TMCBSU, Montana
Field Study – Phase 2

Provident Energy Associates of Montana, LLC

Production & Completions Group
Consulting Services, DCS NGC
June 2009

Provident
Energy Associates of Montana, LLC

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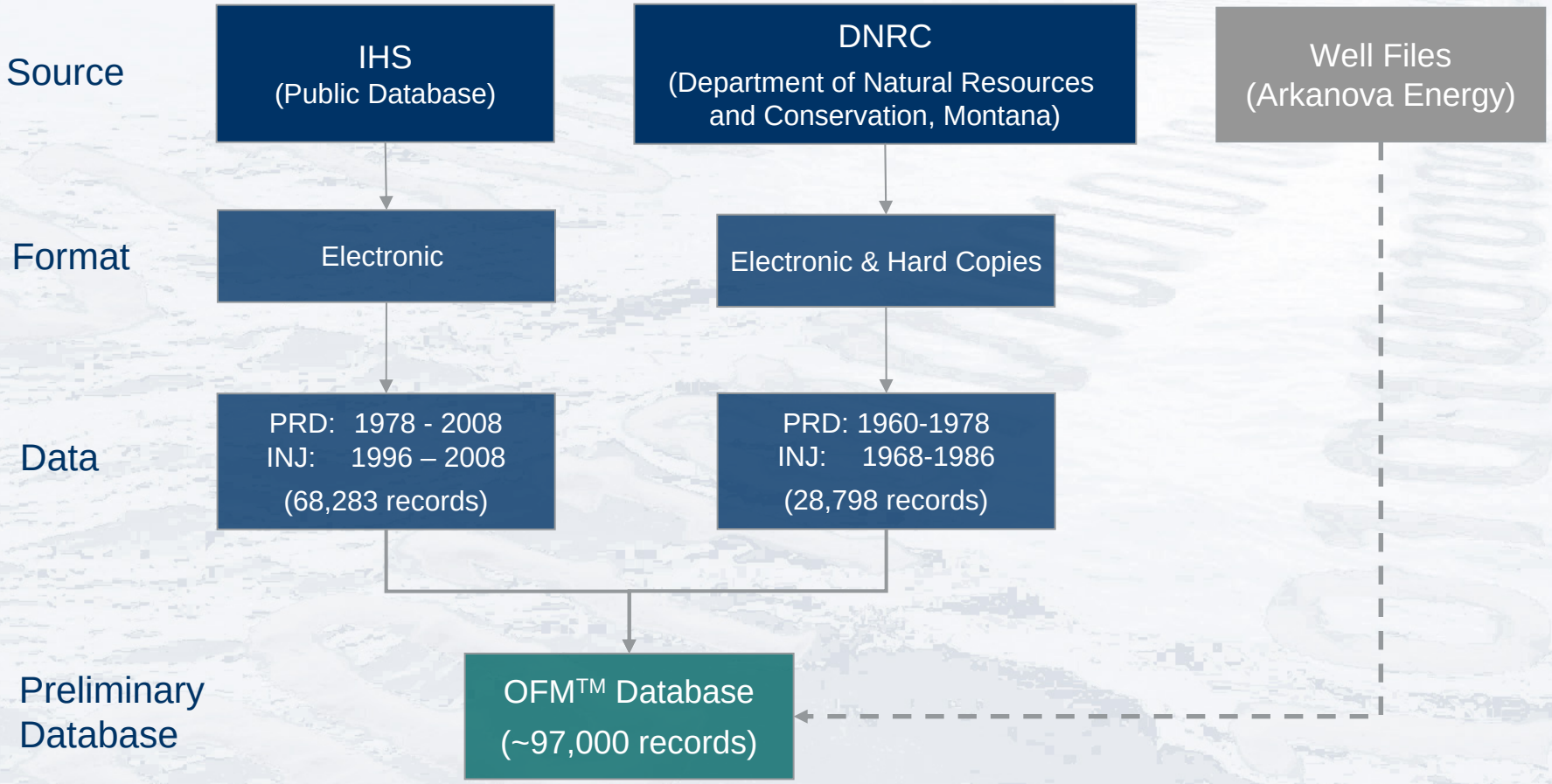
Agenda

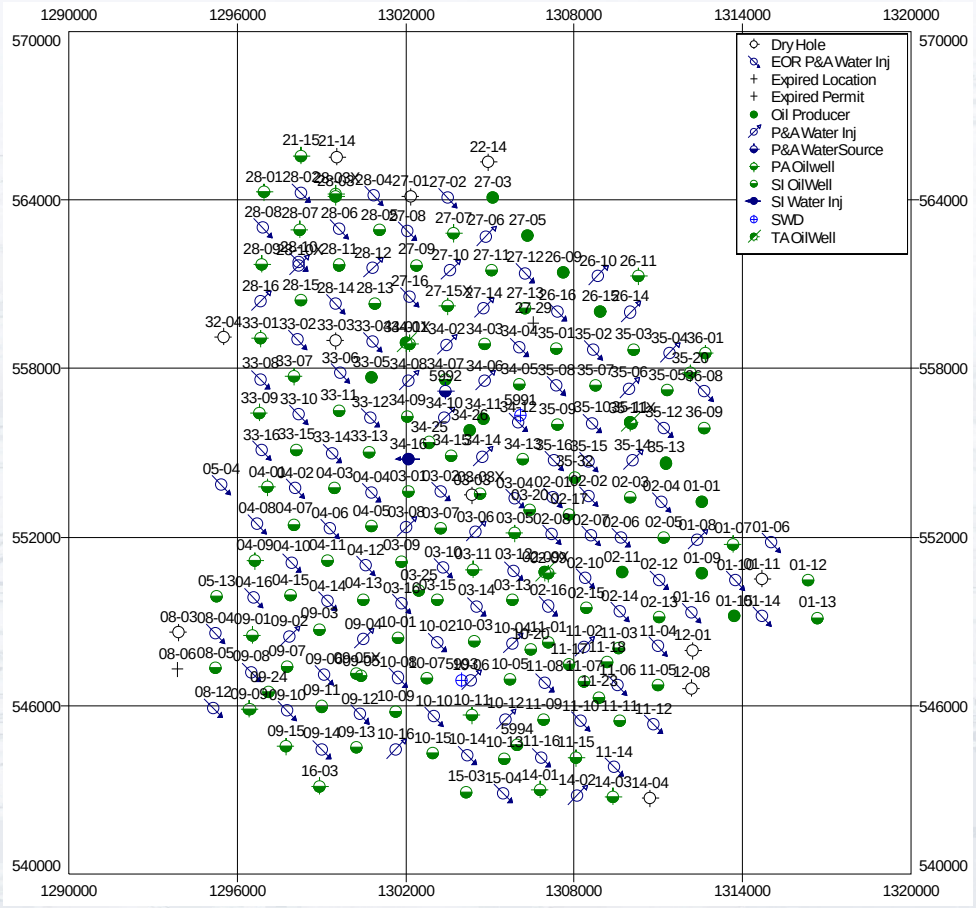
- Phase 1 Review
  - Workflow & Results
    - TMCBSU Inventory (OFM™)
    - Total Field Production & Injection
- Phase 2
  - Objectives & Deliverables
  - Cut Bank Formation
  - Production Analysis (by Yanil Del Castillo)
  - Operations Review (by Eddie Rodriguez)
  - ➢ Conclusions & Recommendations - covered in each section
- Proposed Next Steps

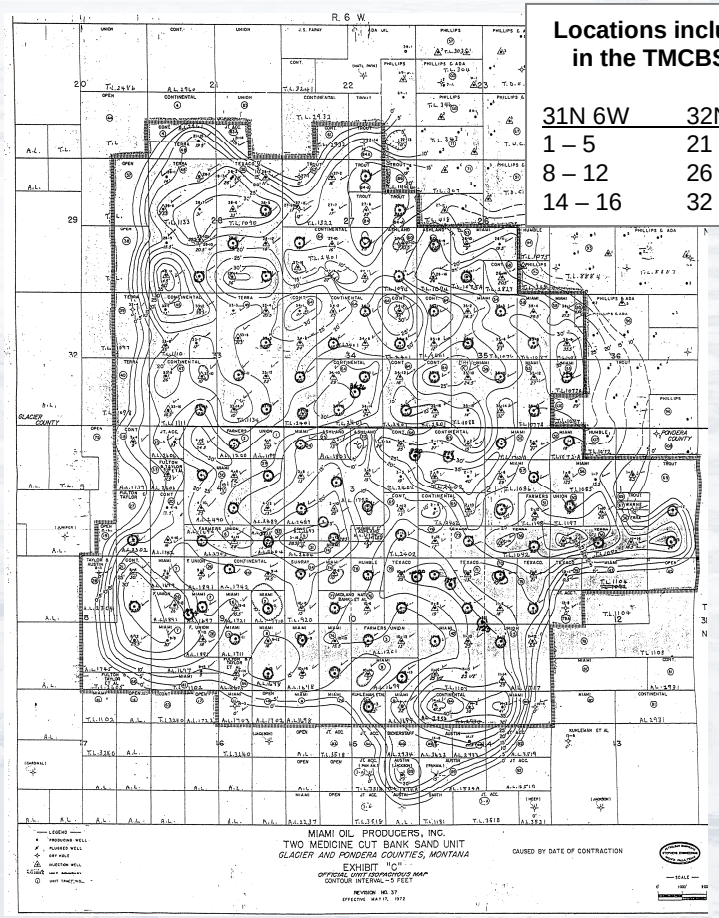
Phase 1 – Data Acquisition



Note: *Larger # of records than listed for Phase 1 Final presentation due to a larger download form IHS* (including more offset wells).

Phase 1 – Building a Database (OFM™)





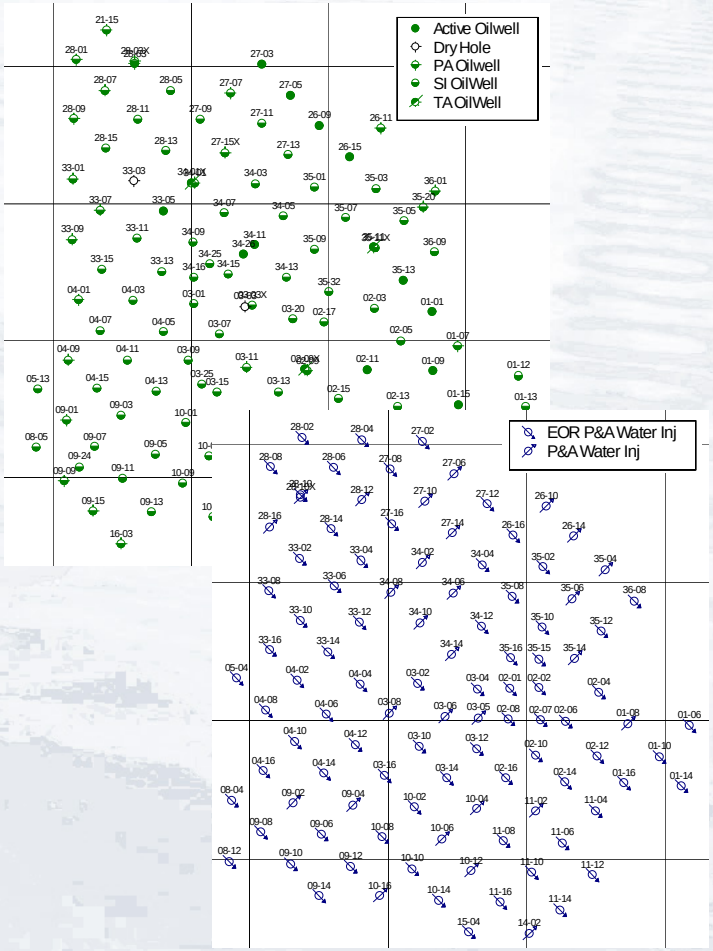
Locations included in the TMCBSU:

31N 6W	32N 6W
1 – 5	21 – 22
8 – 12	26 – 28
14 – 16	32 – 26

Phase 1 - OFM Inventory

CUT BANK / LOWER CUT BANK Formation

12	Active Producers
76	SI or TA Producers
31	P&A Producers
104	P&A Injectors
9	Dry Wellbores
1	WaterSource (5992)[1]
233	**Completions (1 per wellbore)**



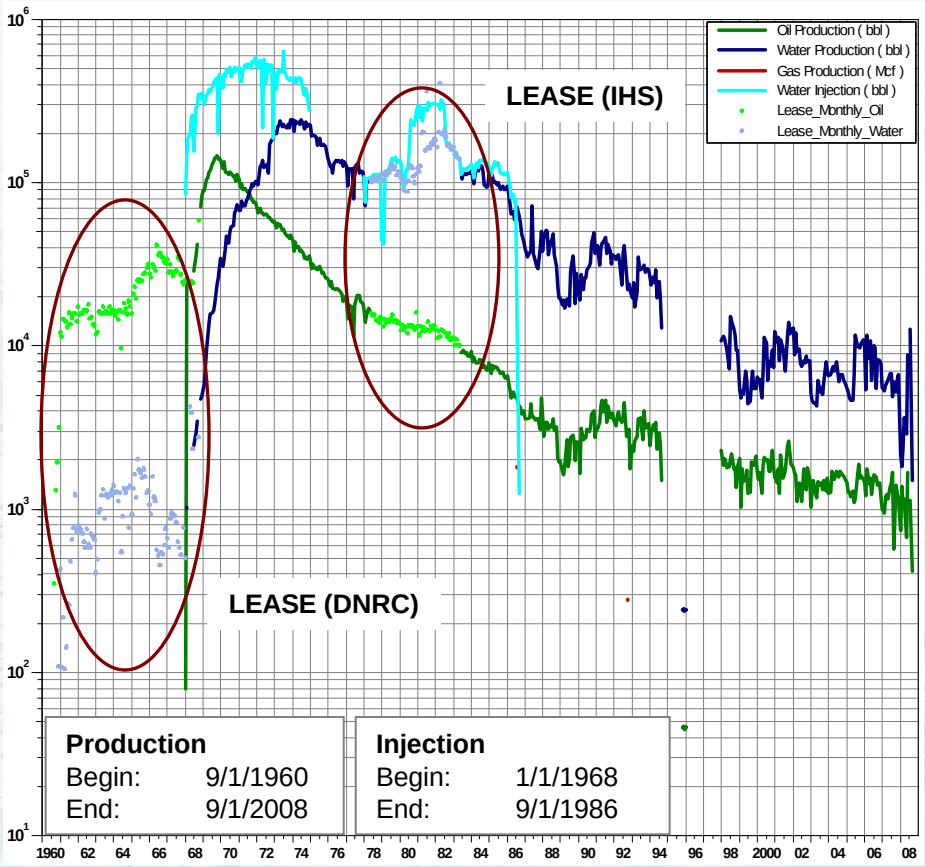
MADISON Formation

1	SI Producer: 5994
2	Disposal Wells: 5991 (active) & 5993 (P&A)

[1] *"Watersource": No production or injection data. XY record only.*

Phase 1 – Total Field Production & Injection

Cut Bank / Lower Cut Bank



Cut Bank / Lower Cut Bank Formation:

Production (per well)		**+ Lease Prd**
Oil Cum:	7.75 MMBO	2.73 MMBO
Water Cum:	22.60 MMBW	8.70 MMBW

TOTAL Production

Oil Cum*:	10.48 MMBO
Water Cum:	31.30 MMBW

TOTAL Injection

Injection Cum: 51.14 MMBW (excl. disp.)

Gas Cum: ~ 2 MMscf (well 04-11 only - '86 & '92)

**Total oil cum within 3% of BLM estimates*
⇒ Successful Phase 1 Data Acquisition

Phase 2 - Objectives & Deliverables

- QA/QC current Dataset - Done
- Validate OFM™/Access Database - Done

I) Two-day Field Visit

II) Data Inventory Review

- Identify available data, such as well files, logs, maps, PVT and core data, waterflood reports

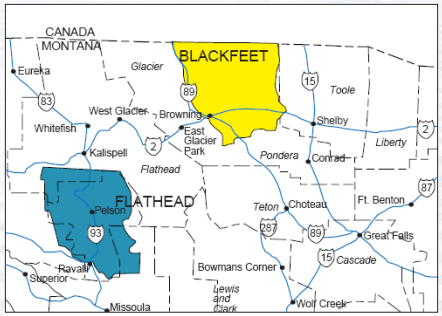
- Preliminary Review of TMCBSU
  - Field Potential - Identify best areas
  - Candidate Recognition - Identify best candidates for re-activation
  - Review requirements for reinstating waterflood
  - Recommend action items for longer term reserve recovery

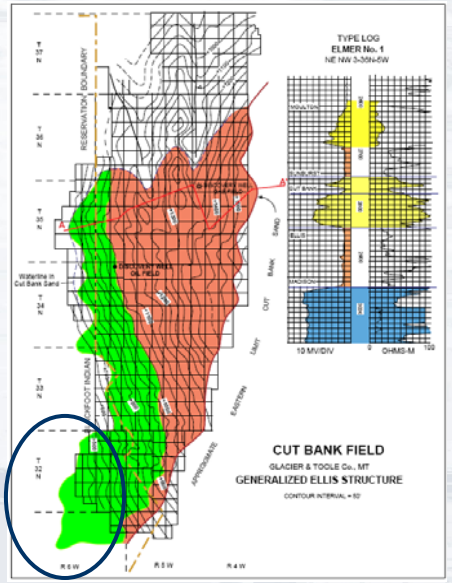
- **Report & Presentation on Findings and Recommendations**

Cut Bank Formation

**Reference: BLM Report 1996 & Blackfeet Nation Article*

- Southwest extension of the larger Cut Bank field
- Monocline, west side of Sweetgrass Hills Arch
- Lower Cretaceous Cut Bank Sandstone
  - Upper Sand 0-38ft (not productive)
  - Lower Sand 0-47ft (oil bearing)
- Primary trapping mechanism:
  - permeability pinchouts, erosional features





TMCBSU (31-32N, 6W)

BLM Estimates (1996 Report):

OOIP[2]: 105.39 MMbbls

Cum Production: 10.80 MMbbls of oil (~ 10% Recovery)

Remaining OIP: 94.59 MMbbls of oil

~~~

Potential RF (active WF): 26% ⇒ 27.57 MMbbls (164 bbls/acre-ft)

[2] Assuming: Φ_{avg} 12.7%, S_w 30%, B_o 1.1 res bbl/STB
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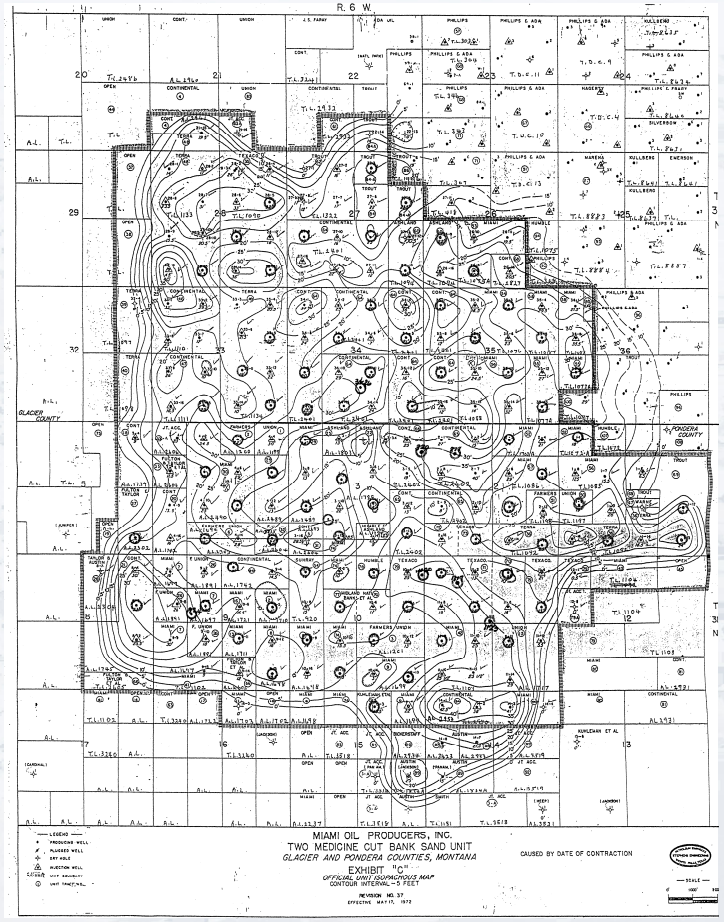
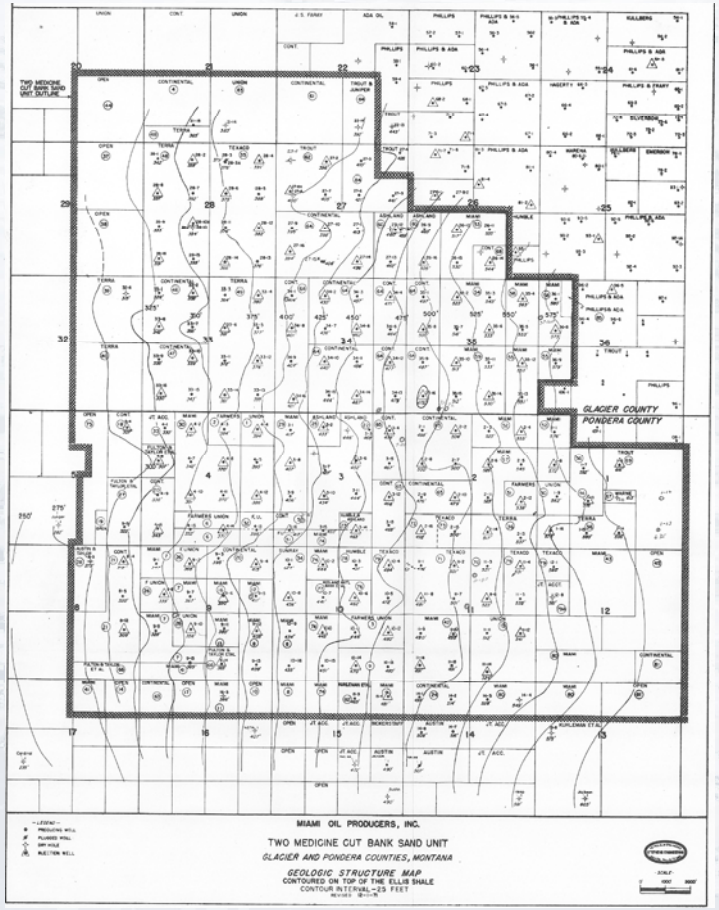
Cut Bank Formation





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Two Medicine Cut Bank Sand Unit (TMCBSU)

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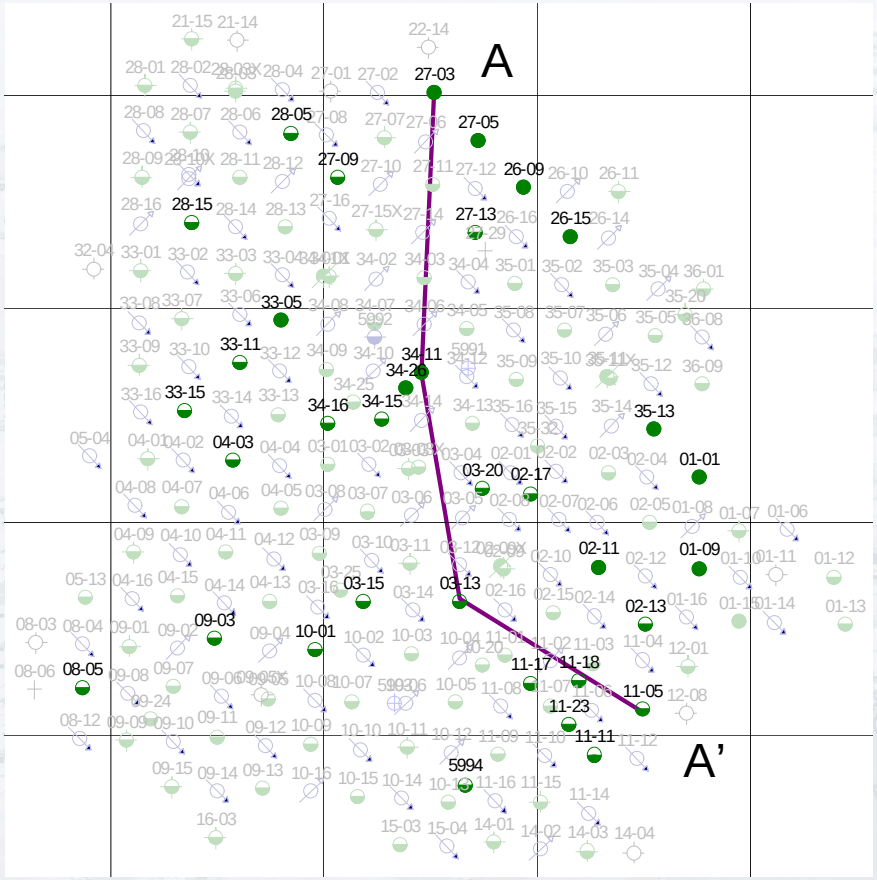
Cut Bank Formation
North/South Cross-Section



** Highlighted wells w/ logs in local well files*

Cross-section (A to A')

27-03
34-11
03-13
11-05

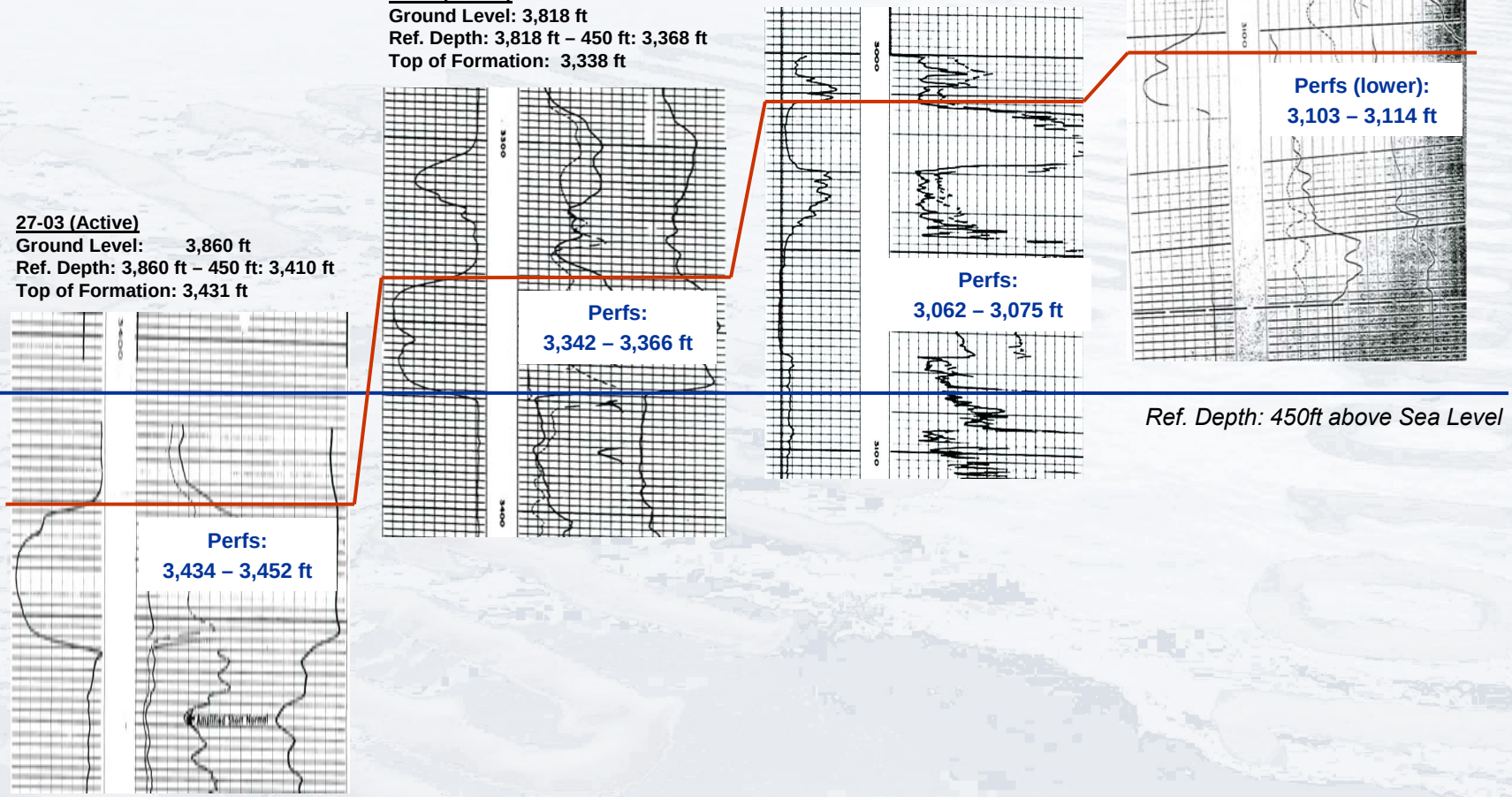
North/South Cross-Section (updip to the south)

11-05 (Shut In): Ground Level: 3,643 ft
Ref. Depth: 3,643 ft – 450 ft: 3,193 ft
Top of formation: 3,104 ft

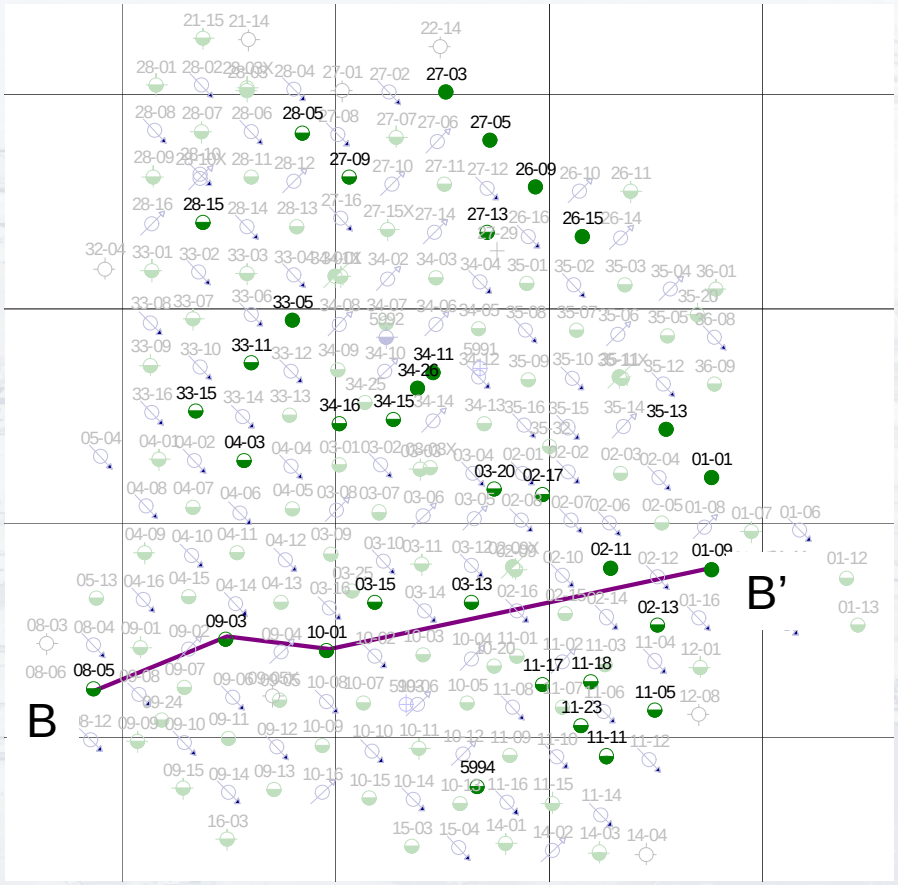
03-13 (Shut in)
Ground Level: 3,535 ft
Ref. Depth: 3,535 ft – 450ft: 3,085 ft
Top of Formation: 3,012 ft

34-11 (Active)
Ground Level: 3,818 ft
Ref. Depth: 3,818 ft – 450 ft: 3,368 ft
Top of Formation: 3,338 ft

27-03 (Active)
Ground Level: 3,860 ft
Ref. Depth: 3,860 ft – 450 ft: 3,410 ft
Top of Formation: 3,431 ft



Cut Bank Formation
West/East Cross-Section

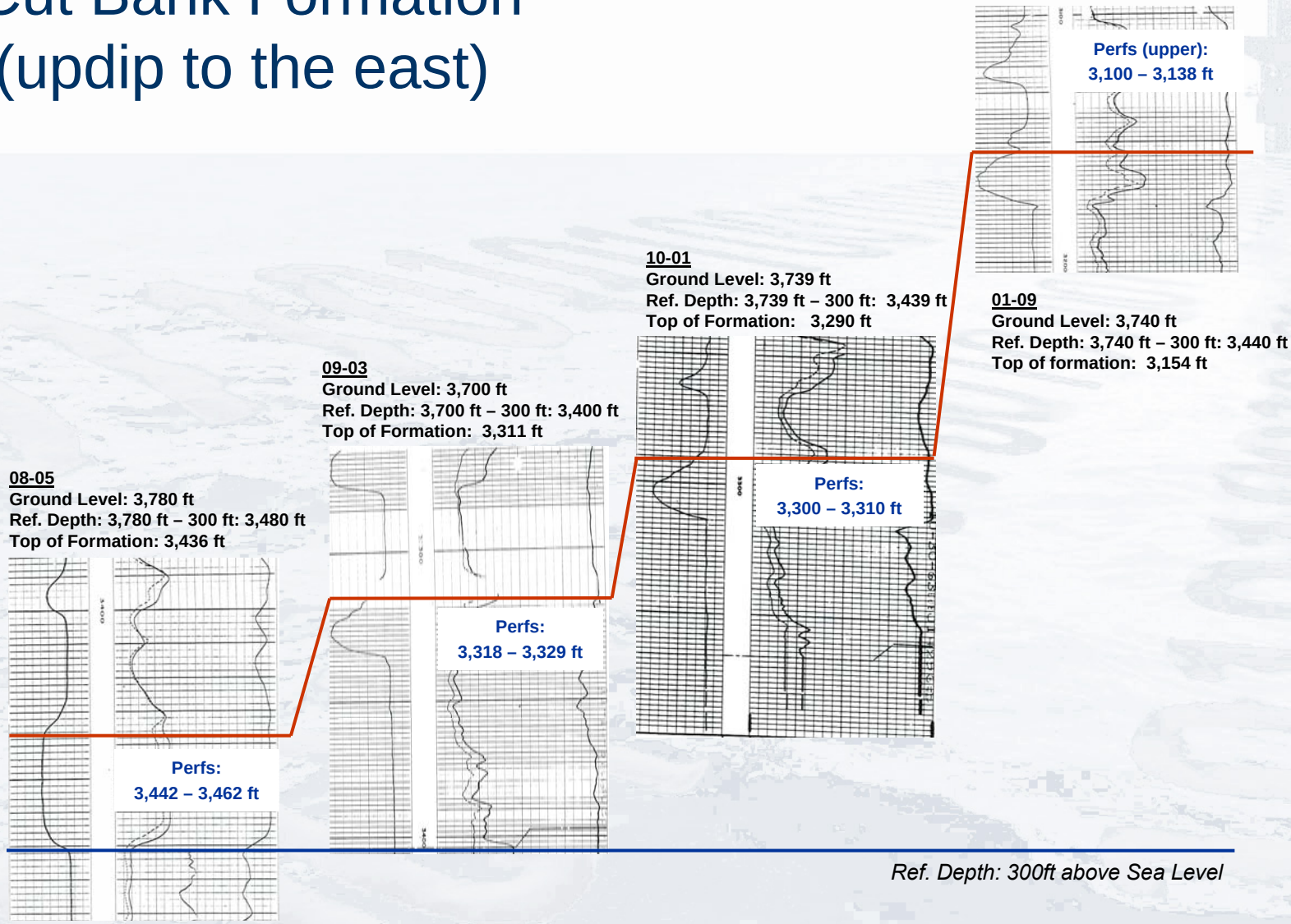


Cross-section (B to B')

08-05
09-03
10-01
01-09

** Highlighted wells w/ logs in local well files*

Cut Bank Formation (updip to the east)



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TMCBSU Phase 2: Production Field Review

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Production & Completion, DCS NGC

9 June 2009

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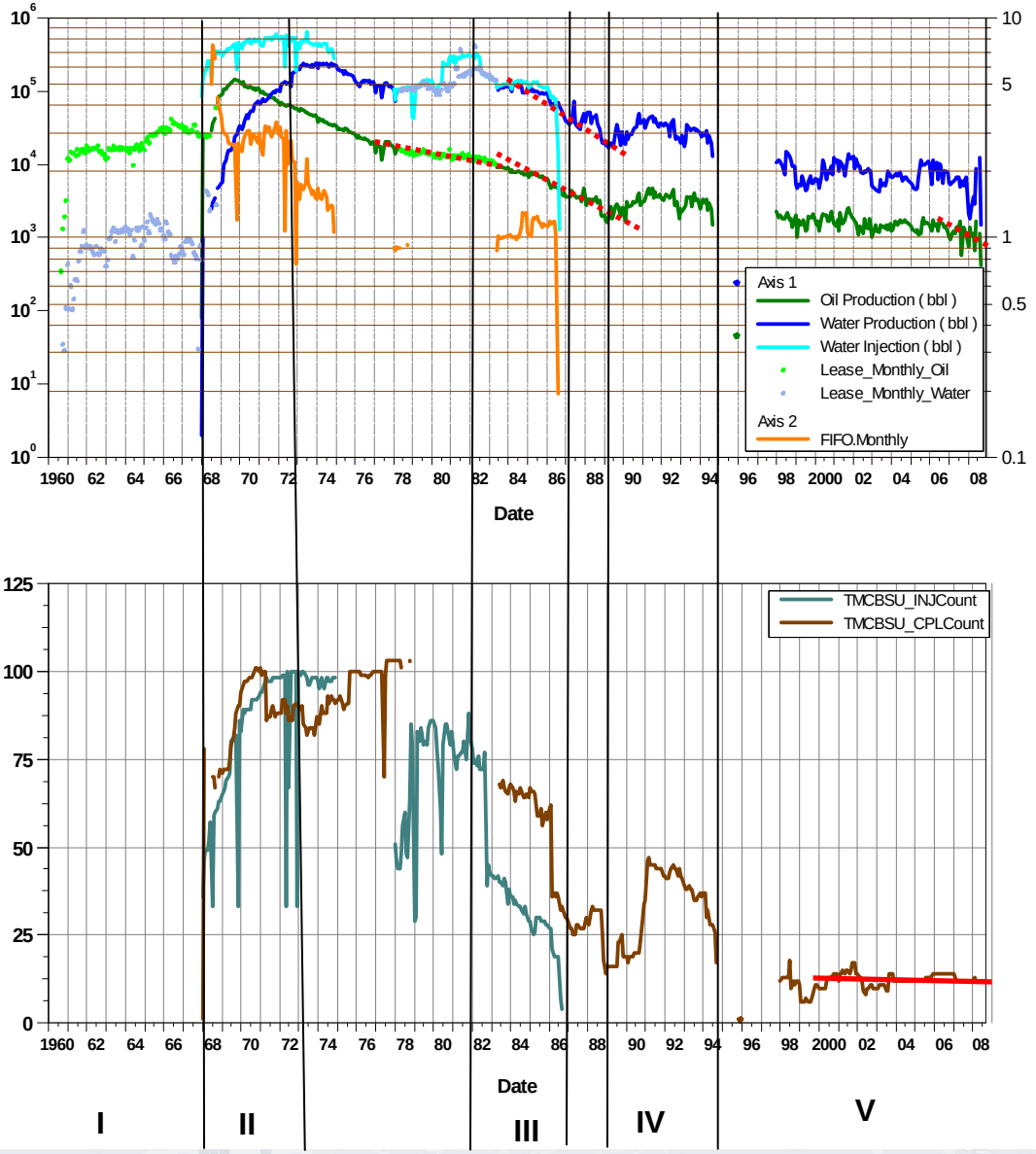
Overview

- Phase 2
  - Objective : Identify Best Candidates for Reactivation
  - Field / Waterflood Review
  - Candidate Recognition (Key Production Indicators)
    - Best 12 months of Production
    - Last 6 Month Average (Oil, Water)
    - Total Liquid Production per perforated interval
    - Historical well production / water cut
  - Conclusions & Recommendations

Field / WaterFlood Review

Oil Cum: 7748 MBO
Gas Cum: 2 MMCFG
Water Cum: 22595 MBW
Winj Cum 51143 MB



Fill up: FIFO >3 initial injection (68-72)

Final : FIFO near 1 (83-86)

I Initial Drill 1959 (Texota) . Main drilling 59-65. Pilot Waterflood 1962. Unitization 1967.

II Increase # prod/ inj , water increases significantly greater than oil (60-72),

III Reduce # prod/inj. Then sharper decline (86-88). 1989 due to low economics & environmental requirements 100 injector wells were P&A (Mont-Mill operating co).

IV Workover oil producers (91-93) increase prod (Mont-Mill operating co.).

V # Active wells around 14

Drastic water cut increase when injection was began

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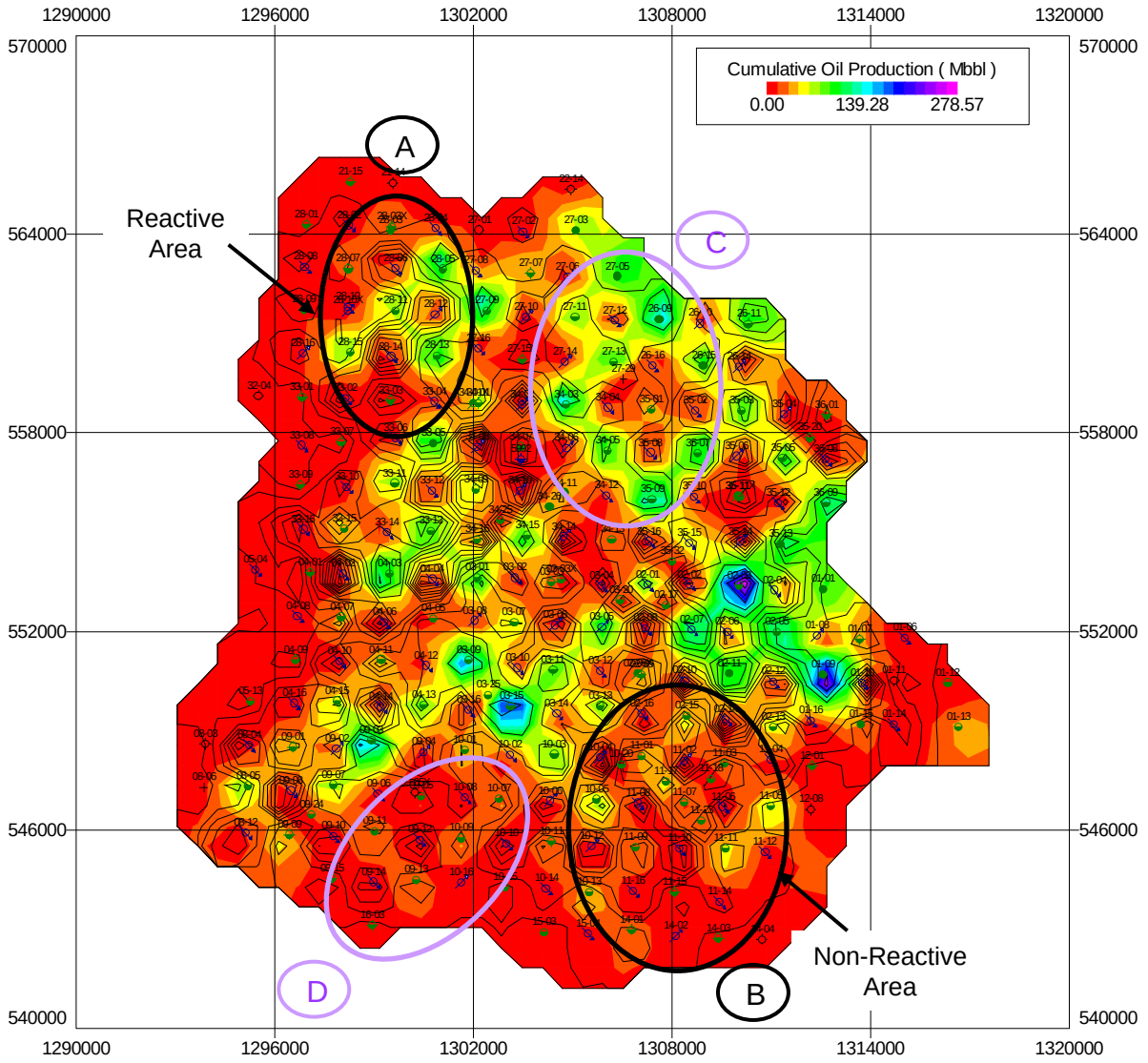
OilCum
WinjCum

Date:12/1/2008



- Areas with High WinjCum
- Areas without Low WinjCum

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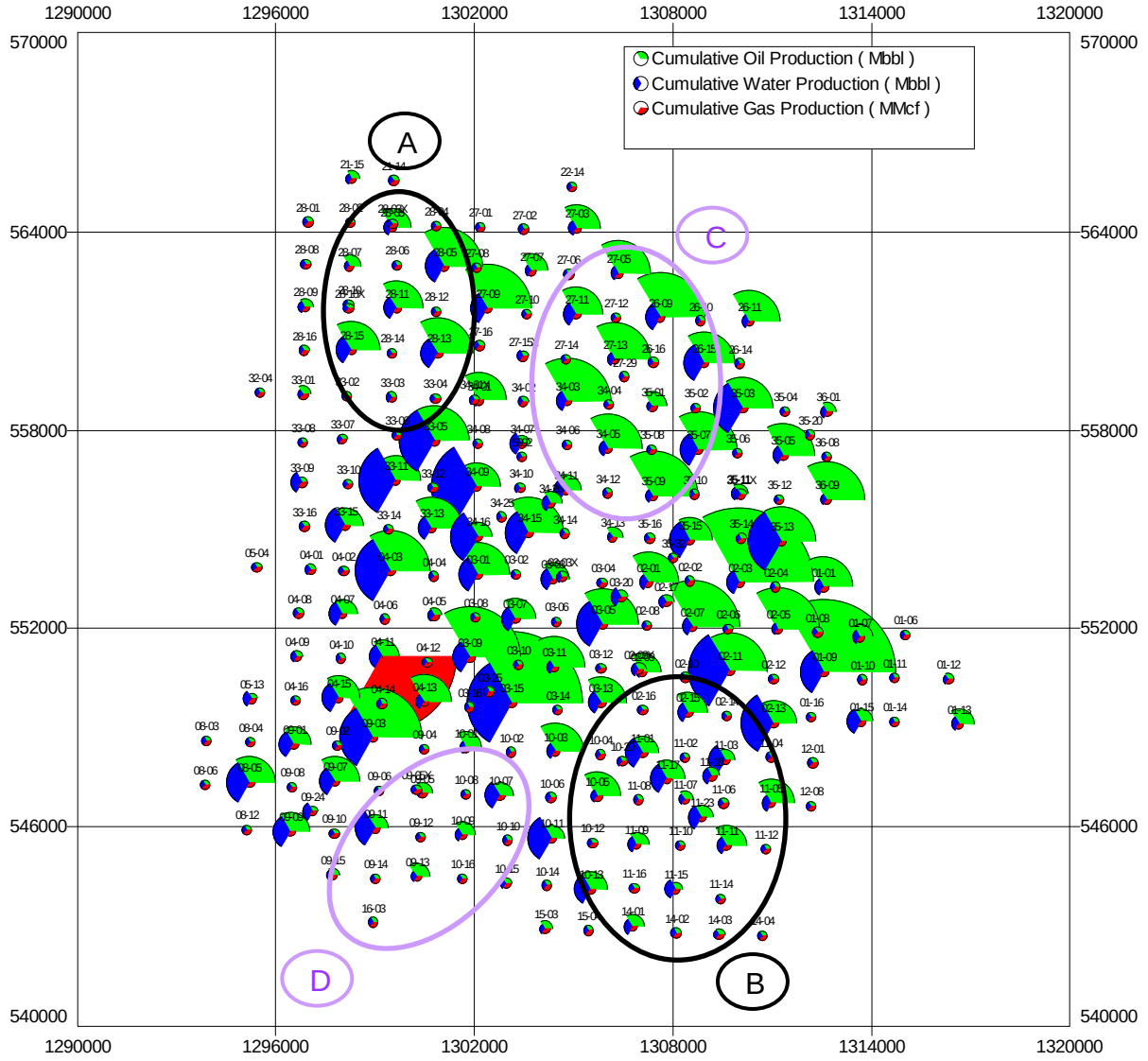
Date:12/1/2008

OilCum
WaterCum



- Areas with Low WaterCum (N,S)

(OilCum better in the N)

* High gas prod (04-11) P&A

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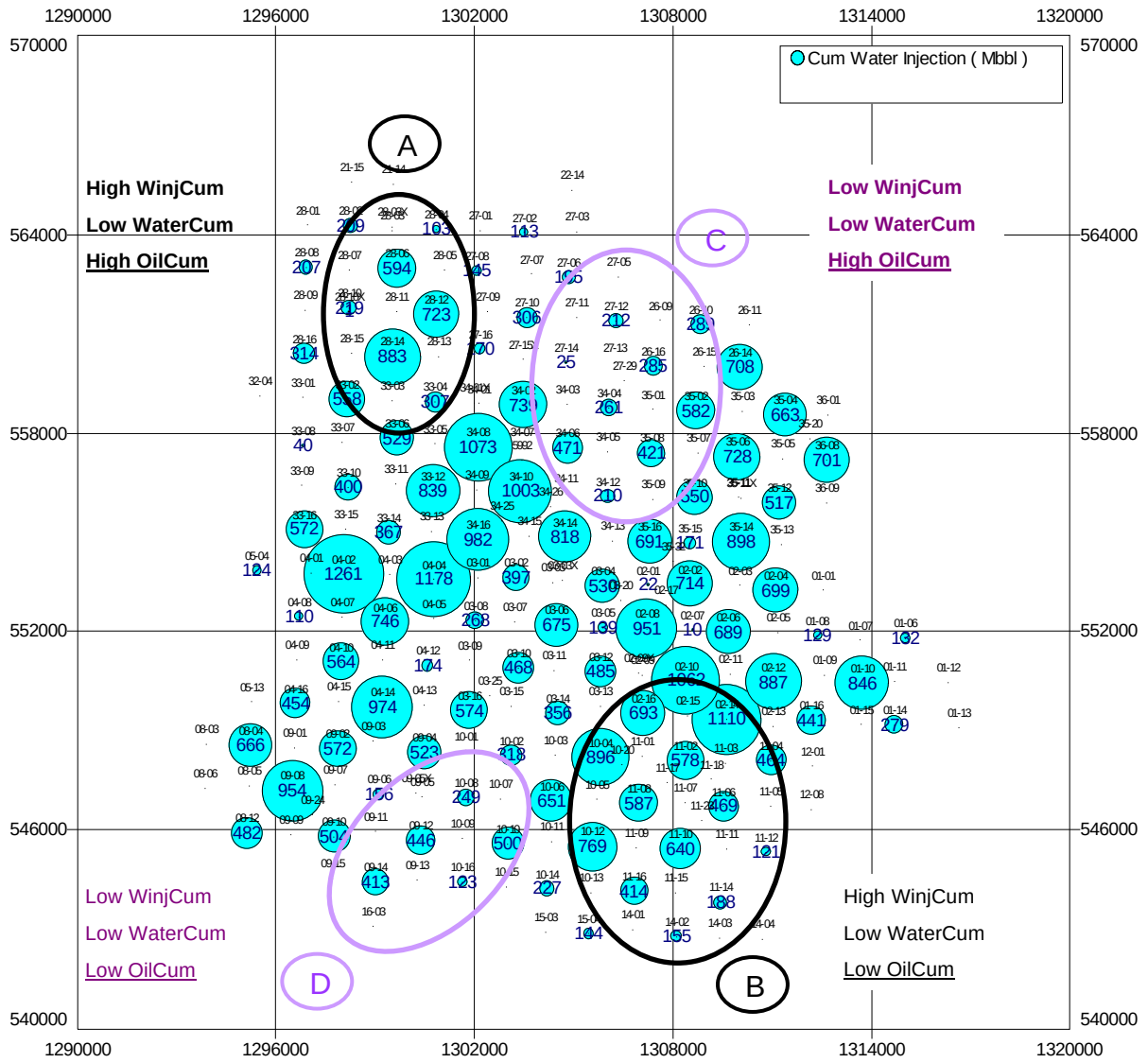
Date:12/1/2008

WinjCum



- Areas with High WaterInjCum
- Areas with Low WaterInjCum

(A) High WinjCum, High OilCum and Low WaterCum – Interesting area

(C) High OilCum and Low WaterCum without High WinjCum (outside pressure maintenance ?)

(B) Low OilCum / WaterCum with High Winj Cum (rock quality?)

(D) Low OilCum/ WaterCum, Low Winj Cum (rock quality?)

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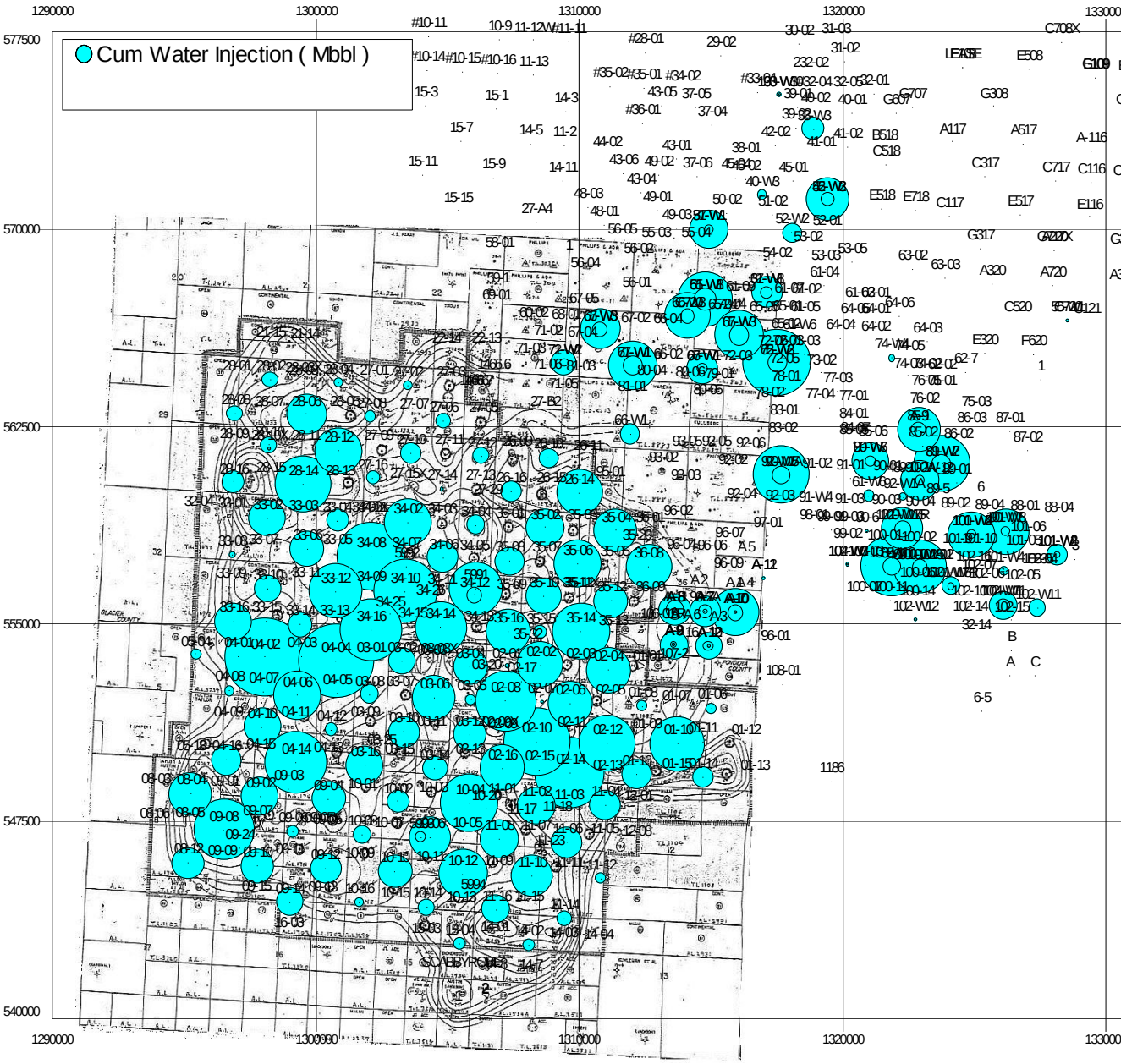
WInjCum Outside TMCBSU



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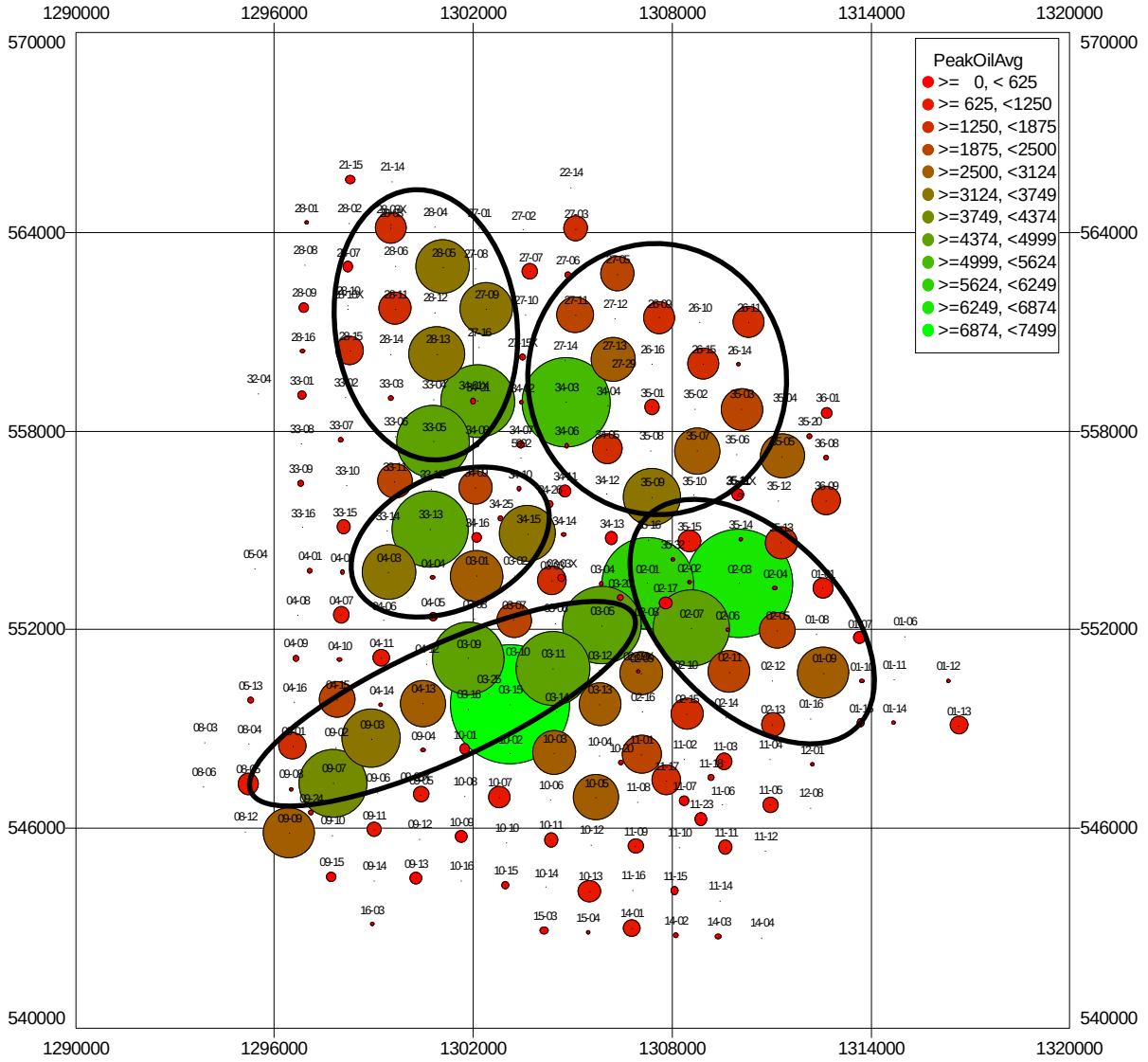
* Data Outside TMCBSU from IHS

Best12Mo

Best 12 Months Avg. Oil Rate vs. OilCum

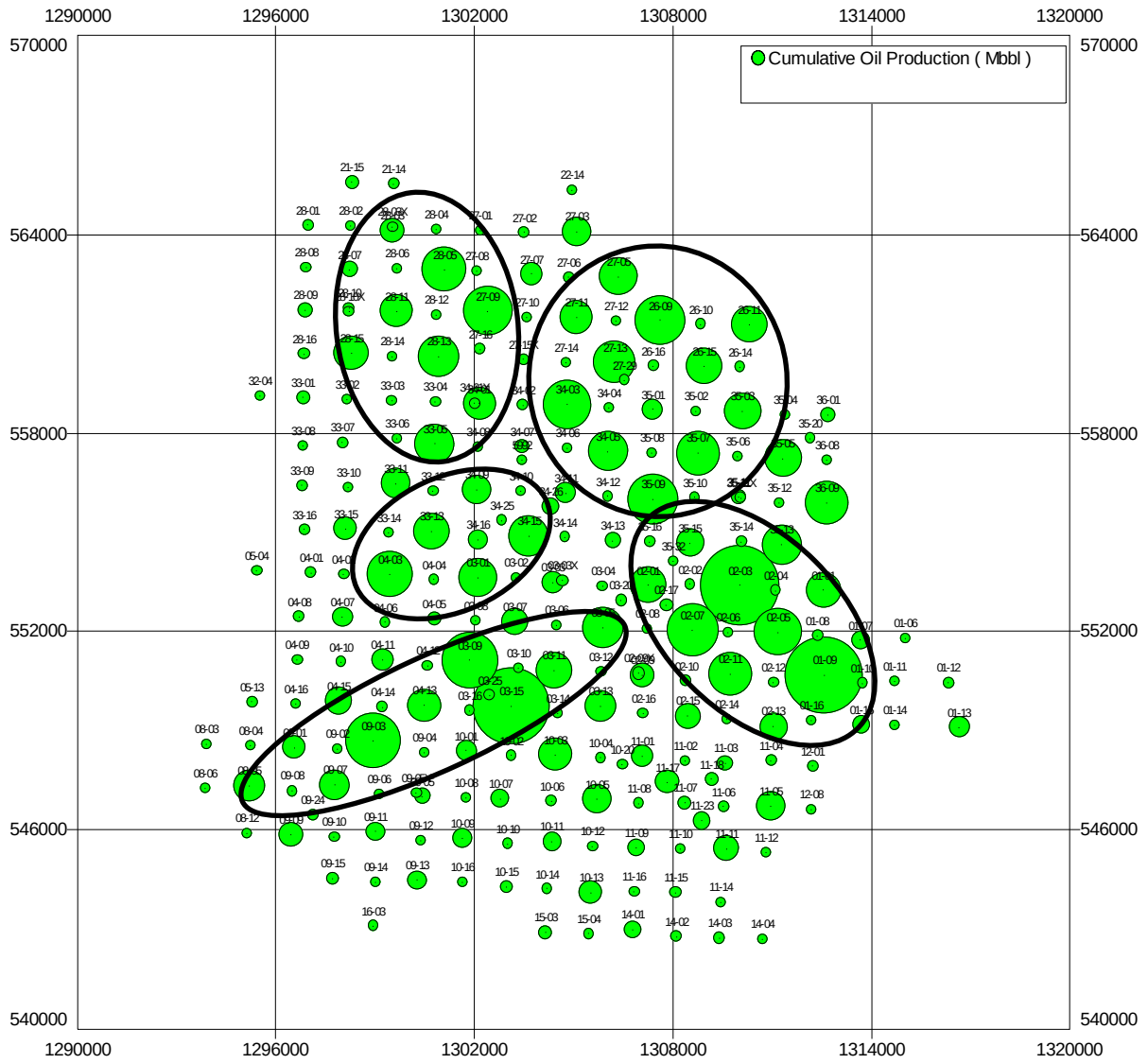
Well List	Best 12 Months	Well Status
03-15	7499	SI_PRD
02-03	6722	SI_PRD
02-01	5682	P&A_INJ
34-03	5548	SI_PRD
03-05	4800	P&A_INJ
02-07	4701	P&A_INJ
33-13	4689	SI_PRD
03-11	4517	P&A_PRD
34-01	4512	P&A_PRD
33-05	4474	Active_PRD
03-09	4417	SI_PRD
09-07	4140	SI_PRD
09-03	3538	SI_PRD
35-09	3402	SI_PRD
34-15	3349	SI_PRD
28-13	3336	SI_PRD
04-03	3291	SI_PRD
28-05	3214	SI_PRD
27-09	3161	SI_PRD
01-09	3099	Active_PRD
03-01	3096	SI_PRD
09-09	3038	P&A_PRD
04-13	2757	SI_PRD
35-07	2739	SI_PRD
10-05	2682	SI_PRD
35-05	2643	SI_PRD
27-13	2606	SI_PRD
10-03	2583	SI_PRD
02-09	2572	P&A_PRD
03-13	2508	SI_PRD
35-03	2443	SI_PRD
02-11	2423	Active_PRD
11-01	2278	SI_PRD
02-05	2084	SI_PRD
27-11	2082	SI_PRD
04-15	2066	SI_PRD
03-07	2011	SI_PRD
33-11	2007	SI_PRD
27-05	1947	Active_PRD



(*) Wells with Best 12 Months > 1000 bbl/month were selected

Date:12/1/2008

OilCum



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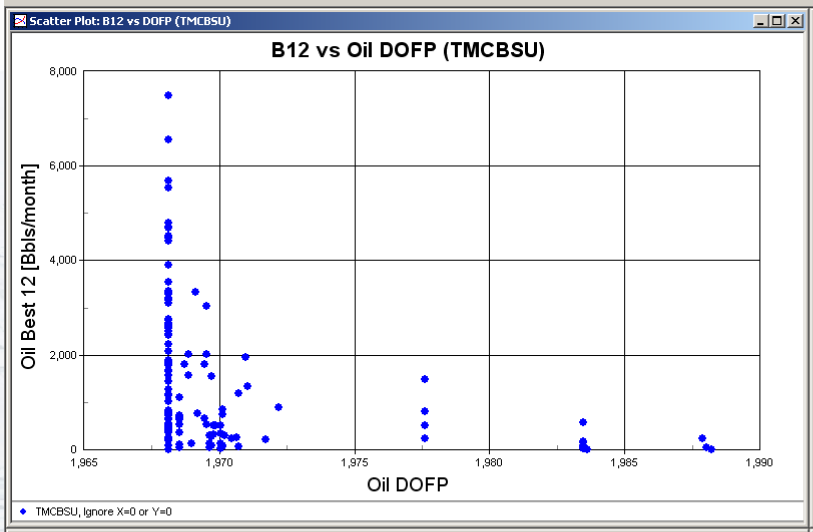
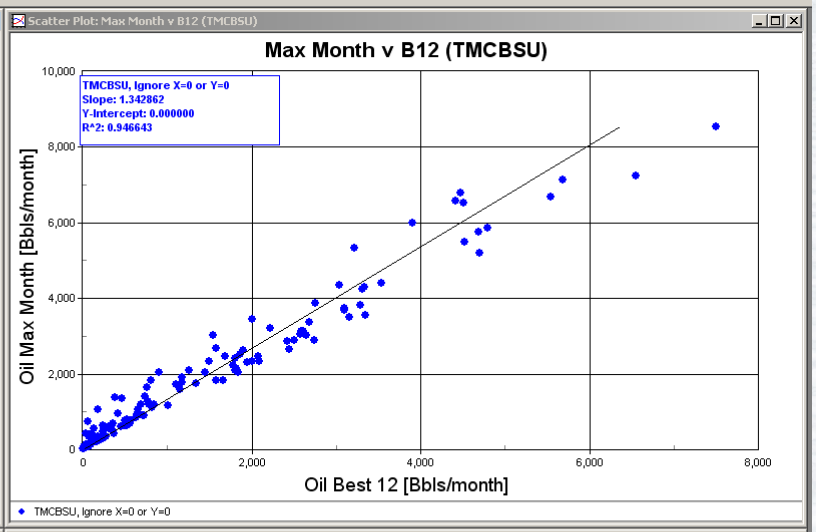
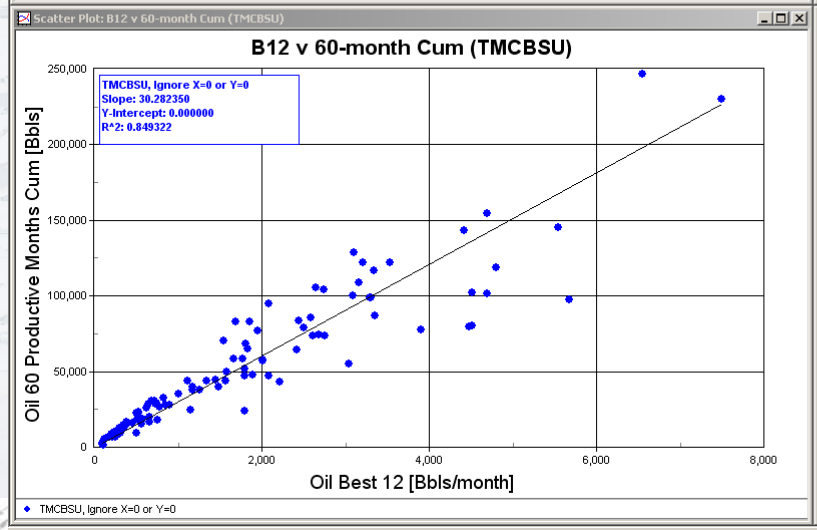
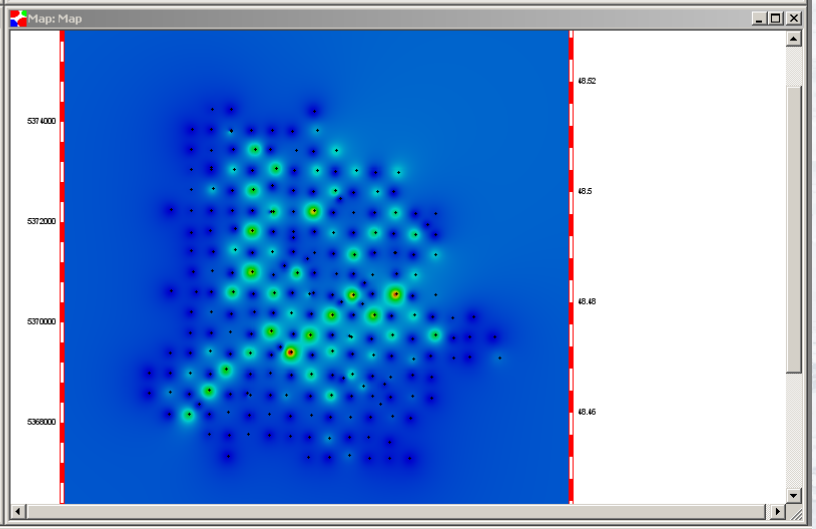
Best 12 Months vs. First 5 yrs OilCum





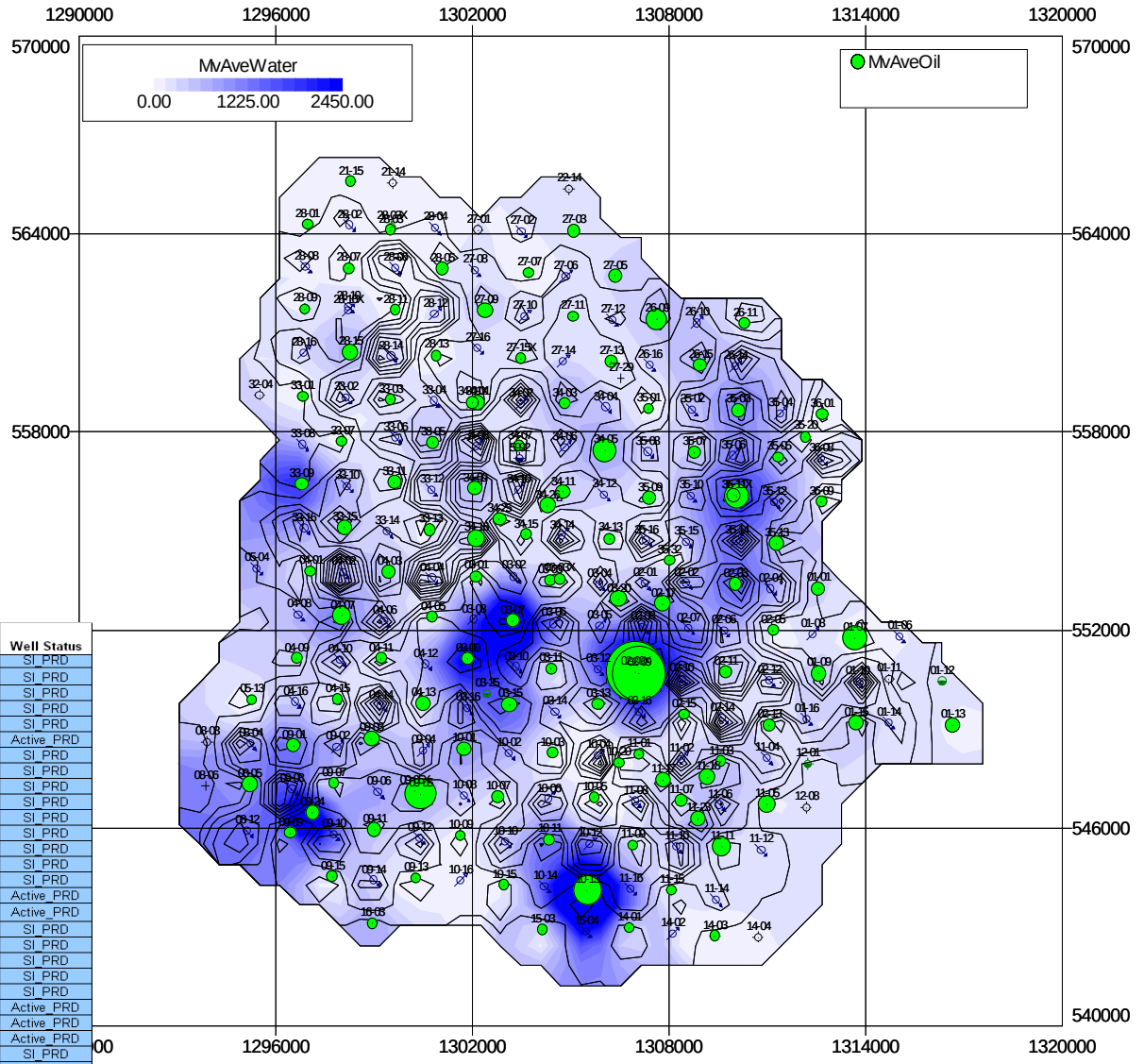




Correlation exists: Best 12 Months vs. OilCum (First 5 yrs & Final)

Last 6 Month Avg. Oil & Water

Last6MoAvg



Well Name	Date	MvAvg_Oil (bbl/m)	MvAvg_Water (bbl/m)	Class_Mavg	Well Status
02-09X	10/1/1978	763.00	4702.67	HOHW	SI_PRD
09-05	10/1/1978	323.33	731.5	HOHW	SI_PRD
10-13	10/1/1978	287.67	5460.5	HOHW	SI_PRD
35-11X	10/1/1978	213.17	2750.67	HOHW	SI_PRD
34-05	10/1/1978	205.83	834.67	HOHW	SI_PRD
26-09	9/1/2008	174.00	545	HOLW	Active_PRD
04-07	10/1/1978	136.83	1312.67	HOHW	SI_PRD
11-11	8/1/1994	133.00	125	HOLW	SI_PRD
34-16	12/1/2008	114.00	475.17	HOLW	SI_PRD
03-20	2/1/2007	105.83	367.67	HOLW	SI_PRD
11-05	9/1/1994	104.33	101.67	HOLW	SI_PRD
08-05	4/1/2002	99.50	920.5	HOHW	SI_PRD
28-15	8/1/1994	90.17	697	HOHW	SI_PRD
11-18	8/1/1994	89.33	604.67	HOLW	SI_PRD
02-17	7/1/1998	88.00	1151.5	HOHW	SI_PRD
01-09	9/1/2008	87.00	436.67	HOLW	Active_PRD
34-26	9/1/2008	86.83	215.83	HOLW	Active_PRD
03-15	9/1/1994	80.83	1550.5	HOHW	SI_PRD
27-09	7/1/1994	79.67	445.67	HOLW	SI_PRD
09-03	4/1/2002	79.00	689.5	HOHW	SI_PRD
33-15	8/1/1994	78.83	449.17	HOLW	SI_PRD
11-23	8/1/1994	78.17	975	HOHW	SI_PRD
35-13	9/1/2008	69.33	545	HOLW	Active_PRD
01-15	9/1/2008	69.17	328.83	HOLW	Active_PRD
34-11	9/1/2008	69.17	436.83	HOLW	Active_PRD
34-09	11/1/1988	69.00	685.33	HOHW	SI_PRD
01-13	2/1/1994	68.33	137.17	HOLW	SI_PRD
04-13	2/1/1994	68.00	139	HOLW	SI_PRD
10-01	1/1/2002	66.83	833	HOHW	SI_PRD
11-17	10/1/2002	65.67	389.5	HOLW	SI_PRD

(*) Mv Ave Water at different times

(*) Contour map – Water Injection Cum

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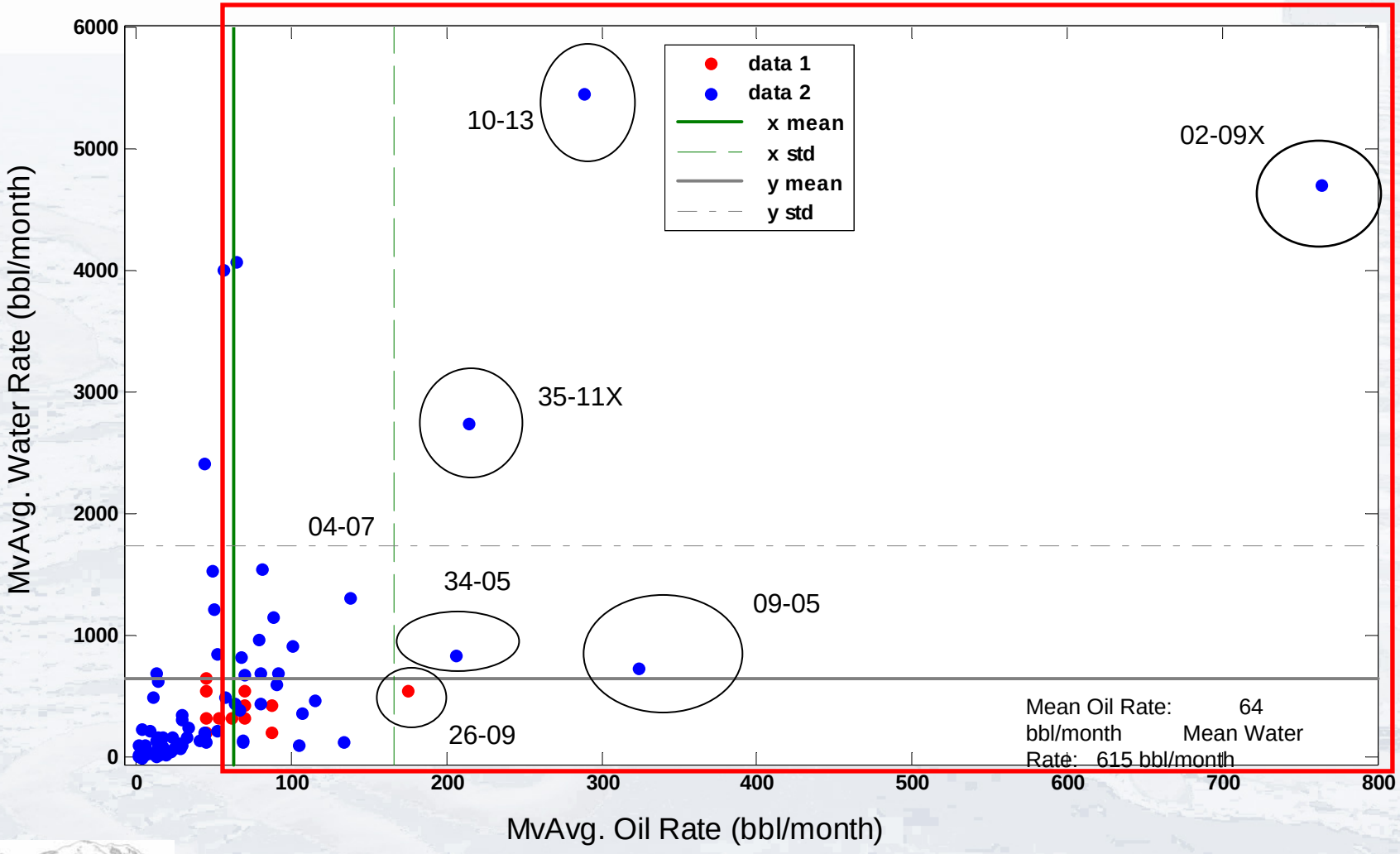
Last 6 Month Avg. Oil & Water - Cross-Plot

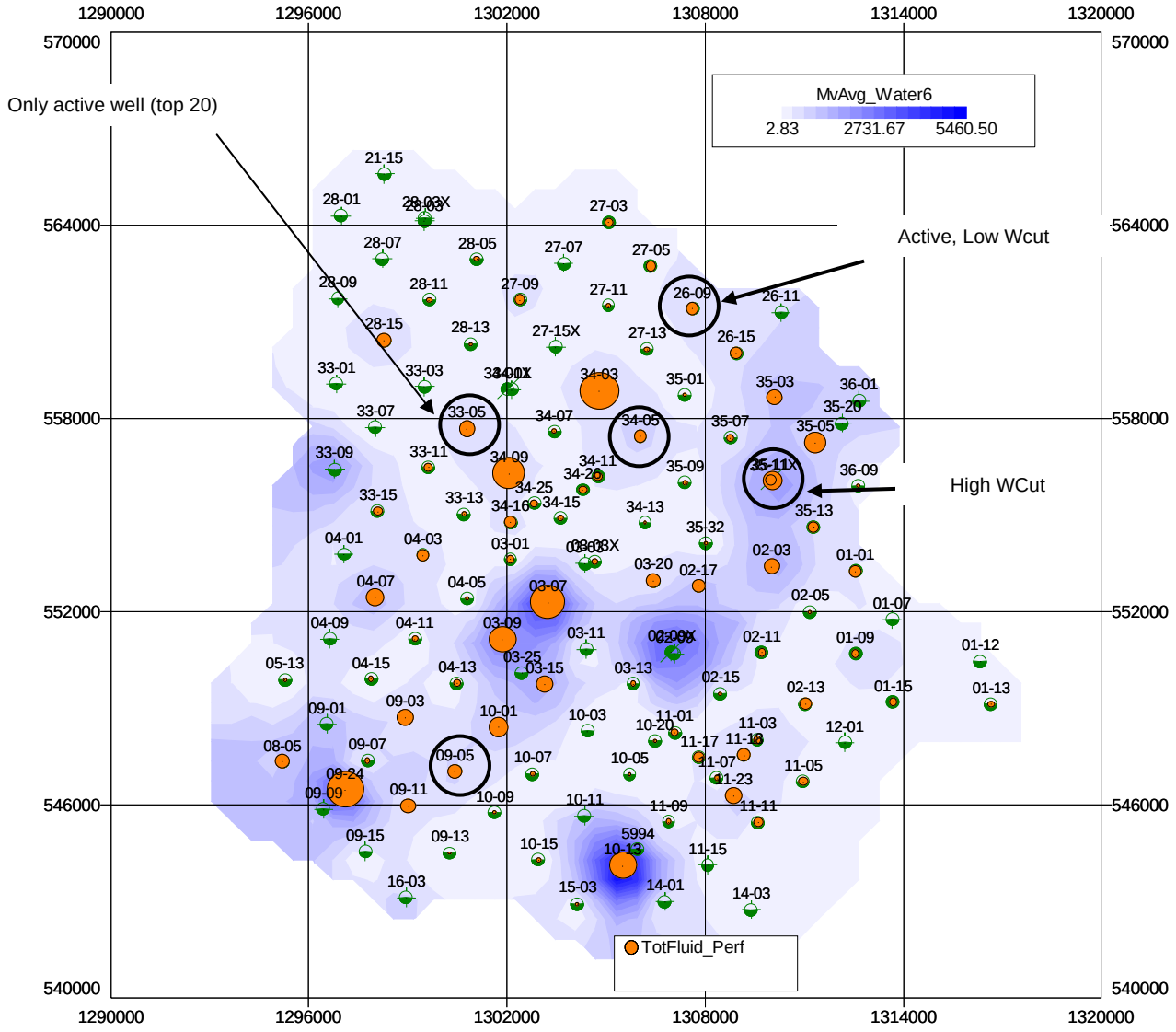


(*) Mv Ave Oil/ Water at different times

(*) Wells above Mean Oil rate were selected

Last 6 month Total Fluid / Perforated Interval

Well Name	Hnet	Well Satus	Tot.Fluid/Perfs
34-09	3	TA_SI	251
04-07	19	TA_SI	76
09-03	11	TA_SI	70
33-05	9	Active	65
03-20	9	TA_SI	53
28-15	15	TA_SI	52
08-05	20	TA_SI	51
09-11	10	TA_SI	51
09-05	23	TA_SI	46
34-05	26	TA_SI	40
26-09	18	Active	40
11-18	18	TA_SI	39
34-16	16	TA_SI	37
02-13	8	TA_SI	35
04-03	17	TA_SI	33
01-01	12	Active	32
26-15	22	Active	32
35-13	23	Active	27
11-17	18	TA_SI	25
27-09	21	TA_SI	25
27-05	16	Active	24
11-11	12	TA_SI	22
34-11	24	Active	21
11-05	10	TA_SI	21
33-15	26	TA_SI	20
33-11	10	TA_SI	18
02-11	23	Active	16
27-03	18	Active	14
01-09	38	Active	14
34-26	22	Active	14
01-15	29	Active	14
03-01	11	TA_SI	13
01-13	17	TA_SI	12
35-07	33	TA_SI	12
04-13	18	TA_SI	12
34-25	24	TA_SI	11
04-11	17	TA_SI	11



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"Idea of reservoir quality"

(*) Using Last 6 Month Wcut wells > 90 % were excluded

(*) Minimum Total Fluid / ft Cut- off of 11 bbl/ft

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Criteria to Rank Candidates

Initial Candidate Selection (Match 3 Criteria)

- Best 12 months production indicator.
- High Last 6 month Avg. Oil Rate (above mean oil rate) .
- High Last 6 month Total Fluid per perforated interval. Wells with last 6 month Water Cut > 90 % were excluded .

Final Candidate Selection

- Compare individual well Production history to Field Averages (oil, water)
- Select wells near High WinjCum areas (past Reactive waterflood areas)
- Select wells in low water production areas (Last 6 month Avg. Water)

Initial Candidate Selection

Well	Well Name	Date	MvAvg_Oil (bbl/m)	MvAvg_Water (bbl/m)	Class_Mavg	Well Status
DNRC_0209X	02-09X	10/1/1978	763.00	4702.67	HOHW	OIL_TA
DNRC_0905	09-05	10/1/1978	323.33	731.5	HOHW	OIL_SI
DNRC_1013	10-13	10/1/1978	287.67	5460.5	HOHW	OIL_SI
DNRC_3511X	35-11X	10/1/1978	213.17	2750.67	HOHW	OIL_SI
DNRC_3405	34-05	10/1/1978	205.83	834.67	HOHW	OIL_SI
125001114507	26-09	9/1/2008	174.00	545	HOLW	OIL_ACT
DNRC_0407	04-07	10/1/1978	136.83	1312.67	HOHW	OIL_SI
125001114503	11-11	8/1/1994	133.00	125	HOLW	OIL_SI
125001117832	34-16	12/1/2008	114.00	475.17	HOLW	OIL_SI
125001114484	03-20	2/1/2007	105.83	367.67	HOLW	OIL_SI
125001114501	11-05	9/1/1994	104.33	101.67	HOLW	OIL_SI
125001114488	08-05	4/1/2002	99.50	920.5	HOHW	OIL_SI
125001114518	28-15	8/1/1994	90.17	697	HOHW	OIL_SI
125001114505	11-18	8/1/1994	89.33	604.67	HOLW	OIL_SI
125001114478	02-17	7/1/1998	88.00	1151.5	HOHW	OIL_SI
125001114469	01-09	9/1/2008	87.00	436.67	HOLW	OIL_ACT
125001117833	34-26	9/1/2008	86.83	215.83	HOLW	OIL_ACT
125001114483	03-15	9/1/1994	80.83	1550.5	HOHW	OIL_SI
125001114513	27-09	7/1/1994	79.67	445.67	HOLW	OIL_SI
125001114489	09-03	4/1/2002	79.00	689.5	HOHW	OIL_SI
125001114522	33-15	8/1/1994	78.83	449.17	HOLW	OIL_SI
125001114506	11-23	8/1/1994	78.17	975	HOHW	OIL_SI
125001114532	35-13	9/1/2008	69.33	545	HOLW	OIL_ACT
125001114471	01-15	9/1/2008	69.17	328.83	HOLW	OIL_ACT
125001114527	34-11	9/1/2008	69.17	436.83	HOLW	OIL_ACT
125001114526	34-09	11/1/1988	69.00	685.33	HOHW	OIL_SI
125001114470	01-13	2/1/1994	68.33	137.17	HOLW	OIL_SI
125001114486	04-13	2/1/1994	68.00	139	HOLW	OIL_SI
125001114494	10-01	1/1/2002	66.83	833	HOHW	OIL_SI
125001114504	11-17	10/1/2002	65.67	389.5	HOLW	OIL_SI

Last 6 Month Avg.

Well Name	Hnet	MvAvg_Oil (bbl/m)	MvAvg_Water (bbl/m)	MvAvg_Water_cut (%)	MvAvg Fluid (bbl/m)	Well Satus	Tot.Fluid/Perfs (bbl/d)
01-01	12	60.83	328.83	79.52	389.66	Active	32.47
01-09	39	87.00	436.67	77.50	523.67	Active	13.78
01-13	17	68.33	137.17	67.72	205.50	TA_SI	12.09
01-15	29	69.17	328.83	76.82	398.00	Active	13.72
02-11	23	44.00	328.83	83.72	372.83	Active	16.21
02-13	8	32.83	240.33	87.03	283.16	TA_SI	35.40
03-01	11	27.67	117.5	71.78	145.17	TA_SI	13.20
03-20	9	105.83	367.67	77.72	473.50	TA_SI	52.61
04-03	17	56.33	497.17	89.08	553.50	TA_SI	32.56
04-07	19	136.83	1312.67	90.56	1449.50	TA_SI	76.29
04-11	17	16.00	172.67	90.57	188.67	TA_SI	11.10
04-13	18	68.00	139	68.34	207.00	TA_SI	11.50
08-05	20	99.50	920.5	90.09	1020.00	TA_SI	51.00
09-03	11	79.00	689.5	89.55	768.50	TA_SI	69.86
09-05	23	323.33	731.5	67.55	1054.83	TA_SI	45.86
09-11	10	62.50	443.33	95.40	505.83	TA_SI	50.58
11-05	10	104.33	101.67	48.78	206.00	TA_SI	20.60
11-11	12	133.00	125	48.50	258.00	TA_SI	21.50
11-17	18	65.67	389.5	85.54	455.17	TA_SI	25.29
11-18	18	89.33	604.67	87.09	694.00	TA_SI	38.56
26-09	18	174.00	545	68.90	719.00	Active	39.94
26-15	22	44.00	653	90.93	697.00	Active	31.68
27-03	18	44.00	215.83	77.33	259.83	Active	14.44
27-05	16	52.33	329	81.27	381.33	Active	23.83
27-09	21	79.67	445.67	84.93	525.34	TA_SI	25.02
28-15	15	90.17	697	88.47	787.17	TA_SI	52.48
33-05	9	44.00	544.83	89.40	588.83	Active	65.43
33-11	10	39.83	144.67	78.35	184.50	TA_SI	18.45
33-15	26	78.83	449.17	84.65	528.00	TA_SI	20.31
34-05	26	205.83	834.67	79.51	1040.50	TA_SI	40.02
34-09	3	69.00	685.33	56.70	754.33	TA_SI	251.44
34-11	24	69.17	436.83	81.37	506.00	Active	21.08
34-16	16	114.00	475.17	80.49	589.17	TA_SI	36.82
34-25	24	51.33	217.83	80.47	269.16	TA_SI	11.22
34-26	22	86.83	215.83	64.07	302.66	Active	13.76
35-07	33	28.33	351.67	95.24	380.00	TA_SI	11.52
35-13	23	69.33	545	84.40	614.33	Active	26.71

Liq./ft Perf

Initial Candidates
01-09
04-13
08-05
09-03
11-17
26-09
27-09
28-15
34-05
34-09
35-13

Well	Well Name	Date	Best 12 Months (bbl/m)	Well Status
125001114472	01-01	01-Sep-08	1011	Active_PRD
125001114469	01-09	01-Sep-08	3099	Active_PRD
125001114473	02-03	01-Feb-86	6722	SI_PRD
125001114474	02-05	01-Jun-93	2084	SI_PRD
125001114475	02-11	01-Sep-08	2423	Active_PRD
125001114476	02-13	01-Jan-08	1264	SI_PRD
125001114477	02-15	01-Feb-86	1777	SI_PRD
125001114479	03-01	01-Mar-93	3096	SI_PRD
125001114481	03-07	01-Mar-84	2011	SI_PRD
125001114482	03-09	01-Feb-86	4417	SI_PRD
125001115331	03-13	01-Sep-84	2508	SI_PRD
125001114483	03-15	01-Sep-94	7499	SI_PRD
125001114485	04-03	01-Aug-94	3291	SI_PRD
125001114486	04-13	01-Feb-94	2757	SI_PRD
125001114487	04-15	01-Feb-86	2066	SI_PRD
125001114488	08-05	01-Apr-02	1109	SI_PRD
125001114489	09-03	01-Apr-02	3538	SI_PRD
125001114490	09-07	01-Jan-85	4140	SI_PRD
125001114495	10-03	01-Mar-94	2583	SI_PRD
125001118443	10-05	01-Dec-95	2682	SI_PRD
125001114496	10-07	01-Feb-94	1147	SI_PRD
DNRC_1013	10-13	01-Oct-78	1178	SI_PRD
125001114500	11-01	01-Dec-86	2278	SI_PRD
125001114504	11-17	01-Oct-02	1621	SI_PRD
125001114507	26-09	01-Sep-08	1813	Active_PRD
125001114509	26-15	01-Sep-08	1799	Active_PRD
125001114510	27-03	01-Sep-08	1338	Active_PRD
125001114511	27-05	01-Sep-08	1947	Active_PRD
125001114513	27-09	01-Jul-94	3161	SI_PRD
125001114514	27-11	01-Jun-91	2082	SI_PRD
125001114515	27-13	01-Apr-94	2606	SI_PRD
125001114516	28-05	01-Jul-98	3214	SI_PRD
125001114517	28-11	01-Nov-91	1835	SI_PRD
125001115625	28-13	01-Feb-86	3336	SI_PRD
125001114518	28-15	01-Aug-94	1545	SI_PRD
125001114519	33-05	01-Sep-08	4474	Active_PRD
125001114520	33-11	01-Oct-03	2007	SI_PRD
125001114521	33-13	01-Feb-86	4689	SI_PRD
125001114524	34-03	01-Nov-93	5548	SI_PRD
DNRC_3405	34-05	01-Oct-78	1683	SI_PRD
125001114526	34-09	01-Nov-88	1894	SI_PRD
125001114528	34-15	01-Oct-92	3349	SI_PRD
125001114529	35-03	01-Feb-86	2443	SI_PRD
DNRC_3505	35-05	01-Oct-78	2643	SI_PRD
125001114530	35-07	01-Apr-94	2739	SI_PRD
125001114531	35-09	01-Nov-86	3402	SI_PRD
125001114532	35-13	01-Sep-08	1862	Active_PRD
125001114535	36-09	01-Jun-93	1660	SI_PRD

Best 12 Months

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Final Candidate Selection

Well_List	MvAvg_Oil	Best 12 Months	Liq/ft Perf	Total	BLM	Historical Prd Behavior	Last Date Prd	Well Status OFM	Well Updates
02-11	0	1	1	2	X	HOHW	9/1/2008	OIL_ACT	Appears to have a bad pump
03-15	1	1	0	2	X	HOHW	9/1/1994	OIL_SI	No Information
04-03	0	1	1	2	X	HOHW	8/1/1994	OIL_SI	PA Candidate because located next to the river
08-05	1	1	1	3	X	HOHW	4/1/2002	OIL_SI	High FL, 1376 Static BHP
09-03	1	1	1	3	X	HOHW	4/1/2002	OIL_SI	BLM- well in south
11-17	1	1	1	3		HOHW	10/1/2002	OIL_SI	High FL, 1517 BHP, one of the best Wells in south
34-16	1	0	1	2	X	HOHW	12/1/2008	OIL_SI	Recently active, shut down for maintenance
01-01	0	1	1	2	X	HOLW	9/1/2008	OIL_ACT	Acidized Successfully with both HCl (15%) tailed with 28% HF acid.
01-09	1	1	1	3	X	HOLW	9/1/2008	OIL_ACT	Fluid to surface, has a 57D pumping unit and tubing leaks.
11-05	1	0	1	2		HOLW	9/1/1994	OIL_SI	No Information
11-11	1	0	1	2	X	HOLW	8/1/1994	OIL_SI	No Information
26-09	1	1	1	3	X	HOLW	9/1/2008	OIL_ACT	Best well, 17 PSI BHP
27-05	0	1	1	2		HOLW	9/1/2008	OIL_ACT	Parted, 8-10 BOPD 2 months
27-09	1	1	1	3	X	HOLW	7/1/1994	OIL_SI	Awaiting flowline installation to be commingled with other flowline going to battery seven.
28-15	1	1	1	3	X	HOLW	8/1/1994	OIL_SI	PU on location
34-05	1	1	1	3		HOLW	10/1/1978	OIL_SI	No Information
34-26	1	0	1	2	X	HOLW	9/1/2008	OIL_ACT	No Information
11-18	1	0	1	2		LOLW	8/1/1994	OIL_SI	Has a 57D pumping it
35-13	1	1	1	3	X	LOHW	9/1/2008	OIL_ACT	700 ft sand above perforations, downhole pump 1000 ft above perforations, plan to test pump
26-15	0	1	1	2		LOLW	9/1/2008	OIL_ACT	Next to 26-09, high fluid level and 57D PU
02-13	0	1	1	2	X	LOHW	1/1/2008	OIL_SI	No Information
33-05	0	1	1	2	X	LOHW	9/1/2008	OIL_ACT	Good well but crooked hole tubing, 160 D pumping unit
27-03	0	1	1	2		LOLW	9/1/2008	OIL_ACT	No Information
33-11	0	1	1	2	X	LOHW	10/1/2003	OIL_SI	PA Candidate because located next to the river
02-03	0	1	0	1		NA	2/1/1986	OIL_SI	No Information
02-05	0	1	0	1		NA	6/1/1993	OIL_SI	No Information
27-13	0	1	0	1		NA	4/1/1994	OIL_SI	Plan to come online shortly

Bold Black : Primary Candidates

Bold Red : Secondary Candidates

Mavg_B12_Liq/ft

Mavg_B12

Mavg_Liq/ft

B12_Liq/ft

B12

11-11 & 11-17 are producing based on Arkanova_TMCBSU_Map2

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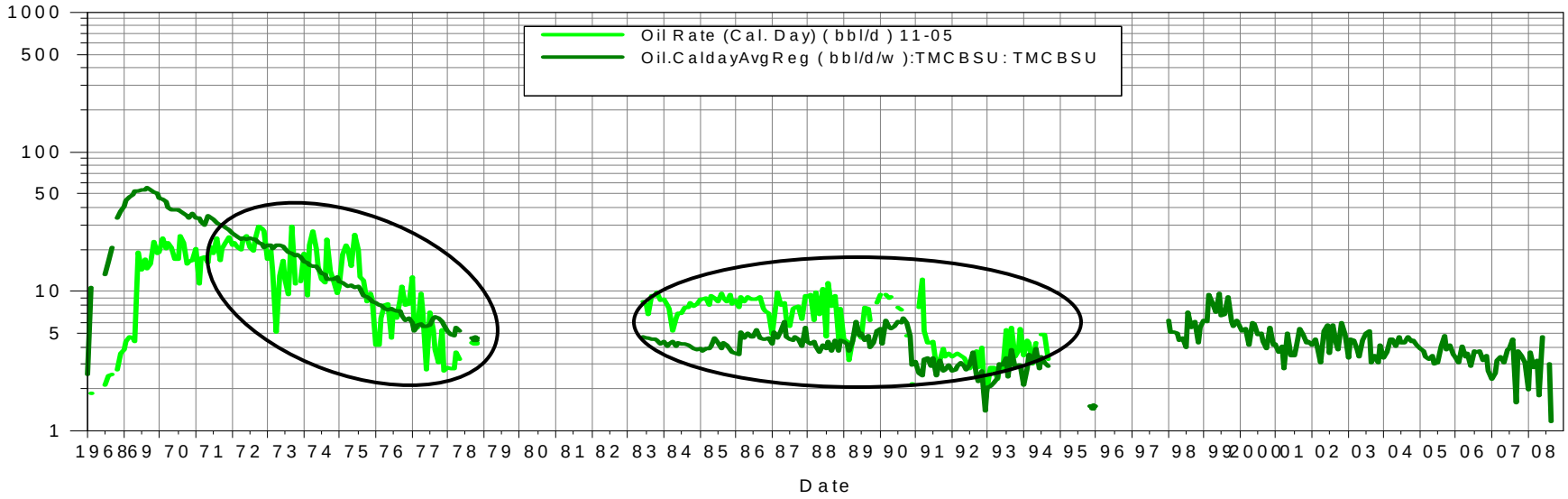
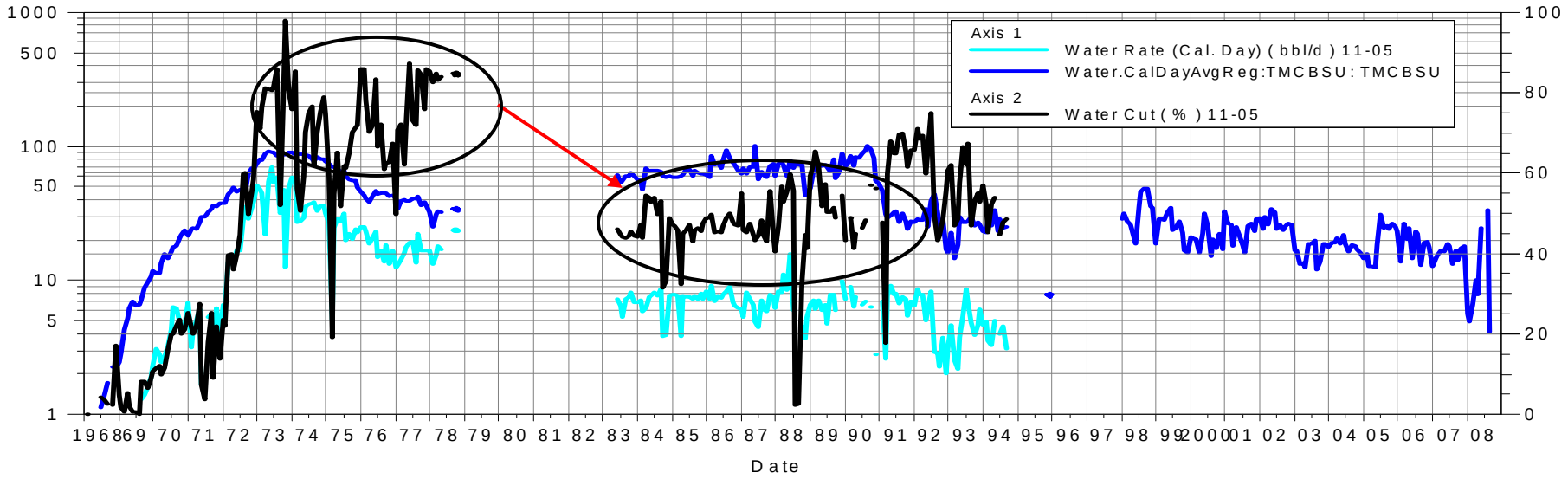
Well UWI : 125001114501

Well Alias : 11-05





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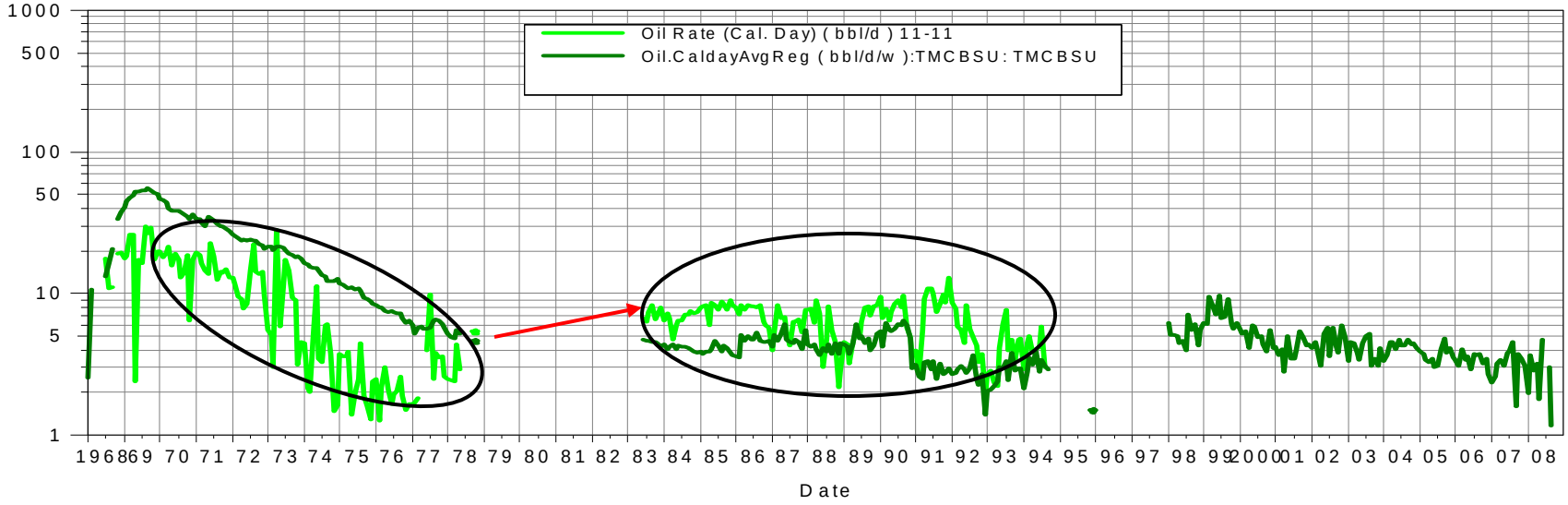
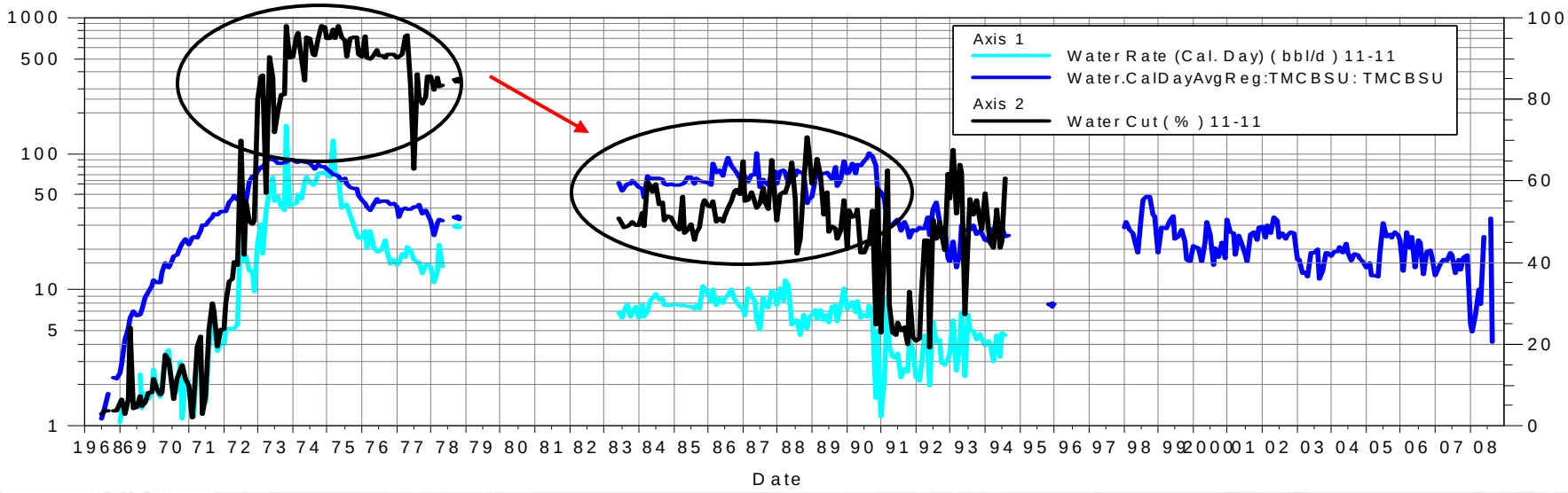
Well UWI : 125001114503

Well Alias : 11-11





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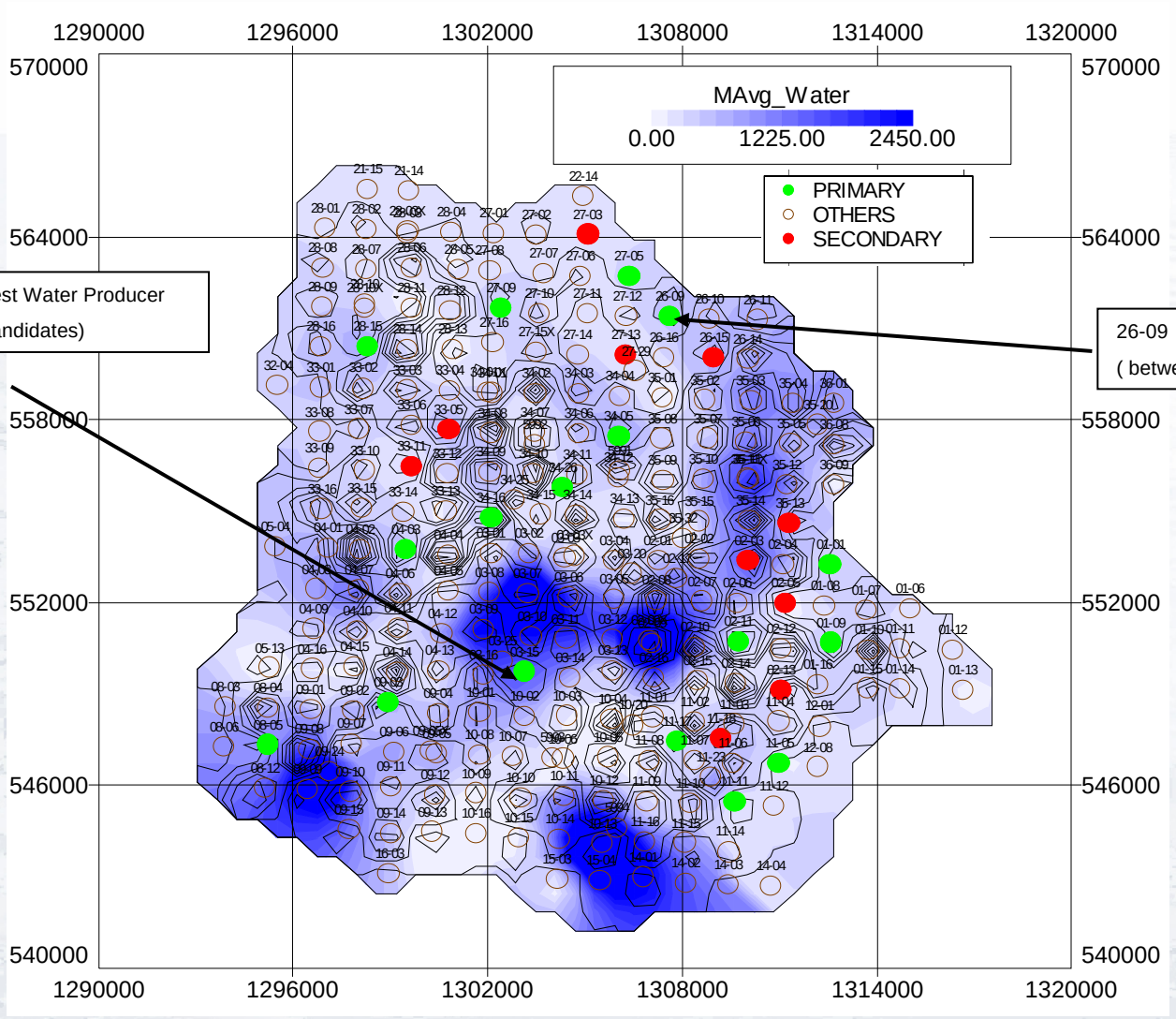

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Conclusions & Recommendations

- Candidate selection based on Best 12 months, Last 6 months average oil/water and total fluid per perforated interval was representative of well performance. Historical well production was compared to field averages (oil / water) to verify candidate selection.
- Results - Wells with best Potential: 17 primary candidates, 10 secondary candidates (6 primary candidates and 4 secondary candidates are currently active). Candidates for Reactivation: 11 Primary, 6 secondary.
- Drastic Field water increase when injection was begun could indicate poor waterflood sweep efficiency and possibly channeling (i.e. water recirculation).

Conclusions

- South Part of the field (D & B) seem to be less productive (possibly associated with low reservoir quality).
- North part of the field (C) cumulated high oil production (low cumulative water) without receiving comparable volumes of water injection. This area seem to be receiving external pressure support.

Recommendations

- Review workover program during 91-93 (Mont-Mill operating co.) which increased field oil production.
- Detail waterflood evaluation to identify areas were the flood channeling is more severe (identify unswept areas).
- Identify opportunities for recompletion: Review Logs, perforation intervals (identify unswept intervals).
- Build up Static Model to identify best Petrophysical areas (i.e. to explain different production behavior between N & S) .
- Fracture analysis – Gather more data (included more wells (currently 25 wells analyzed) , perforation: phasing , type, density).

TMCBSU
Operations Review

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Agenda

- Objective
- Key Findings
- Conclusions
- Recommendations

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Objective: To present key findings regarding the operations review and field visit of the Provident operated TMCBSU.

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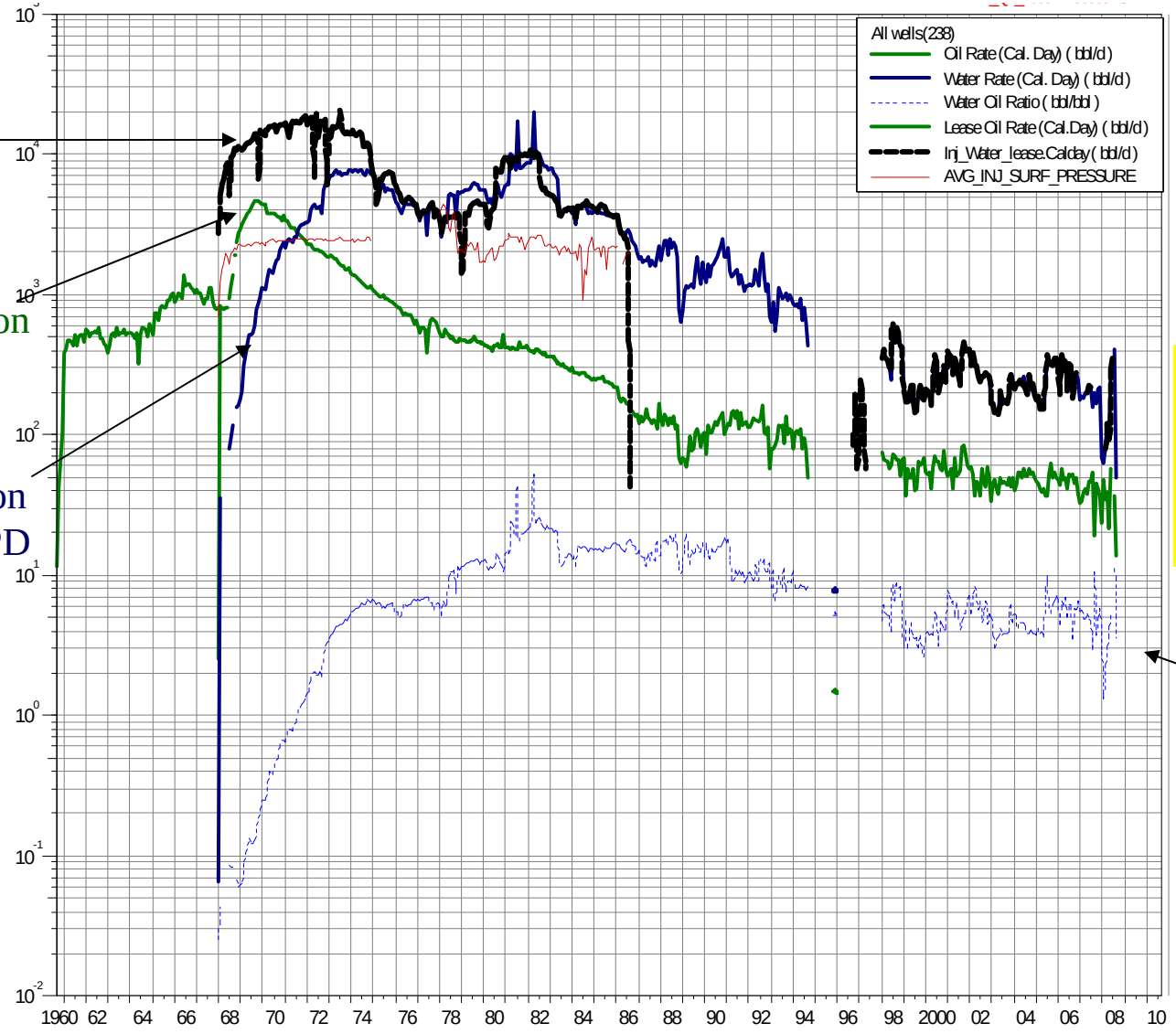
TMCBSU Unit Field Curve



Peak Water Inj
~19,000 BWIPD

Peak Oil Production
~5000 BOPD

Peak Wtr Production
~7000 - 9000 BWPD

Early Surface Inj. Pressure
2000 - 2400 PSI

~ 100 Producers
~ 100 Injectors

38 BOPD & 271 BWPD from 14 active wells (Avg 5/09)

WOR is Flat

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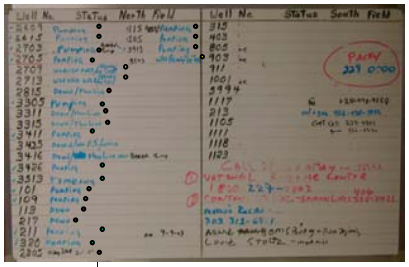
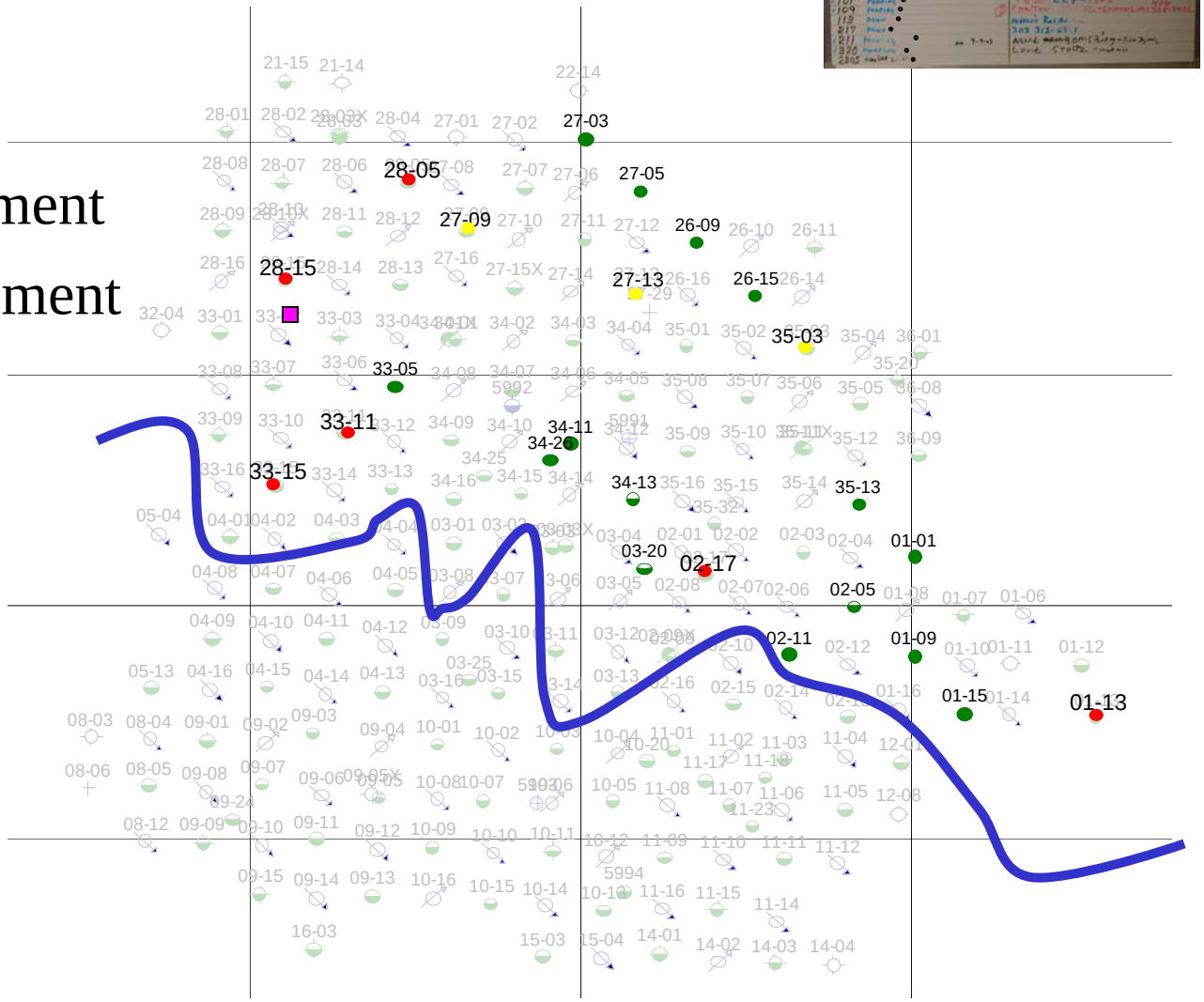
Active Wells



- Pumping Wells
- Pending Reinstatement
- Potential Reinstatement (BLM candidates)



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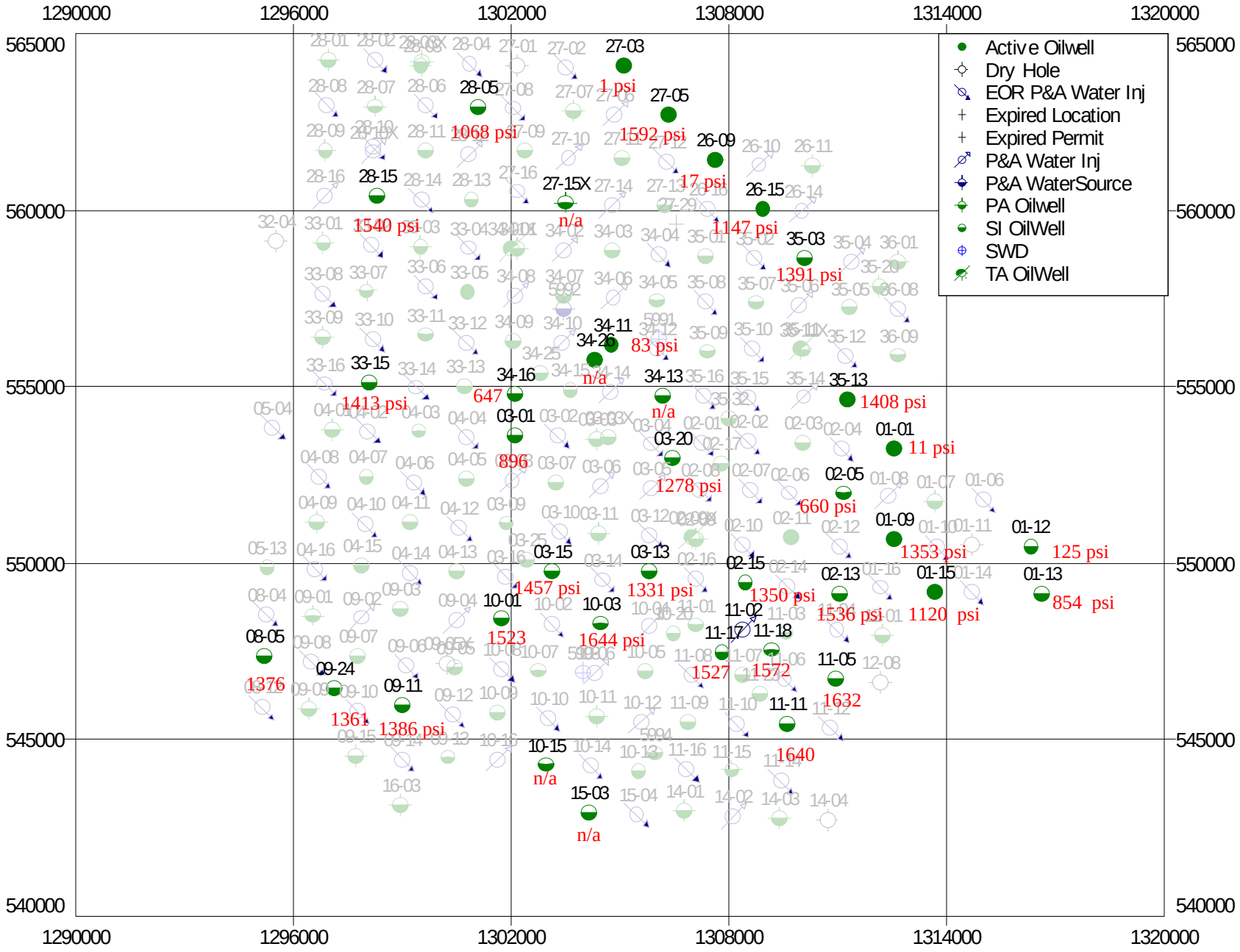
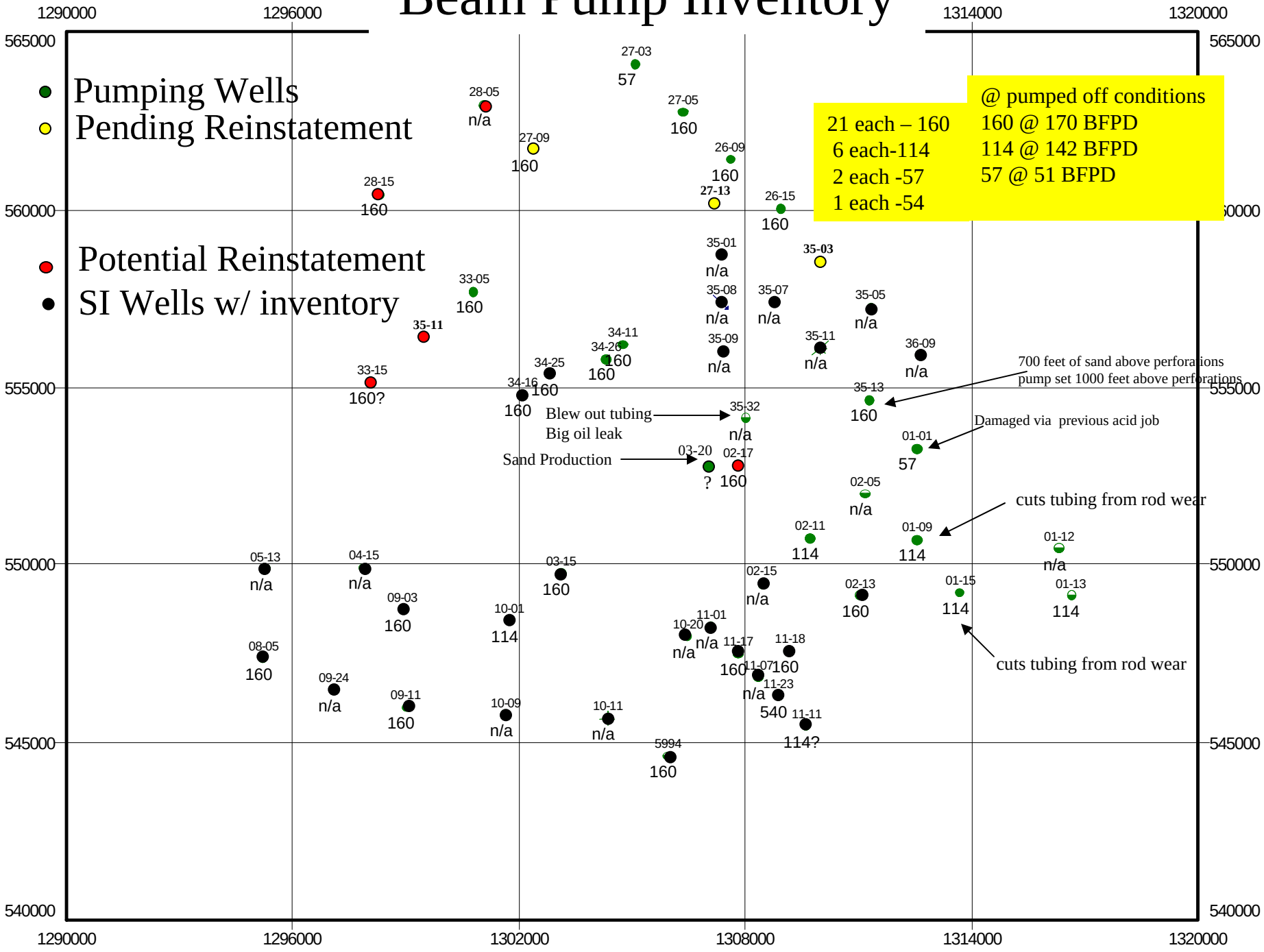
Fluid Levels/Extrapolated BHP

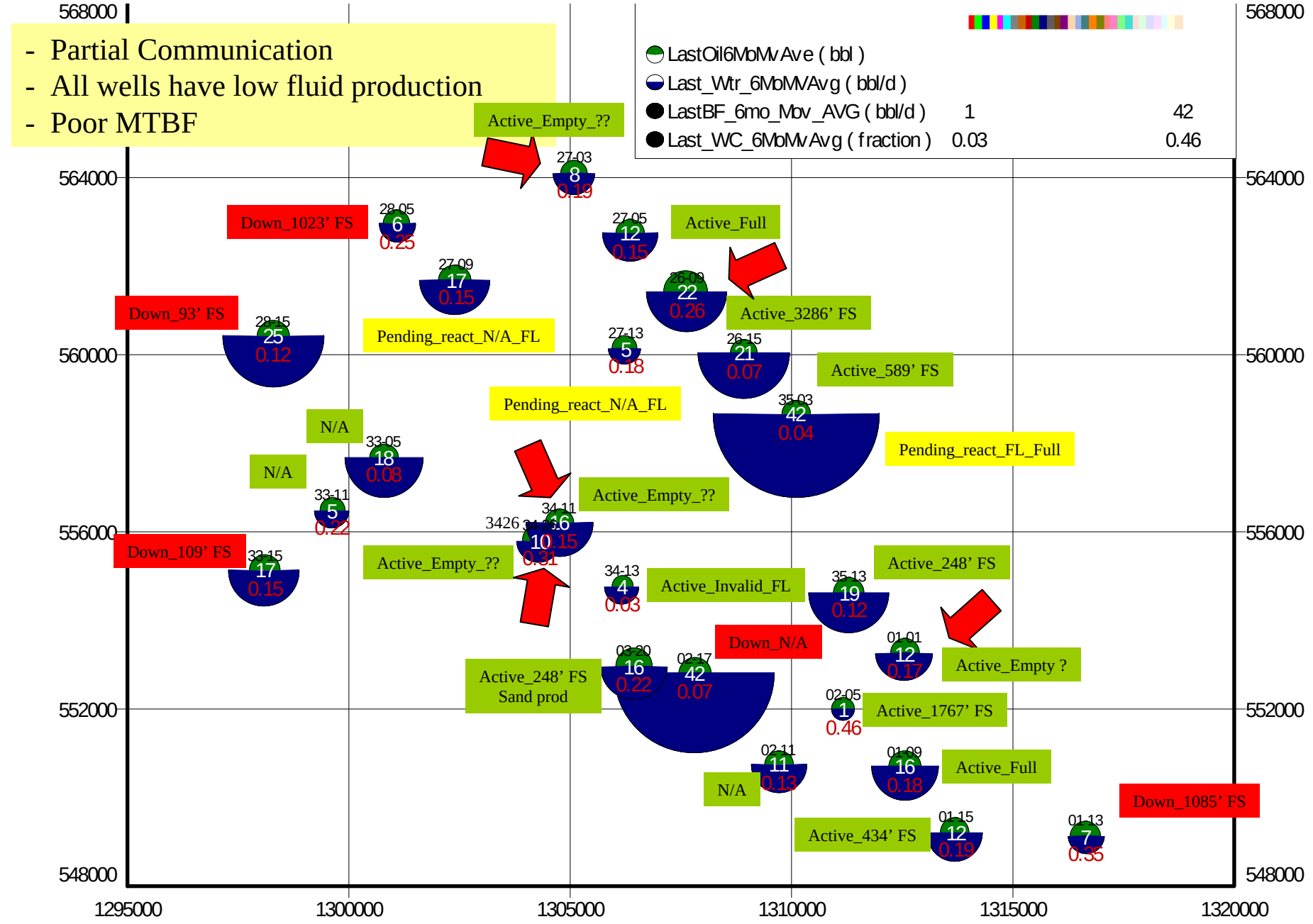


Beam Pump Inventory



Existing Active Wells

- Partial Communication
- All wells have low fluid production
- Poor MTBF



Missing Critical Well Information

Wellfiles do not adequately reflect well history, such as:

- Lost in hole equipment
- Equipment presently in the hole
- Previous fluid levels / scale problems
- Remedial work performed after the initial completion
- Well deviations (dog leg severity) – evident by holes in tubing

Incremental Oil via Optimized Pumping

- Preliminary Estimates (below) indicate 79 BOPD incremental Oil
- Troubling: Too many assumptions had to be made
- Urgent need to validate well tests on active wells.
- Test casing integrity above top perfs on future pullings/workovers
- Reconfirm fluid levels on active wells

Well Name	Status	TD (ft)	Top_Perfs (ft)	Bot_Perf (ft)	Perf Zone (ft)	CP PSI	Est. Static__Pressure (@ .44/psi/ft	Pwf	DeltaP	6 Months Moving Avg BFPD	6 Months Moving Avg Oil_Cut	PI (BFPD/PSI)	@ max fluid after flood _ BFPD	Incremental BFPD @ 0 PSI Pwf	Est Inc Oil	PU_Size	PU Max Capcity
01-01	active	3260	3,182	3,194	12	0	1405	11	1394	12	17%	0.0086	42	0.10	0	160	170
01-09	active	3180	3,100	3,138	38	0	1381	1353	28	16	18%	0.5700	69	69.00	12	114	142
01-13	down	3150	3,045	3,062	17	0	1347	854	494	7	35%	0.0142	10	10.00	4	114	142
01-15	active	3120	3,001	3,030	29	0	1333	1120	214	12	19%	0.0562	30	30.00	6	114	142
02-05	active	3260	3,185	3,199	14	40	1408	618	790	1	46%	0.0013	8	0.78	0	114	142
03-20	active	3304	3,191	3,200	9	0	1408	1278	130	16	22%	0.1233	103	103.00	23	160	170
26-09	active	3407	3,316	3,334	18	0	1467	17	1450	22	26%	0.0152	60	0.26	0	160	170
26-15	active	3354	3,222	3,244	22	0	1427	1147	281	21	7%	0.0748	40	40.00	3	160	170
27-03	active	3530	3,434	3,452	18	0	1519	1	1518	8	19%	0.0053	20	0.00	0	57	51
27-05	active	3475	3,375	3,391	16	125	1492	1467	25	12	15%	0.4819	25	25.00	4	57	51
28-05	down	3557	3,471	3,502	31	0	1541	1068	473	6	25%	0.0127	13	13.00	3	160	170
28-15	down	3685	3,590	3,605	15	20	1586	1520	66	25	12%	0.3767	41	41.00	5	160	170
33-15	down	3450	3,353	3,379	26	0	1487	1413	74	17	15%	0.2296	48	48.00	7	160	170
34-11	active	3430	3,342	3,366	24	0	1481	83	1398	16	15%	0.0114	40	0.95	0	160	170
34-26	active	3450	3,338	3,360	22	0	1478	0	1478	10	31%	0.0068	30	0.00	0	160	170
35-13	active	3340	3,204	3,227	23	120	1420	1287	133	19	12%	0.1429	102	102.00	12	160	170
															79		

Caution!

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Portable Well Test Equipment

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Test Pumping Unit

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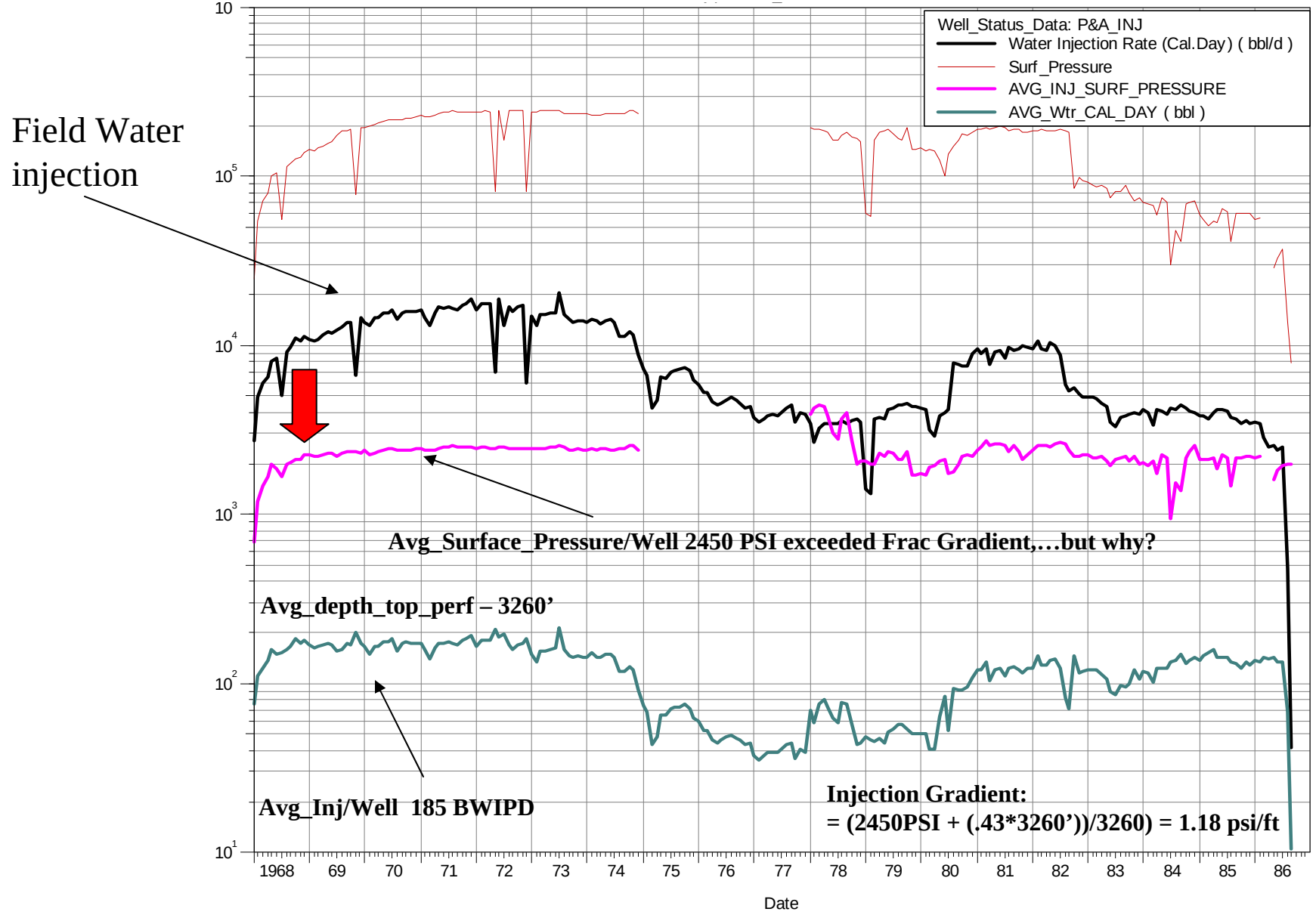
Why did the Waterflood Fail?

Premature Water Channeling



Horizontal Wells found in Glacier County, Mt.

(none found in Pondera County)

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Cutbank Horizontal Wells

Well Name	Section	Location (T-R)
TCBSU 11-7	11	32N-6W
TCBSU 11-5	11	32N-6W
CBAU 1-22H	22	33N-6W
CBAU 2-22H	22	33N-6W
CBAU 1-14H	14	33N-6W
ARMSTRONG 3-14H	14	33N-6W
ARMSTRONG 2-14H	14	33N-6W
Klemens C405	5	32N-5W
CBAU 1-23-14H	23	33N-6W

Quicksilver Resources, Inc.	CBAU 1-14H
Union Oil Company Of California	ARMSTRONG 3-14H
Quicksilver Resources, Inc.	ARMSTRONG 2-14H

K2 America Corporation	TCBSU 11-7
K2 America Corporation	TCBSU 11-5

TMCBSU North Boundary Limit

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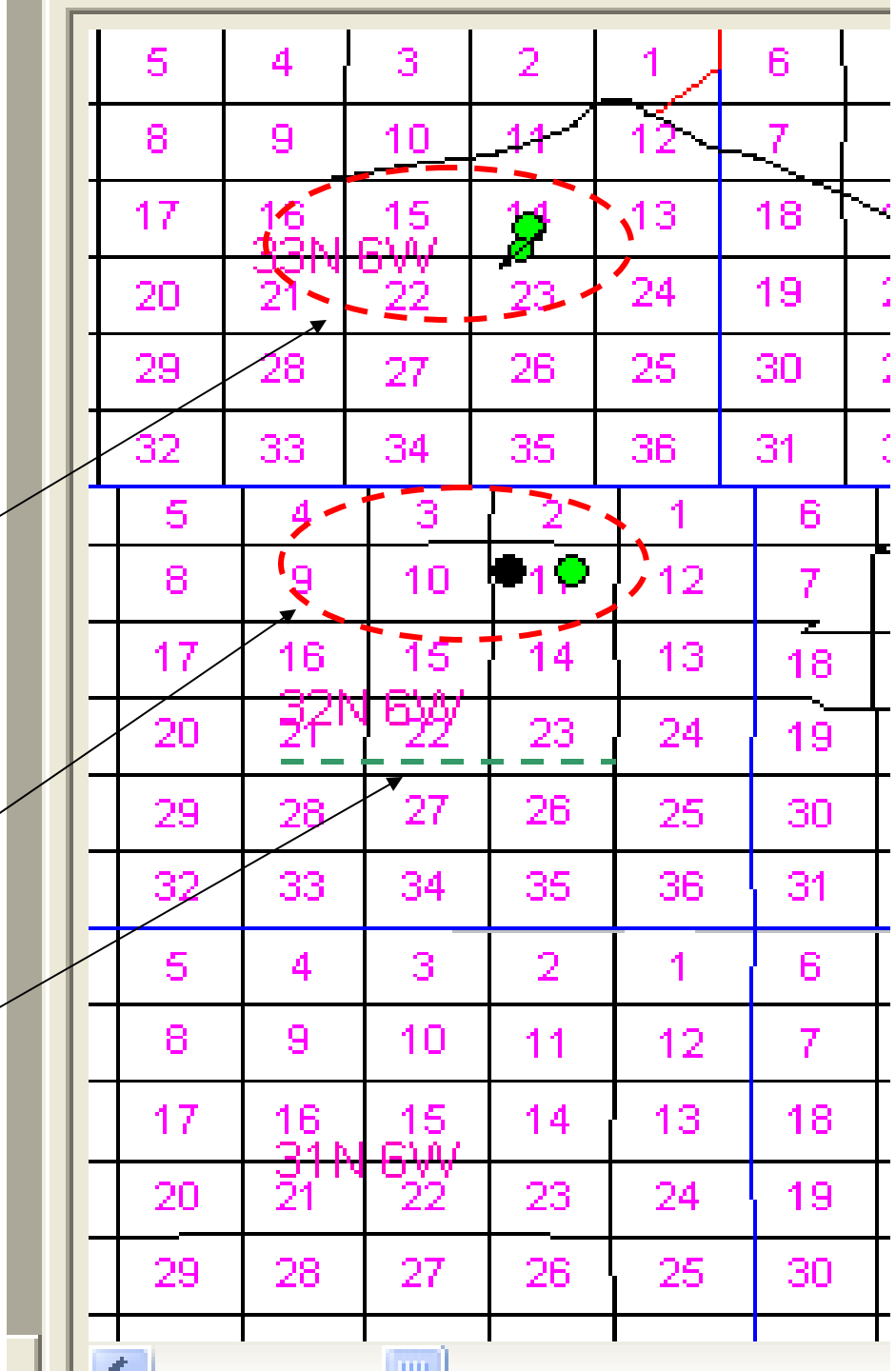
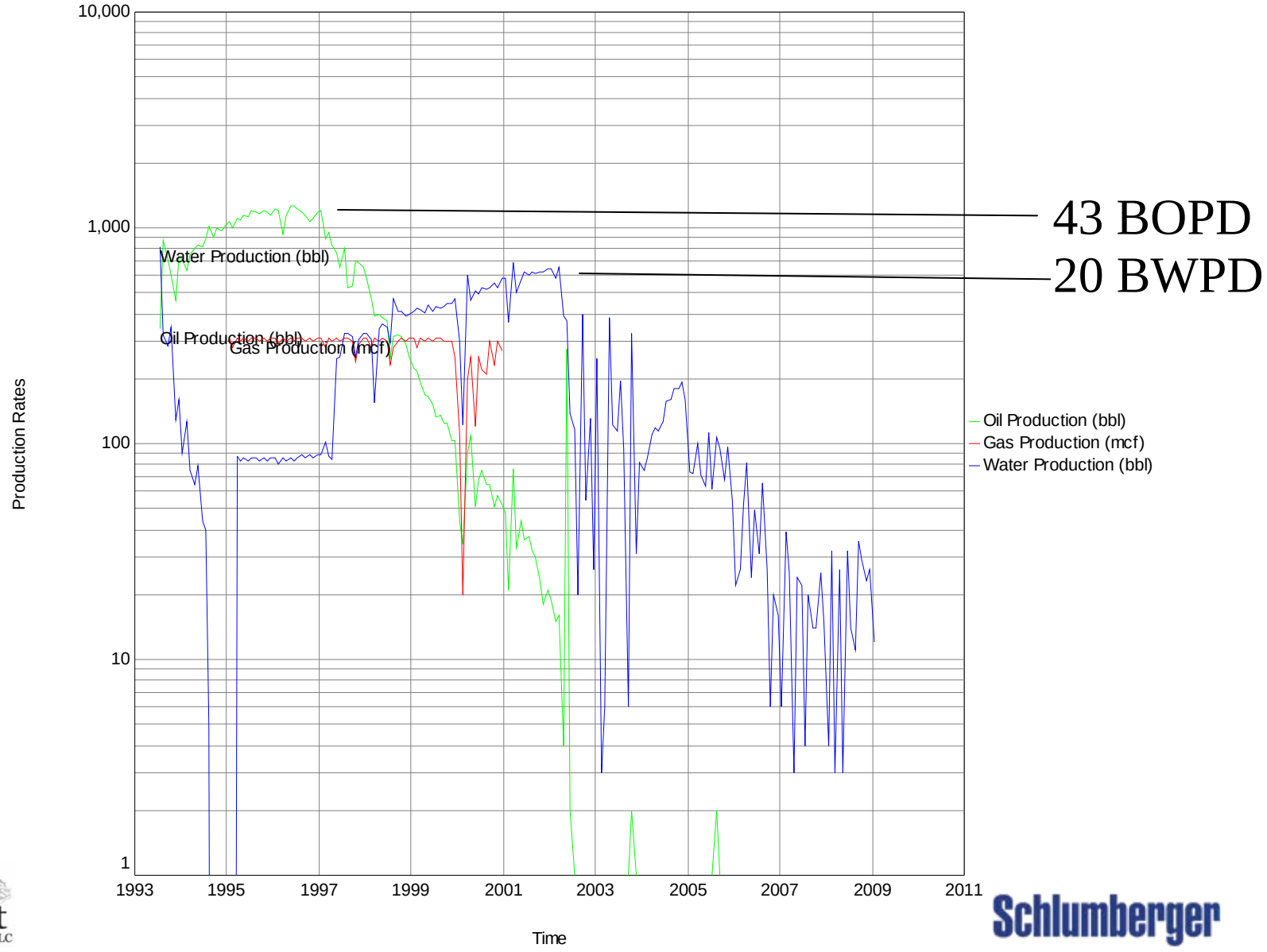


QUICKSILVER RESOURCES INCORPORATED
CBAU ARMSTRONG (2-14H)



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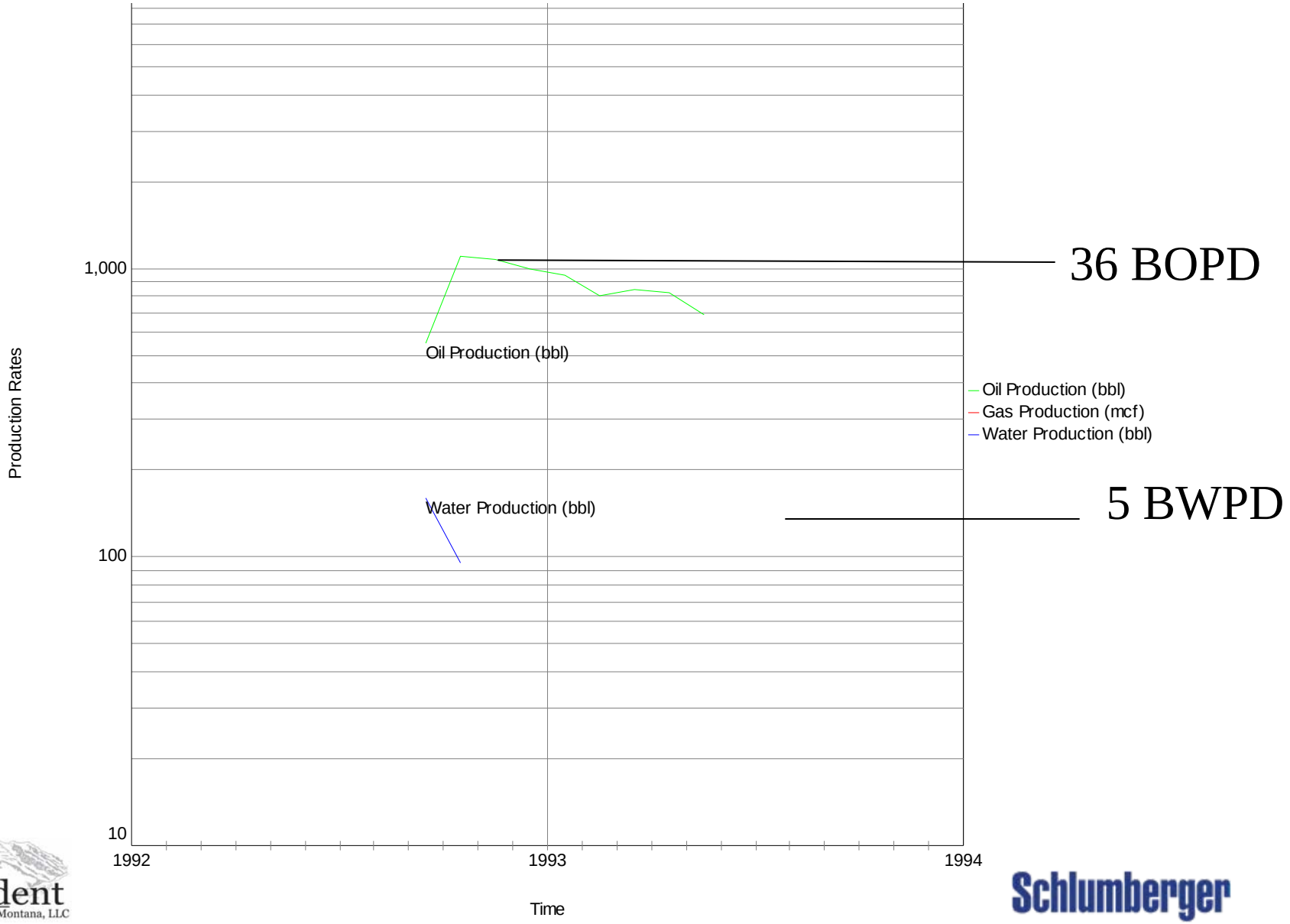
QUICKSILVER RESOURCES INCORPORATED
C B A U (1-14H)



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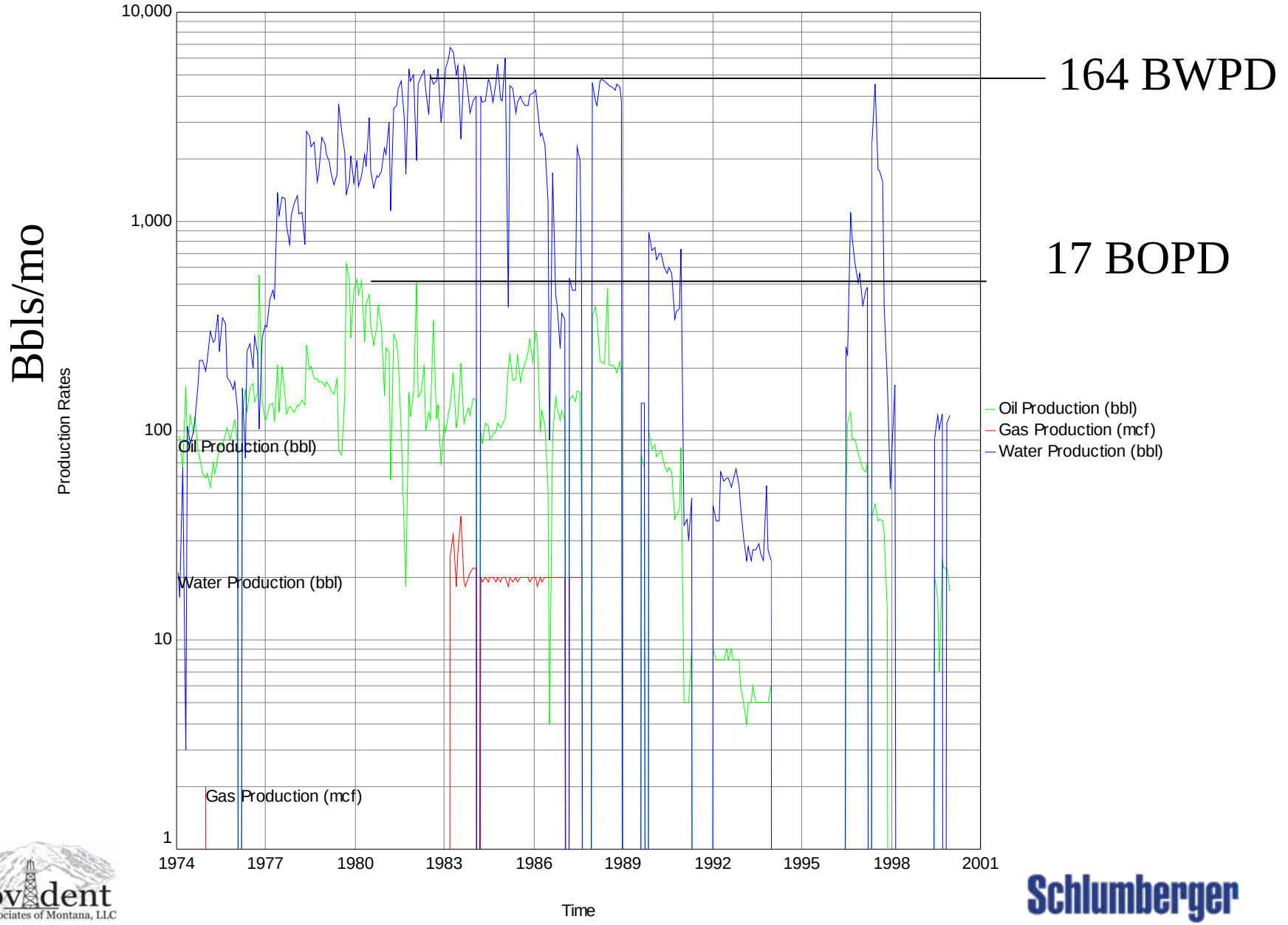
K2 AMERICA CORPORATION
DAMSON CB SU (11-5)



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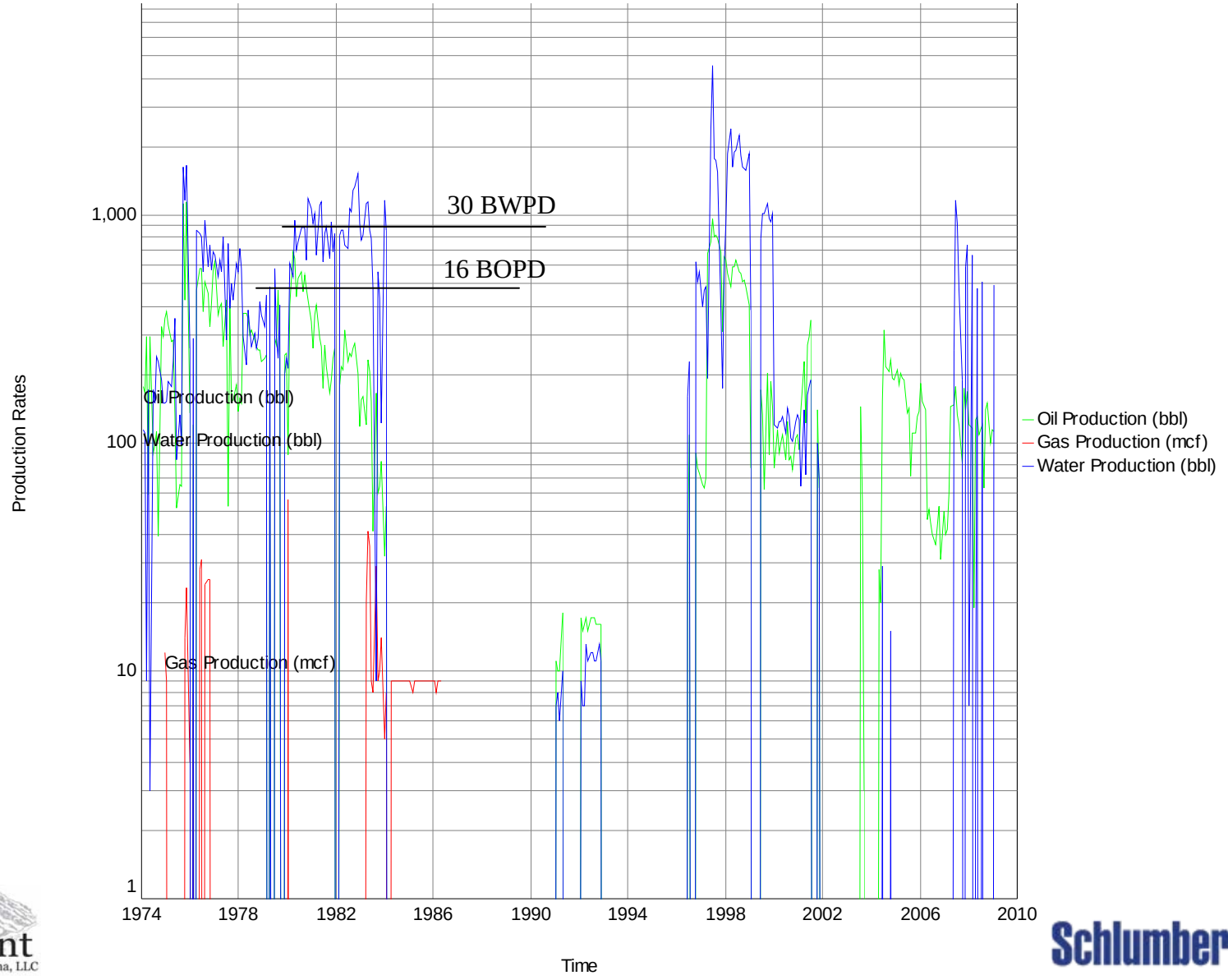
K2 AMERICA CORPORATION
DAMSON CB SU (11-7)



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Conclusions

- TMCBSU reservoir pressure is **close to original BHP.**
- There is incremental production to be gained from existing active wells.
- Some active wells do not appear to be properly communicated with the reservoir.
- There is missing critical well and field information
- Portable Pumping Units and proper well tests are critical to increase production of the TMCBSU
- High surface injection pressure exceeding Frac pressures were the cause of premature water channeling….but why?
- Horizontal Well in the Cutbank Formation are lack luster
- The Cutbank Sands are stratigraphic, heterogeneous and flow units need to be properly defined prior embarking in long term reserves development.

Recommendations

Short term production/reserves

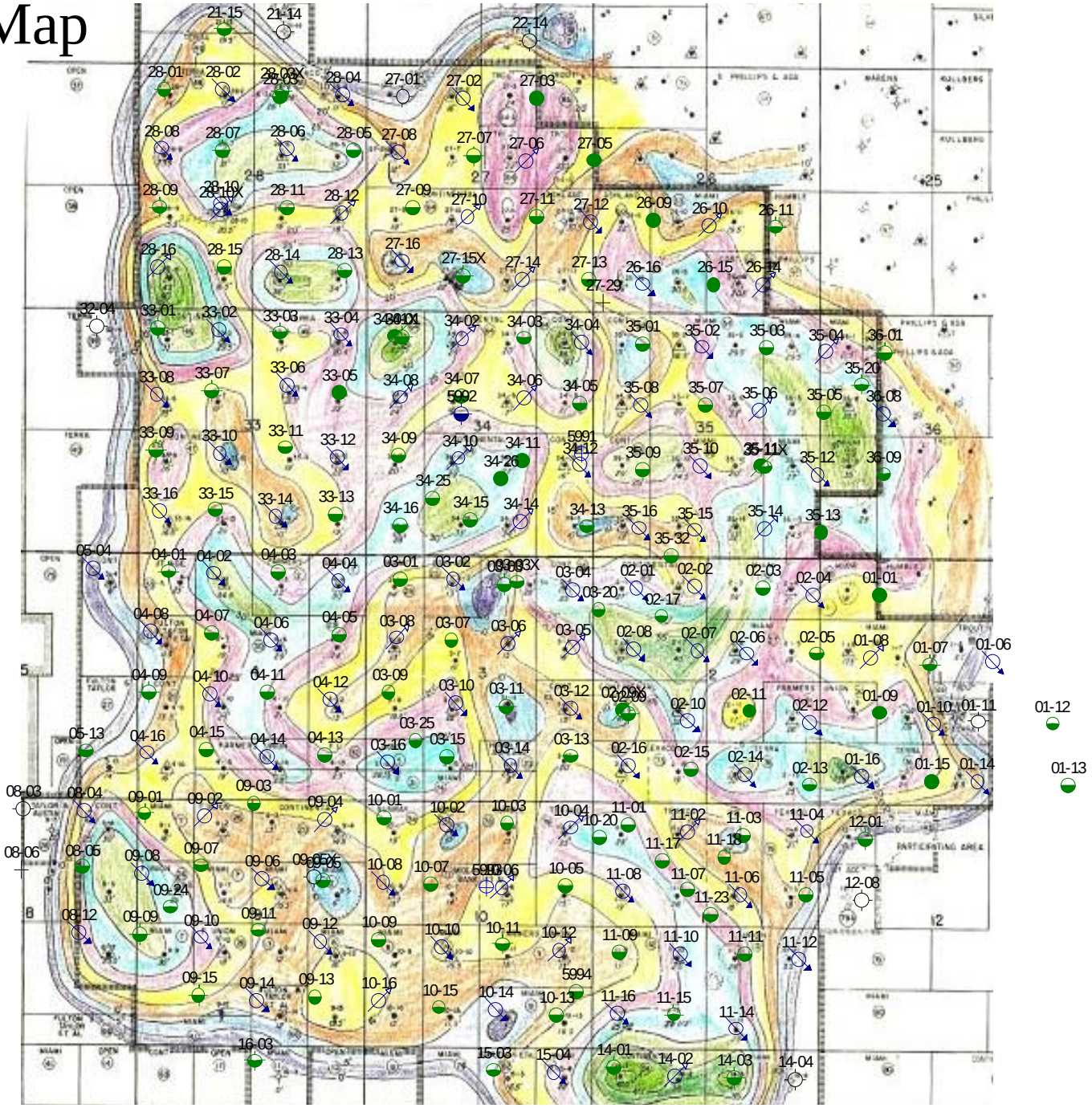
- Focus on existing production of active wells / reactivations

Long term reserves

- Need to source missing data and to evaluate Engineering, Geological and Operational information to opt for either:
  - Horizontal Well Drilling
  - Waterflood reinstallation
  - Infill Drilling

Support Slides

Isopach Map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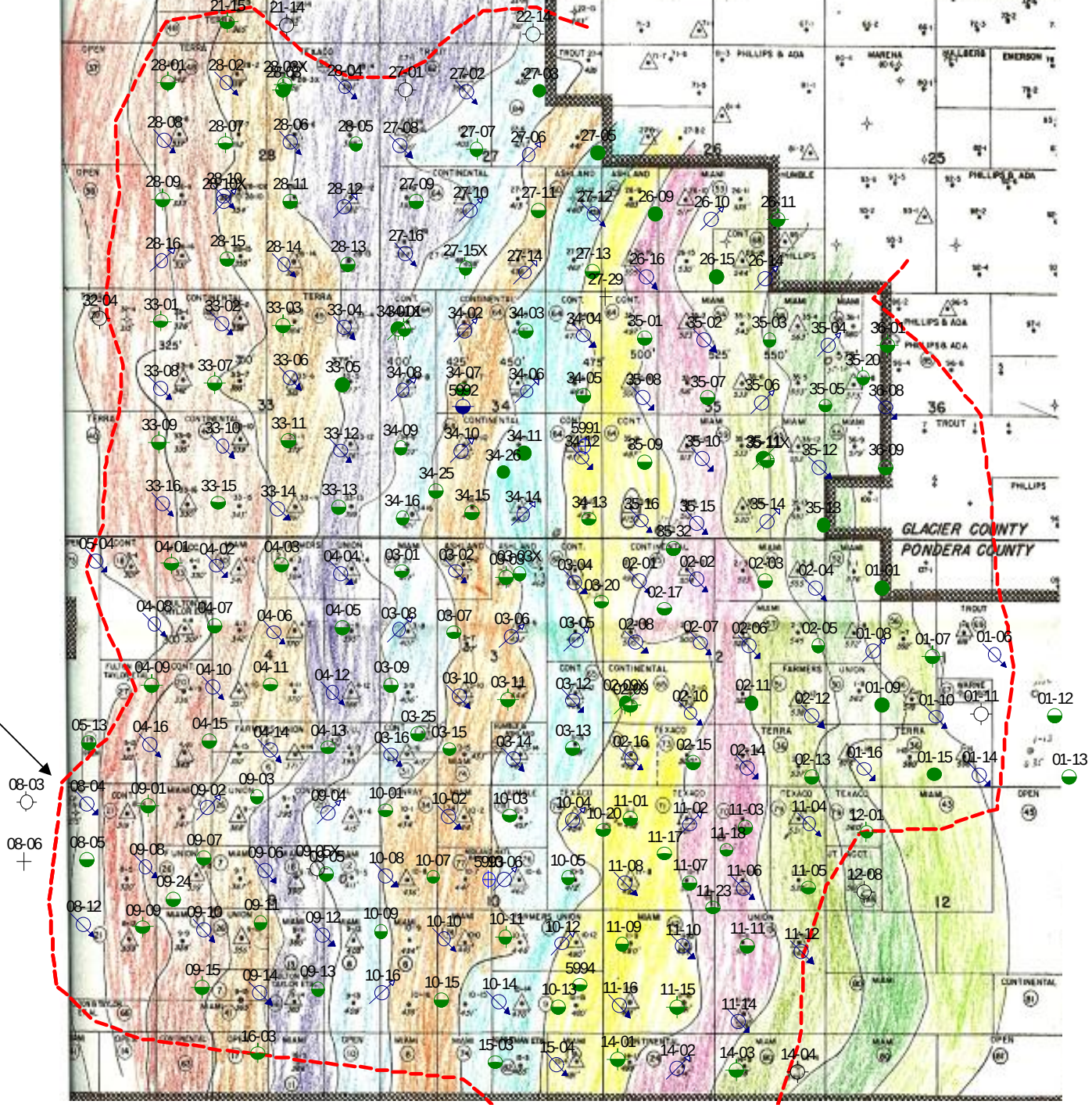
Structure Map

“0” pay line



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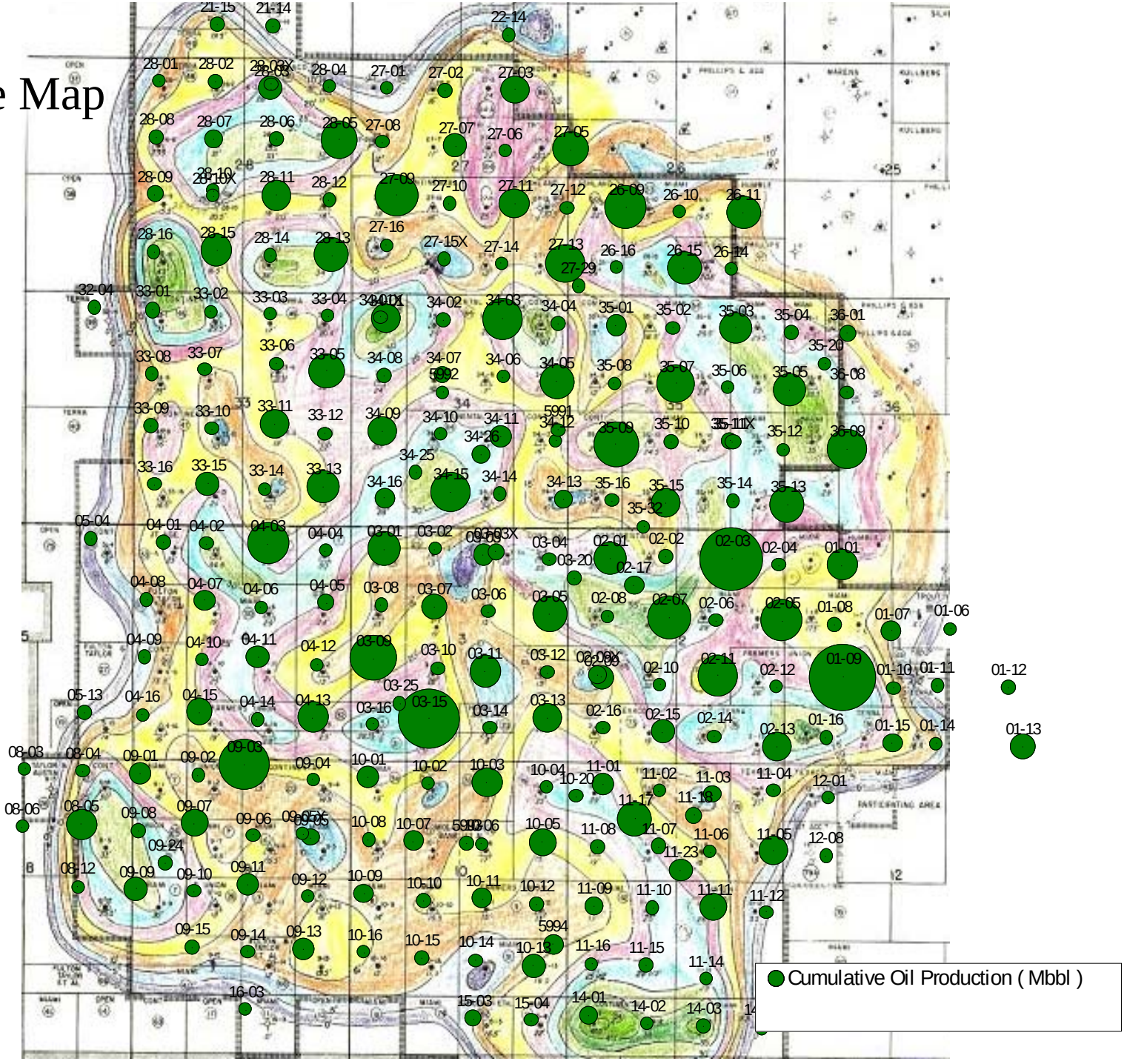
Date:12/1/2008

Oil Bubble Map



Proposed Next Steps

- Begin Lifting Optimization & Testing Operations
  - Operations & Lifting experts can be sourced from Schlumberger
- Secure Missing Information - Complete Well Files
  - Schlumberger involvement key (Identify, Compile and Catalog data)
- Consider Geological Model & Reservoir Simulation
  - Digitize Logs (3rd party)
  - Build Geological Model & Validate OOIP
  - Perform Numerical Simulation and additional Production Analysis (e.g waterflood evaluation, fracture analysis) in order to evaluate Field Development Strategies
    - Infill Drilling with Pressure Maintenance
    - Waterflood Reinstallation
    - Horizontal Drilling
- Continued Technical Support from Schlumberger

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