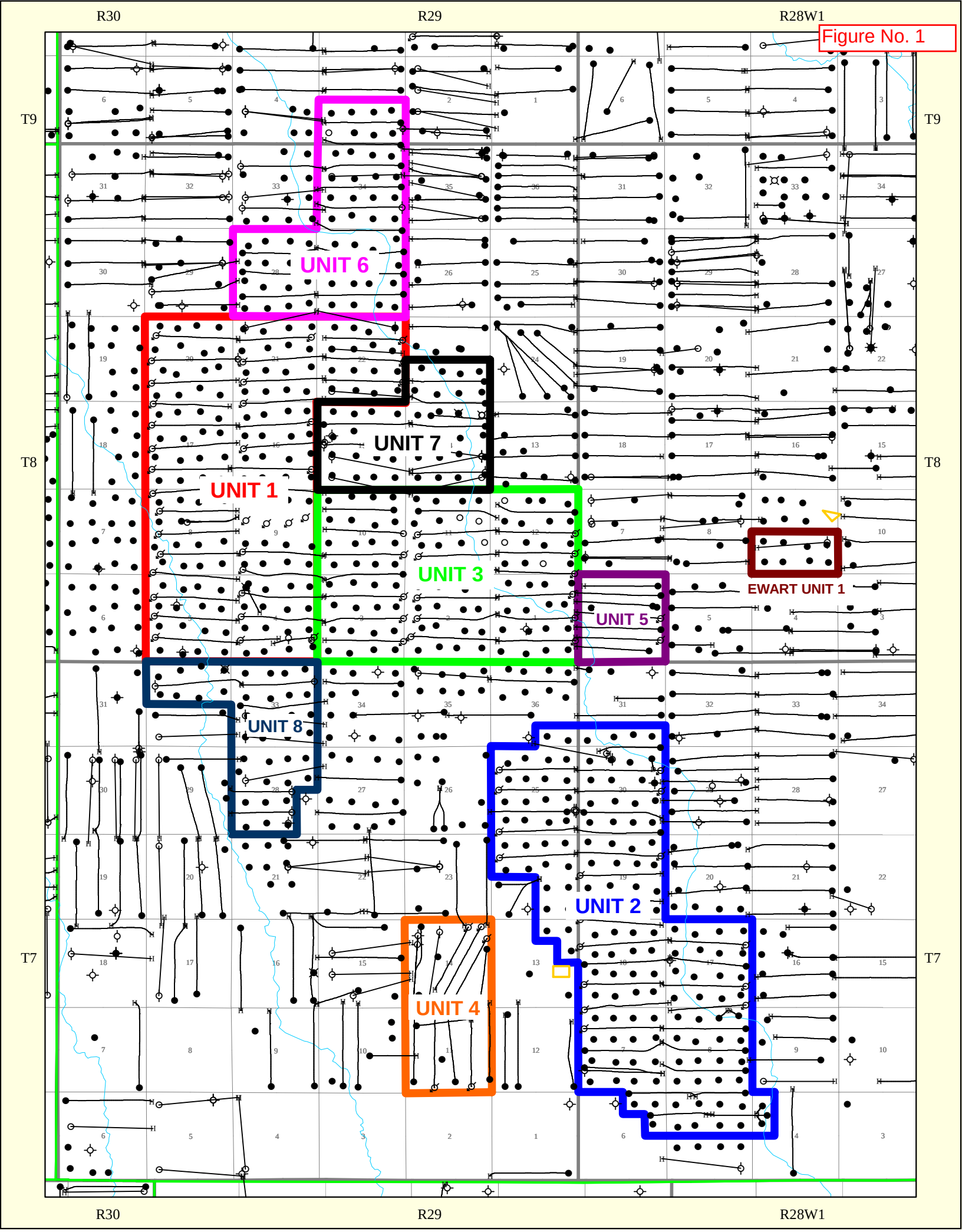
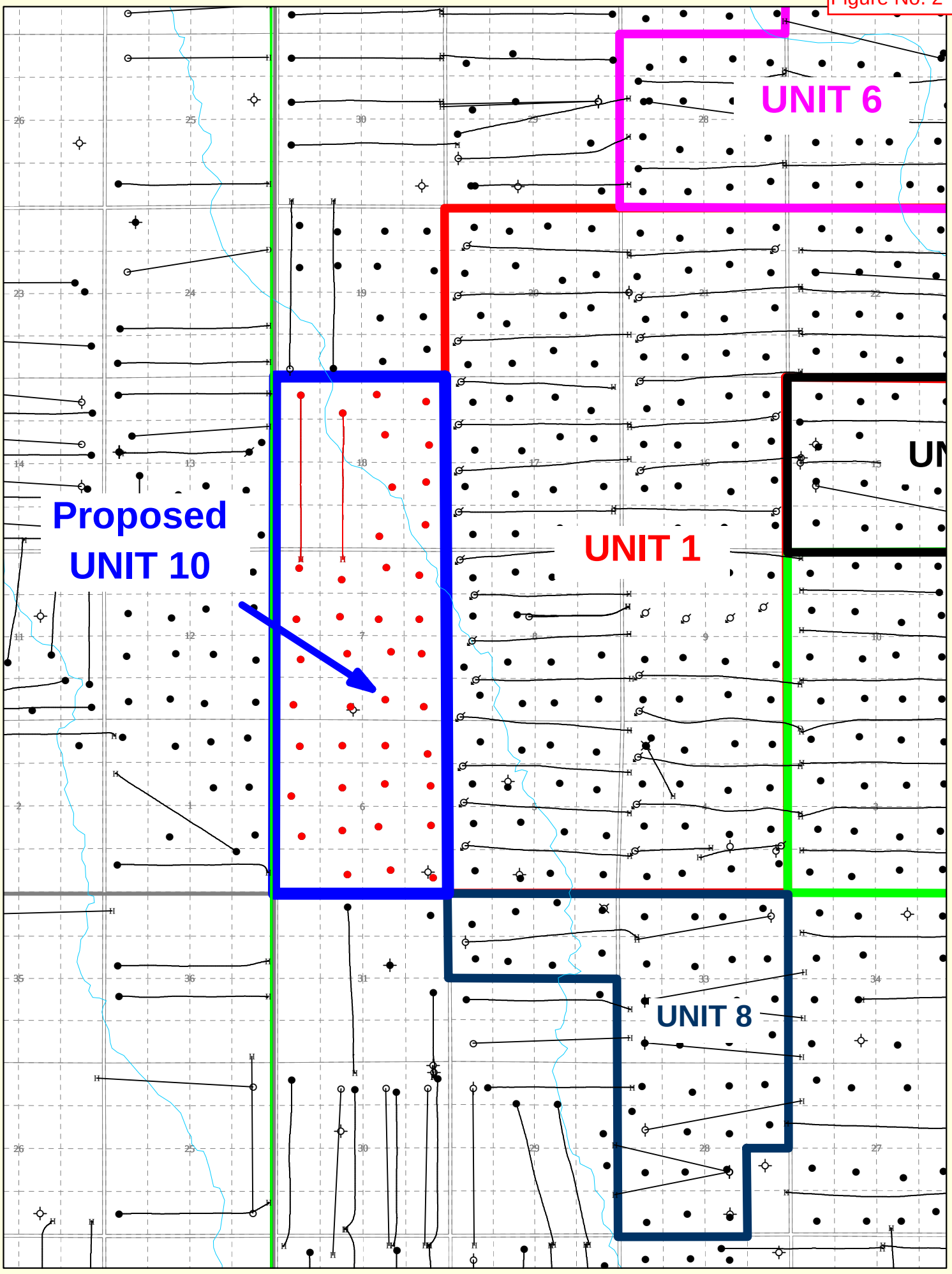


Figure No. 1
R30
R29
R28W1
T9
T8
T7
UNIT 6
UNIT 7
UNIT 1
UNIT 3
UNIT 5
EWART UNIT 1
UNIT 8
UNIT 2
UNIT 4

Figure No. 2



File: Sinclair Unit 10 excluding Sec Datum: NAD27 Projection: Stereographic Center: N49.64321 W101.39102 Created in AccuMap™, a product of IHS

Figure No. 3

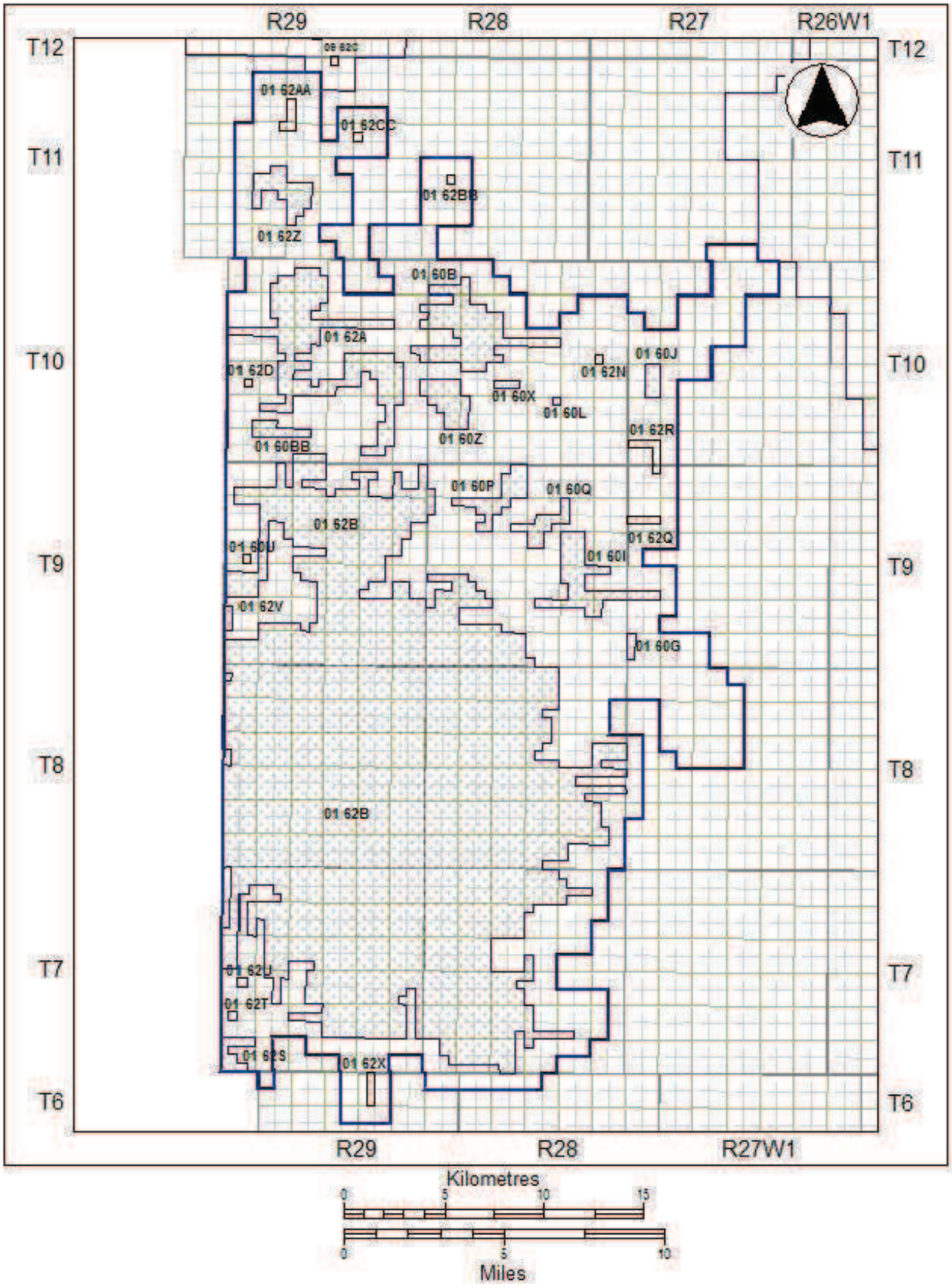


FIGURE 14 - DALY SINCLAIR BAKKEN & BAKKEN-THREE FORKS POOLS (01 60A - 01 60BB & 01 62A – 01 62CC) (Drawn on the DLS System Quarter Section Grid)

Manitoba Petroleum Branch

Well Information as of 08/02/2013 - Group Well Report

Production Graph

# of Wells:	41	**Prod Zone:**	BAKKEN	**On Prod:**	2003-02 to 2012-11
		Field:	DALY (1)	**Cum Oil:**	1184175.8 bbl
Fluid:	Oil	**Pool Code:**	62B	**Cum Gas:**	0.0 mcf
Mode:	Producing	**Unit Code:**		**Cum Wtr:**	449870.3 bbl

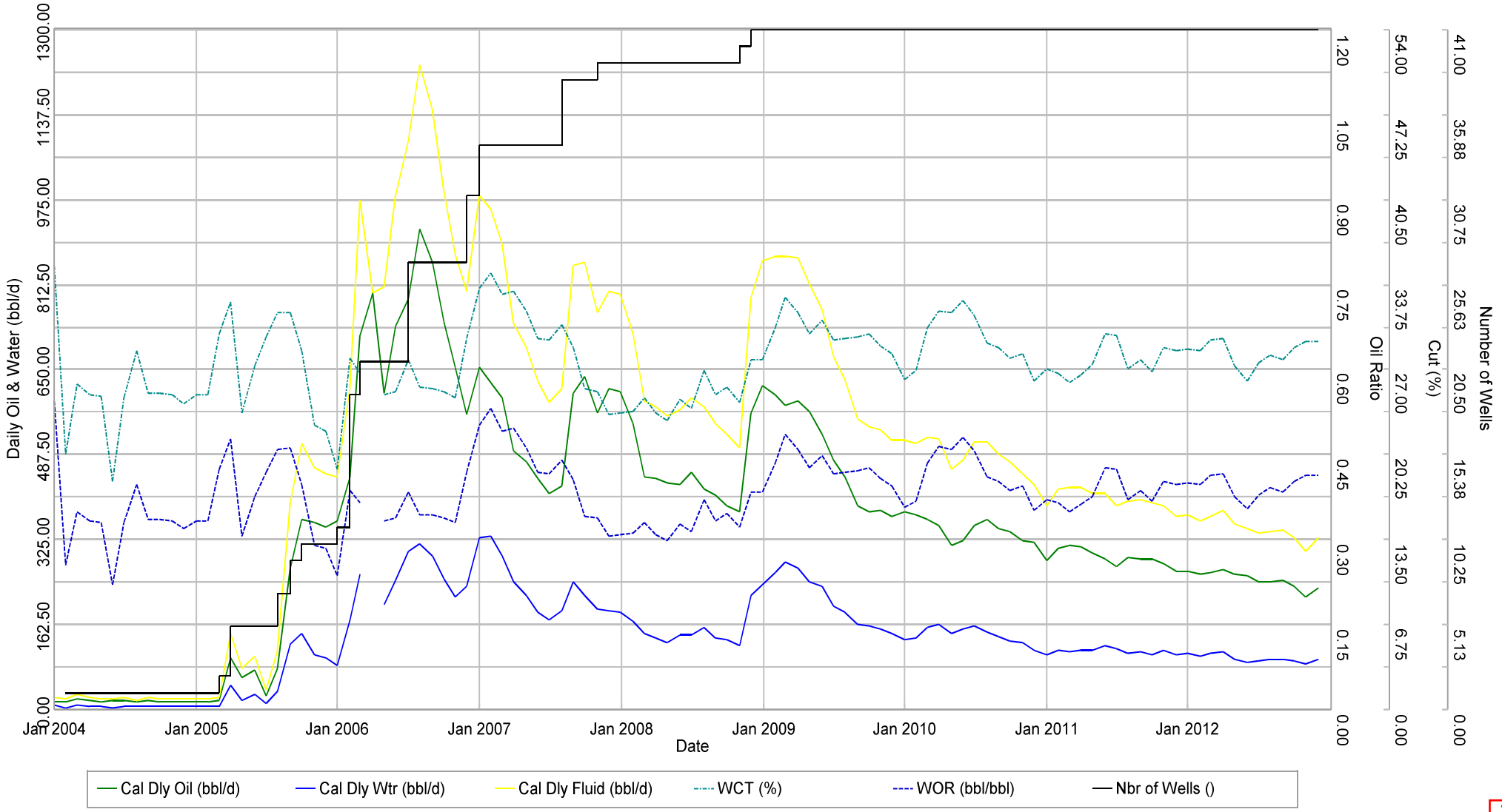


Figure No. 4

R30 R29W1

Figure No. 5

UNIT 10 Proposed Injectors

T8 T8

R30 R29W1

Production Graph

Sinclair Unit #1 Section 4 Pilot Wells

# of Wells:	16	**Prod Zone:**	BAKKEN; TORQUAY	**On Prod:**	2004-12 to 2012-10
		Field:	DALY (1)	**Cum Oil:**	820464.3 bbl
Fluid:	Oil; Water Injection	**Pool Code:**	62B	**Cum Gas:**	0.0 mcf
Mode:	Producing; Injection	**Unit Code:**	162B01	**Cum Wtr:**	121134.0 bbl

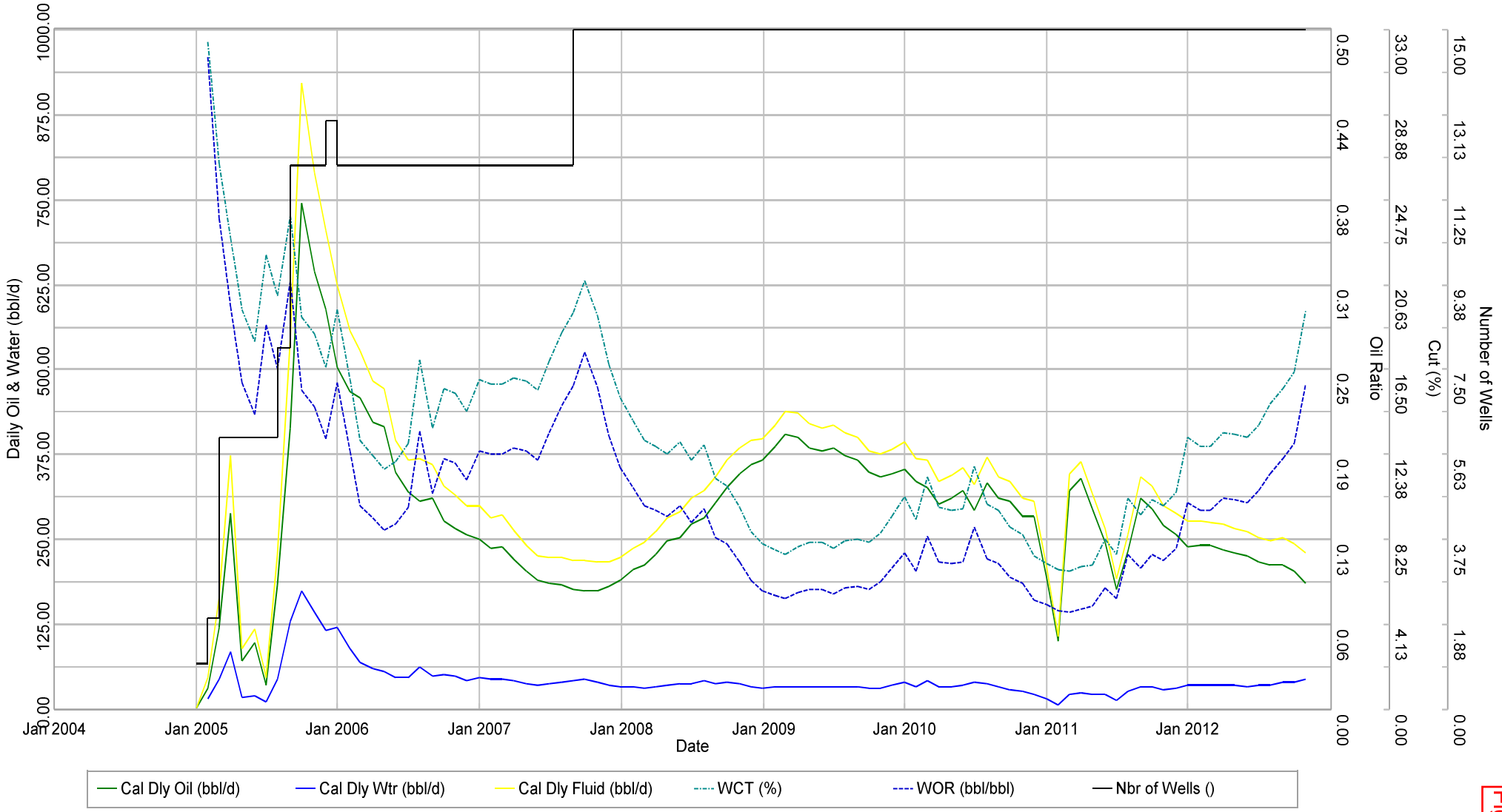


Figure No. 6

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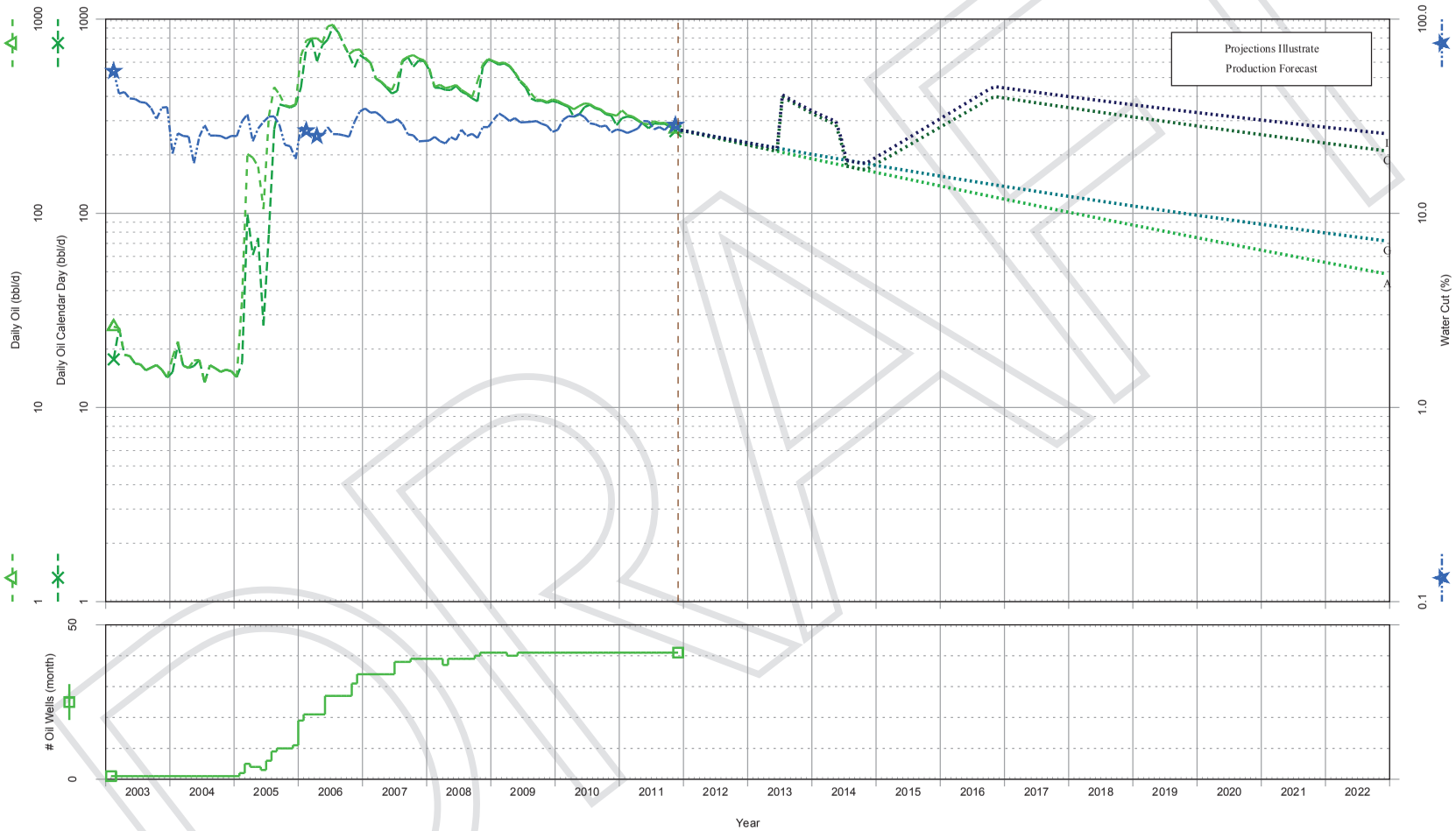
Historical and Forecast Production
Sinclair Proposed Unit No. 9 - Total Property

Property : Sinclair Proposed Unit No. 9



Total Reserves Summary @ 2011/12/01

Reserves Classification		Reserves (Mbbl) Ultimate	Cum Production	Remaining
Pv Prd	A(R)	1659	1093	566
Total Pv	C(R)	2996	1093	1903
P + P Prd	G(R)	1861	1093	768
Total P + P	I(R)	3772	1093	2678

Average Production Rates (Last 12 months ending 2011/11/30)

Gas :	0.0 Mcf/d	0.0 Mcf/cd	WGR :	0.0 bbl/MMcf
Oil :	300.7 bbl/d	291.1 bbl/cd	GOR :	0.0 scf/bbl
Avg Wells :	39.6		WC :	27.7 %

Cumulative Production

Oil :	1093.2 Mbbl	Gas :	0.0 MMcf	Water :	413.9 Mbbl

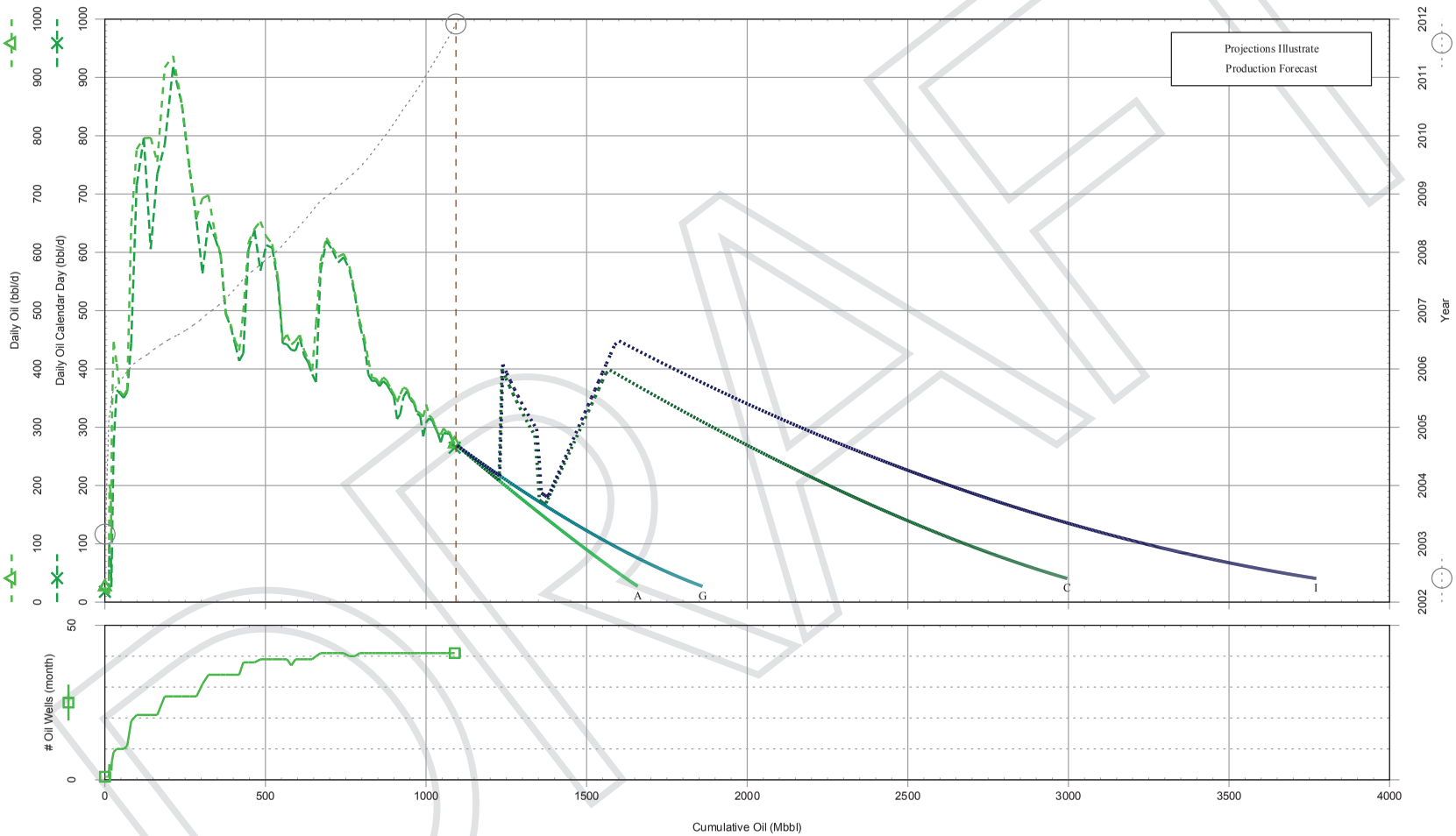
Plot 1

DRAFT

Figure No. 7

Historical and Forecast Production
Sinclair Proposed Unit No. 9 - Total Property

Property : Sinclair Proposed Unit No. 9



Total Reserves Summary @ 2011/12/01

Reserves Classification		Reserves (Mbbl) Ultimate	Cum Production	Remaining
Pv Prd	A(R)	1659	1093	566
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Gas :	0.0 Mcf/d	0.0 Mcf/cd	WGR :	0.0 bbl/MMcf
Oil :	300.7 bbl/d	291.1 bbl/cd	GOR :	0.0 scf/bbl
Avg Wells :	39.6		WC :	27.7 %

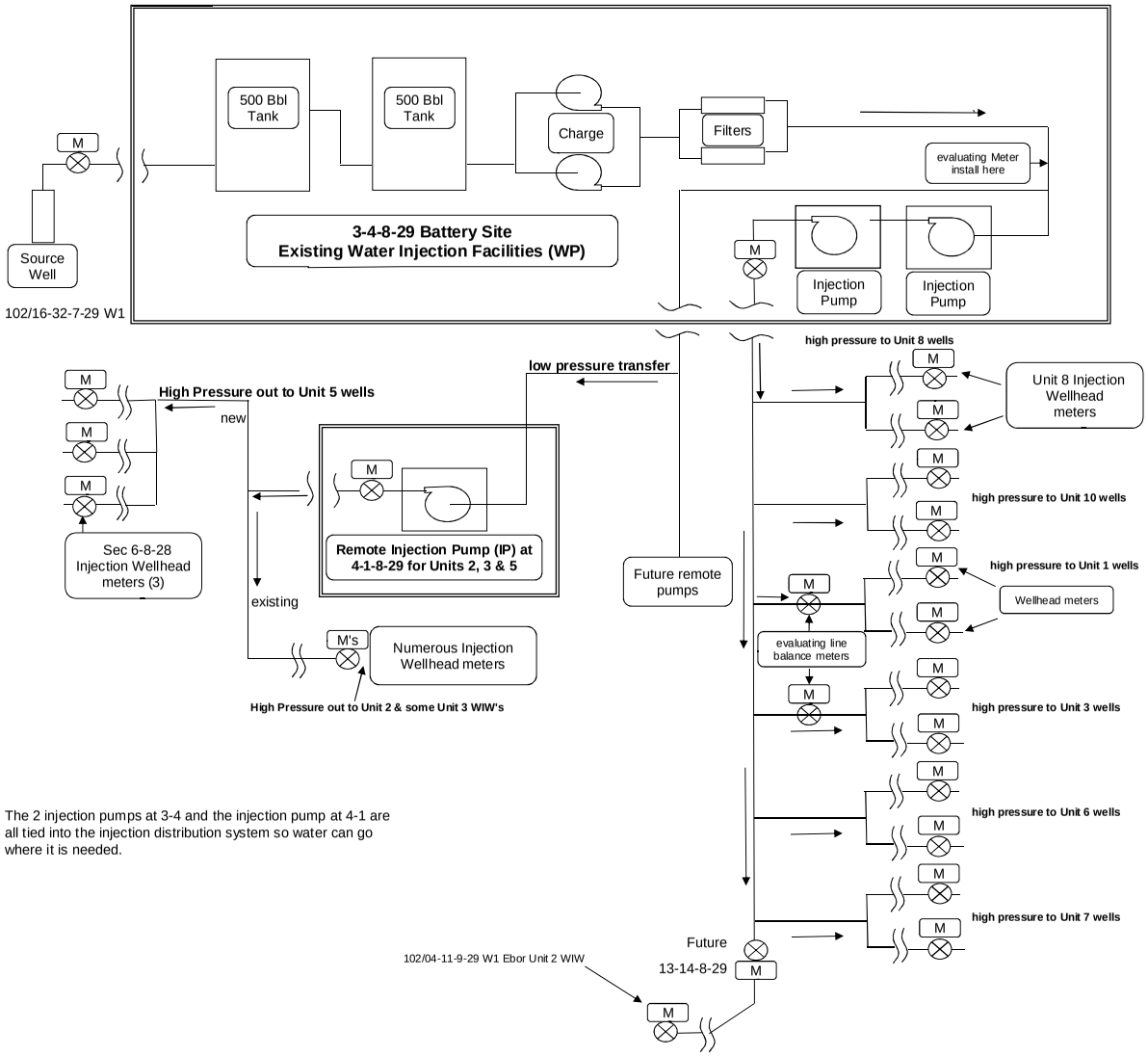
Cumulative Production

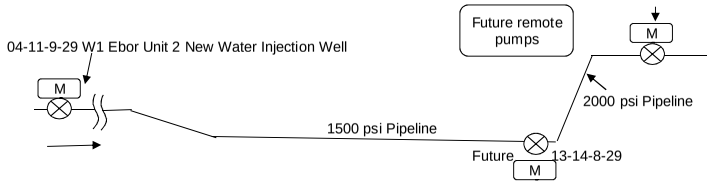
Oil :	1093.2 Mbbl	Gas :	0.0 MMcf	Water :	413.9 Mbbl

Plot 2

Figure No. 8

Sinclair Water Injection System





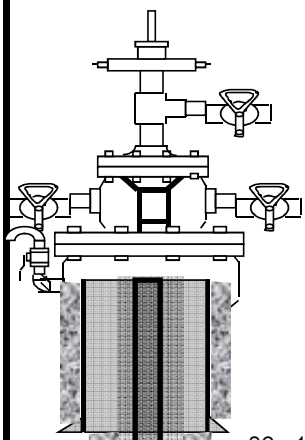
The 2 injection pumps at 3-4 and the injection pump at 4-1 are all tied into the injection distribution system so water can go where it is needed.

Figure No. 9

Figure No. 10

Tundra Oil And Gas Partnership

TYPICAL WATER INJECTION WELL DOWNHOLE DIAGRAM



SC = 140mKB

KOP = 783mMD

Tubing bottom @ 1092.22mKB

Packer set @ 1091.34mKB (COE)

Production Casing = 1102.0mKB

WELL NAME:	**Tundra Sinclair Unit 10 HZNTL WIW**				**WELL LICENCE:**	
Prepared by				Date:		
Elevations :						
KB [m]			KB to THF [m]		TD [m]	2380.0
GL [m]			CF (m)		PBTD [m]	
Current Perfs:	Openhole or Cemented Liner			1102.0	to	2380.0
Current Perfs:					to	2133.0
KOP:	783m MD		Total Interval		to	
Tubulars	**Size [mm]**	**Wt - Kg/m**	**Grade**	**Landing Depth [mKB]**		
Surface Casing	244.5	48.07	H-40 - ST&C	Surface	to	140.0
Product. Casing	177.8	34.23	J-55 - LT&C	Surface	to	1102.0
Tubing	73.0 - TK-99	9.67	J-55	Surface	to	1092.2

Date of Tubing Installation:	05-Nov-08		Length	Top @
Item	Description	K.B.--Tbg. Flg.	0.00	m KB
	1 - Weatherford HRP coated packer		1.75	1.75
	113 - 73mm TK-99 coated tbg		1086.31	1088.06
	1 - 73mm TK-99 coated pup jt		0.53	1088.59
	1 - 73mm coated split dognut		0.21	1088.80
	stretch		0.34	1089.14
				1089.14
				1089.14
				1089.14
				1089.14
				1089.14
				1089.14
	Bottom of Tubing mKB			1092.22mKB

Rod String :

Date of Rod Installation:

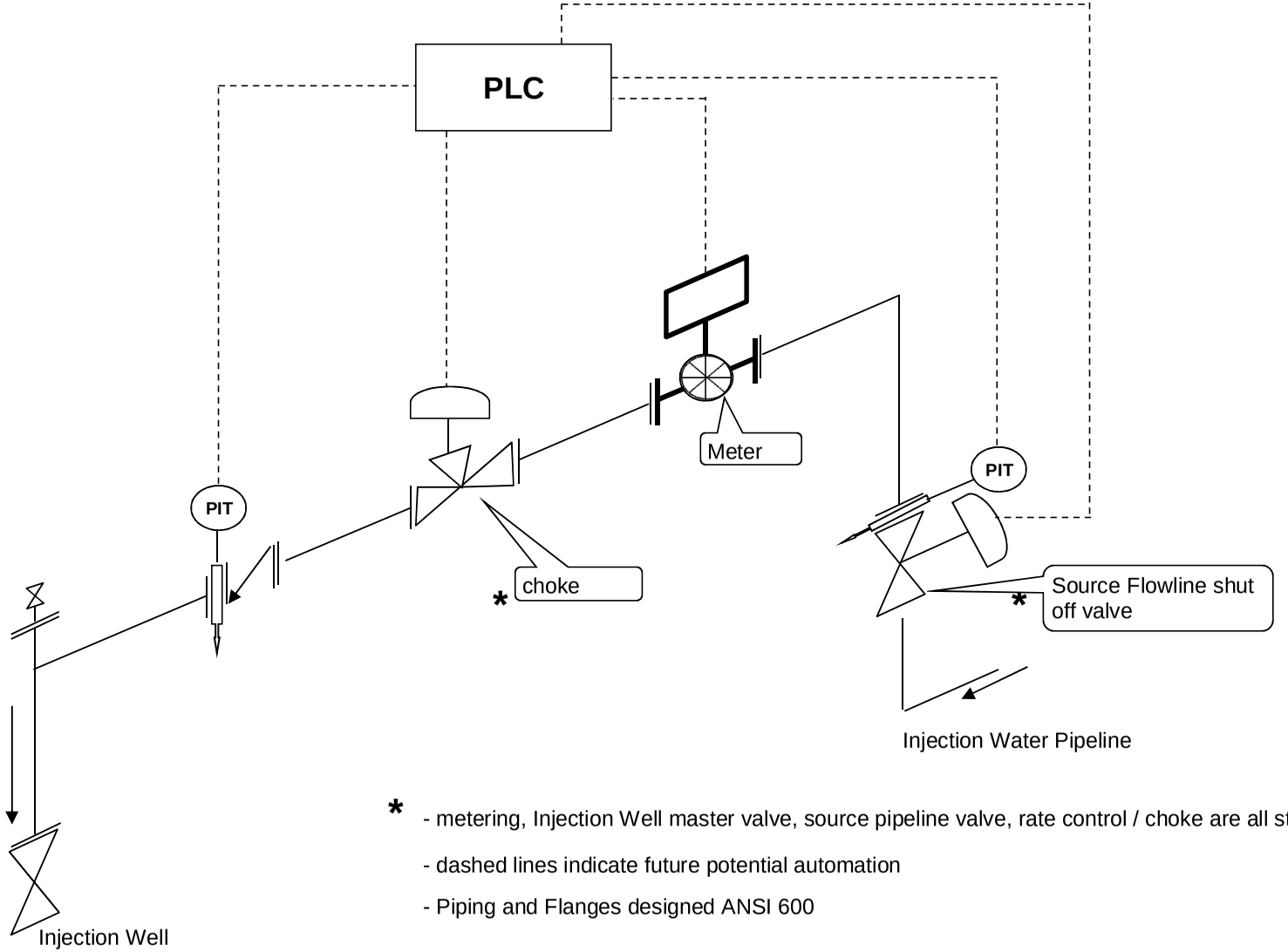
Bottomhole Pump:

Directions:

Figure 10

Sinclair Unit No. 10

Proposed Injection Well Surface Piping P&ID



* - metering, Injection Well master valve, source pipeline valve, rate control / choke are all standard

- dashed lines indicate future potential automation
- Piping and Flanges designed ANSI 600

Figure No. 11

Figure No. 12

Sinclair Unit No. 10

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

** subject to final design and engineering