

Proposed Cromer Unit No. 3
Application for Enhanced Oil Recovery Waterflood Project

List of Figures

Figure 1	Daly Sinclair Field Area Map
Figure 2	Cromer Unit No. 3 Proposed Boundary
Figure 3	Bakken-Three Forks A Pool
Figure 4	Cromer Unit No. 3 Historical Production
Figure 5	Cromer Unit No. 3 Development Plan
Figure 6	Sinclair Pilot Waterflood Section 4 Production Profile
Figure 7a	Cromer Unit No. 3 Primary Recovery – Rate v. Cumulative Oil
Figure 7b	Cromer Unit No. 3 Primary Recovery – Rate v. Time
Figure 8a	Cromer Unit No. 3 Primary + Secondary Recovery – Rate v. Cumulative Oil
Figure 8b	Cromer Unit No. 3 Primary + Secondary Recovery – Rate v. Time
Figure 9	Cromer Unit No. 3 Injection Facilities Process Flow Diagram
Figure 10	Typical Openhole Water Injection Well Downhole Diagram
Figure 11	Planned Corrosion Program

Figure 1

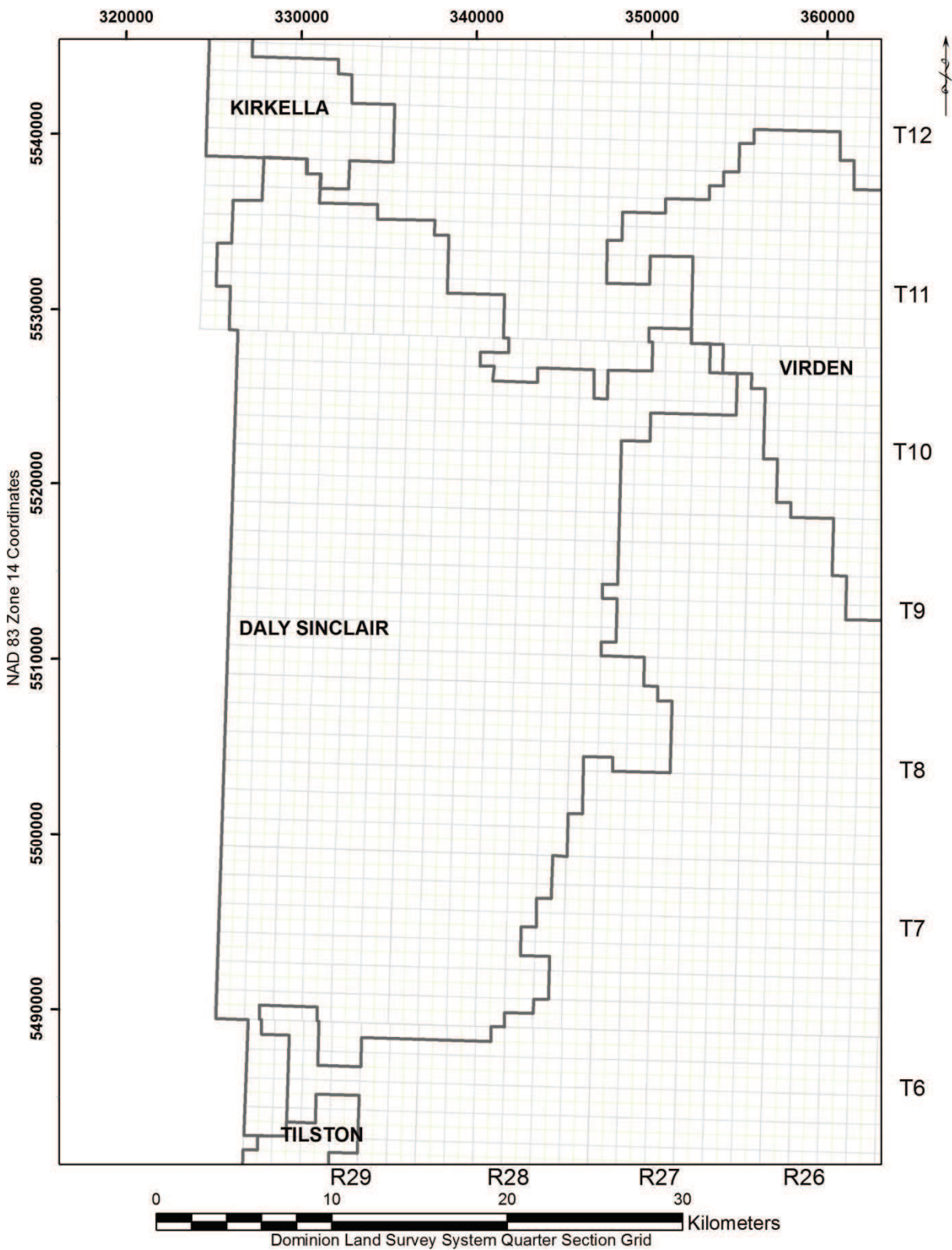
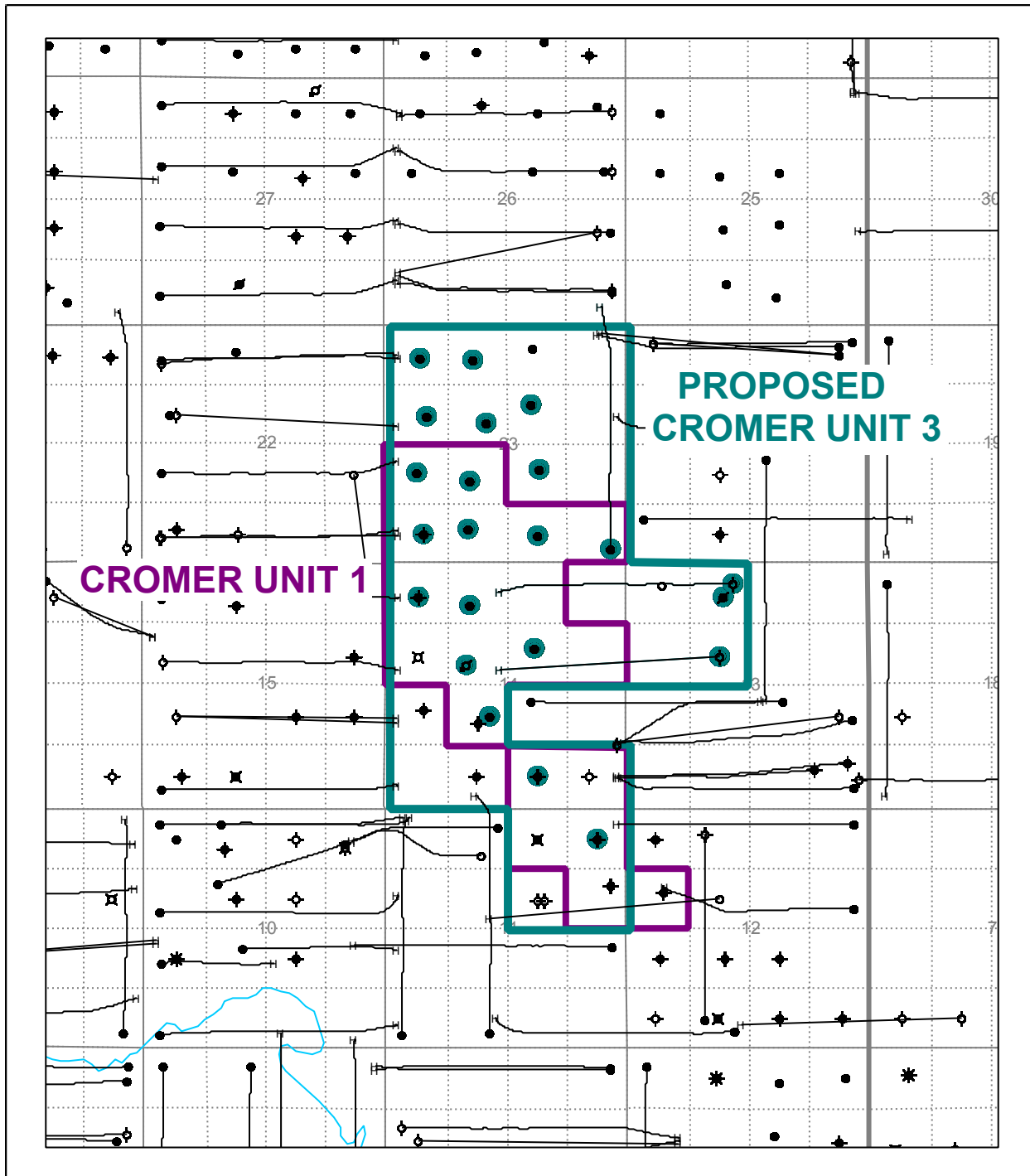


Figure 2 - Daly Sinclair Field (01)



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

Figure 2
Proposed Cromer Unit 3 (Bakken)
S. Baker, May 21, 2015
\\FS02\AccuMapData\Sharon.Baker\New_AccuMap\Sinclair Units\Cromer Unit 1 Expansion_Bakken.accumap



Figure No. 3

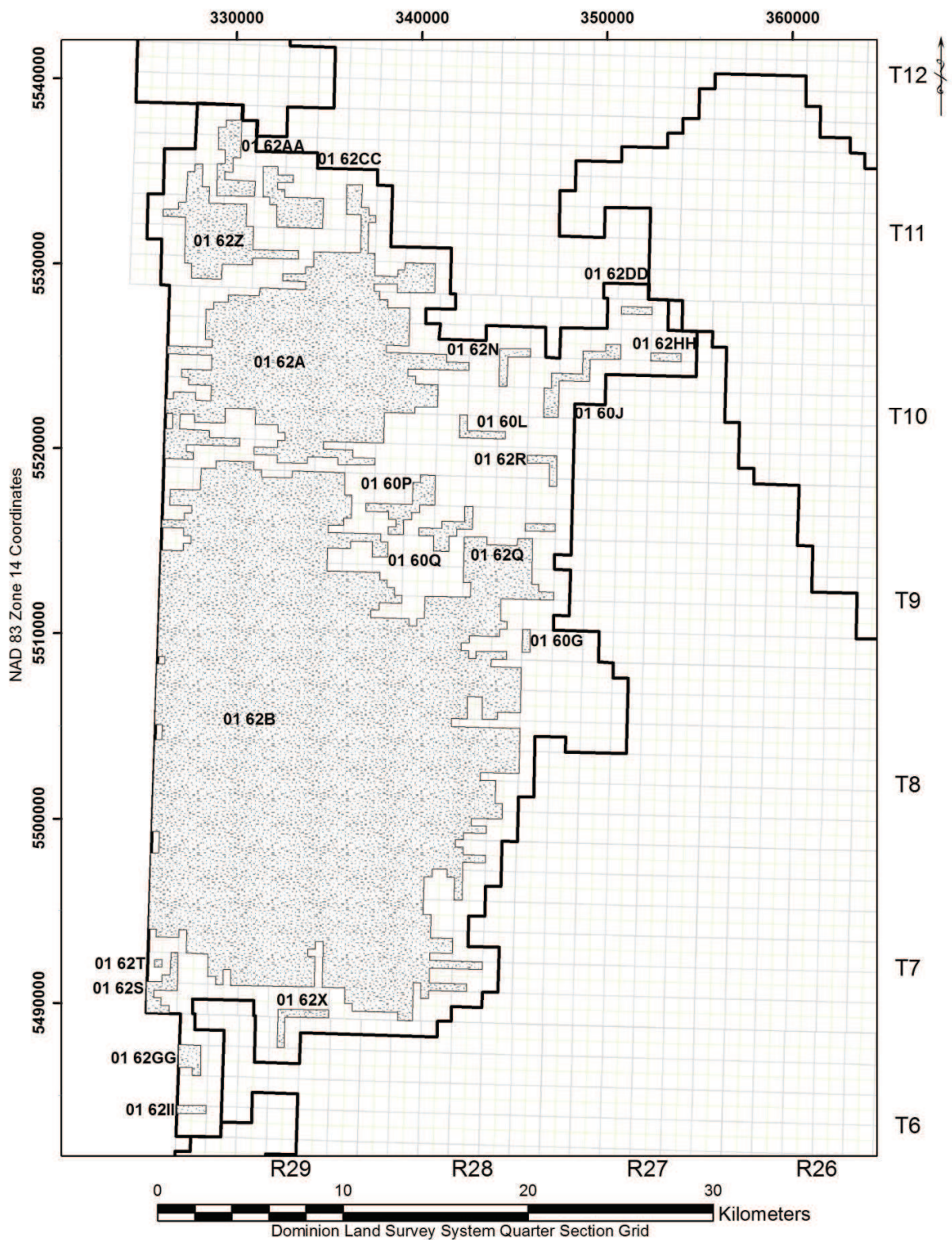
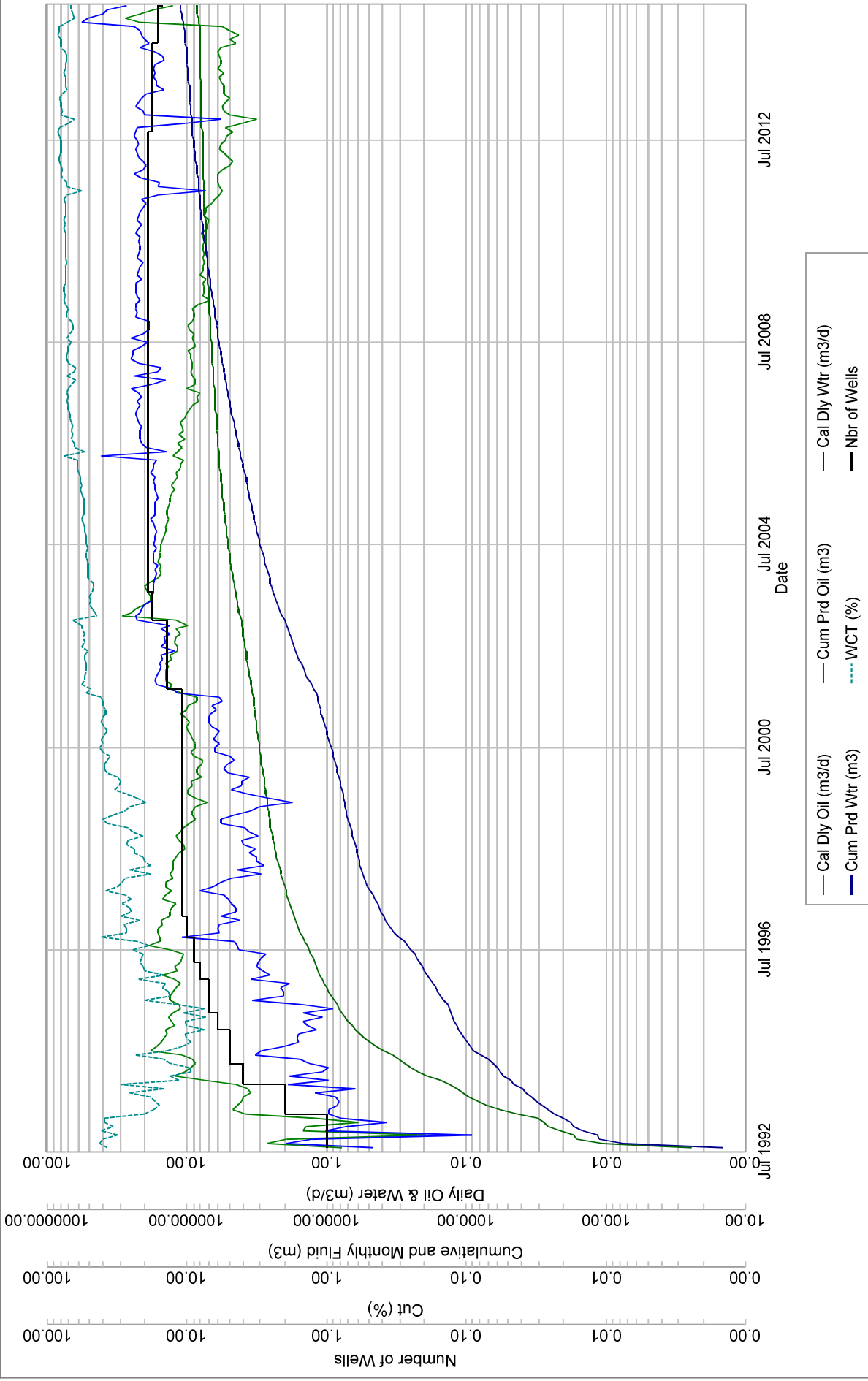


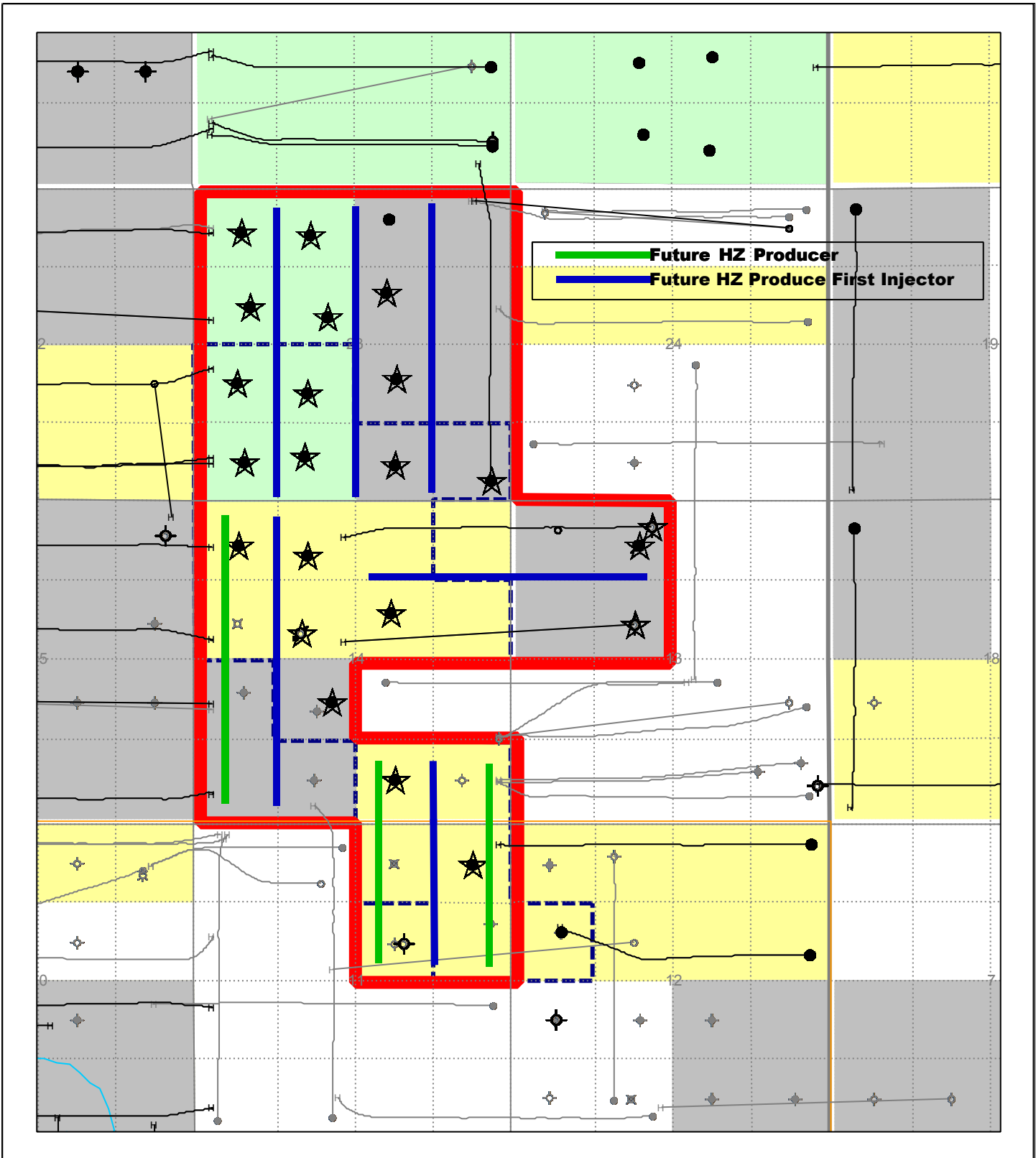
Figure 13 - Daly Sinclair Bakken & Bakken-Three Forks Pools
(01 60A - 01 60BB & 01 62A - 01 62II)

Figure 4

Production Graph

Group:	comer unit 1 expansion bakken.lwell	Prod Form:	BAKKEN; THREEFK	On Prod:	1992-07 to 2015-02
# of Wells:	22	Field:	DALY (1)	Cum Oil:	84967.8 m3
Fluid:	Oil; Water Injection	Pool Code:	62B	Cum Gas:	0.0 E3m3
Mode:	Pumping; Standing; Producing; Comingled; Injection	Unit Code:	162B01	Cum Wtr:	111536.2 m3





— **Future HZ Producer**
— **Future HZ Produce First Injector**

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

Map Legend			
Wells Abandoned Gas Abandoned Heavy Oil Abandoned Oil Abandoned Oil & Gas Abandoned Service Cancelled Drilling	Dry & Abandoned Gas Gas Injection Heavy Oil Injection Location Oil Oil & Gas	Service or Drain Suspended Suspended Gas Suspended Heavy Oil Suspended Oil Suspended Oil & Gas Limits Wells - Tundra Licensed (Tundra License...)	Stars - Cromer Unit # X wells - after c... TUNDRA OIL & GAS LIMITED Layers 14 Tundra Crown Mineral 16 Tundra Freehold Mineral 18 Tundra Fee Simple Mineral Cromer Unit #1 Proposed Cromer Unit Expansion

Daly Oil Cum
New Bakken Cromer Unit Boundary & Development
 May 07, 2015
 Cromer Unit 1a.accumap



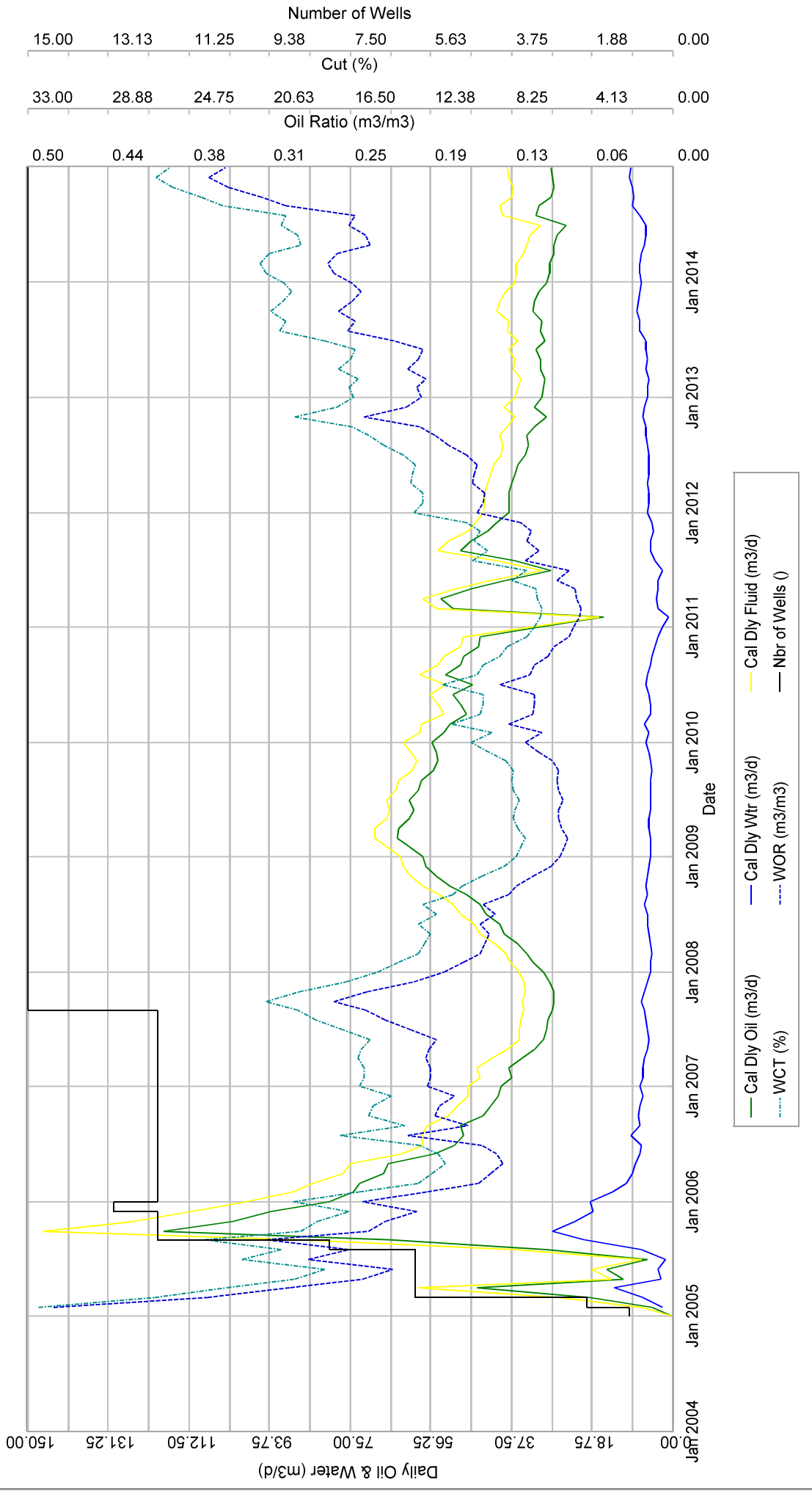
Production Graph

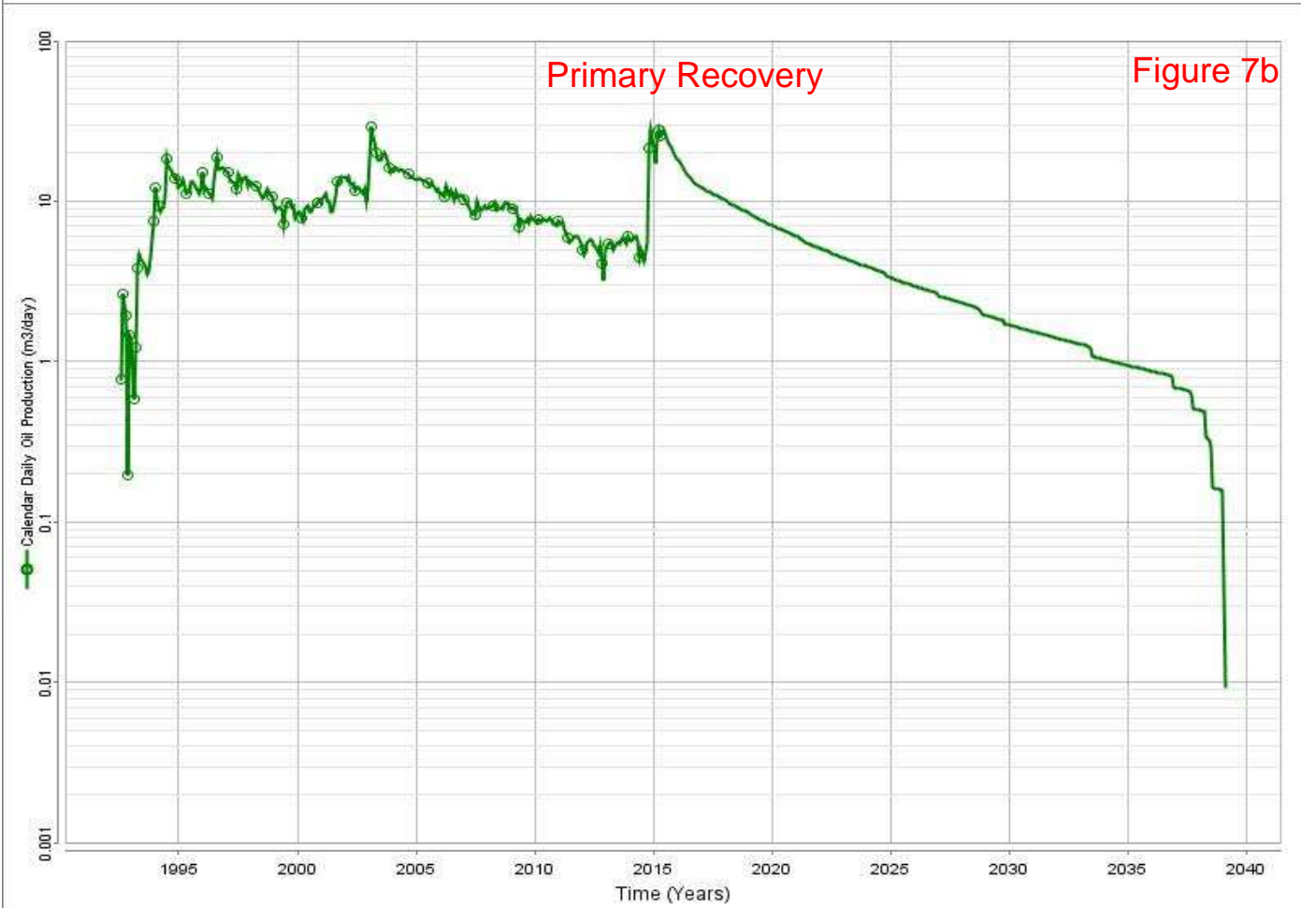
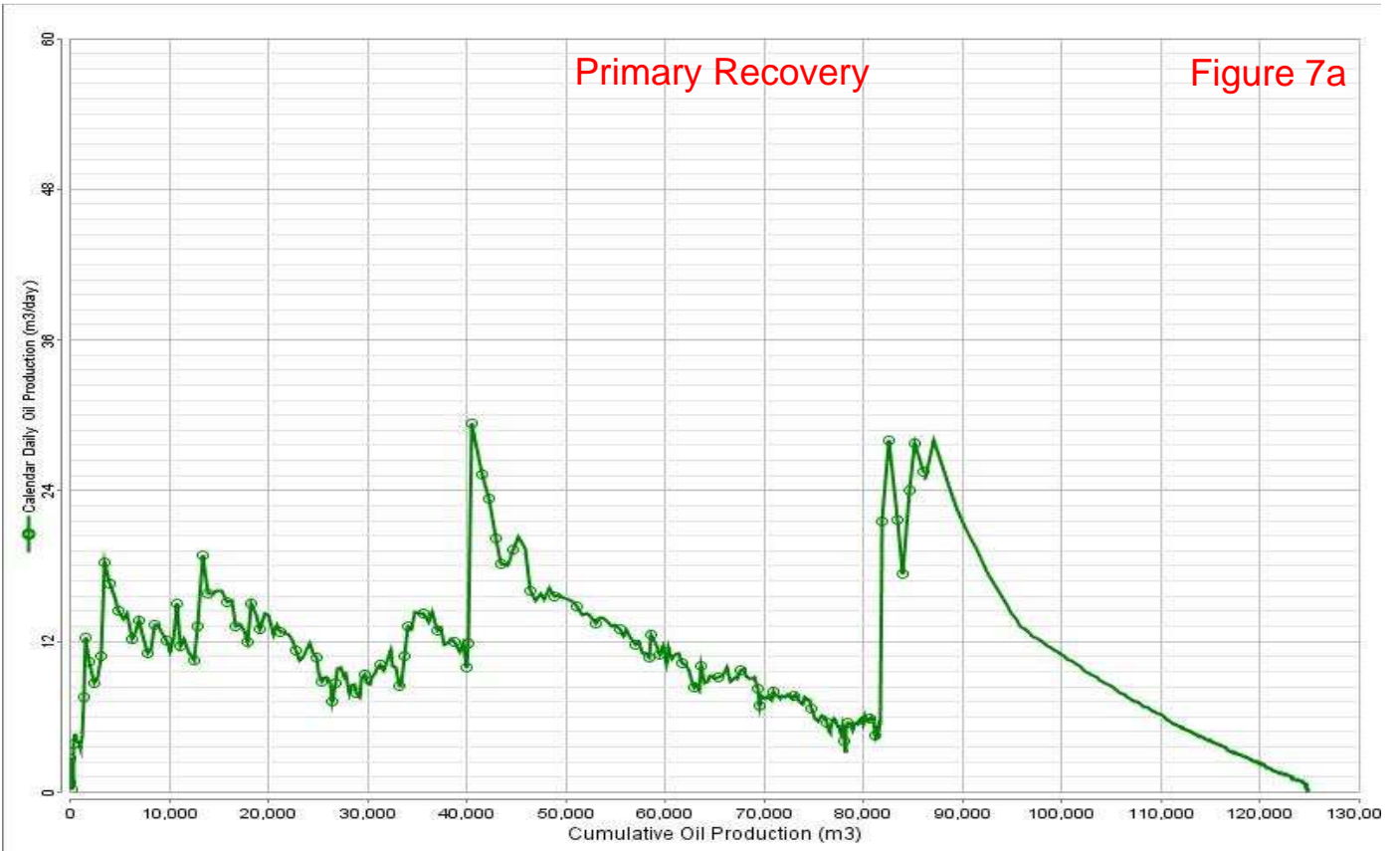
of Wells: 16
 Fluid: Oil; Water Injection
 Mode: Producing; Injection

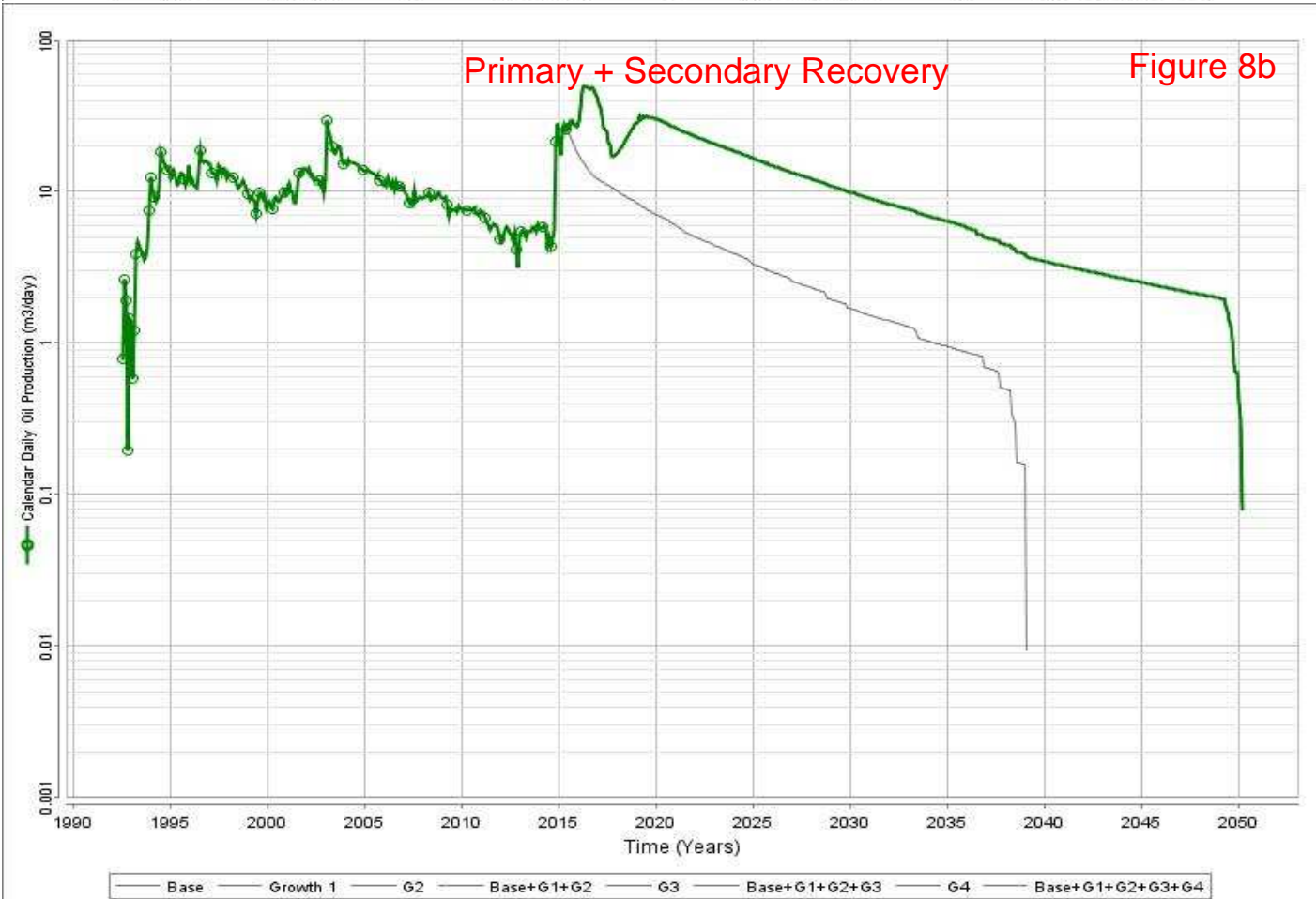
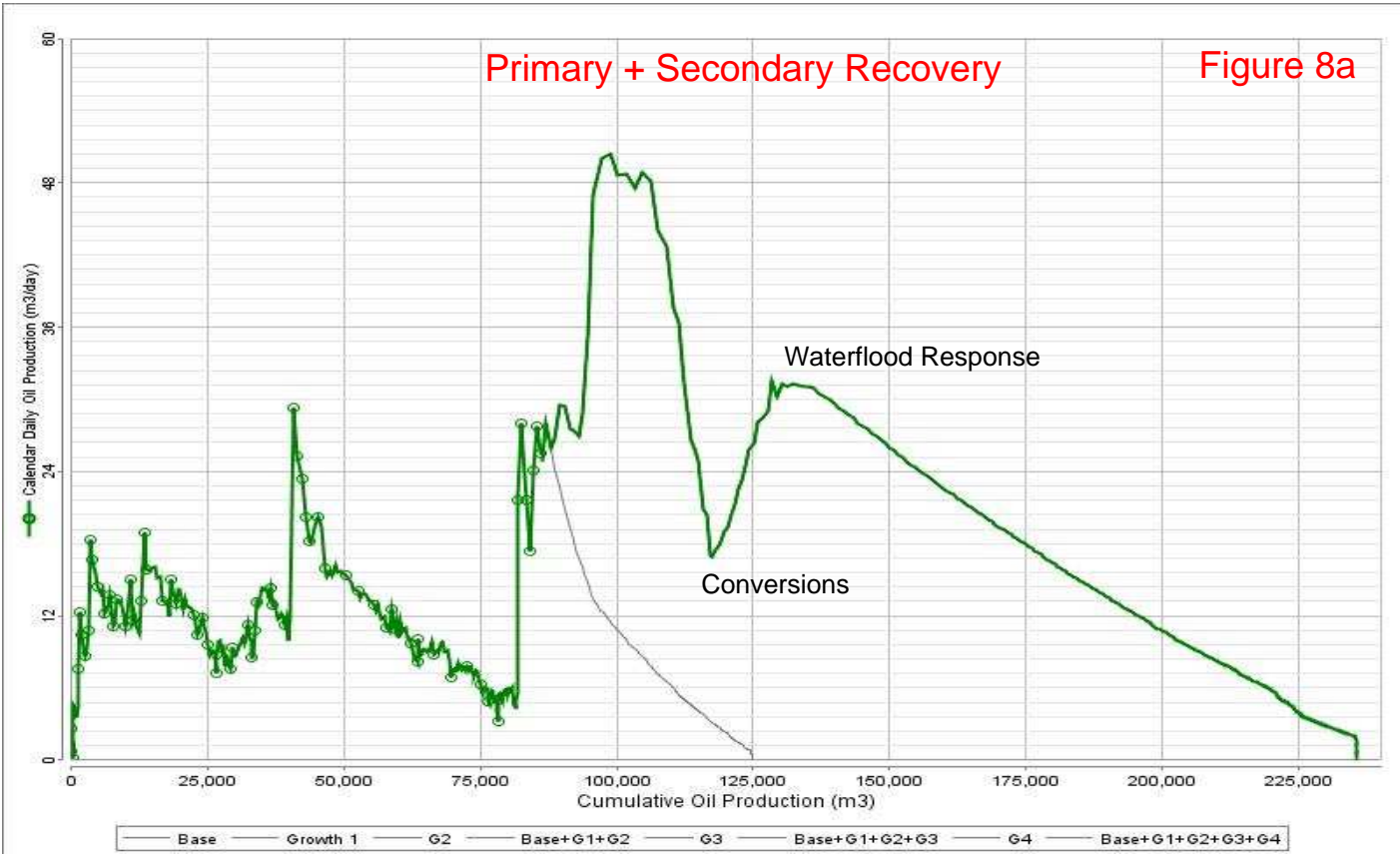
Prod Zone: BAKKEN; TORQUAY
 Field: DALY (1)
 Pool Code: 62B
 Unit Code: 162B01

On Prod: 2004-12 to 2014-12
 Cum Oil: 153901.9 m3
 Cum Gas: 0.0 E3m3
 Cum Wtr: 25140.1 m3

Figure 6







TK-203
FIBERGLASS WATER TANK
79.4m³ (500 BBL)

TK-201
FIBERGLASS WATER TANK
79.4m³ (500 BBL)

P-400A/B
CHARGE PUMP
GRUND FOS
TYPE: CRN64-2-1 A-G-G-E-KUBE
MODEL:A96416023-P10931193
DRIVE: 20 HP @ 3520 RPM
575V/3P/60Hz TEFC.

F-400A/B
FILTER
CERT BY: FILTER SOLUTIONS INC
MAWP: 150PSI @ 225°F
MDMT: -20°F @ 150PSI
S/N: 10994-A3
BUILT: 2010

F-401 A/B
FILTER
CERT BY: FILTER SOLUTIONS INC
MAWP: 150PSI @ 225°F
MDMT: -20°F @ 150PSI
S/N: 10994-A2
BUILT: 2010

F-420
FILTER
CERT BY: FILTER SOLUTIONS INC
MAWP: 150PSI @ 225°F
MDMT: -20°F @ 150PSI
S/N: 10994-A4
BUILT: 2010

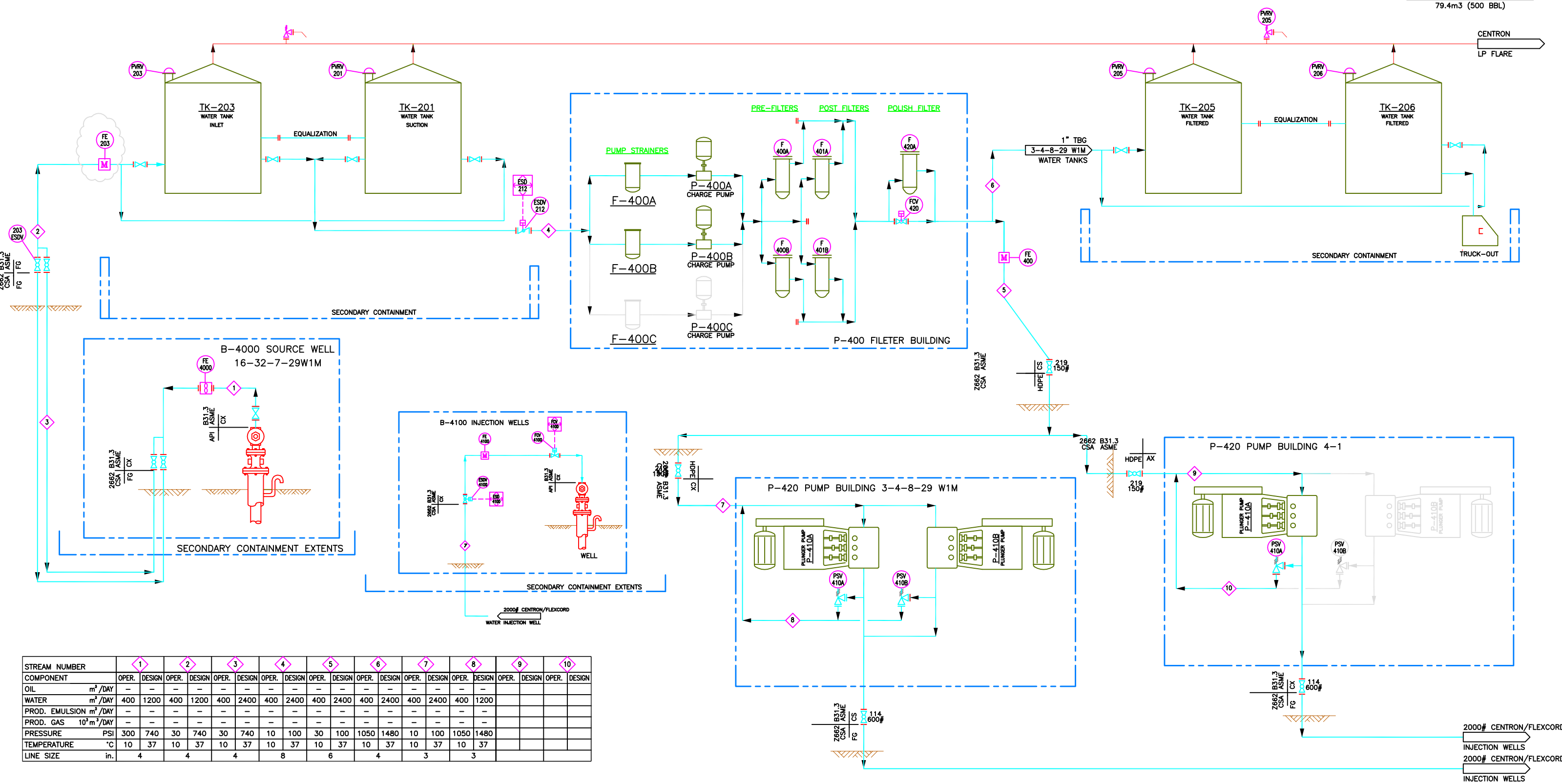
P-410A
WATER INJECTION PUMP
VENDOR: GARDNER DENVER
MODEL: GD-100T
CAPACITY: 340-680 m³/day
DRIVER: 100 HP TEFC
DP:1200 RPM, 575V/3P/60Hz
PISTON SIZE: 2 3/4

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MODEL: GD-100T
CAPACITY: 340-680 m³/day
DRIVER: 100 HP TEFC
DP:1200 RPM, 575V/3P/60Hz
PISTON SIZE: 3 1/2

TK-205
FIBERGLASS WATER TANK
79.4m³ (500 BBL)

TK-206
FIBERGLASS WATER TANK
79.4m³ (500 BBL)



STREAM NUMBER	1		2		3		4		5		6		7		8		9		10	
	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN
OIL	m ³ /DAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WATER	m ³ /DAY	400	1200	400	1200	400	2400	400	2400	400	2400	400	2400	400	2400	400	1200	-	-	-
PROD. EMULSION	m ³ /DAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROD. GAS	10 ³ m ³ /DAY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRESSURE	PSI	300	740	30	740	30	740	10	100	30	100	1050	1480	10	100	1050	1480	-	-	-
TEMPERATURE	°C	10	37	10	37	10	37	10	37	10	37	10	37	10	37	10	37	-	-	-
LINE SIZE	in.	4	4	4	4	8	6	4	3	3	-	-	-	-	-	-	-	-	-	-

Figure 9

NOTES:

TUNDRA
OIL & GAS PARTNERSHIP

SINCLAIR
03-04-008-29/13-10-009-28 W1M

WATER INJECTION
PROCESS FLOW DIAGRAM

DRAWN BY: RM

SCALE: NTS

AFE: TBA

DRAWING NUMBER: FAIRWAY UNIT INJECTION PFD

REV NO: 1

REV	DESCRIPTION	BY	DATE	CHK	APP	REFERENCE DRAWING
0	AS-BUILT		30-JUNE 2014	LF	JC	

Cromer Unit No. 3

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 11

** subject to final design and engineering