONS & COMPLIANCE
  o  Facilities
  o  Measurement & Reporting
  o  Facility Performance
  o  Water Production, Injection & Uses
  o  Sulphur Production
  o  Future Plans
  o  Compliance
DEVELOPMENT OVERVIEW

PROJECT DETAILS
- First steam September 2010
- Approved processing capacity 40,000 bbl/d
- 6 producing pads
  - 35 horizontal well pairs
  - 13 infill wells
- 2 approved drainage areas
  - Pad 7 spud Q4 2018, first steam summer 2019
  - Pad 8 approval received September 2018

INFRASTRUCTURE
- Fuel gas from TransCanada Pipeline (TCPL)
- Dilbit export to Enbridge Cheecham Terminal
- Diluent supply from Enbridge Cheecham Terminal
SURFACE DATA OVERVIEW

NO NEW GEOSCIENCE DATA ACQUIRED DURING THE REPORTING PERIOD

- Cores, petrophysics, geomechanical, fracture pressure or caprock integrity tests

<table>
<thead>
<tr>
<th>Area</th>
<th>Area (km²)</th>
<th>Cored Wells</th>
<th>Image Logs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Area</td>
<td>326</td>
<td>369</td>
<td>621</td>
</tr>
<tr>
<td>Development Area</td>
<td>37.4</td>
<td>144</td>
<td>240</td>
</tr>
</tbody>
</table>

Legend:
- AOC Lease Area
- Development Area
- Pad Drainage Area
- Pad Drainage Area (Not on Production)
- Pad 7 Observation Well
- Cored Well
- Image Log(HMI) Well
**BITUMEN PAY CLASSIFICATION: GBIP**

**GROSS BITUMEN IN PLACE (GBIP)**
- GBIP represents the total pay interval accessible via SAGD
- Petrophysical criteria:
  - Gamma Ray (GR) <= 75 API
  - Resistivity (RT) >= 40 ohm-m
  - Porosity (DPSS) >= 27%
- Non-Non-reservoir lithofacies (F6–F7) are not included if greater than 2m in thickness

**ELEVATION RANGE**
- 202 - 241 masl
DEVELOPABLE BITUMEN IN PLACE (DBIP)

- DBIP has the same petrophysical properties as GBIP but is restricted to higher quality lithofacies:
  - F1: Shale-Clast Breccia (if <5m)
  - F2: Trough Cross-Bedded Sand
  - F3: Current-Ripple Laminated Sand
  - F4A-B: Sand with 5–10% Mud Interbeds

**ELEVATION RANGE**

- 202 - 237 masl
Elevation Range 202 - 241 masl
Elevation Range 193 - 231 masl
Elevation Range 191 - 213 masl
MINIMAL GAS THICKNESS AND LIMITED DISTRIBUTION WITHIN DEVELOPMENT AREA

Elevation Range 221-253 masl
2018
- No new caprock core, mini-frac or tri-axial testing completed during the reporting period

HISTORICAL
- Caprock defined as the Clearwater Formation
  - Includes regionally continuous shale of the Wabiskaw Member
  - mini-frac tests completed at two locations (01-04-079-10W4, 01-28-078-10W4)
- Approved maximum operating pressure is 5,500 kPag
- All injectors operating at ~ 3,000 - 3,300 kPag

SURFACE HEAVE MONITORING
- No new data acquired during reporting period
RESERVOIR PROPERTIES

- Original Reservoir Pressure: 2,300 to 2,600 kPa
- Original Reservoir Temperature: 14°C
- Average Horizontal Permeability: 5 to 6 D
- Average Vertical Permeability: 4 to 5 D
- Depth: 410 to 444 m TVD (-230 to -216 m subsea)
SUBSURFACE
4D SEISMIC & MONITORING

ATHABASCA OIL CORPORATION
SEISMIC ACQUISITION HISTORY

2018
- No new data acquired during the reporting period

HISTORICAL
- Q1 2016: 2.0 km² first 4D survey for Pad 5
- Q1 2015: 9.0 km² 3D survey
  - Third 4D repeat survey (2.2 km² active SAGD Pads 1 & 2)
  - Repeat 3D seismic for higher resolution data
- Q1 2014: 2.1 km² 4D survey (active SAGD Pads 3 & 4)
- Q1 2013: 4.5 km² 3D survey
  - Second repeat survey (4.9 km² of active SAGD Pads 1–4)
- Q1 2012: 8.6 km² 3D survey
  - First 4D survey (4.9 km² of active SAGD Pads 1–4)
  - New baseline survey for Pads 5 and 6 (3.7 km²)
- Q1 2009: 4.9 km² baseline survey (pre-steam) Pads 1–4
2018
- RSTs acquired from 13 wells during the reporting period

HISTORICAL
- Baseline acquired in 2010 - 23 wells
- 2011 - 18 wells
- 2012 - 7 wells
- 2013 - 12 wells
- 2014 - 11 wells
- 2015 - 6 wells
- 2018 - 13 wells
- Saturation log results show steam chamber thickness correlates with observation well temperature profiles
SUBSURFACE
WELL DESIGN, INSTRUMENTATION & ARTIFICIAL LIFT
2018
- 5 well pairs were drilled on Pad 7 during Q4 2018- Q1 2019

HISTORICAL
- The Leismer project includes a Central Processing Facility (CPF) and six well pads, with 35 well pairs and 13 infill wells
All wells completed with ESP’s with the exception of two infill wells
  - Rod pumps installed on infills L5N3 and L5N4

Typical artificial lift operating conditions:
  - **Bottomhole pressure (BHP) range:** 2,500-3,300 kPag
  - **BHP temperature range:** 180-235 °C

<table>
<thead>
<tr>
<th>Artificial Lift Performance</th>
<th>ESP</th>
<th>Rod</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Minimum Rate (m³/d)</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>Typical Maximum Rate (m³/d)</td>
<td>1,200</td>
<td>300</td>
</tr>
</tbody>
</table>
PADS 1-4 COMPLETIONS

- Pads 1-4 injection wells completed with parallel tubing strings
- In production wells, instrumentation carried within a 1.75” coiled tubing

11-3/4" intermediate casing

4-3/8 × 3-1/2" short tubing

3-1/2 × 2-7/8 × 3-1/2" long tubing

8-5/8" slotted liner

3-1/2" production tubing

1.75" Instrumentation coil

11-3/4" x 9-5/8” intermediate casing; or 11-3/4” casing full length

7" wire-wrap screen; or 7" slotted liner; or 8-5/8" slotted liner

Pump
PADS 5-6 COMPLETIONS

- Pads 5-6 injection wells completed with concentric tubing strings
- In production wells, instrumentation carried within a 1.5” coiled tubing (coil runs inside a 2-3/8” guide string)
- 5 of 7 injectors on Pad 5 completed with Vacuum Insulated Tubing (VIT) on long tubing string
TYPICAL COMPLETION: INFILL WELL

- 16" x 13-3/8" surface casing
- Casing gas
- 3-1/2" production tubing
- 2-3/8" x 3-1/2" guide string
- Instrumentation string
- 11-3/4" x 9-5/8" intermediate casing
- 7" liner (WWS)
INSTRUMENTATION

TEMPERATURE
- Mixture of thermocouples (TC) and fiber measurements
- Both systems adequate for temperature management along the wellbore

PRESSURE
- Injector BHP is measured with blanket gas
- Producer and infill BHP is measured using optical gauges and/or bubble tubes
OBSERVATION WELLS

- Instrumentation used to monitor reservoir pressure and temperature
- 30 thermocouples spaced at 1 m above, below, and within SAGD pay
- 10 thermocouple bundles installed in wells previously equipped with fibre optics (DTS), February 2018
2018
- Installed 1 tubing deployed flow control device (FCD) into L3P3 in 2018

HISTORICAL
- Liner deployed and tubing deployed FCD configurations have been used to optimize asset performance
- Able to operate at lower subcool with positive impact on temperature conformance

L3P4 TEMPERATURE PROFILES

![Temperature profiles](image)
LEISMER CONTINUES TO BE A TOP-TIER OIL SANDS ASSET

- 6 producing pads
  - 35 SAGD well pairs (34 pairs on production) and 13 infill wells on production
- L3P3 FCD installed in May 2018
- 4 infill wells started on Pad 5 in June 2018
- Once through steam generator (OTSG) commissioned in September 2018 to improve reliability
  - Steam capacity increased to ~ 11,600 m³/d (73,000 bbl/d)
- Maximum produced monthly bitumen rate of 3,493 m³/d (21,967 bbl/d) with SOR of 3.07 (Mar 2018)
## PAD RECOVERY FACTOR

<table>
<thead>
<tr>
<th>Pad</th>
<th>DBIP Above Producer ($10^3$ m$^3$)</th>
<th>DBIP ($10^3$ m$^3$)</th>
<th>GBIP ($10^3$ m$^3$)</th>
<th>Cumulative Production ($10^3$ m$^3$)</th>
<th>DBIP Above Producer Recovery Factor$^1$</th>
<th>DBIP Recovery Factor$^1$</th>
<th>GBIP Recovery Factor$^1$</th>
<th>Predicted Recovery Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2,590</td>
<td>3,467</td>
<td>3,914</td>
<td>2,066</td>
<td>80%</td>
<td>60%</td>
<td>53%</td>
<td>65–75%</td>
</tr>
<tr>
<td>2</td>
<td>2,857</td>
<td>2,821</td>
<td>3,344</td>
<td>1,661</td>
<td>58%</td>
<td>59%</td>
<td>50%</td>
<td>65–75%</td>
</tr>
<tr>
<td>3</td>
<td>2,650</td>
<td>3,003</td>
<td>3,443</td>
<td>1,658</td>
<td>63%</td>
<td>55%</td>
<td>48%</td>
<td>50–60%</td>
</tr>
<tr>
<td>4</td>
<td>1,747</td>
<td>2,236</td>
<td>2,433</td>
<td>1,126</td>
<td>64%</td>
<td>50%</td>
<td>46%</td>
<td>50–60%</td>
</tr>
<tr>
<td>5</td>
<td>2,739</td>
<td>3,477</td>
<td>4,479</td>
<td>973</td>
<td>36%</td>
<td>28%</td>
<td>22%</td>
<td>50–60%</td>
</tr>
<tr>
<td>6</td>
<td>2,914</td>
<td>3,471</td>
<td>3,836</td>
<td>686</td>
<td>24%</td>
<td>20%</td>
<td>18%</td>
<td>65–75%</td>
</tr>
<tr>
<td>Total</td>
<td>15,498</td>
<td>18,475</td>
<td>21,449</td>
<td>8,170</td>
<td>53%</td>
<td>44%</td>
<td>38%</td>
<td>~65%</td>
</tr>
</tbody>
</table>

**NOTES:**

$^1$ Recovery Factor based on cumulative oil production in Feb 2019

- Volumetrics include 50 m at heel and toe of well pair
PAD PERFORMANCE DEPENDS ON GEOLOGY AND OPERATING PARAMETERS

- Pads 6, 3 and 4 selected as examples of high, medium and low performing pads, respectively
  - Selection based on average monthly oil rate and iSOR
  - Differences in the productivity of the wells primarily due to geological variability
PAD PERFORMANCE: HIGH PAD 6

PAD 6 SUMMARY

- First steam 2016
- Peak oil rate: ~790 m³/d (600-1300 bbl/d/wellpair)
- cSOR ~ 2.8
- High reservoir quality with thick pay
  - Mostly sandy reservoir
  - High oil saturation
- Significant steam chamber development since last reporting period
  - OBS well 100/09-33 shows 7 m steam chamber rise near heel of L6P5
PAD PERFORMANCE: MEDIUM PAD 3

PAD 3 SUMMARY

- First steam 2010
- Peak oil rate: ~480 m³/d (150-800 bbl/d/wellpair)
- cSOR ~ 3.0
- Good reservoir quality
- Significant steam chamber development since last reporting period
  - OBS well 103/13-27 shows 5 m steam chamber development at the base after FCD installation on L3P4 well

Temperature Plots

- Temperature data for Mar 1, 2018 and Mar 1, 2019
- Thermocouple data
- Reservoir temperature profiles

Graphs showing fluid rate and SOR over time:
- Oil Rate, Water Rate, Steam Rate, iSOR, cSOR
- Years on x-axis: 2010 to 2019
- Fluid rates in m³/d
- SOR values

L3P4M2- 103/13-27-078-10W400 (14m from L3P4)
**PAD PERFORMANCE: LOW PAD 4**

**PAD 4 SUMMARY**

- First steam 2010
- Peak oil rate: 311 m$^3$/d (150-700 bbl/d/wellpair)
- $c_{SOR} \approx 3.25$
- Average reservoir quality
- Historical NCG co-injection on this pad

![Fluid Rate Chart](chart.png)

![Temperature Plots](plot.png)
4 DEVICES HAVE BEEN INSTALLED AT LEISMER SINCE 2017

- After installation, oil production increased 125-150% per well
STEAM PRESSURE

- Steam upstream of pads 7,000–9,000 kPa
- Steam pressure let-down to 5,000–6,000 kPa at pads

STEAM QUALITY

- Steam quality decreases during transportation to well pads due to heat losses
  - Estimated at 95% for Pads 1–4, 6
  - Estimated at 90% at Pad 5 due to longer, larger diameter pipe line
WELL INTEGRITY

- No wellbore integrity failures during the reporting period (liner or casing)

ABANDONMENTS

- No producer/injector well pairs have been abandoned or suspended to date
- Well network in place to monitor conditions at 102/05-8-079-10W4
  - 107/05-08-079-10W4 observation well
  - 100/02-08-079-10W4 observation well
  - Pressure differentials across the LGR and CLW-B have remained stable year over year
- No near term plans for well pad abandonments
SUBSURFACE PILOTS
NON-CONDENSABLE GAS CO-INJECTION

PAD 4 NCG PERFORMANCE

- Pad 4 NCG co-injection stopped Nov 2018 after installation of once through steam generator 5 (OTSG 5)

LEISMER FUTURE NCG PLANS

- Field-wide NCG co-injection approval received in Nov 2018
  - Implementation as required in the medium term to optimize steam allocation
2019 SUBSURFACE DEVELOPMENT PLANS

- Finish Pad 7 well completions on 5 wellpairs
  - Anticipated first steam in summer 2019
  - Producer wells completed with ESPs and FCDs
- Evaluating opportunities for tubing deployed FCDs into producer wells on Pads 1-5
- Regulatory approval received for 10 well pairs and 9 infills on Pad 8, August 2018
- Regulatory approval received for 4 infills on Pad 6, September 2018

PAD ABANDONMENTS

- No pad abandonments anticipated at Leismer within next five years
SURFACE OPERATIONS

FACILITIES
INLET DEGASSER, OTSG 5 AND DILUENT OPTIMIZATION COMPLETED DURING REPORTING PERIOD
CPF

- MARP updated to reflect additional metering associated with OTSG 5, diluent optimization and degasser projects

WELL TESTING

- Well tests used to calculate daily bitumen and water production
- Six hour test with 1 hr. purge to improve oil calculation accuracy
- Pads 1, 3, 5 and equipped with full test headers and test separators
- Pad 4 equipped with full test header and Multi-Phase Flow Meters (MPFM)
- Pad 2 and 4 equipped with MFPM

FQI – flow quantity indicator
AE – analyzer element
OR - orifice plate
<table>
<thead>
<tr>
<th></th>
<th>Net Oil Proration</th>
<th>Net Water Proration</th>
<th>Proration Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proration Factor</td>
<td>0.92</td>
<td>0.99</td>
<td>0.77</td>
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<tr>
<td>Proration Factor</td>
<td>0.89</td>
<td>1.04</td>
<td>0.70</td>
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<tr>
<td>Proration Factor</td>
<td>0.96</td>
<td>1.03</td>
<td>0.75</td>
</tr>
<tr>
<td>Proration Factor</td>
<td>0.95</td>
<td>1.04</td>
<td>0.80</td>
</tr>
<tr>
<td>Proration Factor</td>
<td>0.97</td>
<td>1.04</td>
<td>0.85</td>
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<tr>
<td>Proration Factor</td>
<td>0.96</td>
<td>1.00</td>
<td>0.90</td>
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<tr>
<td>Proration Factor</td>
<td>1.00</td>
<td>1.05</td>
<td>0.95</td>
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<tr>
<td>Proration Factor</td>
<td>1.00</td>
<td>1.05</td>
<td>1.00</td>
</tr>
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<td>Proration Factor</td>
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<td>1.08</td>
<td>1.05</td>
<td>1.10</td>
</tr>
<tr>
<td>Proration Factor</td>
<td>1.03</td>
<td>1.05</td>
<td>1.15</td>
</tr>
</tbody>
</table>

*Out of range due to facility turnaround*
FACILITY PERFORMANCE

SITE RELIABILITY HAS REMAINED HIGH

- CPF availability was 93% for 2018 including shutdown for planned turnaround
- Plant availability > 97% excluding turnaround
- Availability calculated based on steam capacity

MAJOR ACTIVITIES

- Completed planned turnaround at CPF - May
- Completed Norlite pipeline tie-in (reduces diluent costs) - June
- Installed and start-up of de-gasser (reduces diluent use) - May
- Commissioned OTSG 5 (improves steam reliability) - September
- Completed diluent optimization at CPF (reduces diluent costs) - November
PRODUCTION & ELECTRICITY CONSUMPTION

Bitumen Production

- Turnaround
- Voluntary curtailment

Electricity Consumption

- Mar-18
- Apr-18
- May-18
- Jun-18
- Jul-18
- Aug-18
- Sep-18
- Oct-18
- Nov-18
- Dec-18
- Jan-19
- Feb-19
CO2 EMISSIONS

CO2e Emissions Intensity

CO2e Emissions
SURFACE
WATER PRODUCTION, INJECTION & USES
WATER USE

SOURCE WATER USE
- Water Act license allocation 317,915 m³/year (871 m³/day)
- Total non-saline water use from source wells during reporting period 199,000 m³ (545 m³/d)
  - 62% of license allocation
  - ~98.5% for process use at CPF
  - ~1.5% for domestic use at CPF
- No saline water use

SOURCE WATER MINIMIZATION
- Source water use reduced by approximately 20% from previous reporting period
- Source water intensity of 0.18 bbl water/bbl bitumen over the reporting period
- Balanced reservoir conditions minimize make-up water volume requirements
- High blowdown recycle rates minimize source water demand

TYPICAL WATER QUALITY

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Non-saline Water</th>
<th>Produced Water</th>
<th>Disposal Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS [mg/L]</td>
<td>1,475</td>
<td>2,450</td>
<td>28,400</td>
</tr>
<tr>
<td>pH [-]</td>
<td>8.1</td>
<td>7.4</td>
<td>12.0</td>
</tr>
<tr>
<td>Hardness [mg/L as CaCO₃]</td>
<td>4.7</td>
<td>22</td>
<td>1.1</td>
</tr>
<tr>
<td>Total Alkalinity [mg/L as CaCO₃]</td>
<td>850</td>
<td>230</td>
<td>6,300</td>
</tr>
<tr>
<td>SiO₂ [mg/L]</td>
<td>0</td>
<td>255</td>
<td>200</td>
</tr>
<tr>
<td>Cl [mg/L]</td>
<td>230</td>
<td>1200</td>
<td>11,000</td>
</tr>
</tbody>
</table>
**SOURCE WATER NETWORK**

- 5 Lower Grand Rapids non-saline wells
  - 1F1/16-09-079-10W4/00, 1F1/07-10-079-10W4/00
  - F1/04-09-079-10W4/00, 1F1/16-04-079-10W4/00
  - 1F1/03-04-079-10W4/00
- 2 Clearwater B saline wells
  - 1F2/04-28-078-10W4/00
  - 1F2/01-10-078-10W4/00
- 3 well source water monitoring network
  - 100/03-05-079-10 W4/00 (local)
  - 100/11-02-078-10 W4/00 (regional)
  - 100/03-22-081-08 W4/00 (regional)

**DISPOSAL NETWORK**

- Class 1b Disposal, Approval No. 11479B
- 2 Basal McMurray disposal wells
  - 100/12-33-078-10W4/00
  - 100/13-33-078-10W4/00
- 2 well disposal monitoring network
DISPOSAL WELL MONITORING

- 2 monitoring wells measuring pressure and temperature
  - 100/10-33-078-10W4/2
  - 102/15-28-078-10W4/00
- Bottom water temperature and pressure measurements consistent year-over-year
SOURCE WATER USAGE

Volume (m$^3$)

- 2018-03
- 2018-04
- 2018-05
- 2018-06
- 2018-07
- 2018-08
- 2018-09
- 2018-10
- 2018-11
- 2018-12
- 2019-01
- 2019-02

- 03-04-079-10W4
- 04-09-079-10W4
- 07-10-079-10W4
- 16-04-079-10W4
- 16-09-079-10W4
STEAM INJECTION

Monthly Volume (m³)

- **Turnaround**
- **Voluntary Curtailment**

Monthly Volume

- Mar-18
- Apr-18
- May-18
- Jun-18
- Jul-18
- Aug-18
- Sep-18
- Oct-18
- Nov-18
- Dec-18
- Jan-19
- Feb-19

Monthly Capacity

- Voluntary Curtailment

Legend:

- Blue: Monthly Volume
- Red: Monthly Capacity
Disposal limit calculated as per Directive 081
OTHER WASTE STREAMS

SOLIDS DISPOSAL:
- Water treatment solids (lime softening) are pumped to settling pond
- The pond is dredged and solids removed for offsite disposal as required
- No disposal required during this reporting period
SURFACE
SULPHUR PRODUCTION
SULPHUR & SULPHUR DIOXIDE REPORTING

- EPEA Approval No. 241311 limit is 2.0 t/d of SO₂ emissions
- Average daily SO₂ emissions over period was 0.99 t/d (50% of approval limit)
- SO₂ emissions are calculated based on analytical results of produced gas samples
- There are no sulphur recovery facilities at Leismer
DAILY & QUARTERLY SULPHUR EMISSIONS

Sulphur Dioxide Emissions

Avg Quarterly Emissions
Q1-2018: 1.29 t/d
Q2-2018: 0.77 t/d
Q3-2018: 0.98 t/d
Q4-2018: 0.96 t/d
LEISMER FUTURE PLAN

- CPF debottlenecking to support additional pads/production as required
COMPLIANCE
REGULATORY & ENVIRONMENT
## APPROVALS AND AMENDMENTS

<table>
<thead>
<tr>
<th>Date</th>
<th>Approval/Amendment</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2018</td>
<td>OSCA Approval No. 10935 EPEA 241311-00-06</td>
<td>Replace approved 104.3 MW OTSG with a 124 MW OTSG</td>
</tr>
<tr>
<td>July 2018</td>
<td>Disposal Approval No. 11479B</td>
<td>Amend monitoring well network (replacement well)</td>
</tr>
<tr>
<td>August 2018</td>
<td>OSCA Approval No. 10935V</td>
<td>Pad 8 Development - 10 well pairs and 9 infill wells</td>
</tr>
<tr>
<td>September 2018</td>
<td>OSCA Approval No. 10935W</td>
<td>Pad 6 Infill Development – 4 infill wells</td>
</tr>
<tr>
<td>November 2018</td>
<td>OSCA Approval No. 10935X</td>
<td>Non-Condensable Gas Co-injection – project pads as required</td>
</tr>
<tr>
<td>January 2019</td>
<td>WA License No. 00239880</td>
<td>Amendment to measure water level when a well is producing</td>
</tr>
</tbody>
</table>

**Notes**
- OSCA – Oil Sands Conservation Act (scheme approval)
- EPEA – Environmental Protection and Enhancement Act Approval
- WA - Water Act
# Inspections

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Inspection ID</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>AER Watercourses, August 3, 2018</td>
<td>LOC 930765, LOC 931332</td>
<td>47717</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>AEP Borrow Pit, July, 11, 2018</td>
<td>SML 140055</td>
<td>N/A</td>
<td>Compliance, August 2018</td>
</tr>
<tr>
<td>AER EPEA 241311, October 22, 2018</td>
<td>CPF 08-02-079-10 W4</td>
<td>482196</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>AER Pipeline, October 22, 2018</td>
<td>License 58659</td>
<td>482196</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>AER EPEA 241311, November 22, 2018</td>
<td>CPF 08-02-079-10 W4</td>
<td>482418</td>
<td>Satisfactory</td>
</tr>
</tbody>
</table>

## Audits

- AER, July 27, 2018, requested the Site-Specific Liability Assessment (SSLA) for CPF
  - *SSLA Submitted, August 2018*
## Non-Compliance Summary

<table>
<thead>
<tr>
<th>Event</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 18, 2018 – AER Notice of Non-Compliance (MARP), Directive 017, Section 12.3.2</td>
<td>AOC submitted requested information May 24, 2018</td>
</tr>
<tr>
<td>January 21, 2019 - AER requested Directive 017 Variance for bitumen measurement outside the scheme boundary (MARP)</td>
<td>AOC submitted Directive 017 Variance Request February 7, 2019</td>
</tr>
<tr>
<td>August 27, 2018 – heavy rain washed out berm resulting in unapproved release of surface water (EPEA Approval No. 241311)</td>
<td>AOC repaired damaged berm and inspected entire berm system to ensure no further potential</td>
</tr>
<tr>
<td>January 30, 2019 – transducer failure prevented daily water level measurement in wells (Water Act Approval No. 239880)</td>
<td>AOC completed equipment repair and replacement</td>
</tr>
</tbody>
</table>

From March 1, 2018 to February 28, 2019 there were 3 reportable releases
AIR QUALITY MONITORING

- Passive air monitoring – no exceedances (SO$_2$, NO$_2$, H$_2$S) of Ambient Air Quality Objectives
- Continuous ambient air monitoring
  - WBEA air monitoring station used, Q1 2018 – only March 2018 data applicable for this reporting period
  - No exceedances (SO$_2$, NO$_2$, H$_2$S) of Ambient Air Quality Objectives
- All monitoring stations registered as required by new Air Monitoring Directive - Jan. 2019
- Leismer has 2 CEMS units reporting data
  - New CEMS units on OTSG 4 & OTSG 5 installed and certified during reporting period
  - CEMS unit on OTSG 1 decommissioned December 2018
**NO\textsubscript{x} MONTHLY AVERAGE**

- New CEMS installed on OTSG 4 & 5, operational October 2018
- CEMS on OTSG 1 no longer reporting as of January 2019

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**OTSG 1 & 4 - Monthly Average NO\textsubscript{x}**

- Mar-18: 10 kg/hr
- Apr-18: 12 kg/hr
- May-18: 14 kg/hr
- Jun-18: 12 kg/hr
- Jul-18: 10 kg/hr
- Aug-18: 8 kg/hr
- Sep-18: 6 kg/hr
- Oct-18: 12 kg/hr
- Nov-18: 10 kg/hr
- Dec-18: 8 kg/hr
- Jan-19: 6 kg/hr
- Feb-19: 4 kg/hr

**OTSG 5 - Monthly Average NO\textsubscript{x}**

- Oct-18: 0 kg/hr
- Nov-18: 0 kg/hr
- Dec-18: 0 kg/hr
- Jan-19: 0 kg/hr
- Feb-19: 0 kg/hr

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**Limit**

- OTSG 1 & 4: 18 kg/hr
- OTSG 5: 20 kg/hr
ENVIRONMENTAL PROTECTION & ENHANCEMENT ACT (EPEA) APPROVAL

- EPEA monitoring programs and/or reports completed during the reporting period:
  - Monthly and annual air emissions
  - Industrial wastewater and runoff
  - Groundwater water - including thermal screening assessment for well pads, new requirement June 2018
  - Soil Monitoring Program report and Soil Management Program Proposal
  - Conservation and Reclamation
  - Wildlife – wildlife monitoring report is submitted every 3 years (May 15, 2018)

- The AER authorized the following program/plans during the reporting period:
  - Reclamation Monitoring Program - October 2018
  - Project-Level Conservation, Reclamation and Closure Plan - January 2019

WATER ACT

- All diversions were below license limits and monthly and annual reporting completed
  - Groundwater licenses (0239880, 0029742, 00368609)
  - Surface water licenses (00273542, 00364442, 00364731)
RECLAMATION PROGRAMS

- MSL 121772 - completed soil placement, contouring, woody debris placement in preparation for tree planting in spring 2019
- Outstanding OSE sites (251) received reclamation certificates in January 2019
- AOC has received reclamation certificates for all OSE programs at Leismer
COMPLIANCE – REGIONAL INITIATIVES

AOC IS A FUNDING MEMBER OF:

- Oil Sands Environmental Monitoring
- Wood Buffalo Environmental Association (WBEA) – air shed monitoring
- Regional Industry Caribou Collaboration (RICC)
- Oil Sands Black Bear Partnership
- Faster Forests – reclamation research industry collaboration
- Industrial Footprint Reduction Options Group (iFROG) – wetland reclamation industry collaboration

AOC PARTICIPATES IN:

- Various CAPP Committees
  - *Oil Sands Environmental Policy and Regulatory Committee*
  - *NE Alberta Caribou Working Group*
  - *Indigenous Affairs Committee*
  - *Air Issues Committee*
ATHABASCA OIL CORPORATION LEISMER PROJECT IS IN COMPLIANCE WITH AER APPROVALS AND REGULATORY REQUIREMENTS

- For the period of March 1, 2018 to February 28, 2019 AOC has no unaddressed non-compliant events