



In Situ Oil Sands Schemes Approvals 9403 / 9404 Brintnell Sector 2007 Semi-Annual Presentation

March 29, 2007

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Pelican Lake Development Group
Eastern Oil Business Unit

Agenda



- Geological Overview
- For Each Approval
 - Current Approval Status
 - Field Performance
 - Key Learnings
 - Future Plans
- EUB Issues
- Compliance

Geological Setting

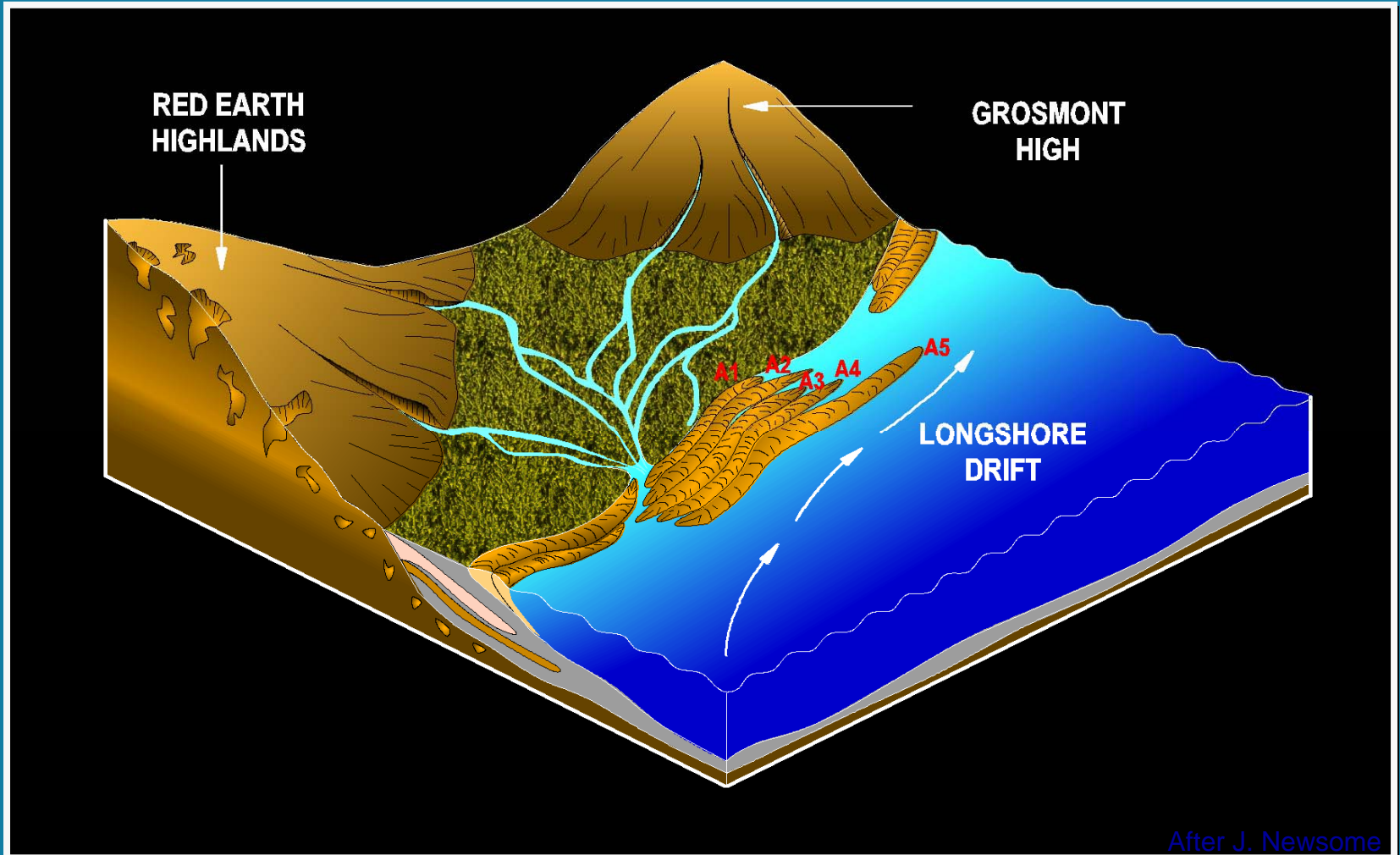


Paleogeography of the Wabiskaw and Stratigraphic Equivalents



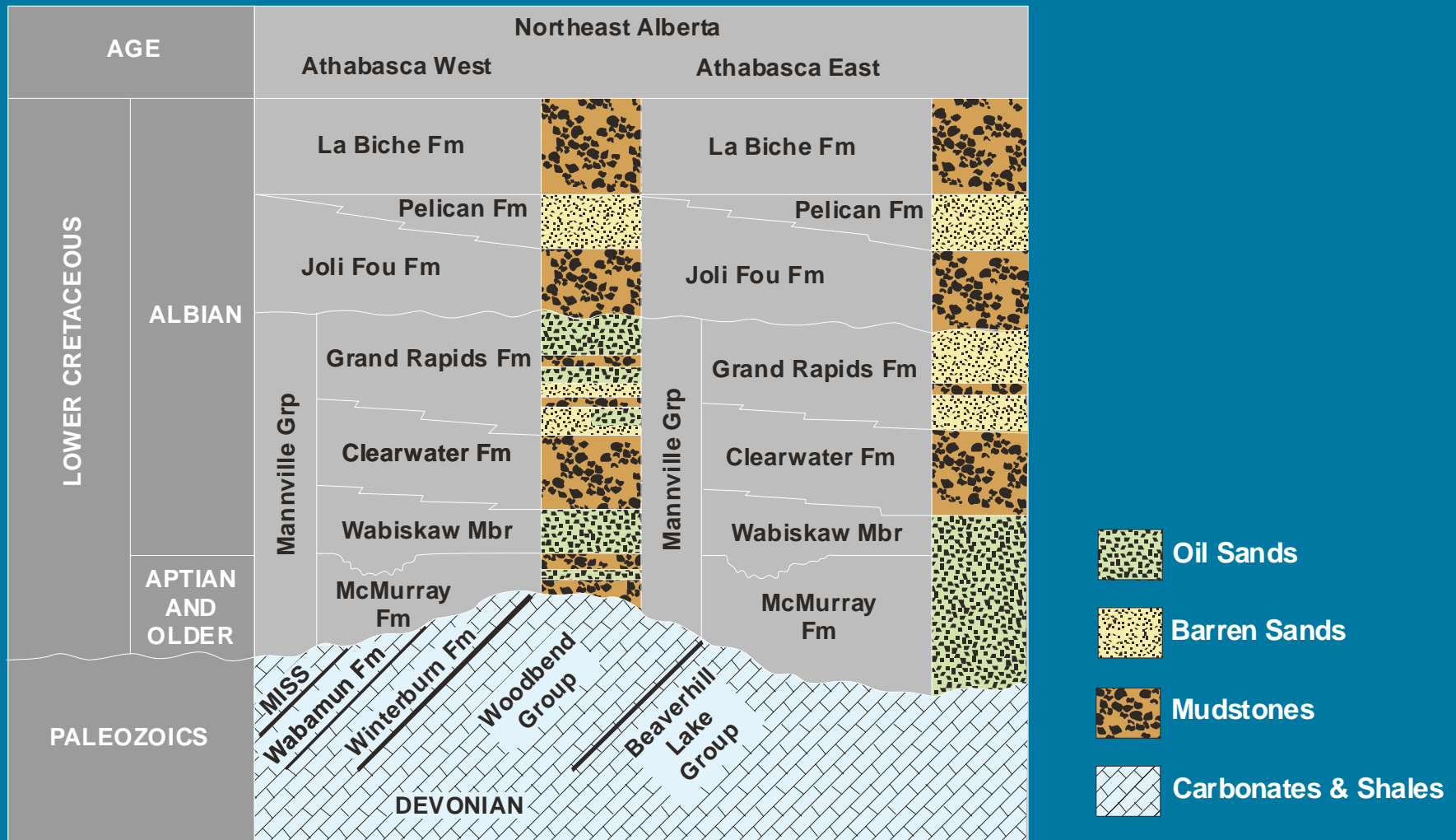
(Modified from Leckie and Smith, 1992)

Wabiskaw Depositional Model Pelican Lake Area

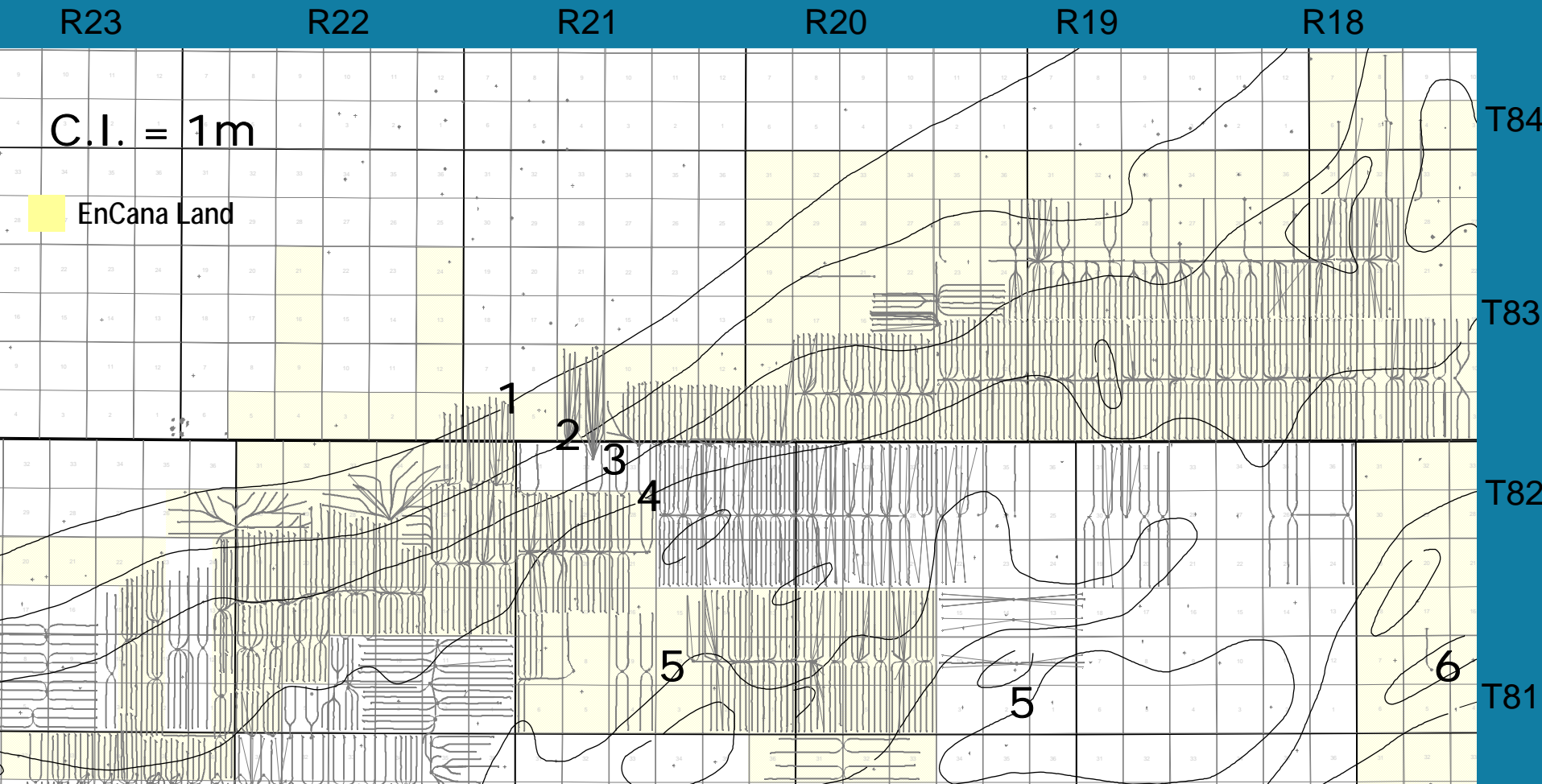


After J. Newsome

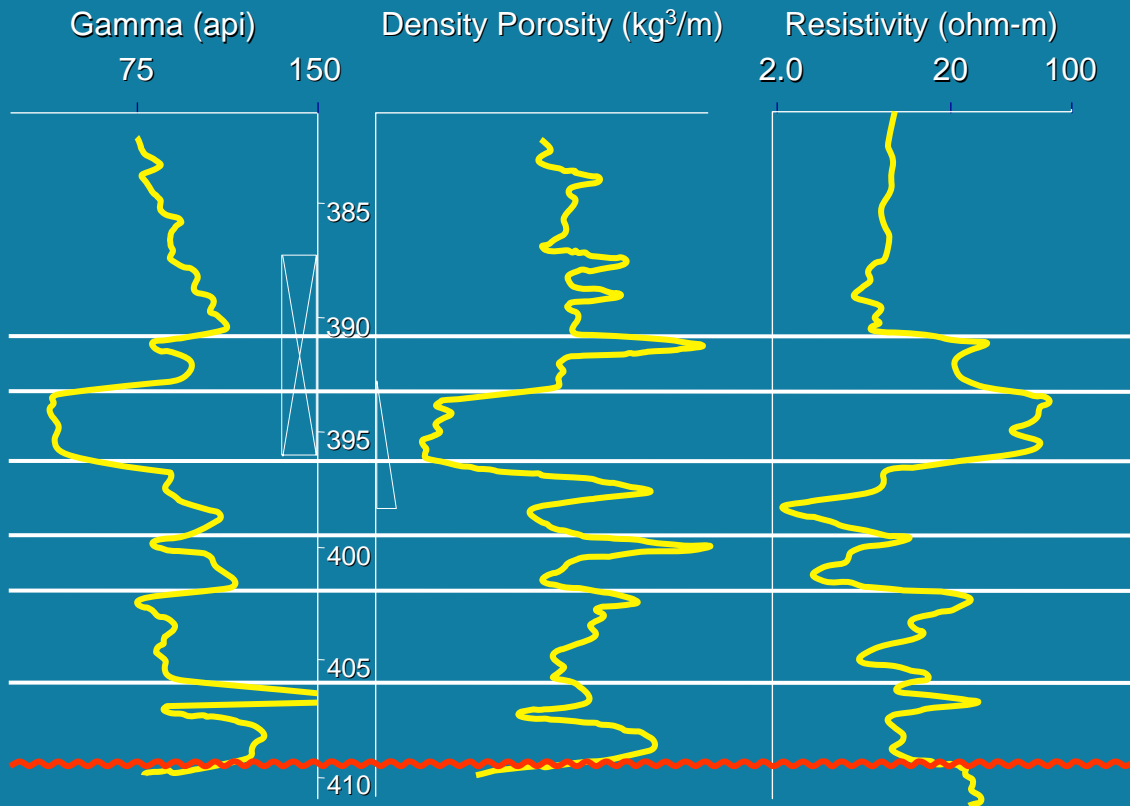
Cretaceous Stratigraphy of the Athabasca Oil Sands Area



Pelican Lake Net Pay Map



Pelican Lake Reference Well AECOG 14-4-83-20W4M



K.B. 627.1m

G.L. 623.3m

Clearwater

Wabiskaw "A" (T31)

Wabiskaw Porosity (T21)

Base Wabiskaw Porosity

Wabiskaw B (T15, E14)

Wabiskaw C (T11)

McMurray (T105, E10)

Sub-Cretaceous Unconformity
(Paleozoic Carbonates)

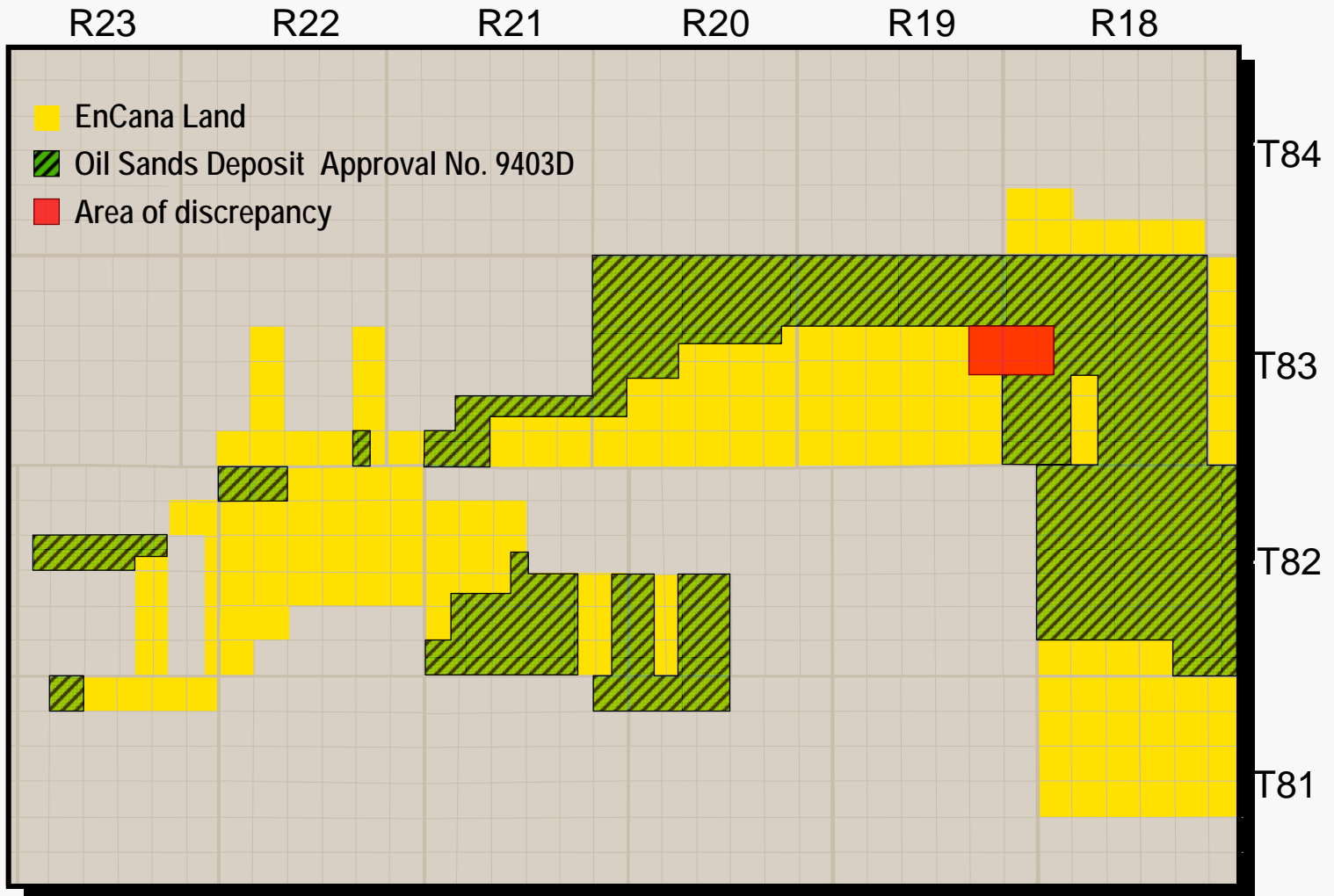
Pelican Lake Wabiskaw "A" Typical Reservoir Parameters

- **Depth:**
350m - 450m
- **Thickness:**
3m
- **Porosity:**
30%
- **Permeability:**
300 - 3000 md
- **Temperature:**
17° C
- **Initial Reservoir Reserve:**
1800 - 2400 kPa
- **Water Saturation:**
30%
- **Oil Viscosity (live oil)**
300 - 5000+ cp
- **Oil Gravity:**
13.5° - 16.5° API

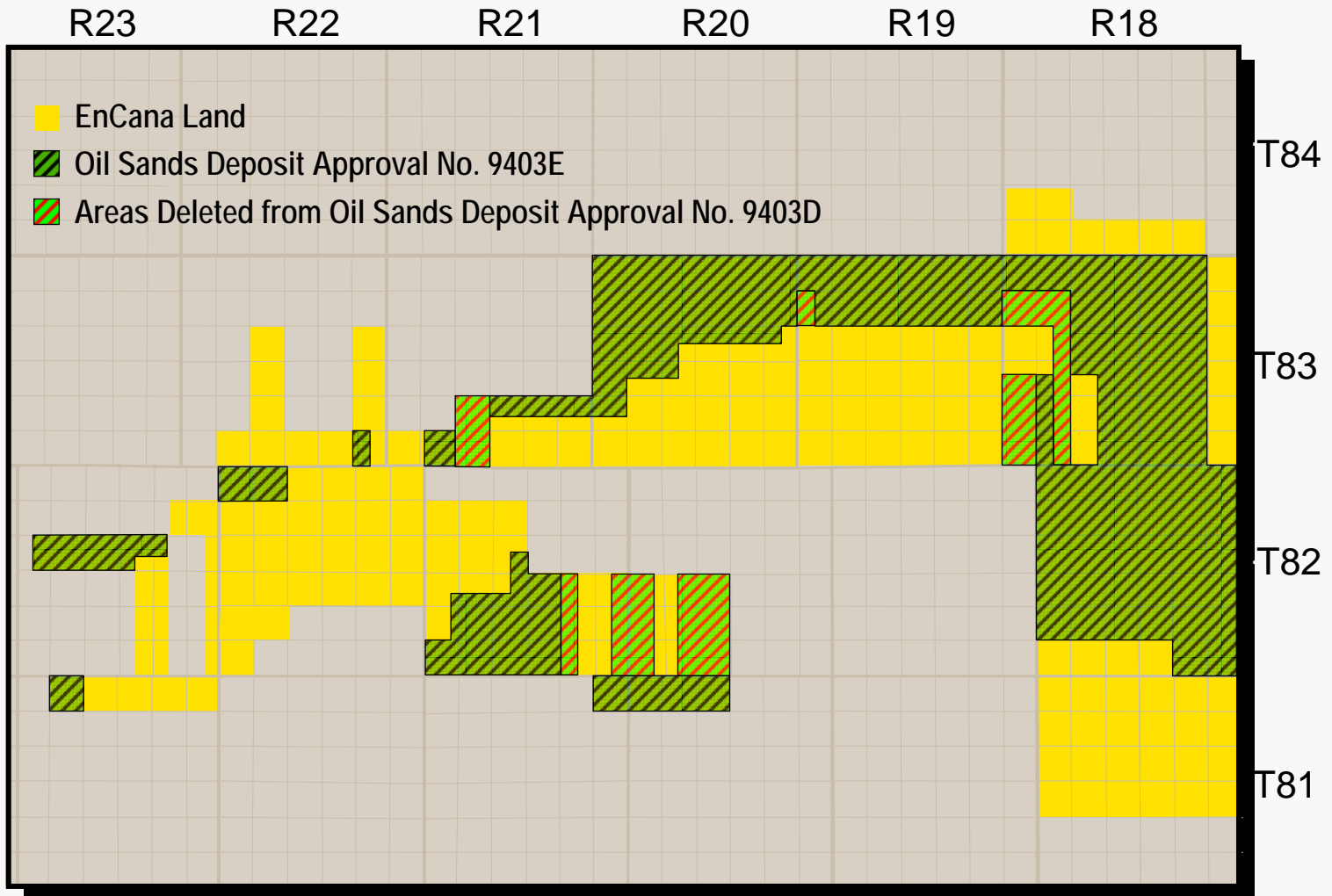
Approval 9403 - Primary



Approval 9403D Approval Area



Approval 9403E Approval Area

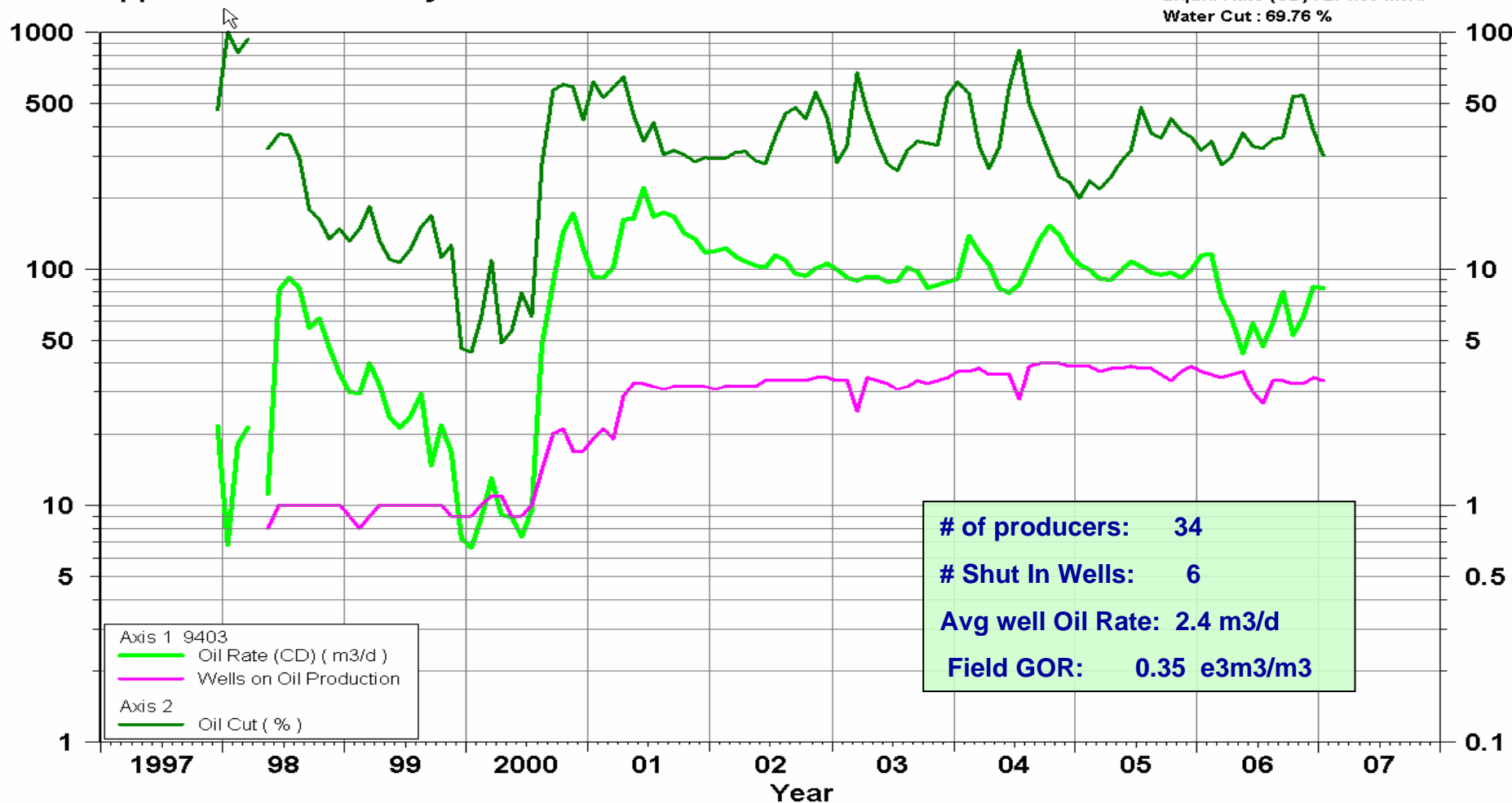


Approval 9403 Primary Production History



Approval 9403E Primary Production

Oil Rate (CD) : 83.11 m3/d
Liquid Rate (CD) : 274.85 m3/d
Water Cut : 69.76 %

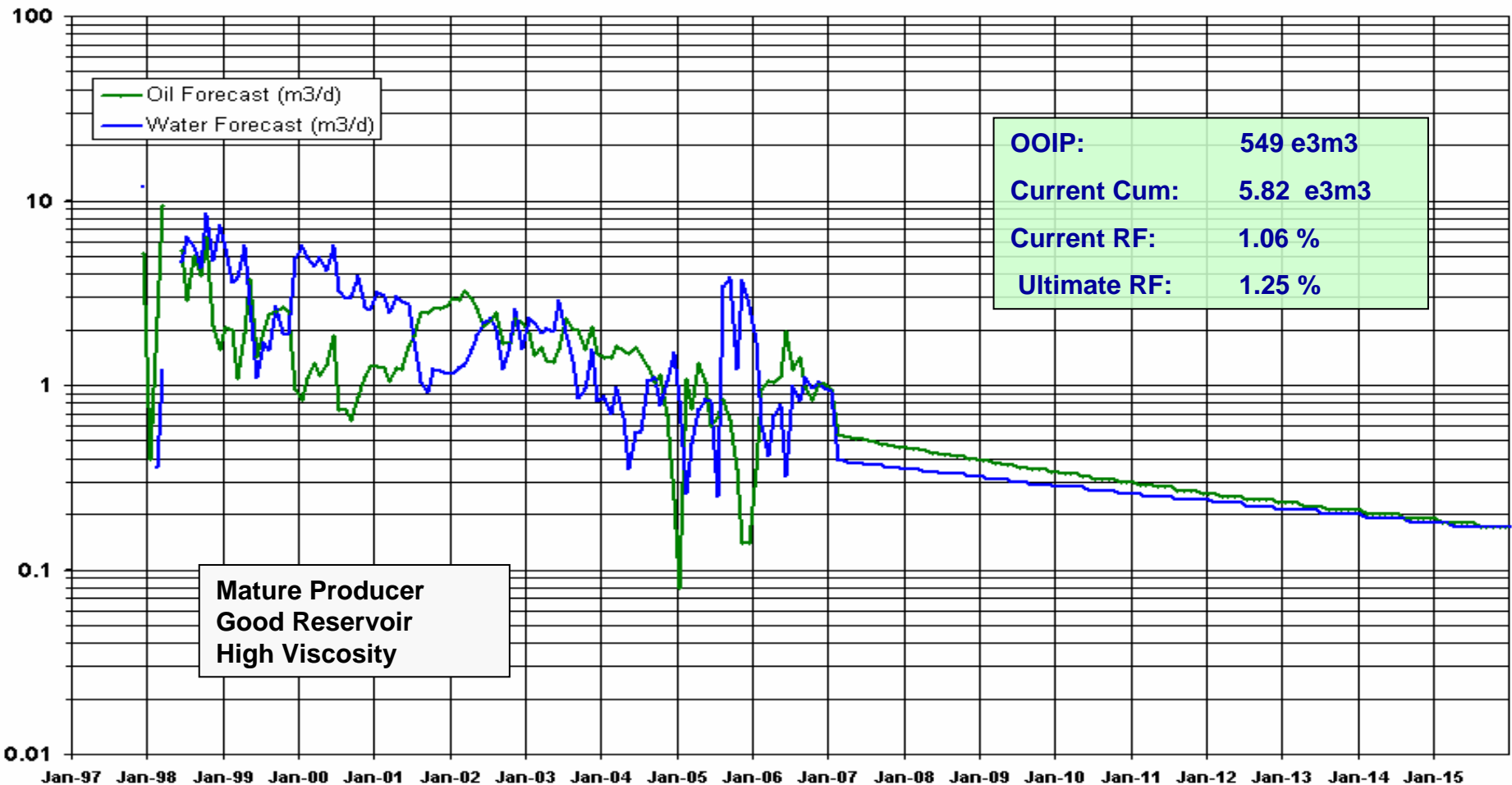


of producers: 34
Shut In Wells: 6
Avg well Oil Rate: 2.4 m3/d
Field GOR: 0.35 e3m3/m3

Approval 9403 Pad 23 Forecast



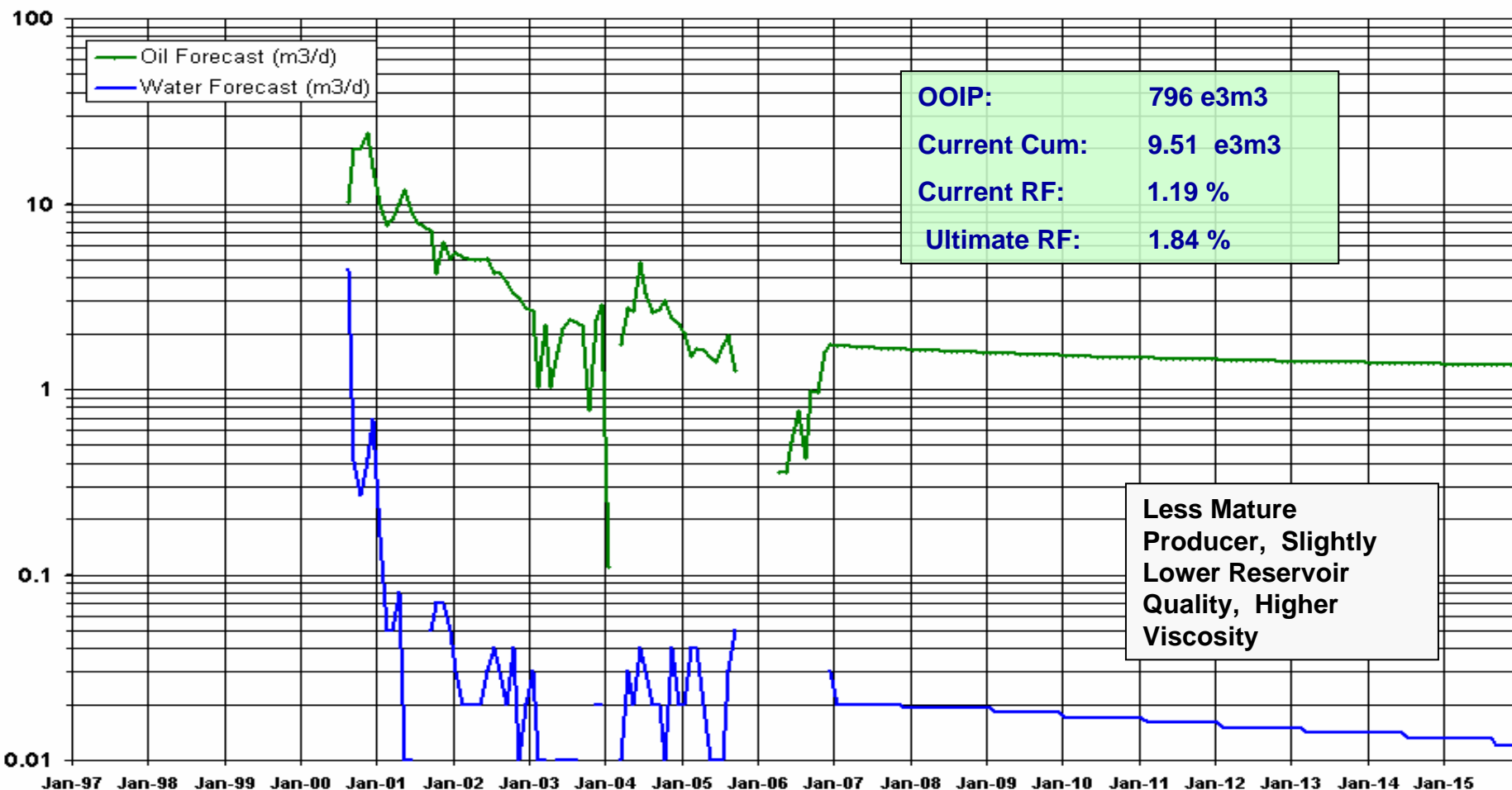
Pelican Lake Primary Oil Forecast
00/15-32-081-23W4/00



Approval 9403 Pad NE 22 Forecast



Pelican Lake Primary Oil Forecast
00/01-04-083-18W4/00

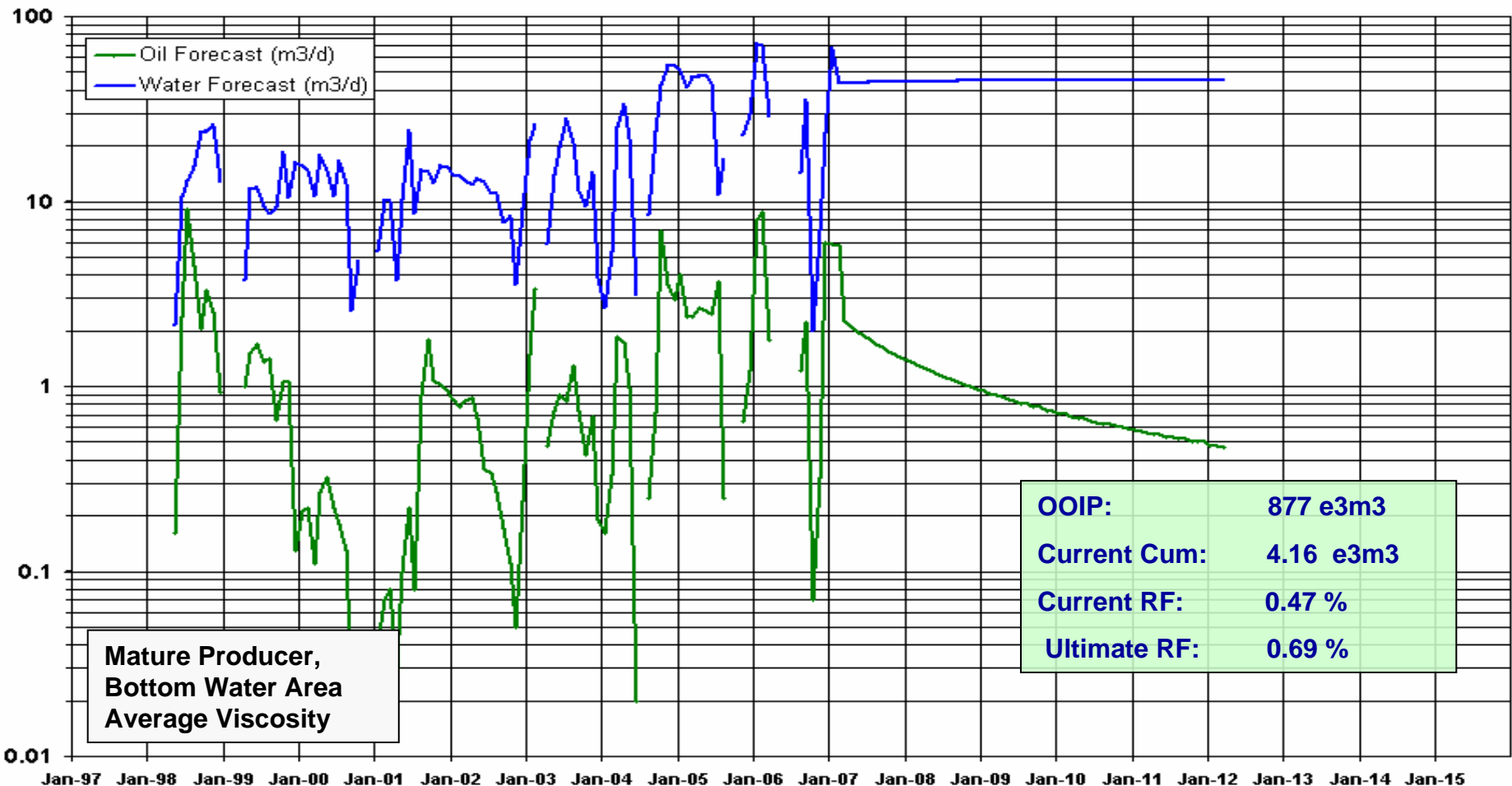


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Pad E15 Forecast



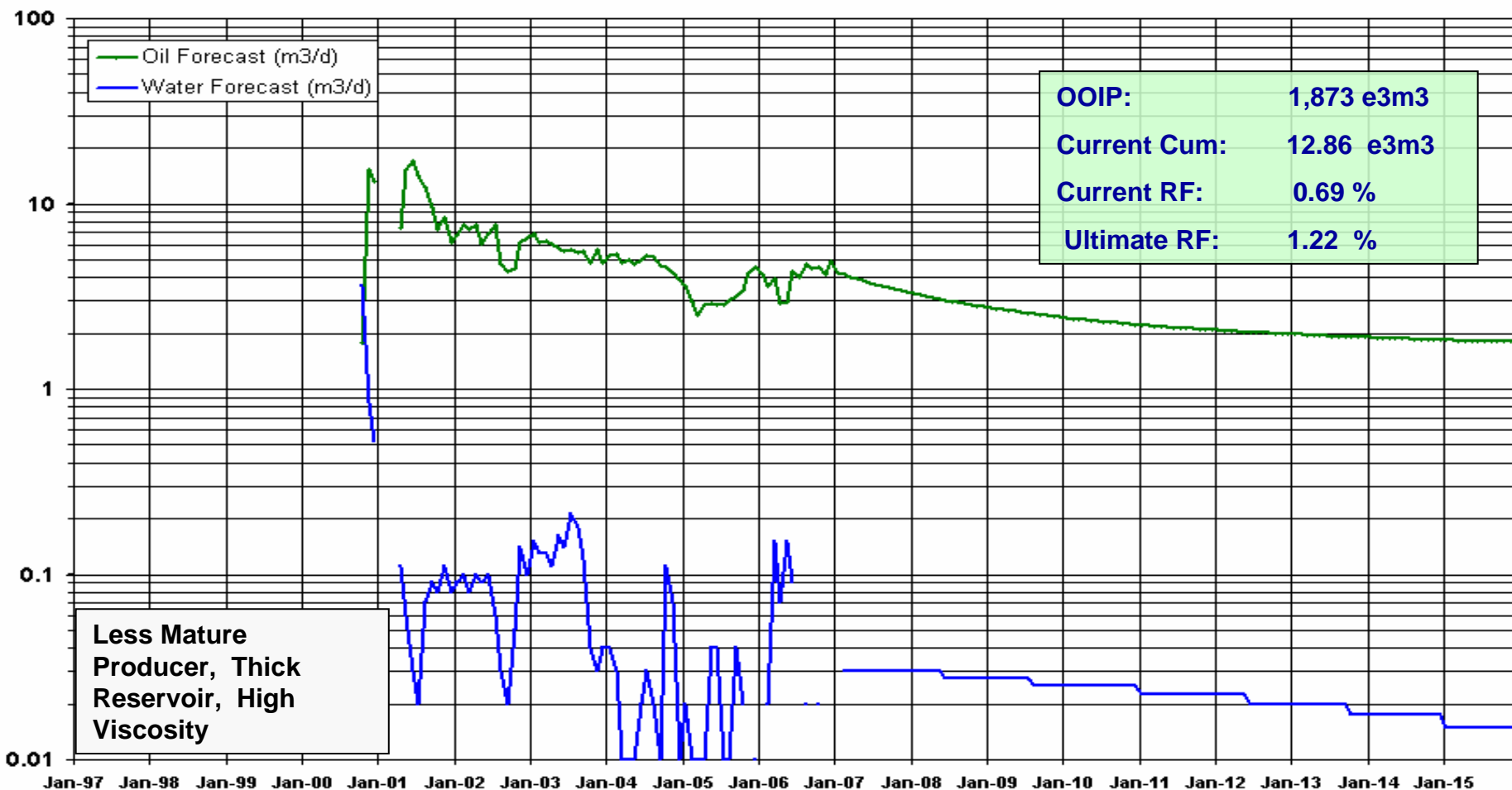
Pelican Lake Primary Oil Forecast
00/04-04-082-21W4/00



Approval 9403 Pad E30 Forecast



Pelican Lake Primary Oil Forecast
00/07-33-081-20W4/00



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Key Learnings



- Maintain economic crude bitumen production from primary producers
- Average oil rate 2 m³/d per primary producer
- Marginal primary producers, enhance productivity by implementing secondary recovery scheme

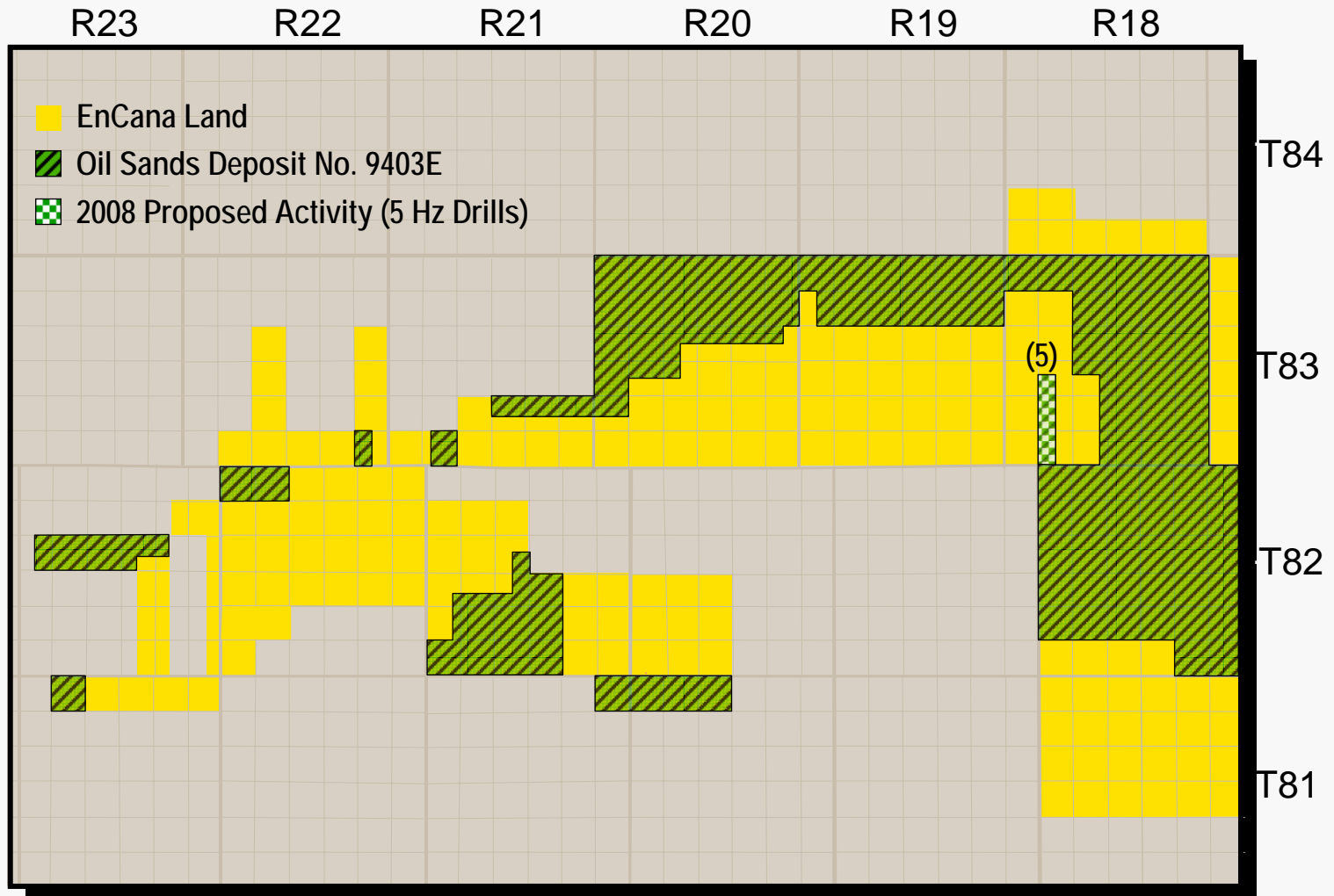
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Future Plans - Activity



- No stepout development in 2007
- 17 well conversions in 2007
 - Application 1419327 dated Sept 20, 2005
- 5 primary infill locations for 2008
- No stepout development locations for 2008
- 20 well conversions in 2008

Approval 9403 Future Plans



Approval 9403

Approval Management



- Reconcile 9403E Approval Area Map Discrepancy
- Delete Approval Item 3 – annual review
 - Limited development
 - Low productivity oil wells
 - Reduction in approval area and producing wells due to conversion to waterflood

Approval 9403 Compliance

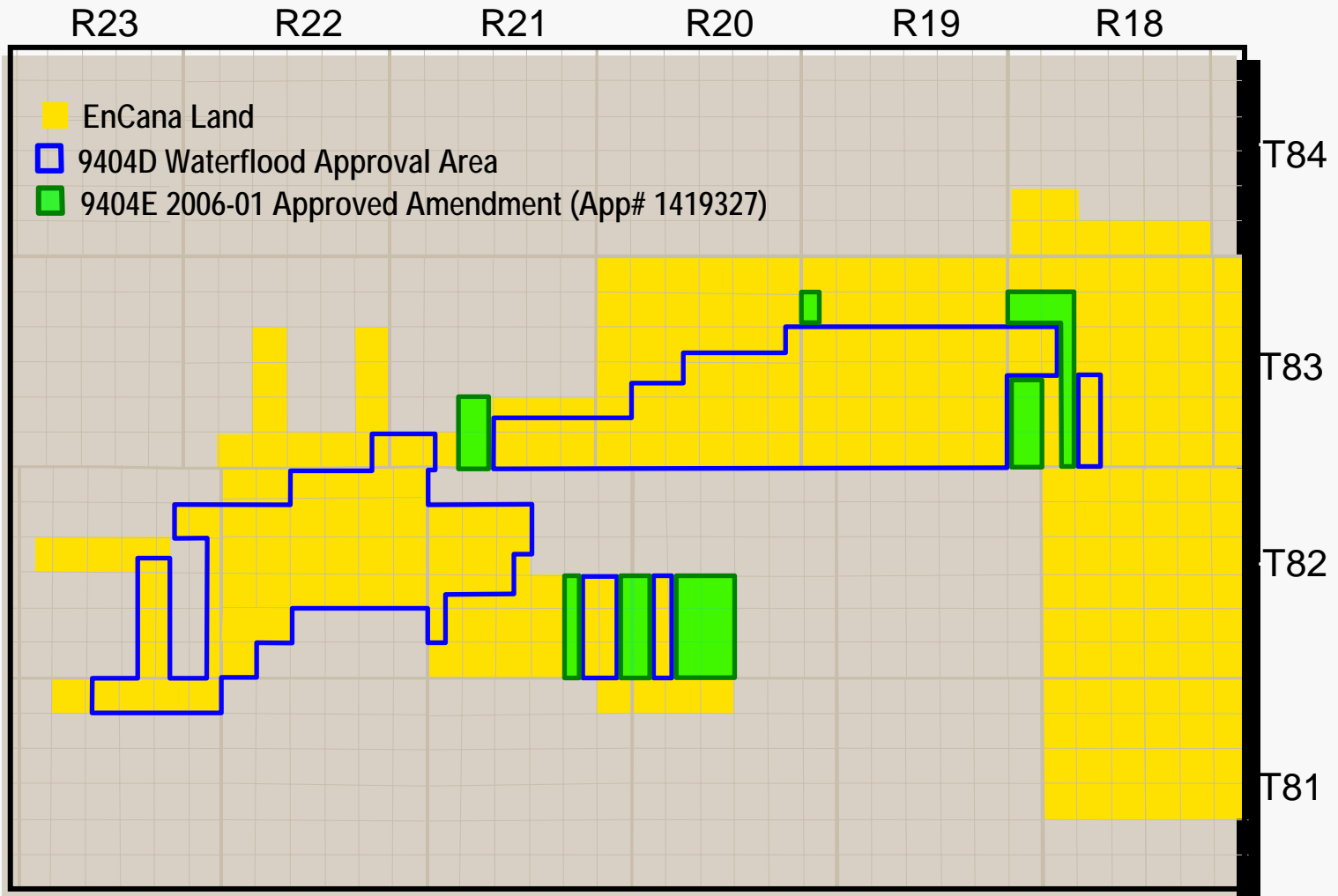


- EnCana is not aware of any conditions in its Approvals or Regulations in which it is not compliant.
- Commitments described in the original application have been met, or are in the process of being met.

Approval 9404 - Secondary



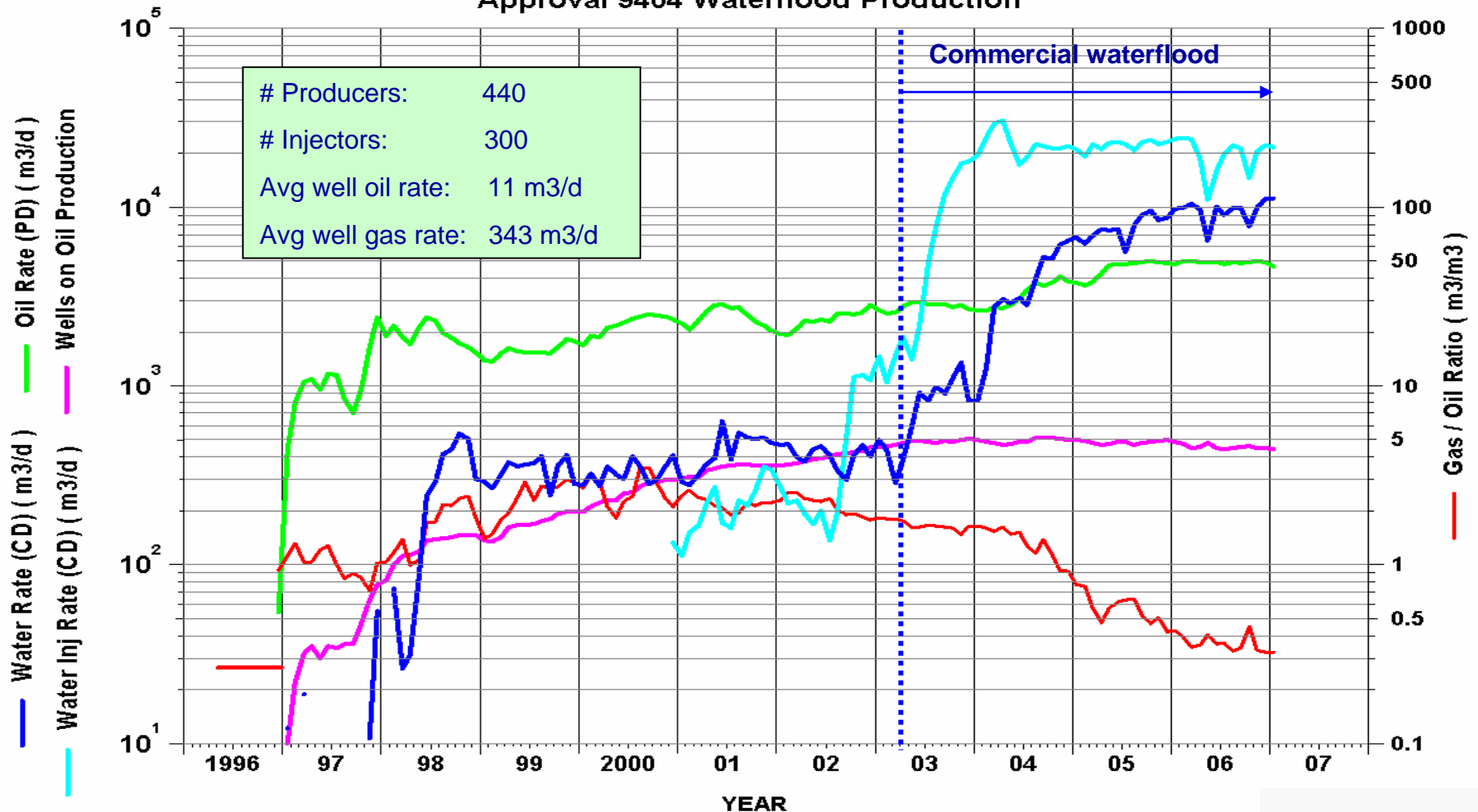
Approval 9404E Current Approval Area



Approval 9404 Field Performance



Approval 9404 Waterflood Production



Approval 9404

Waterflood Surveillance



- Balance between fluid injection and production
 - instantaneous VRR > 1 due to fillup period
- Target cumulative VRR to approach unity
 - Some well VRR's > 1 due to insufficient historical produced gas, but surface pressures below MAWHIP
- VRR Report to 2007-01 submitted

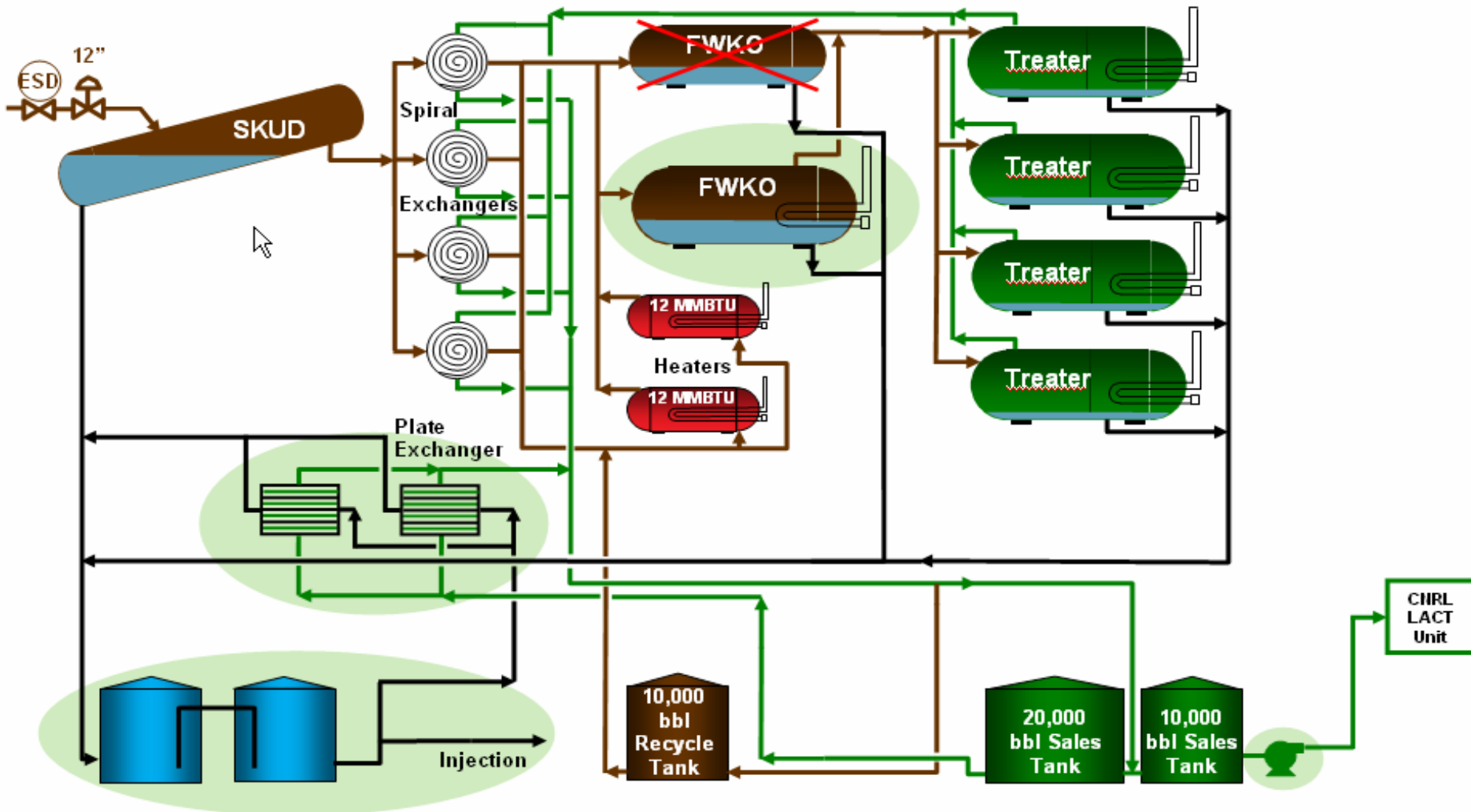
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Waterflood Surveillance Cont'd



- Real time pattern performance monitoring
 - fluid rate, fluid level, watercut, injection rate/pressure, etc.
- Monitor injectivity changes w/ Hall Plots
- Daily injection water quality tracking (ppm oil)
- Monthly injection target adjustment
- Tracer programs on select WF & workover wells
- Monthly sampling for polymer returns

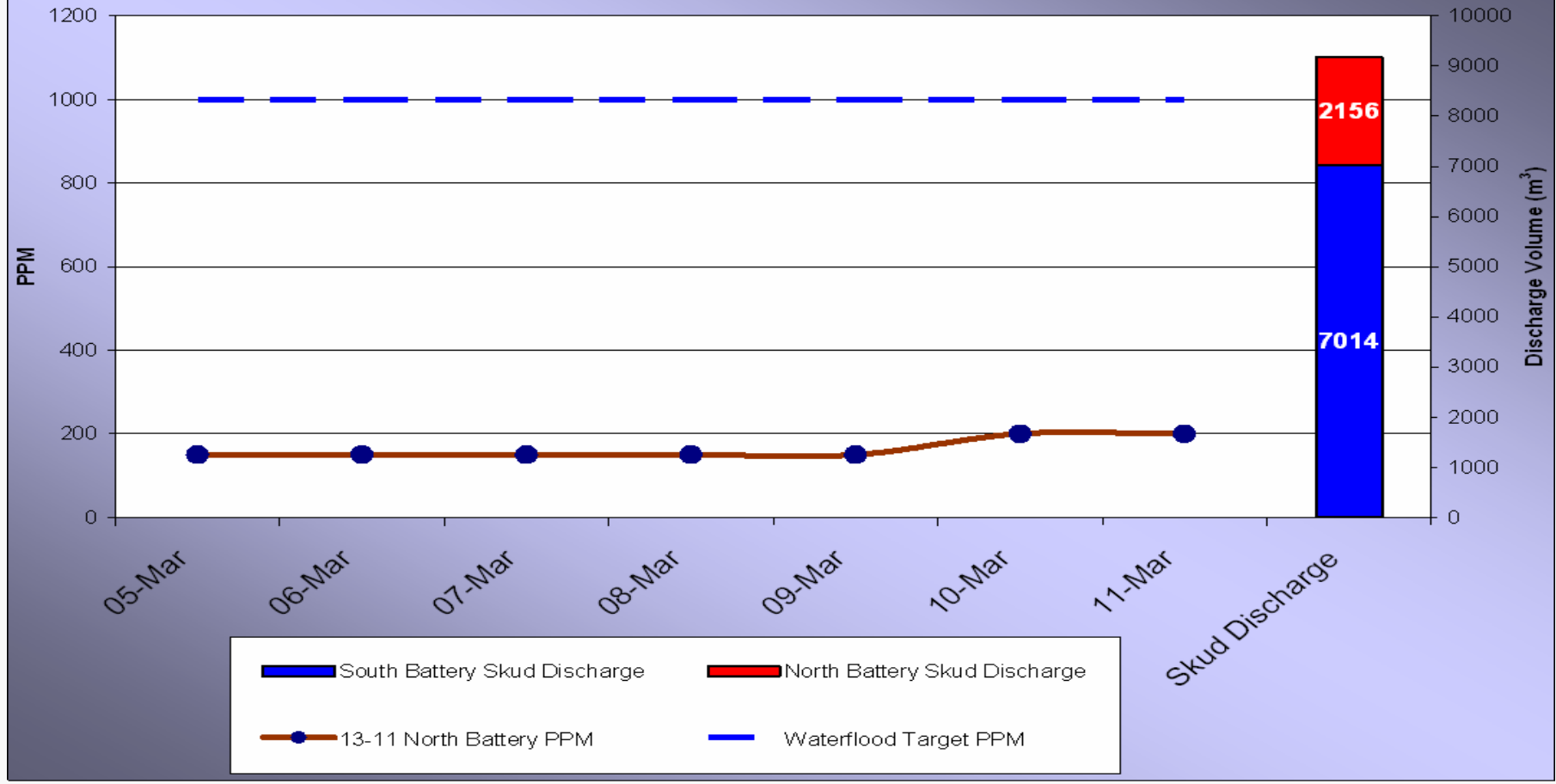
2007 Facilities Expansion Operational Impact



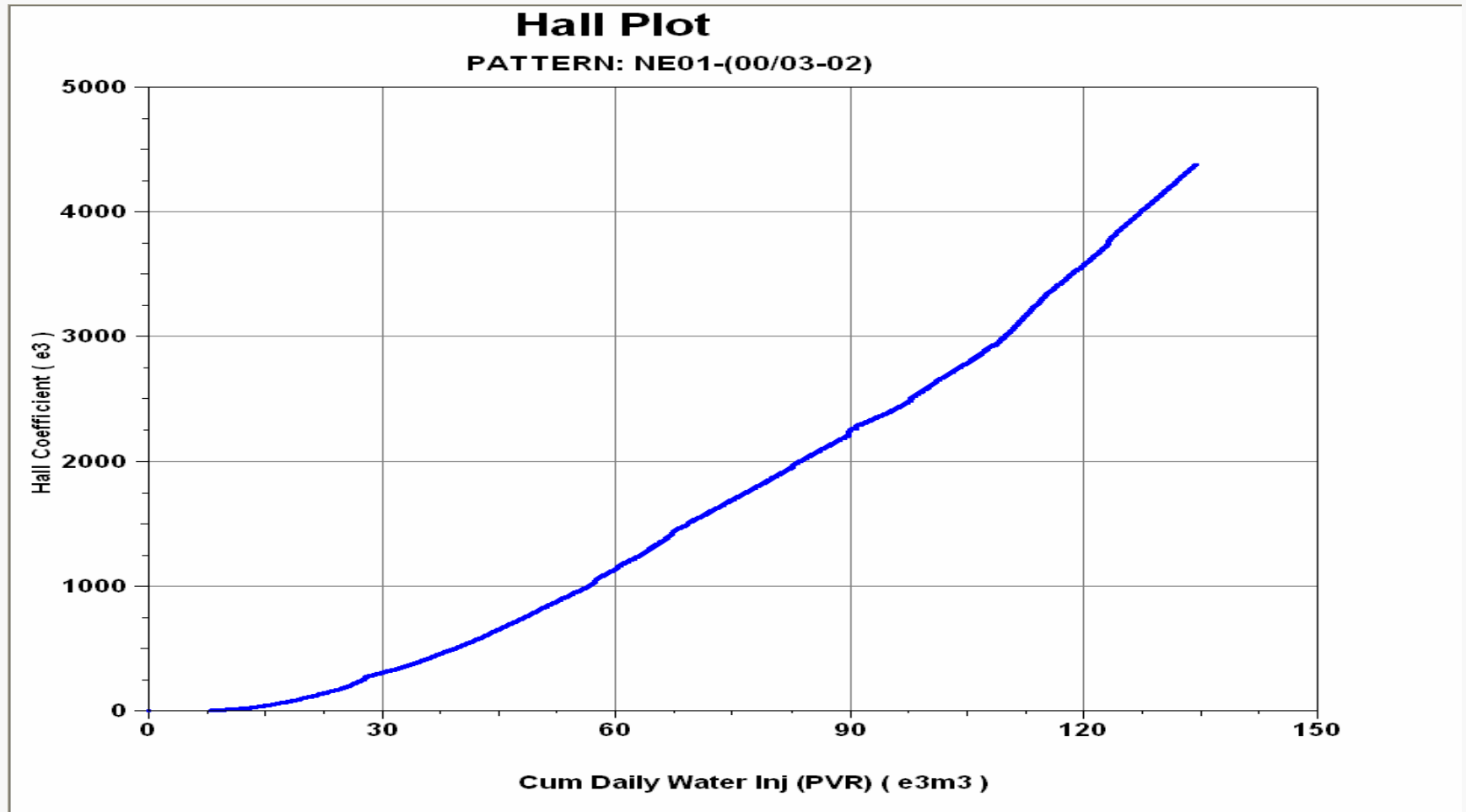
Waterflood Surveillance Injection Water Quality



Battery Water Quality



Waterflood Surveillance Injectivity Monitoring

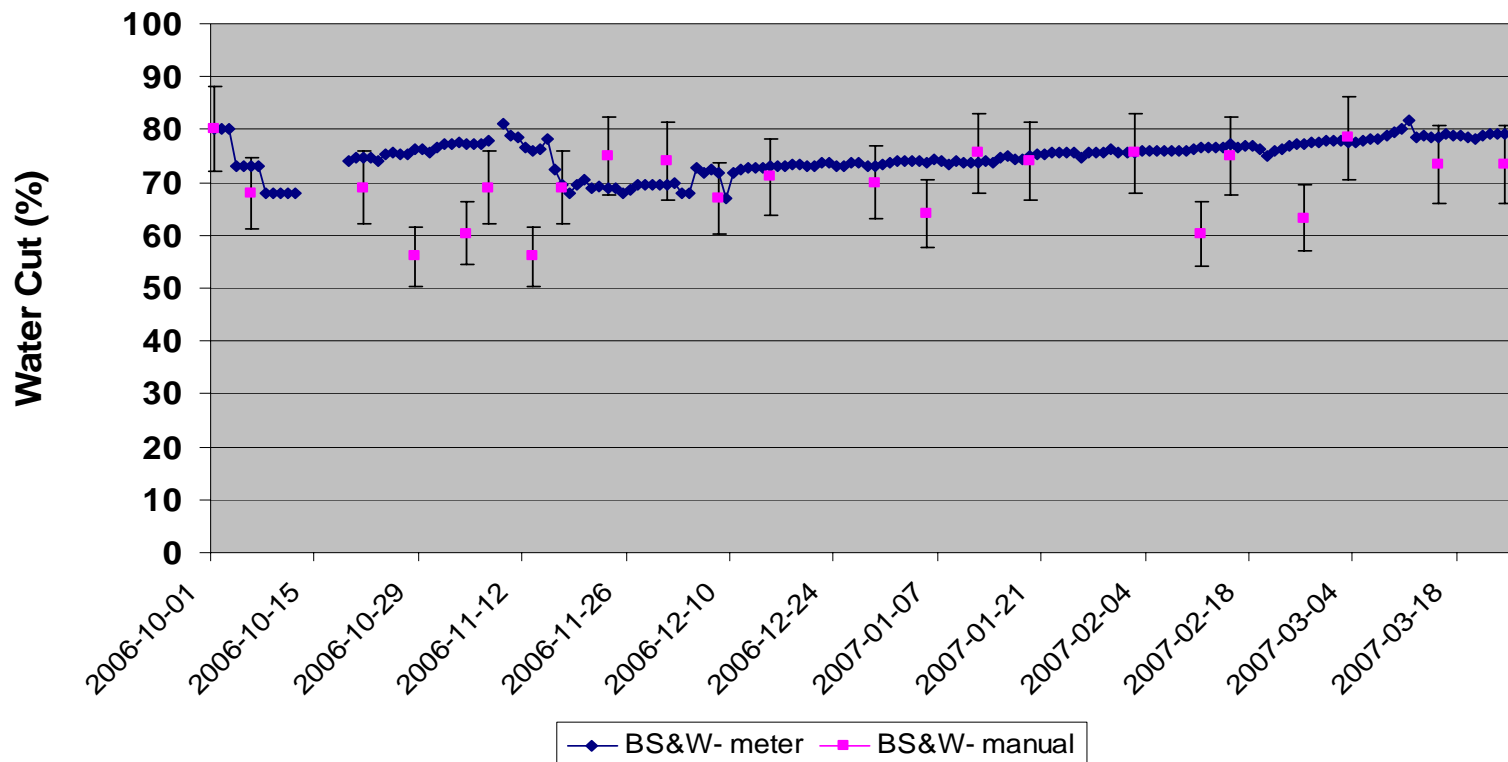


Surveillance

Continuous Water Cut Monitoring



Continuous Water Cut Meter vs Manual Readings
102/10-16-083-20W4/0 Polymer Producer

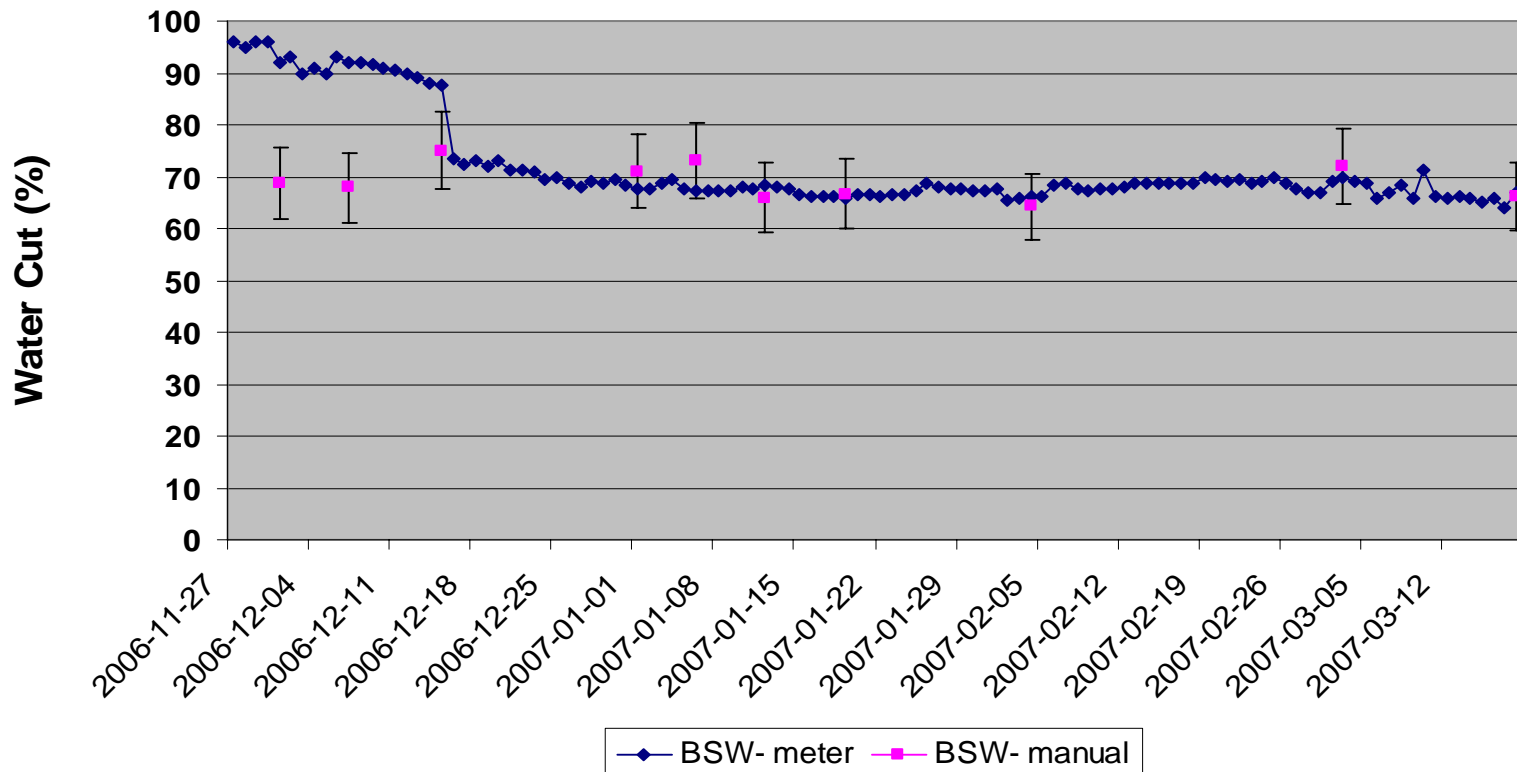


Surveillance

Continuous Water Cut Monitoring



Continuous Water Cut Meter vs Manual Readings
102/01-15-082-22W4/0 Polymer Producer



Approval 9404 Remedial Injector Workovers



- Pre-2006 workovers to mitigate high water-cuts:
 - Pad 8 100/9-12-82-23W4 (Dec '03)
 - Pad NE5 00/03-06-83-19W4 (Dec '04)
 - Pad NE5 00/04-06-83-19W4 (Dec' 04)
 - Pad NE5 00/06-18-83-19W4 (May '05)
 - Pad NE5 00/05-18-83-19W4 (Nov '05)
- Positive response on Pad 8 & NE 5 Pad

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Remedial Injector Workovers



- Recent workovers commenced in 2006:
 - Pad NE 1 4 Approved Injectors (Jan '06)
 - Pad 17 4 Approved Injectors (Jan'06)
 - Pad E5 4 Approved Injectors (March' 06)
 - NW 1-4 16 approved Injectors (Oct '06)
- Early Pad NE1 data looks encouraging
- No definitive response seen yet on Pads 17 & E5
- Operational and facility constraints

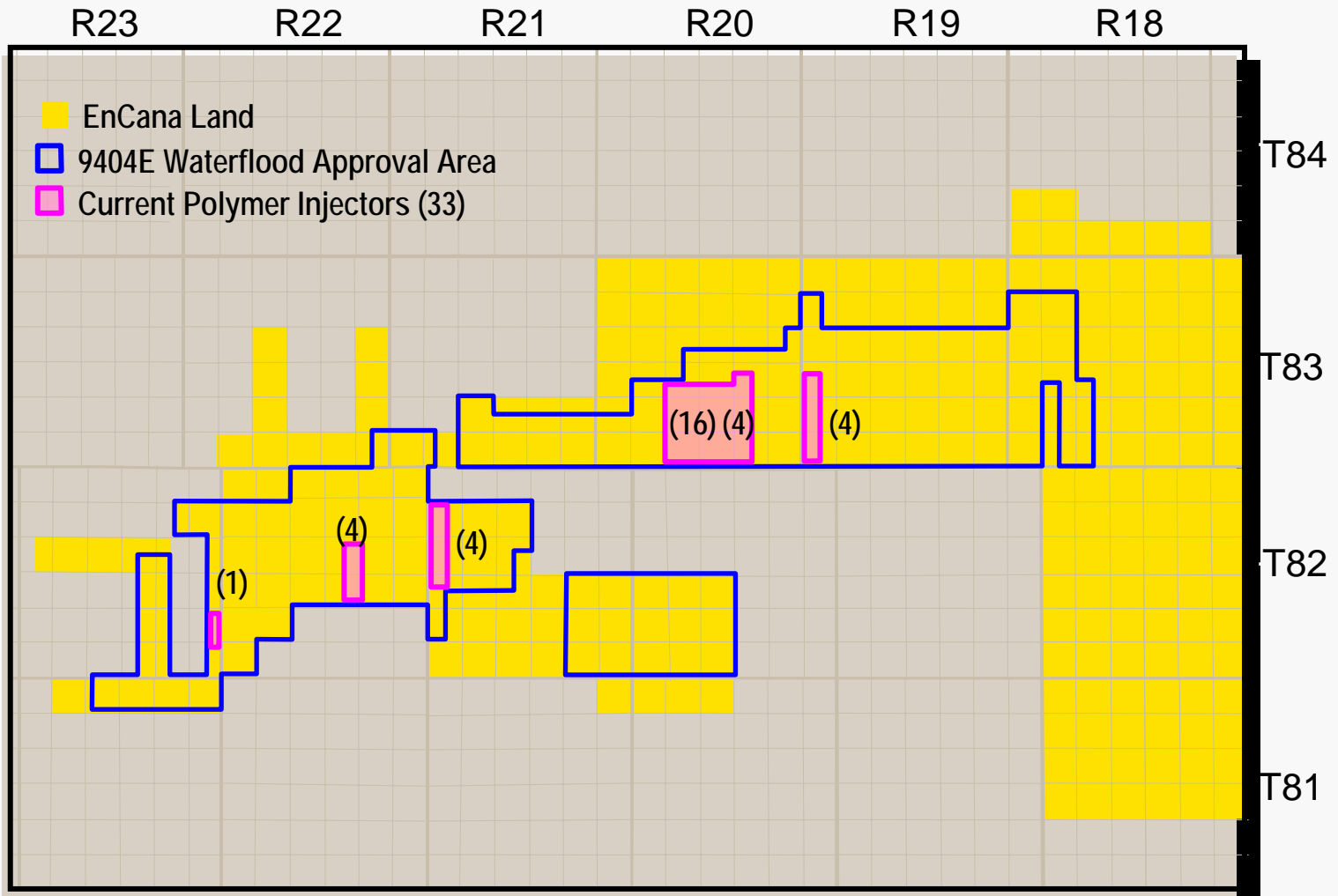
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Current & Projected Recovery Factors



<u>Category</u>	<u>Recovery Factor (%)</u>
■ Current	3
■ Primary	6
■ Waterflood	12
■ Ultimate	18

Approval 9404 Current Remedial Workovers



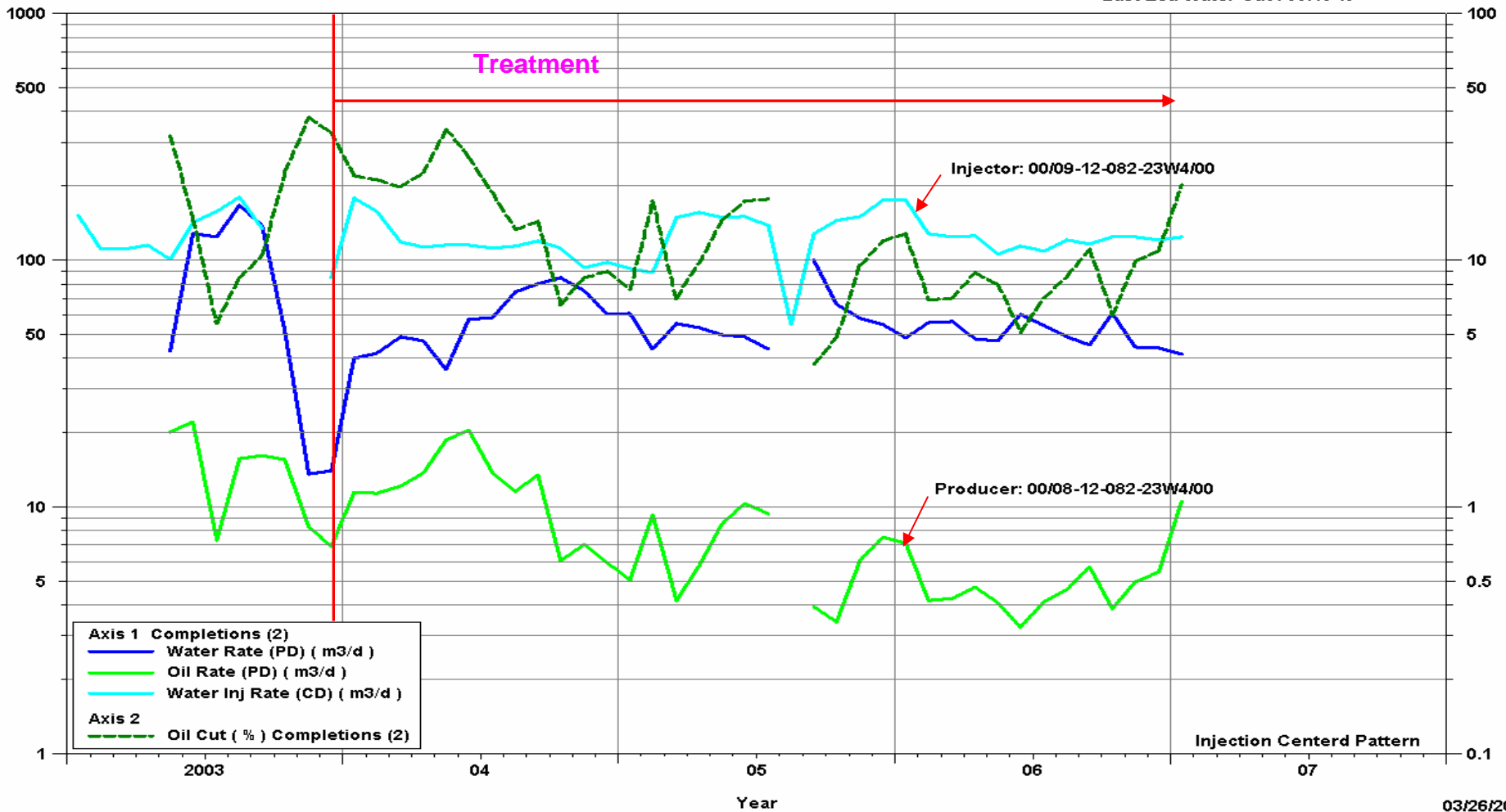
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Pad 8 Workover: High watercut



Pad 8 Remedial Workover Treatment

Last Est. Water Rate (PVR) : 28.65 m3/d
 Last Est. Oil Rate (PVR) : 22.10 m3/d
 Last Est. Water Cut : 56.45 %



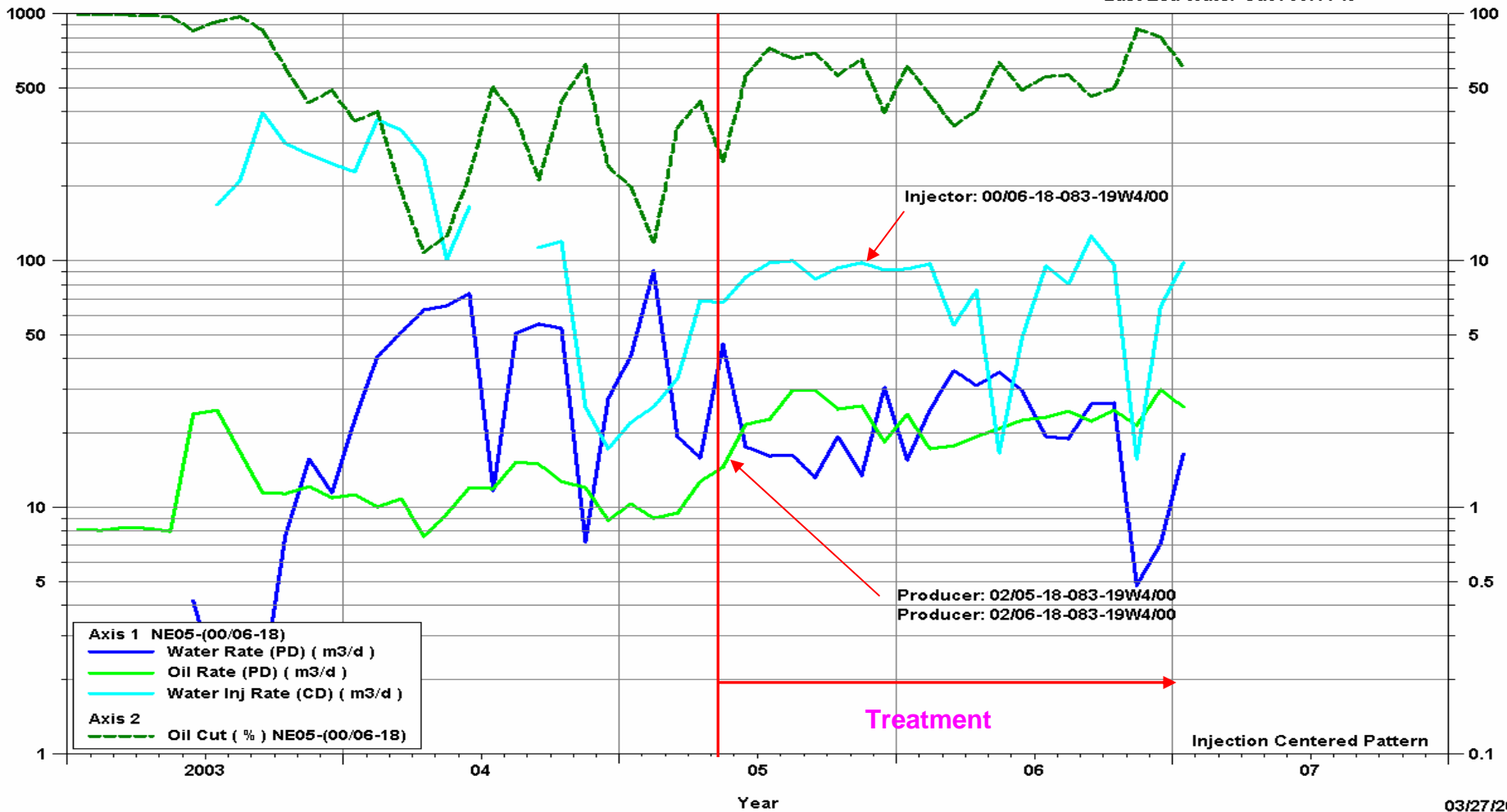
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Pattern NE5 00/6-18 Workover



Pattern NE05-(00/06-18) Remedial Workover Treatment

Last Est. Water Rate (PVR) : 18.66 m3/d
 Last Est. Oil Rate (PVR) : 32.56 m3/d
 Last Est. Water Cut : 36.44 %



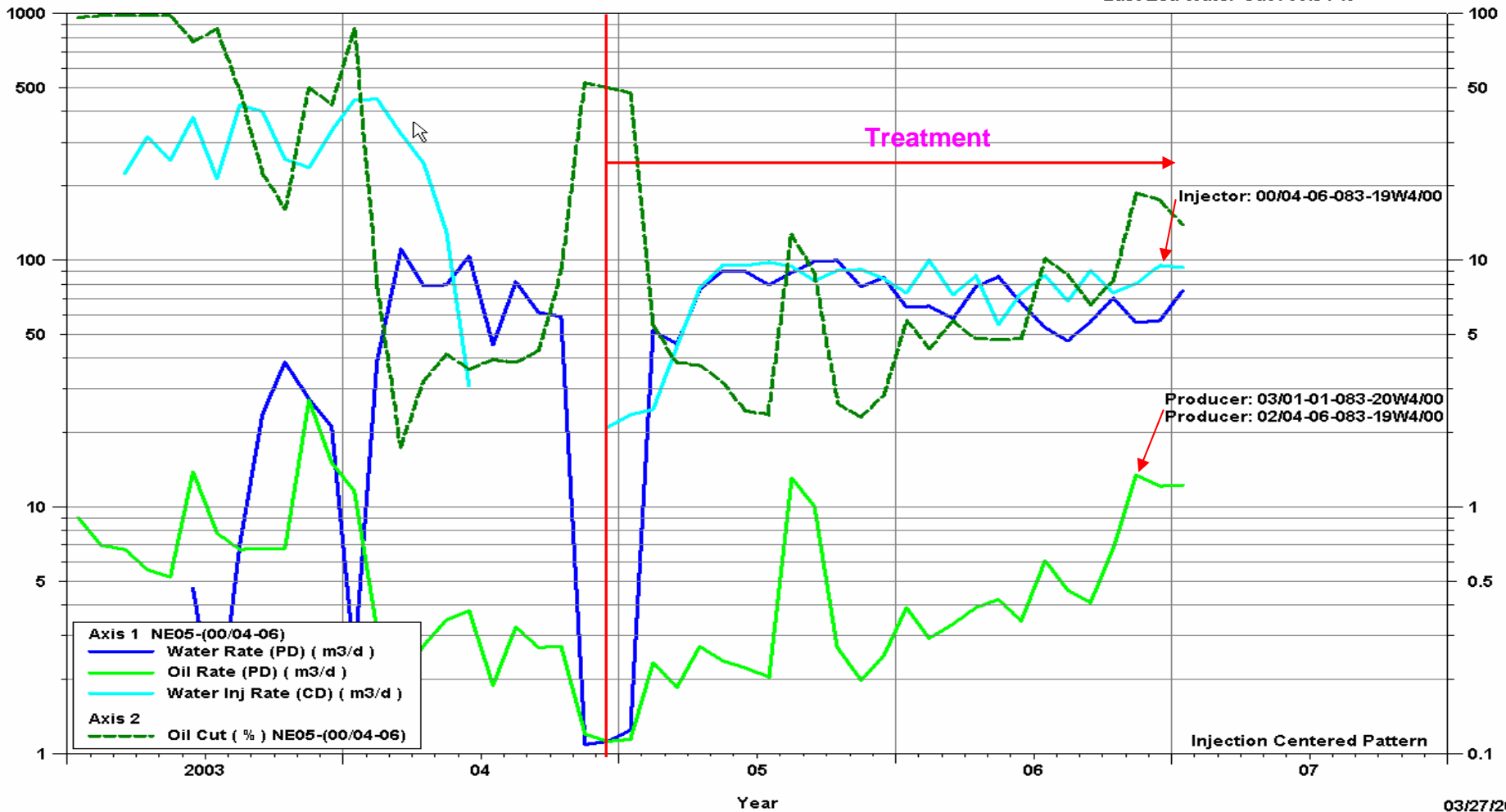
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Pattern NE5 00/4-6 Workover



Pattern NE05-(00/04-06) Remedial Workover Treatment

Last Est. Water Rate (PVR) : 46.18 m3/d
 Last Est. Oil Rate (PVR) : 7.55 m3/d
 Last Est. Water Cut : 85.94 %



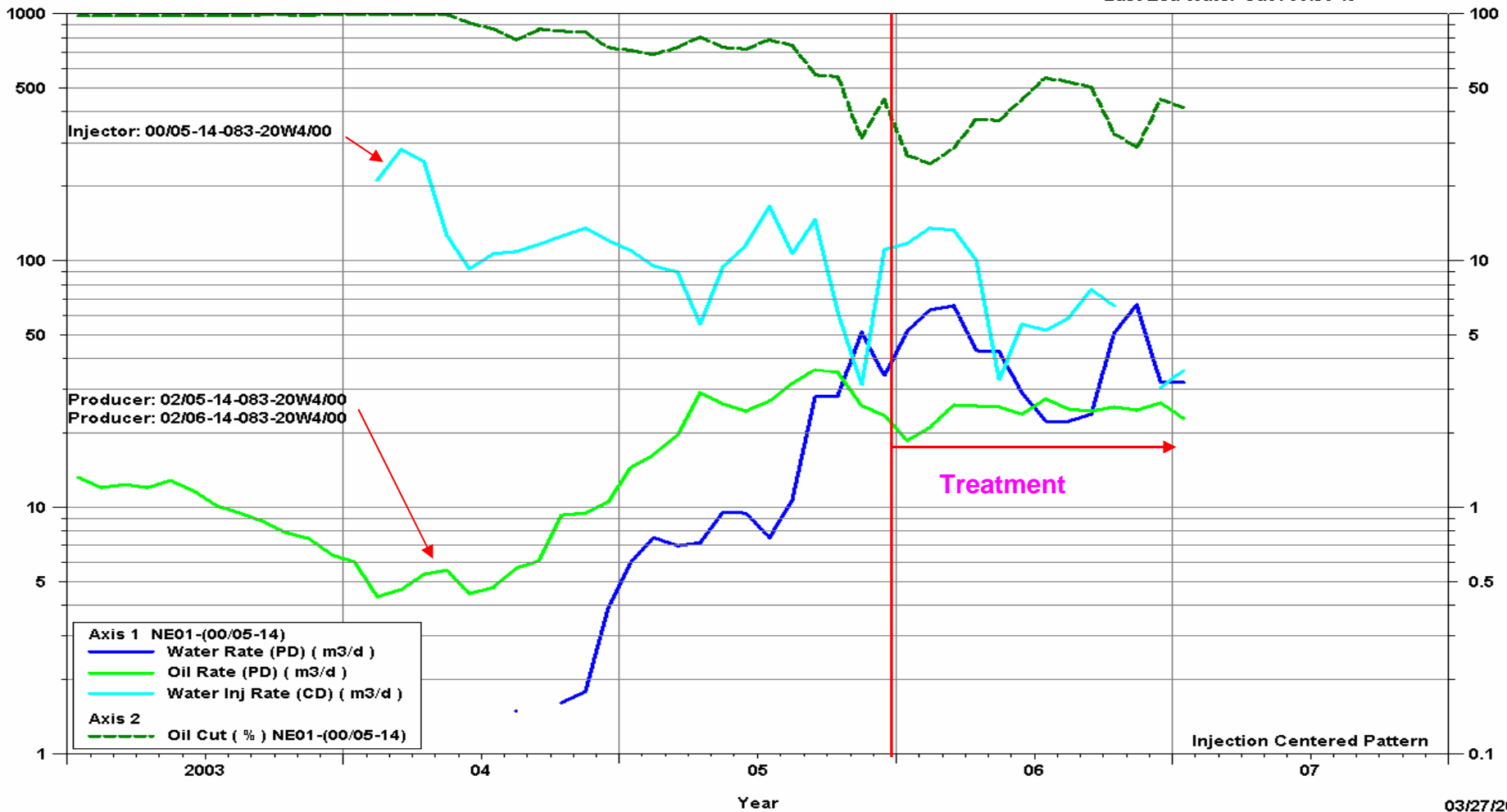
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Pattern NE1 00/5-14 Workover



Pattern NE01-(00/05-14) Remedial Workover Treatment

Last Est. Water Rate (PVR) : 40.98 m3/d
 Last Est. Oil Rate (PVR) : 21.20 m3/d
 Last Est. Water Cut : 65.90 %



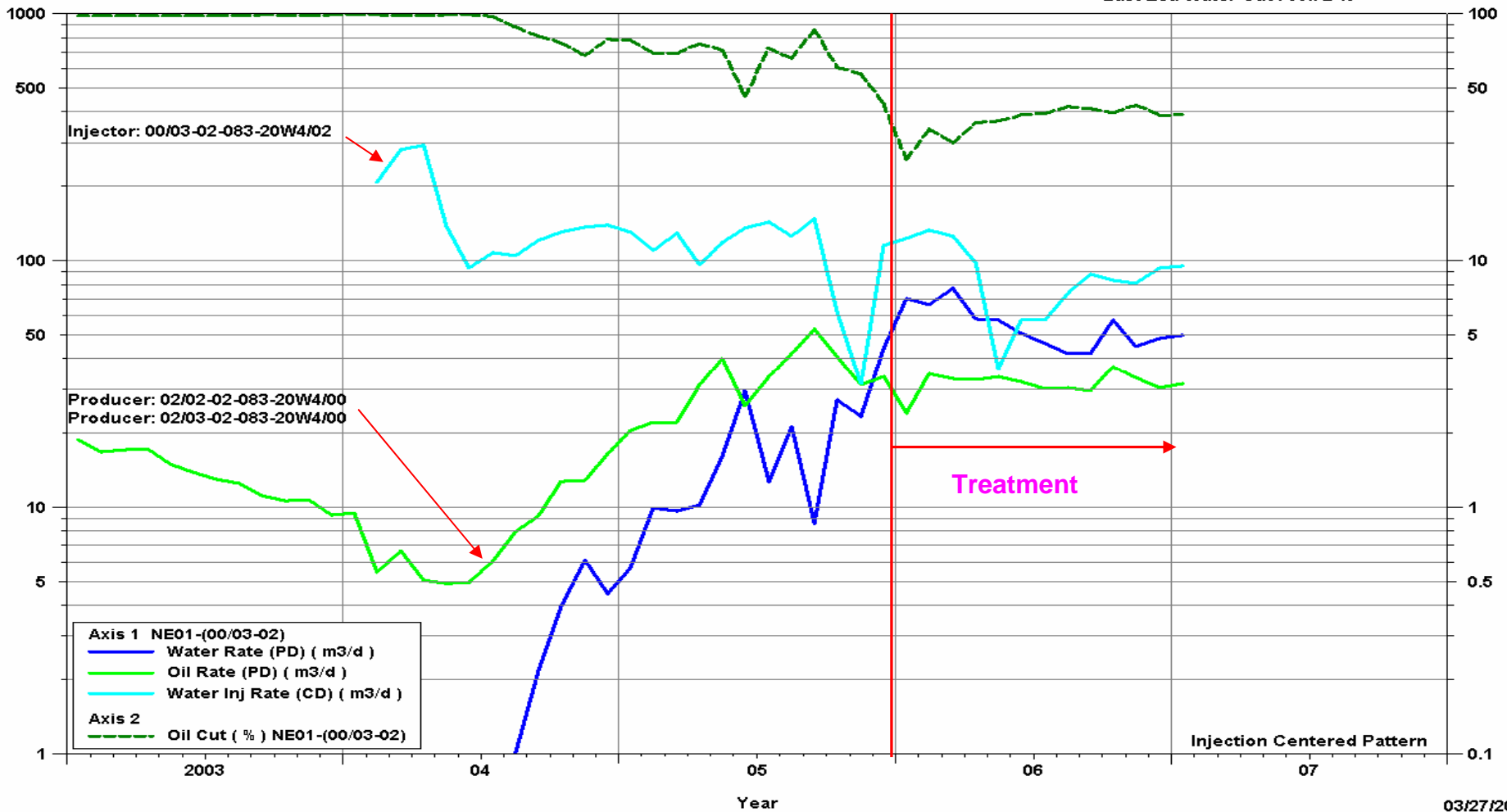
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Pattern NE1 00/03-02 Workover



Pattern NE01-(00/03-02) Remedial Workover Treatment

Last Est. Water Rate (PVR) : 44.96 m3/d
 Last Est. Oil Rate (PVR) : 29.08 m3/d
 Last Est. Water Cut : 60.72 %



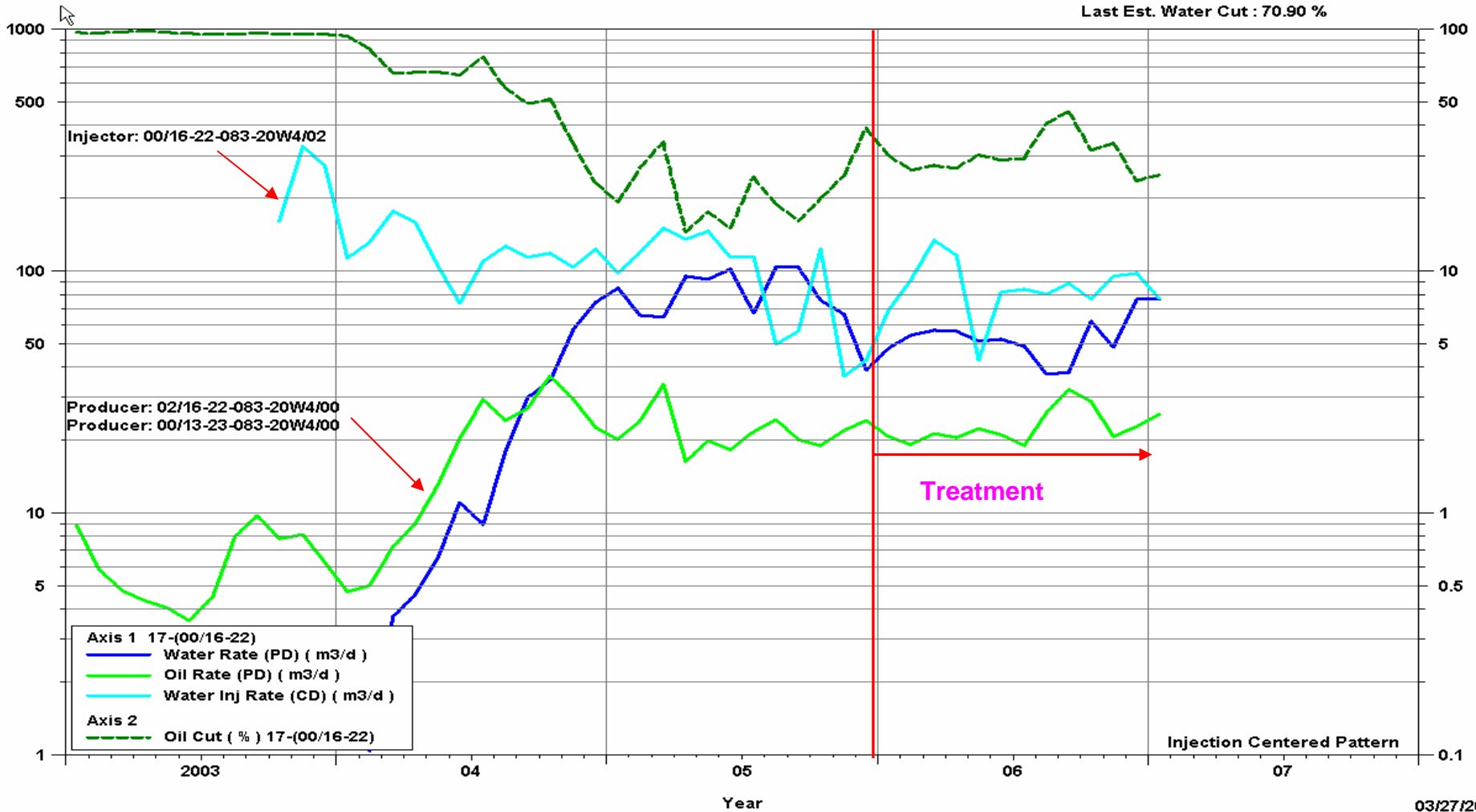
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Pattern 17 00/16-22 Workover



Last Est. Water Rate (PVR) : 46.30 m3/d
 Last Est. Oil Rate (PVR) : 19.00 m3/d
 Last Est. Water Cut : 70.90 %

Pattern 17-(00/16-22) Remedial Workover Treatment



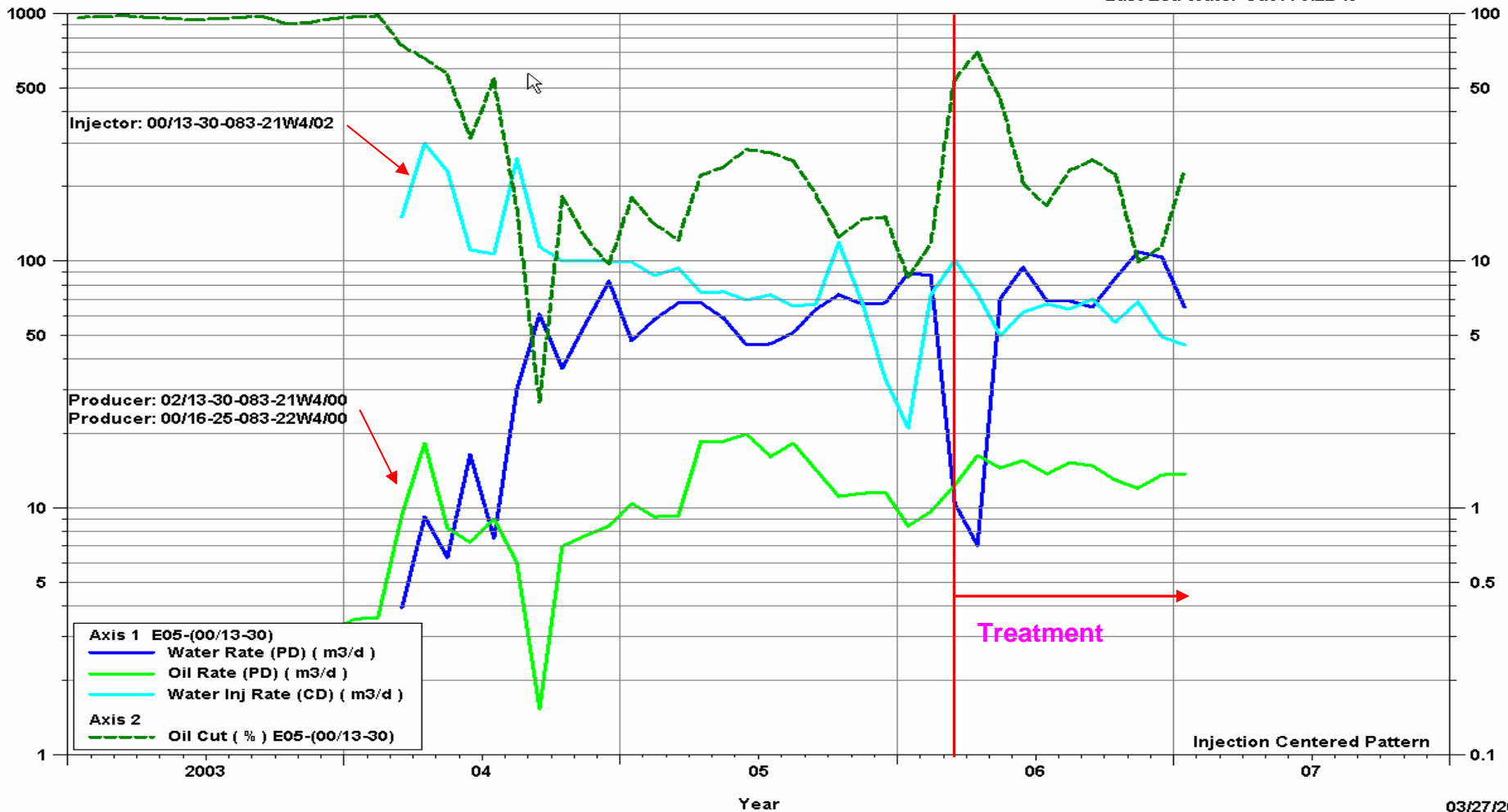
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Pattern E5 00/13-30 Workover



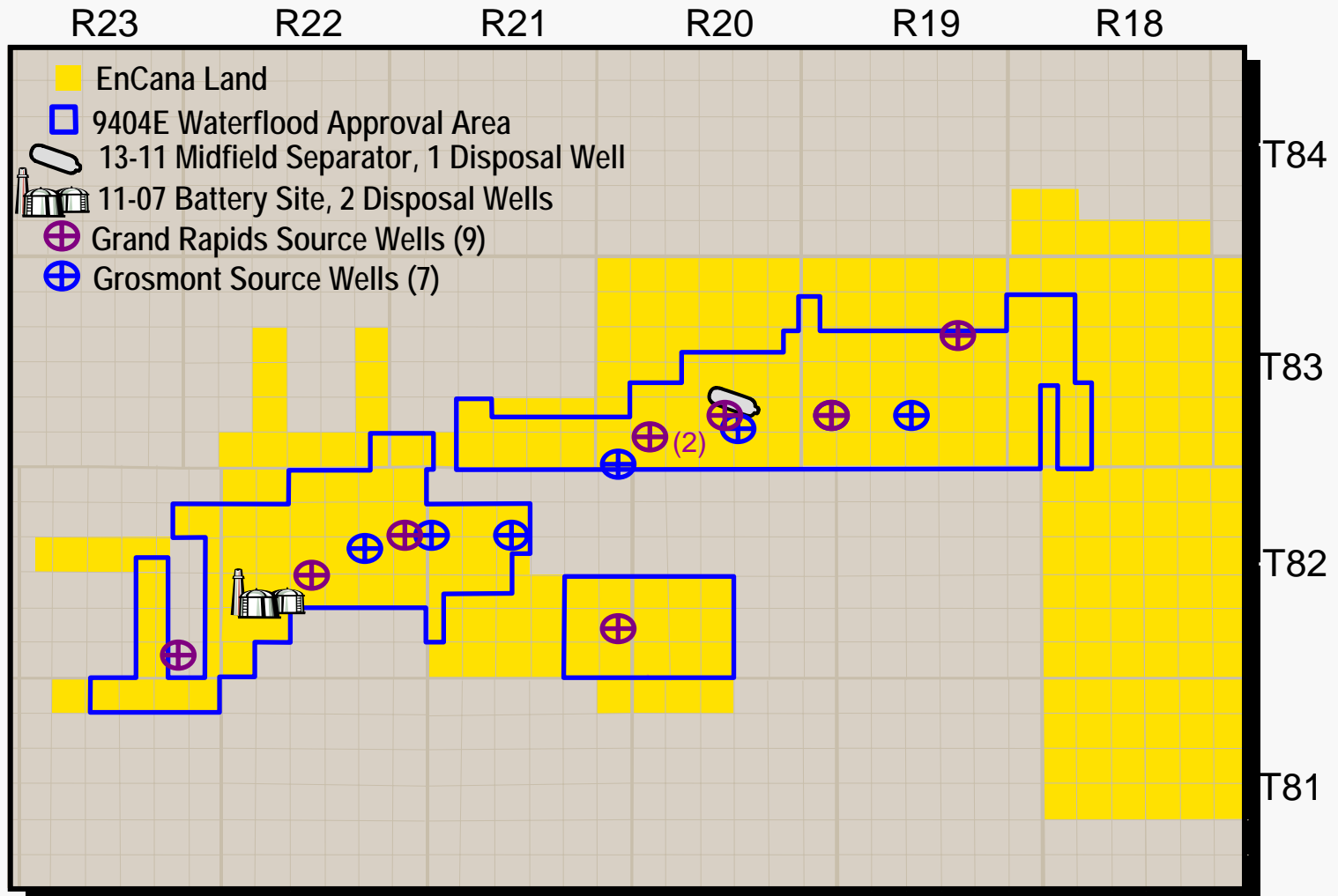
Last Est. Water Rate (PVR) : 20.48 m3/d
 Last Est. Oil Rate (PVR) : 8.68 m3/d
 Last Est. Water Cut : 70.22 %

Pattern E05-(00/13-30) Remedial Workover Treatment

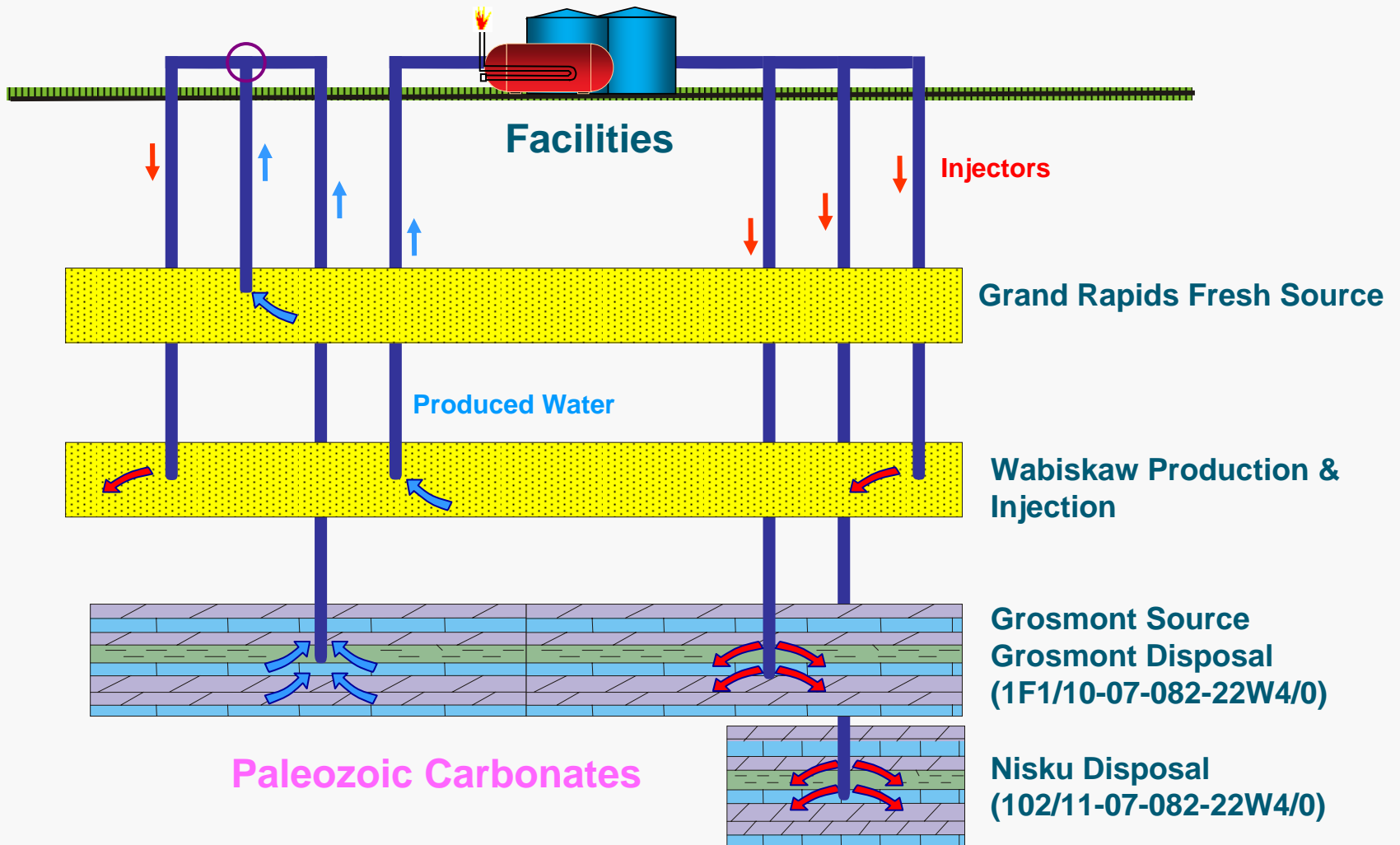


Approval 9404

Current Water Source Wells



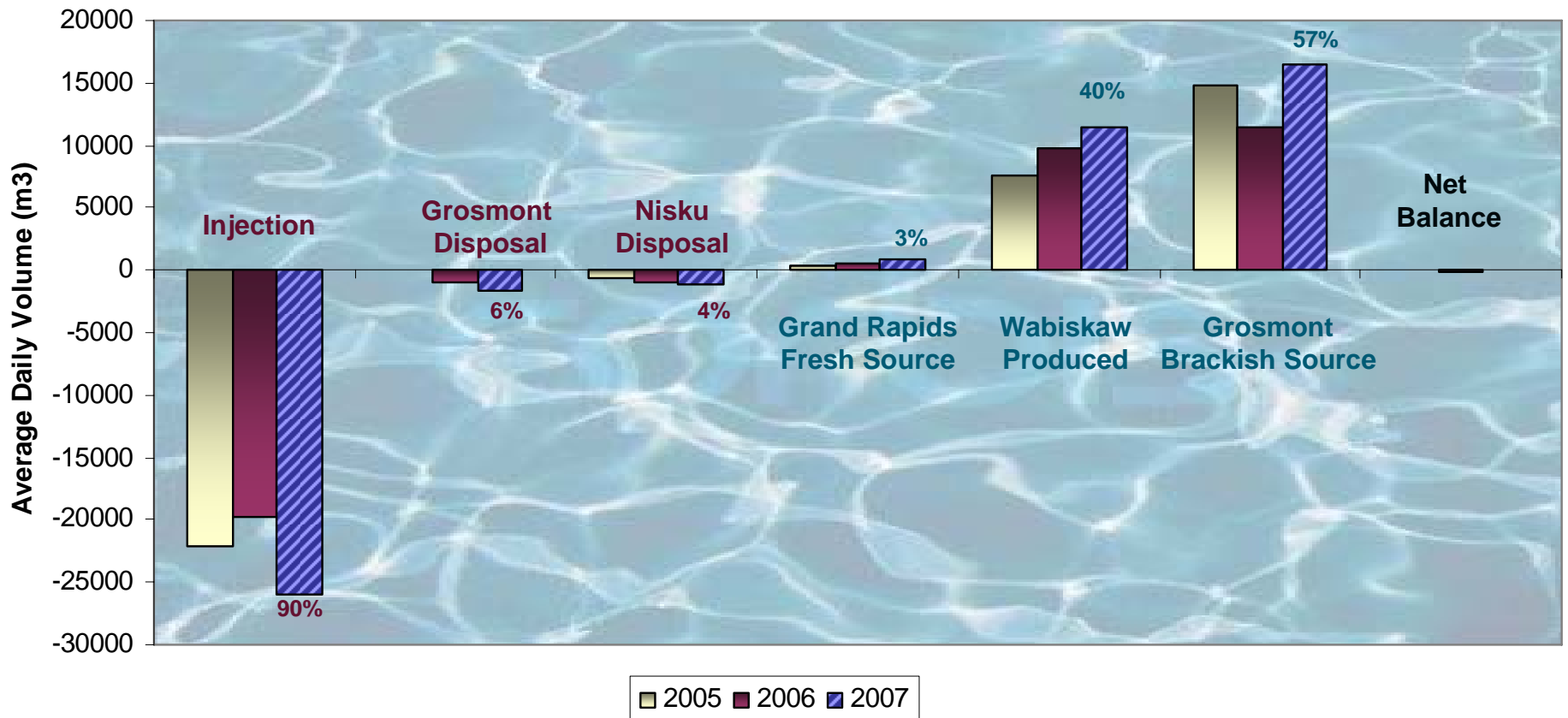
Approval 9404 Waterflood Flow Schematic



Approval 9404 Field Water Balance



Water Balance Approval 9404



Approval 9404

Brackish Water Source Well Summary



Annual Produced Volume (e3m3)

<u>Source Well Location</u>	<u>Formation</u>	<u>2005</u>	<u>2006</u>	<u>*Est. 2007</u>
1F1/10-21-082-21W4/3	Grosmont	391	725	490
1F1/15-36-082-21W4/0	Grosmont	1,432	507	1267
F1/06-23-082-22W4/0	Grosmont	141	0	-
100/07-07-083-19W4/0	Grosmont	726	504	1254
1F1/06-10-083-19W4/0	Grosmont	1,269	1165	1110
1F1/04-11-083-20W4/0	Grosmont	490	1274 (1155)	1290
1F1/12-19-082-21W4/0	Grosmont	877	1	600
**1F1/12-18-082-22W4/0	Grosmont	0	0	-
**1F1/13-11-083-20W4/0	Grosmont	0	0	-
***1F1/10-07-082-22W4/0	Grosmont	103	0	-
(0) Future 2007 Wells	Grosmont	<u>0</u>	<u>0</u>	<u>0</u>
	Total:	5,429	4,176 (4,057)	6,011

*Estimates based on projection from most current rate and 2007 planned development.

** Wells currently suspended.

***Converted to disposal well March 2006

Currently under investigation as to having different water types as being reported in registry

Approval 9404

Fresh Water Source Well Summary



Annual Produced Volume (e3m3)

<u>Source Well Location</u>	<u>Formation</u>	<u>2005</u>	<u>2006</u>	<u>*Est 2007</u>
1F1/05-07-083-19W4/0	Grand Rapids B	34	32.1	41
1F1/08-07-082-20W4/0	Grand Rapids B	4	1.5	0
1F1/09-24-083-19W4/0	Grand Rapids A	10	2.3	0
1F1/05-11-083-20W4/0	Grand Rapids B	8	24.8	57
1F1/11-19-082-21W4/0	Grand Rapids B	6	25.0	30
1F1/10-01-082-23W4/0	Grand Rapids B	51	50.6	52
1F1/02-09-083-20W4/0	Grand Rapids A	0	2.0	0
1F1/03-09-083-20W4/0	Grand Rapids B	0	7.5	37
1F1/16-15-082-22W4/0	Grand Rapids B	4	26.0	32
(1) Future 2007 hz Well	Grand Rapids B	<u>0</u>	<u>0</u>	<u>55</u>
	Total:	117	172	304

*Estimate based on projection from current rate and planned 2007 development.

Incorrectly allocated to Grosmont source water in registry. In process of being corrected.

Approval 9404 Water Disposal Summary



Annual Injected Volume (e3m3)

<u>Disposal Well Location</u>	<u>Formation</u>	<u>2005</u>	<u>2006</u>	<u>Est. 2007</u>
F1/10-07-082-22W4/0	Grosmont	0	352	620
102/11-07-082-22W4/0	Nisku	228	342	400
*100/13-11-083-20W4/0	Nisku	<u>0.07</u>	<u>0.0</u>	<u>2</u>
Total:		228	694	1022

*100/13-11 used primarily for drilling fluid waste disposal

Currently under investigation relating to source/disposal volumes discrepancies

Approval 9404

Key Learnings



- Insufficient fluid processing capacity constrained performance
 - Gathering pipelines
 - Battery oil treatment
 - Water handling and disposal capacity
- High water-cuts due to poor mobility ratio
- Injector workovers have successfully reduced water production
- No injectivity issues to date with waterflood or remedial workover treatments

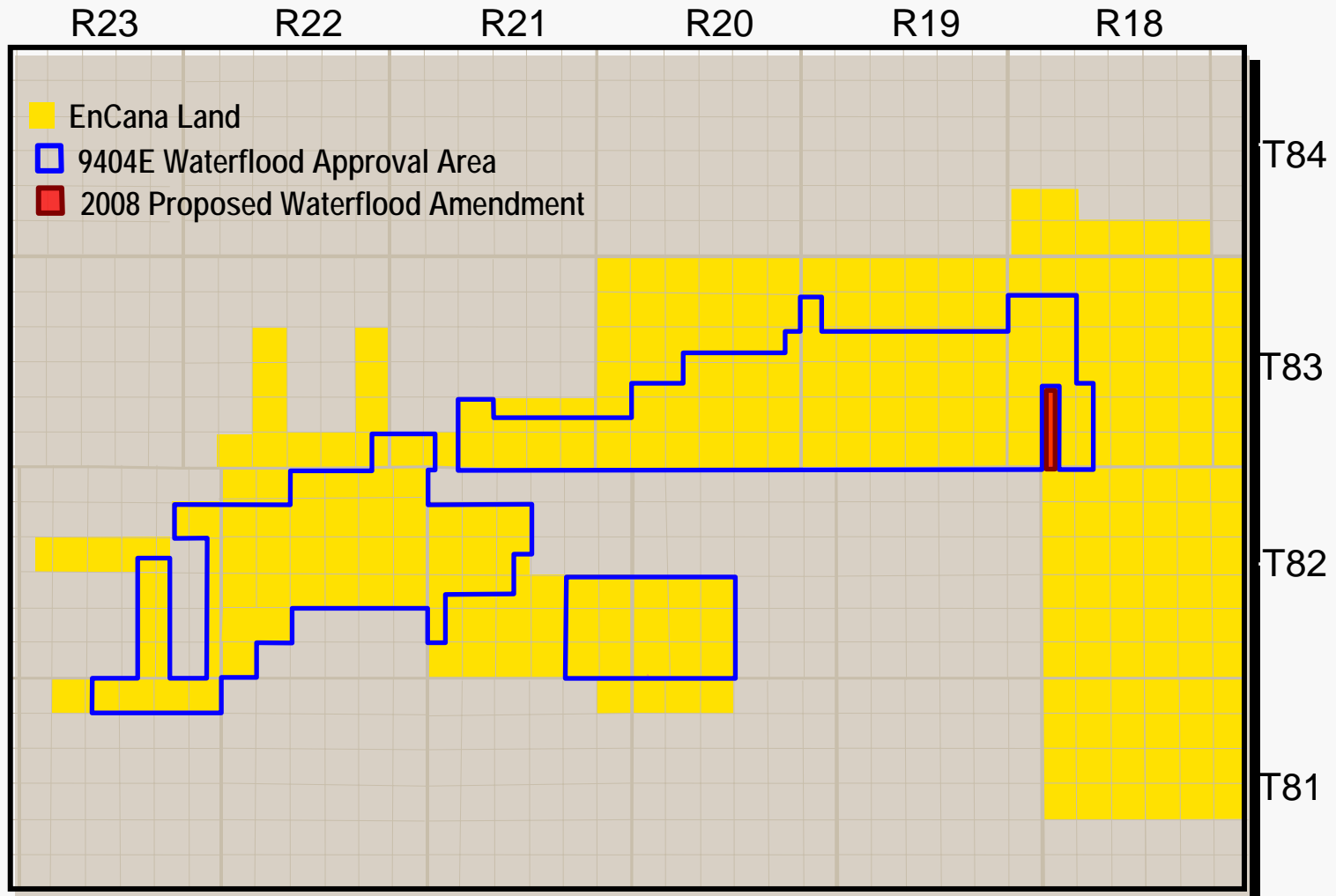
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Future Plans



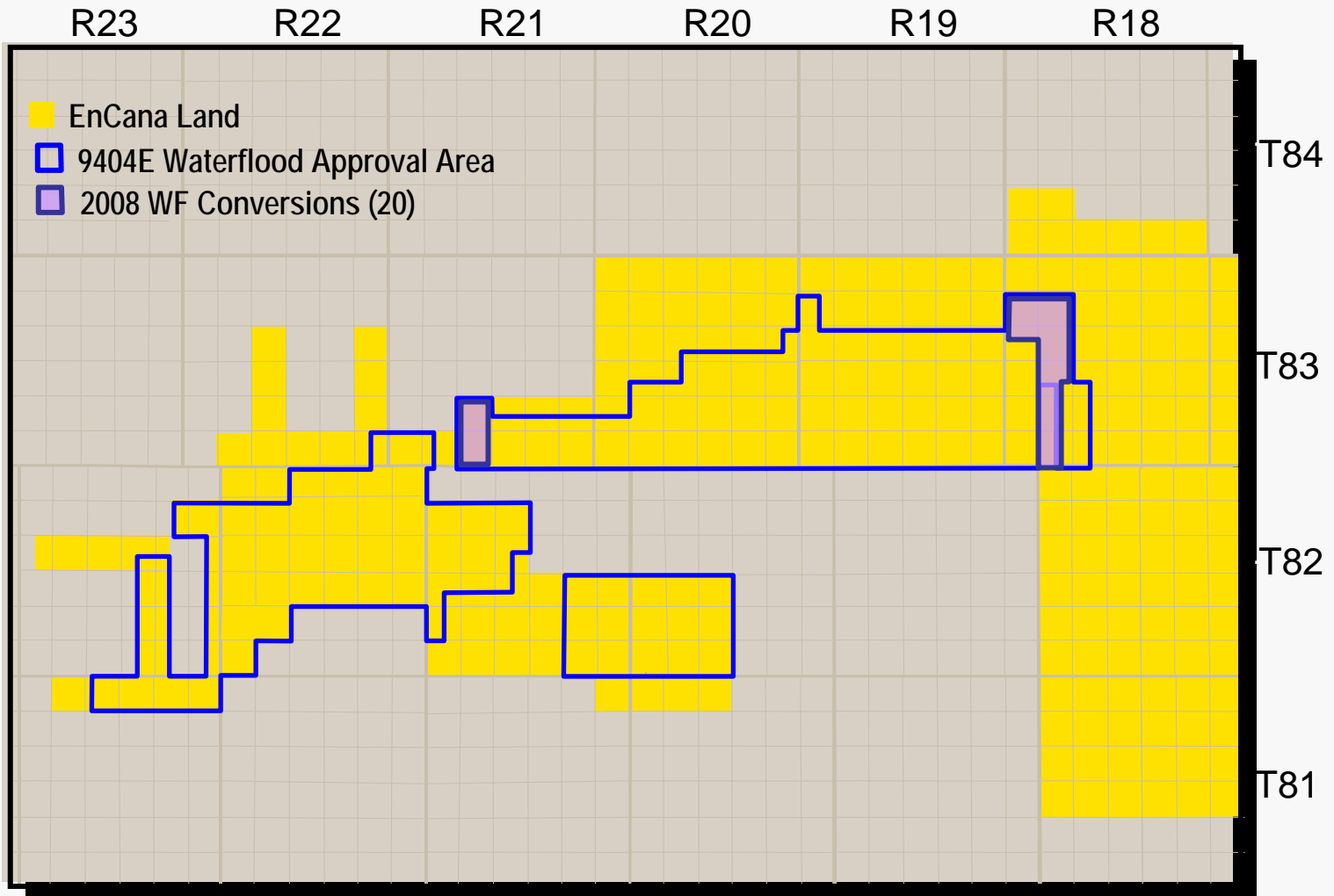
- Continue waterflood expansion as main reservoir drive mechanism
 - 17 conversions in 2007
- Expand waterflood approval area
 - 2007 application to include NE19 conversions
- Increase number of injector workovers:
 - Optimize existing 33 treatments
 - Implement 25 new treatments in 2007
 - Reduce water handling costs and extend well life
- Evaluate Brackish vs Fresh Source Water Feasibility:
 - Assess Grand Rapids hz well deliverability
 - Assess Water Softening Technologies for TDS reduction
 - Assess option feasibility for 2008 pilots

Future Plans Waterflood Expansion

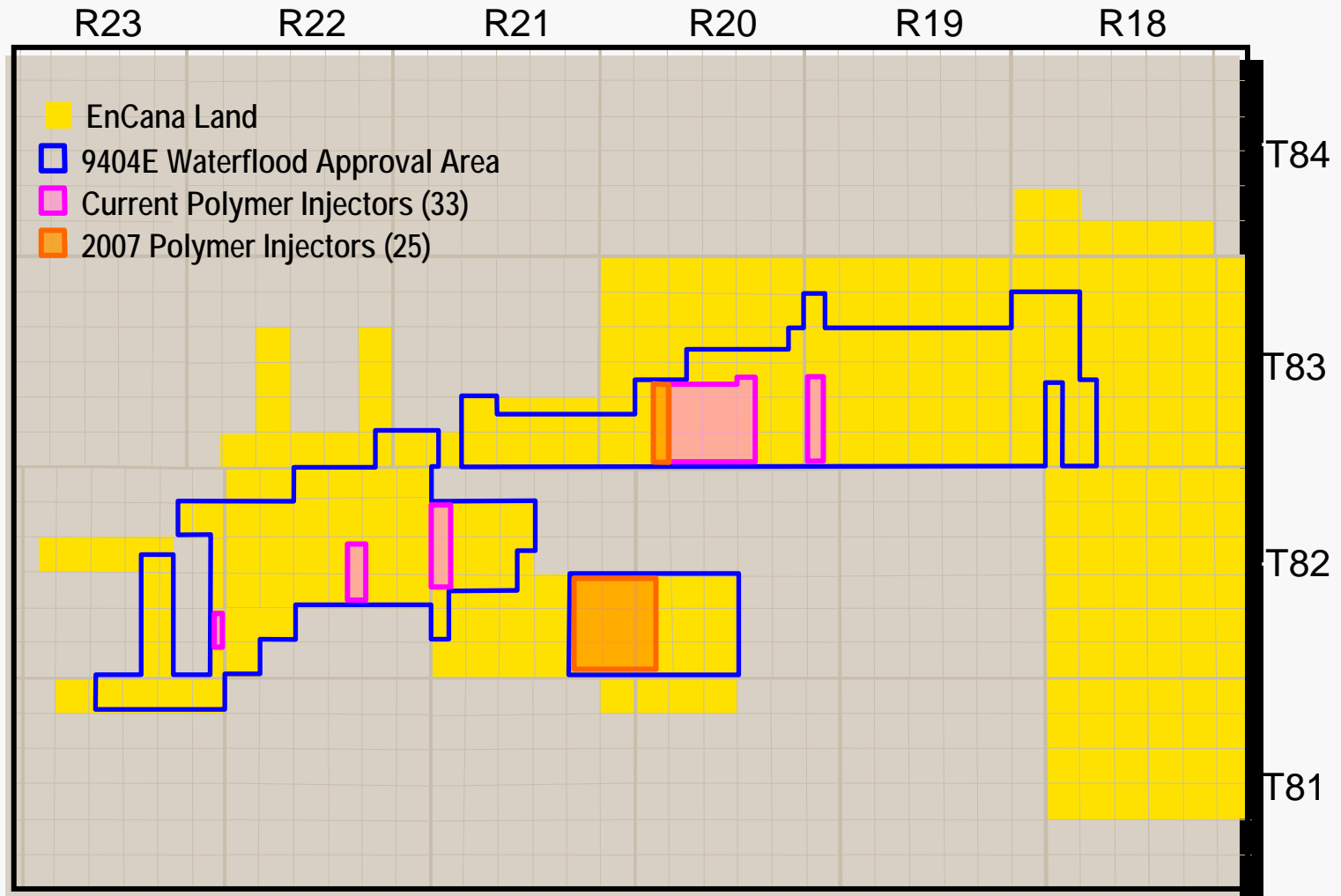


Future Plans

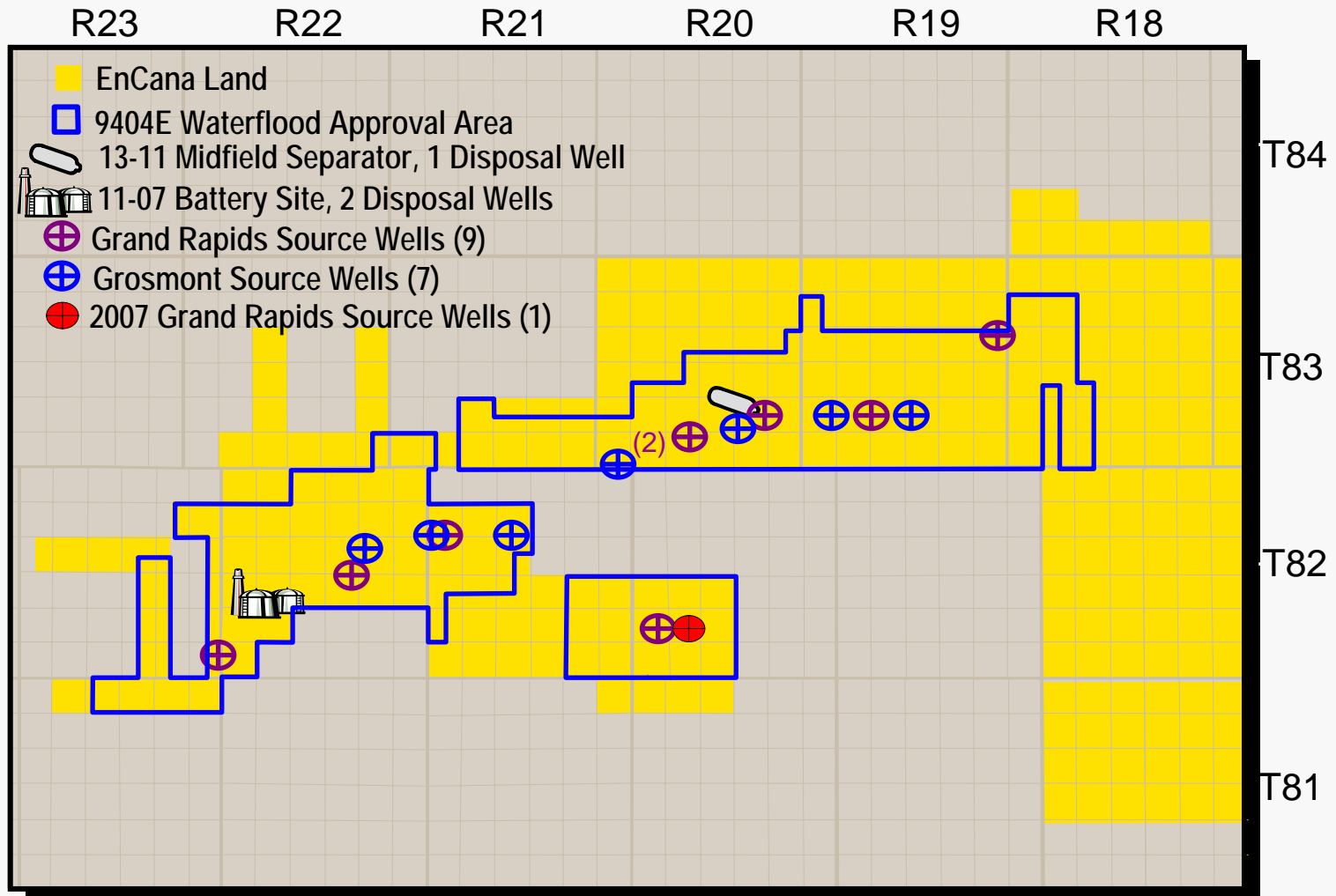
2008 Injector Conversions



Future Plans Remedial Injector Workovers



Approval 9403E Future Water Source Wells



Approval 9404

Approval Management



- Recommended changes
 - Delete list of injectors / consolidated approval
 - waterflood area and well spacing defines project
 - Replace semi annual with annual review
 - 6 months is a short time frame for production monitoring
 - Replace VRR requirements with MAWHIP
 - A practical, measurable yardstick of waterflood performance

Approval 9404 Issues



- Guidance on regulatory approval extension process:
- Pending Injector Workover Approval Expiries

<u>Injector Workover Location</u>	<u>Expiry</u>	<u>Injectors</u>
— Pilot Pad 8	Oct 31, 2008	1
— Pilot NE5	Oct 31, 2008	4
— Field Wide 2006 Approvals	Oct 31, 2008	96
— Future Balance of field, 2008+	Not applied For	200+

Approval 9404 Compliance



- EnCana is not aware of any conditions in its Approvals or Regulations in which it is not compliant.
- Commitments described in the original application have been met, or are in the process of being met.