Murphy Oil Company LTD.

Seal Polymer Project
Scheme Approval No. 11320C
Annual AER Progress Presentation

SEAL EOR Facilities

May 4, 2015

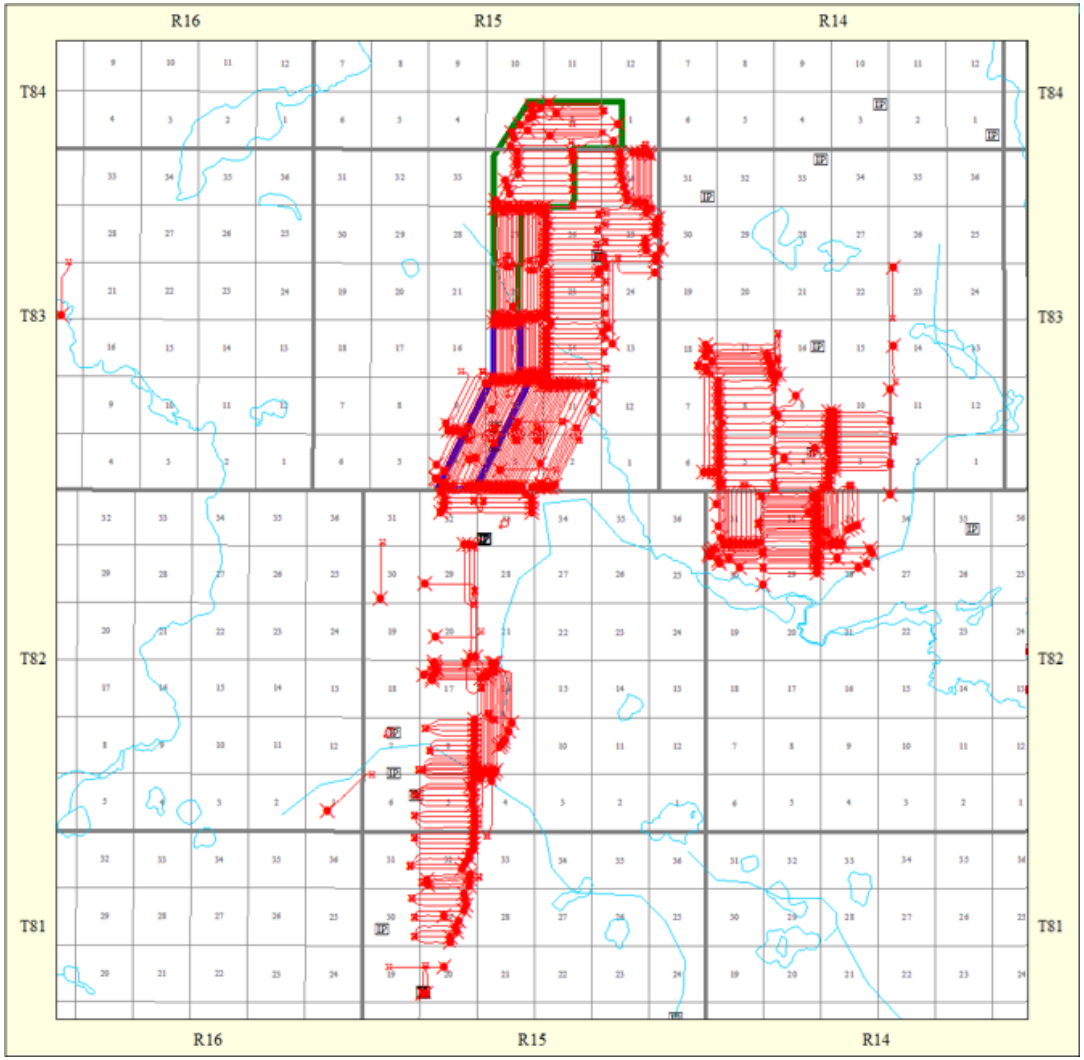
Agenda

- Subsurface
- Surface

- Background
- Geology
- Drilling & Completions
- Flood Performance
- Injection Pressures
- Future Plans

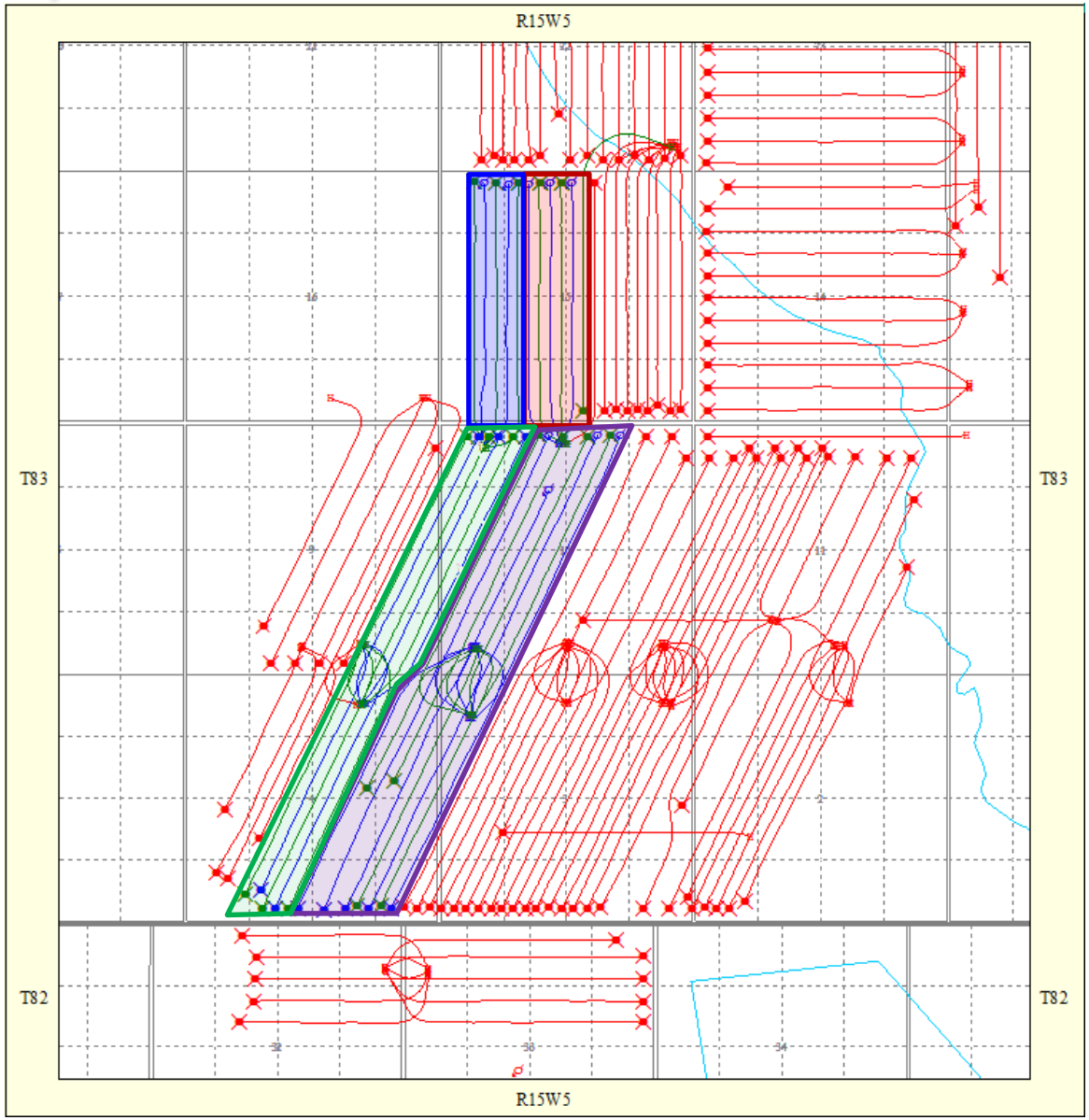
- **Background**
- Geology
- Drilling & Completions
- Flood Performance
- Injection Pressures
- Future Plans

Background – Map of Seal Central



- Polymer injection located in Central Seal
- Range 15 – Townships 83 & 84
- Terminology
  - Area 1 – Approval 11320B (Blue)
  - Area 2 – Approval 11320C (Green)

Background – Map of Seal Central



- Pilot + 3 Phases of expansion
- Pilot operational Oct, 2010
- Phase 1 operational Sept, 2012
- Phase 2 operational Dec, 2012
- Phase 3 on hold

- Background
- **Geology**
- Drilling & Completions
- Flood Performance
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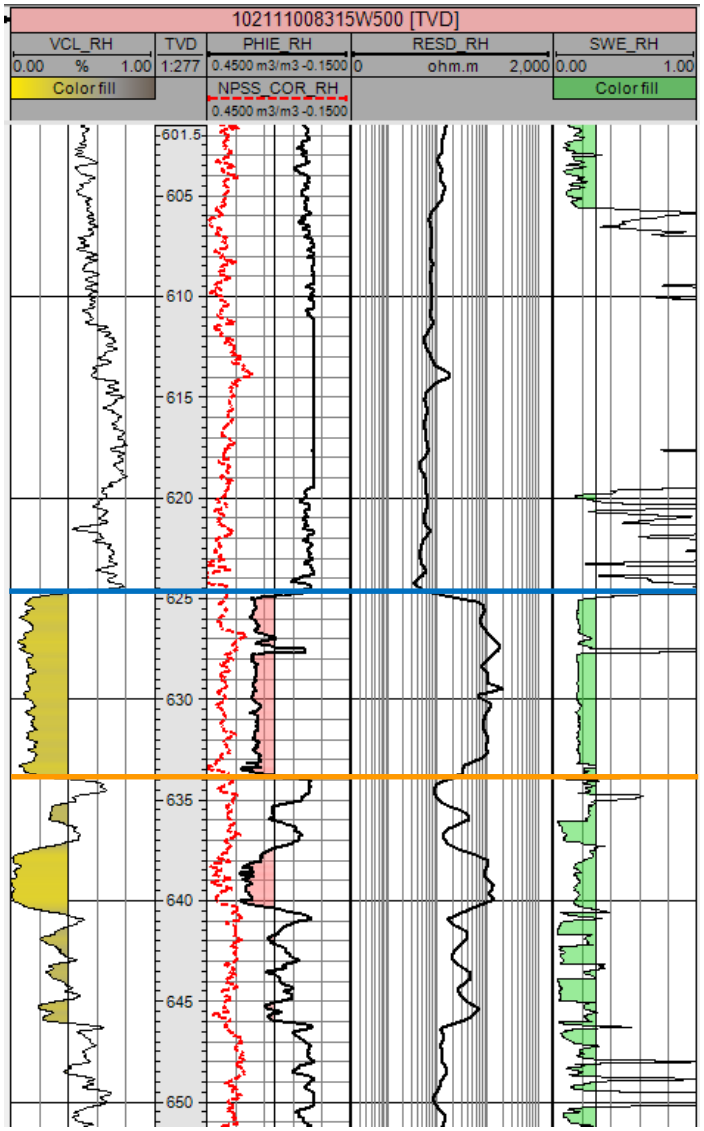
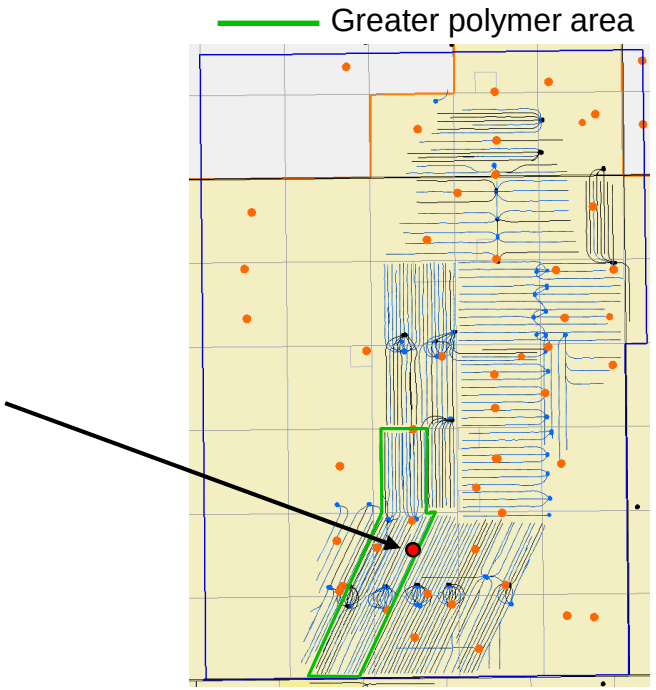
Geology - Reservoir Properties

- **Bluesky Sand**
  - Unconsolidated, quartz-rich sandstone
    - fine-medium grained
    - moderate sorting
  - Depth of ~625m TVD
  - Net Pay Range ~4 - 8m in Polymer area (up to 22 in main area)
  - Porosity 22 - 30%
  - Permeability 500 - 2000mD in Polymer area
  - Reservoir temperature 19 °C
  - Water Saturation < 25% (typically 15-20% in reservoir)
  - Oil Viscosity average ~28,000 cP
  - Initial Reservoir Pressure 4500 - 5000kPa

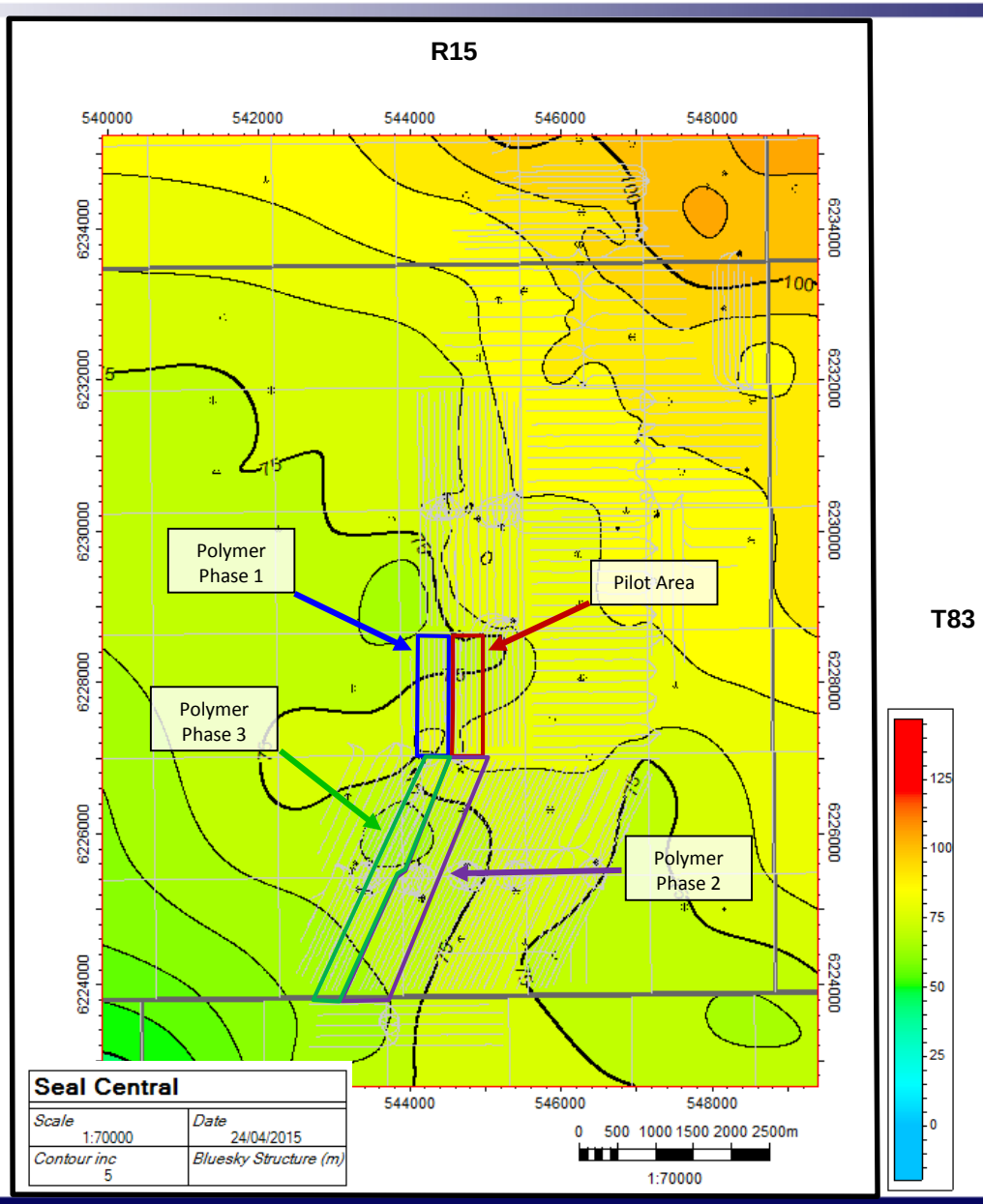
Geology – Murphy 02/11-10-83-15W5



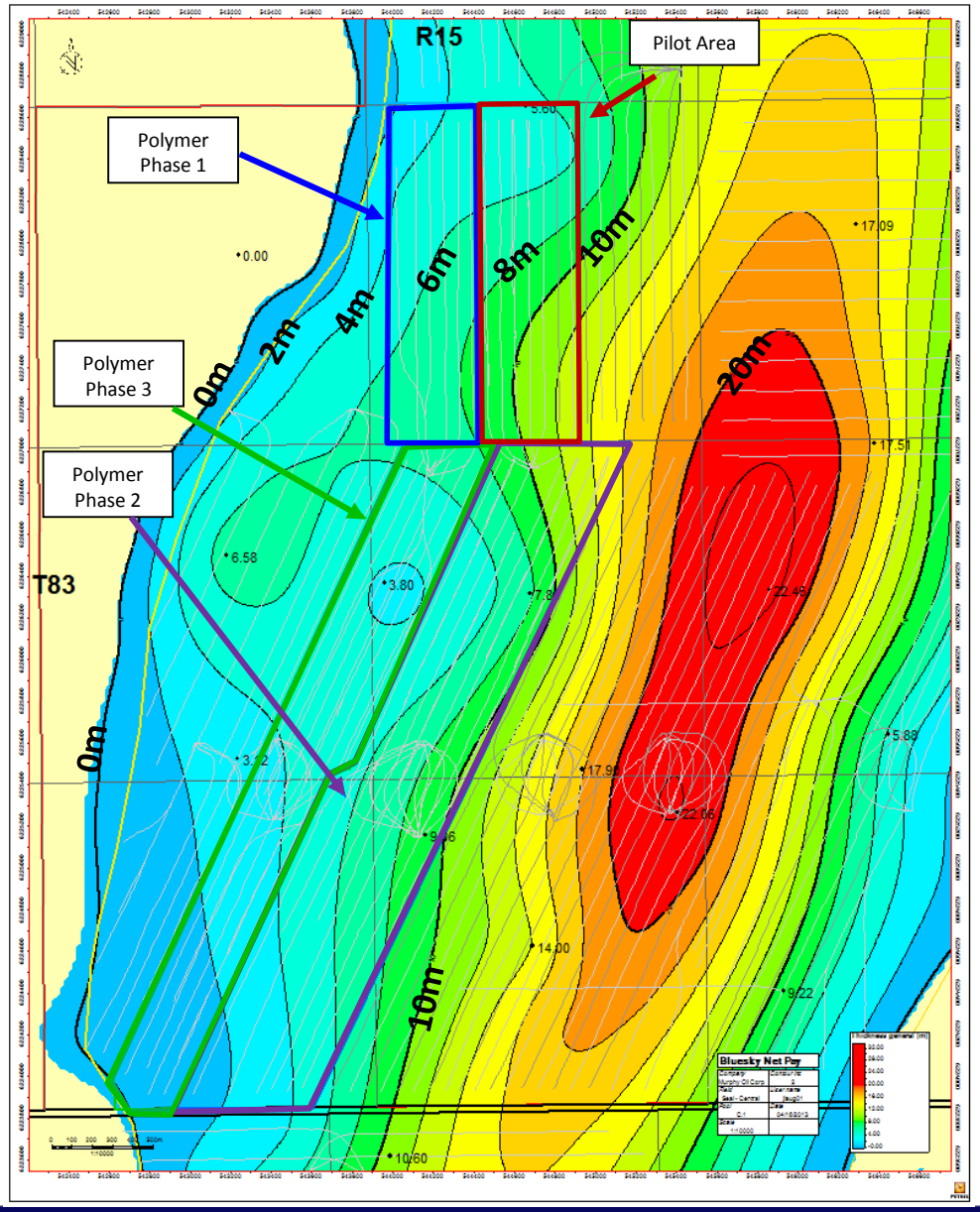
- **Petrophysically derived cut-offs for net bitumen**
  - **VCL <40 (~75-80 API GR)**
  - **PHIe >17**
  - **SWe <30 from Archie**



Geology - Bluesky Structure Map



Geology - Bluesky Net Pay Map



- Background
- Geology
- **Drilling & Completions**
- Flood Performance
- Injection Pressures
- Future Plans

Drilling & Completions

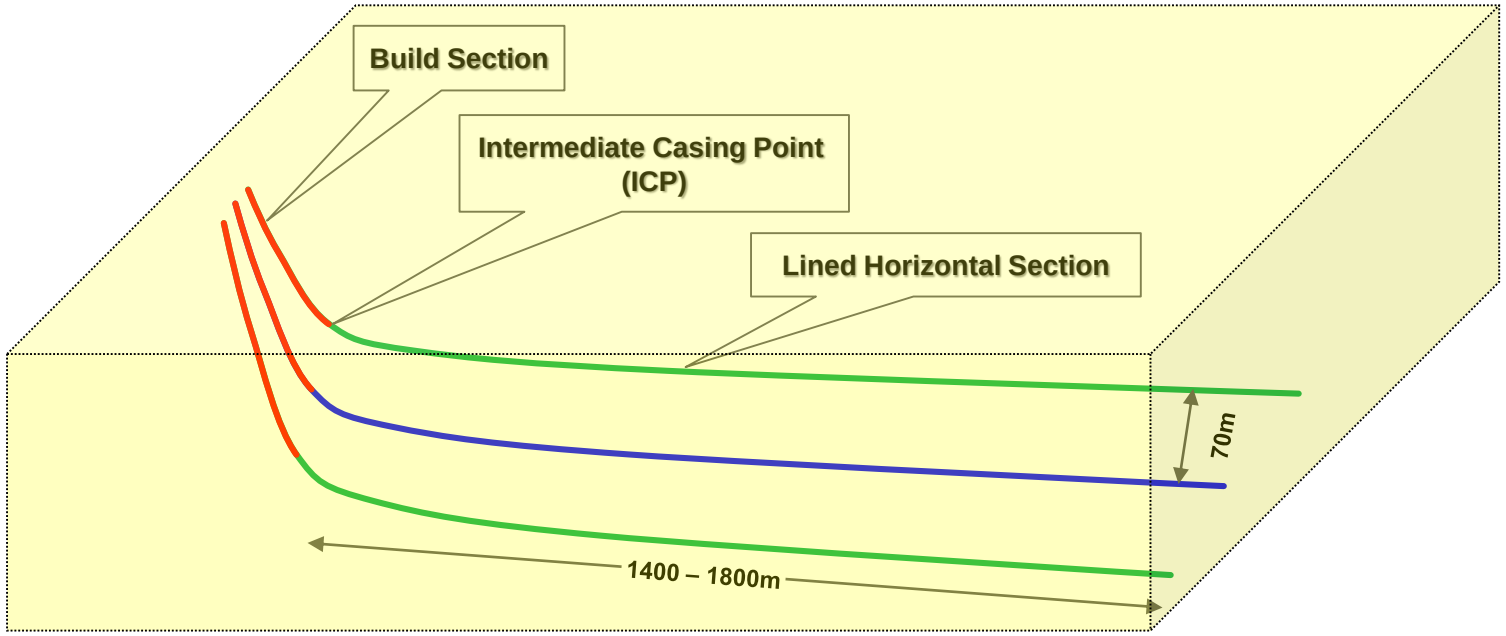
Pilot + Expansion Locations:

- **Lowest viscosity compared to other locations**
- **<10 m net pay**
- **Murphy 100% working interest**
- **Flowline production**

Well Placement Criteria:

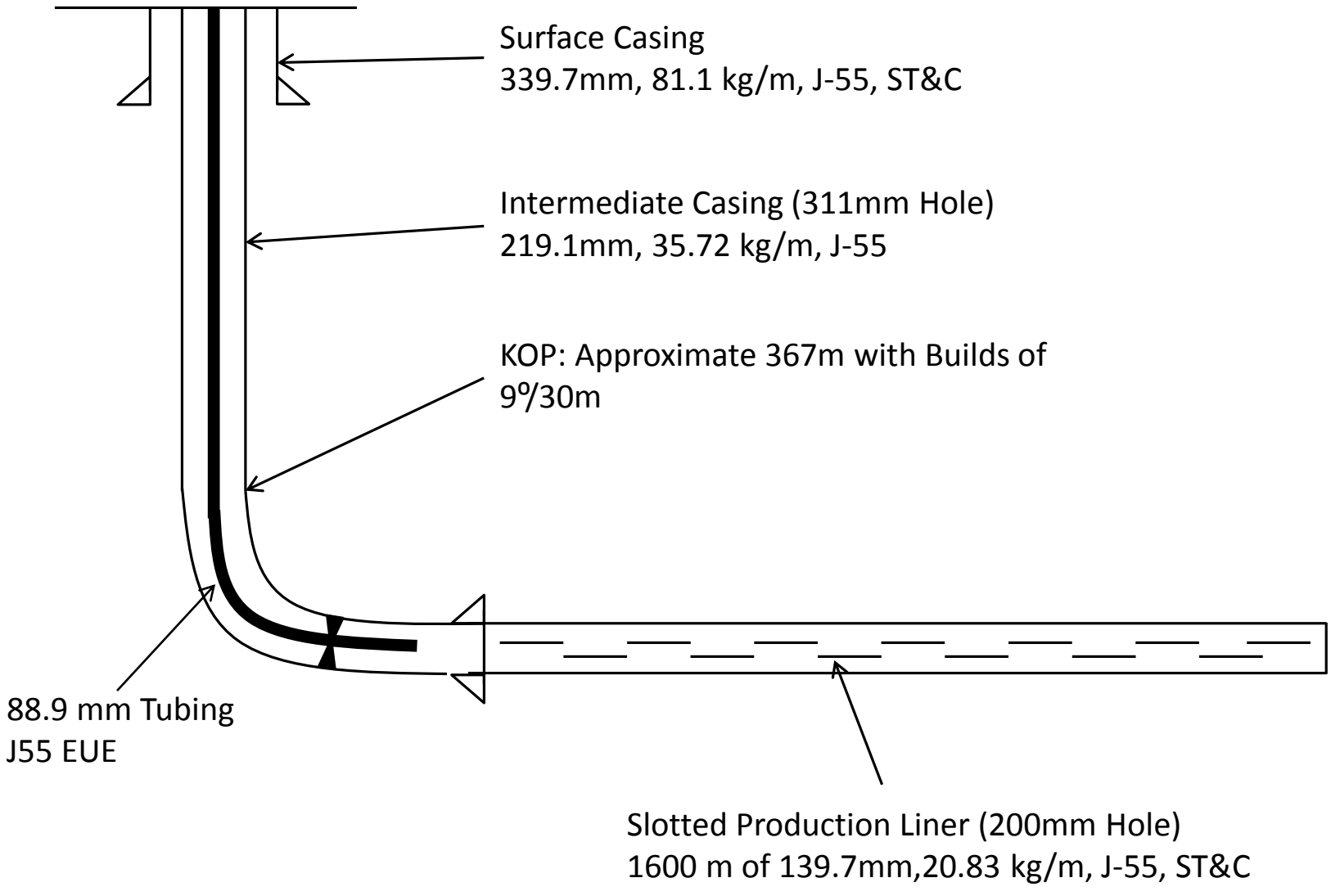
- **Well placement within the top 5 meters of the Bluesky due to low viscosity and high permeability**

D&C - Typical Drilling Configuration



- Original well spacing was 140 meters with infills drilled at 70 meters
- Injector and producing wells are at 70 meter spacing

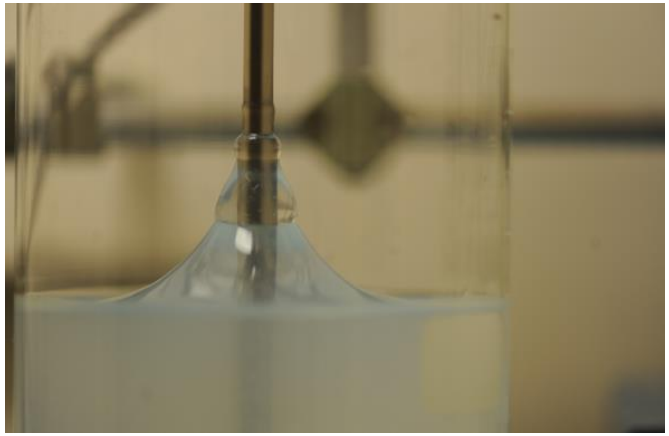
D&C - Typical Completion Details



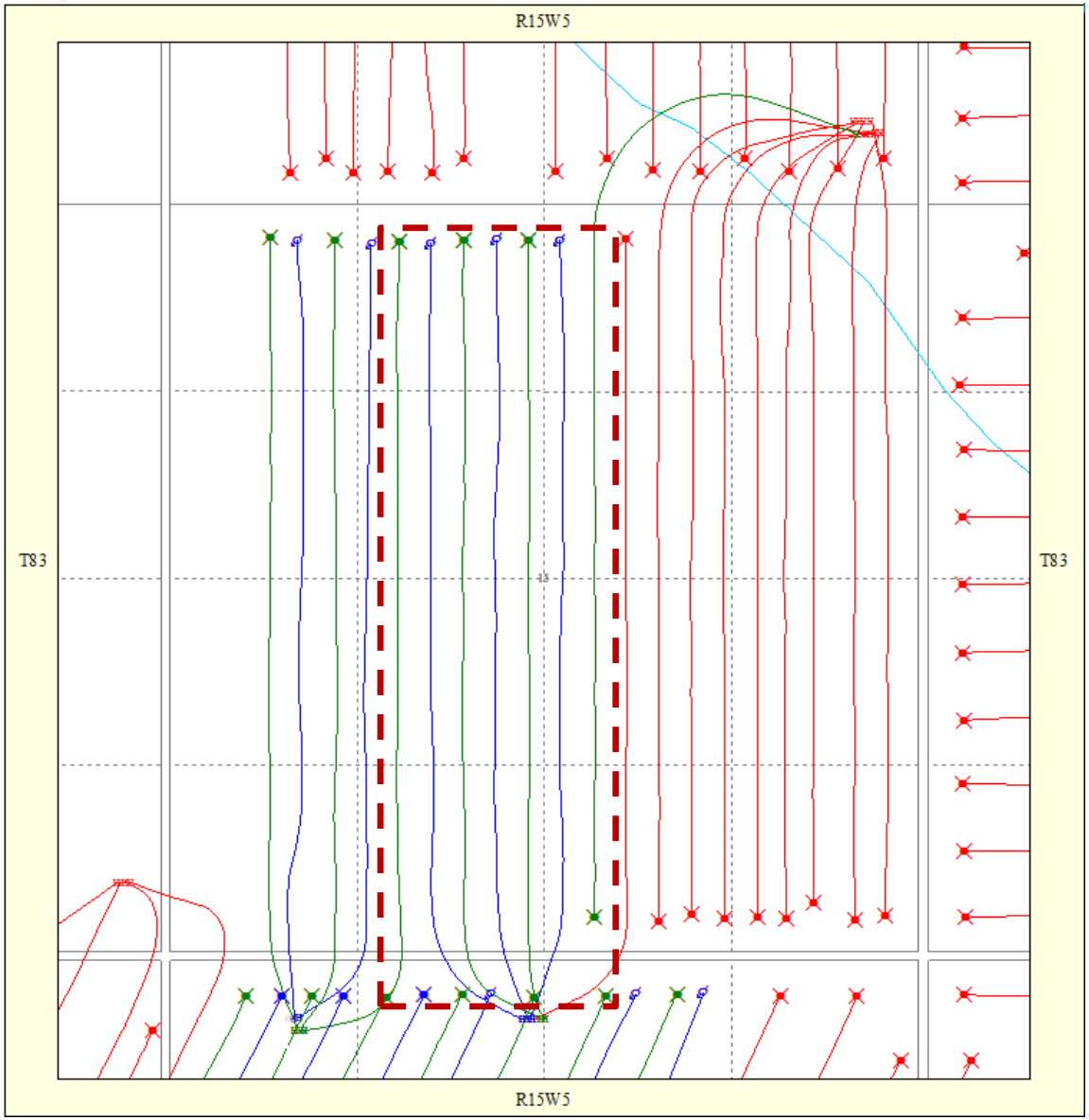
- Background
- Geology
- Drilling & Completions
- **Flood Performance**
- Injection Pressures
- Future Plans

Performance – Polymer Flood

- First Polymer Injection in October 2010
- Hydrating polymer concentrations: 1000-1500 ppm = 40-60 cp
- Polymer trace in produced water: >900 ppm within pilot
- Live oil mobility ratio: 34-53
  - The polymer viscosity is the only variable available in achieving a target mobility ratio due to the uncertainty surrounding permeability and in-situ oil viscosity

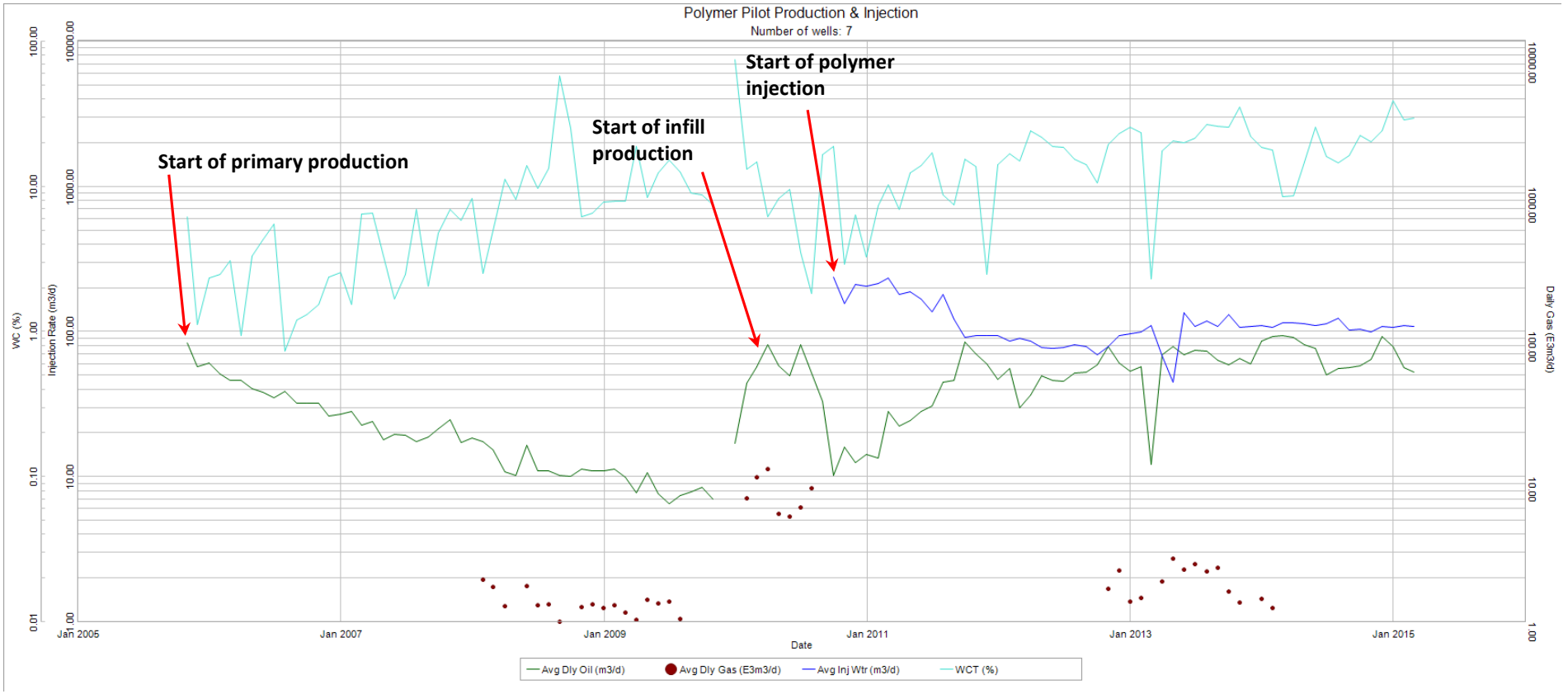


SEAL Polymer Pilot



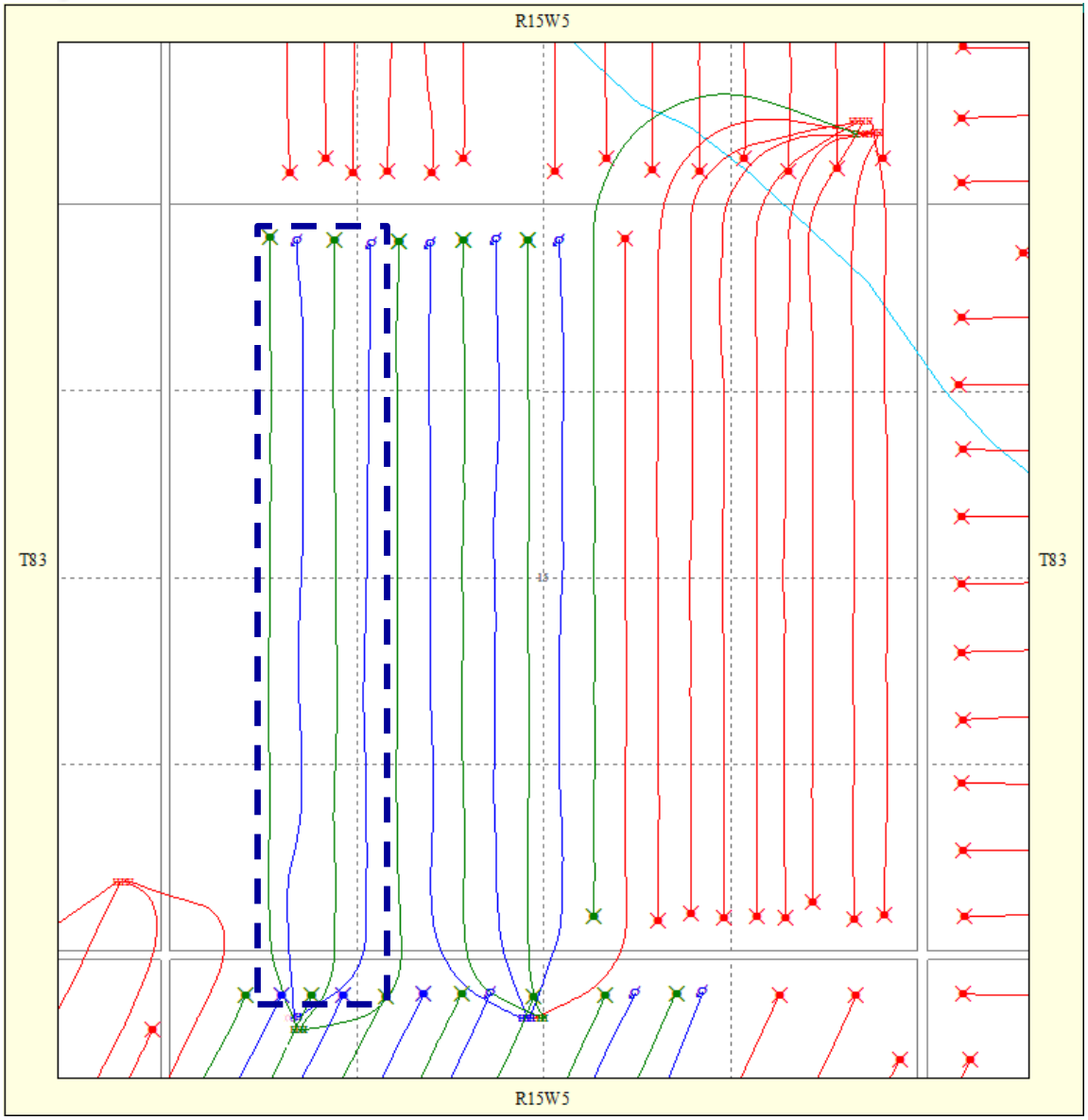
- Pilot consists of 3 injectors and 4 producers.
- Approval No. 11320B to downspace on the East side of the pilot.
- 70 meter spacing
- Injection started Q4 2010, production response has been observed since Q3 2011
- Current RF: 10.07%
- Ultimate RF: 15.07%

Performance – Pilot Prod./Inj. Profile



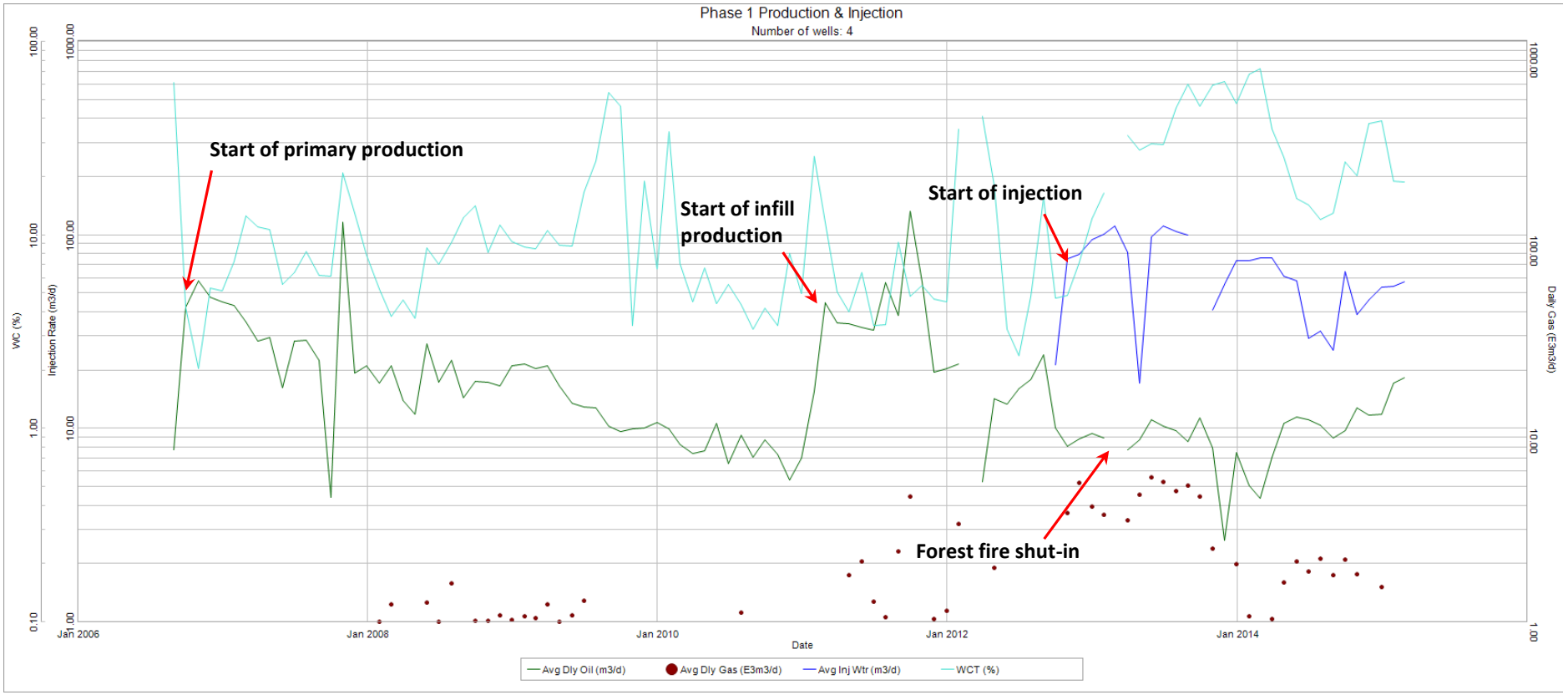
- Increased production >70 m3/day
- Maintained “plateau” for 2.5 years
- Observed that: Reduced injection pressure = Reduced production rates

SEAL Polymer Phase 1



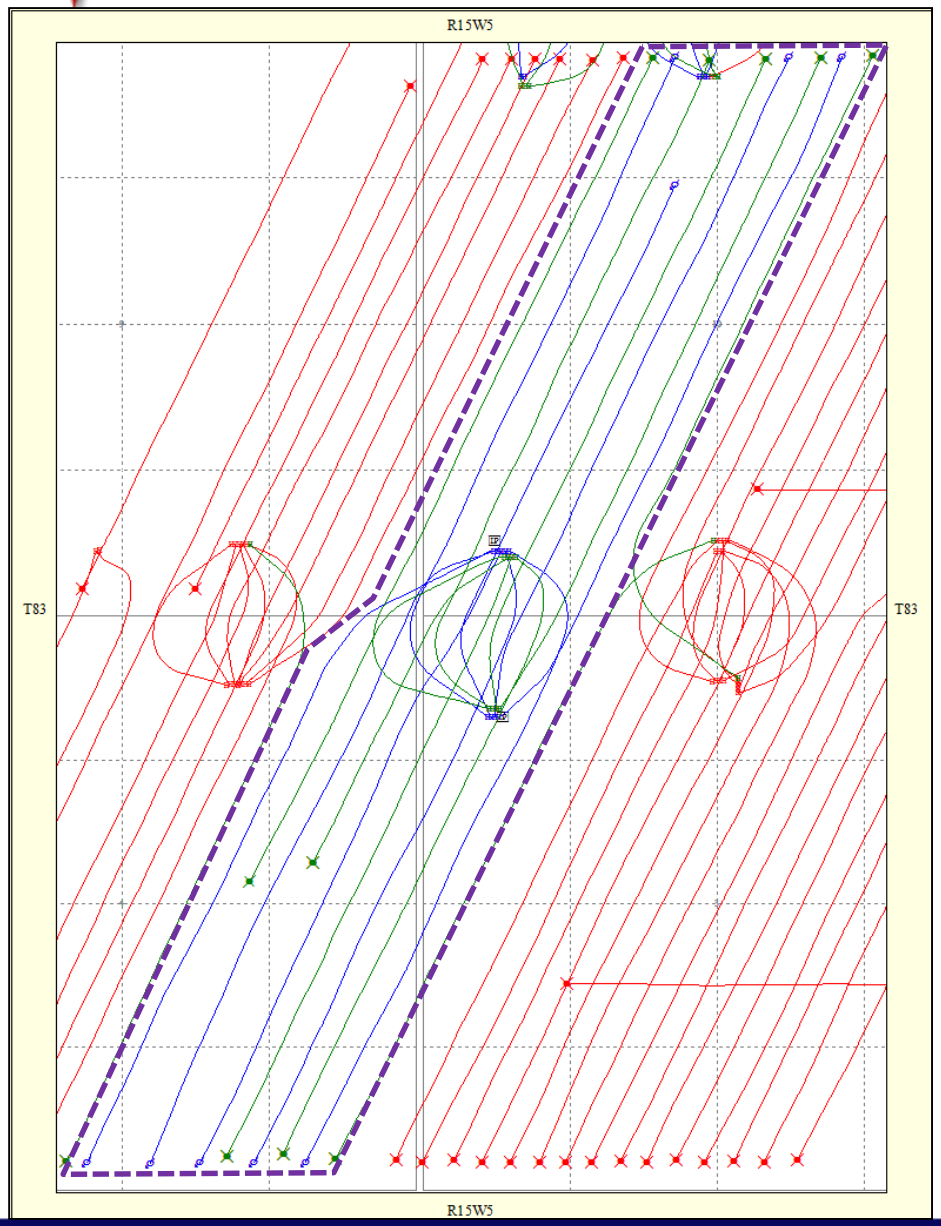
- Phase 1 consists of 2 injectors and 2 producers.
- 70 meter spacing
- Injection started Q3 2012, response has been in Q4 2014
- Current RF: 7.93%
- Ultimate RF: 11.14%

Performance – Phase 1 Prod./Inj. Profile



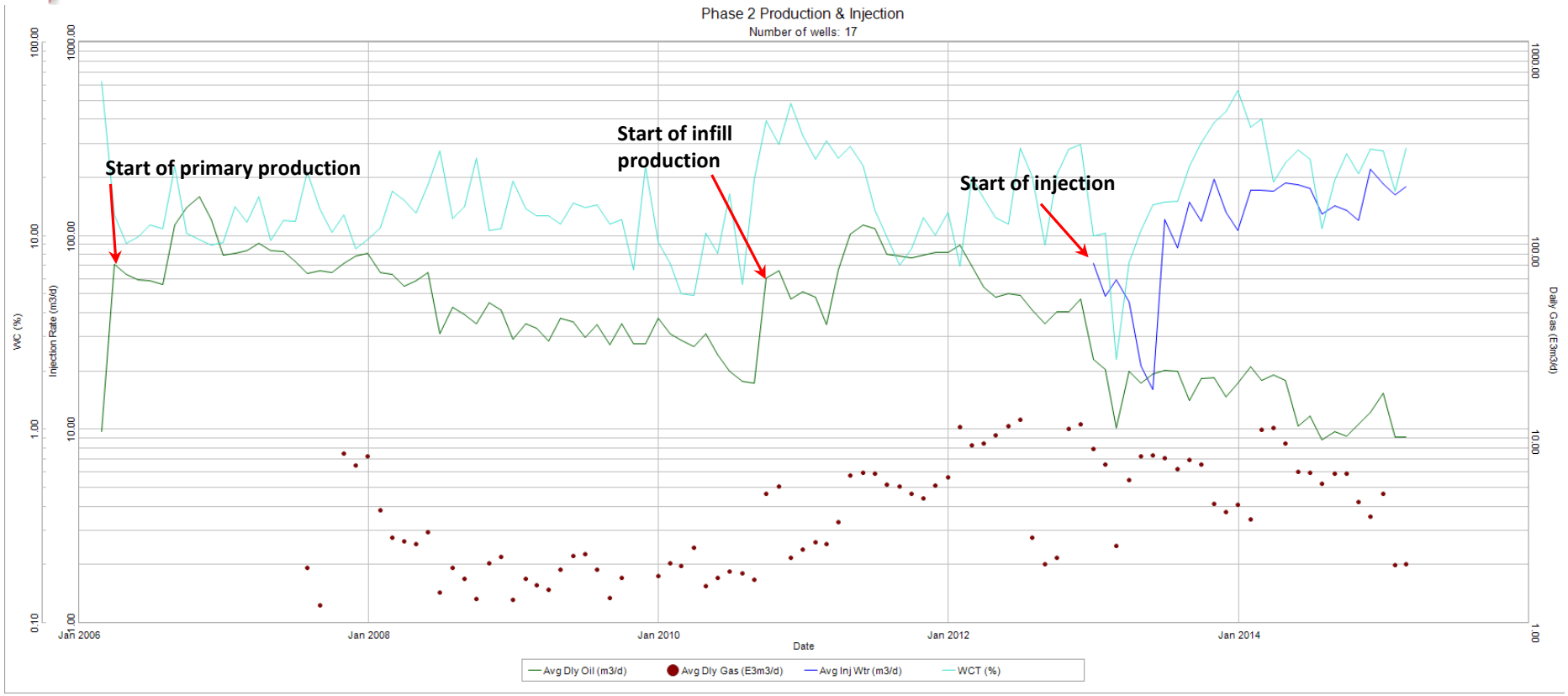
- Conformance treatment reduced WC's from 70% to 20%
- Increased production was noticed after the conformance treatment

SEAL Polymer Phase 2



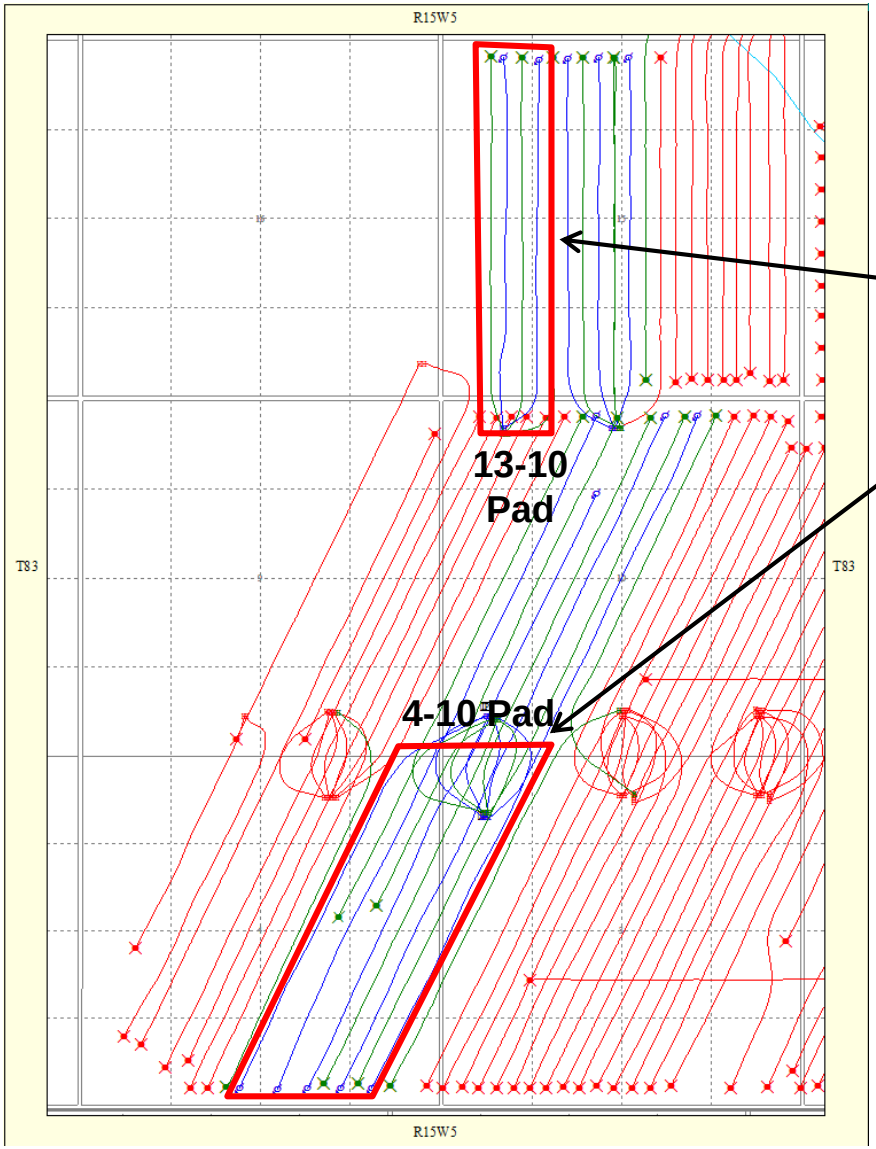
- Phase 2 consists of 9 injectors and 11 producers.
- 70 meter spacing
- Injection started Q4 2012 on the south pad & Q2 2013 on the north pad, water cuts increased Q3 2013 on the north pad
- Current RF: 5.41 %
- Ultimate RF: 6.59%

Performance – Phase 2 Prod./Inj. Profile



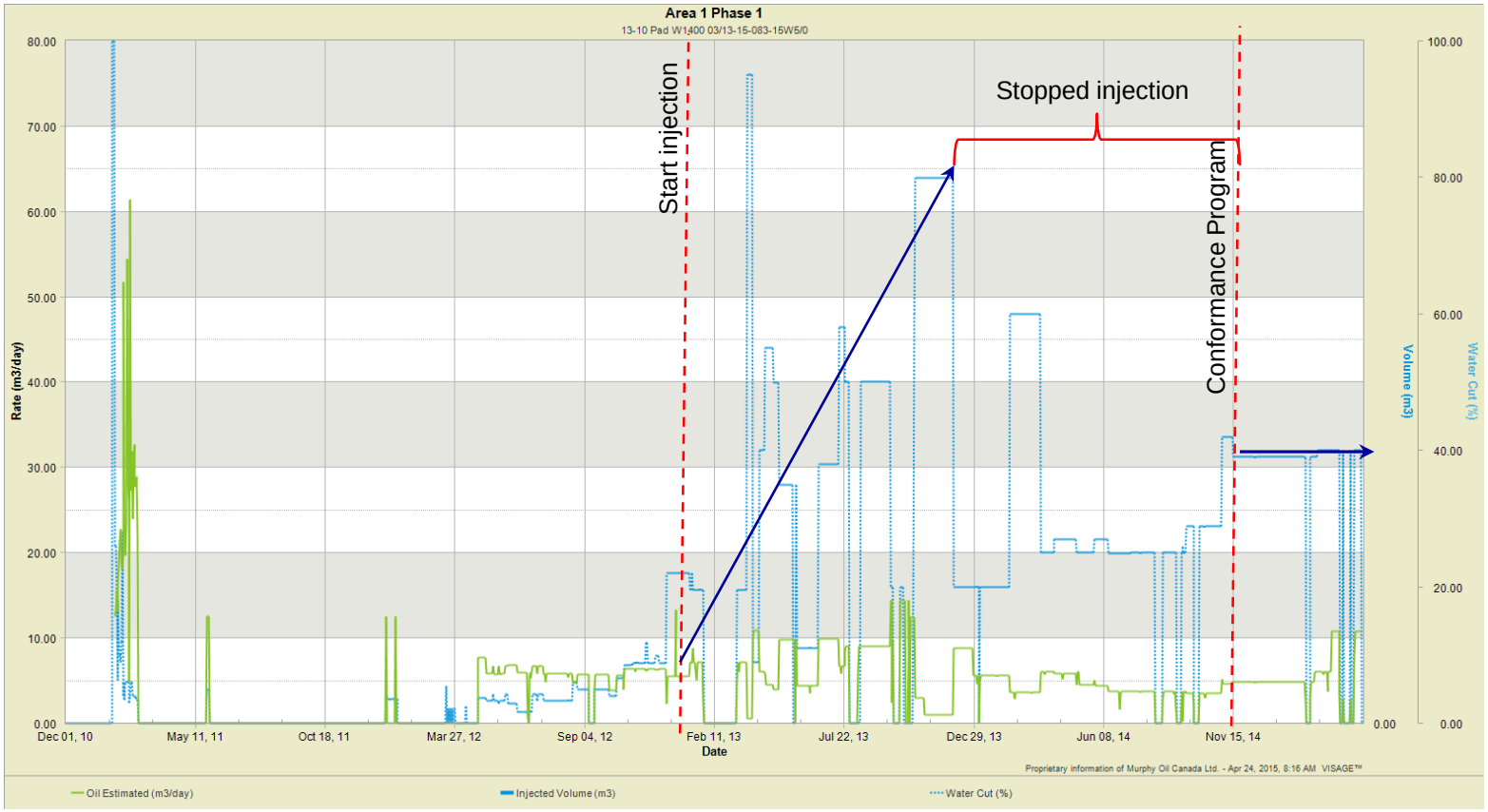
- Positive results from 13-03 Pad: Low water cuts & increasing reservoir pressure
- Conducted a conformance treatment on 2 injectors on the 4-10 pad, no results yet
- No production response recorded

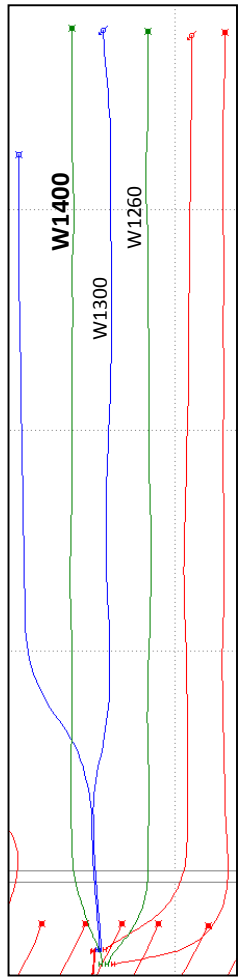
Performance – Conformance Treatment



- Pads with premature breakthrough:
  - 13-10 Pad – completed on 1 injector and 2 offsetting producers
  - 4-10 Pad – completed on 2 injectors and 3 offsetting producers
- For now we just have results from the 13-10 Pad

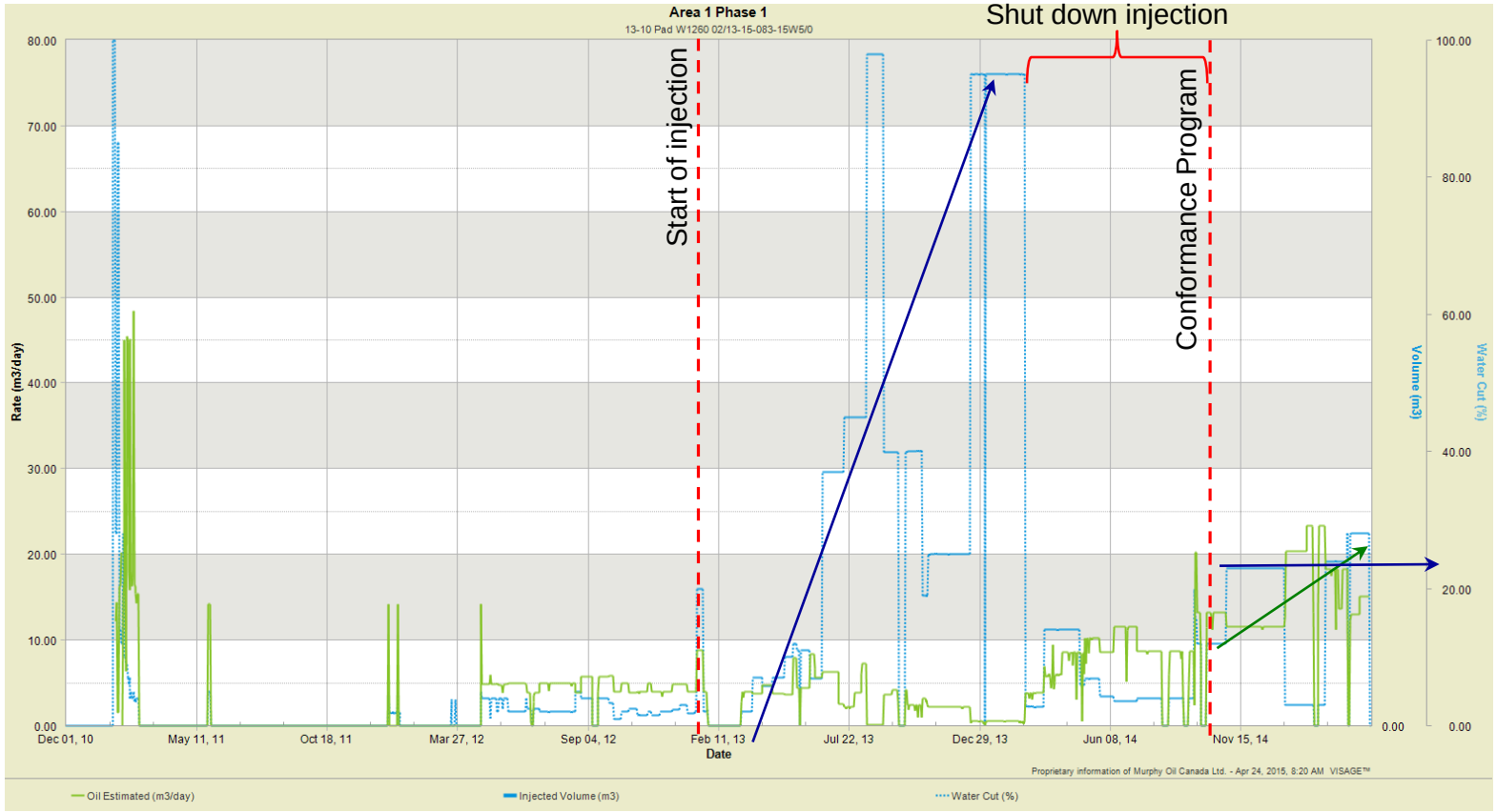
Performance – Conformance Treatment

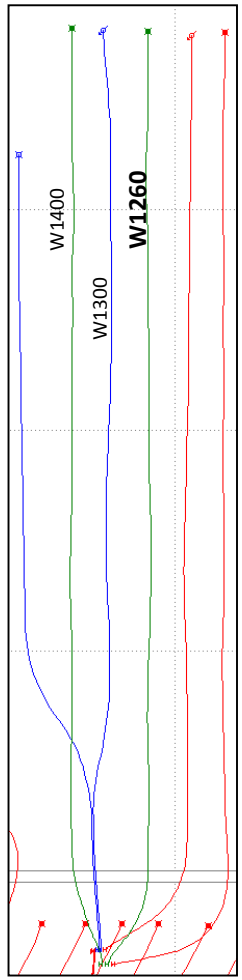




- Breakthrough was recorded shortly after the start of polymer injection
- Stopped injection to lower water cuts and to evaluate the problem
- Preformed a conformance program in November of 2014
- Results show a reduction of water cuts by 50%
- Still no uplift in production, almost at fill-up

Performance – Conformance Treatment





- Breakthrough was recorded shortly after the start of polymer injection
- Stopped injection to lower water cuts and to evaluate the problem
- Preformed a conformance program in November of 2014
- Water cuts have been reduced by 75%
- Production has increased by **2X**

Performance – Polymer Flood

- Pilot has best production results within the project
- Phase 1 is starting to show response
- Phase 2 has mixed results
- Maintaining reservoir voidage within the project area
  - Volume of injected polymer to date 322.6 E3m3
- Expected incremental recovery factor after polymer flood 8.8%
- Produced solution gas from the pilot & expansion is captured and tied in to 4-33 battery.

Performance – Key Learning's

- Injectivity is a non-issue with wells on vacuum at the start of injection
- Higher injection pressures yield better production
- Start injection before or soon after infill producers are drilled
- Conformance treatments can offer potential mitigation to early breakthrough, this will be key in already depleted zones such as Area 1 Phase 3

- Background
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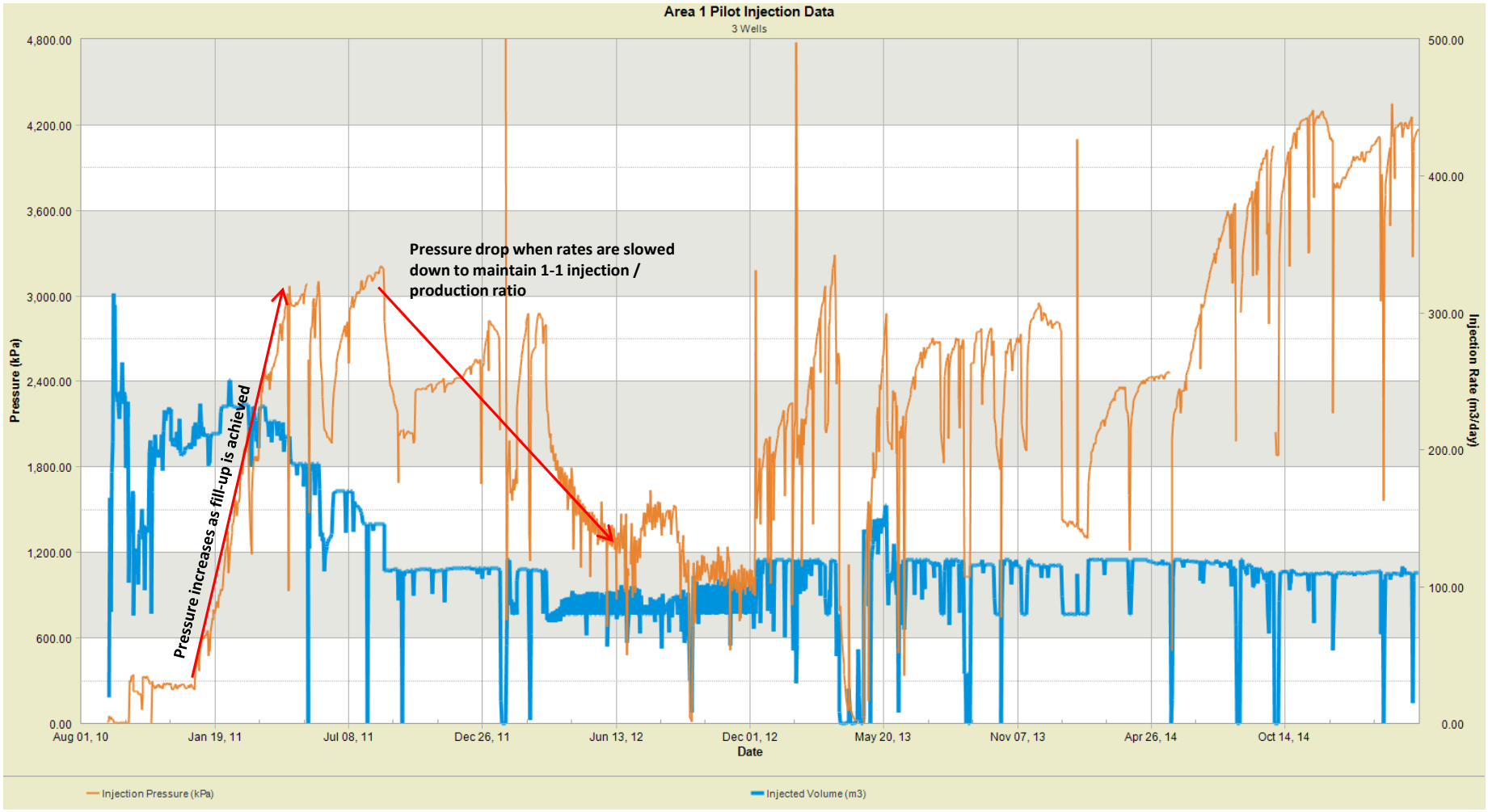
- Flood Performance
- **Injection Pressures**
- Future Plans

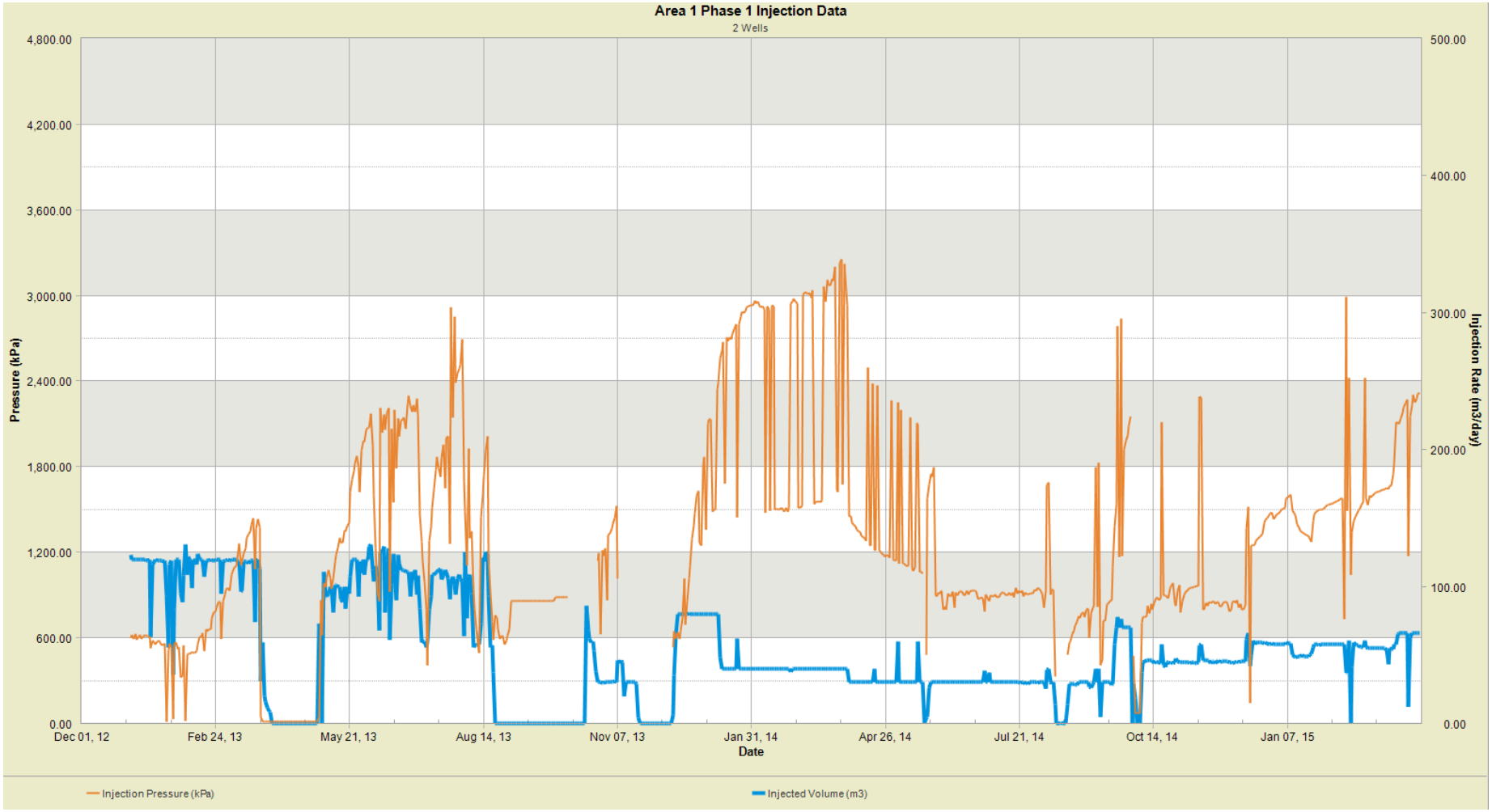
Injection Pressures

- Polymer Injection Approval Pressure (Approval # 11320C)
  - MAWHIP 4,900 kPa
  - MABHIP 11,500 kPa
- Monitoring Injection Pressure
  - Surface pressure recorded daily and monitored to ensure MAWHIP is not exceeded

Injection Pressure - Pilot

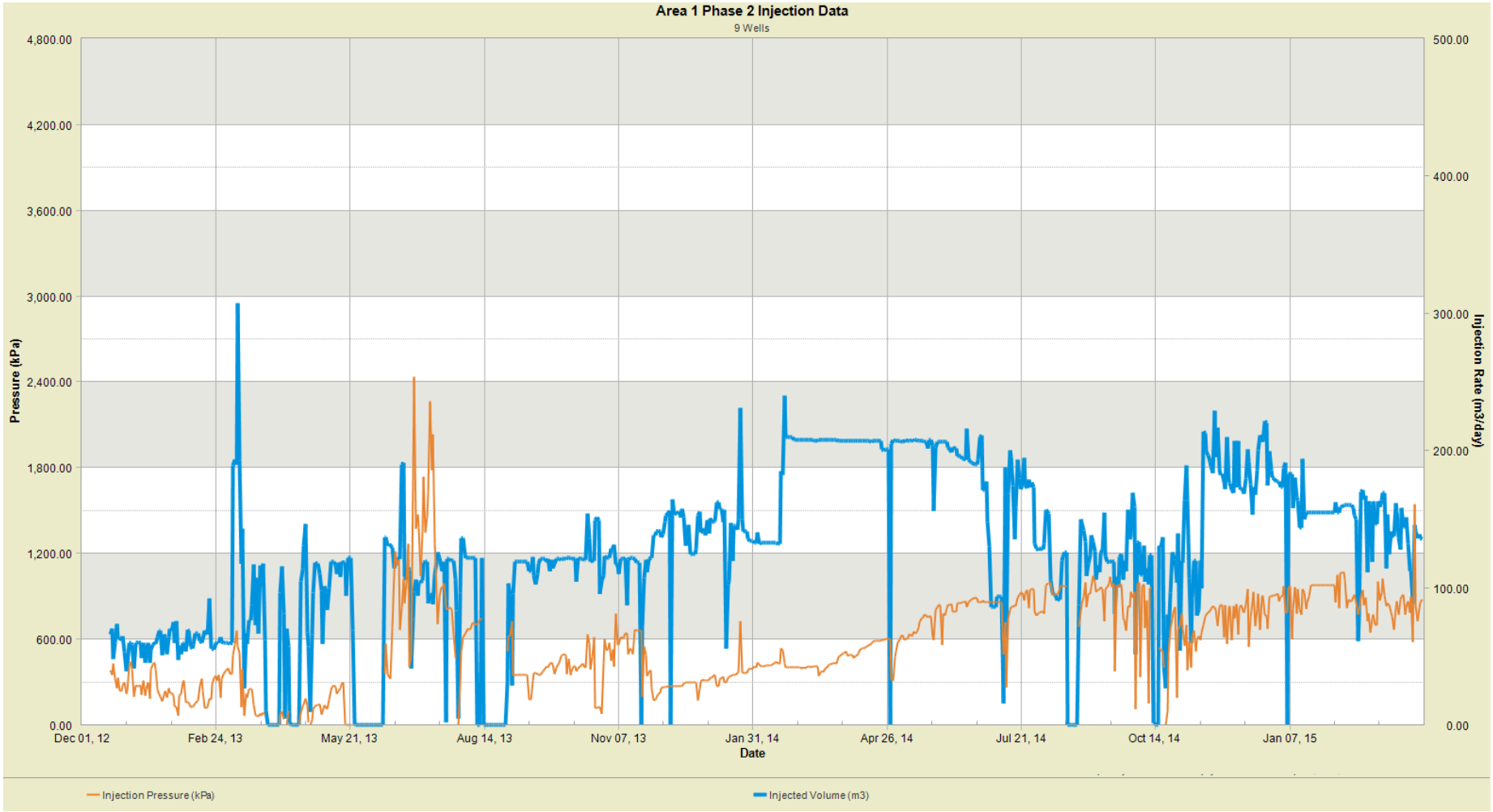


Injection Pressure – Phase 1



- **Injection pressures continue to rise while maintaining water cuts**

Injection Pressure – Phase 2



- **Mixed results with build up occurring on the 13-03 pad and conformance issues on the 4-10 pad**

- Background
- Geology
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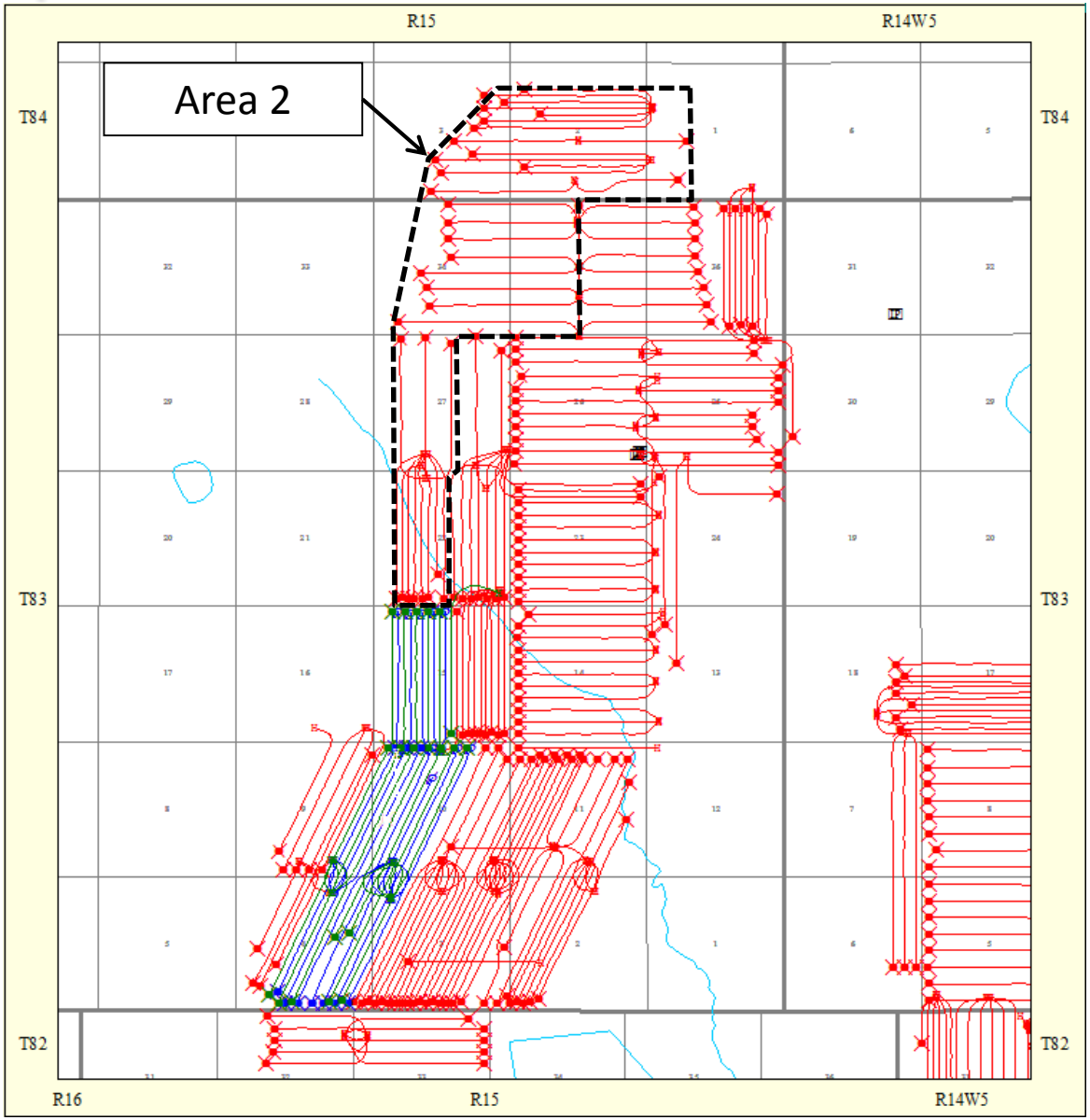
- Flood Performance
- Injection Pressures
- **Future Plans**

Future - Expansion Plans

- Murphy has commissioned 2 of 3 Phases of the commercial Area 1 expansion.
  - Phase 3 injection is currently on hold
- Murphy has plans within the 2016 budget to implement AREA 2

Future Plans- Expansion



- Located in Central Seal just North of existing pilot and expansion.
- Similar reservoir characteristics and viscosities

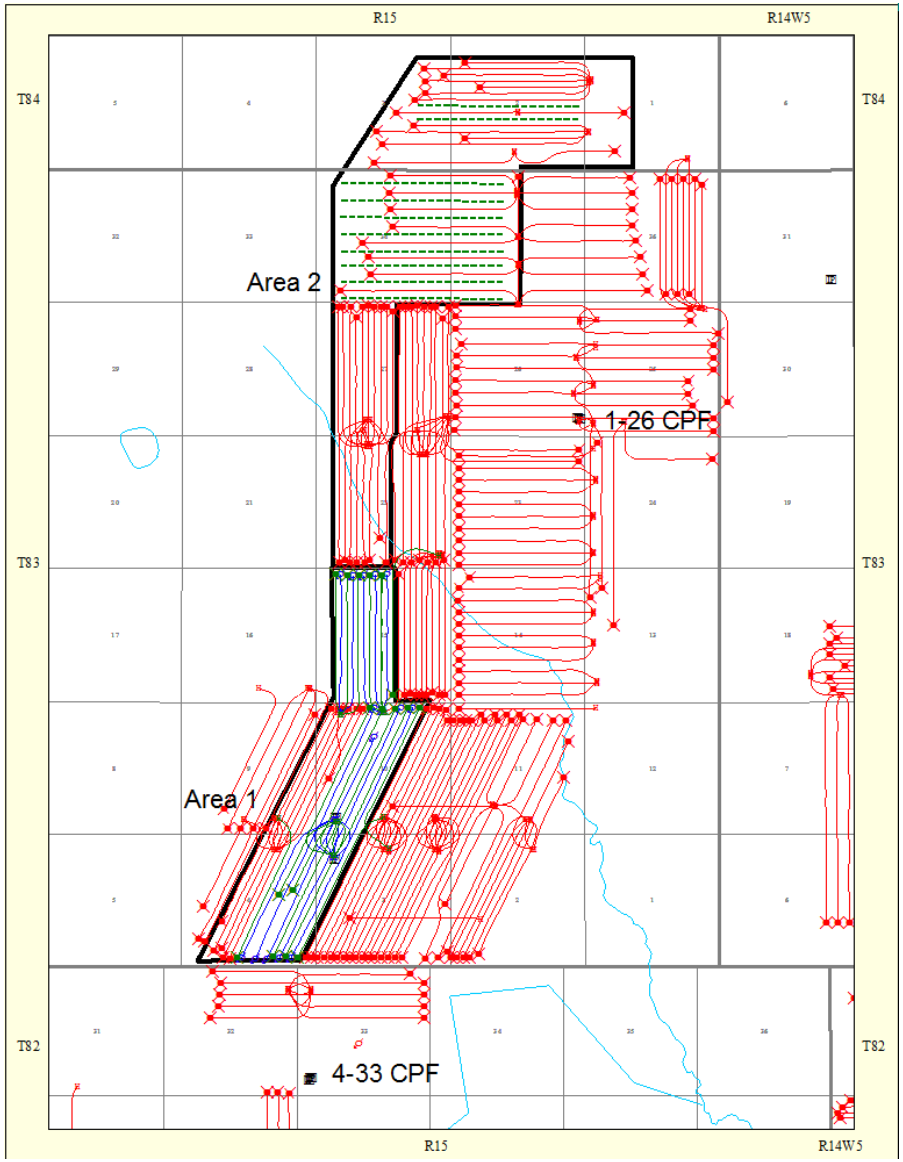
Agenda

- Subsurface
- **Surface**

- Facilities
- Non-Saline Water Use and Conservation
- Regulatory
- Conclusion

- **Facilities**
- Non-Saline Water Use and Conservation
- Regulatory
- Conclusion

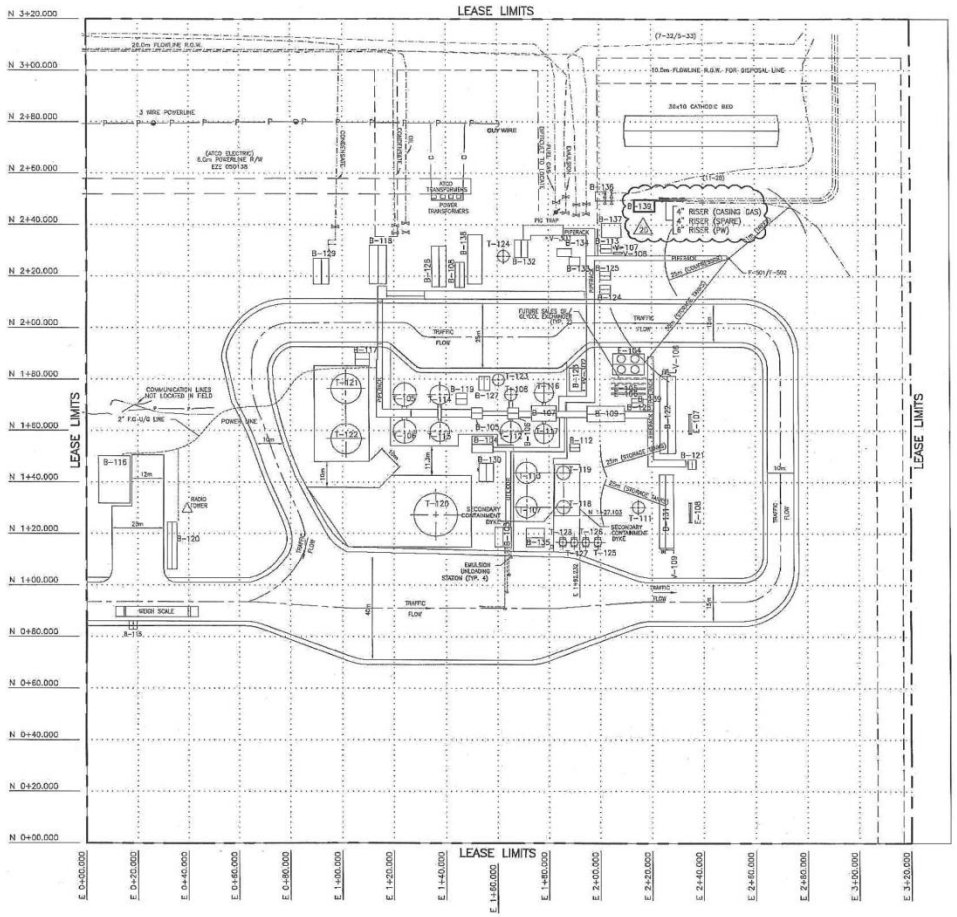
Facilities - Battery Locations



- Located in Central Seal
- All producing wells from the polymer pilot and Area 1 are flowlined to the 4-33 CPF
- All future Area 2 production will be processed at the 1-26 CPF
- All source water treatment facilities are equipped to remove iron, oxygen and bacteria from the water before hydration occurs

ABIF	ABBT	ABCT	Description
0111879	0121572	N/A	14-10 Polymer Injeciton Facility
0129026	0129029	N/A	13-03 Polymer Injection Facility
N/A	0129032	N/A	
N/A	0094150	N/A	Flow line of 4-33 CPF
N/A	N/A	0133398	4-33 CPF
0080049	N/A	N/A	10-04 SWD
0088019	N/A	N/A	11-28 SWD
0107239	N/A	0133398	6-33 SWD

Facilities – 4-33 Plot Plan



TANKS (COORDINATES TAKEN FROM CENTER)

T-105	SALES OIL TANK (480 cu.m/3000 BBL)	9144mm# x 7315mm H.	N 1+74.033	E 1+24.192
T-106	SALES OIL TANK (480 cu.m/3000 BBL)	9144mm# x 7315mm H.	N 1+59.638	E 1+24.192
T-107	CHARGE TANK (420 cu.m/2200 BBL)	8305mm# x 7315mm H.	N 1+30.447	E 1+71.300
T-108	DESAND TANK (110 cu.m/690 BBL)	4648mm# x 7315mm H.	N 1+74.035	E 1+65.192
T-111	POP TANK (40 cu.m/250 BBL)	4648mm# x 2438mm H.	N 1+30.326	E 2+14.890
T-112	DIVERT TANK (420 cu.m/2500 BBL)	8305mm# x 7315mm H.	N 1+59.635	E 1+65.192
T-113	CHARGE TANK (400 cu.m/2500 BBL)	8305mm# x 7315mm H.	N 1+43.753	E 1+71.300
T-114	CONDENSATE TANK (320 cu.m/2000 BBL)	7468mm# x 7315mm H.	N 1+74.035	E 1+37.892
T-115	CONDENSATE TANK (320 cu.m/2000 BBL)	7468mm# x 7315mm H.	N 1+59.635	E 1+37.892
T-116	SKIM TANK (320 cu.m/2000 BBL)	7468mm# x 7315mm H.	N 1+74.735	E 1+78.192
T-117	CLEAR WATER TANK (320 cu.m/2000 BBL)	7468mm# x 7315mm H.	N 1+58.935	E 1+78.192
T-118	CHARGE TANK (159 cu.m/1000 BBL)	5258mm# x 7315mm H.	N 1+30.447	E 1+85.757
T-119	CHARGE TANK (159 cu.m/1000 BBL)	5258mm# x 7315mm H.	N 1+43.753	E 1+85.757
T-120	CHARGE TANK (1590 cu.m/10000 BBL)	16764mm# x 7315mm H.	N 1+27.422	E 1+36.151
T-121	SALES OIL TANK (795 cu.m/5000 BBL)	11735mm# x 7315mm H.	N 1+76.340	E 1+01.270
T-122	SALES OIL TANK (795 cu.m/5000 BBL)	11735mm# x 7315mm H.	N 1+56.859	E 1+01.270
T-123	DESAND TANK (160 cu.m/1000 BBL)	4648mm# x 9758mm H.	N 1+79.803	E 1+60.408
T-124	POP TANK (16 cu.m/100 BBL)	2896mm# x 2438mm H.	N 2+27.859	E 1+62.463
T-125	ACID TANK (16 cu.m/100 BBL)	2900mm# x 2430mm H.	N 1+16.767	E 1+99.081
T-126	ACID TANK (16 cu.m/100 BBL)	2900mm# x 2430mm H.	N 1+16.767	E 1+94.531
T-127	DEMULSIFIER TANK (16 cu.m/100 BBL)	2900mm# x 2430mm H.	N 1+16.767	E 1+89.981
T-128	DEMULSIFIER TANK (16 cu.m/100 BBL)	2900mm# x 2430mm H.	N 1+16.767	E 1+85.431

BUILDINGS (COORDINATES TAKEN FROM SOUTHEAST CORNER)

B-103	TRANSFER PUMP BUILDING	7890mm x 6430mm	N 1+14.913	E 1+85.338
B-104	CHARGE PUMP BUILDING	8235mm x 6395mm	N 1+51.482	E 1+58.278
B-105	RECYCLE BUILDING	4250mm x 4200mm	N 1+64.735	E 1+54.242
B-106	DIVERT/DESAND RETURN BUILDING	4250mm x 4200mm	N 1+64.735	E 1+68.242
B-107	WATERPLANT BUILDING	9750mm x 8100mm	N 1+63.785	E 1+83.067
B-108	MCC BUILDING	3656mm x 9754mm	N 2+15.563	E 1+47.405
B-109	HEADER BUILDING	1440mm x 6060mm	N 2+09.592	E 1+63.635
B-112	ELECTRICAL BUILDING	3765mm x 2390mm		
B-113	VRU BUILDING	4264mm x 3410mm	N 2+29.135	E 2+04.835
B-115	SCALE BUILDING	1828mm x 1839mm	N 0+83.856	E 0+17.644
B-116	SHOP/WAREHOUSE BUILDING	12192mm x 18288mm	N 1+31.845	E 0+16.790
B-117	SALES OIL BOOSTER PUMP BUILDING	5250mm x 5000mm	N 1+85.206	E 1+10.220
B-118	LACT UNIT BUILDING	6400mm x 15200mm	N 2+16.974	E 1+16.830
B-119	CONDENSATE BUILDING	4100mm x 4300mm	N 1+70.454	E 1+48.275
B-120	OFFICE BUILDING	3658mm x 18288mm	N 1+06.137	E 0+33.213
B-121	CUT SHACK BUILDING	3050mm x 3700mm	N 1+45.089	E 2+37.841
B-122	TREATER BUILDING	8115mm x 29883mm	N 1+55.319	E 2+29.262
B-123	VAPOUR RECOVERY COMPRESSOR BUILDING	2896mm x 5486mm	N 1+75.333	E 1+92.993
B-124	SALES GAS COMPRESSOR BUILDING	5540mm x 7620mm	N 2+13.80	E 2+09.521
B-125	SALES GAS DEHYDRATOR BUILDING	2440mm x 3658mm	N 2+21.375	E 2+05.448
B-126	MCC BUILDING	15800mm x 6600mm	N 2+15.755	E 1+40.228
B-127	CLEAN OIL UNLOAD BUILDING	3200mm x 4200mm	N 1+78.403	E 1+56.584
B-128	GYLCOL PUMP BUILDING	4950mm x 4700mm	N 1+70.825	E 2+15.855
B-129	CONDENSATE INJECTION PUMP BUILDING	5800mm x 10000mm	N 2+16.974	E 0+94.820
B-130	TREATER CHARGE BUILDING	7150mm x 5800mm	N 1+40.243	E 1+38.443
B-131	TREATER BUILDING	5487mm x 28448mm	N 1+14.552	E 2+28.343
B-132	VORTEX SEPARATOR BUILDING	5100mm x 8850mm	N 2+27.385	E 1+71.882
B-133	FUEL GAS COMPRESSOR BUILDING	2540mm x 4877mm	N 2+20.350	E 1+92.502
B-134	FUEL GAS DEHYDRATOR BUILDING	2895mm x 5792mm	N 2+27.831	E 1+89.236
B-135	CHEMICAL INJECTION SKID BUILDING	2896mm x 5792mm	N 1+14.997	E 1+78.224
B-136	WATER METERING SKID	3658mm x 3658mm	N 2+49.305	E 2+02.357
B-137	COMPRESSOR BUILDING	5486mm x 7315mm	N 2+35.255	E 2+08.293
B-138	MCC BUILDING	5500mm x 12203mm	N 2+20.453	E 1+54.070
20 B-139	PRODUCED WATER TRANSFER PUMPS BLDG.	7925mm x 4572mm	N 2+49.753	E. 2+13.355

MISC.

E-104	GLYCOL AERIAL COOLER	11964mm x 8125mm		
E-105	SALES OIL/GLYCOL HEAT EXCHANGER	13010mm x 559mm O.D.		
E-106	SALES OIL/GLYCOL HEAT EXCHANGER	13010mm x 559mm O.D.		
E-107	PROD. EMULSION/SALES OIL HEAT EXCHANGER	7899mm x 991mm O.D.	N 1+82.642	E 2+34.882
E-108	PROD. EMULSION/SALES OIL HEAT EXCHANGER	7890mm x 965mm O.D.	N 1+28.254	E 2+34.882
F-501/ F-502	DUAL FLARE STACK	88.9mm#/273.1mm# x 12192mm H.	N 2+27.306	E 2+50.285

VESSELS

V-106	TREATER	4267mm# x 24384mm s/s		
V-107	L.P. KNOCK-OUT DRUM	1219mm# x 2440mm s/s		
V-108	H.P. KNOCK-OUT DRUM	1219mm# x 2440mm s/s		
V-109	TREATER	3658mm# x 24384mm s/s	N 1+14.552	E 2+28.343
V-301	CASING GAS SLUG CATCHER	610mm# x 2286mm s/s	N 2+35.043	E 1+78.445
V-302	VAPOUR RECOVERY KNOCK OUT DRUM	1256mm# x 3517mm LG.		

DWG. NO.	REFERENCE DRAWINGS	NO	DESCRIPTION	BY	CKD	APPR	DATE
		14	CHEMICAL INJECTION SKID ADDITION (I.F.C. #07-067)	FG	PAG	BAR	2007/08/07
		20	LOCATE PUMP BUILDING/IFC – PHASE 2	SC	BM	BR	2013/03/18
		19	ADDED B-137, B-138 & 12-21 RISERS (I.F.C. #10-0264)	FG	BAR	BR	2011/07/21
		18	ADDED B-136 – (I.F.C. #09-001)	FG		BAR	2009/04/06
		17	6-33 DISPOSAL WELL ADDITION – (I.F.C. #09-0001)	FG			2009/02/18
		16	AS-BUILT	CRM		BAR	23DB/09/29
		15	AS-BUILT PLOT PLAN – ISSUED FOR INFORMATION	FG			23DB/08/19

PROFESSIONAL ENGINEER ALBERTA DALE LEMON

Rev 20 only

2013-03-19

PERMIT TO PRACTICE
VISTA PROJECTS LIMITED
APEGGA PERMIT No. P 04559
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROJECT NO.:	1841
DRAWN BY:	DRE
DATE:	2004/04/14
SCALE:	1:800
DESIGNED BY:	
CHECKED BY:	
APPROVED BY:	
DRAWING NO:	04-33-082-15W5-A-001
REV:	20

Vista Projects Limited

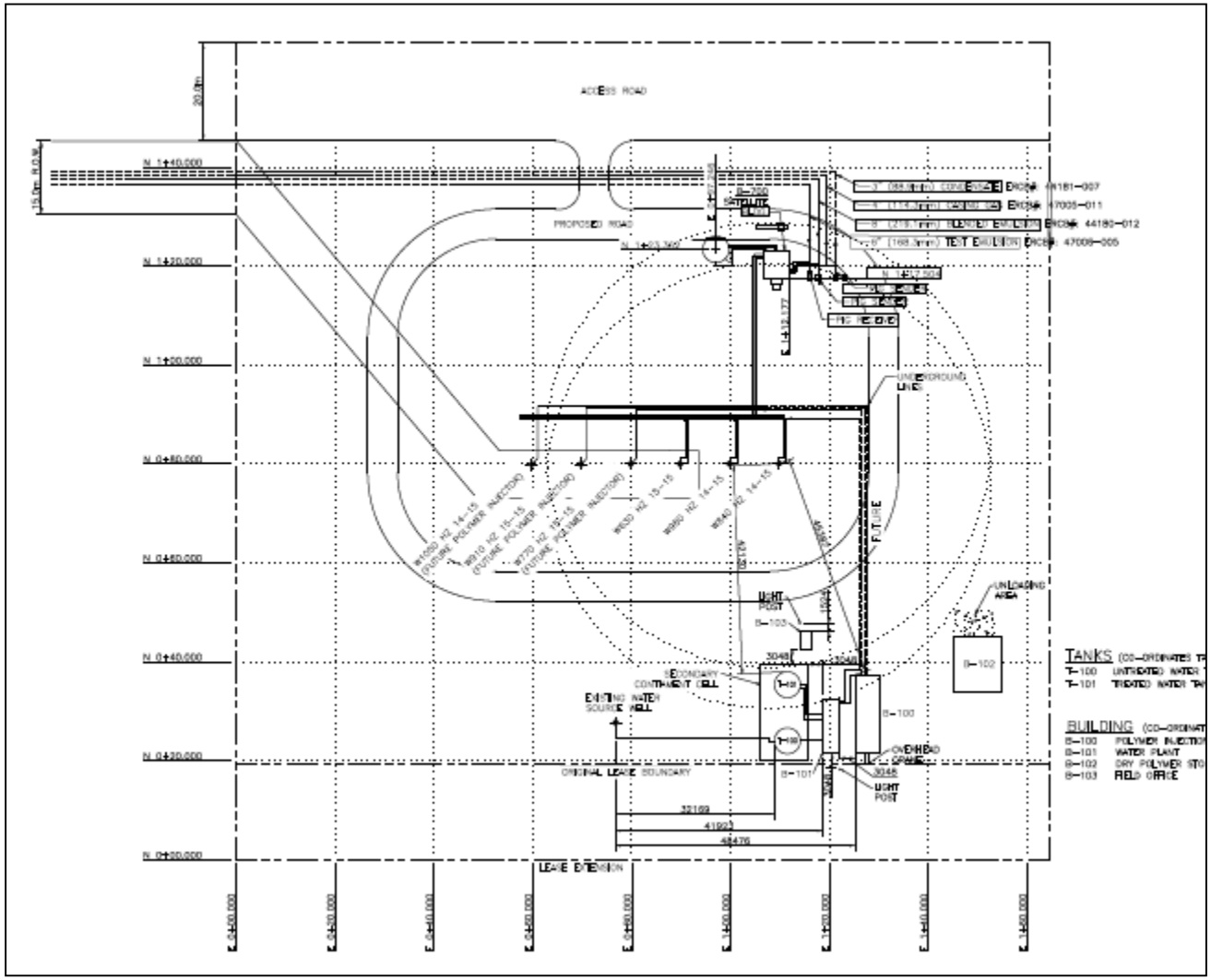
MURPHY OIL COMPANY LTD.
SEAL LAKE BATTERY
PLOT PLAN

L.S.D.: 4-33-82-15 W5M

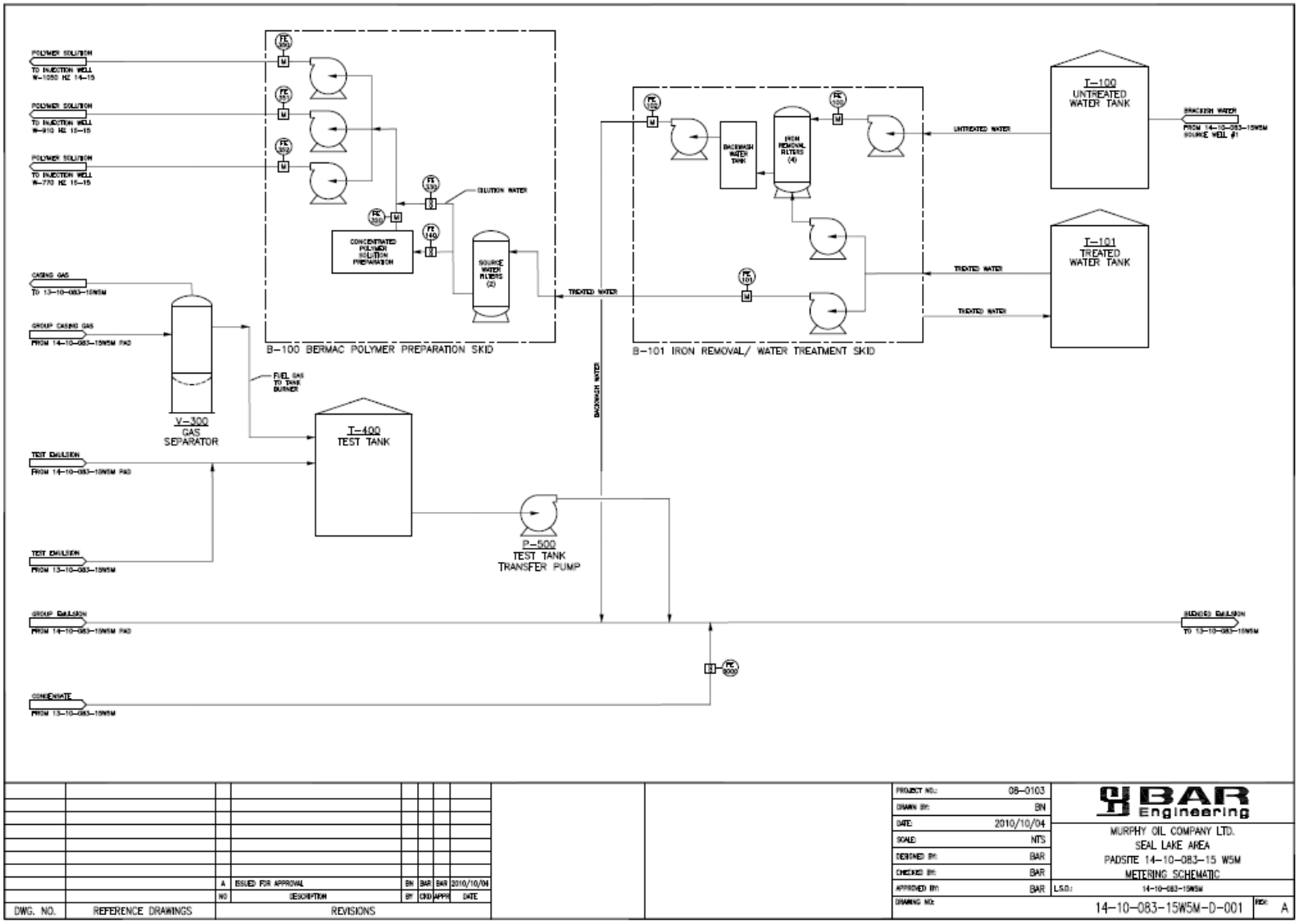
3370-A-101

2013-Feb-04 6:21:44 PM

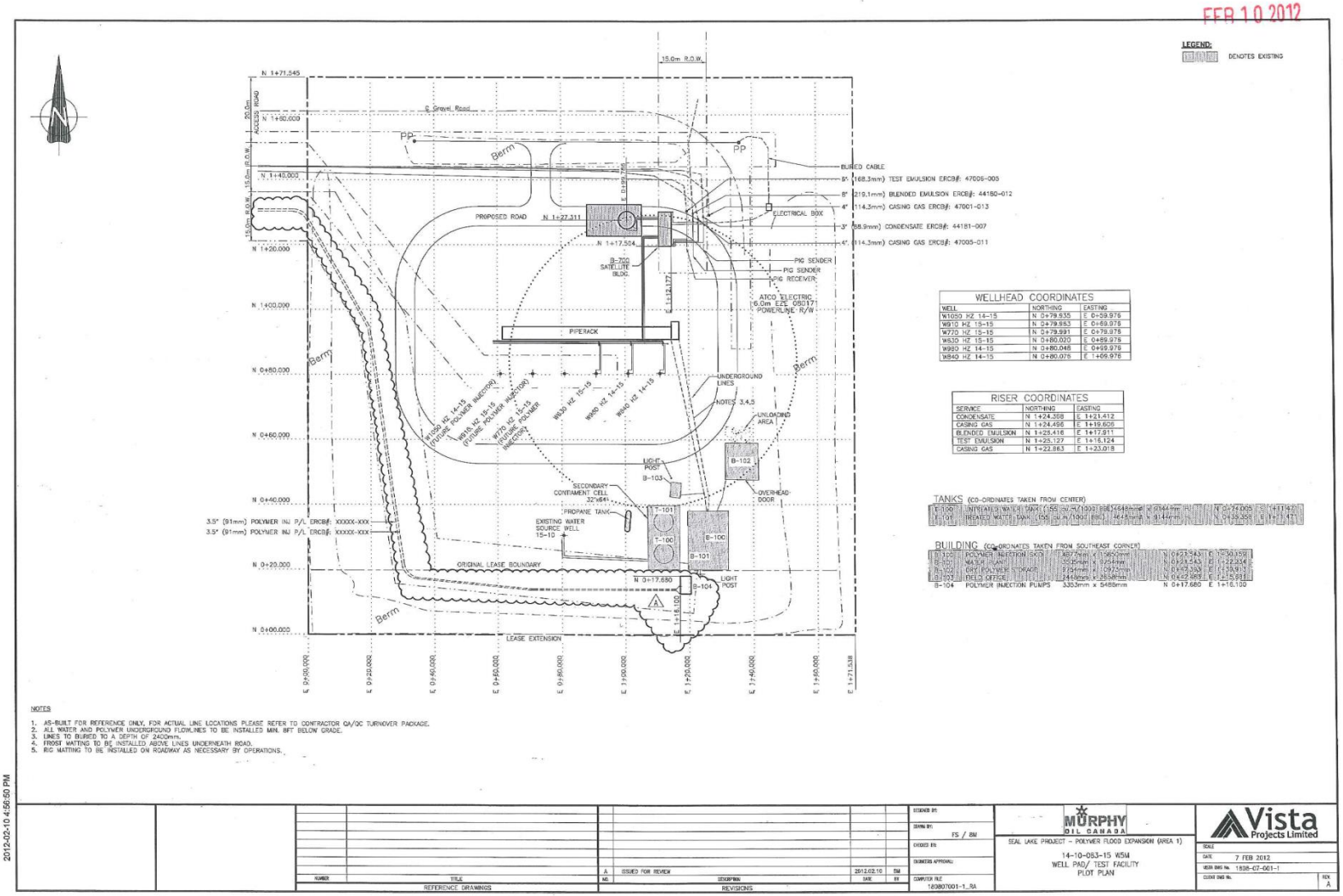
Pilot – 14-10 Plot Plan



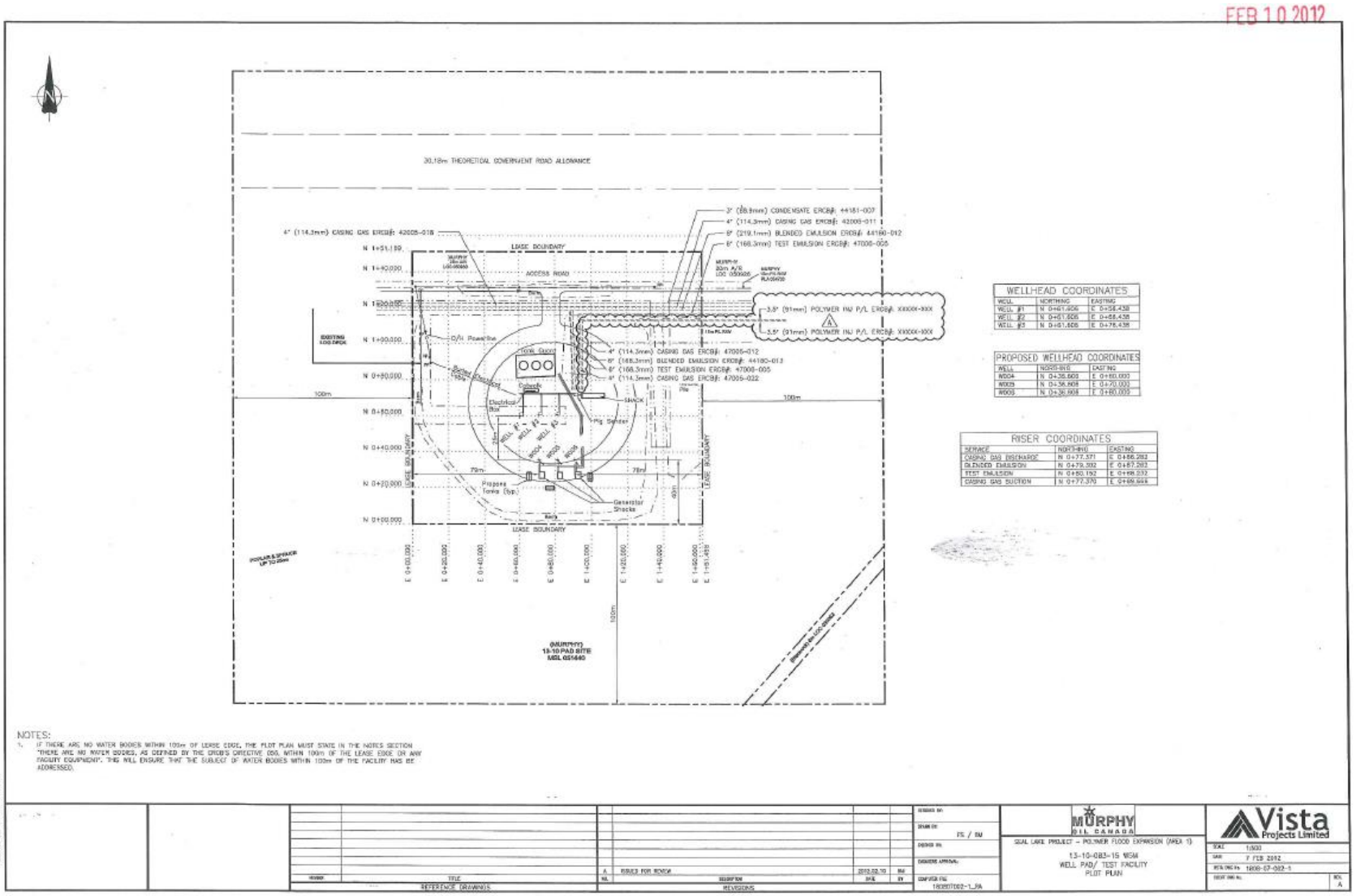
Pilot – Polymer PFD



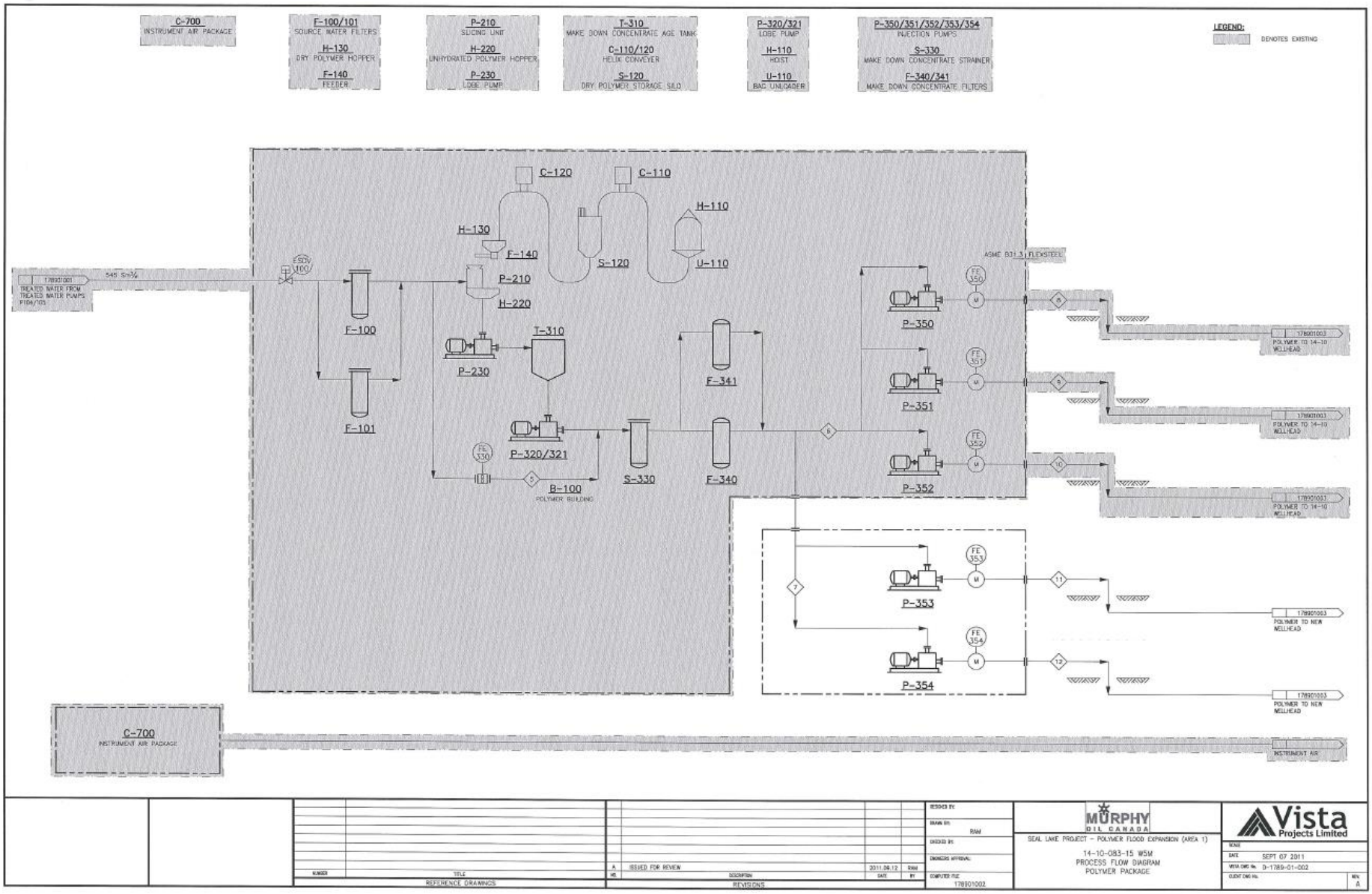
Area 1 Phase 1 – 14-10 Plot Plan



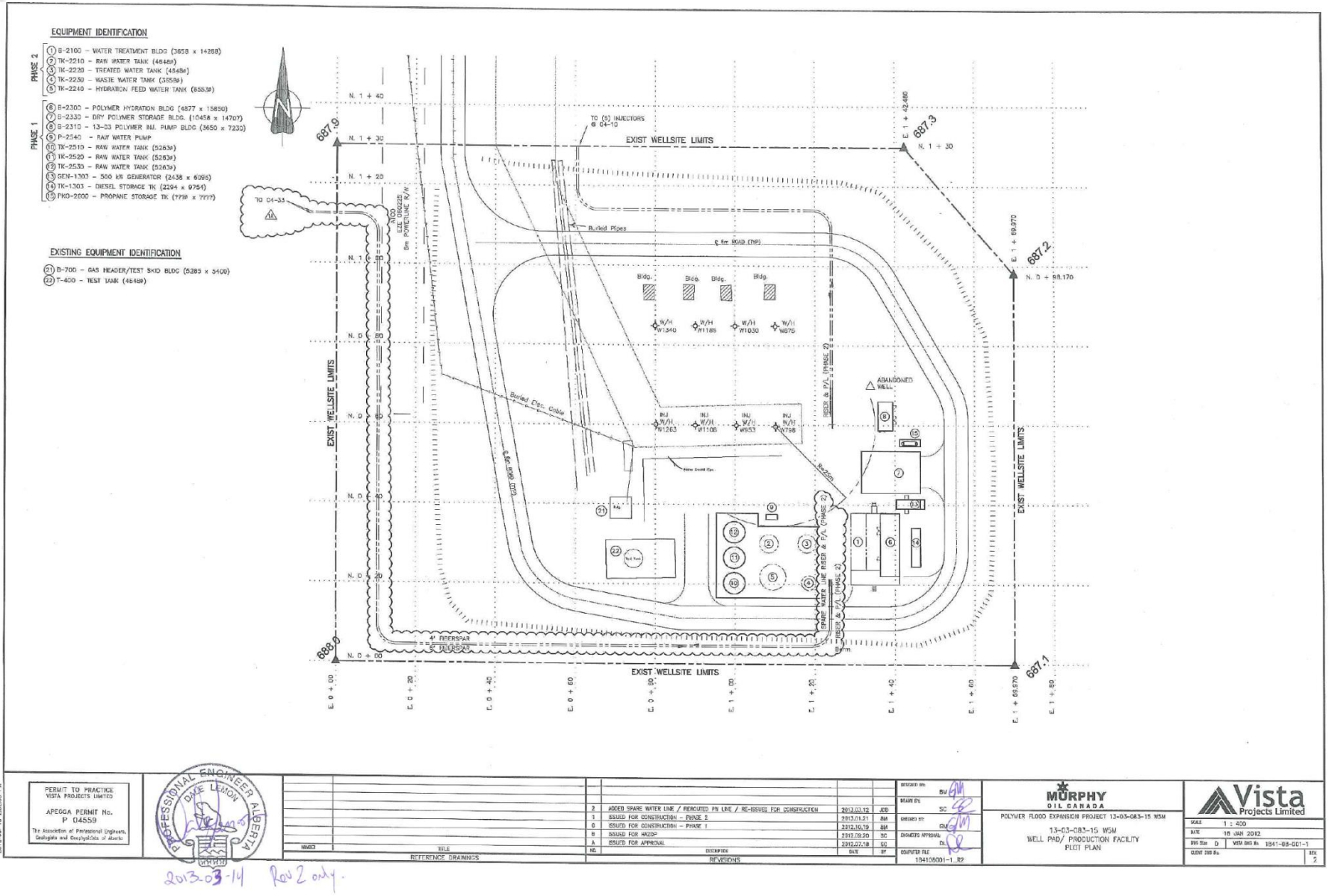
Area 1 Phase 1 – 13-10 Plot Plan



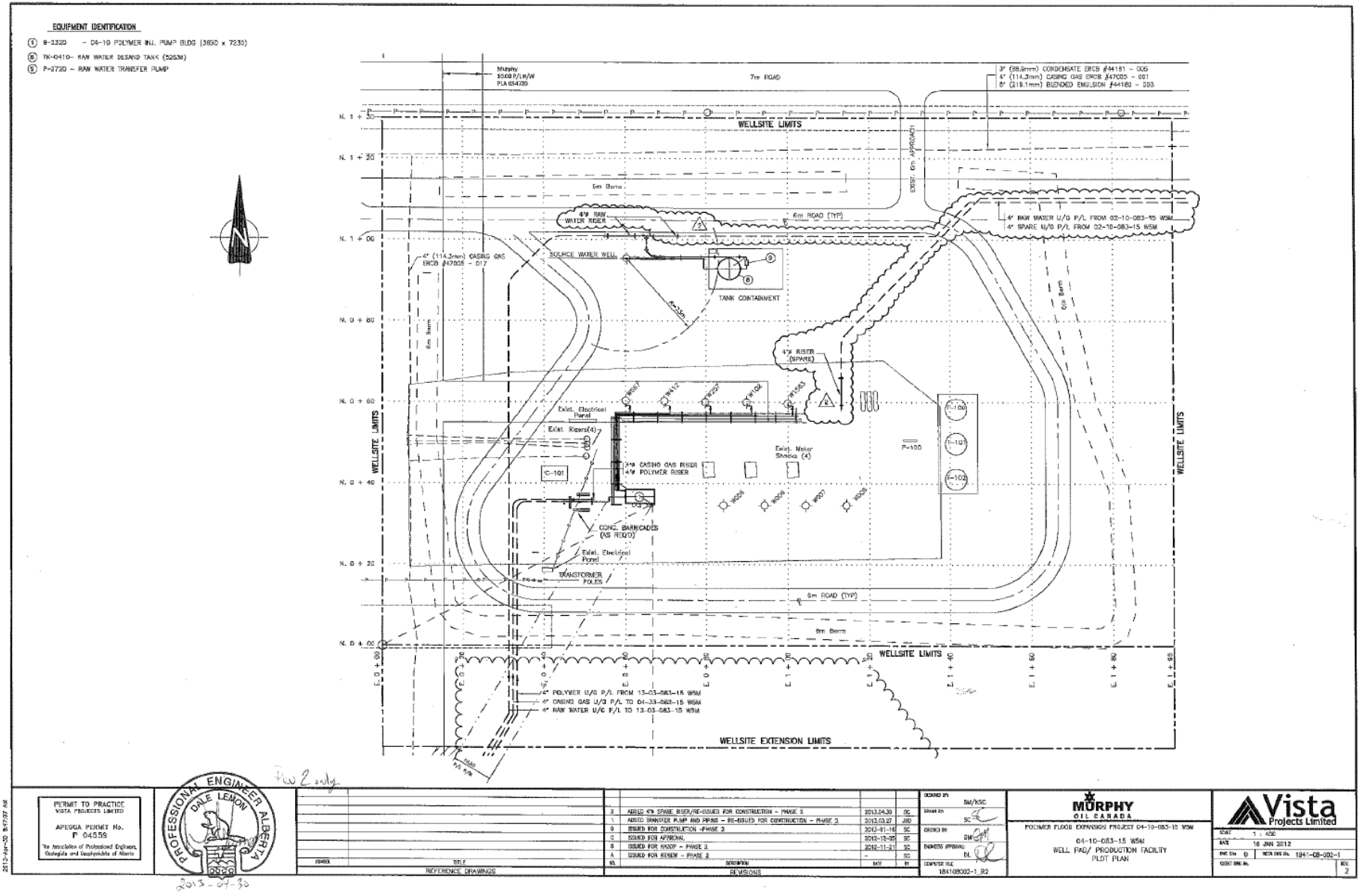
Area 1 Phase 1 – 14-10 PFD



Area 1 Phase 2 – 13-3 Plot Plan



Area 1 Phase 2 – 4-10 Plot Plan



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VISTA PROJECTS LIMITED
APEGGA PERMIT No.
P 04559
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROFESSIONAL ENGINEER ALBERTA
DALE LEMON
2013-07-30

Rev 2 only.

ISSUED	REFERENCE DRAWINGS

NO.	DESCRIPTION	MAY	BY
2	ADDED 4"ø SPARE RISER/RE-ISSUED FOR CONSTRUCTION – PHASE 2	2013.04.30	SC
1	ADDED TRANSFER PUMP AND PIPING – RE-ISSUED FOR CONSTRUCTION – PHASE 2	2013.03.27	JBD
0	ISSUED FOR CONSTRUCTION –PHASE 2	2012-11-16	SC
C	ISSUED FOR APPROVAL	2012-10-05	SC
B	ISSUED FOR HAZOP – PHASE 2	2012-11-21	SC
A	ISSUED FOR REVIEW – PHASE 2	–	SC

REVISIONS

DESIGNED BY	BM/KSC
DRAWN BY	SC
CHECKED BY	BM
ENGINEER APPROVAL	DL
COMPUTER FILE	1841080002-1_R2

MURPHY OIL CANADA

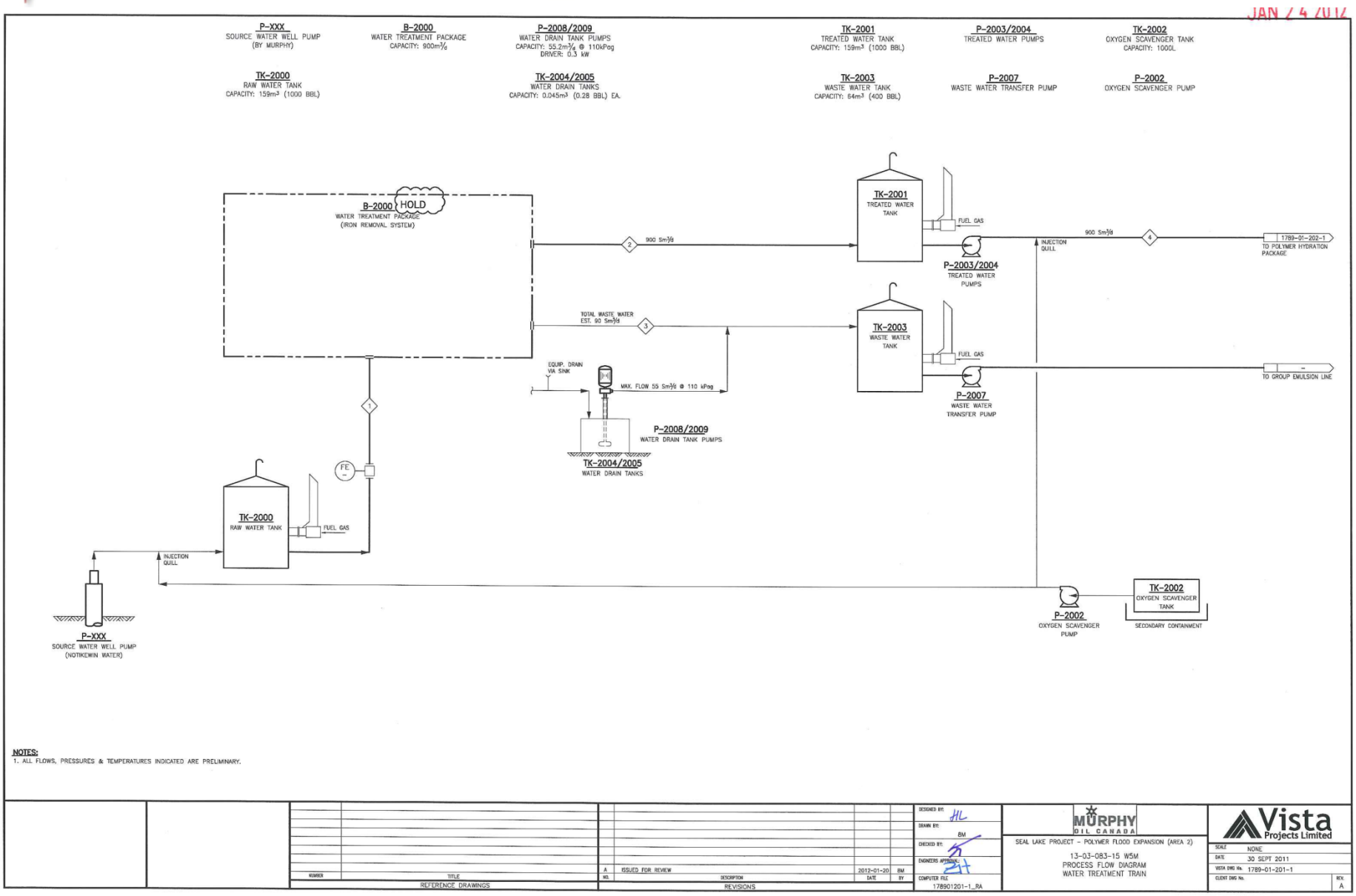
POLYMER FLOOD EXPANSION PROJECT 04-10-083-15 W5M

04-10-083-15 W5M
WELL PAD/ PRODUCTION FACILITY
PLOT PLAN

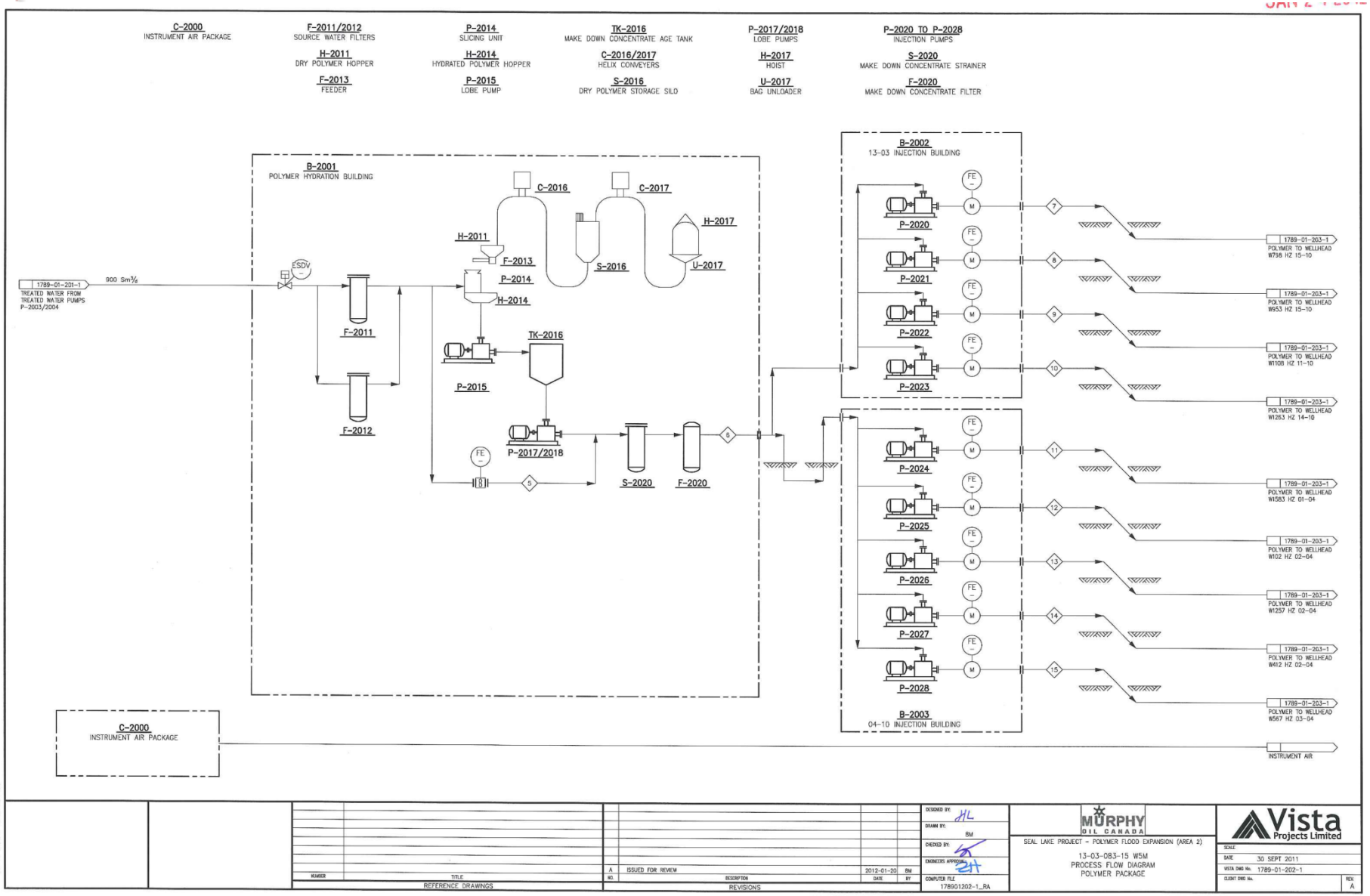
Vista Projects Limited

SCALE	1 : 400
DATE	16 JAN 2012
DWG No.	1841-08-002-1
CLIENT DWG No.	REV. 2

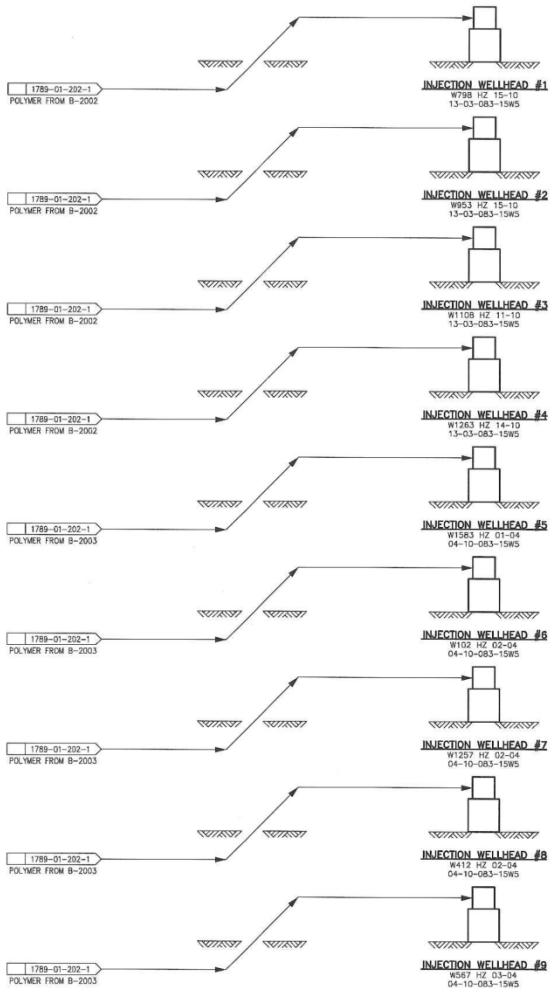
Area 1 Phase 2 - PFD



Area 1 Phase 2 - PFD



Area 1 Phase 2 - PFD



2012-01-24 2:59:22 PM

NUMBER | TITLE
REFERENCE DRAWINGS

NO. | DESCRIPTION | DATE | BY
A | ISSUED FOR REVIEW | 2012-01-20 | BM
REVISIONS

DESIGNED BY: HL
DRAWN BY: BM
CHECKED BY:
ENGINEERS APPROVAL:
COMPUTER FILE: 178901203-1_RA

MURPHY OIL CANADA

SEAL LAKE PROJECT – POLYMER FLOOD EXPANSION (AREA 2)

13-083-15 W5M
PROCESS FLOW DIAGRAM
WELLHEAD PADS

Vista Projects Limited

SCALE:
DATE 30 SEPT 2011
VISTA DWG No. 1789-01-203-1
CLIENT DWG No.
REV. A

- Facilities
- **Non-Saline Water Use and Conservation**
- Regulatory
- Conclusion

Water Usage - Paddy Formation

- **UWI: 1F1/14-10-083-15W5/0**
  - Murphy currently has term license 00289082-00-00 with Alberta Environment for the diversion of up to 164,250 m^3 of Paddy water for injection with an expiry date of 2018-03-05
  - 3,750 TDS
  - Fe was not detected

- **UWI: 1F1/15-03-083-15W5/0**
  - No TDL necessary with TDS testing >4000 ppm
  - 5,383 TDS
  - Fe was not detected

Water Usage - Notikewan Formation

- UWI: 1F1/4-10-083-15W5
- TDL's are not needed for Notikewan wells with TDS >4000 ppm
  - 10,592 TDS
  - Fe was not detected

Water Usage – Planning and Operation

- Murphy is currently developing a water management program for the entire Seal field

Water Usage – Produced Volumes

- Produced volumes are reported from test tanks located at the well site (tested weekly)
- From the start of the polymer flood there has been a recorded 20,951 m^3 of water produced from the producing wells
- Water volumes are calculated through BS&W tests conducted simultaneously with the well test
- Produced water is currently being injected into disposal wells 102/06-33-082-15W5/0, 100/10-04-083-14W5/3 and 100/11-28-082-15W5/2
- There is no sulfur production from the 4-33 battery
- Murphy is currently not recycling produced water from emulsion as per regulatory approval
- The 1-26 Facility currently is outside the current operating polymer flood and is considered out of scope for this update

Water & Gas Usage – Volumes

	Polymer Injection Volumes (m3)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Fresh Water	5,371.30	5,645.00	6,516.70	6,251.00	6,327.30	5,999.90	5,928.30	4,010.20	5,019.30	4,237.50	4,602.40	4,962.50
	Saline Water	2,763.50	3,254.90	3,713.10	3,737.70	3,682.10	3,979.80	3,398.30	2,714.40	3,405.60	2,852.30	4,755.90	5,757.40
	Total	8,134.80	8,899.90	10,229.80	9,988.70	10,009.40	9,979.70	9,326.60	6,724.60	8,424.90	7,089.80	9,358.30	10,719.90

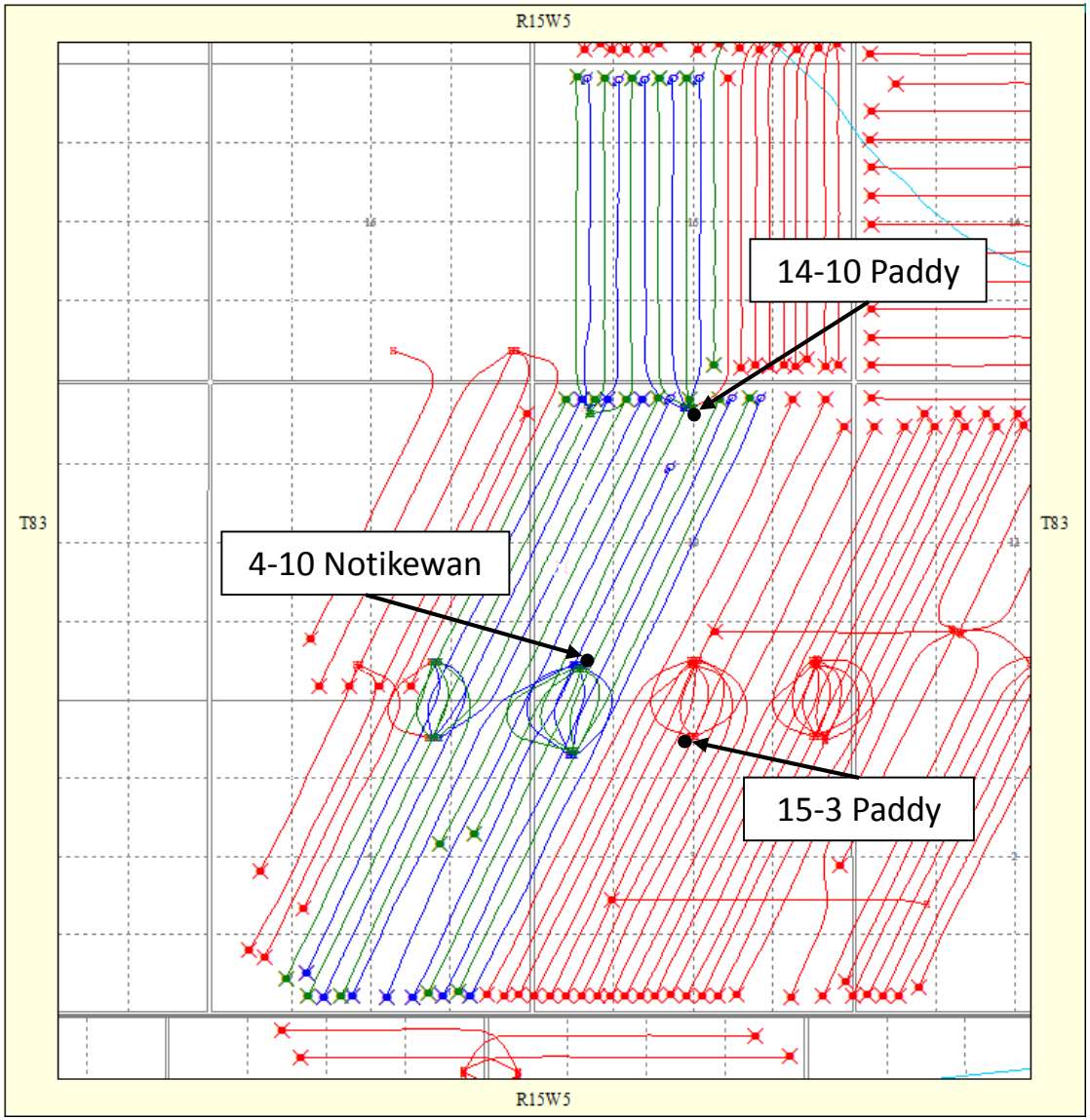
	4-33 Total Water Volumes (m3)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Produced Water (Area 1)	1,274.00	886.40	527.90	673.00	945.00	449.70	382.50	342.80	493.90	618.00	1,007.50	1,862.50
	Produced Water (Field)	14,278.00	13,140.00	12,721.00	11,827.00	17,210.00	11,569.00	11,525.00	9,618.00	11,800.00	12,653.00	16,181.00	16,540.00
	Fresh Water *injected	5,371.30	5,645.00	6,516.70	6,251.00	6,327.30	5,999.90	5,928.30	4,010.20	5,019.30	4,237.50	4,602.40	4,962.50
	Saline Water *injected	2,763.50	3,254.90	3,713.10	3,737.70	3,682.10	3,979.80	3,398.30	2,714.40	3,405.60	2,852.30	4,755.90	5,757.40
	Third Party Disposal (Field)	1,057.80	(58.60)	(118.10)	(1,701.80)	2,833.60	51.90	628.30	1,417.90	487.30	2,177.10	4,103.60	1,005.40
	Disposal Volumes (Field)	13,220.20	13,198.60	12,839.10	13,528.80	14,376.40	11,517.10	10,896.70	8,200.10	11,312.70	10,475.90	12,077.40	15,534.60
	Prorated Disposal Volumes (Area 1)	1,179.61	890.35	532.80	769.84	789.41	447.68	361.65	292.26	473.50	511.67	751.99	1,749.29

2014 Source Water (m3)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1F1/14-10-083-15W5/0	5,371.30	5,645.00	6,516.70	6,251.00	6,327.30	5,999.90	5,928.30	4,010.20	5,019.30	4,237.50	4,602.40	4,962.50
1F1/04-10-083-15W5/0	2,763.50	3,254.90	3,713.10	3,737.70	3,682.10	3,979.80	3,398.30	2,714.40	3,405.60	2,852.30	4,755.90	5,757.40

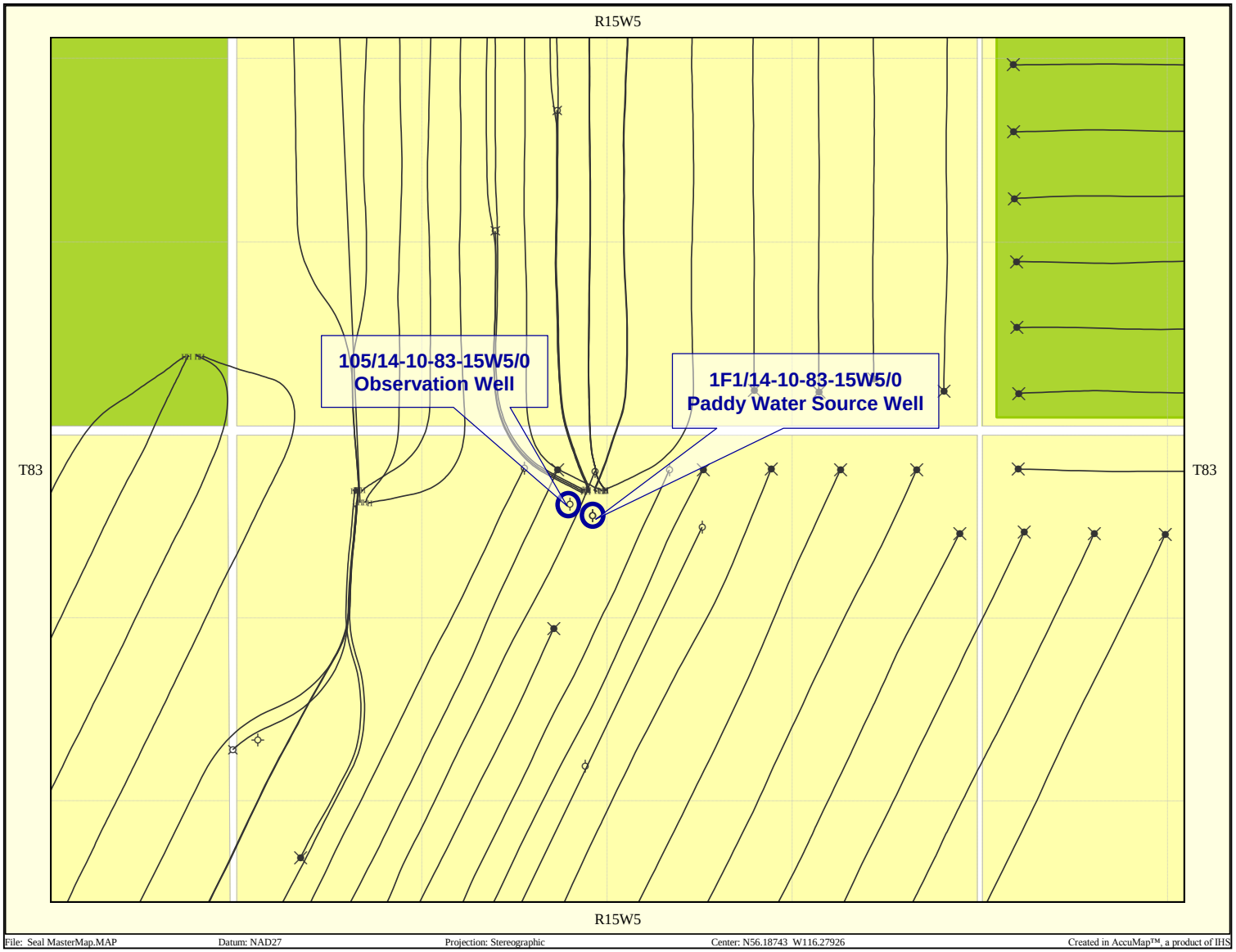
	4-33 Total Gas Volumes (E3m3)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	Produced Gas (Area 1)	170.40	343.70	373.20	314.10	288.50	274.00	262.50	199.20	235.10	191.80	161.30	190.30
	Produced Gas (Field)	1,618.30	2,259.10	2,346.90	2,084.00	2,500.20	2,789.90	2,621.10	2,178.40	2,592.30	2,528.40	3,202.00	2,665.20
	Consumed	729.30	857.30	1,053.10	1,135.00	1,186.10	1,099.50	1,090.00	1,168.10	744.40	816.80	1,877.00	1,657.20
	Flared	83.70	26.70	101.60	25.02	31.40	28.60	28.20	116.00	42.50	43.70	101.00	23.00
	Blanket Gas	998.07	454.08	711.40	948.74	664.85	186.00	309.63	606.48	(95.71)	(42.39)	190.57	339.70
	Delivered	1,803.37	1,829.18	1,903.60	1,872.72	1,947.55	1,847.80	1,812.53	1,500.78	1,709.69	1,625.51	1,414.57	1,324.70

(Field) represents all field production flowing to the 4-33 CPF

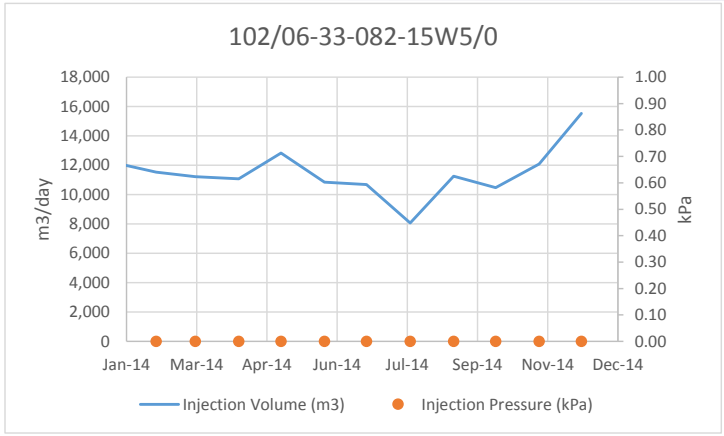
Water Usage - WSW Locations

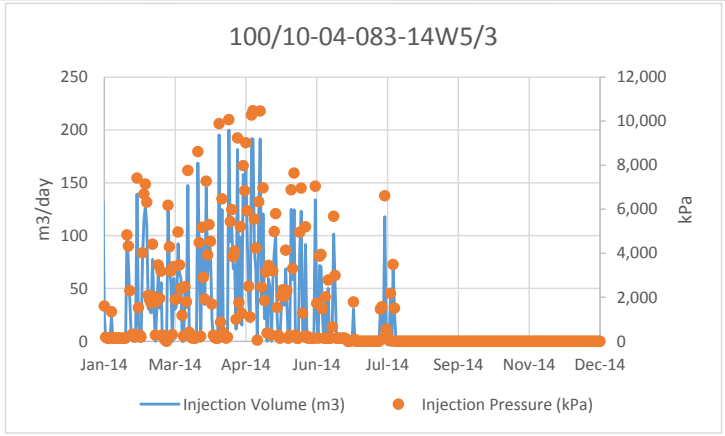


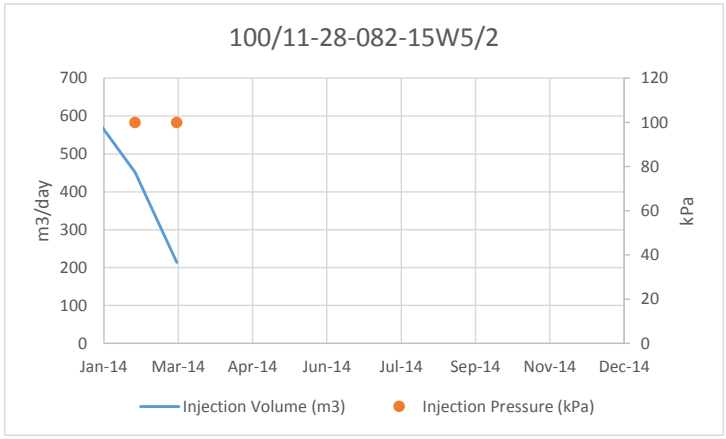
Water Usage - Paddy Well Location



Water Usage – Disposal Wells







- **102/06-33-083-15W5 is on vacuum justifying the lack of injection pressure**

UWI	Approval Number	Formation
102/06-33-082-15W5/0	11949	Debolt
100/10-04-083-14W5/3	11353C	Nisku
100/11-28-082-15W5/2	11949	Debolt

Water Usage – Produced Volumes

- **Proration factors for production volumes are calculated using standard accounting procedures**

4-33 CPF ABBT0094150	2014 Gas Proration	2014 Oil Proration	2014 Water Proration
January	0.75964	0.82550	0.90841
February	1.03769	0.76339	0.95133
March	1.05893	0.77343	0.79729
April	1.03276	0.77619	1.03697
May	1.15478	0.79624	0.87524
June	0.97690	0.76726	1.01250
July	1.23463	0.77707	0.87183
August	1.10351	0.72064	0.83578
September	1.14399	0.70065	1.28180
October	0.77458	0.77139	0.95143
November	0.74934	0.71372	1.04481
December	0.70742	0.72258	1.13995

Water Usage – Injected Volumes

Pilot

177,920 m3 injected

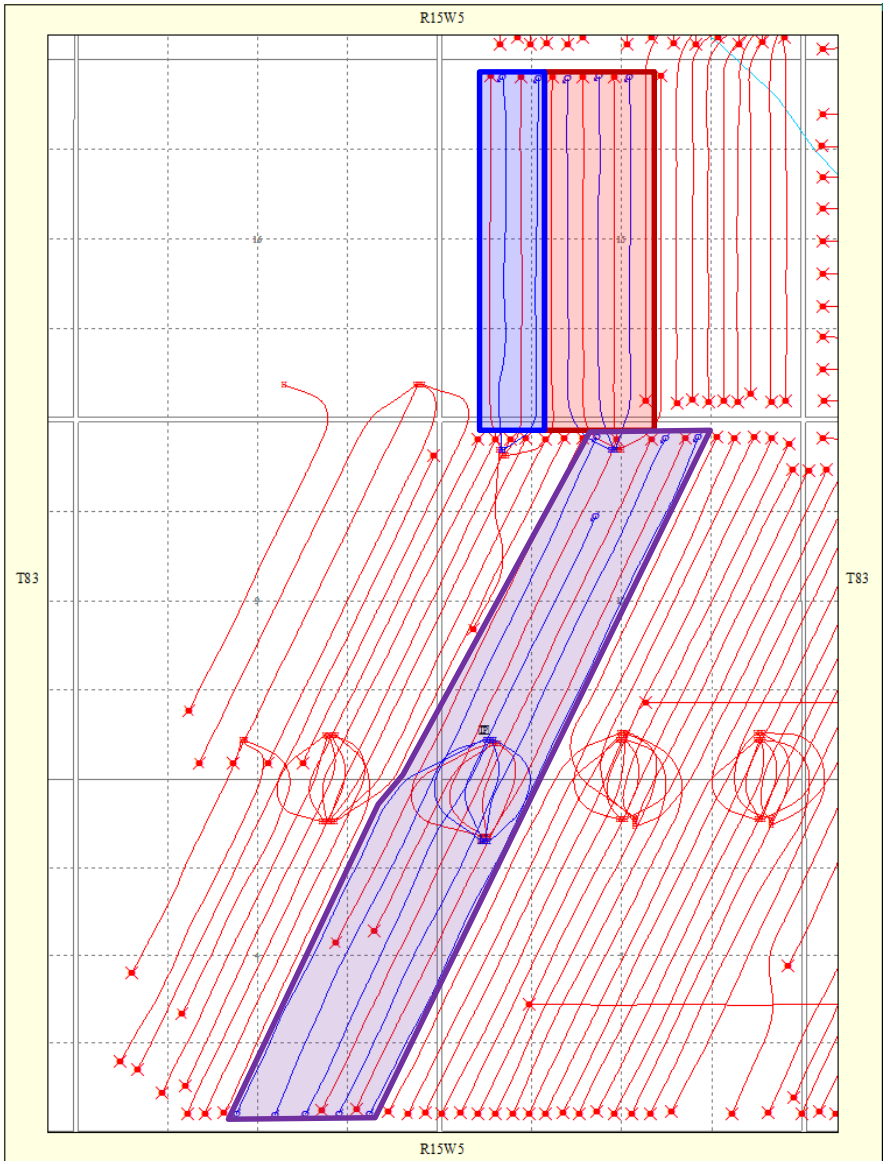
Phase 1

44,568 m3 injected

Phase 2

95,495 m3 injected

Total = 317,983 m3 injected



- Facilities
- Non-Saline Water Use and Conservation
- **Regulatory**
- Conclusion

Regulatory - Scheme Approval

- Murphy is in compliance with other regulatory bodies (AER, SRD, AENV, DFO)

- Facilities
- Non-Saline Water Use and Conservation
- Regulatory
- **Conclusion**

Conclusion

- Murphy is committed to maximizing the value of the resource for both itself and the province of Alberta through it's royalty interest
- Observations made over the past year will be applied to future polymer project within Seal Lake
- Murphy's top priority is ensuring compliance with AER and all regulatory bodies