

## **Proposed Sinclair Unit No. 19**

### **Application for Enhanced Oil Recovery Waterflood Project**

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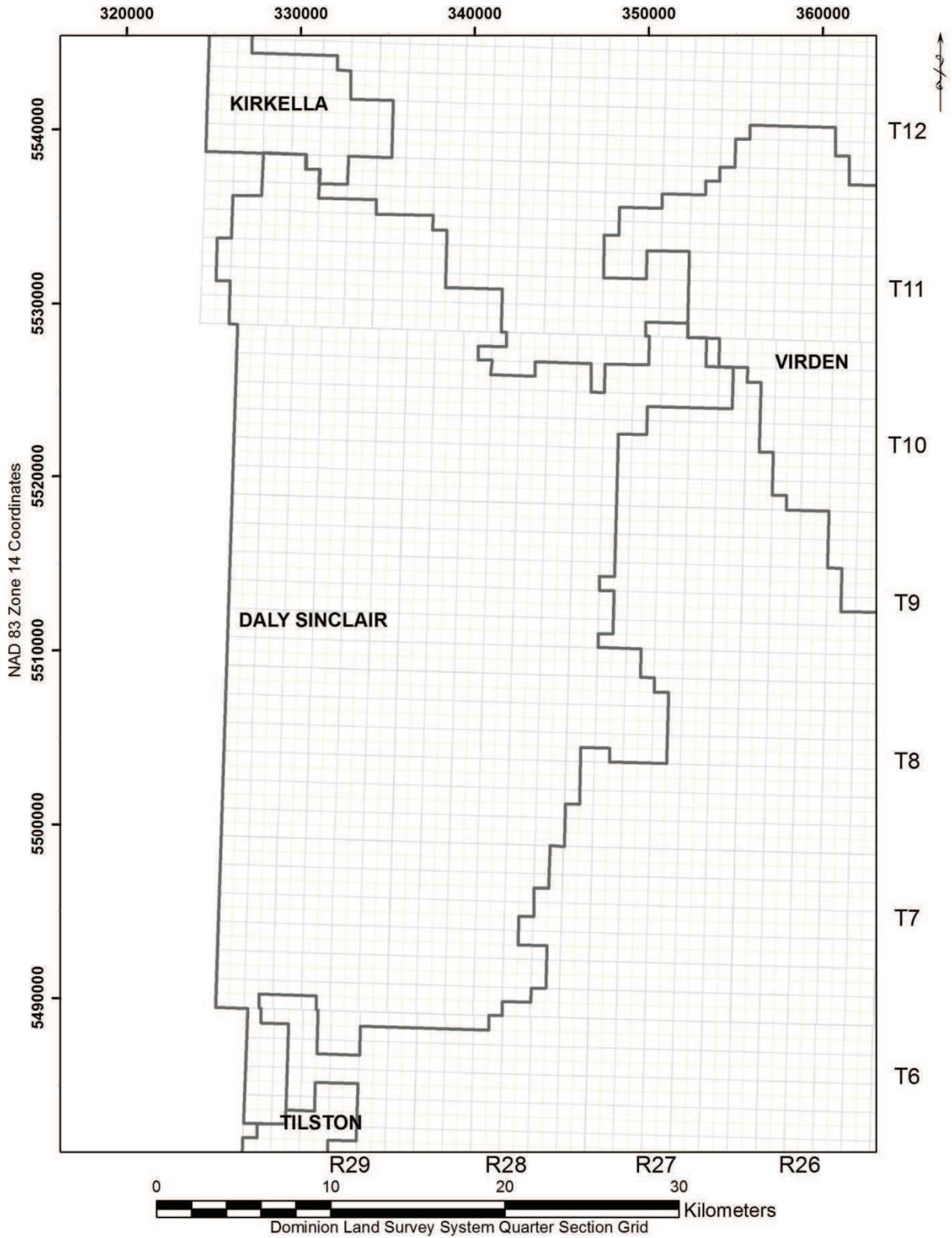
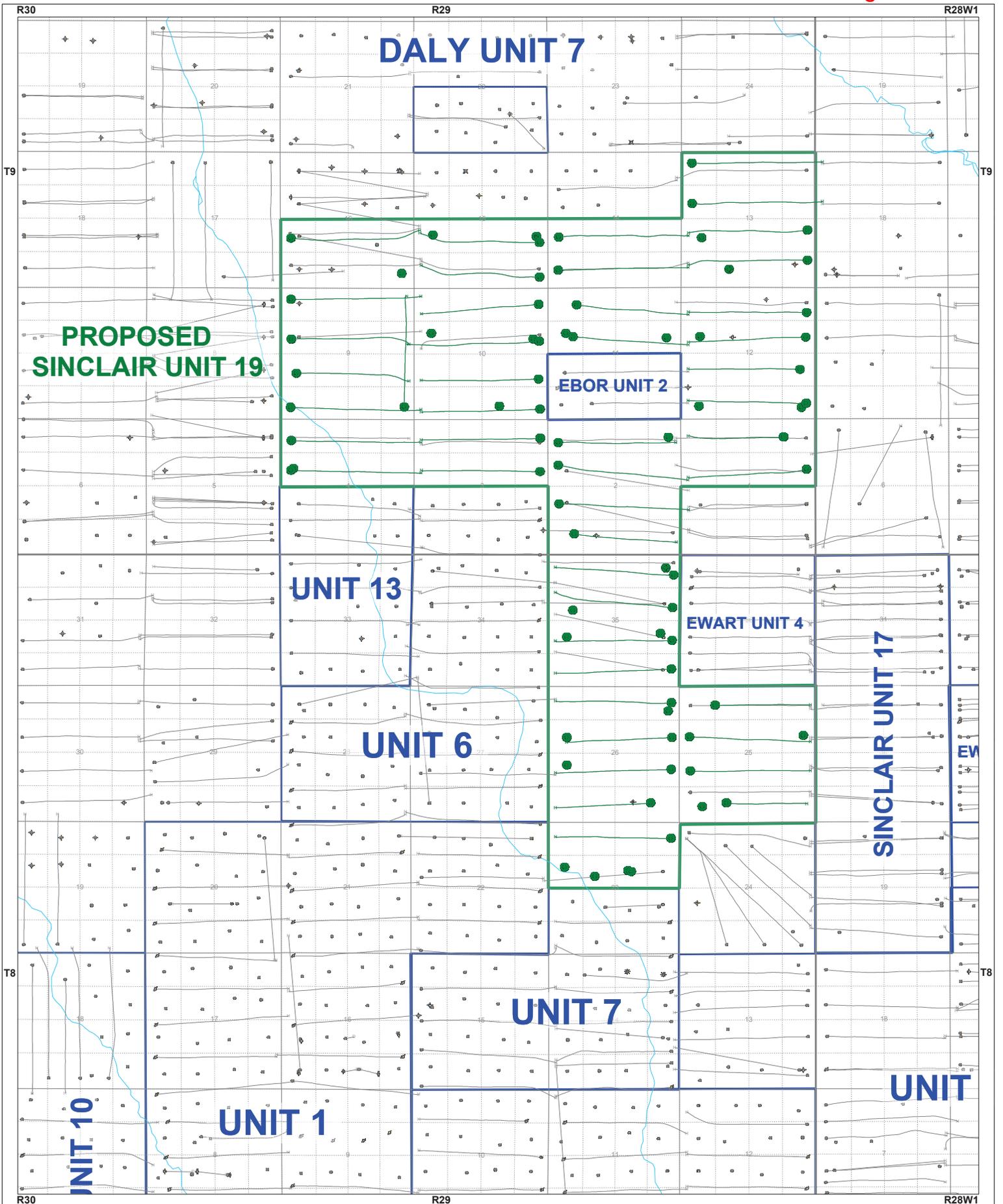
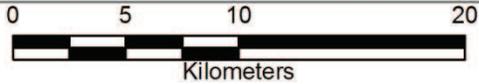
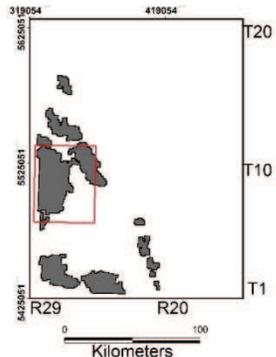
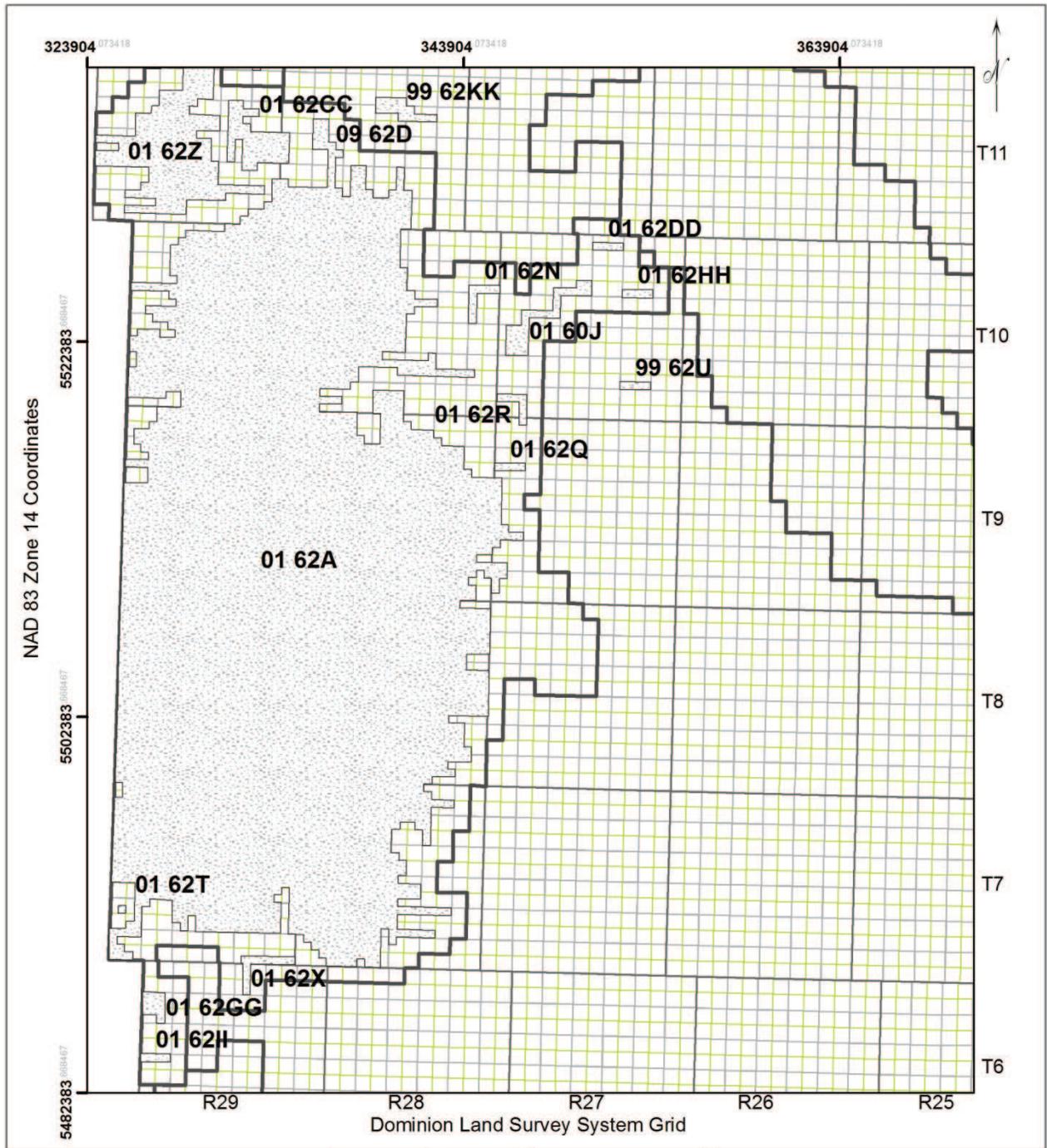


Figure 2 - Daly Sinclair Field (01)



Datum: NAD27 Projection: Stereographic DLS Version AB: ATS 2.6, BC: PRB 2.0, SK: STS 2.5, MB: MLI07

Figure No. 2  
 Sinclair Unit No. 19 Proposed Boundary  
 Sharon Baker, April 18, 2016  
WFS0000Map0000Sharon Baker, AccuMap of Oil Proposed Future Baker Units  
 Amended boundary



- Legend**
- 2016 Fields
  - Oil Pools
  - Township Grid
  - Section Grid
  - Quarter Section Grid

**Map 3**  
 Manitoba's Designated Fields & Pools 2016  
 Well Information: January 1, 2016.  
 Geology by: P. Fulton-Regula  
 Petroleum Branch



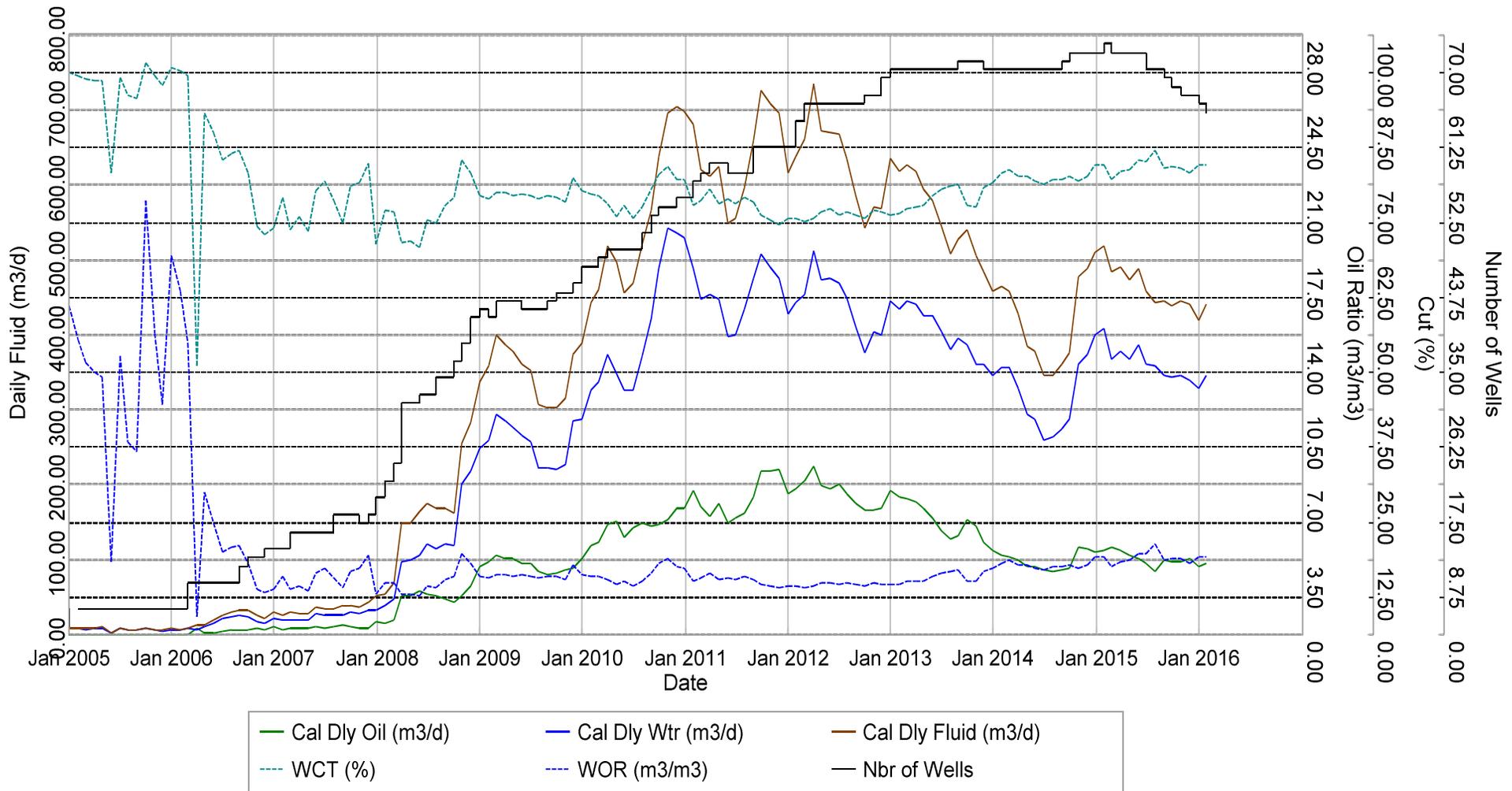
Figure 21 - Map 3 Bakken & Bakken Torquay Formation Pools (60 & 62)

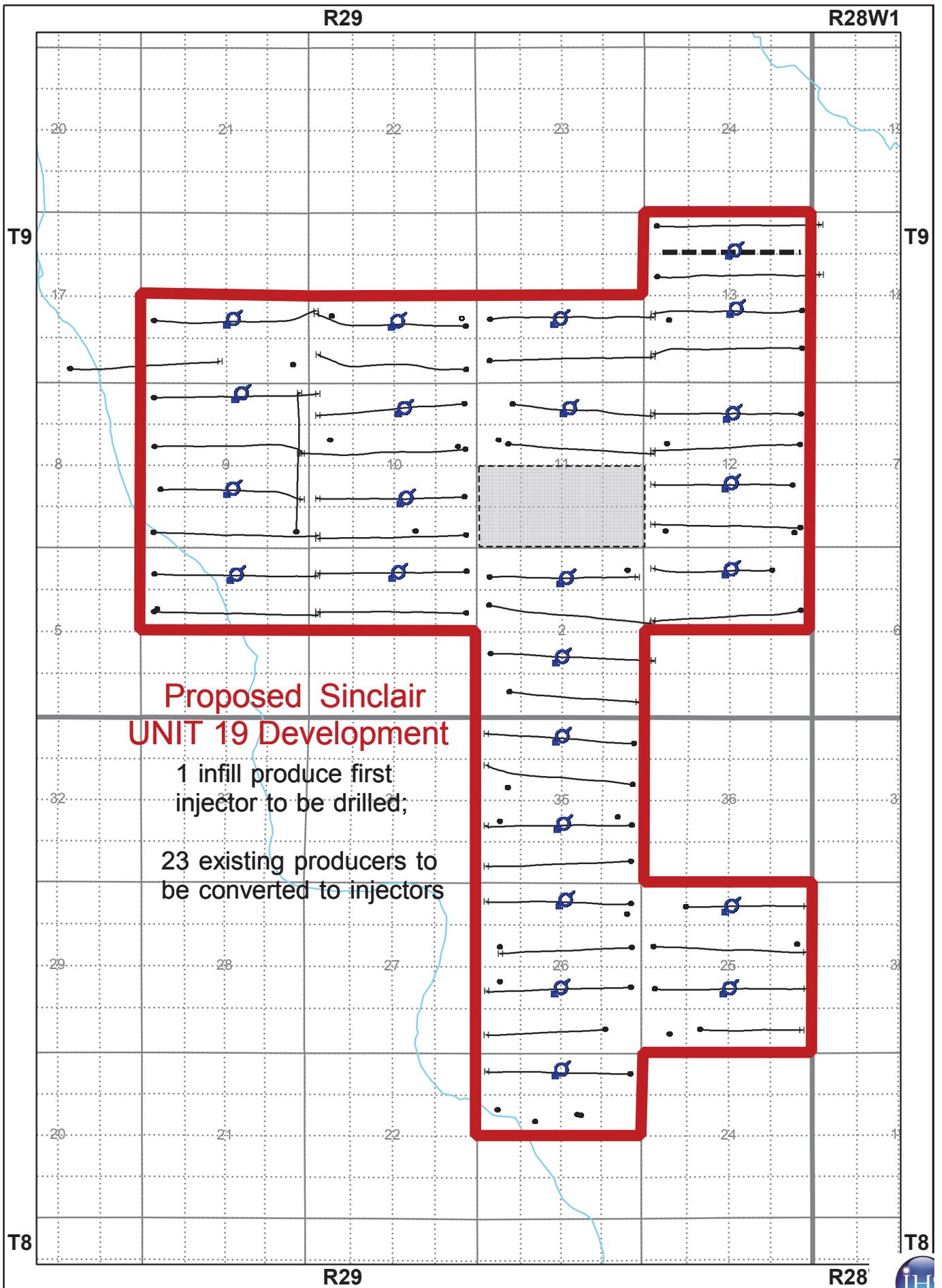
# Well Information as of 4/6/2016 - Group Well Report

Figure No. 4

## Production Graph

<b>Group:</b> sinclair unit no. 19 well list.lwell	<b>On Prod:</b> 1994-07 to 2016-01	<b>Cum Oil:</b> 381829.6 m3
<b># of Wells:</b> 75	<b>Prod Form:</b> BAKKEN; TORQUAY; THREEFK; BAKKENM	<b>Cum Gas:</b> 0.0 E3m3
<b>Fluid:</b> Oil	<b>Field:</b> DALY (1)	<b>Cum Wtr:</b> 1051432.4 m3
<b>Mode:</b> Producing; Abandoned Zone; Pumping; Potential; Comingled	<b>Pool Code:</b> 62B	<b>Cum Inj Oil:</b> 0.0 m3
	<b>Unit Code:</b>	<b>Cum Inj Gas:</b> 0.0 E3m3
		<b>Cum Inj Wtr:</b> 0.0 m3





# Well Information as of 3/18/2016 - Group Well Report

Figure No. 6

## Production Graph

<b>Group:</b>	sinclair unit no. 1 section 4 well list. wls	<b>On Prod:</b>	2004-12 to 2016-01	<b>Cum Oil:</b>	164916.6 m3
<b># of Wells:</b>	16	<b>Prod Form:</b>	BAKKEN; TORQUAY	<b>Cum Gas:</b>	0.0 E3m3
<b>Fluid:</b>	Oil; Water Injection	<b>Field:</b>	DALY (1)	<b>Cum Wtr:</b>	28779.8 m3
<b>Mode:</b>	Producing; Injection; Abandoned	<b>Pool Code:</b>	62B	<b>Cum Inj Oil:</b>	0.0 m3
		<b>Unit Code:</b>	162B01	<b>Cum Inj Gas:</b>	0.0 E3m3
				<b>Cum Inj Wtr:</b>	165741.0 m3

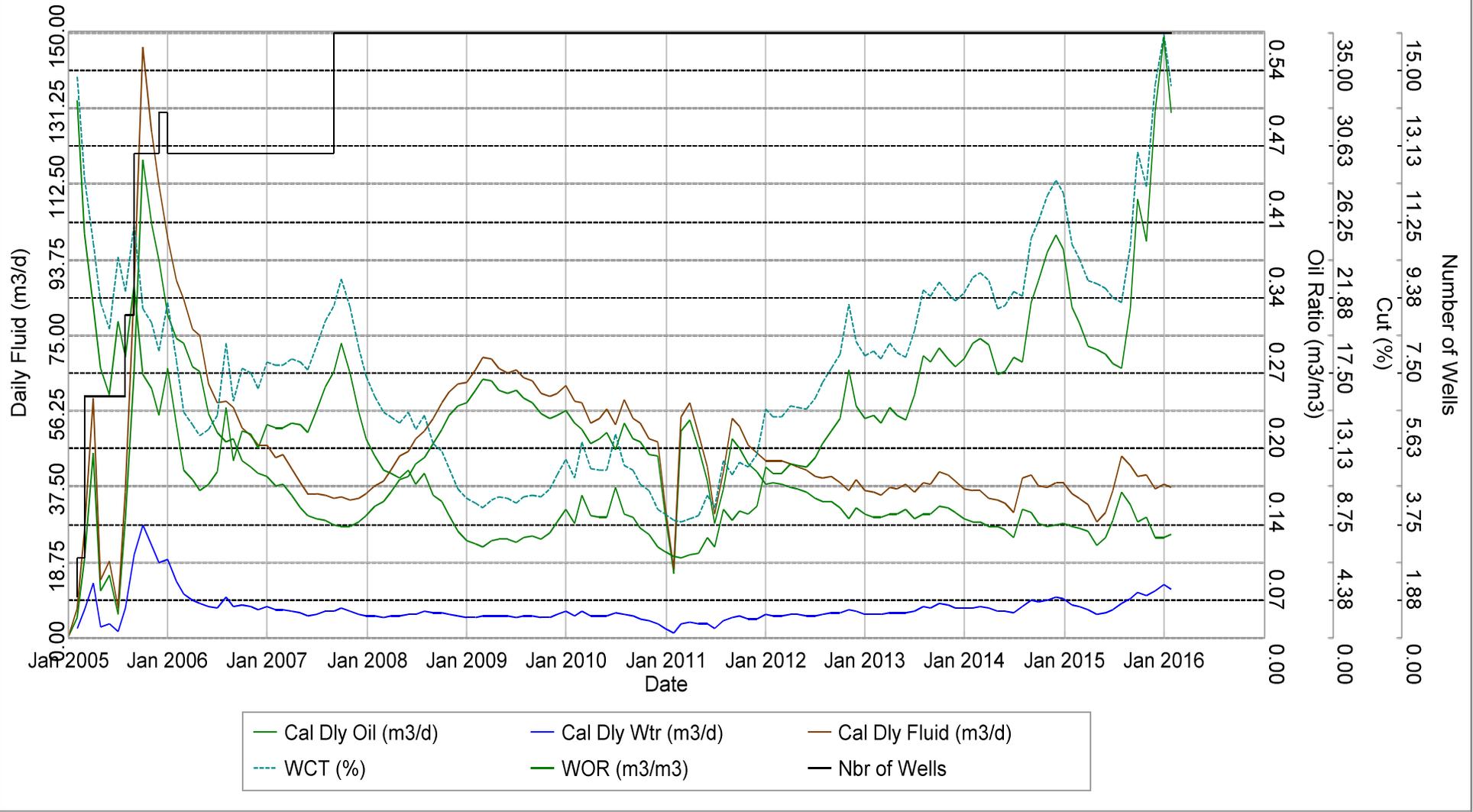
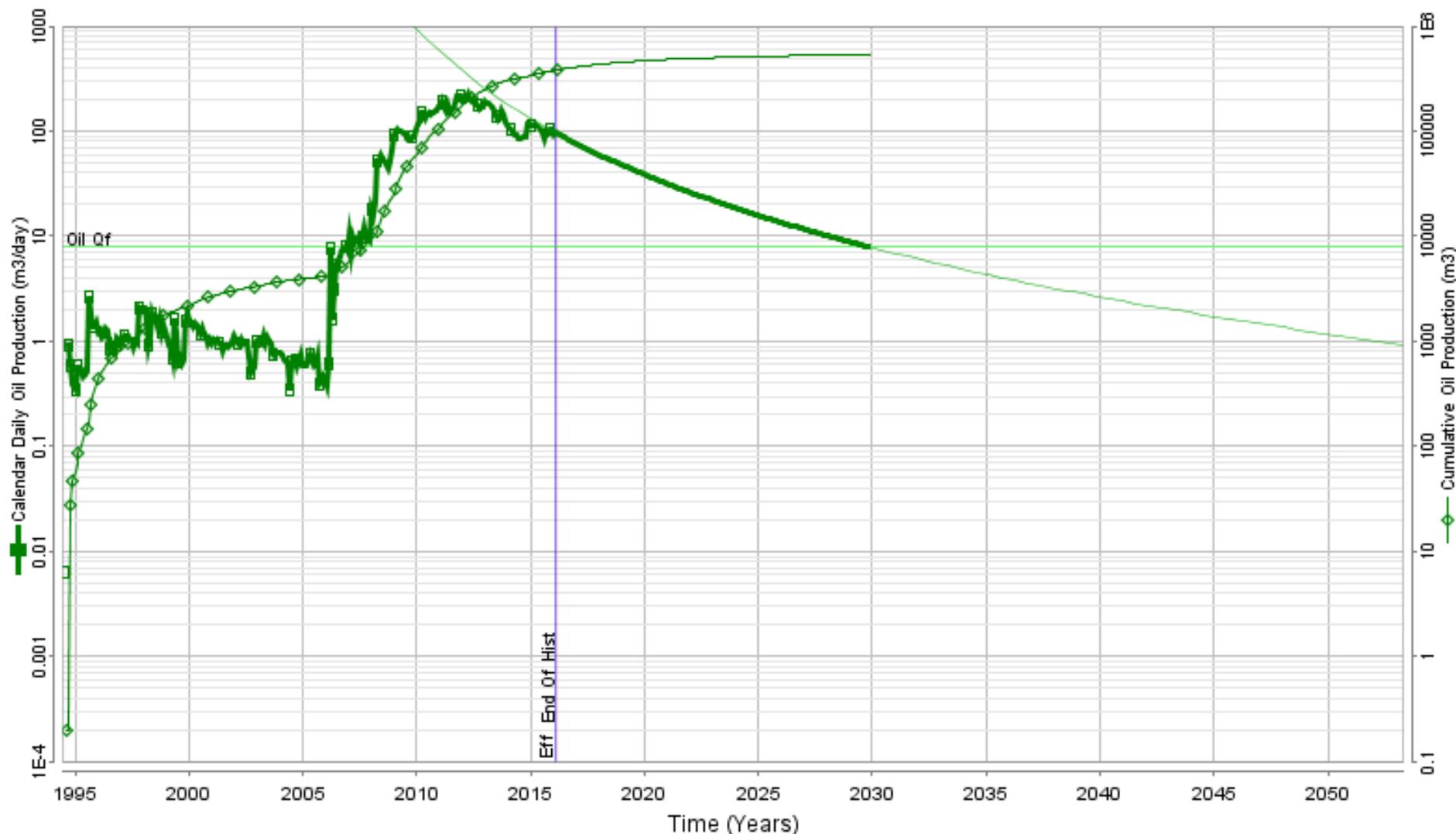


Figure No. 7

Province: Manitoba  
 Field: multi zone (2)  
 Pool: multi zone (2)  
 Unit: multi zone (75)  
 Status: Oil Prod  
 Operator: TUNDRA OIL & GAS LIMITED

Proposed Sinclair Unit 19  
 Proposed Sinclair Unit No. 19  
 Base

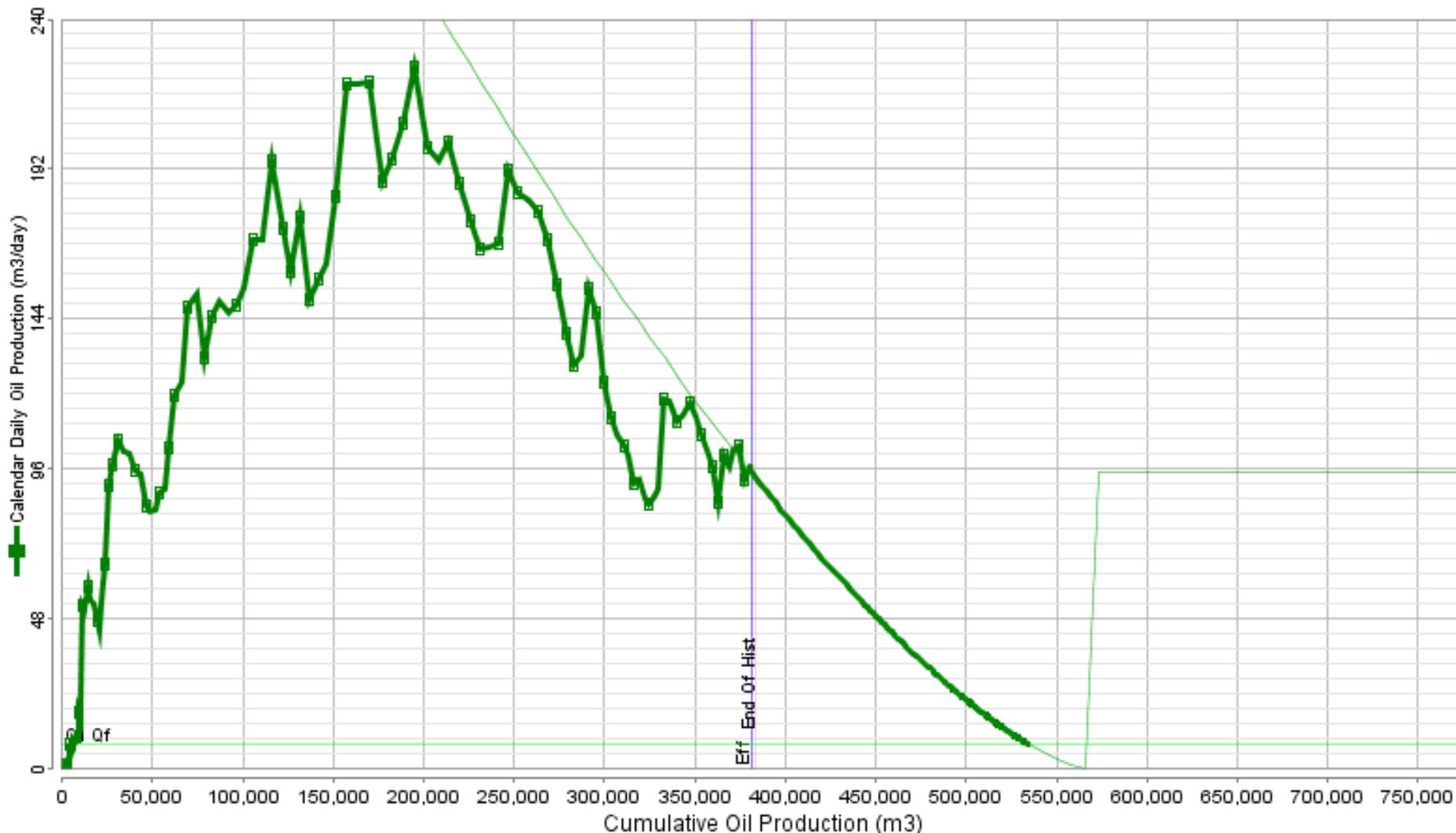


Cum Oil(m3):	383,644	Cum Gas(E3m3):	0	Cum Water(m3):	1,069,860	Cum Cond(m3):	0
Forecast Start:	02/01/2016	Calculation Type:	Decline	Est. Cum Prod (m3):	380,950	Decline Exponent:	0.300
Forecast End:	10/23/2029	OVIP (m3):	0	Remaining (m3):	152,988	Initial Decline (%/yr):	23.7
Initial Rate (m3):	95.9	Recovery Factor:	0.000				
Final Rate (m3):	7.9	Ult. Recoverable (m3):	533,938				

Figure No. 8

Province: Manitoba  
 Field: multi zone (2)  
 Pool: multi zone (2)  
 Unit: multi zone (75)  
 Status: Oil Prod  
 Operator: TUNDRA OIL & GAS LIMITED

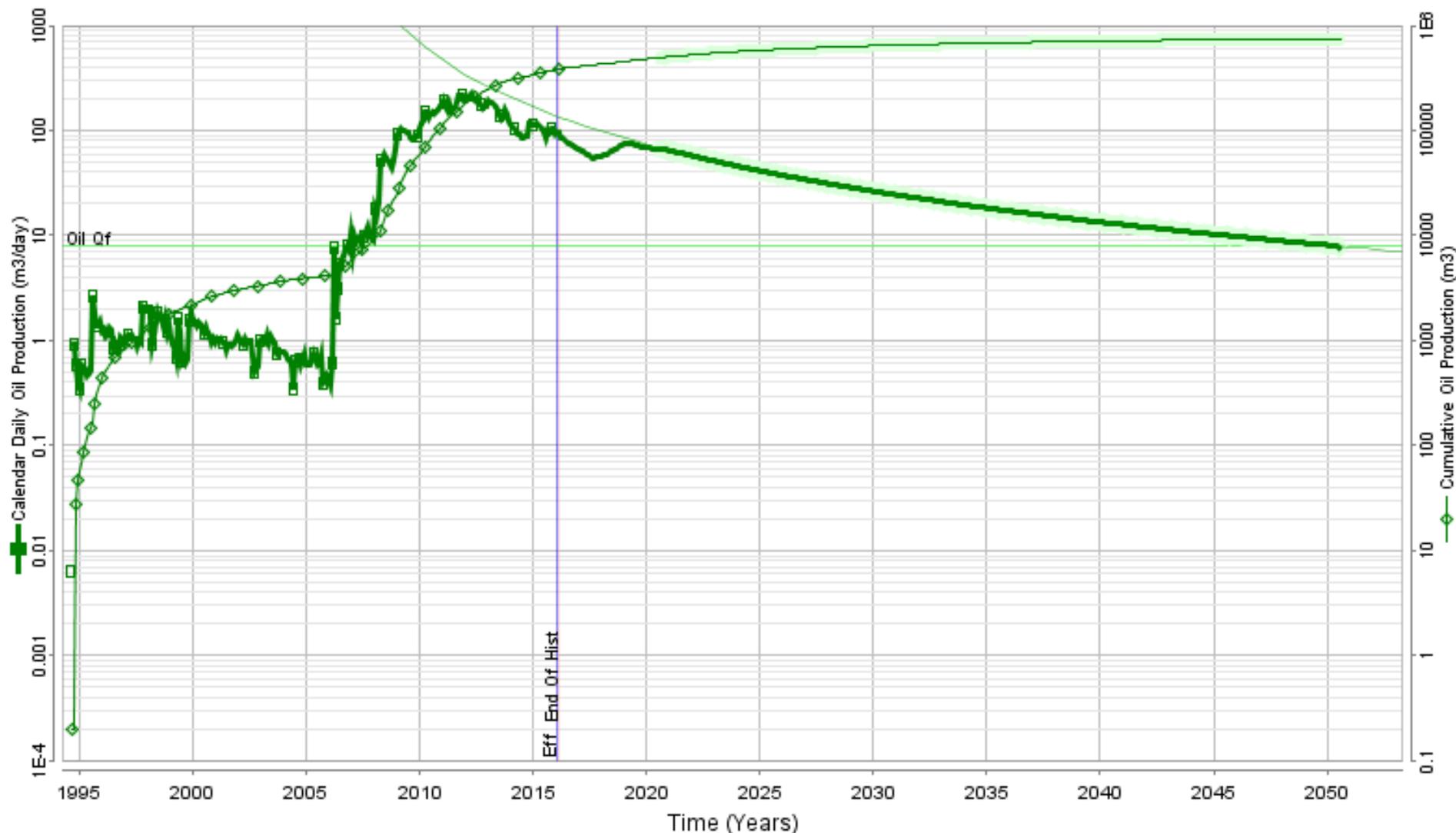
Proposed Sinclair Unit 19  
 Proposed Sinclair Unit No. 19  
 Base



Cum Oil(m3):	383,644	Cum Gas(E3m3):	0	Cum Water(m3):	1,069,860	Cum Cond(m3):	0
Forecast Start:	02/01/2016	Calculation Type:	Decline	Est. Cum Prod (m3):	380,950	Decline Exponent:	0.300
Forecast End:	10/23/2029	OVIP (m3):	0	Remaining (m3):	152,988	Initial Decline (%/yr):	23.7
Initial Rate (m3):	95.9	Recovery Factor:	0.000				
Final Rate (m3):	7.9	Ult. Recoverable (m3):	533,938				

Province: Manitoba  
 Field: multi zone (2)  
 Pool: multi zone (2)  
 Unit: multi zone (75)  
 Status: Oil Prod  
 Operator: TUNDRA OIL & GAS LIMITED

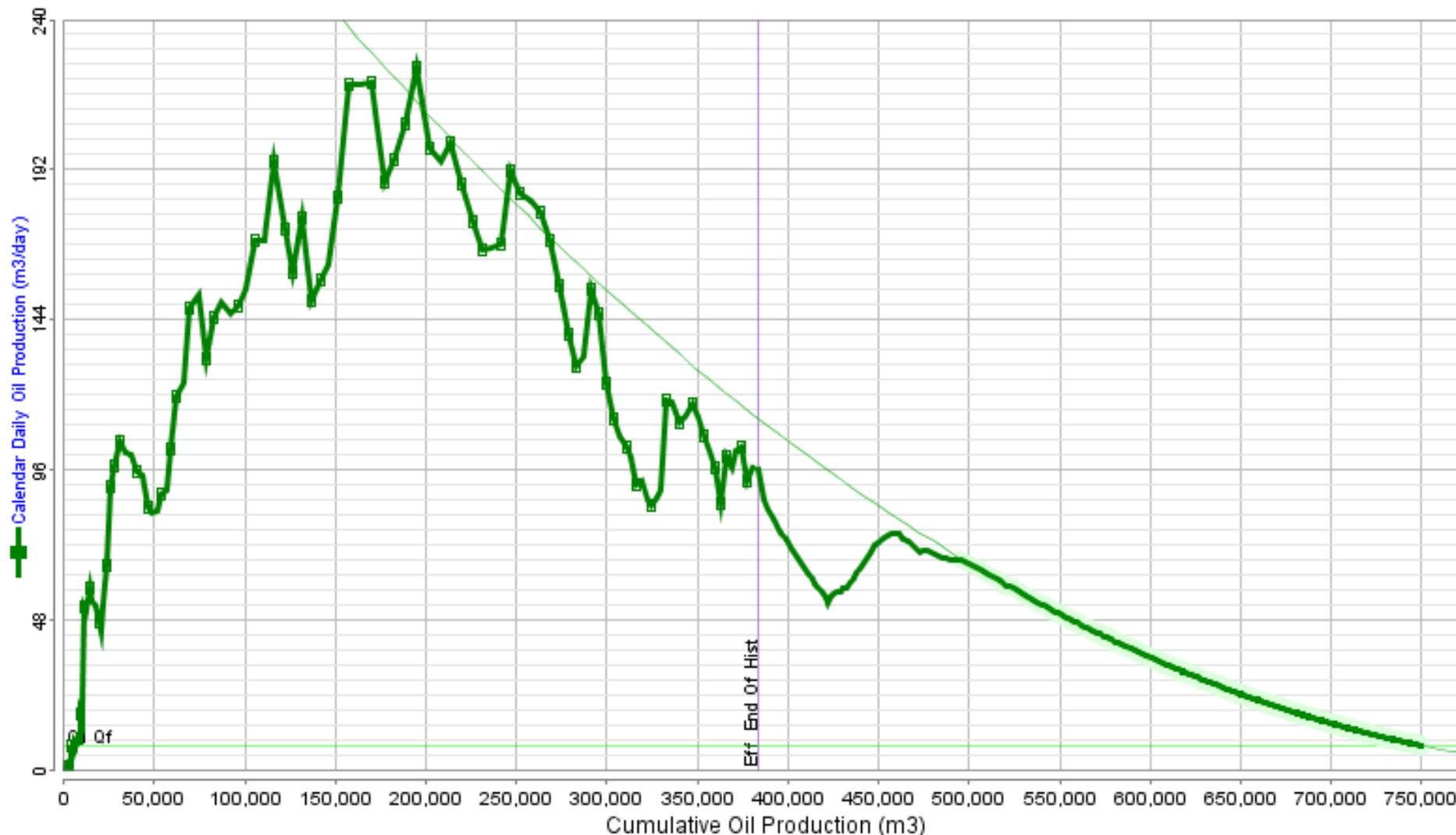
Proposed Sinclair Unit 19  
 Proposed Sinclair Unit No. 19  
 Base + Growth 1



Cum Oil(m3):	383,644	Cum Gas(E3m3):	0	Cum Water(m3):	1,069,860	Cum Cond(m3):	0
Forecast Start:	02/01/2016	Calculation Type:	Decline	Est. Cum Prod (m3):	383,644	Decline Exponent:	0.000
Forecast End:	08/15/2050	OVIP (m3):	0	Remaining (m3):	385,617	Initial Decline (%/yr):	0.0
Initial Rate (m3):	95.9	Recovery Factor:	0.000				
Final Rate (m3):	7.9	Ult. Recoverable (m3):	749,281				

Province: Manitoba  
 Field: multi zone (2)  
 Pool: multi zone (2)  
 Unit: multi zone (75)  
 Status: Oil Prod  
 Operator: TUNDRA OIL & GAS LIMITED

Proposed Sinclair Unit 19  
 Proposed Sinclair Unit No. 19  
 Base + Growth 1



Cum Oil(m3):	383,644	Cum Gas(E3m3):	0	Cum Water(m3):	1,089,880	Cum Cond(m3):	0
Forecast Start:	02/01/2016	Calculation Type:	Decline	Est. Cum Prod (m3):	383,644	Decline Exponent:	0.000
Forecast End:	08/15/2050	OVIP (m3):	0	Remaining (m3):	385,617	Initial Decline (%/yr):	0.0
Initial Rate (m3):	95.9	Recovery Factor:	0.000				
Final Rate (m3):	7.9	Ult. Recoverable (m3):	749,261				





# Sinclair Unit No. 19

## EOR Waterflood Project

### Planned Corrosion Control Program \*\*

#### Source Well

- Continuous downhole corrosion inhibition
- Continuous surface corrosion inhibitor injection
- Downhole scale inhibitor injection
- Corrosion resistant valves and internally coated surface piping

#### Pipelines

- Source well to 3-4-8-29 Water Plant – Fiberglass
- New High Pressure Pipeline to Unit 9 injection wells – 2000 psi high pressure Fiberglass

#### Facilities

- 3-4-8-29 Water Plant and New Injection Pump Station
  - Plant piping – 600 ANSI schedule 80 pipe, Fiberglass or Internally coated
  - Filtration – Stainless steel bodies and PVC piping
  - Pumping – Ceramic plungers, stainless steel disc valves
  - Tanks – Fiberglass shell, corrosion resistant valves

#### Injection Wellhead / Surface Piping

- Corrosion resistant valves and stainless steel and/or internally coated steel surface piping

#### Injection Well

- Casing cathodic protection where required
- Wetted surfaces coated downhole packer
- Corrosion inhibited water in the annulus between tubing / casing
- Internally coated tubing surface to packer
- Surface freeze protection of annular fluid
- Corrosion resistant master valve
- Corrosion resistant pipeline valve

#### Producing Wells

- Casing cathodic protection where required
- Downhole batch corrosion inhibition as required
- Downhole scale inhibitor injection as required

**Figure 13**

\*\* subject to final design and engineering