2016 Performance Presentation

Devon Canada Corporation
Jackfish SAGD Project

Commercial Scheme Approval No. 10097 (as amended)

October 2016

Advisory

This document contains forward-looking information prepared and submitted pursuant to the Alberta Energy Regulator's requirements and is not intended to be relied upon for the purpose of making investment decisions, including without limitation, to purchase, hold or sell any securities of Devon Energy Corporation. Additional information regarding Devon Energy Corporation is available at www.devonenergy.com

Subsurface Operations

Table of Contents
Subsurface Operations

• Background	Dermot O'Shea
• Geology / Seismic	Dermot O'Shea
• Drilling & Completions	Jim Anderson
• Artificial Lift	Jim Anderson
• Instrumentation	Jim Anderson
• Scheme Performance	Devin Ollenberger & Anthony Nguyen
• Future Plans	Devin Ollenberger

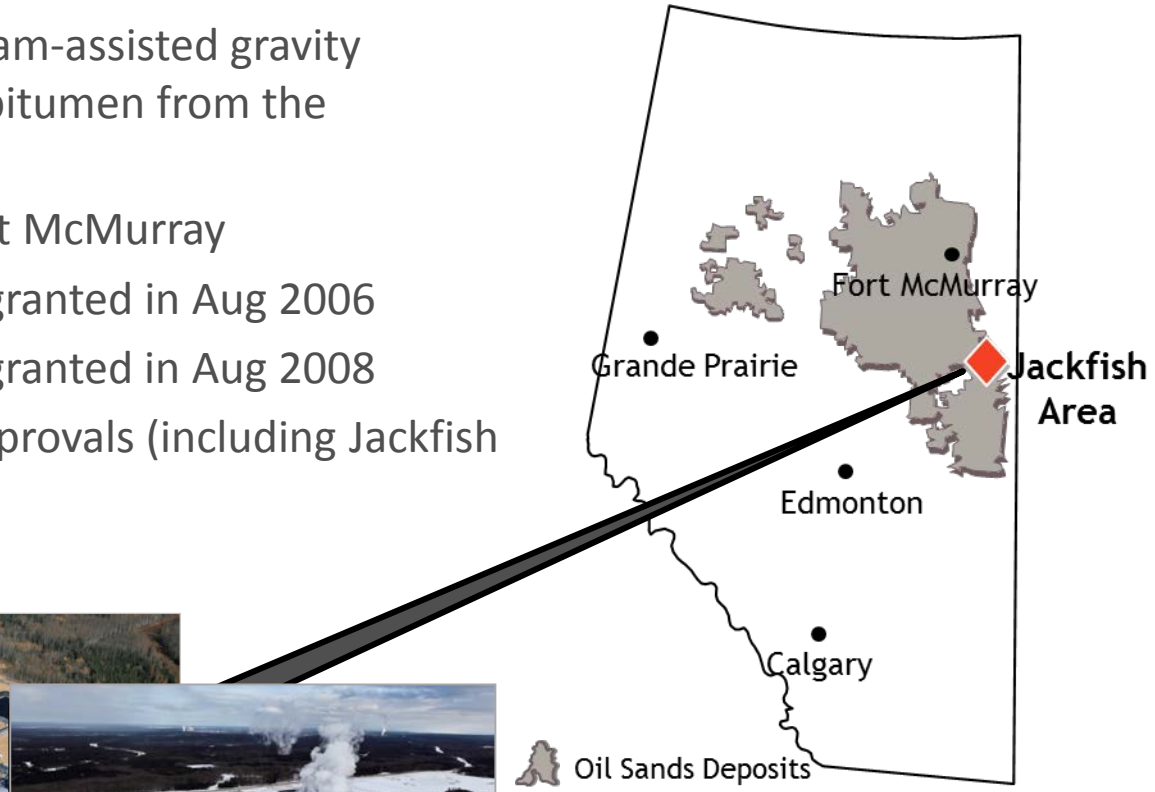
Project Background

Section 3.1.1-1

Brief Background of Scheme

3.1.1-1

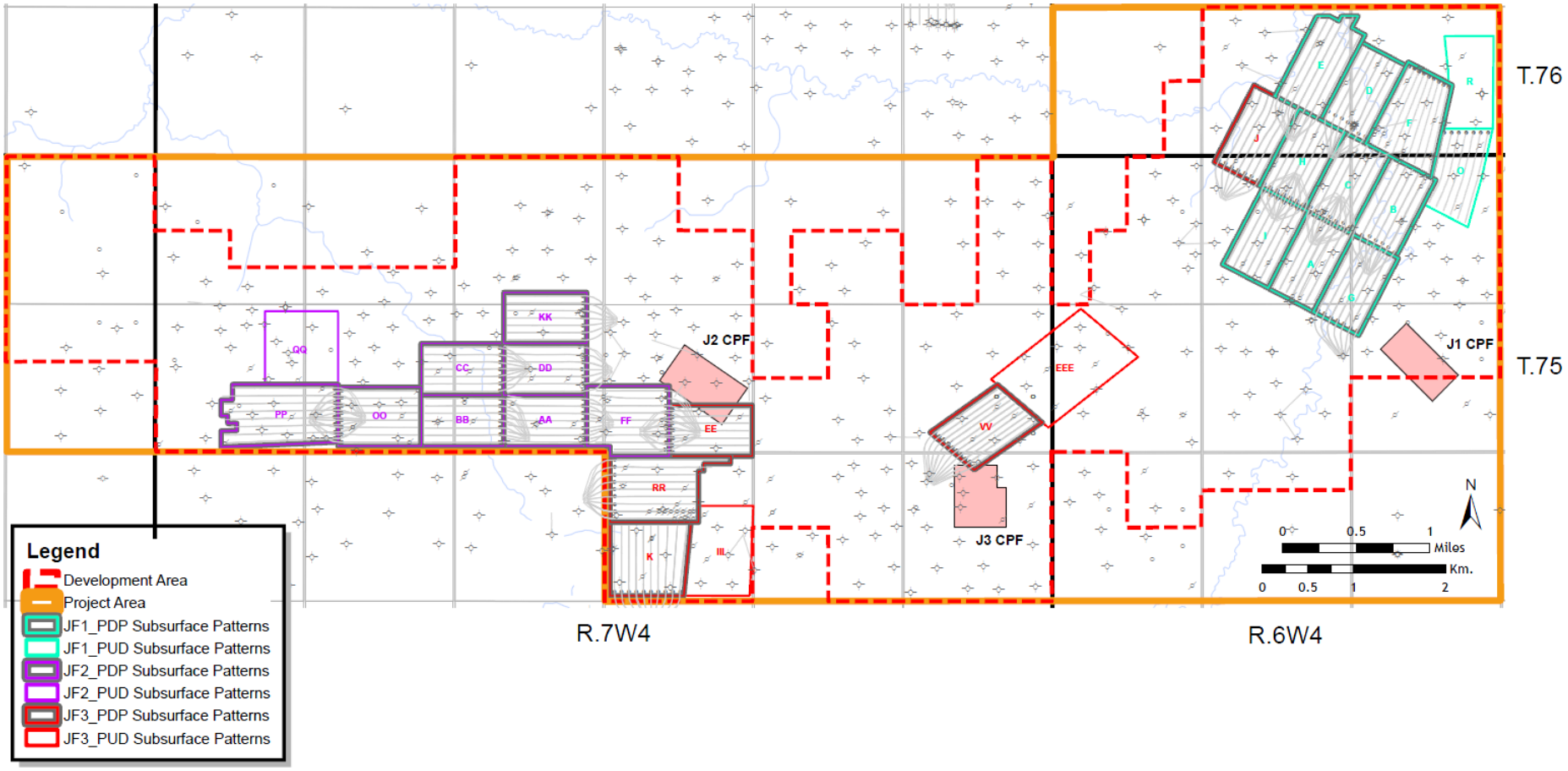
- Jackfish 1, 2 and 3 utilize steam-assisted gravity drainage (SAGD) to recover bitumen from the McMurray formation
- Located 150 km south of Fort McMurray
- Jackfish 1 Scheme approval granted in Aug 2006
- Jackfish 2 Scheme approval granted in Aug 2008
- Amalgamation of Jackfish approvals (including Jackfish 3) in Nov 2011



Brief Background of Scheme

Overall Scheme Map

3.1.1-1



Brief Background of Scheme

Jackfish

3.1.1-1

Asset	Number of Operating Pads	Number of Operating Well Pairs	Upcoming Pads
Jackfish 1	9	65	O
Jackfish 2	8	60	QQ
Jackfish 3	5	43	EEE
Total	***22***	***168***	**-**

Geology

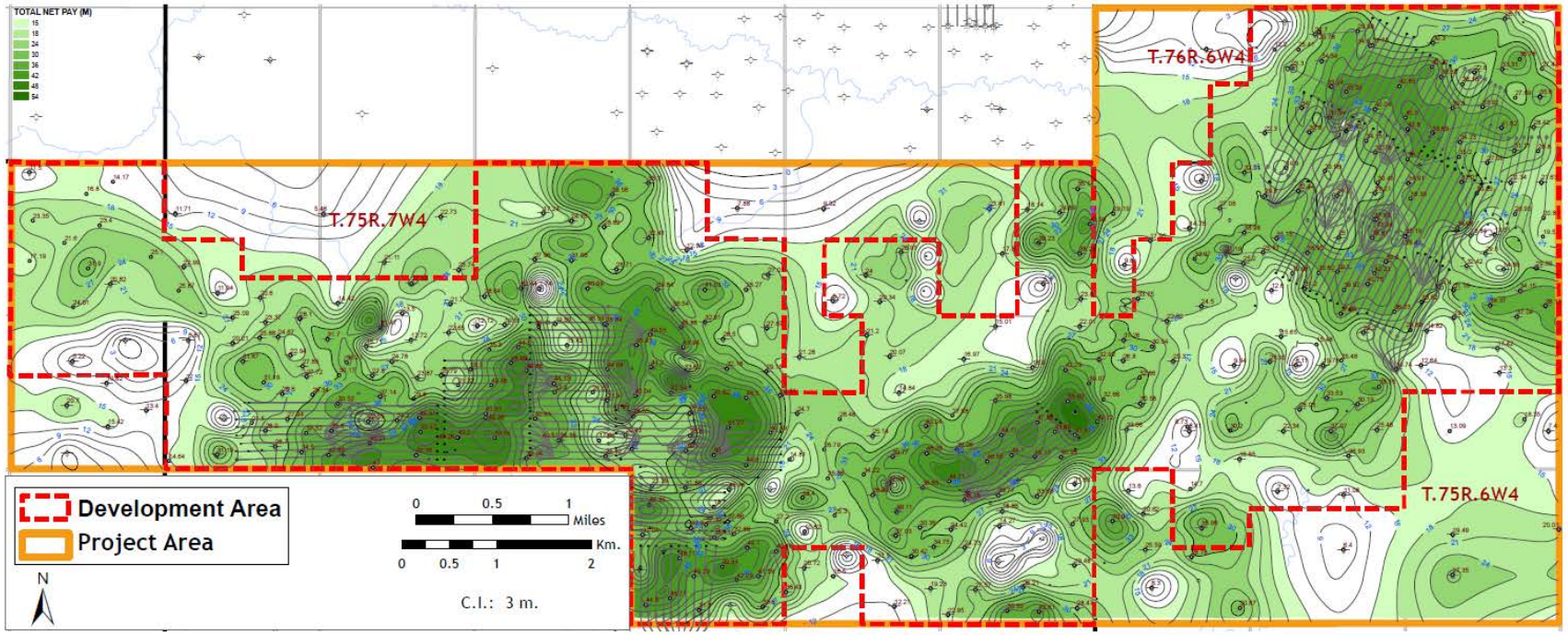
Section 3.1.1-2

Geology
Jackfish Approved Area OBIP

3.1.1-2a

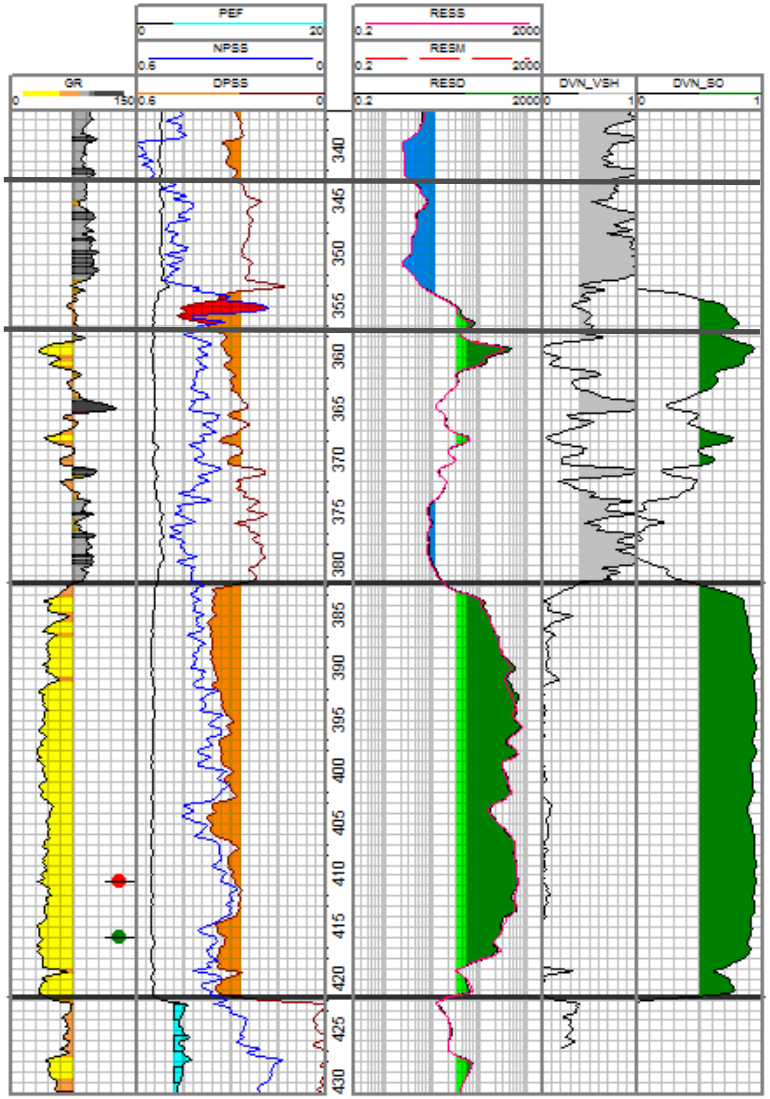
	Area (Ha)	OBIP (10^6m^3)	Avg. Net Pay (m)*	Avg. Oil Saturation (So)*	Avg. Porosity (%)*
Project Area	7,668	228.6	21.4	78.0	33.0
Development Area	5,445	221.8	23.0	79.0	34.0

**Average attributes derived from well control*



Geology
Jackfish Approved Area OBIP Methodology

3.1.1-2a



Gross Rock Volume (GRV)

GRV Base (GRV1_B): picked as the maximum lower limit of continuous exploitable bitumen >50% S_o and <40% V_{sh}

GRV Top GRV1_T: first barrier above GRV Base >3m true vertical thickness of S_o < 50% and >40% V_{sh} or base of gas cap

Gross Rock Volume (GRV): interval between GRV1_B and GRV1_T

GRV Net Pay is determined by removing estimated mud volumes from the GRV using a cutoff of 40% on the V_{sh} curve

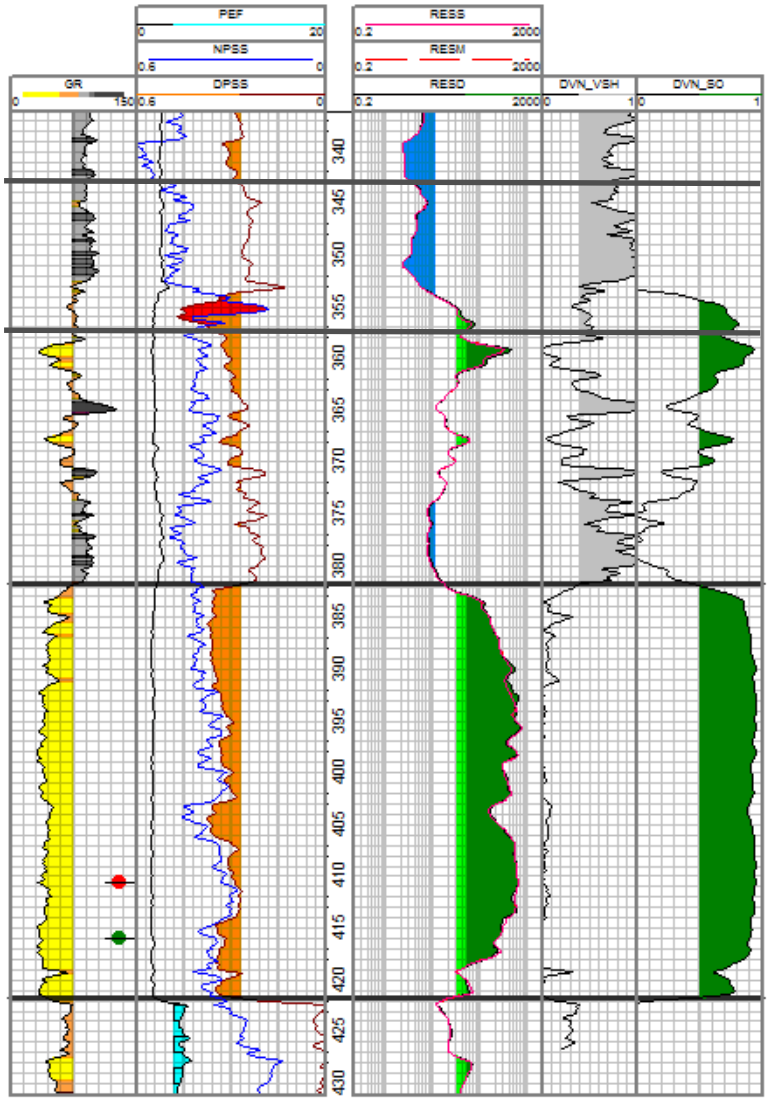
Average S_o and porosity values are calculated from the GRV Net Pay interval for each well

V_{sh} and S_o are standard petrophysical curves calculated from gamma ray, resistivity, and porosity logs, and correlated to image logs and core data

Geology

Jackfish Approved Area OBIP Methodology

3.1.1-2a



Gross Rock Volume Height on Logs

Generate GRV P50

Calculate Ave Net/Gross (NTG)

Net GRV Pay Porosity (Φ)

Net GRV Pay Oil Saturation (S_o)

OBIP = Gross Rock Volume * NTG * Φ * S_o

Original Bitumen in Place

Geology

Jackfish 1, 2 & 3 Average Reservoir Properties

3.1.1-2a

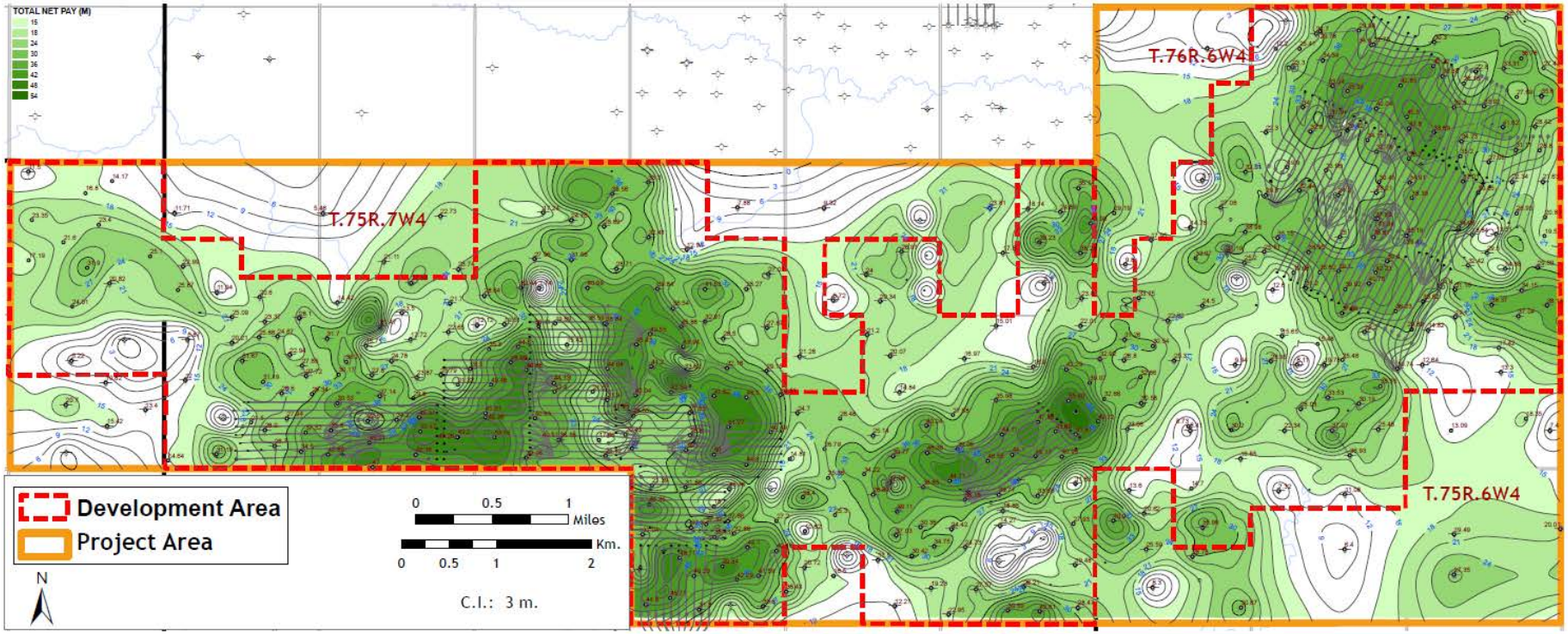
Property	Jackfish 1	Jackfish 2	Jackfish 3
OBIP ($10^6 m^3$)*	69.9	76.7	66.6
Avg Reservoir Depth *mTVD* Avg Reservoir Depth *mASL*	400 202	459 202	428 202
Avg. Original Reservoir Pressure kP*a*	2,700 @ scheme startup	2,700 @ scheme startup	2,700 @ scheme startup
Avg. Reservoir Temp. *ºC*	12	12	12
Avg Kh *md*	5,000	3,000	4,000
Avg Kv *md*	2,000	1,200	1,500
Avg Phi *%*	33	33	33
Avg Bitumen Visc. *Cp*	1,000,000+	1,000,000+	1,000,000+
Original Bottom Water Pressure *kPa*	2,300	2,300	2,300

**Total for all producing, drilled, and planned pads utilizing GRV methodology (2015)*

Geology

Jackfish Total Net Pay Isopach

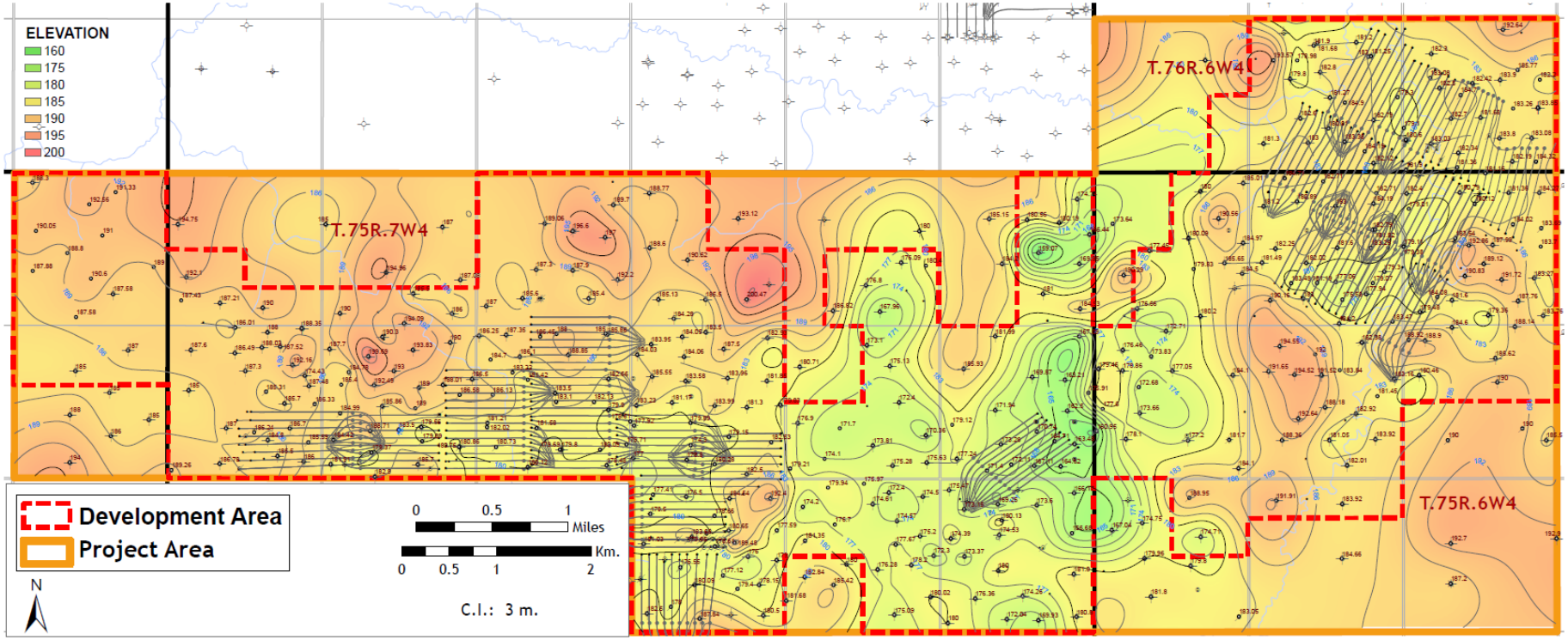
3.1.1-2b



Geology

Jackfish Structure On Base Gross Rock Volume (GRV_B)

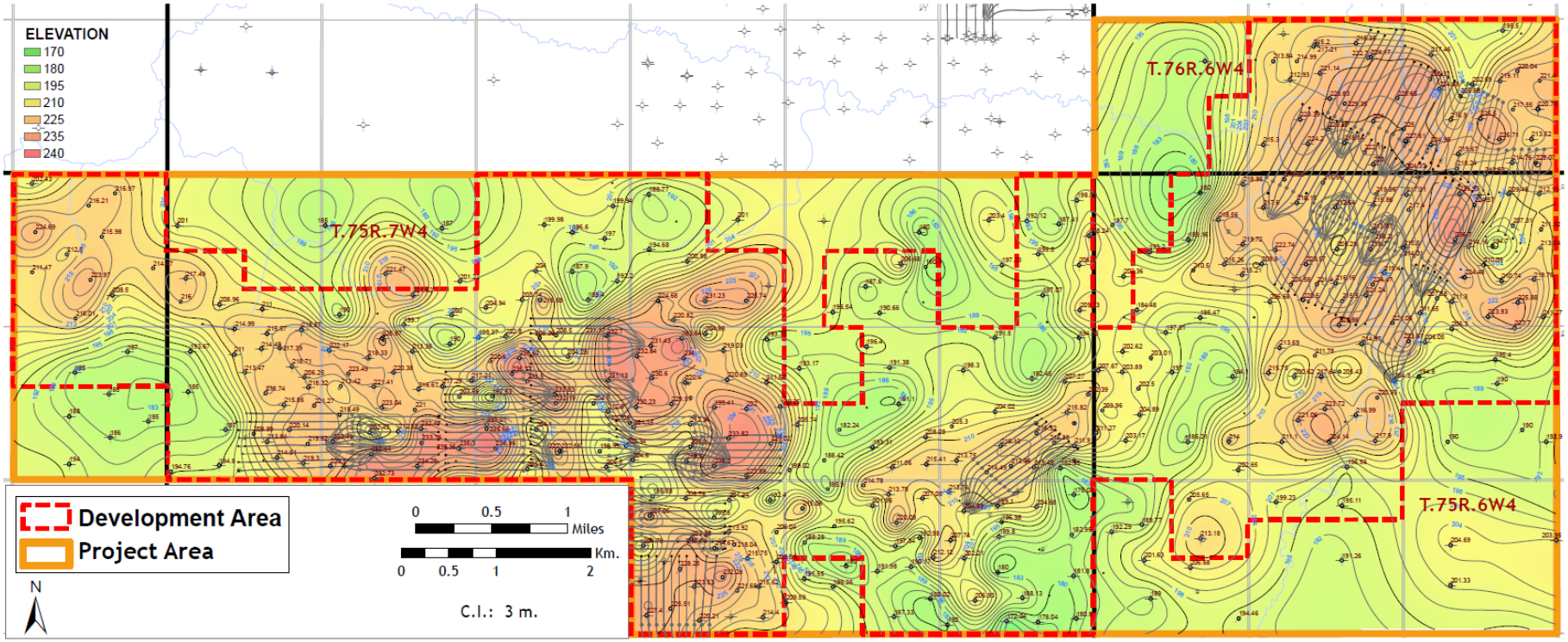
3.1.1-2b



Geology

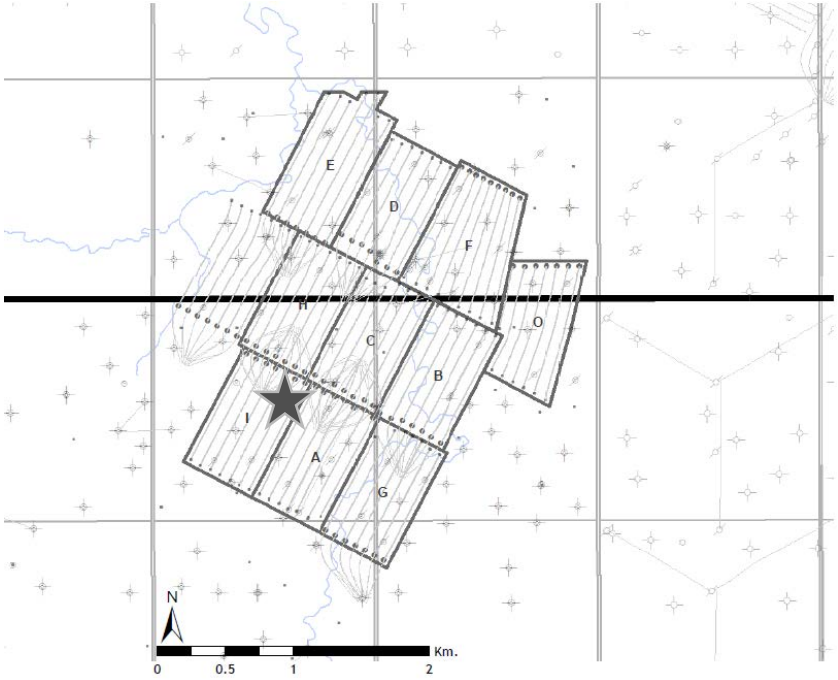
Jackfish Structure On Top Gross Rock Volume (GRV_T)

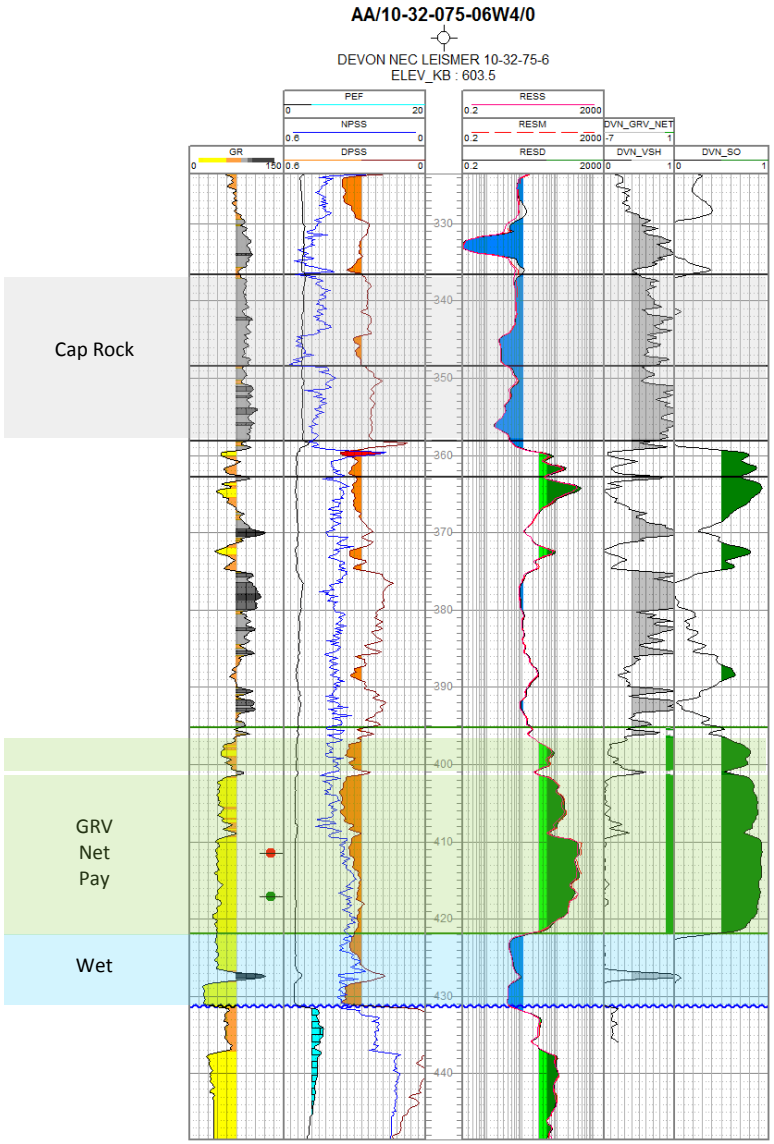
3.1.1-2b



Geology
Jackfish 1 Representative Well Log

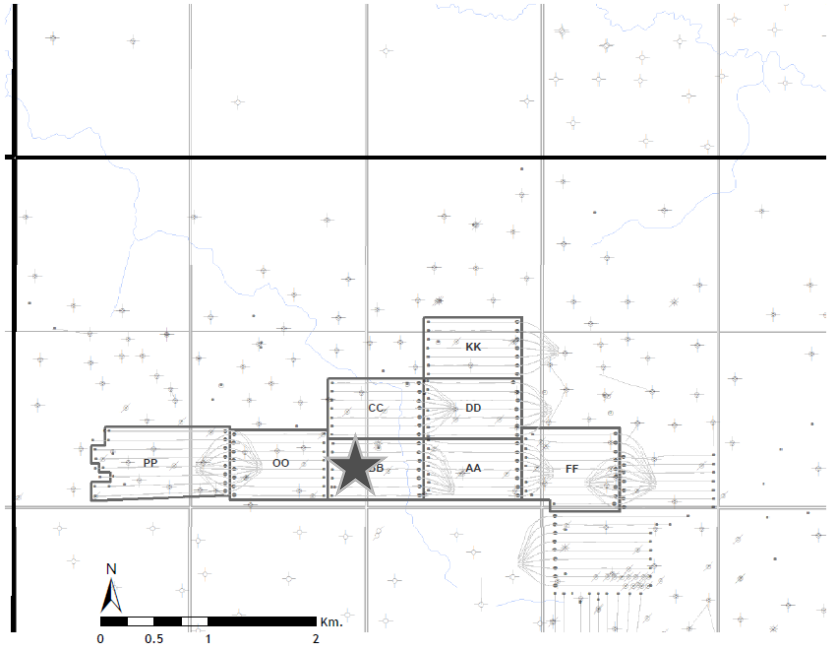
3.1.1-2c

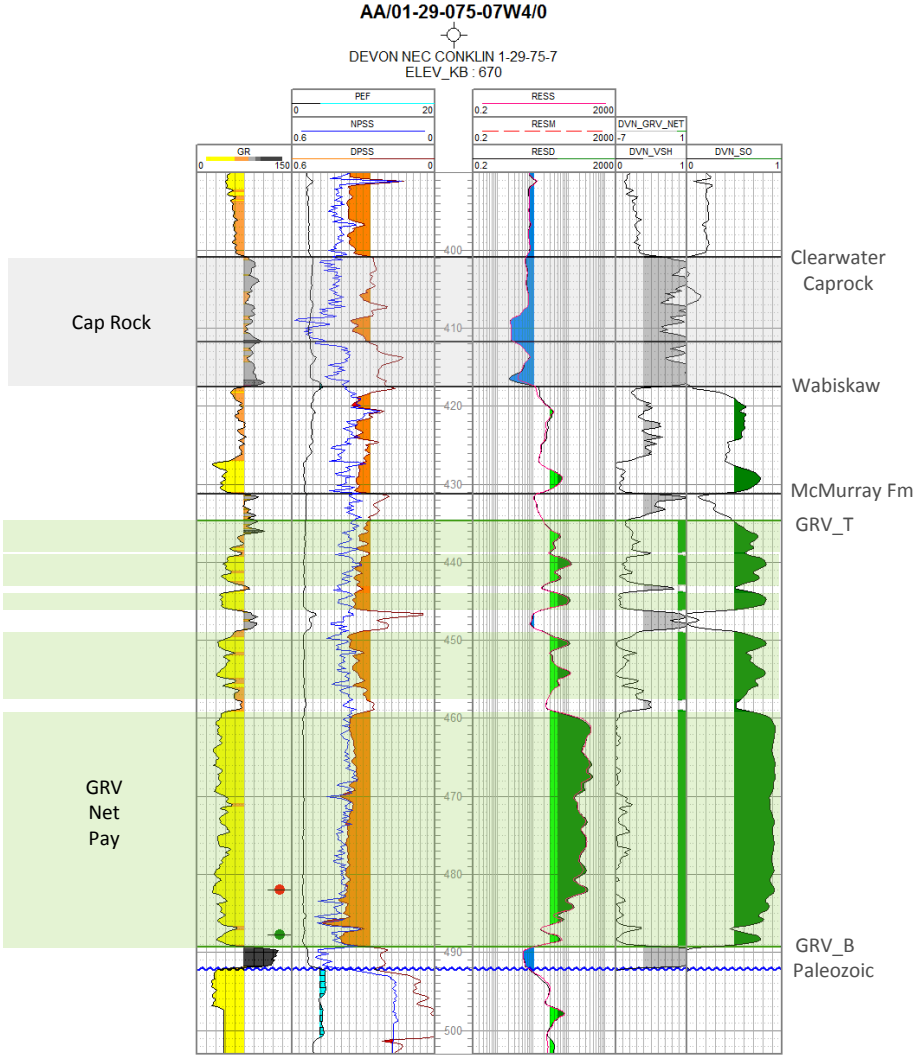




Geology
Jackfish 2 Representative Well Log

3.1.1-2c

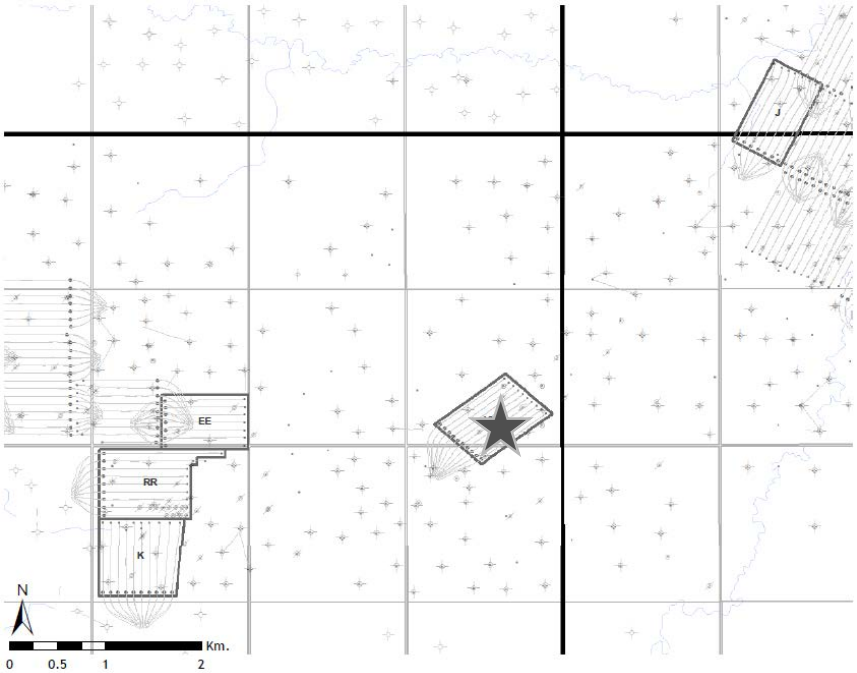


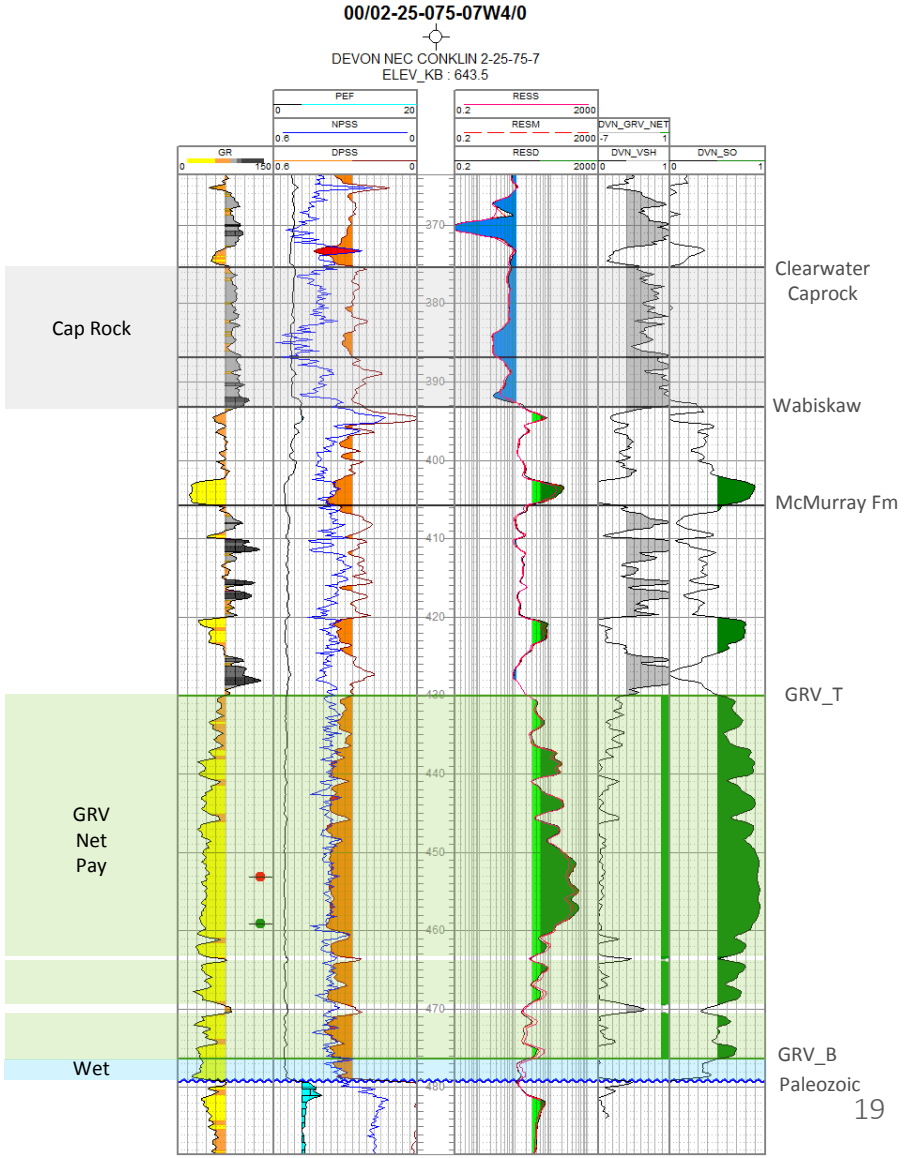


Geology

Jackfish 3 Representative Well Log

3.1.1-2c

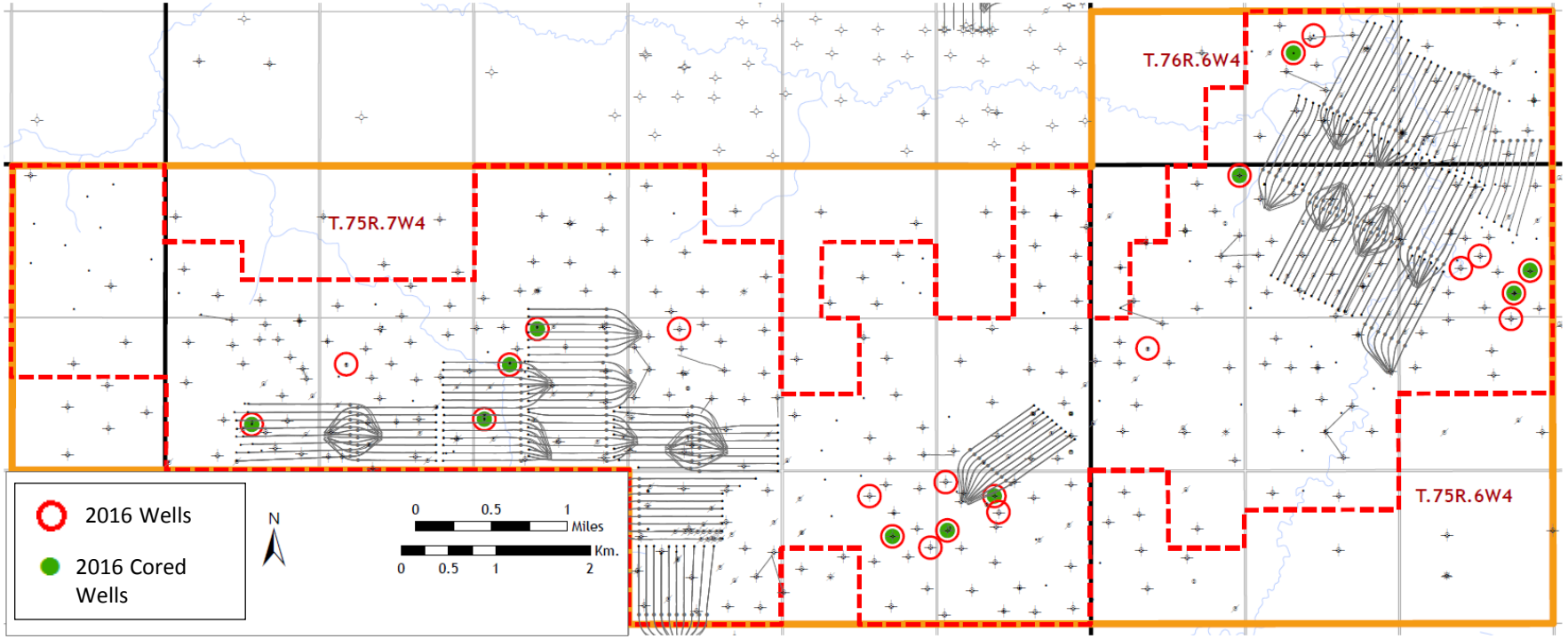




Geology

Jackfish 2016 Drilling Program & Cored Wells

3.1.1-2d



Project Area

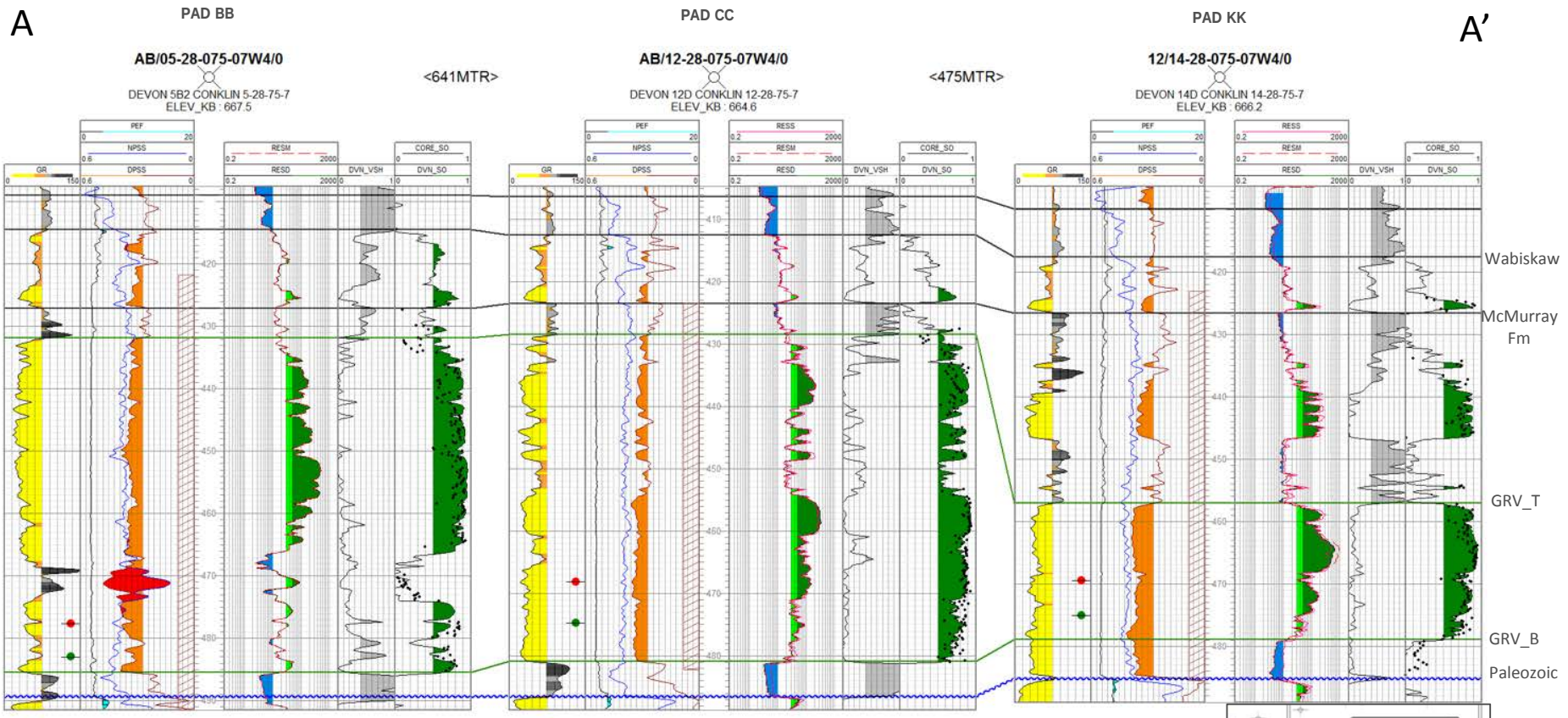
2015-2016 Wells: 22
2015-2016 Core: 11
Total Well Count: 433
Total Core: 196

Special Core Analysis

No special core analysis conducted on core from the 2016 drilling program. Geomechanical testing complete on 2015 program.

Geology
Jackfish 2 Steam Cores

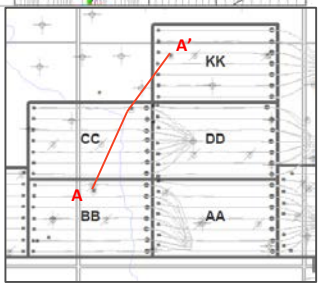
3.1.1-2d



Three steam evaluation cores obtained at Jackfish 2:

- AB/05-28 (Pad BB) encountered steam chamber
- AB/12-28 (Pad CC) & AB/14-28 (Pad KK) targeted low growth areas on 4D and did not encounter steam chamber

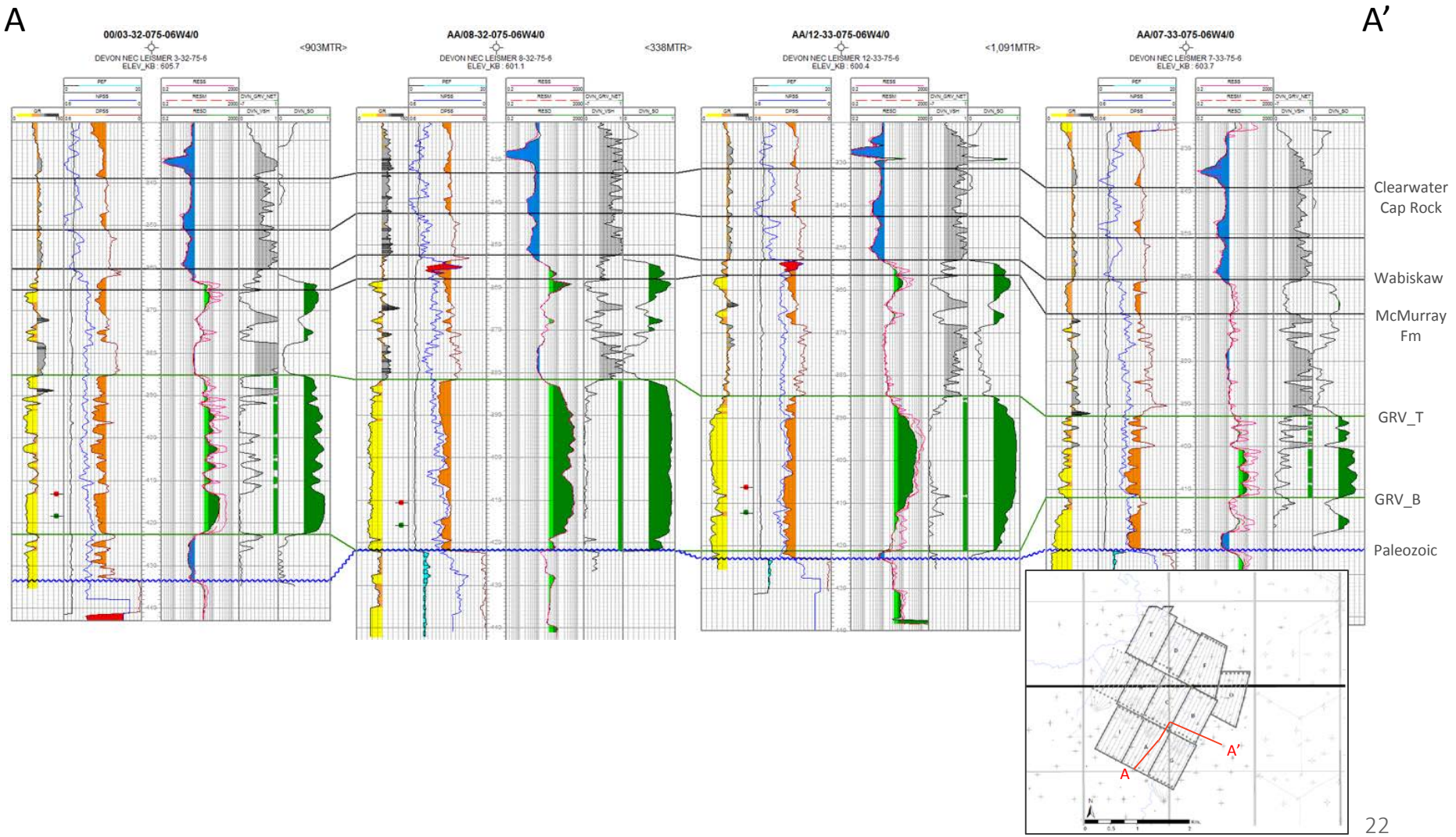
No new implications on ultimate recovery at this point in time



Geology

Jackfish 1 Representative Structural Cross-section

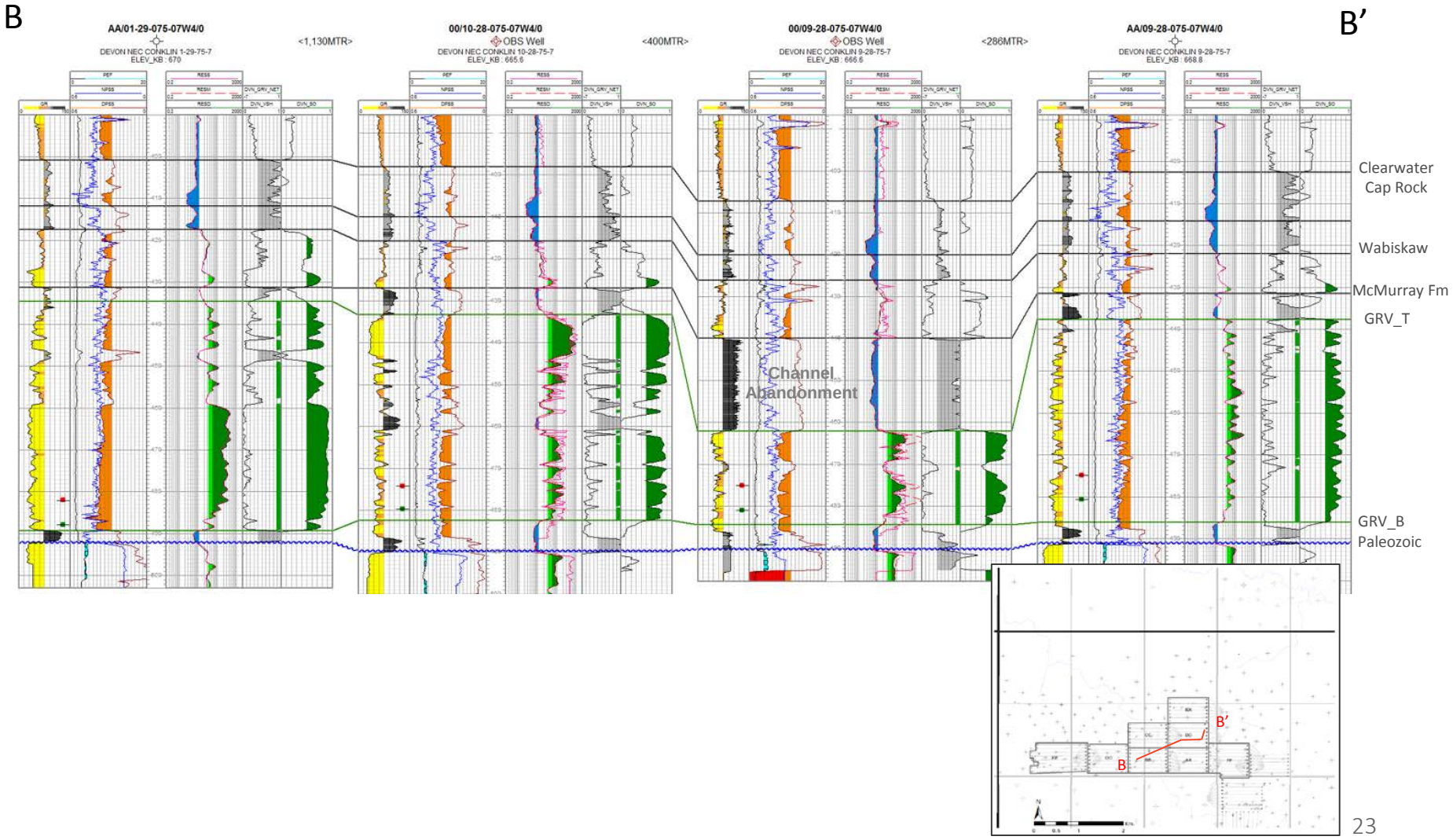
3.1.1-2g



Geology

Jackfish 2 Representative Structural Cross-section

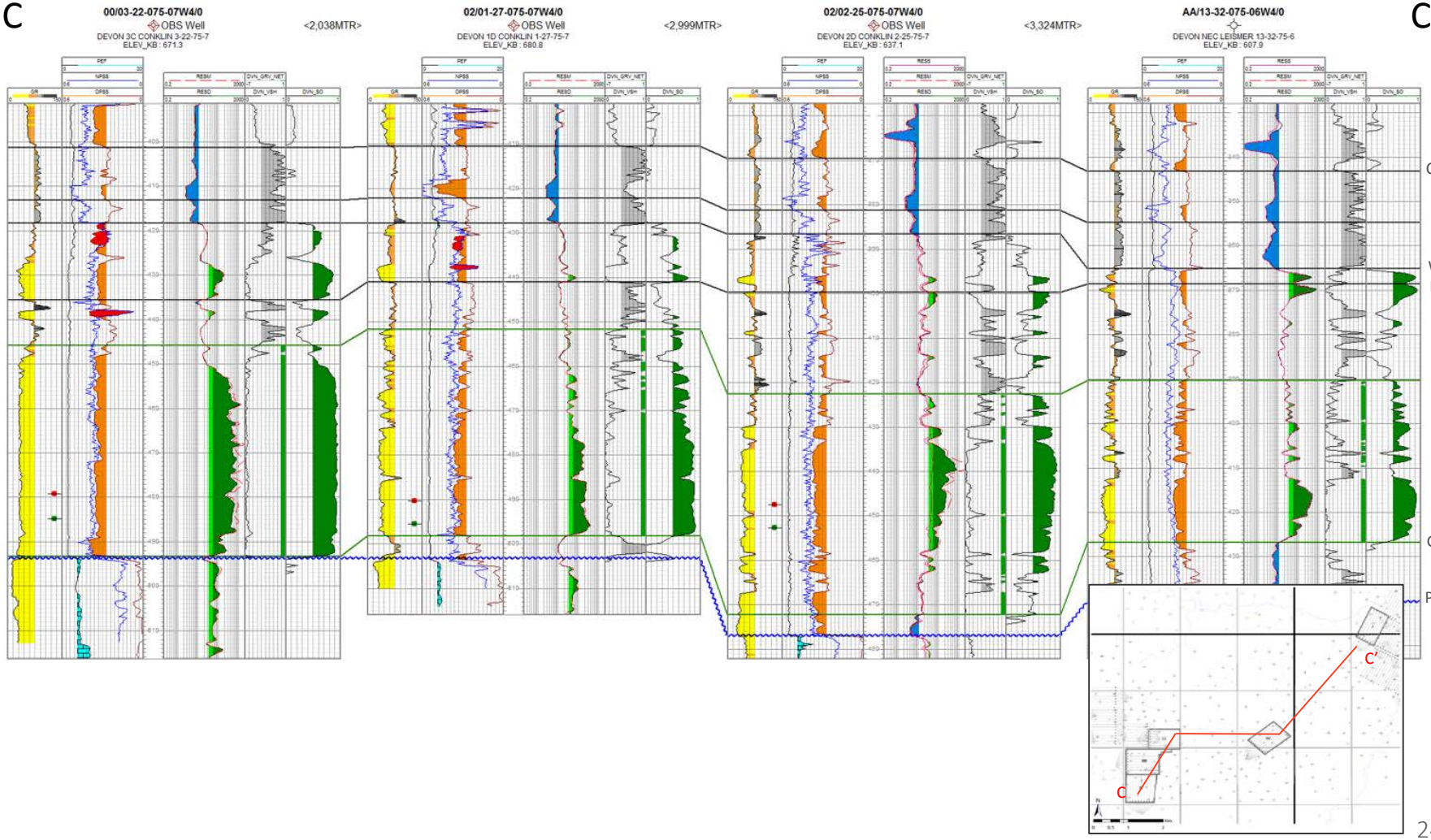
3.1.1-2g



Geology

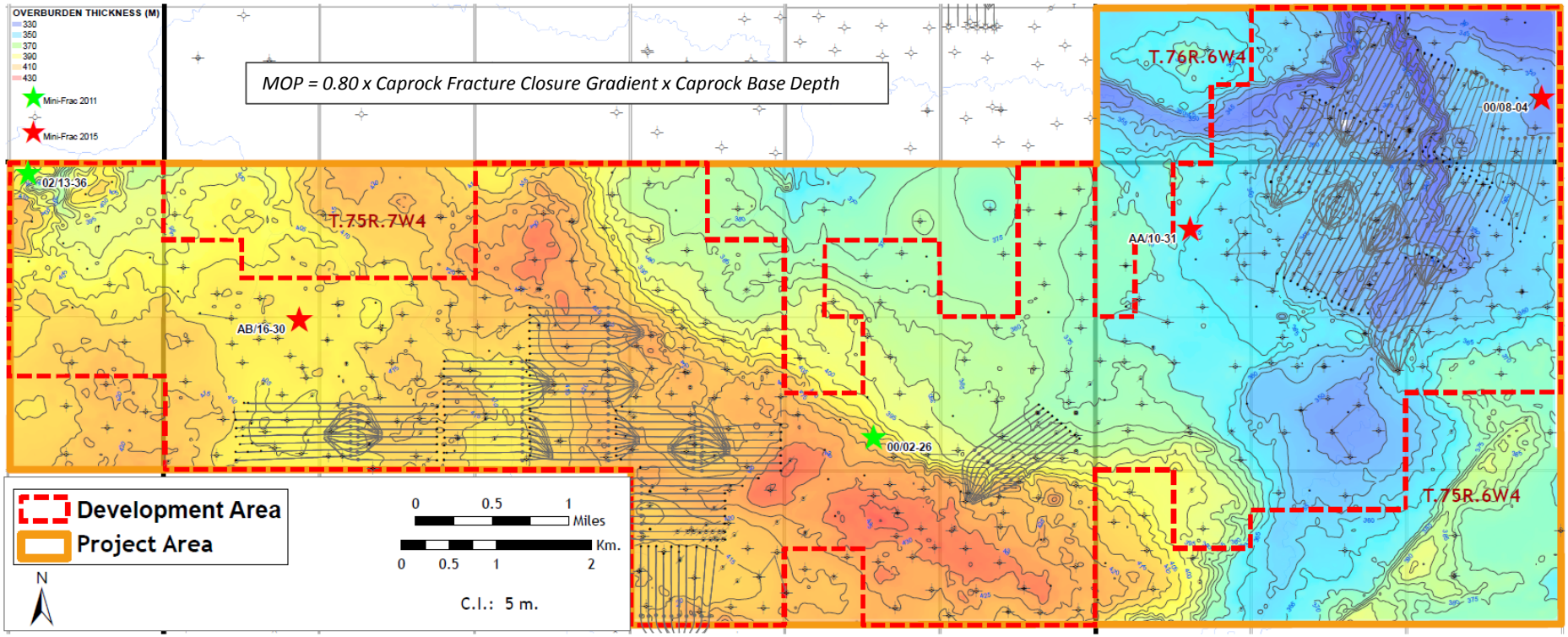
Jackfish 3 Representative Structural Cross-section

3.1.1-2g



Geology
Caprock Overburden Map & 2015 Mini Frac's

3.1.1-2k



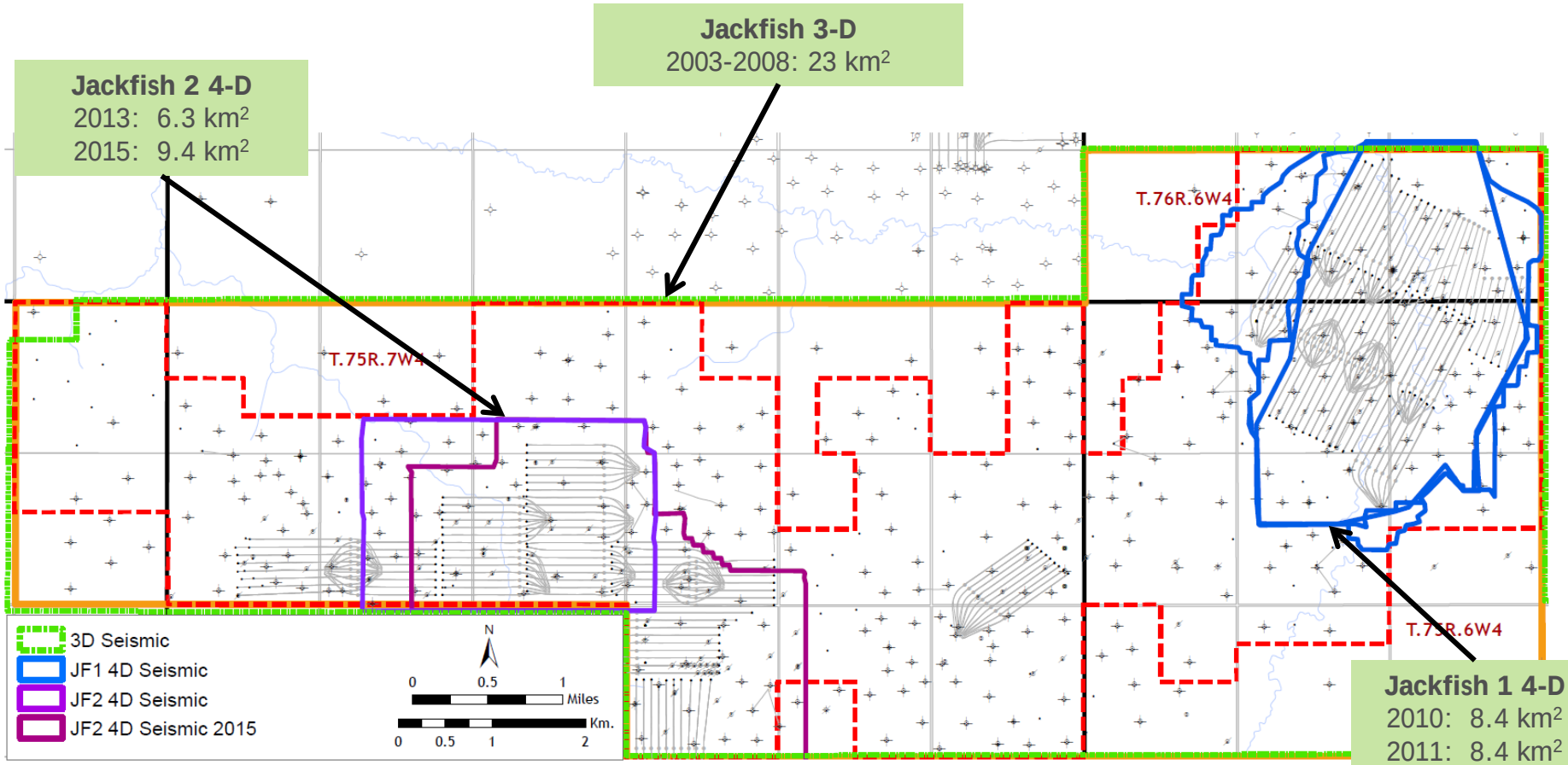
Interpretation complete on 2015 mini frac program:

- Lowest Wabiskaw shale fracture closure gradient of 14.1kPa/m at AA/10-31
- Fracture closure gradient of 18.6kPa/m from the 2011 mini frac program was utilized for the existing MOP approval
- Category 2 Amendment to adjust the Jackfish MOP submitted to the AER in Q3

Seismic

Jackfish 3-D & 4-D - No 2016 4D Acquisition

3.1.1-2j



- No seismic shot during reporting period
- InSAR data collection is ongoing, no heave data interpreted during reporting period

Drilling & Completions

Section 3.1.1-3

Drilling & Completions
Overview

3.1.1-3a

Operating SAGD Horizontal Wells

- **Jackfish 1:** 65 well pairs on 9 pads (Hz sections are 790 – 1,200m)
- **Jackfish 2:** 60 well pairs on 8 pads (Hz sections are 790 – 900m)
- **Jackfish 3:** 43 well pairs on 5 pads (Hz sections are 720 – 1,200m)

Observation Wells

- 59 active SAGD observation wells (2-3 per operating pad)
- 21 regional multi-zone monitoring wells equipped with piezometers

Service Wells

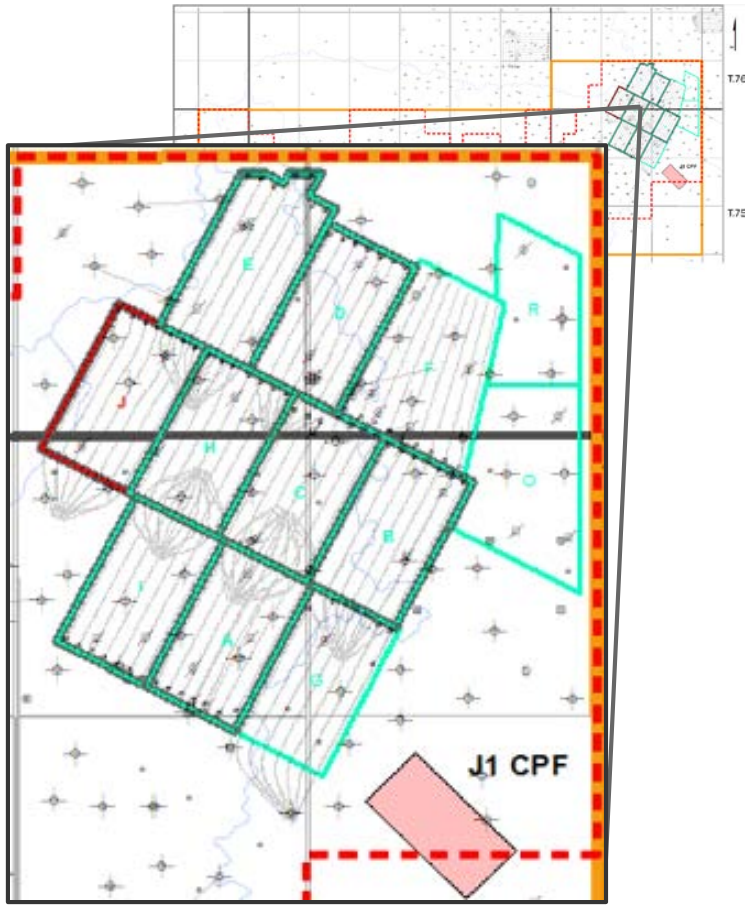
- 6 Grand Rapids brackish source water wells
- 2 McMurray brackish source water wells
- 13 water disposal wells (Class 1b)

Drilling & Completions
Jackfish 1 Overview – SAGD Wells

3.1.1-3a

Existing Pads

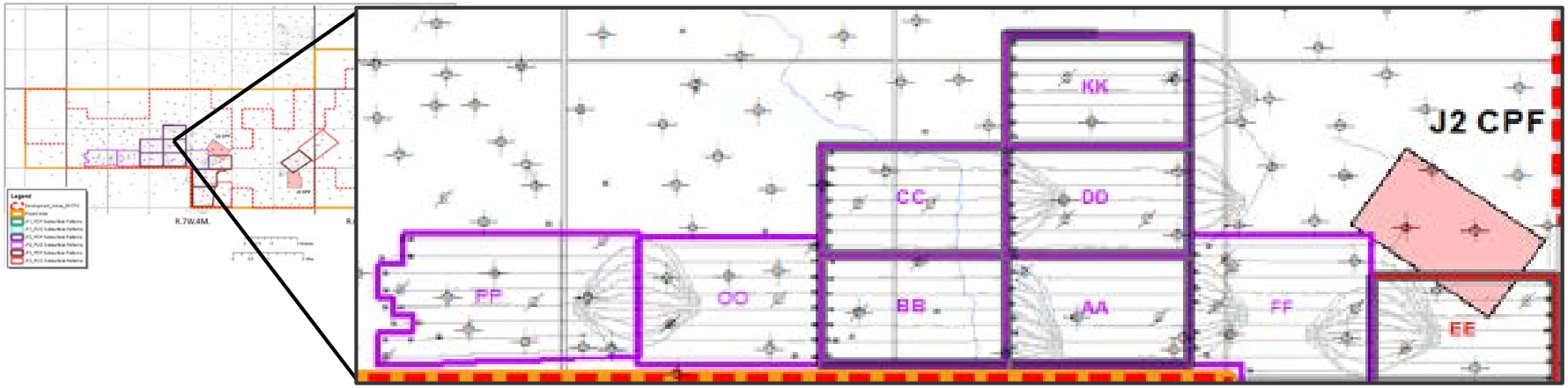
- Pad A, B, C, D, E, F, G, H & I: 7 well pairs per pad (9 on Pad F)
- Pad G started Q3 2015
- Pad F first steam Q2 2016
- 2 observation wells per pad (heel and toe)



Drilling & Completions

Jackfish 2 Overview – SAGD Wells

3.1.1-3a



Existing Pads

- Pad AA, BB, CC, DD & KK: 7 well pairs per pad
- Pad OO & PP (8 well pairs per pad) started in late 2015
- Pad FF: 9 well pairs
- 2 observation wells per pad (heel and toe), 3 wells at Pad FF

Drilling & Completions
Jackfish 3 Overview – SAGD Wells

3.1.1-3a

Existing Pads

- Pad J & EE: 7 well pairs per pad
- Pad VV & K: 10 well pairs per pad
- Pad RR: 9 well pairs

Drilling & Completions

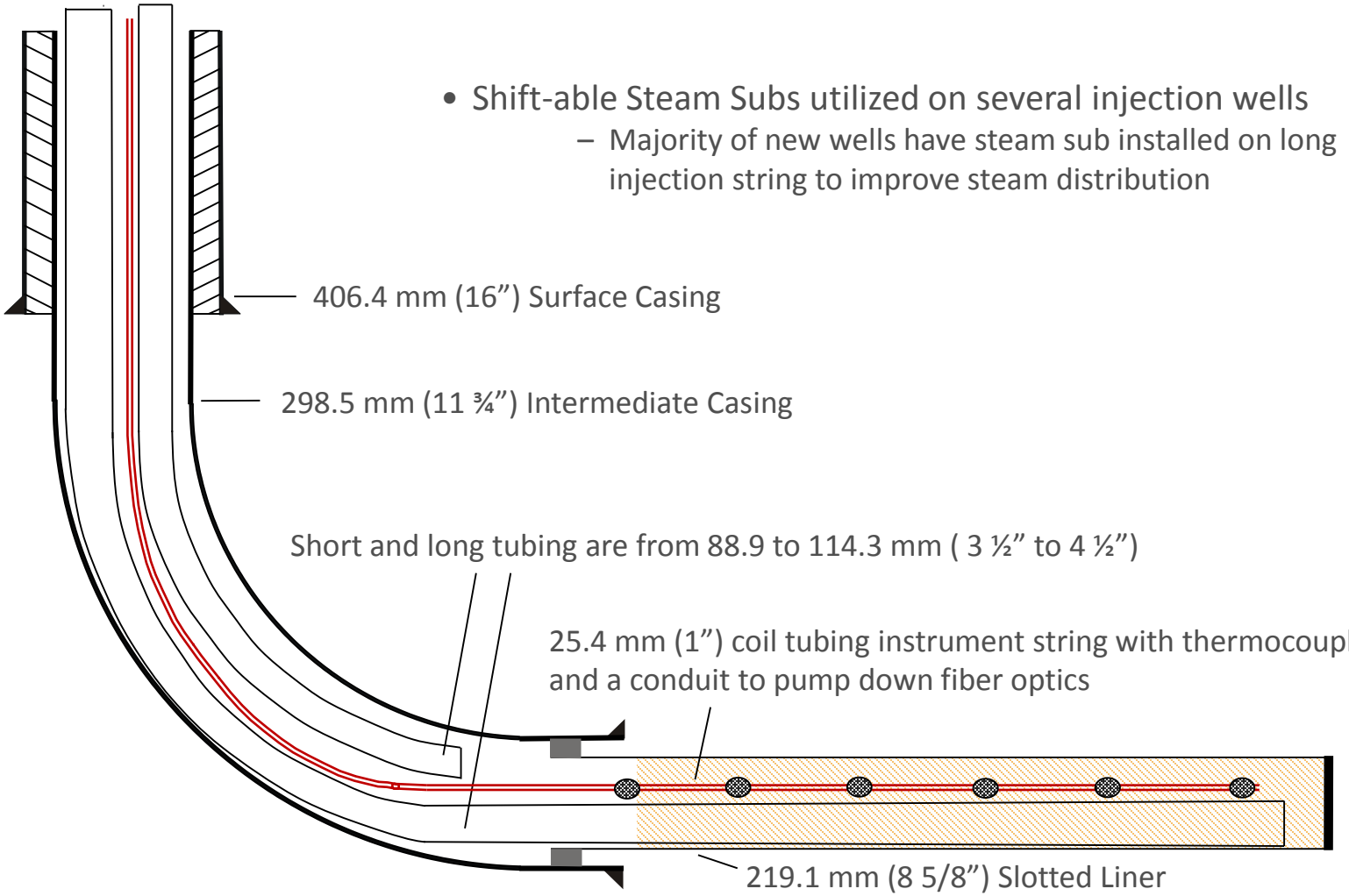
Inter-well Spacing

- Standard lateral inter-well spacing at Jackfish is 80m
- Currently drilled pads that differ from the standard are:
  - Pad VV: Spacing of 60m
  - Pad F: 60m at the heels fanning to 90m at the toes

Drilling & Completions
Typical Injection Well Schematic

devon

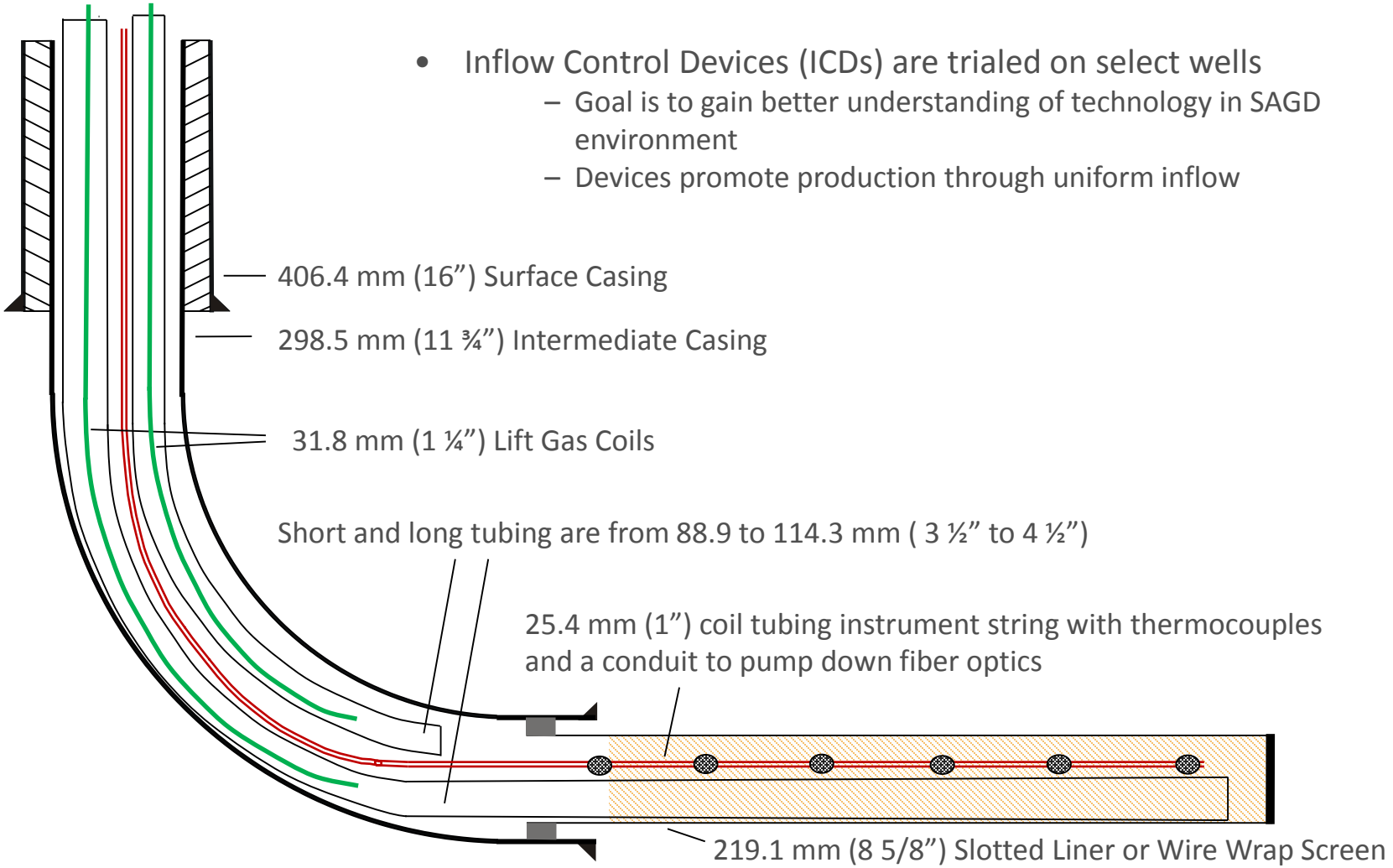
3.1.1-3c



- Shift-able Steam Subs utilized on several injection wells
  - Majority of new wells have steam sub installed on long injection string to improve steam distribution

Drilling & Completions
Typical Production Well Schematic

3.1.1-3c



- Inflow Control Devices (ICDs) are trialed on select wells
  - Goal is to gain better understanding of technology in SAGD environment
  - Devices promote production through uniform inflow

Drilling & Completions
Inflow Control Devices (ICDs)

3.1.1-3c

- Tubing Deployed systems on CC1P, DD2P, DD7P
  - Installed successfully via service rig
- Liner Deployed systems on RR2P, RR6P
  - Installed successfully via drilling rig
- Performance measured through sustained production uplift
  - Sustained uplift yet to be observed on tubing deployed systems
  - Early in trial of liner deployed systems, evaluation of performance ongoing
- Key Learnings
  - Actual pressure drops through ICDs different than designed
  - Additional testing needed to understand multiphase flow through ICDs
- No outflow control devices installed to date

Drilling & Completions

Wire Wrapped Screens

3.1.1-3c

- Wire wrapped screens are currently considered the producer sand control liner standard for all future pads at Jackfish
- First implementation will be at Jackfish 1 - Pad F
  - First steam in Q2 2016
- Expected benefits of wire wrapped screens:
  - Reduced liner pressure drop
  - Increased open flow area
  - Mechanical strength
  - Sand control

Drilling & Completions

Liner Failures

3.1.1-3c

- CC2P was the only confirmed liner failure during the reporting period and was repaired by installing a secondary liner within the existing wellbore
- No re-drills or re-entries were completed during the reporting period

Artificial Lift

Section 3.1.1-4

Artificial Lift

3.1.1-4a, b

- Gas lift is currently used for artificial lift at Jackfish District
- Gas lift continues to be an effective lift strategy for Jackfish operating conditions
  - Typical producer operating pressure above 1,800 kPag
  - Ability to handle over 1,000 m^3/day emulsion flow
  - No operating temperature limitation
- One ESP installed in March 2015 (B3P)
  - B3P was selected due to lift issues caused by high pressure drop when operating on gas lift
  - Plan to continue to evaluate feasibility and deploy ESPs as deemed necessary

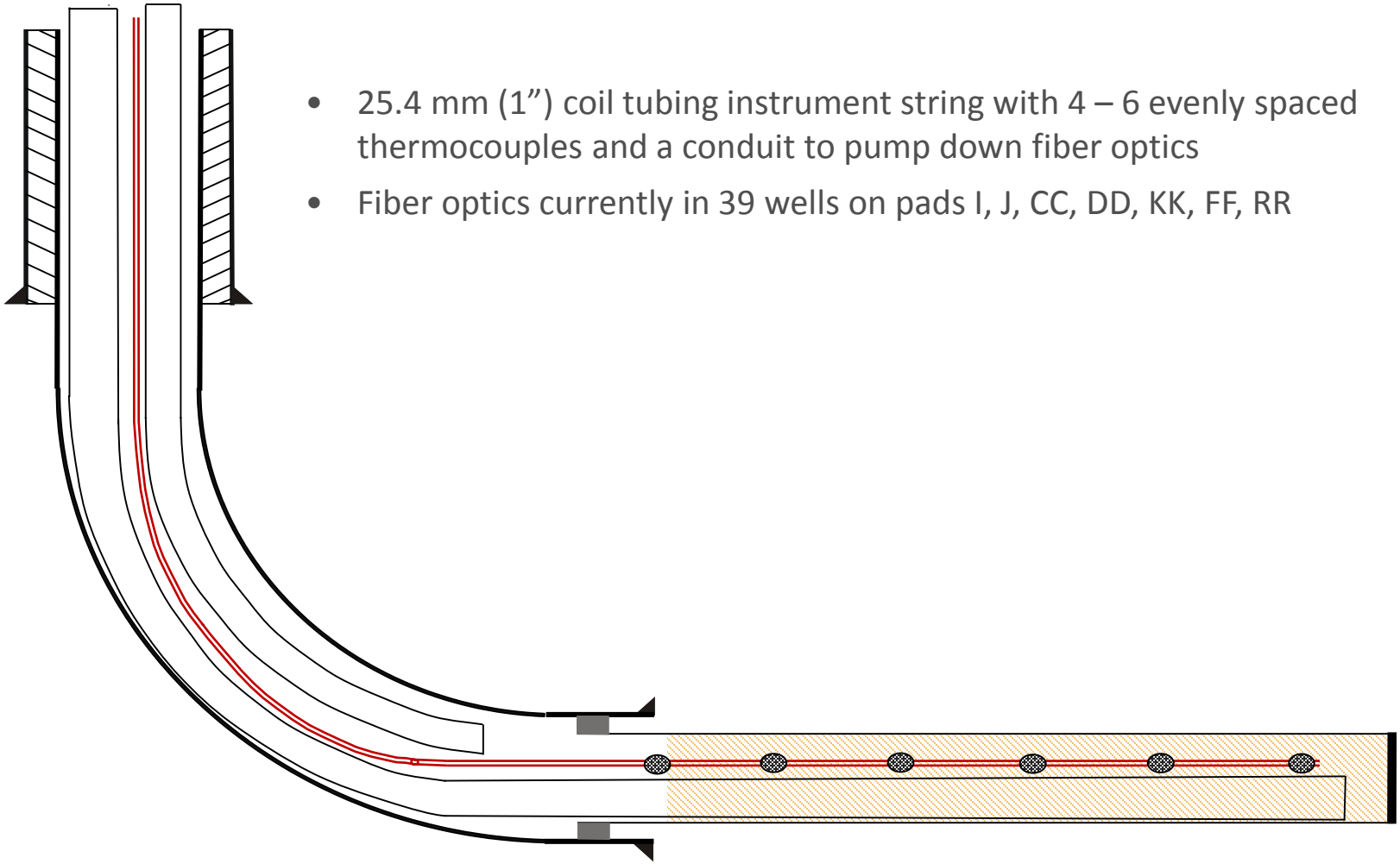
Instrumentation

Section 3.1.1-5

Instrumentation in Wells

SAGD Injection & Producer Wells

3.1.1-5b



- 25.4 mm (1”) coil tubing instrument string with 4 – 6 evenly spaced thermocouples and a conduit to pump down fiber optics
- Fiber optics currently in 39 wells on pads I, J, CC, DD, KK, FF, RR

Instrumentation in Wells
Downhole Pressure Monitoring

devon

3.1.1-5b

Various methods are used simultaneously to monitor down hole pressure

For Injector Wells:

- Using thermocouples / fiber optics temperature data to convert downhole live steam temperature from T_{sat} to P_{sat}*
- Conducting annulus blanket gas pressure survey on periodic basis
- Calculate downhole pressure based on surface steam injection pressures on short and long tubing strings
  - BHP = steam injection surface pressure – frictional losses
- Conducting periodic near-zero steam injection rate test to estimate bottomhole pressure from surface injection pressure

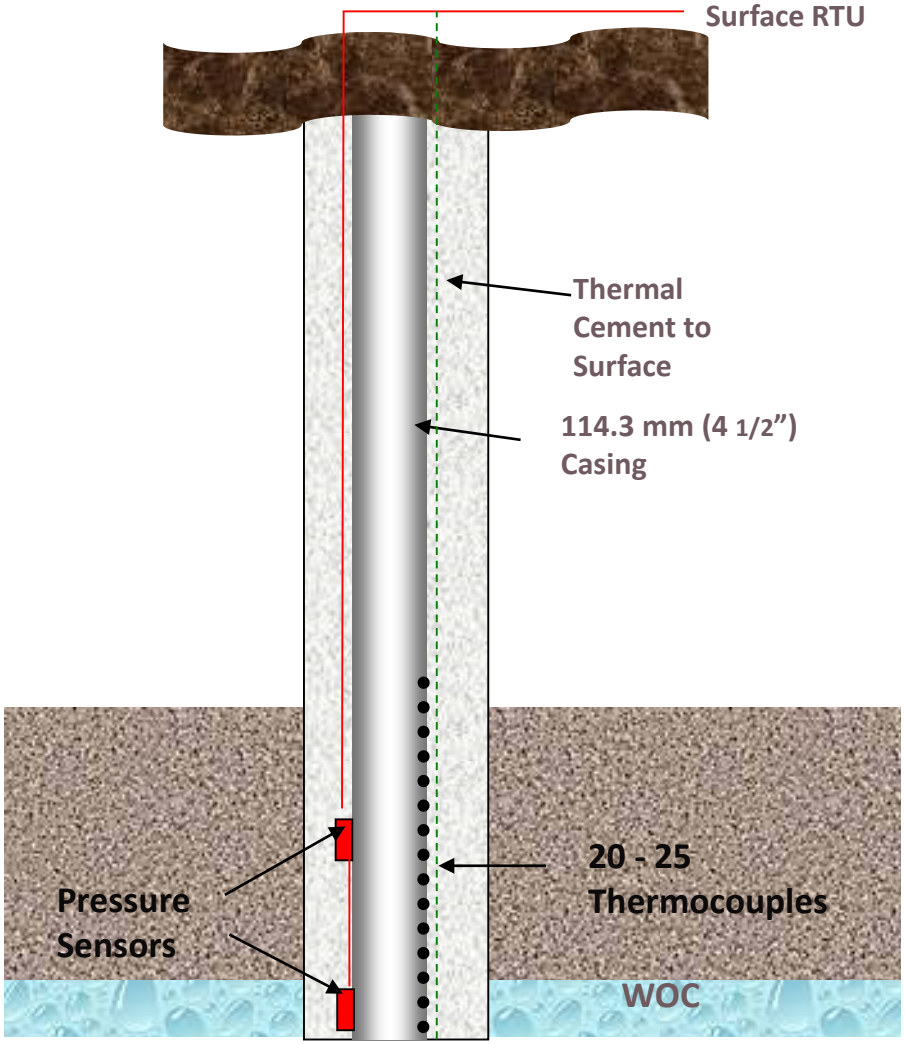
* Prior initial start up of circulation, well pairs would be purged to eliminate dead fluid column inside the wellbore. Historical data also showed such procedures improve warm up time in the horizontal wellbore section.

For Producer Wells:

- Use concentric open-ended lift gas (LG) coiled tubing to calculate down hole pressure
  - BHP = LG surface pressure – frictional losses + static head
  - Frictional losses are correlated/calculated by performing numerous gas lift step rate tests
- Validation of the above correlation is re-assured by periodic annulus blanket gas pressure surveys

Instrumentation in Wells
SAGD Observation Wells

3.1.1-5b



Jackfish 1, 2, & 3 SAGD observation wells contain:

- 20 points thermocouples (25 points in more recently drilled wells), spaced above, below & within pay interval
- 2 pressure sensors*, one in the bitumen and the other in the basal water

*New Jackfish 3 wells have an additional pressure sensor near the top of the McMurray

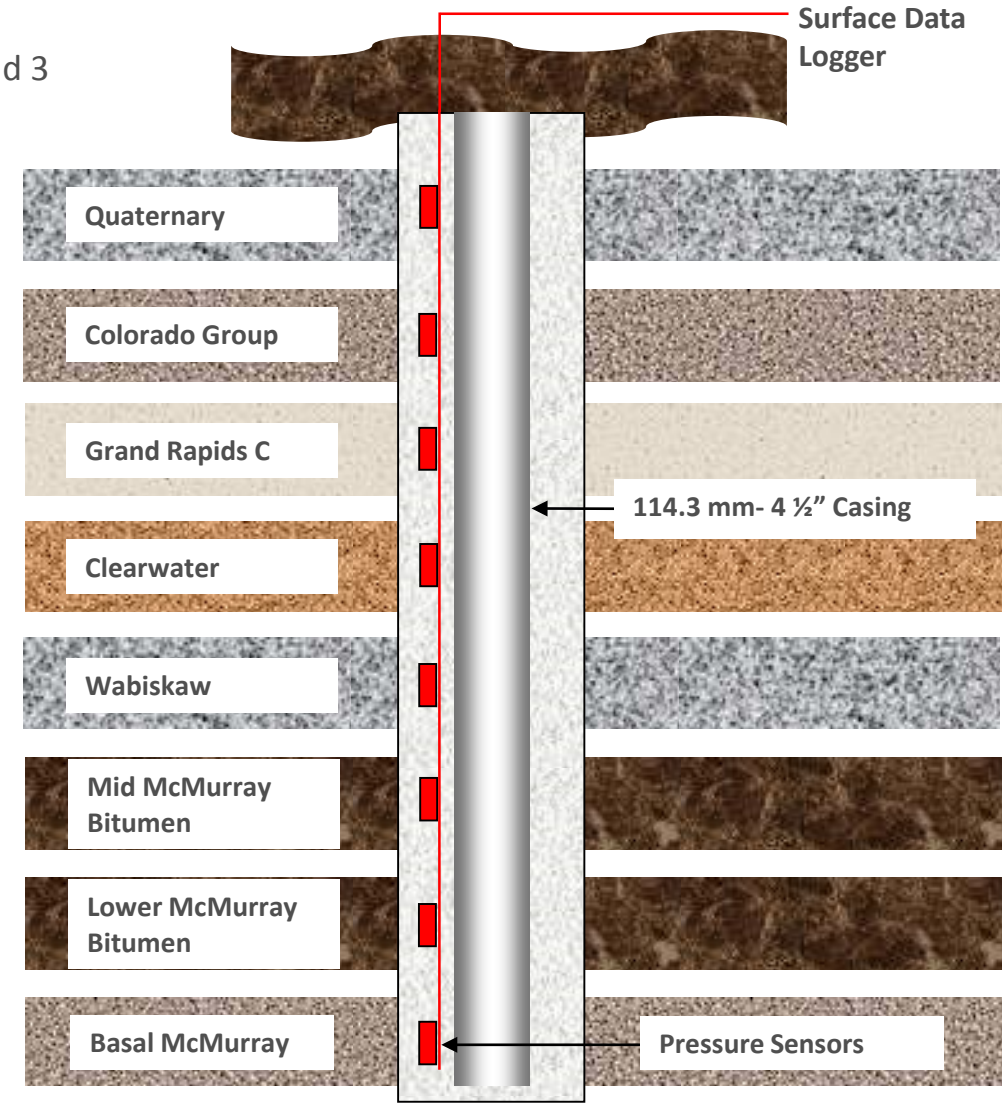
Instrumentation in Wells
SAGD Observation Wells

3.1.1-5b

Monitoring wells cover areas of Jackfish 1, 2, and 3

Twenty-one wells

- 00/07-32-75-6W4 (5 piezometers)
- F1/08-28-75-6W4 (4 piezometers)
- F1/09-14-75-6W4 (4 piezometers)
- F1/12-31-75-6W4 (4 piezometers)
- F1/10-22-75-6W4 (5 piezometers)
- F1/04-26-75-7W4 (5 piezometers)
- F1/06-28-75-7W4 (5 piezometers)
- F1/15-19-75-6W4 (5 piezometers)
- F1/09-24-75-7W4 (5 piezometers)
- F1/14-25-75-6W4 (5 piezometers)
- F1/05-12-75-6W4 (5 piezometers)
- F1/09-22-75-7W4 (4 piezometers)
- 02/12-23-75-7W4 (4 piezometers) *
- 02/01-35-75-7W4 (3 piezometers)
- 00/15-07-75-5W4 (4 piezometers)
- 00/07-22-75-7W4 (2 piezometers)
- 00/03-15-75-6W4 (3 piezometers) **
- 02/09-33-75-6W4 (4 piezometers)
- 00/04-30-75-7W4 (3 piezometers)
- 00/01-19-75-6W4 (3 piezometers) **
- 00/11-30-75-6W4 (5 piezometers)



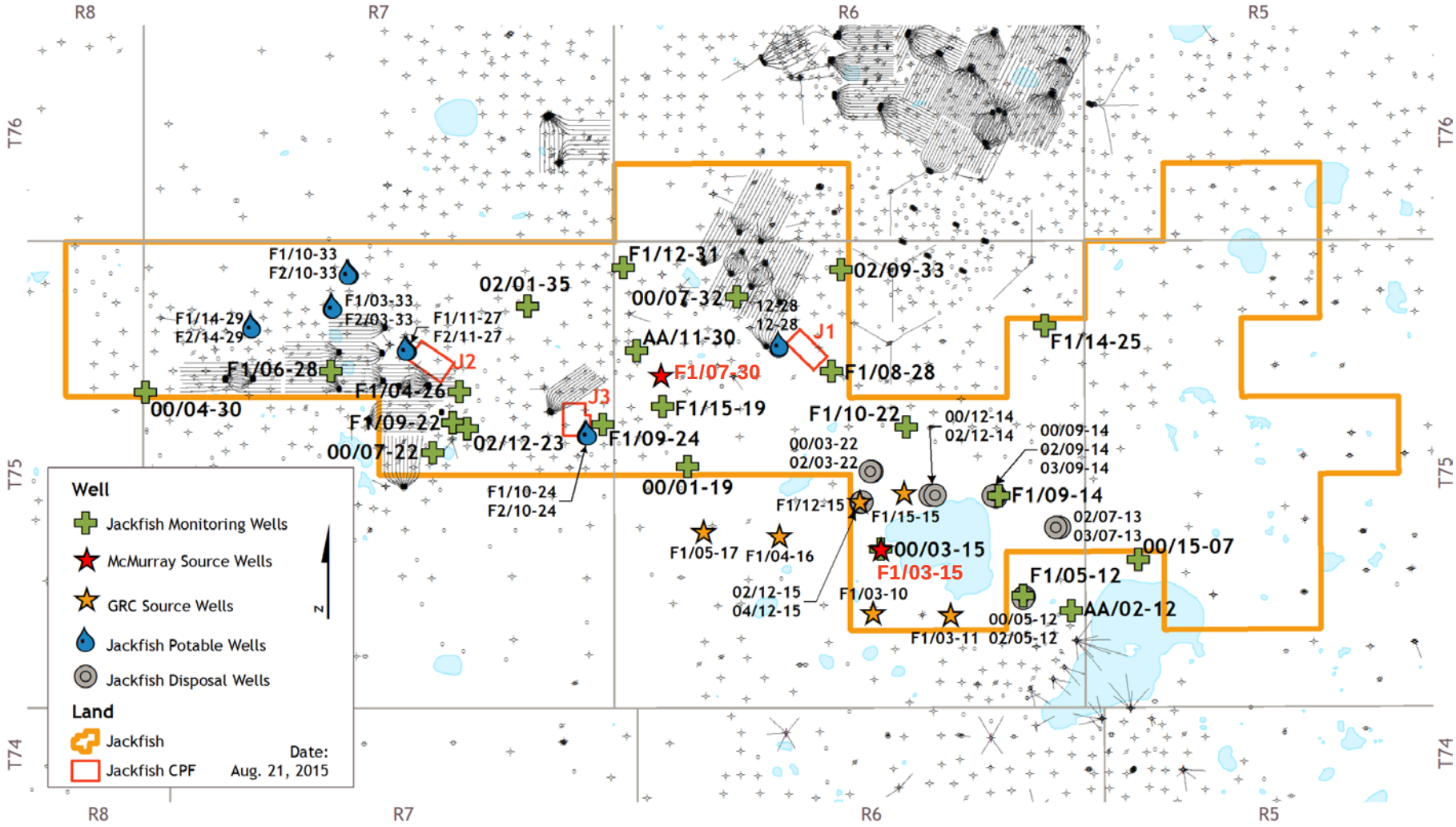
* Perf with a Level Logger

** Perf for water sampling

Instrumentation

Regional Multi-zone Monitoring Wells

3.1.1-5b



Scheme Performance

Section 3.1.1-7

Scheme Performance Prediction
Jackfish

devon

3.1.1-7a

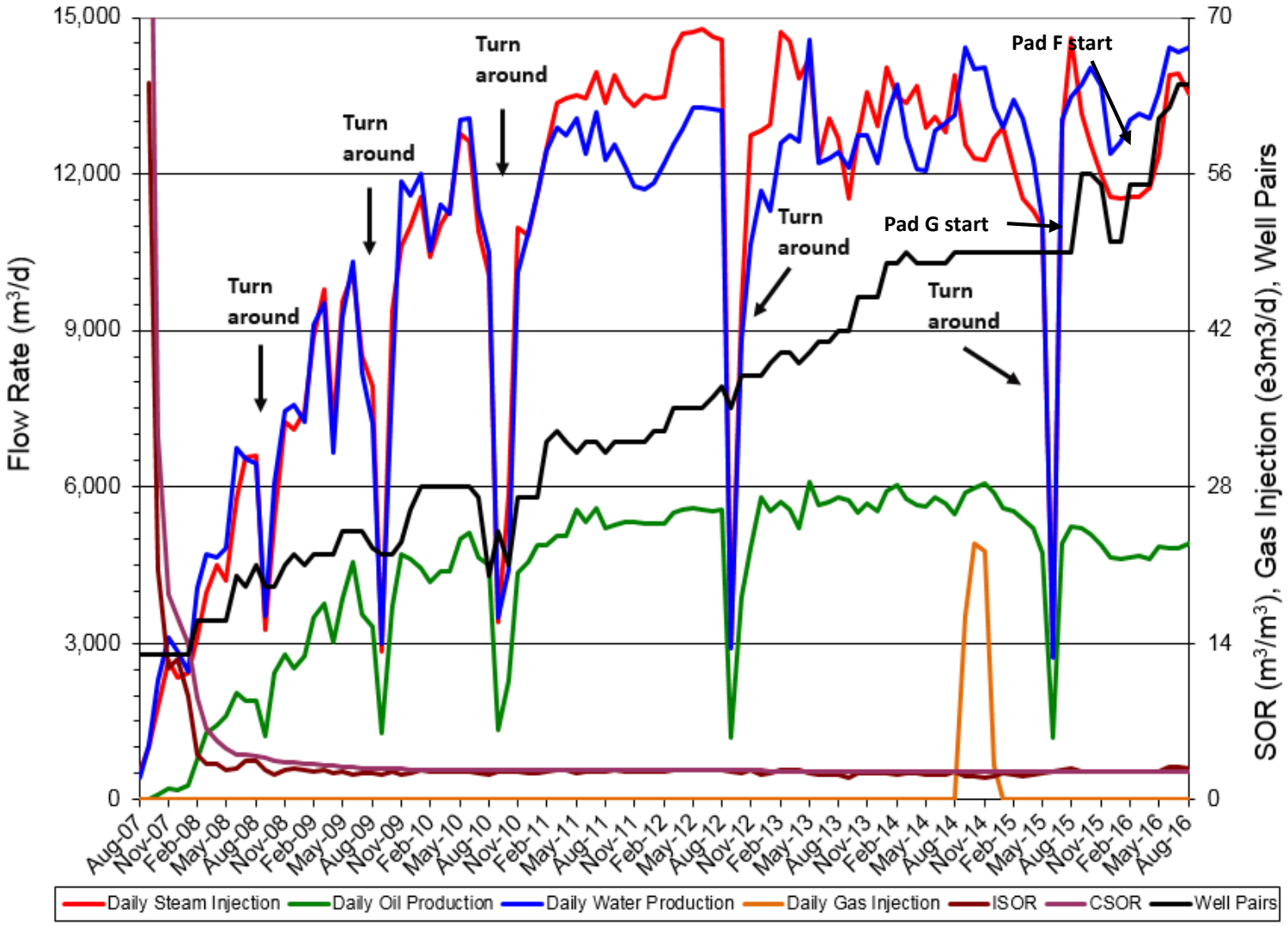
- Well pad performance forecasts generated using Jackfish & industry analogues and validated with numerical simulation and analytical methods

- Facility service factors based on historical data, future plans and quantified risks

Scheme Performance

Jackfish 1 Project Life Plot

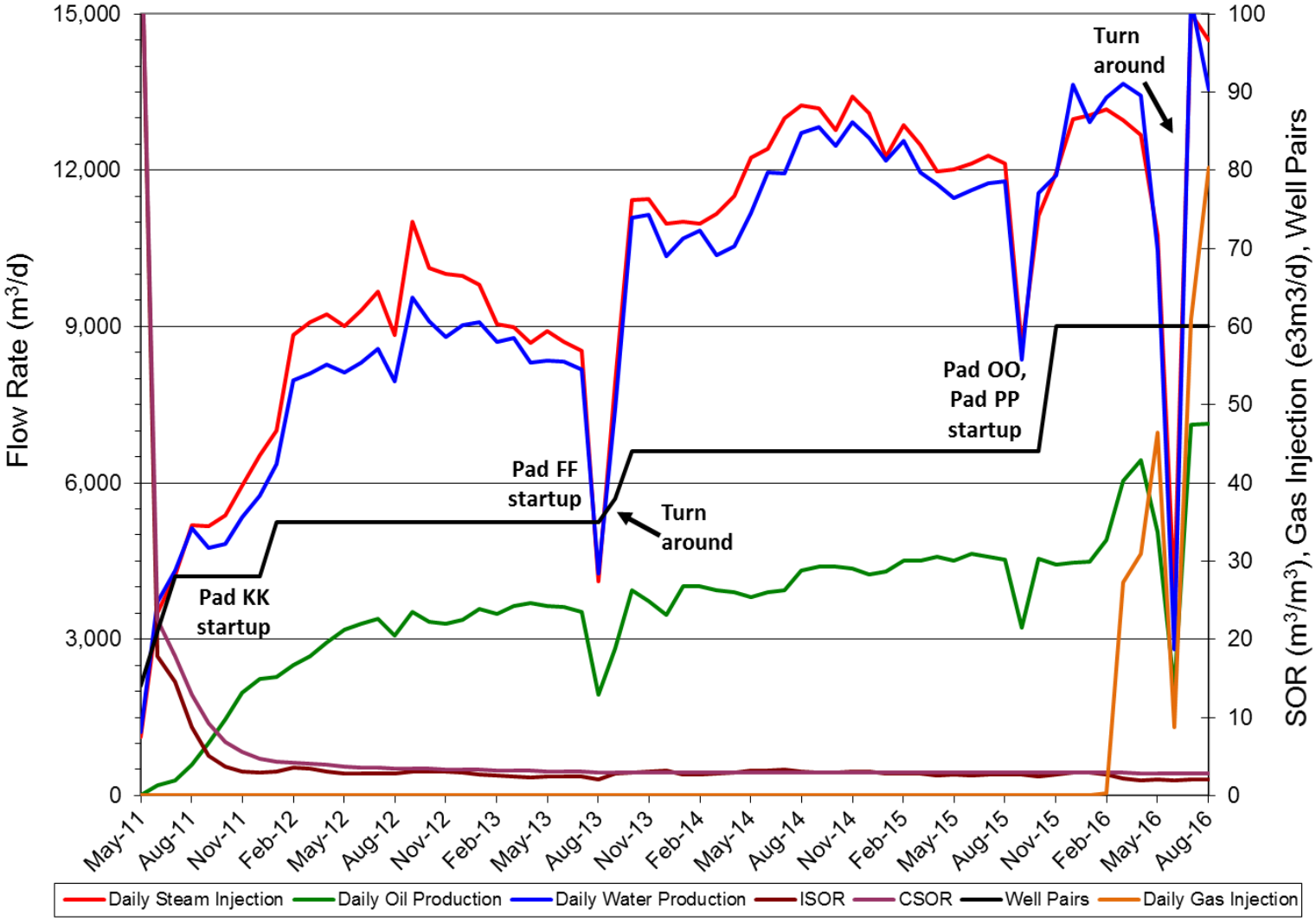
3.1.1-7a



Scheme Performance

Jackfish 2 Project Life Plot

3.1.1-7a

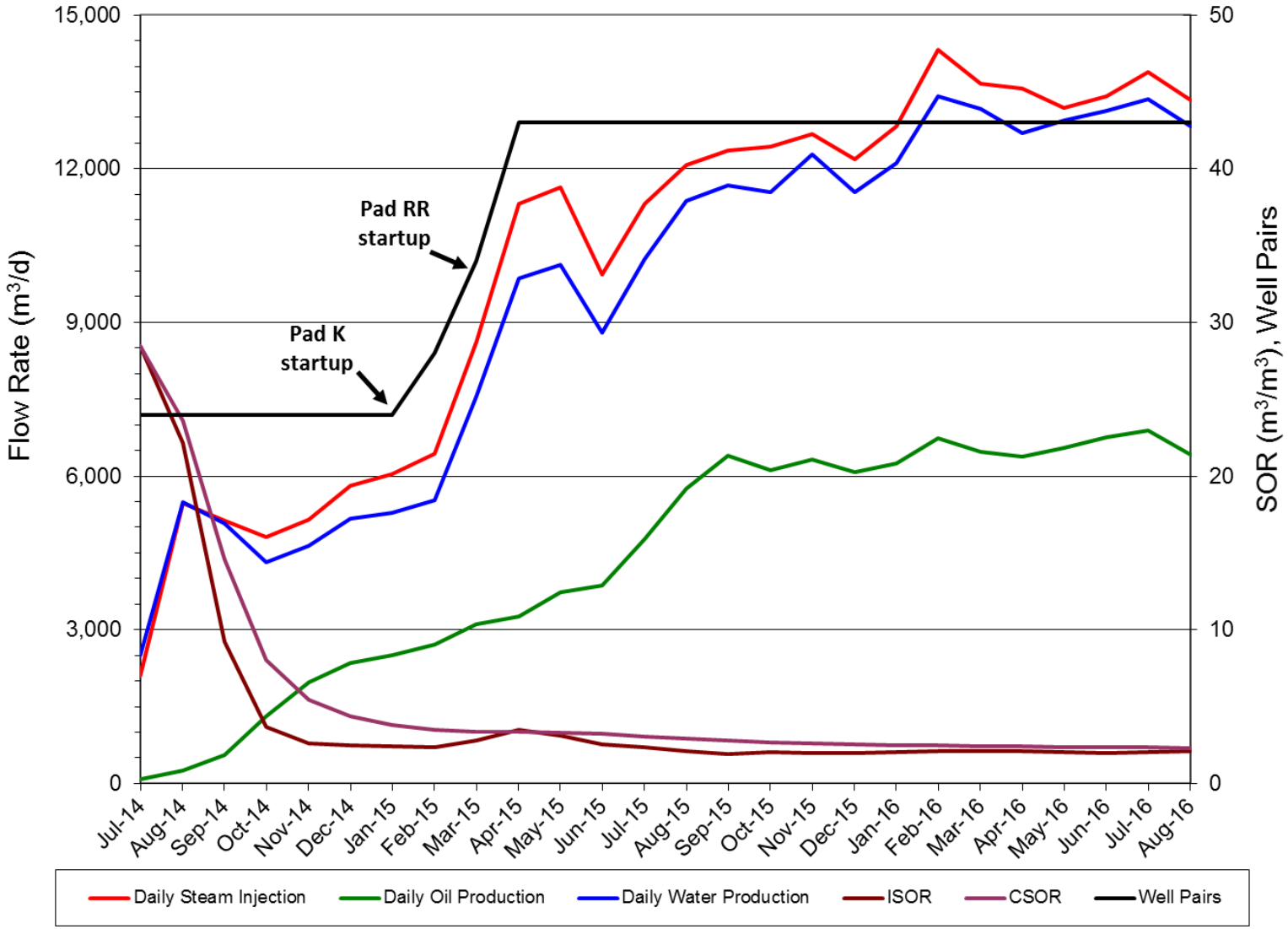


Scheme Performance

Jackfish 3 Project Life Plot

devon

3.1.1-7a

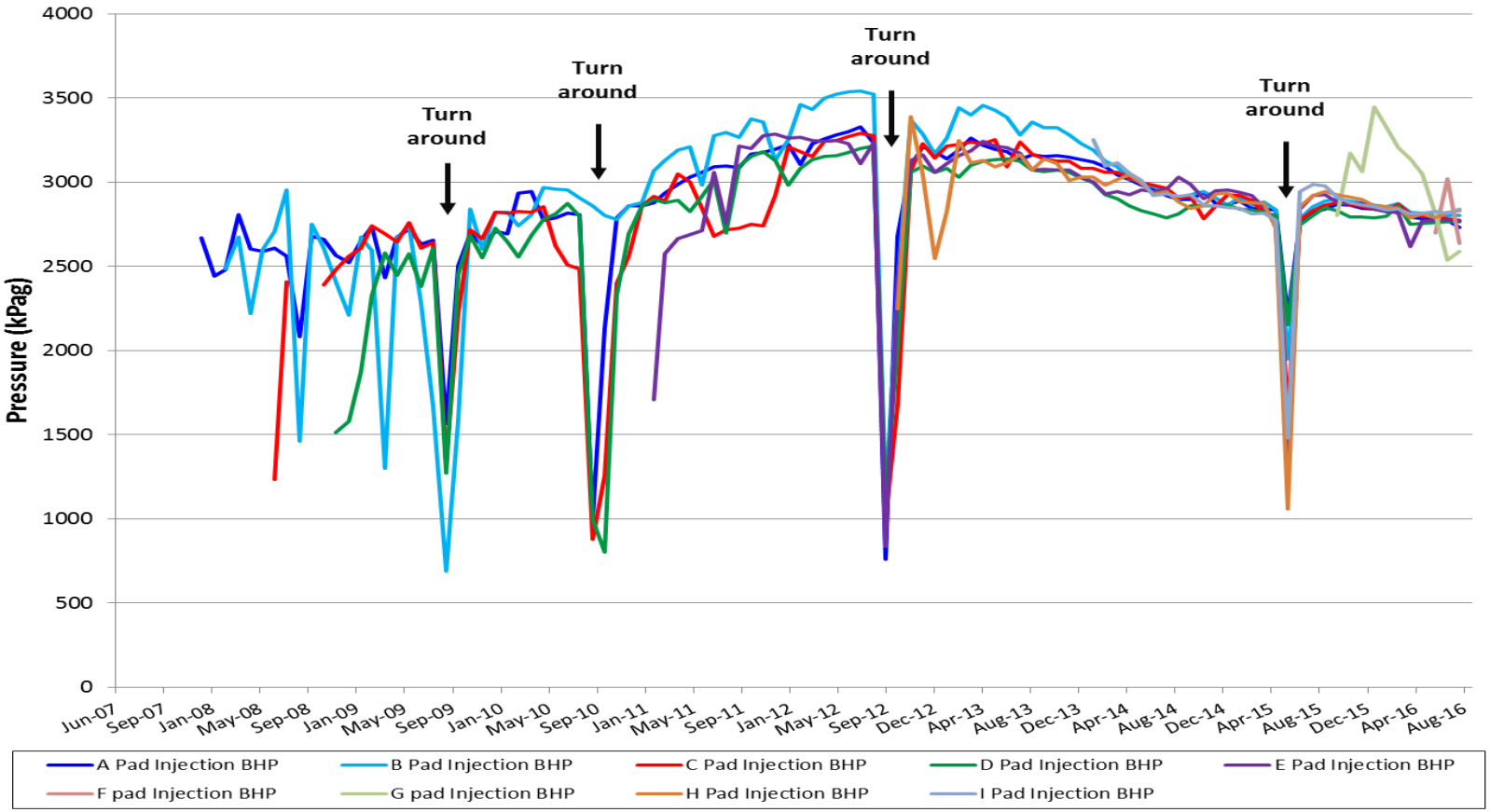


Scheme Performance

Jackfish 1 Bottom Hole Injector Pressures

3.1.1-7b

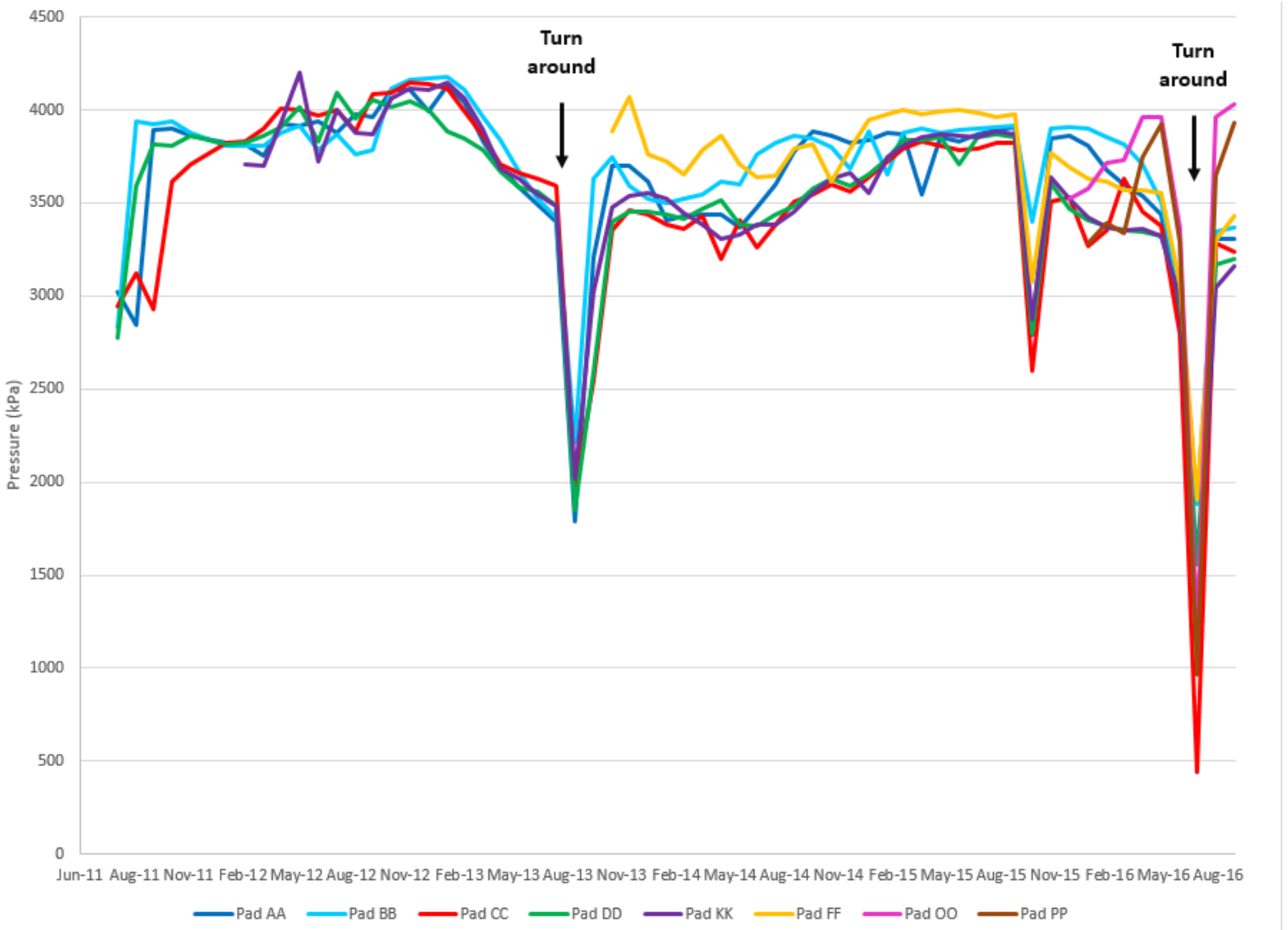
- Devon manages injection pressures to maximize producing rates, manage leakoff and increase overall reservoir recovery. A reduction in operating pressure was implemented in 2013 and continued into 2016.



Scheme Performance

Jackfish 2 Bottom Hole Injector Pressures

3.1.1-7b

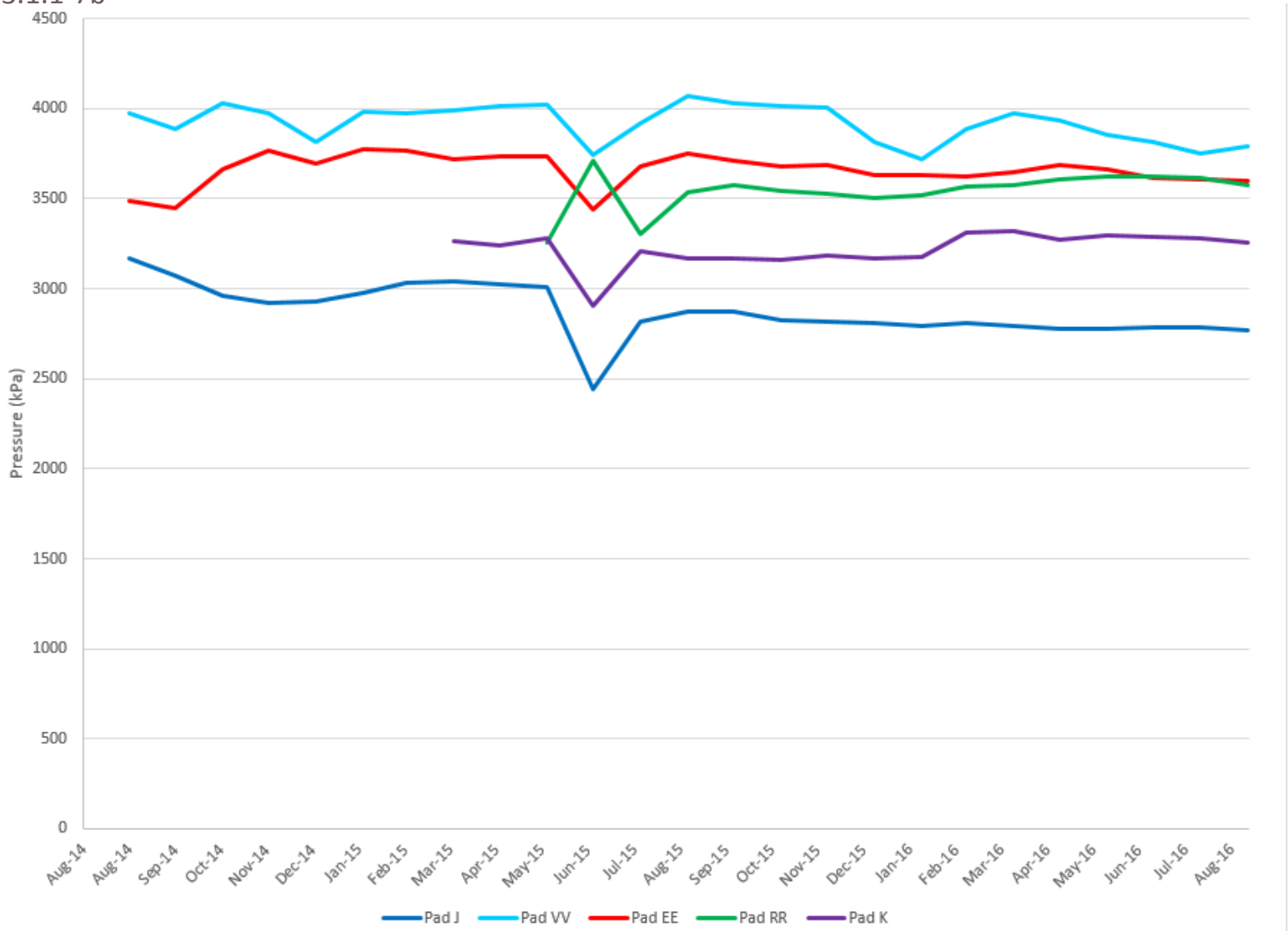


Scheme Performance

Jackfish 3 Bottom Hole Injector Pressures

devon

3.1.1-7b



2016 Scheme Performance

2016 Jackfish 1 Pad Recoveries

3.1.1-7c

Pad	OBIP (10^6m^3)	Ult Rec (10^6m^3)	Cum Prod [1] (10^6m^3)	R.F. (%) to Date [1]	Net GRV Pay S_o (%)	Net GRV Pay Porosity (%)
A	5.7	4.6	4.1	72	84	33
B	4.9	2.6	1.9	39	78	34
C	5.7	3.0	2.6	45	84	35
D	5.8	2.6	2.1	36	82	35
E	5.3	2.7	1.7	33	78	34
H	3.7	2.2	1.1	28	74	34
I	4.3	1.7	0.7	17	79	34
G	4.9	2.3	0.04	1	84	34
F	5.7	2.7	0	0	78	35

[1] Effective August 31, 2016

2016 Scheme Performance

2016 Jackfish 2 Pad Recoveries

3.1.1-7c

Pad	OBIP (10^6m^3)	Ult Rec (10^6m^3)	Cum Prod [1] (10^6m^3)	R.F. (%) to Date [1]	Net GRV Pay S_o (%)	Net GRV Pay Porosity (%)
AA	3.9	2.0	1.2	31	79	35
BB	5.8	4.1	2.6	44	79	34
CC	3.3	0.8	0.5	16	73	34
DD	4.1	1.1	0.7	17	79	34
FF	5.0	2.5	0.9	18	77	34
KK	3.1	1.3	0.7	24	75	34
OO	6.4	3.6	0.2	3	83	34
PP	6.2	3.2	0.3	4	81	35

[1] Effective August 31, 2016

2016 Scheme Performance

2016 Jackfish 3 Pad Recoveries

3.1.1-7c

Pad	OBIP (10^6m^3)	Ult Rec (10^6m^3)	Cum Prod [1] (10^6m^3)	R.F. (%) to Date [1]	Net GRV Pay S_o (%)	Net GRV Pay Porosity (%)
EE	5.0	2.8	0.9	18	79	34
J	4.0	1.7	0.4	10	75	35
VV	5.9	2.8	0.8	9	75	35
RR	6.0	3.0	0.5	8	82	34
K	8.6	5.0	0.8	14	86	34

[1] Effective August 31, 2016

Jackfish 2 - Pad DD Highlights

Low Performer

devon

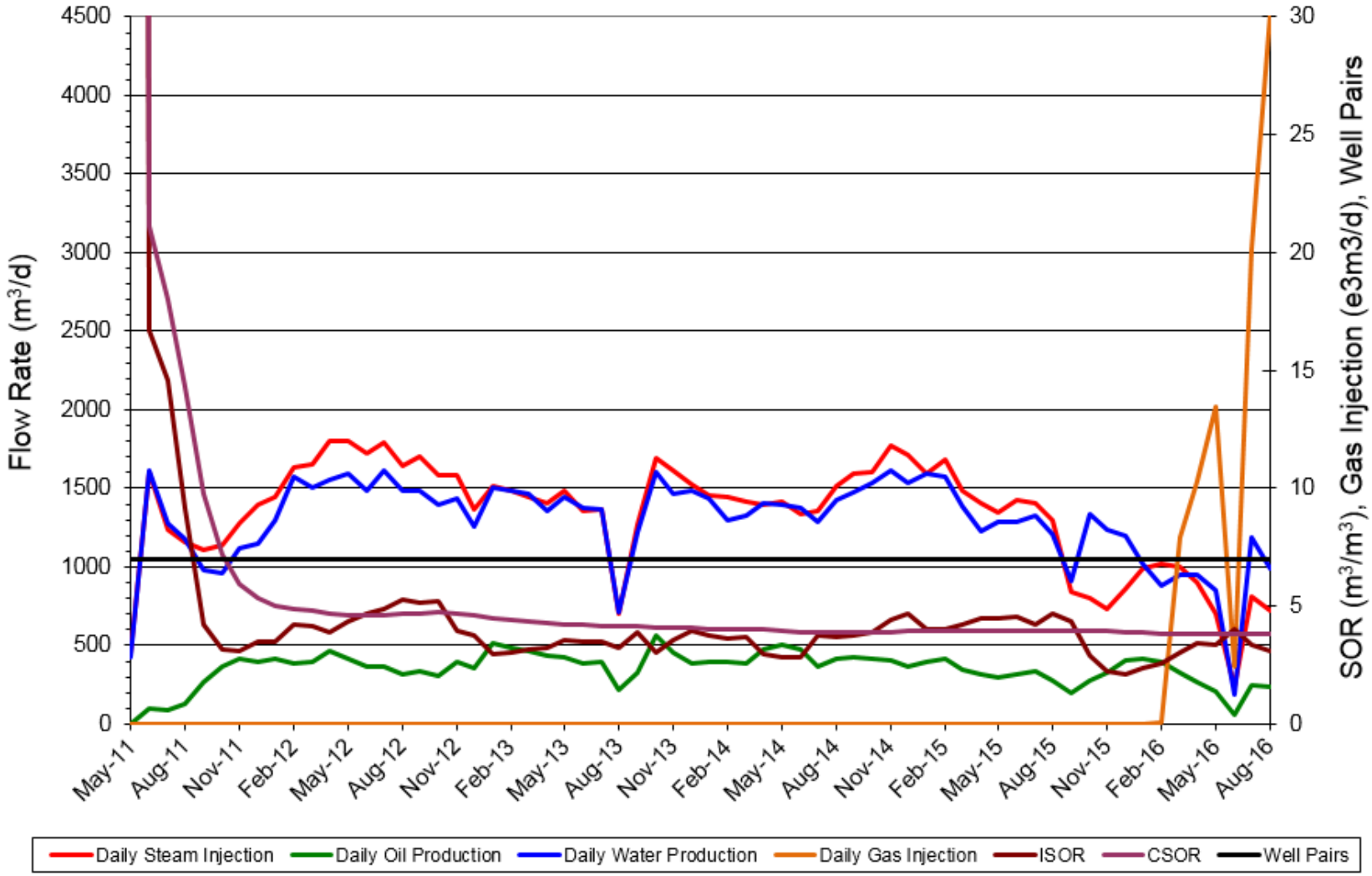
3.1.1-7c

- First steam occurred in June 2011
- 7 well pairs in operation
- NCG injection as of March 2016 on DD1, DD3, DD5 and DD6
- Heterogeneous reservoir with low mid-heel ceiling of ~5m pay thickness
  - Limited vertical steam chamber growth
  - Regions of poor temperature conformance
- Inflow Control Device, installed Sept. 2013 (DD2), well achieved expected production with period of flush production
- Inflow Control Device, installed Nov. 2014 (DD7), under-performing pre-installation rates, likely due to dP higher than anticipated in design
- Potential fluid interaction with Pad AA due to chamber growth on DD1-DD3 wells

Pad DD Performance

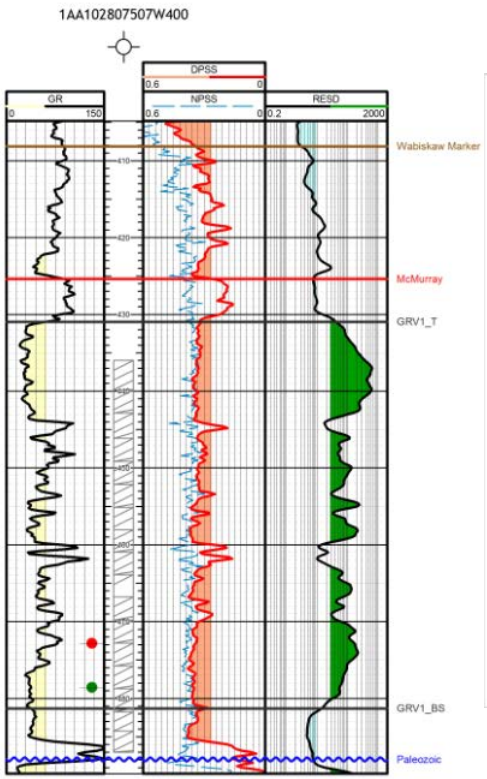
Jackfish 2 Pad DD Life Plot

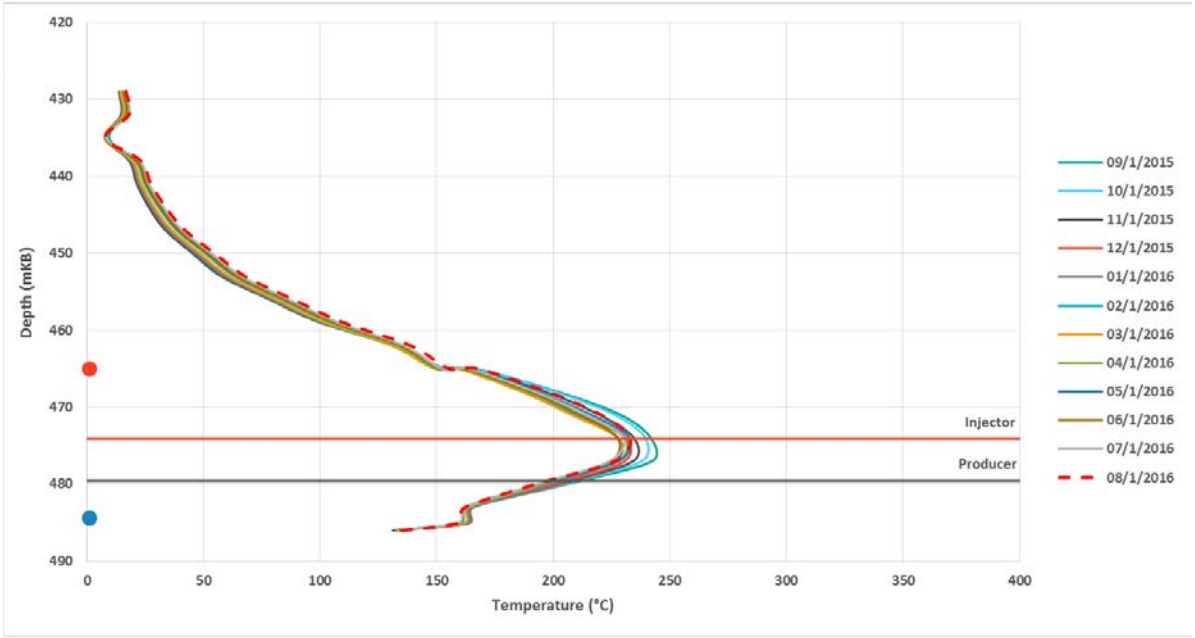
3.1.1-7c



Pad DD Toe Observation Well Temp
(10.5m from DD3 well pair)

3.1.1-5d





- Lower temperature resulting from pressure reduction

Jackfish 3 – Pad EE Highlights

Medium Performer

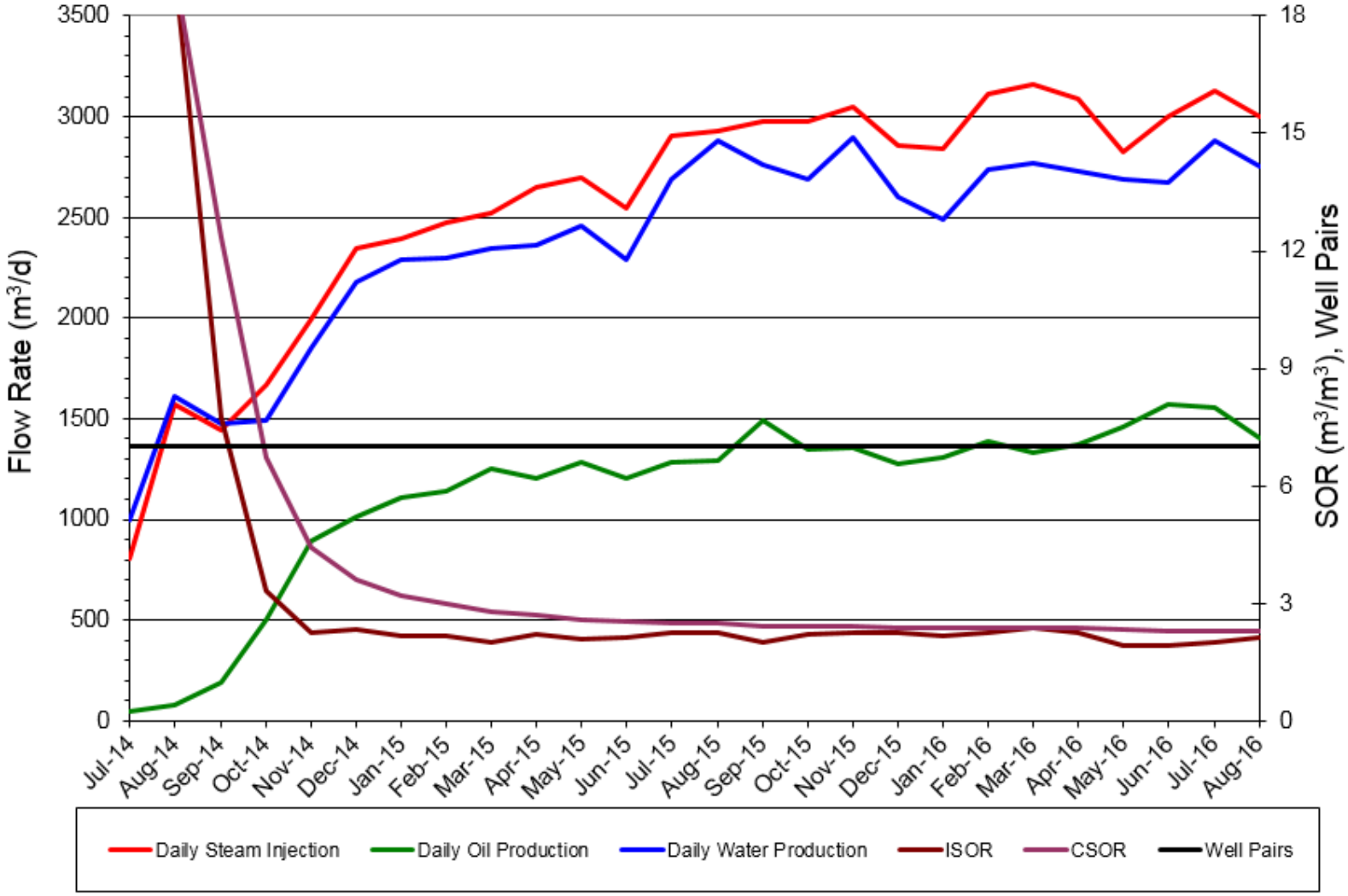
3.1.1-7c

- First steam occurred in July 2014
- 7 well pairs in operation
- Production currently in the plateau phase, expected to decline around the end of 2017
- EE1 – EE5 have clean sand with uniform ceiling
- EE6 – EE7 have low ceiling at toe of wells
- Steam subs opened on EE1 – EE5 in 2015 to increase steam injection rates
- Pad SOR historical average around 2.2

Pad EE Performance

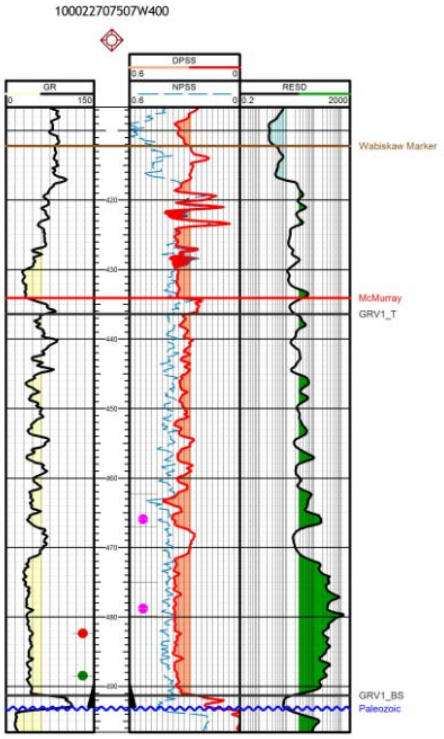
Jackfish 3 Pad EE Life Plot

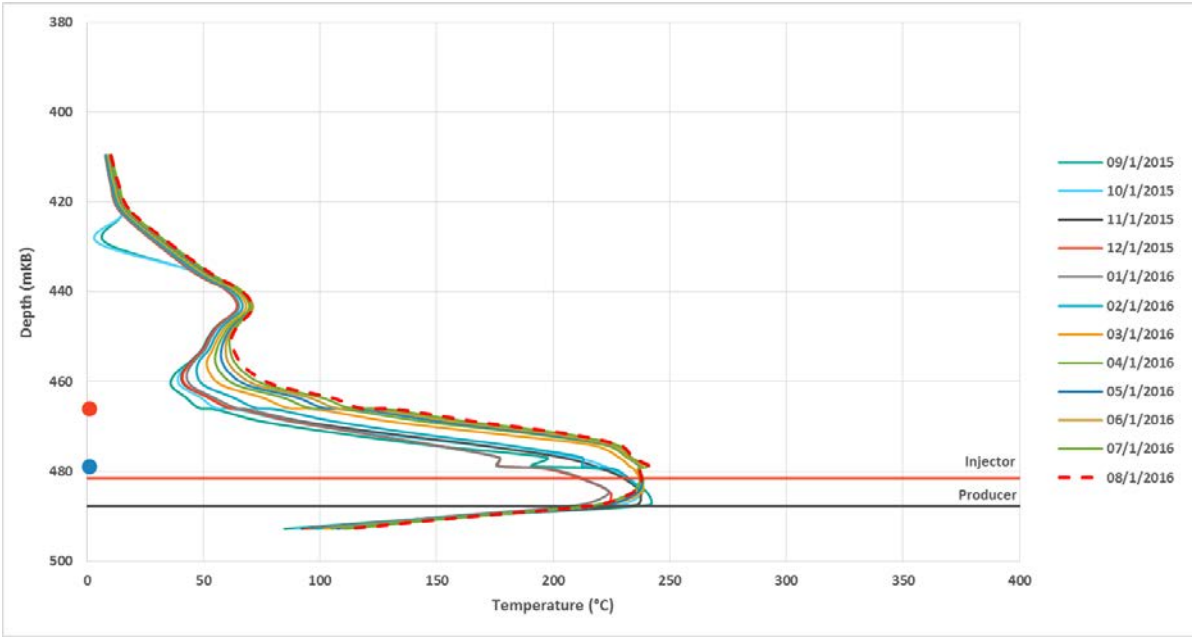
3.1.1-7c



Pad EE Heel Observation Well Temp
(4.8m from EE5 well pair)

3.1.1-5d





Jackfish 3 - Pad K Highlights

High Performer

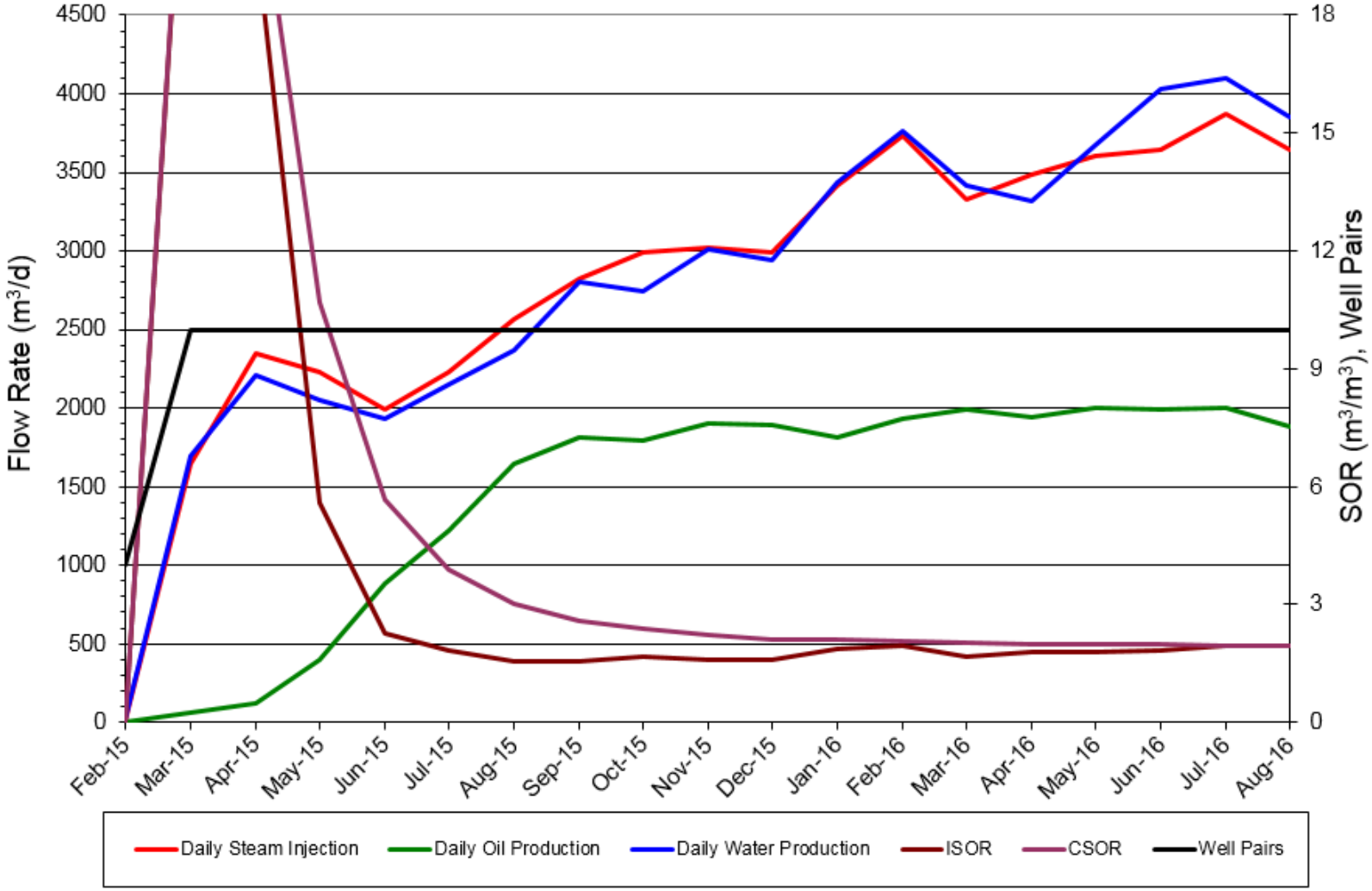
3.1.1-7c

- First steam occurred in February 2015
- 10 well pairs are in operation
- Best performing pad at Jackfish 3
- Clean sand throughout all 10 well pairs
- Historical SOR < 2

Pad K Performance

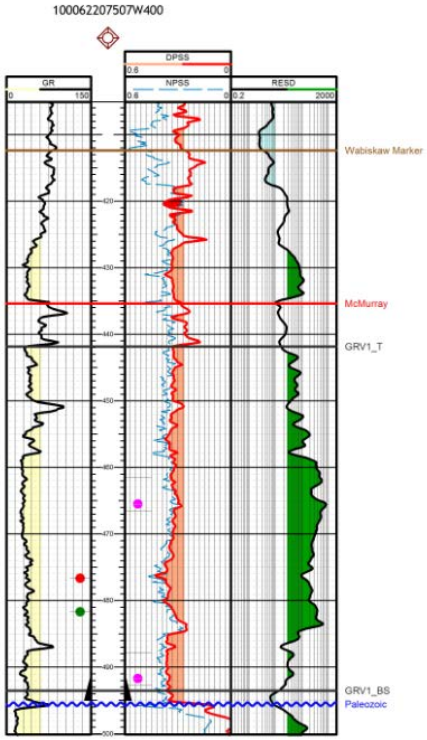
Jackfish 3 Pad K Life Plot

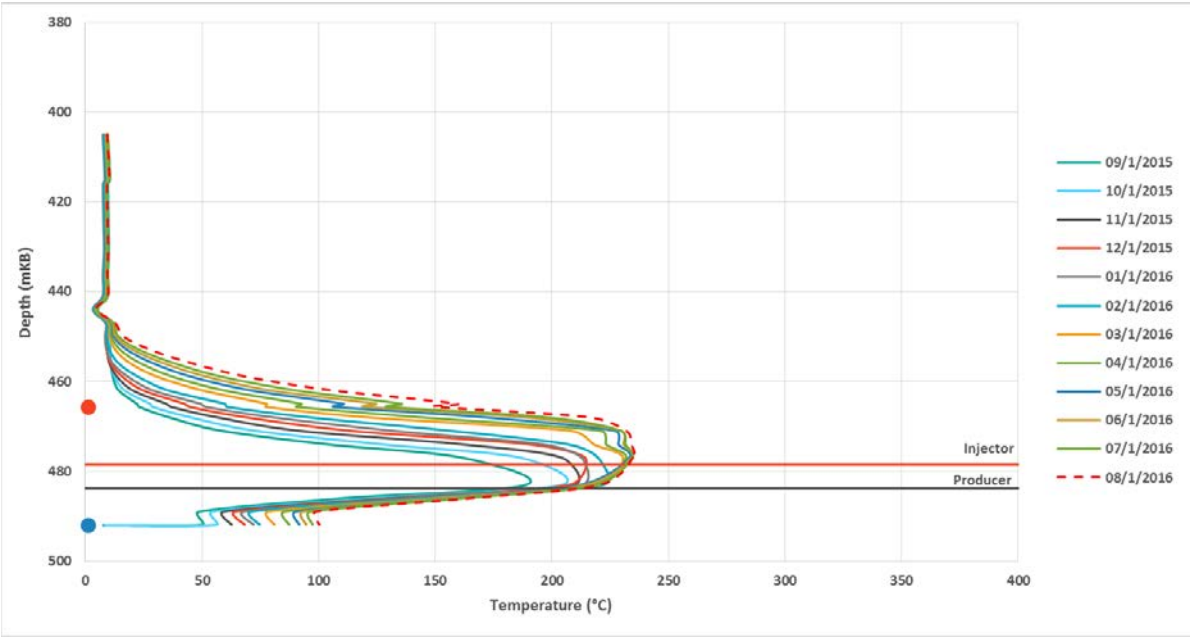
3.1.1-7c



Pad K Toe Observation Well Temp
(9.5m from K5 well pair)

3.1.1-5d





Five Year Outlook

Jackfish Pad Abandonments

3.1.1-7c

- No anticipated pad abandonments at Jackfish within the next five years

Wellhead Steam Quality

3.1.1-7d

	Pressure (kPag)*	Temperature (°C)	Quality (%)
Plant Gate	9,600	311	100%
JF1 Wellhead	2,700-3,700	228-246	97%
JF2 Wellhead	3,000-4,400	247-256	97%
JF3 Wellhead	2,700-4,400	228-256	97%

*Pressures subject to change based on status of pending MOP application

- Losses occur as steam is transported to the pads
- Utilize condensate traps at each pad to maximize wellhead steam quality

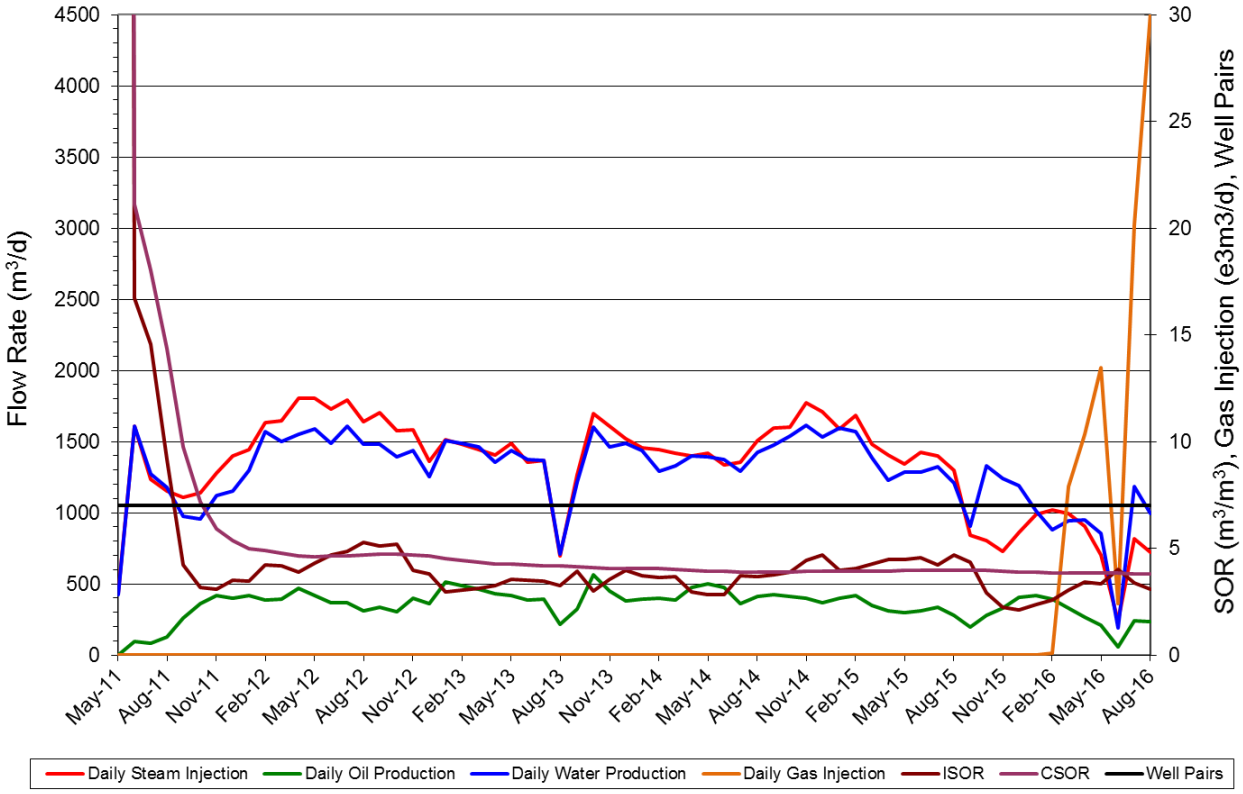
NCG Co-injection

3.1.1-7e, g

- NCG source is fuel gas, primarily composed of methane
- NCG co-injection pilot at Pad A was discontinued in late 2014
- NCG co-injection started on Pads DD, KK and FF in March 2016
- Learnings-to-date:
  - NCG injection rates within expected range (1 – 4 mole%, per pad)
  - NCG successful in maintaining chamber pressure with reduced steam injection
  - No negative impact to resource recovery observed
  - Improved SOR observed
- Continuing to monitor and evaluate NCG performance

NCG Co-injection
Pad DD

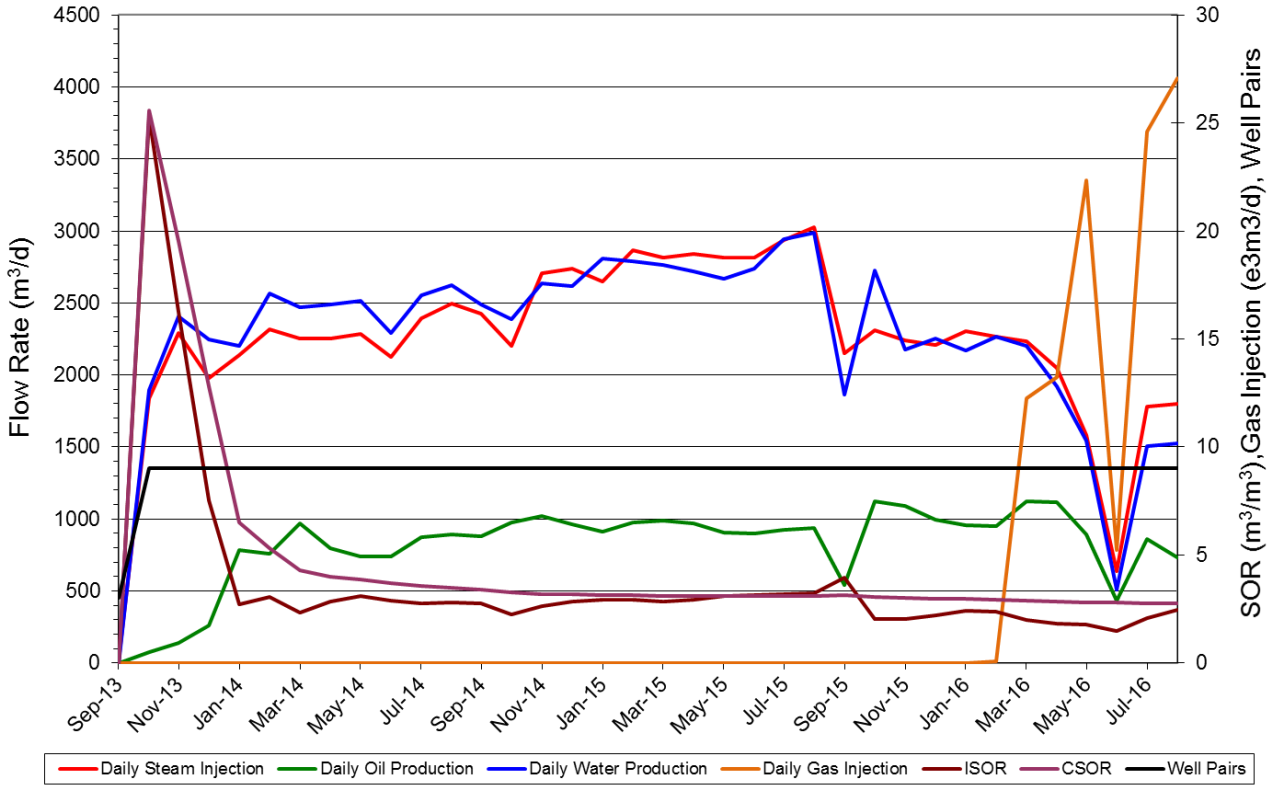
3.1.1-7e, g



- NCG injection as of Aug. 2016 on DD1, DD3, DD5 and DD6

NCG Co-injection
Pad FF

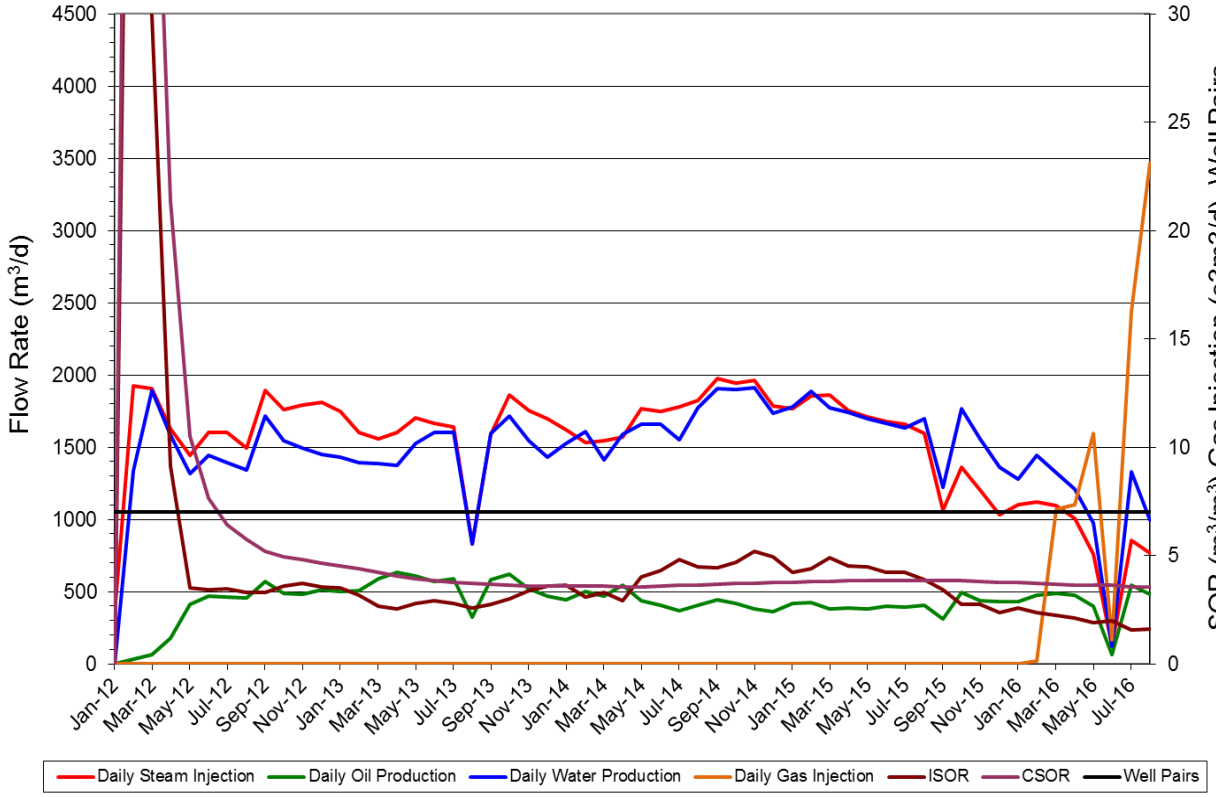
3.1.1-7e, g



- NCG injection as of Aug. 2016 on FF1, FF2, FF3, FF4, FF5, FF6, FF8, and FF9

NCG Co-injection
Pad KK

3.1.1-7e, g



- NCG injection as of Aug. 2016 on KK2, KK3, KK5 and KK6

Jackfish Performance

Key Learnings

3.1.1-7f

- District SOR improvement tied to pressure reduction
- Produced water chlorides indicative of pressure balance with aquifer
- Successful use of NCG to enable steam transfer for new pad startup

Future Plans

Section 3.1.1-8

Future Plans
Well Operations, Drilling, Trials

3.1.1-8a, b

Jackfish 1
- SAGD drilling on Pad R in Q4 2017

Jackfish 2
- SAGD drilling on Pad QQ in Q3 2017
- One pre-SAGD observation well to be drilled on Pad QQ in Q1 2017

Jackfish 3
- SAGD drilling on Pad EEE in Q4 2016

Future Plans
Jackfish District Steam Strategy

3.1.1-8c

Jackfish 1

- Managing injection rates to balance chamber pressure with aquifer

Jackfish 2

- Utilizing steam capacity while managing SOR through steam allocation, pressure management, and leveraging NCG co-injection on Pads DD, KK, and FF

Jackfish 3

- Managing injection rates for SOR optimization through steam allocation and pressure management
- Injection meeting stable demand with all pads in early plateau stage

Surface Operations

Table of Contents

Surface Operations

• Facilities Overview	Ivan Morales
• Facilities Performance	Ivan Morales
• Measurement & Reporting	Jody Kutschera
• Water Production, Injection & Uses	Ivan Morales
• Sulphur Production & Air Emissions	Greg Rokosh
• Environment	Greg Rokosh
• Regulatory Compliance	Greg Rokosh
• Future Plans	Ivan Morales

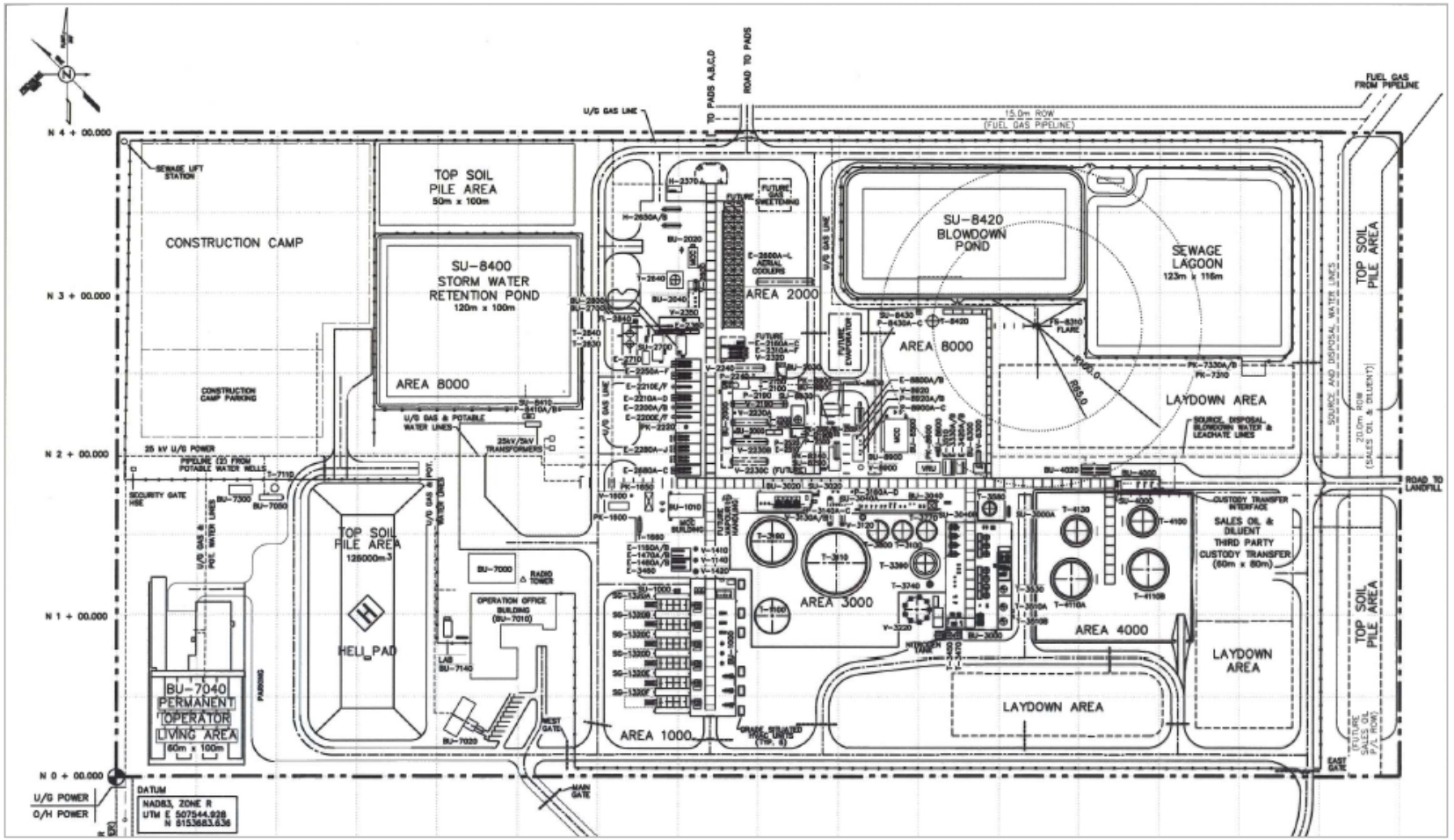
Facilities

Section 3.1.2-1

Facilities

Plot Plan – Jackfish 1

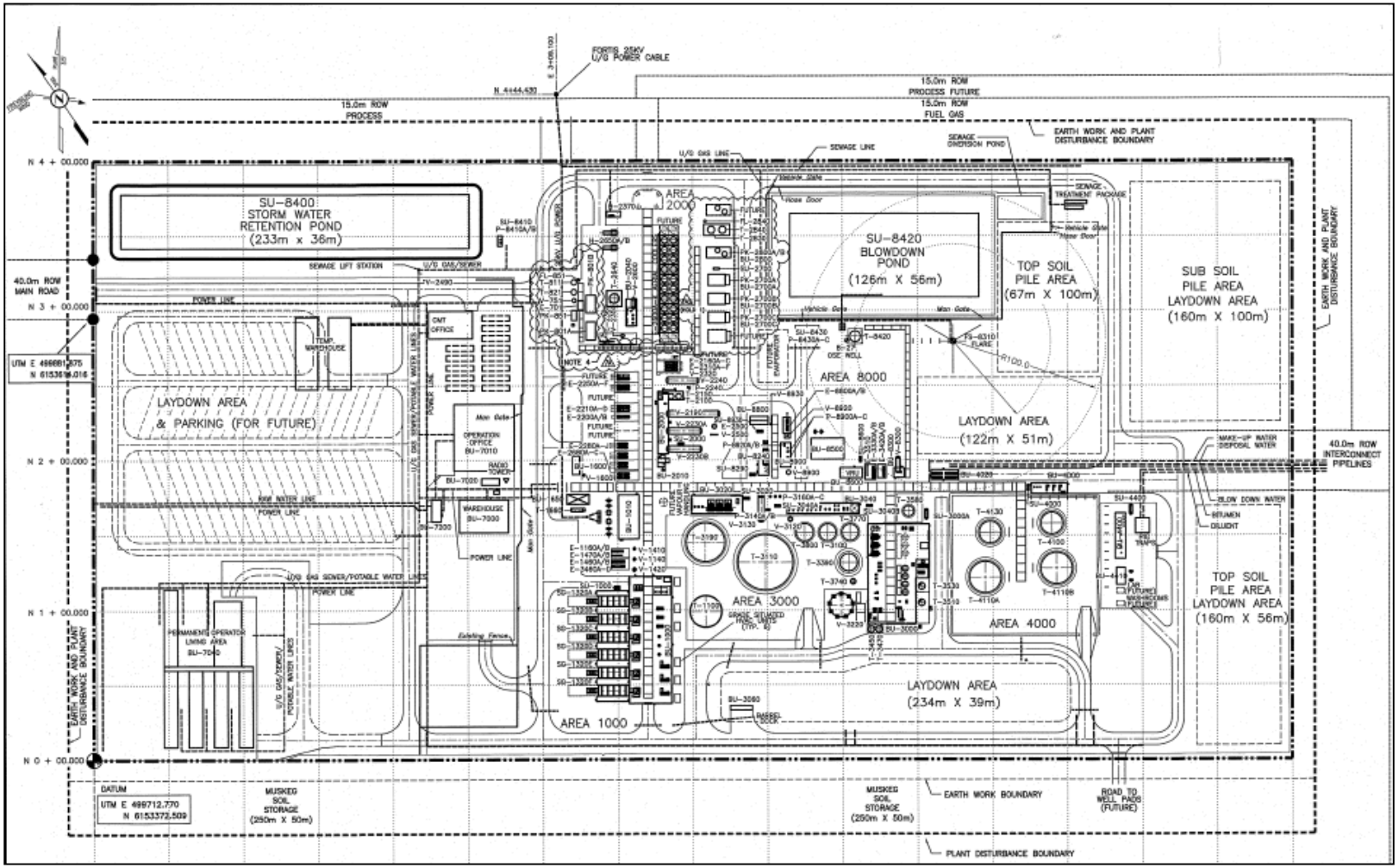
3.1.2-1a



Facilities

Plot Plan – Jackfish 2

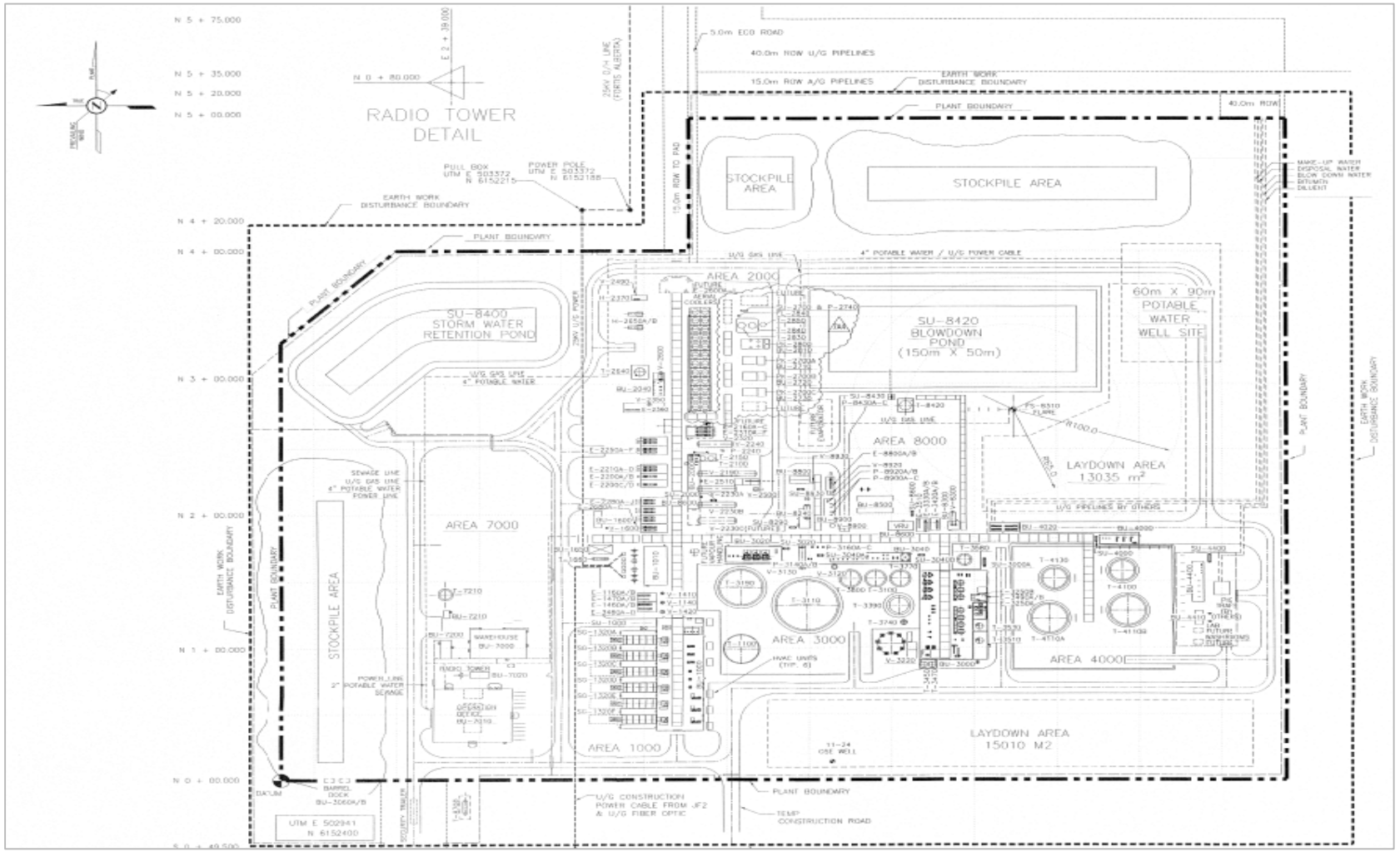
3.1.2-1a



Facilities

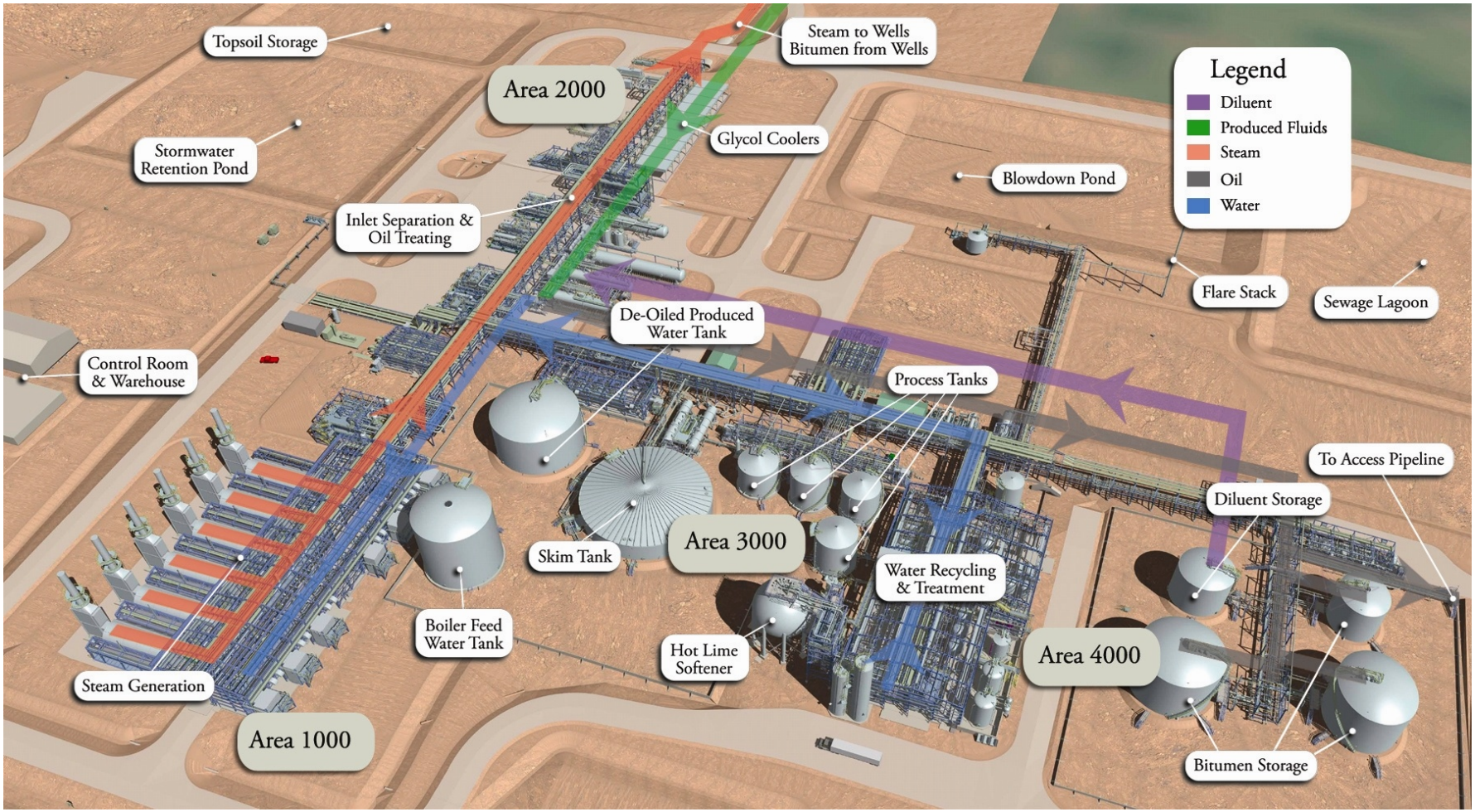
Plot Plan – Jackfish 3

3.1.2-1a



Facilities
Plant Schematic

3.1.2-1b



Facilities Performance

Section 3.1.2-1

Facilities Performance

3.1.2-1a-c

Turnarounds

- Maintenance turnaround completed June 2016

Bitumen Treatment

- Stable operation maintained at higher blend densities and tight blend density ranges

Water Treatment

- Utilized brackish water wells with TDS ranging from 5,000-13,000 ppm for all make up water requirements
- Jackfish 1 - Installation of 4th LSF Unit to improve system reliability
- Jackfish 2 - Upgrades completed to Lime and MagOx systems and HLS to improve system reliability

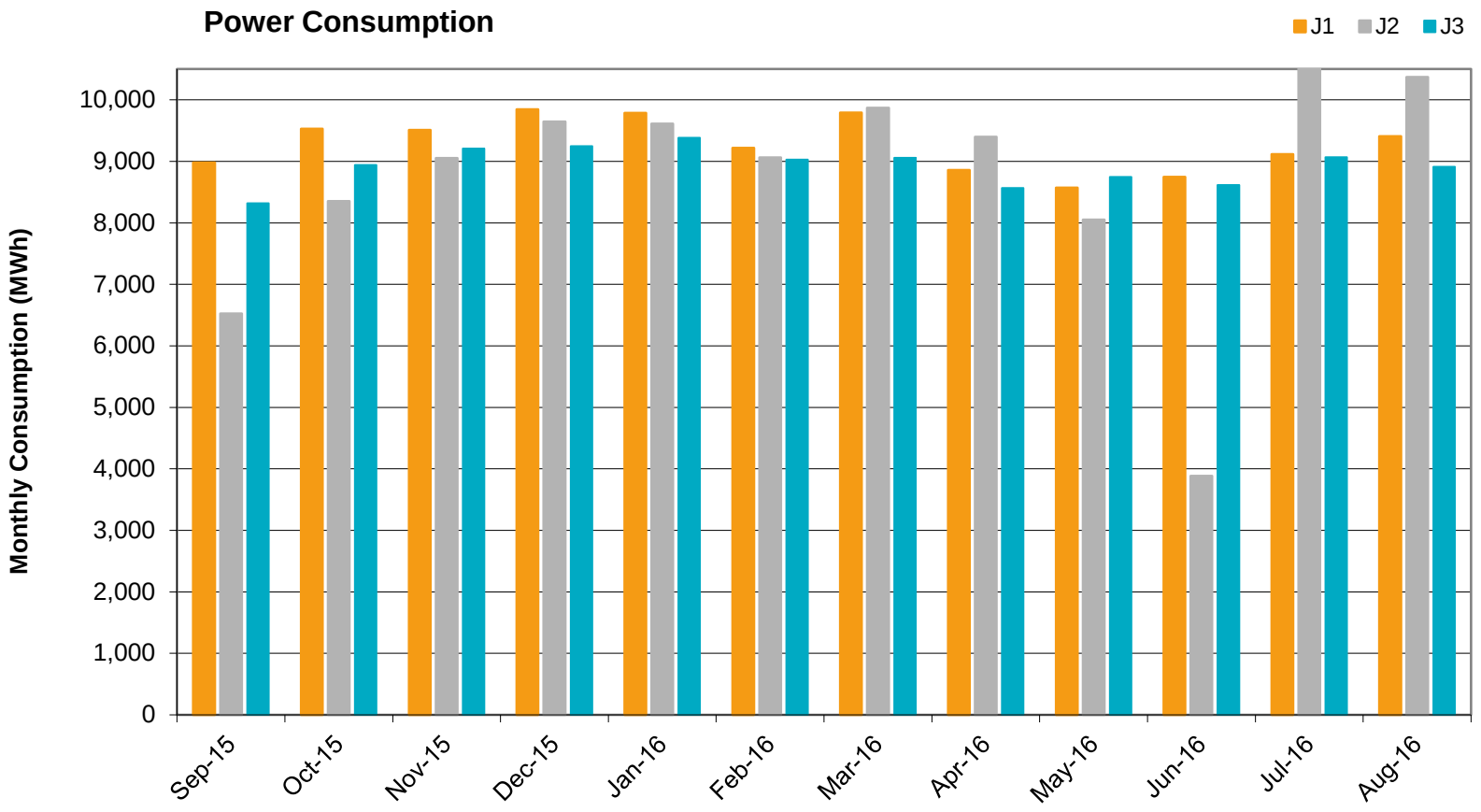
Steam Generation

- Ongoing procedural refinement to manage water quality excursions
- 80% overall steam quality achieved to decrease blowdown disposal volumes and increase steam generation

Facilities Performance

Power Consumption

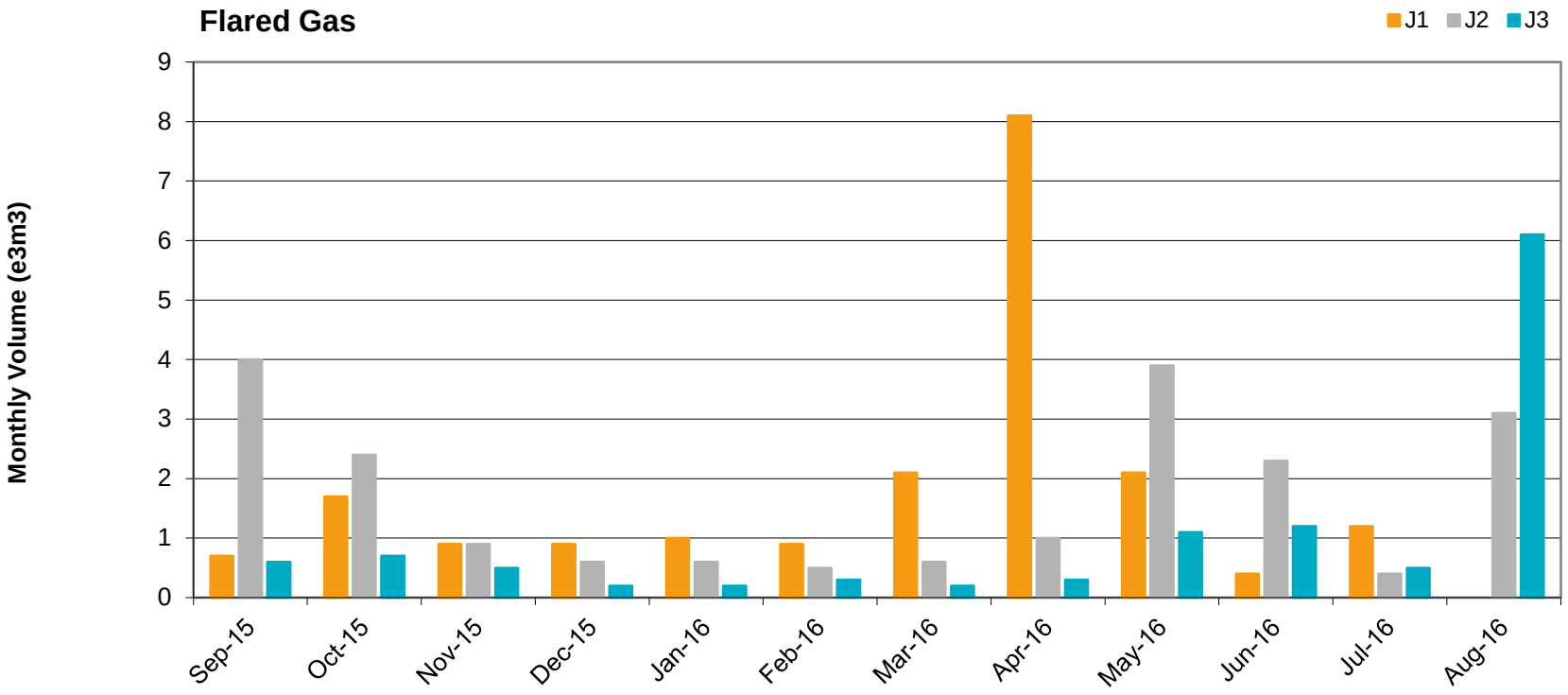
3.1.2-1d



- JF2 power consumption was low in June 2016 due to a planned maintenance turnaround

Facilities Performance
Flared Gas Volume

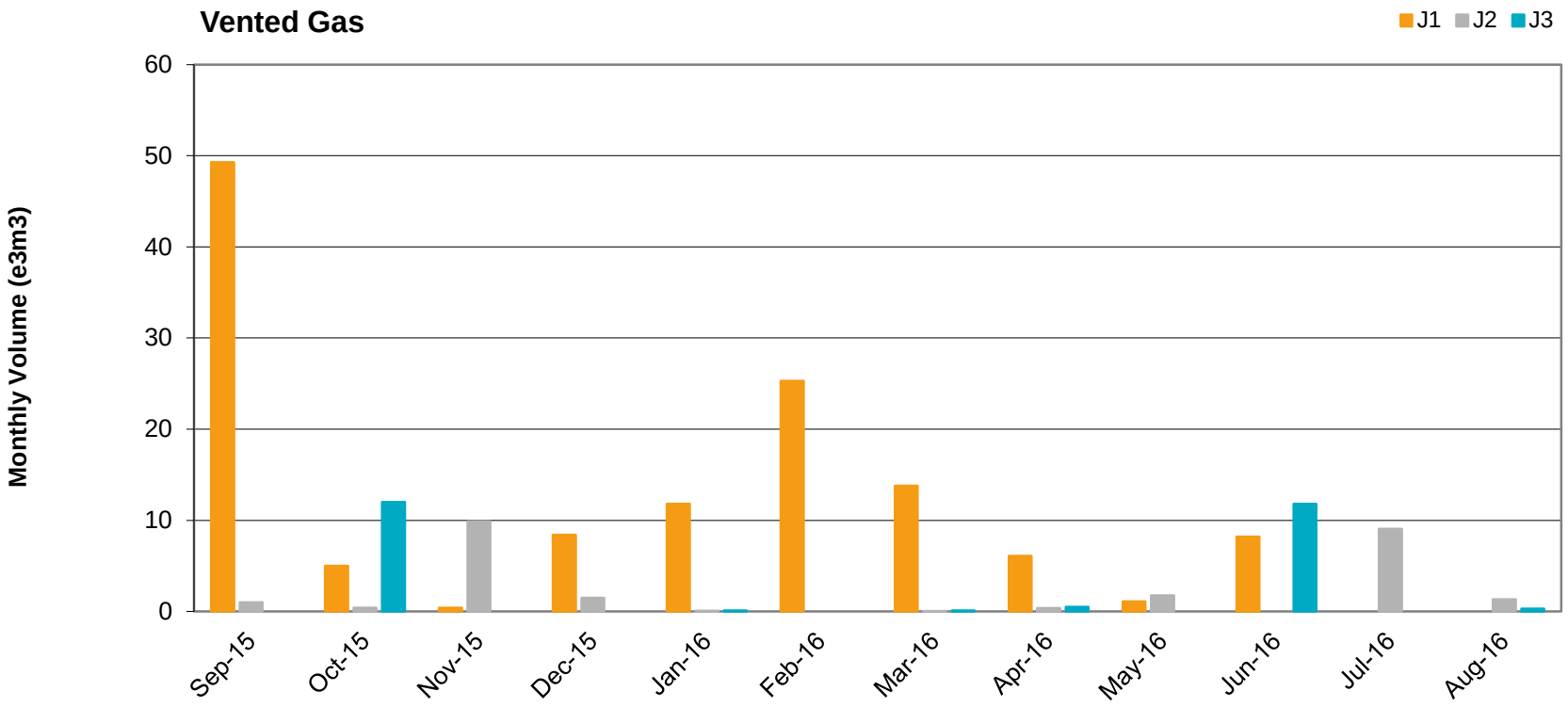
3.1.2-1e



- Flare volumes are produced gas only, volumes are aligned with MARP reporting requirements for Jackfish
- JF1: Multiple plant trips in April
- JF2: Higher flare volumes in May & June from Turn Around Ramp Down/Ramp Up and August power outage
- JF3: Higher flare volume in August for power outage

Facilities Performance
Vented Gas Volume

3.1.2-1e

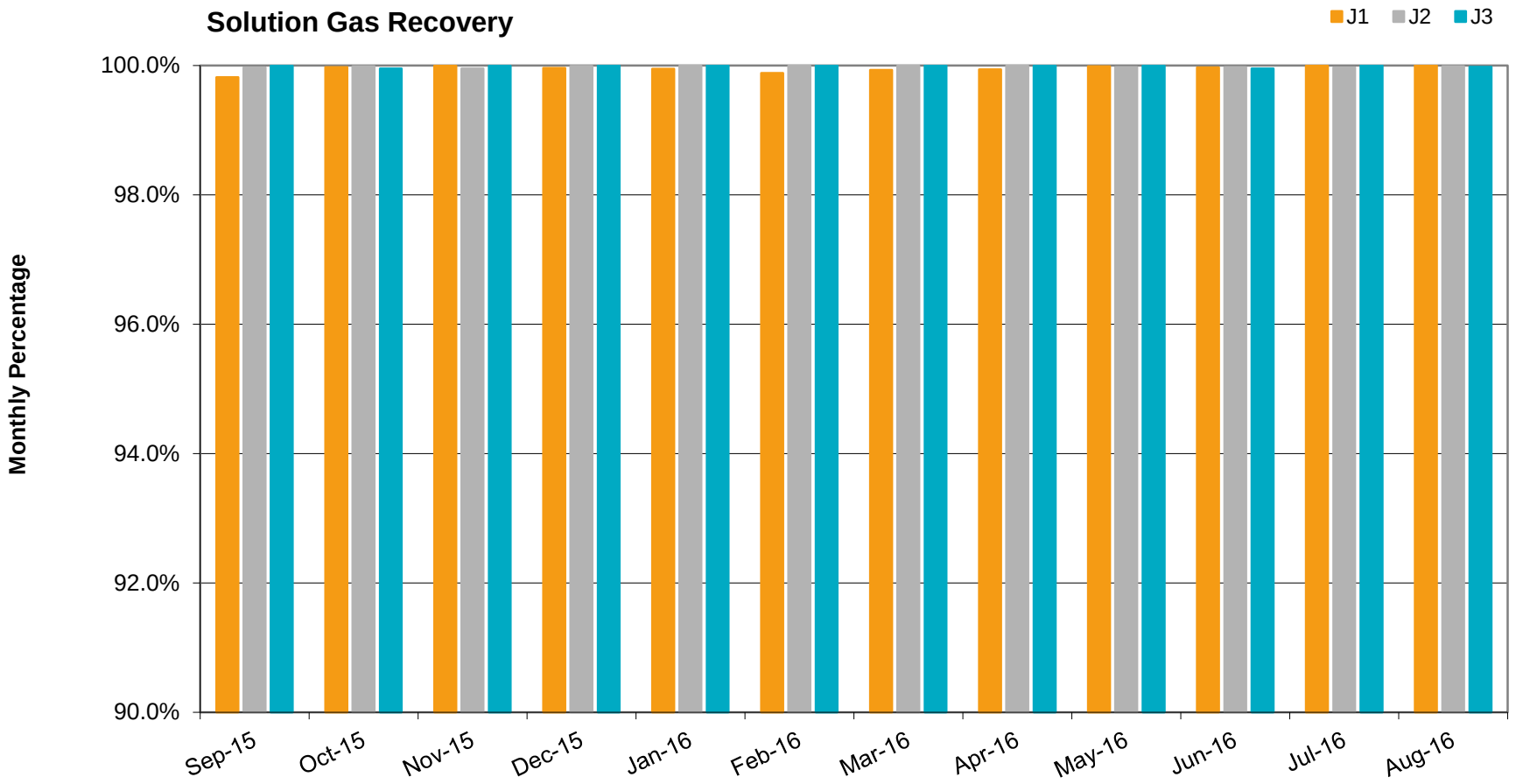


- J1 G pad start-up resulted in plant process instability
- J2 pad trips in November, VRU issues in June
- J3 Access pumps tripped in October, chemical trials in June

Facilities Performance

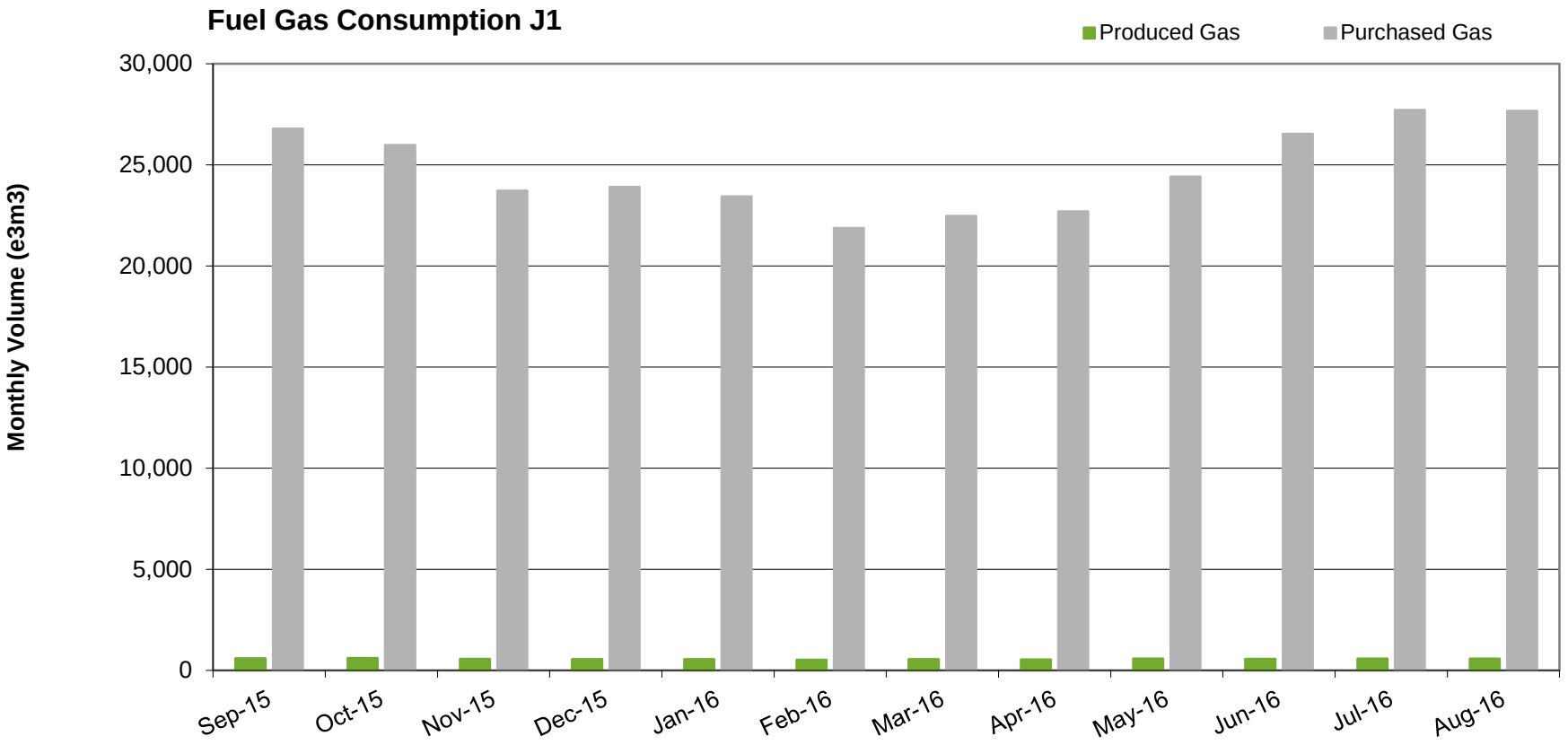
Solution Gas Recovery

3.1.2-1e



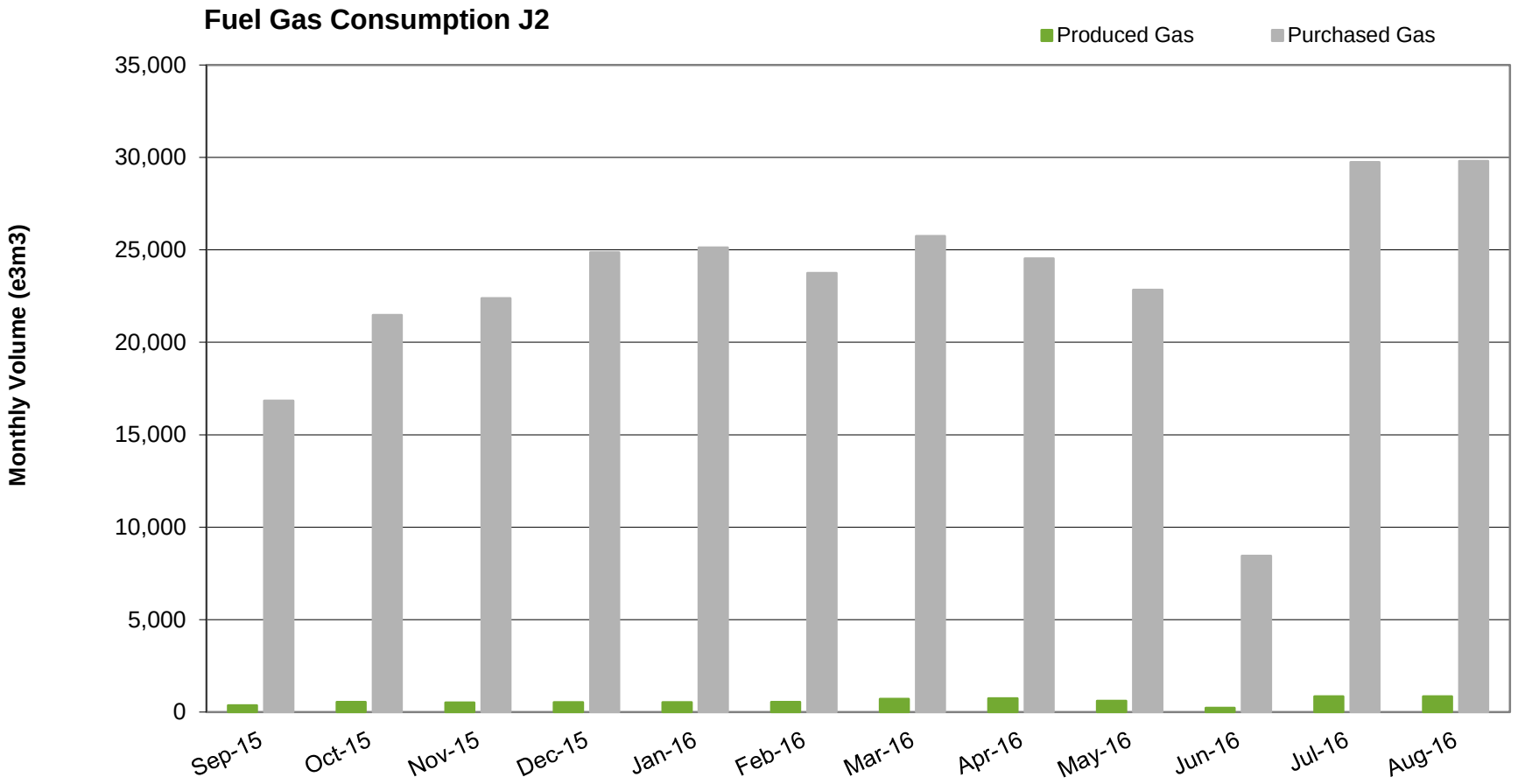
Facilities Performance
Fuel Gas Consumption

3.1.2-1e



Facilities Performance
Fuel Gas Consumption

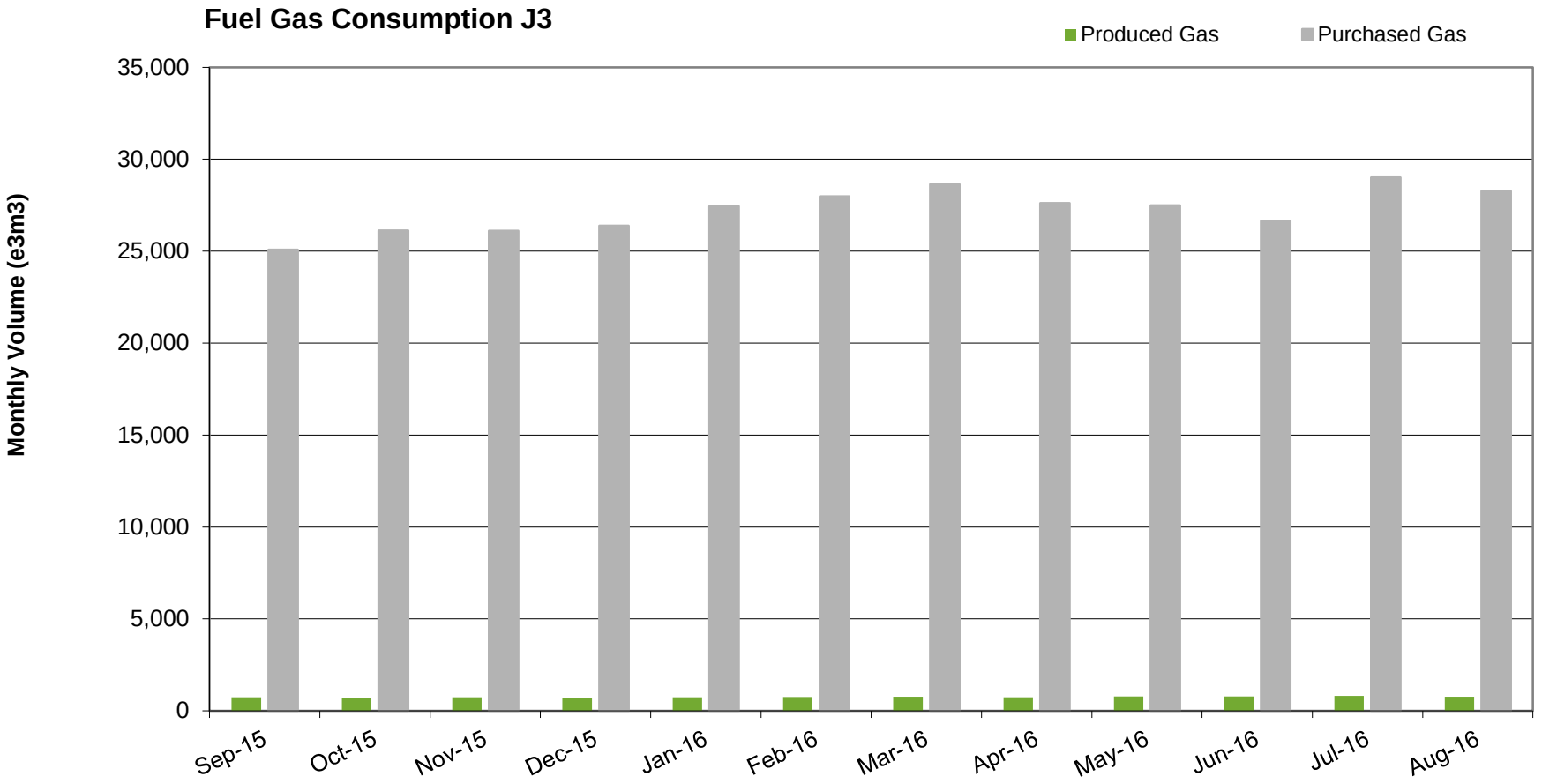
3.1.2-1e



- JF2 Fuel Gas Consumption was low in June 2016 due to a planned maintenance turnaround

Facilities Performance
Fuel Gas Consumption

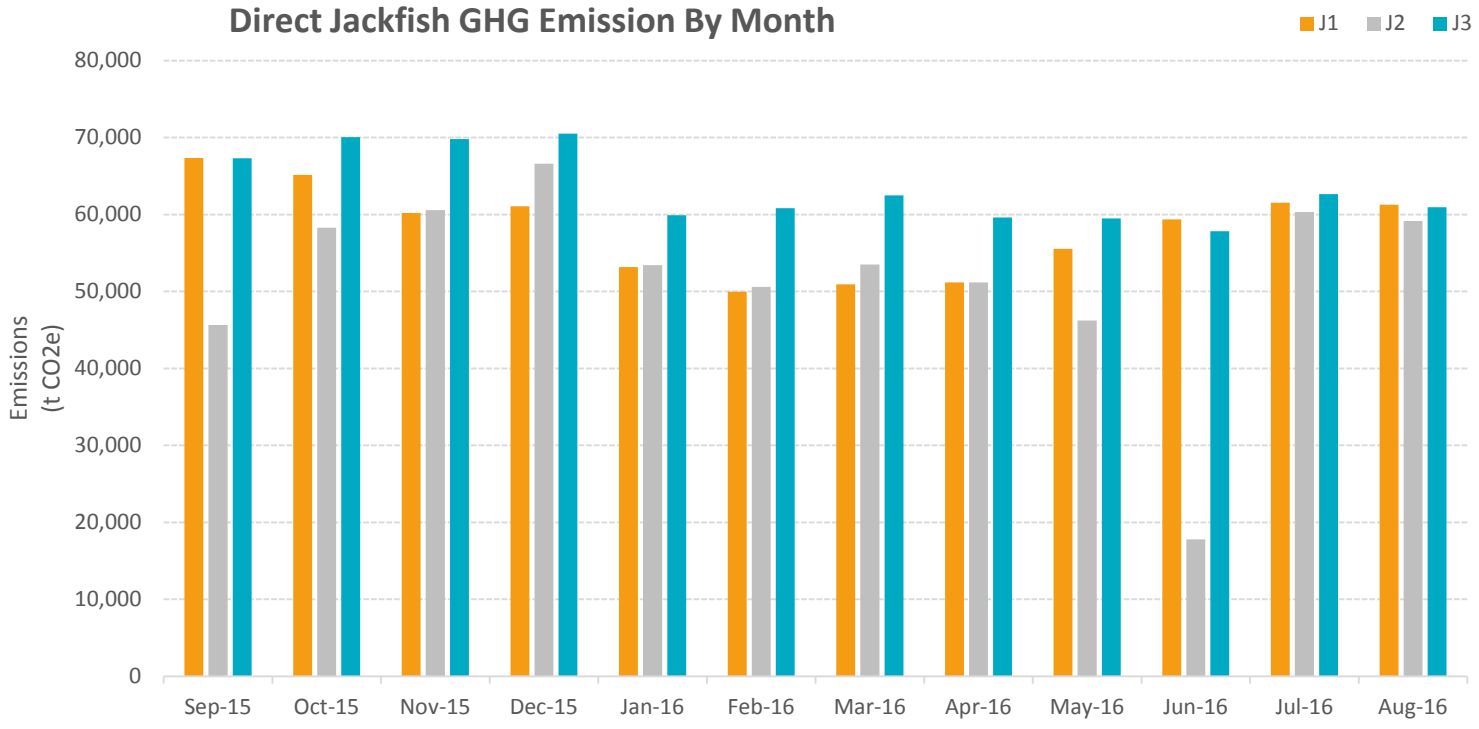
3.1.2-1e



Facilities Performance

Greenhouse Gas Emissions

3.1.2-1f



- JF1 12-month total: 696,776 tonnes CO_2E
- JF2 12-month total: 623,314 tonnes CO_2E
- JF3 12-month total: 761,434 tonnes CO_2E

Measurement & Reporting

Section 3.1.2-2

Measurement & Reporting

Production and Injection Volumes

3.1.2-2a, c

Well Bitumen / Water Production

- The total battery production is allocated to each SAGD producing well based on individual well tests
- Battery Bitumen Production = Dispositions – Receipts + ΔInventory + Blending Shrinkage
- Battery Water Production = Inlet Produced Water + ΔInventory + Truck Out – Truck in – Desand Water to Treater & FWKO
- Individual well test:
  - Each pad equipped with test separator along with coriolis meter and watercut analyzer on liquid leg
  - Vortex meter for gas measurement / water vapor calculation
  - Tested water volume includes the calculated water vapor (from $P_{sat}/P_{measured}$)
  - Typical well test duration is 9 hours

Measurement & Reporting

Production and Injection Volumes

3.1.2-2a, c

Well Gas Production

- Well estimated test gas production = GOR x test bitumen production
- Battery Gas Production = Fuel + Fuel to IF + Flare – TCPL Purchase – Receipt Gas – Diluent Flash
- Battery gas is allocated to each well based on well test

Steam Injection

- Total steam to field measured downstream of HP separators minus the steam condensate
- Vortex meters at each wellhead are used to allocate the total steam

Measurement & Reporting

Proration factors

3.1.2-2a, b

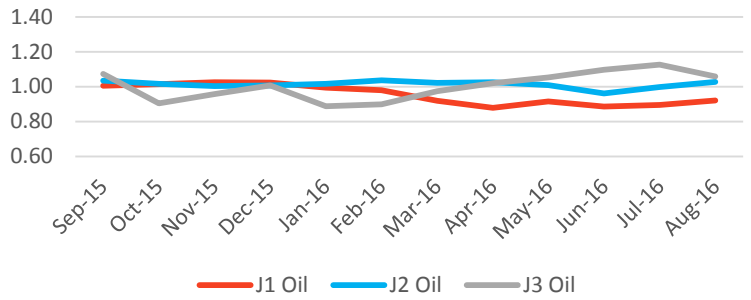
Bitumen / Water Proration Factor

- Within AER target tolerances on an ongoing basis
- Jackfish 2 full facility outage June 2016
- Jackfish 3 oil production ramped up by 9% from Feb to July.

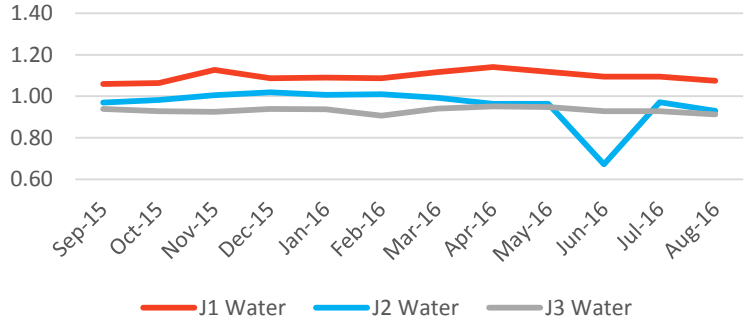
Steam Proration Factor

- 12 months avg was 1.025 for Jackfish 1, 1.024 for Jackfish 2 & 0.987 for Jackfish 3
- Trends for all facilities highly stable

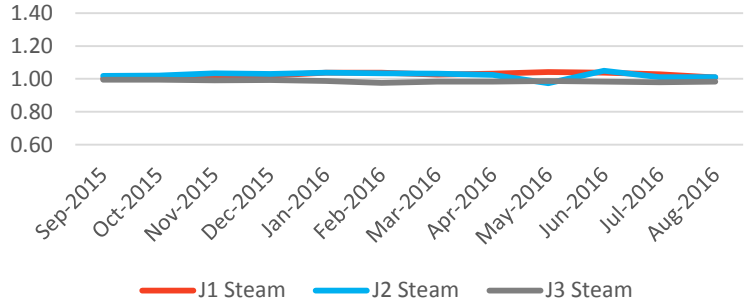
Bitumen Proration Factor



Water Proration Factor



Steam Proration Factor



Measurement & Reporting

Production and Injection Volumes

3.1.2-2a, c

Facility Reporting Codes

FACILITY CODE	FACILITY SUB-TYPE	DESCRIPTION
ABBT 0094366	344 In-Situ Oil Sands	Jackfish 1 CPF
ABIF 0094395	506 In-Situ Oil Sands	Jackfish 1 IF
ABBT 0114300	344 In-Situ Oil Sands	Jackfish 2 CPF
ABIF 0114303	506 In-Situ Oil Sands	Jackfish 2 IF
ABBT 0130642	344 In-Situ Oil Sands	Jackfish 3 CPF
ABIF 0130641	506 In-Situ Oil Sands	Jackfish 3 IF
ABIF 0115392	506 In-Situ Oil Sands	Source / Disposal Facility
ABGS 0131346	621 Gas Gathering System	Purchase Fuel Distribution

Measurement & Reporting

New Measurement Technology - Update

3.1.2-2d

Primary Steam Metering with Bypass

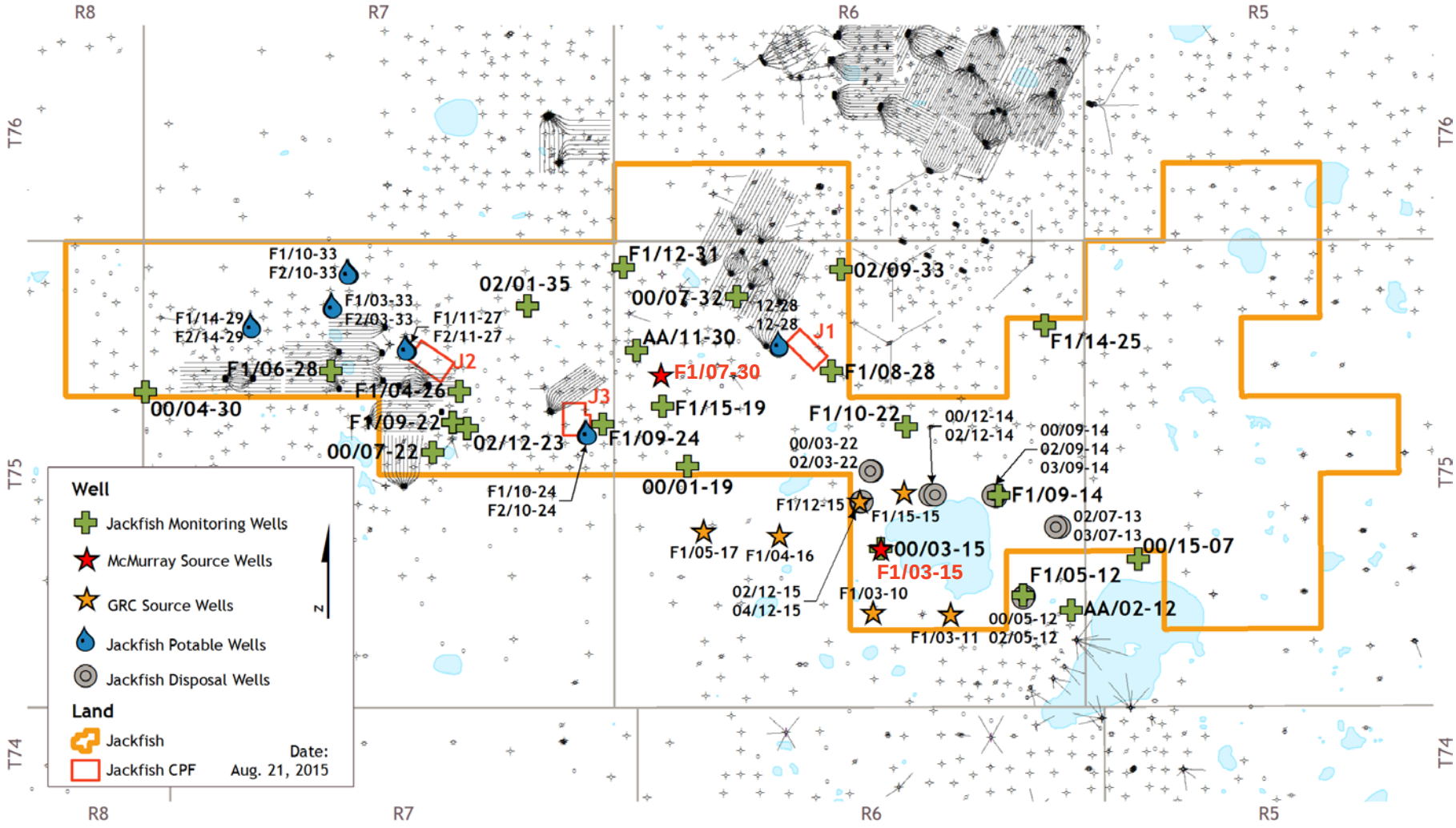
- Installation of replacement CPF steam meters completed in Q1-2015 for JF2 and JF3 and Q3-2015 at JF1
- JF3 meter ceased to indicate steam volumes in July 2016, none of the new meters presently in service
- AER notified and authorization granted for alternate steam determination for JF2 and JF3, JF1 returned to using previous MARP meter
- Currently investigating for root cause of failure, destructive testing of JF3 meter components underway by independent lab

Water Production, Injection & Uses

Section 3.1.2-3

Water Disposal and Source Water
Well Locations

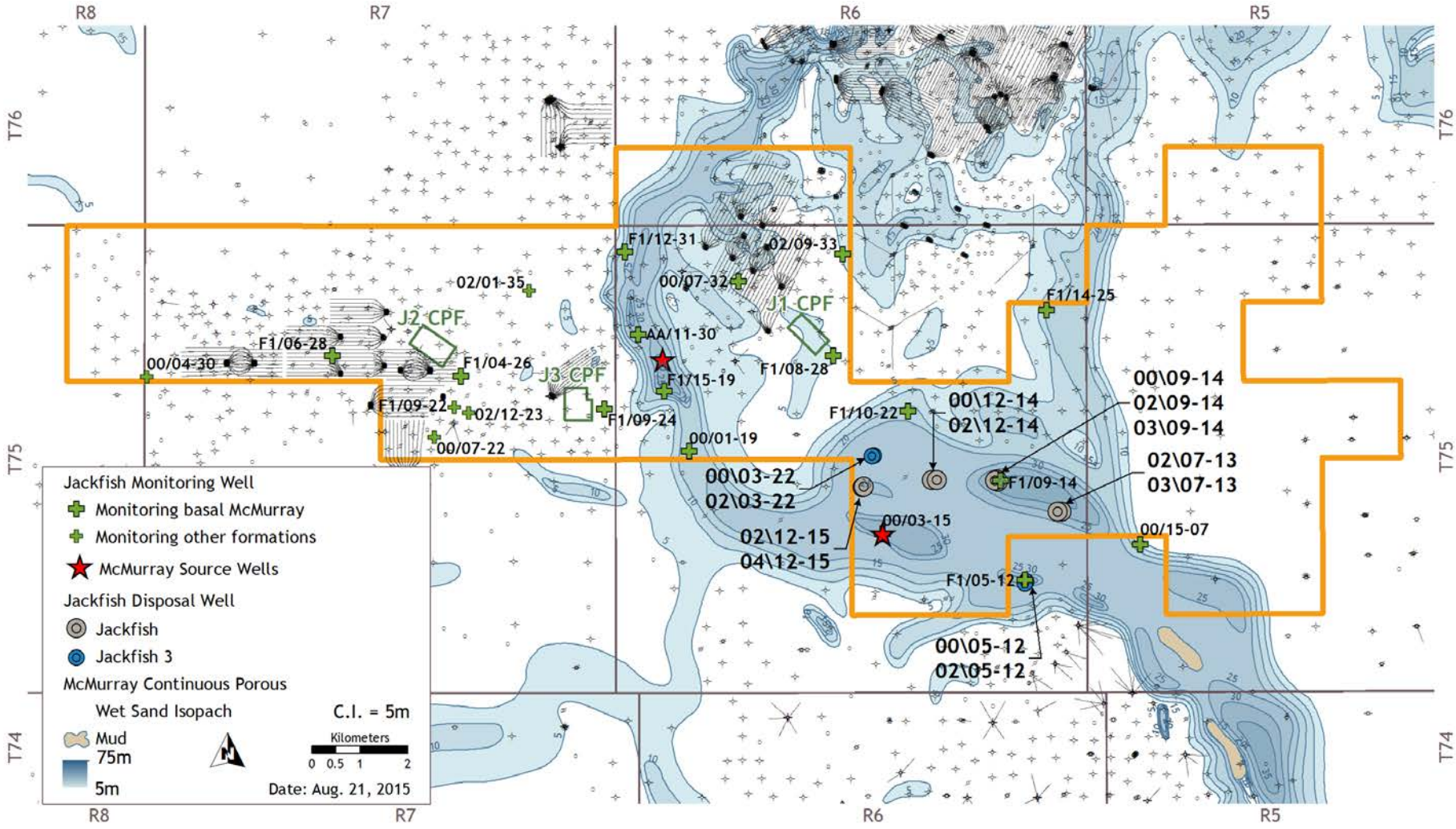
3.1.2-3a



Water Disposal Geology

Basal McMurray Aquifer

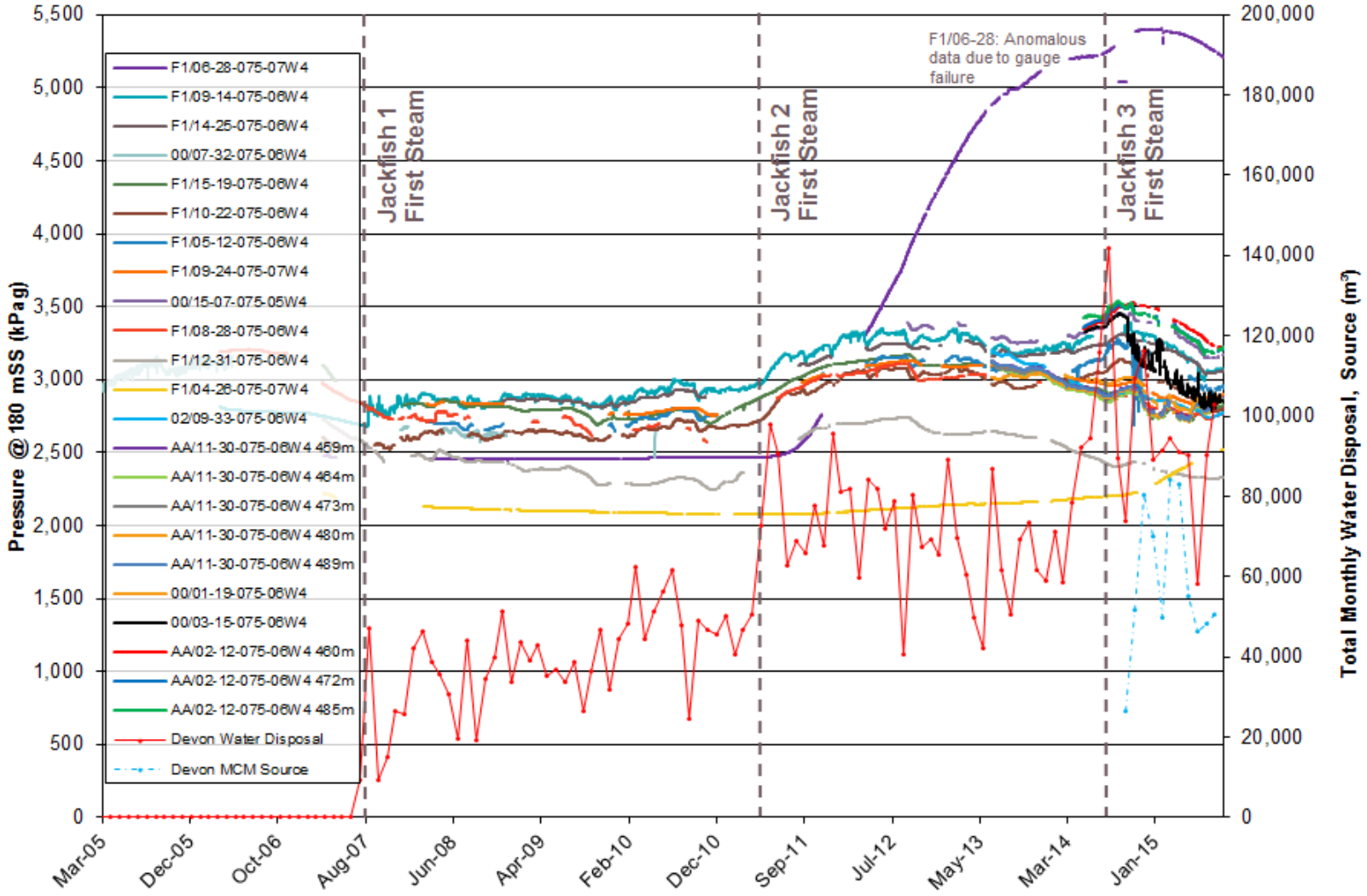
3.1.2-3a



Water Disposal Operations

Basal McMurray Pressure in 75-6W4, 75-7W4

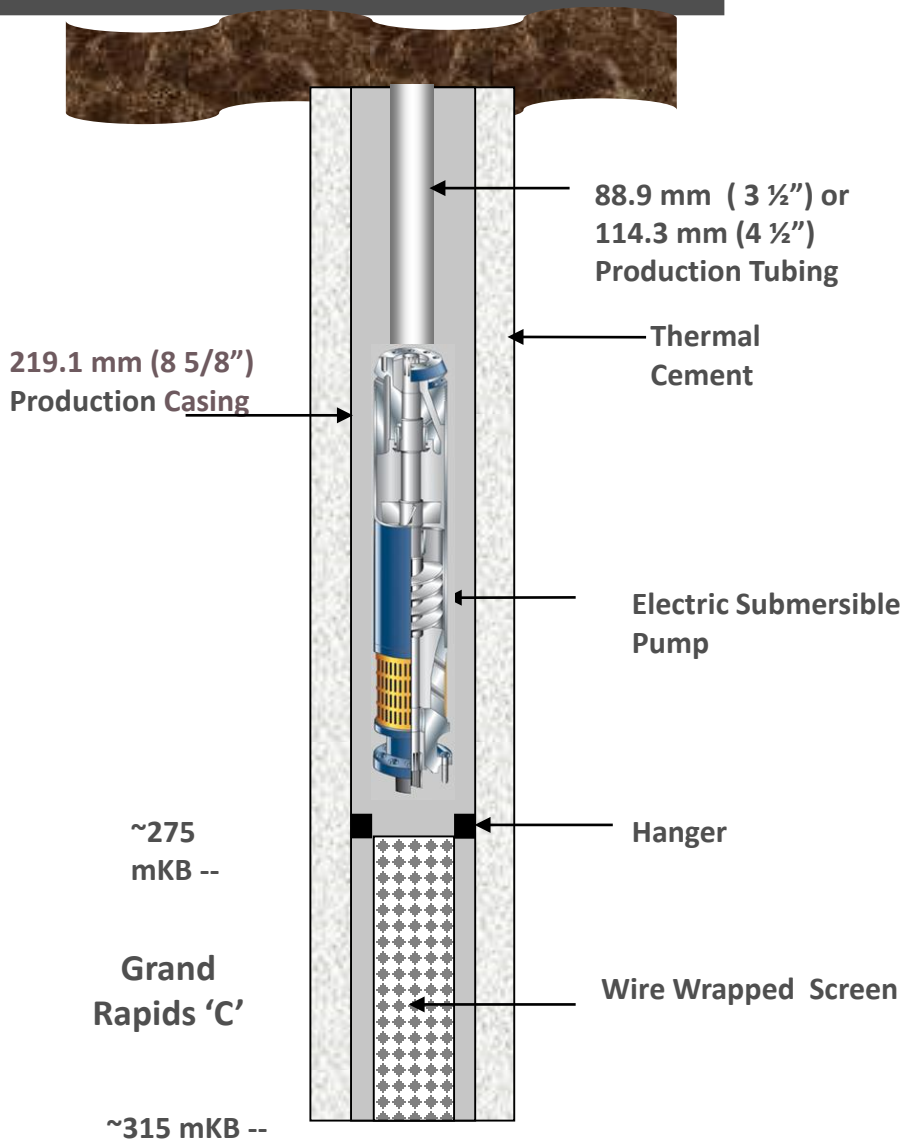
3.1.2-3a



Water Usage - Brackish

3.1.2-3a

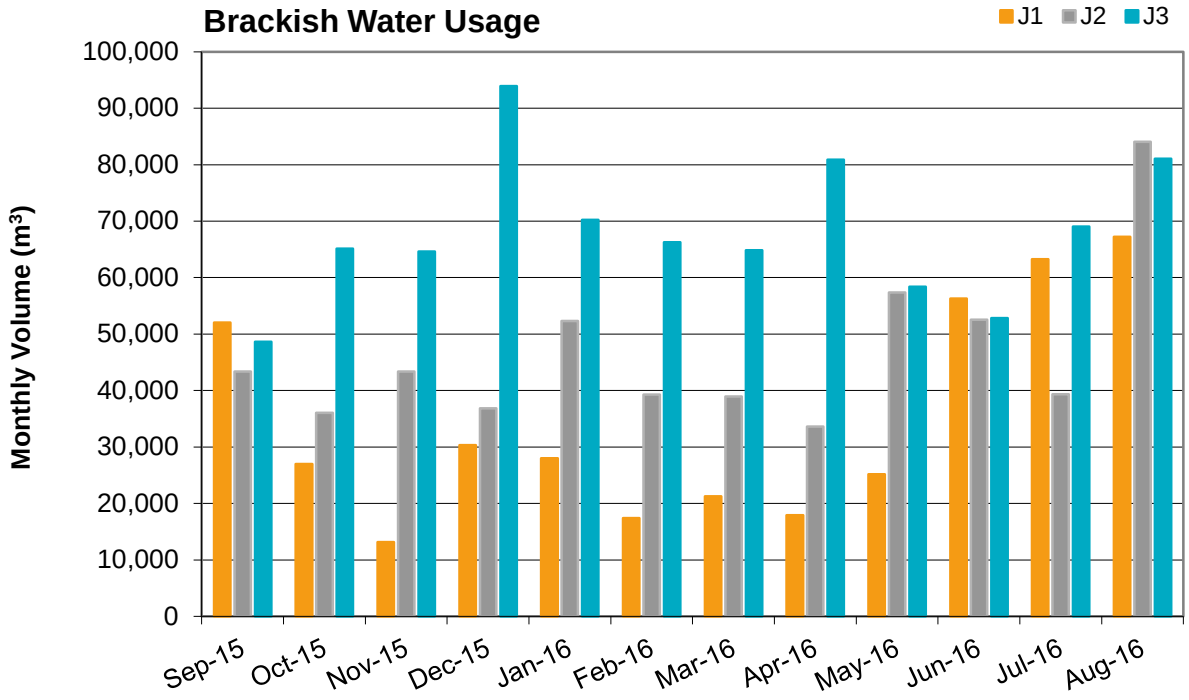
- Brackish source water produced from the Grand Rapids ‘C’ and McMurray zones
- Available for Jackfish 1, Jackfish 2 and Jackfish 3
- Two McMurray Wells:
  - F1/07-30-075-06W4
  - F1/03-15-075-06W4
- Six Grand Rapid Wells:
  - F1/12-15-075-06W4
  - F1/15-15-075-06W4
  - F1/03-10-075-06W4
  - F1/03-11-075-06W4
  - F1/04-16-075-06W4
  - F1/05-17-075-06W4



Water Usage - Brackish

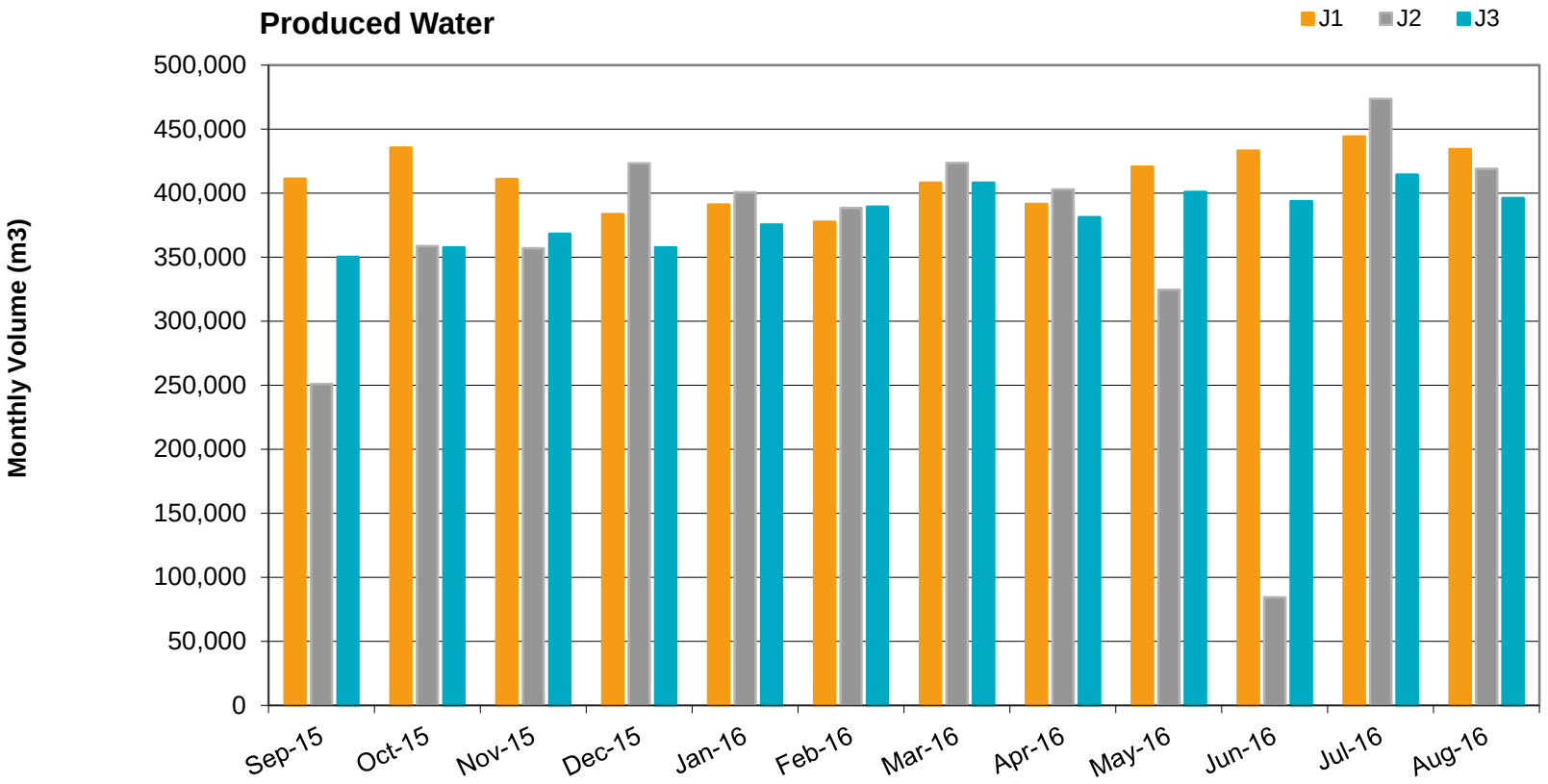
3.1.2-3b

- Brackish water production from the Grand Rapids 'C' commenced on July 12, 2007 and McMurray commenced on October 2, 2014
- Brackish water quality analyzed 1-2 times per year



Produced Water Volume

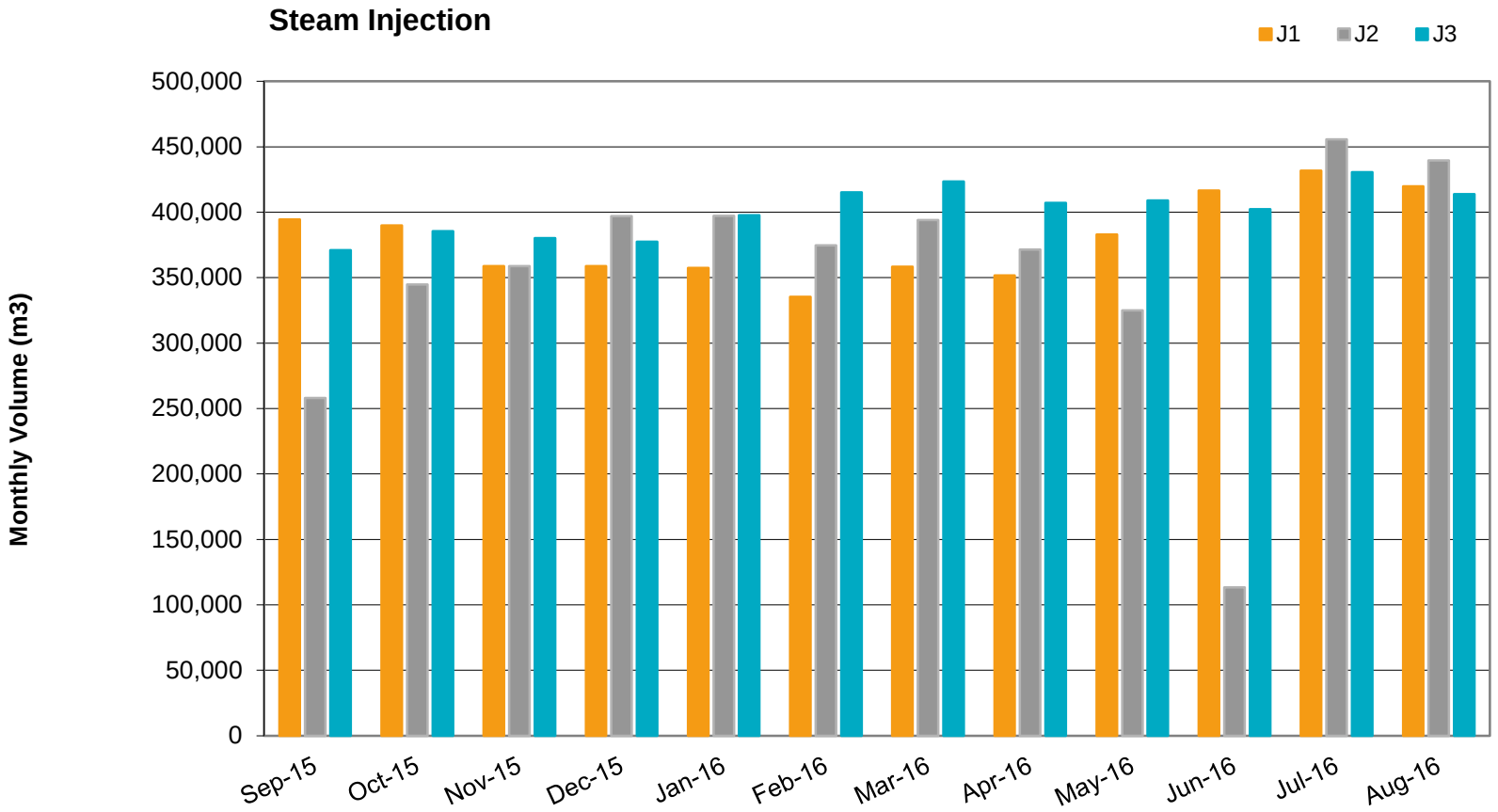
3.1.2-3c



- JF2 produced water was low in June 2016 due to a planned maintenance turnaround

Steam Injection Volume

3.1.2-3d



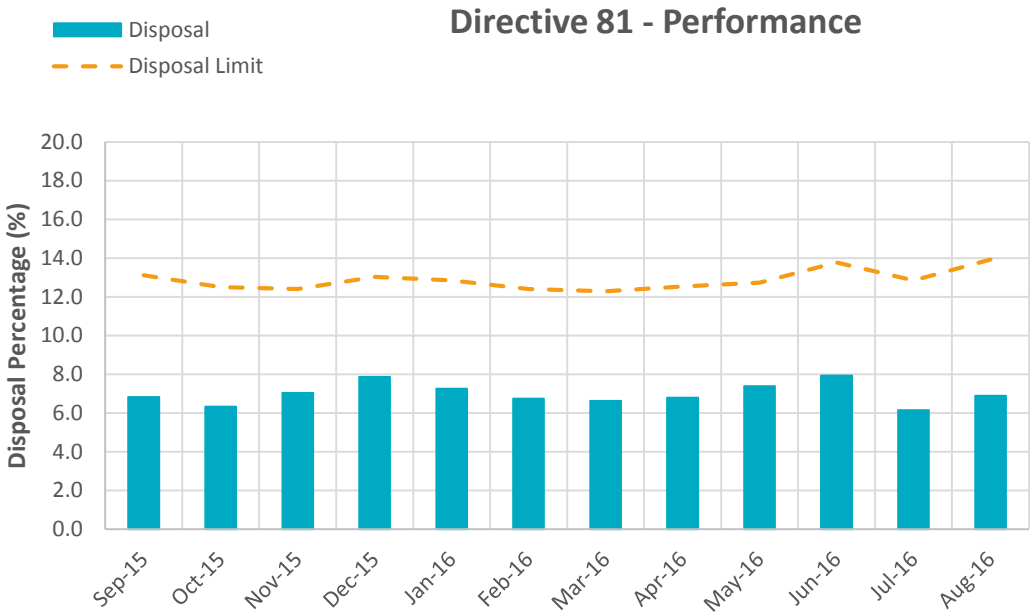
- JF2 steam injection was low in June 2016 due to a planned maintenance turnaround

Produced Water Recycle

3.1.2-3e

- Only brackish water is used for required makeup volumes
- Jackfish Disposal Limit = 12 - 14%

–Jackfish 1 2015/16 Disposal Rate 6.8%
–Jackfish 2 2015/16 Disposal Rate 8.3%
–Jackfish 3 2015/16 Disposal Rate 6.0%



$$Disposal\ Limit = \frac{(Brackish\ Water\ X\ D_f) + (Produced\ Water\ X\ D_p)}{(Brackish\ Water + Produced\ Water)}\ X\ 100\%$$

Water Disposal – Approval No. 10790

Class 1b

3.1.2-5a

Disposal System is shared between Jackfish 1, Jackfish 2 and Jackfish 3

Two disposal streams:

- blowdown & regen waste

Thirteen Class 1b disposal wells in total

Approved MWIP of 6,000 kPa (July 2009)

Jackfish 1 disposal wells:

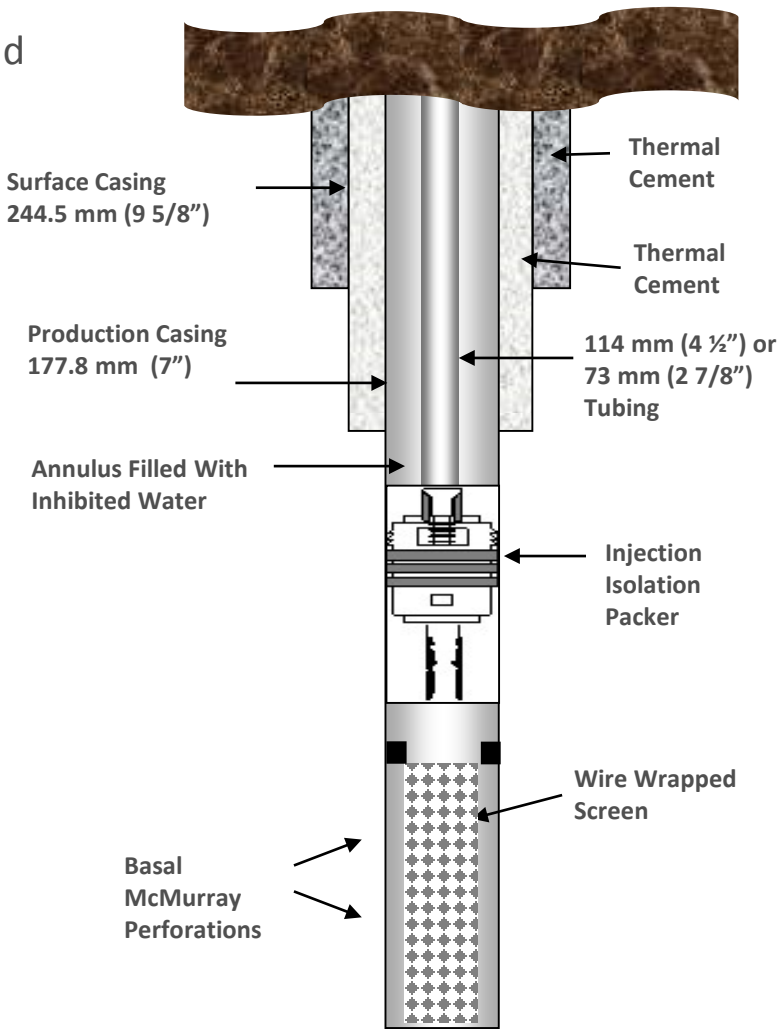
- 00, 02 & 03/09-14-075-06W4 (blowdown)
- 00 & 02/12-14-075-06W4 (regen)

Jackfish 2 disposal wells:

- 02 & 03/07-13-075-06W4 (blowdown)
- 02 & 04/12-15-075-06W4 (regen)

Jackfish 3 disposal wells:

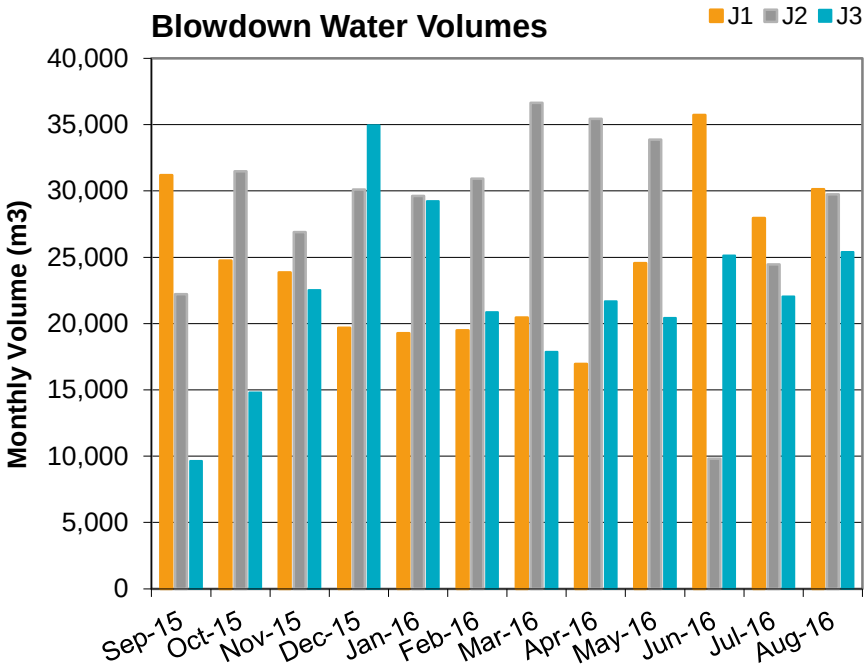
- 00 & 02/05-12-075-06W4 (blowdown)
- 00 & 02/03-22-075-06W4 (regen)

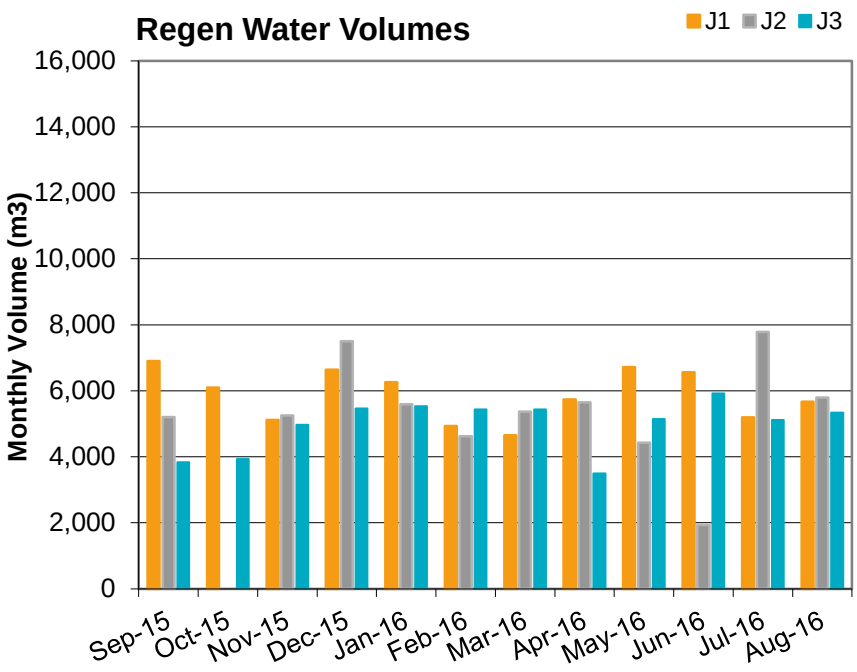


Water Disposal – Approval No. 10790

Volume Summary

3.1.2-5b

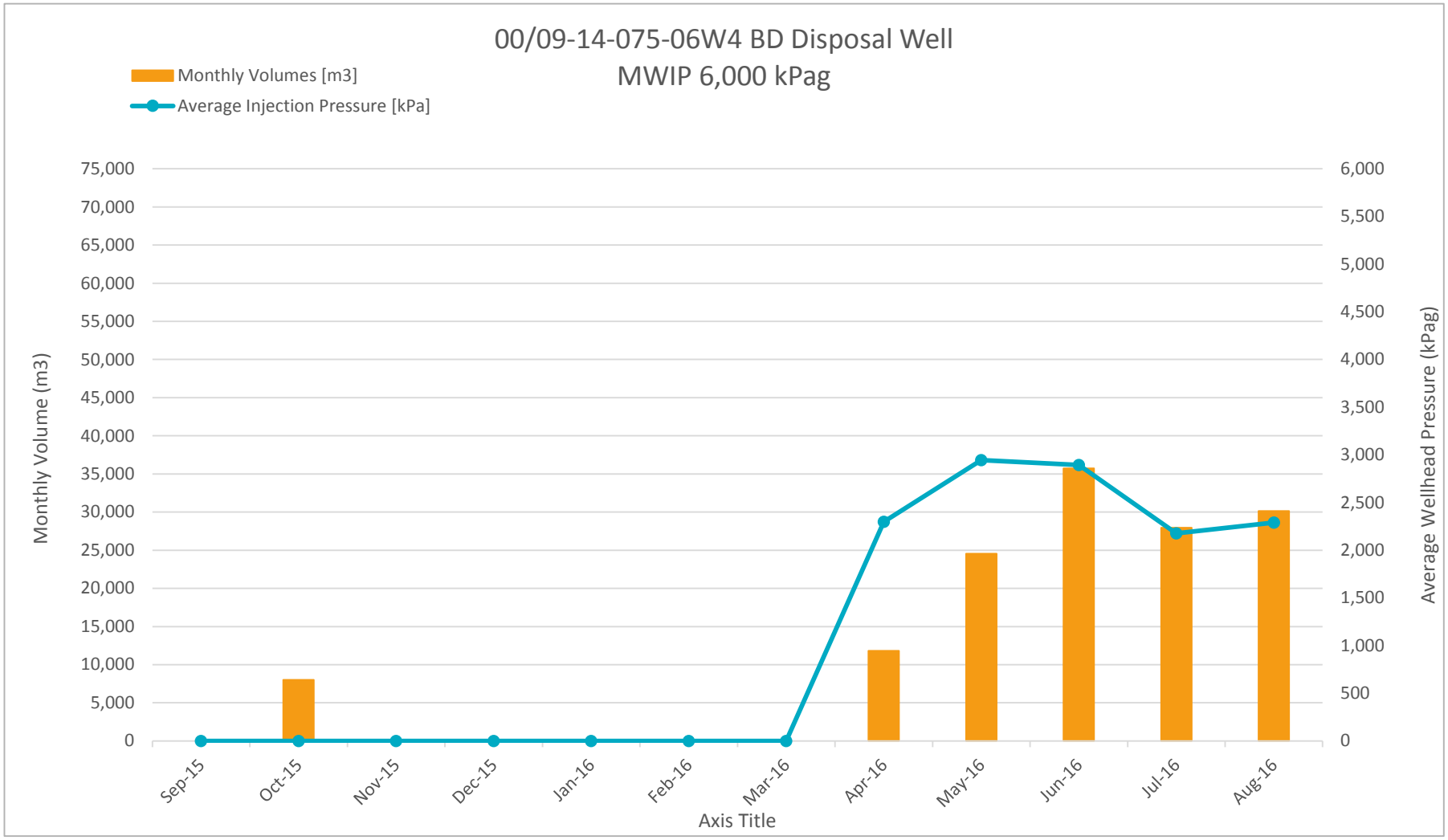




Water Disposal – Approval No. 10790

00/09-14-075-06W4

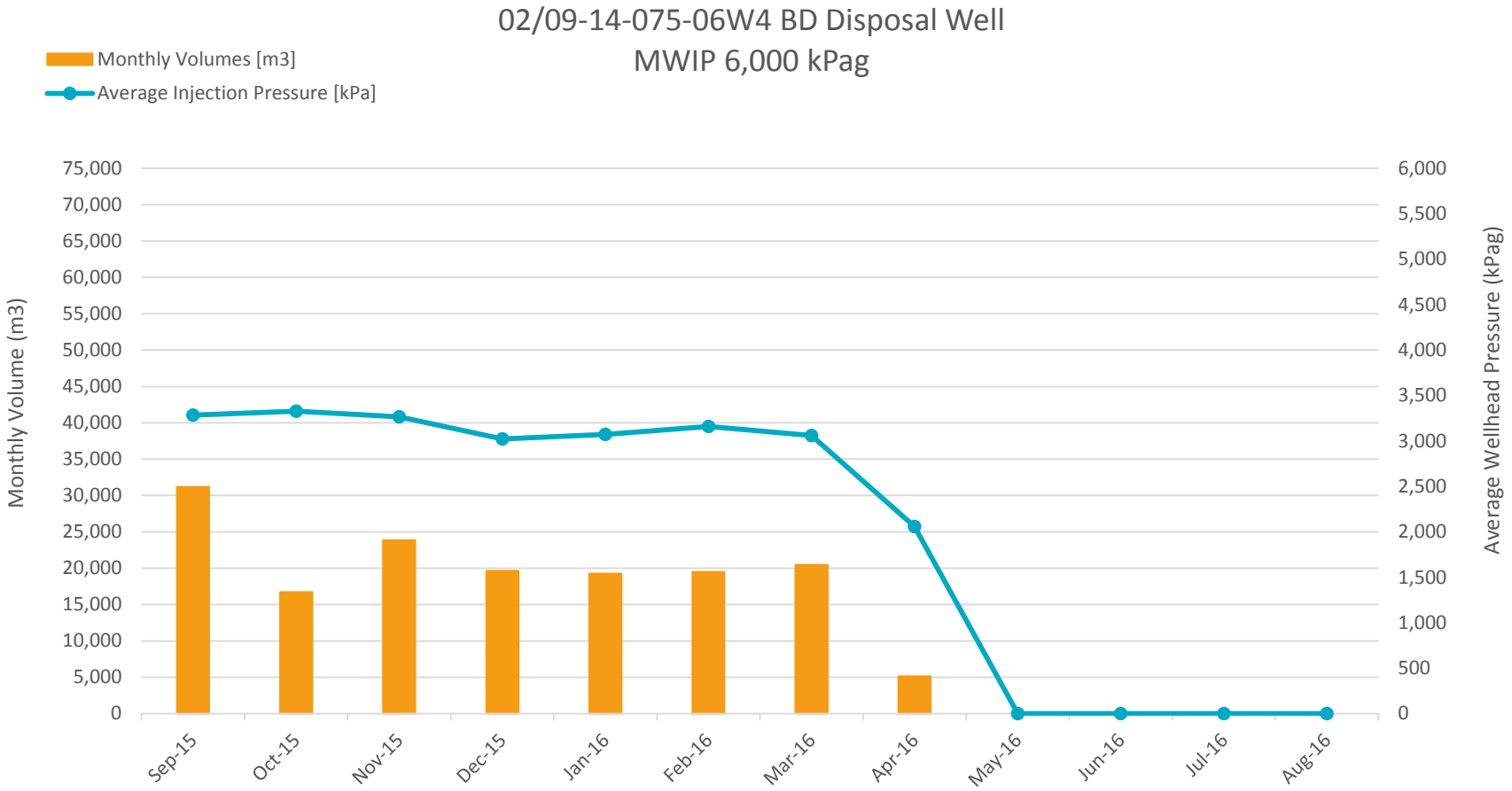
3.1.2-5b



Water Disposal – Approval No. 10790

02/09-14-075-06W4

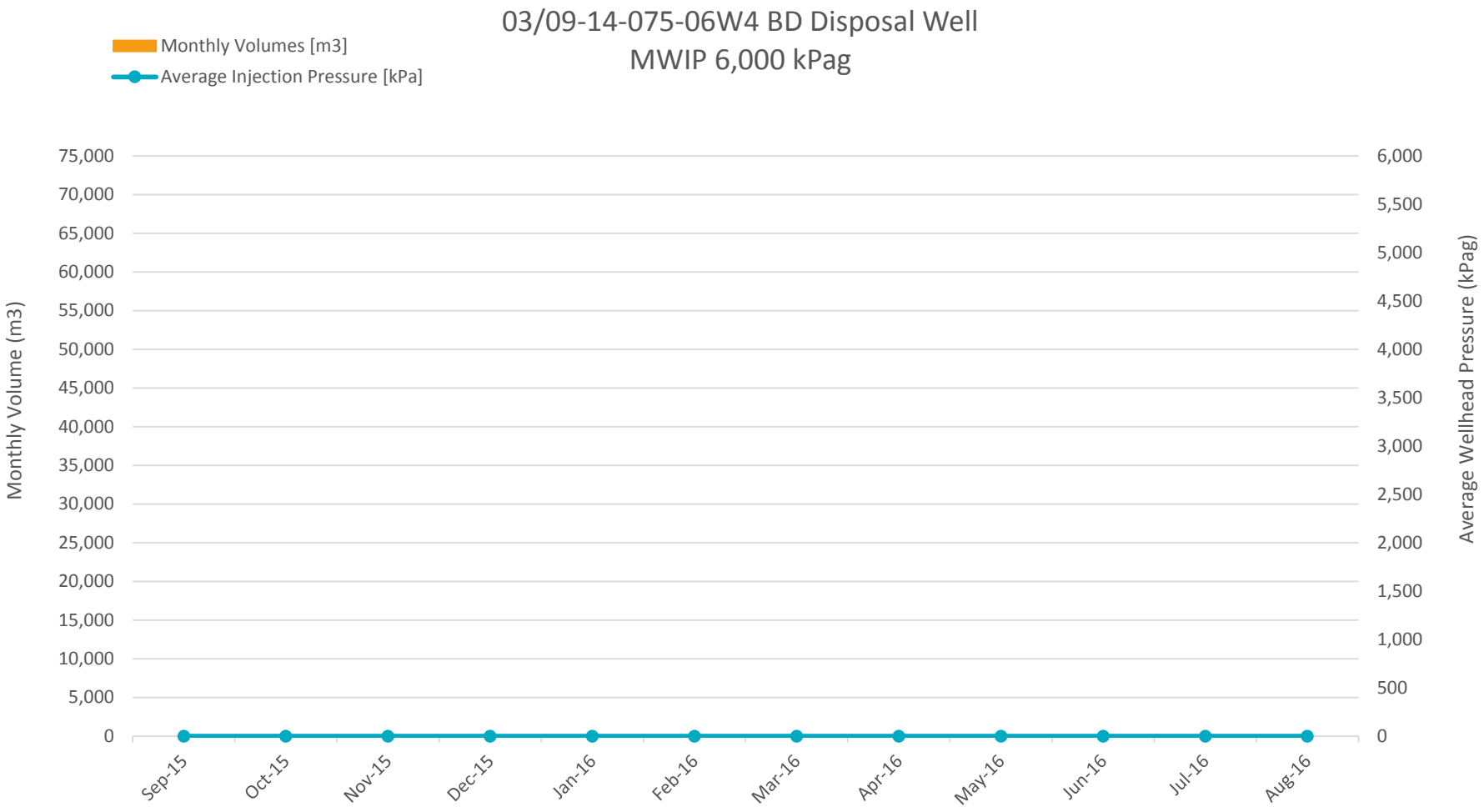
3.1.2-5b



Water Disposal – Approval No. 10790

03/09-14-075-06W4

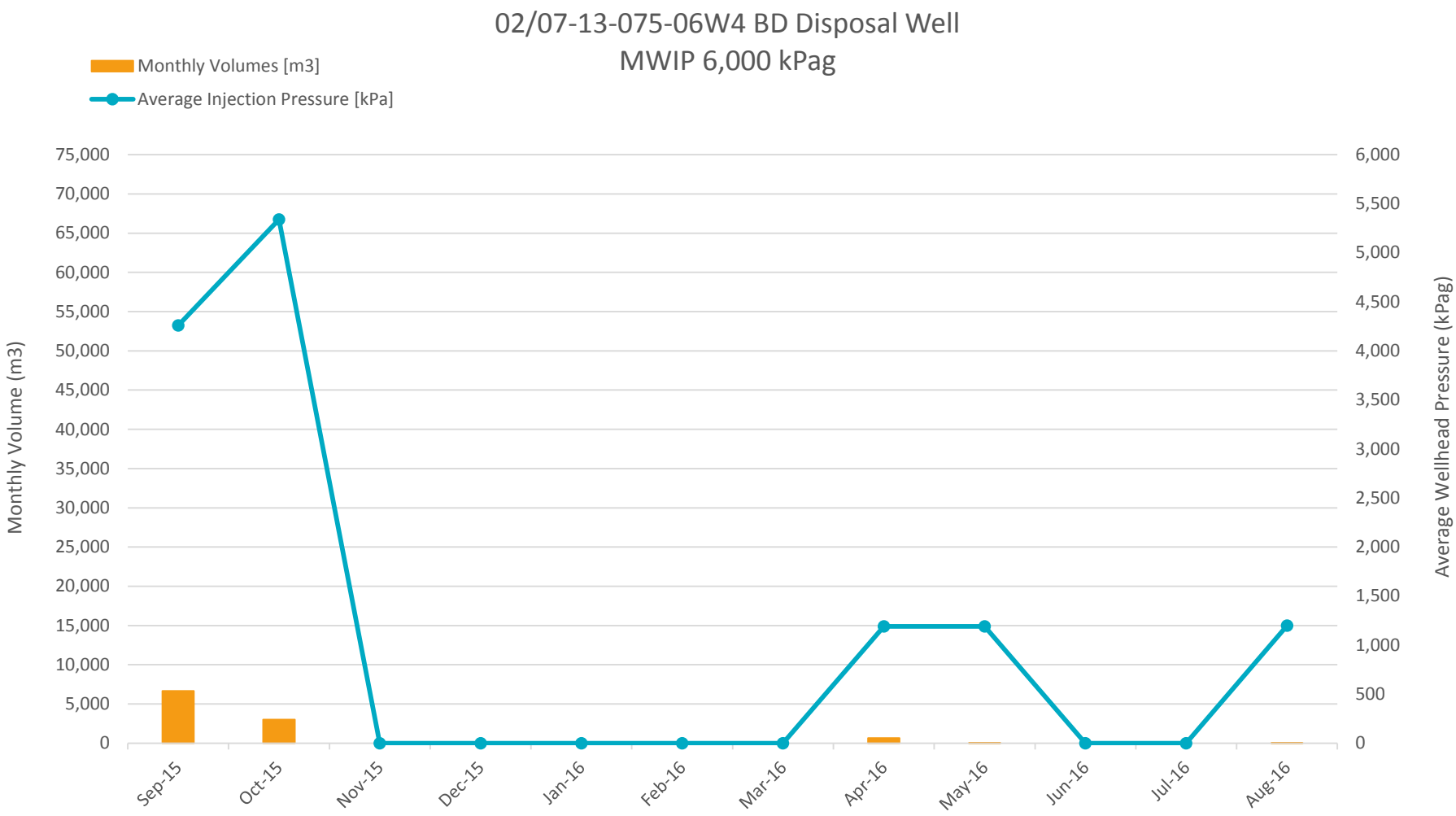
3.1.2-5b



Water Disposal – Approval No. 10790

02/07-13-075-06W4

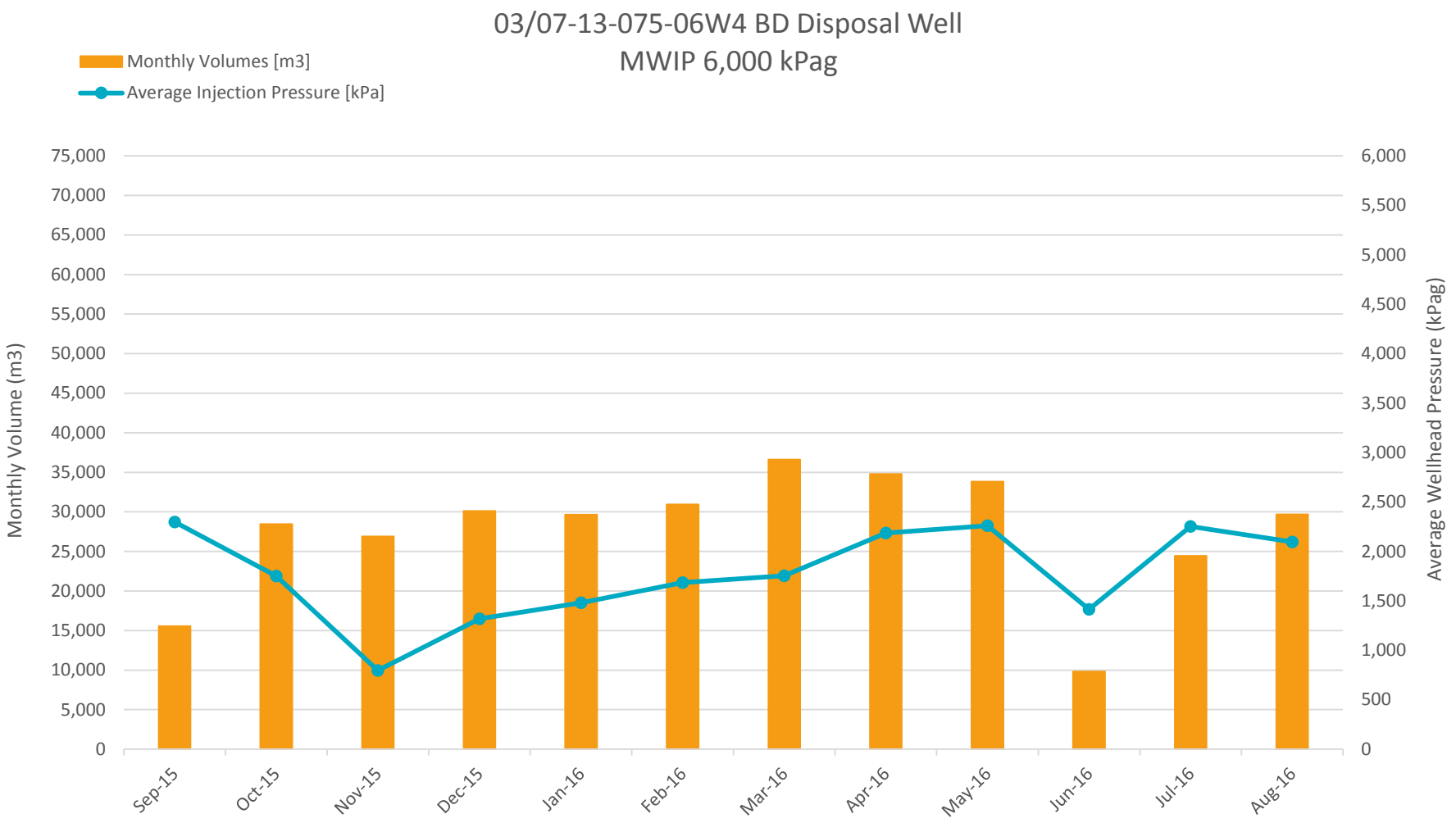
3.1.2-5b



Water Disposal – Approval No. 10790

03/07-13-075-06W4

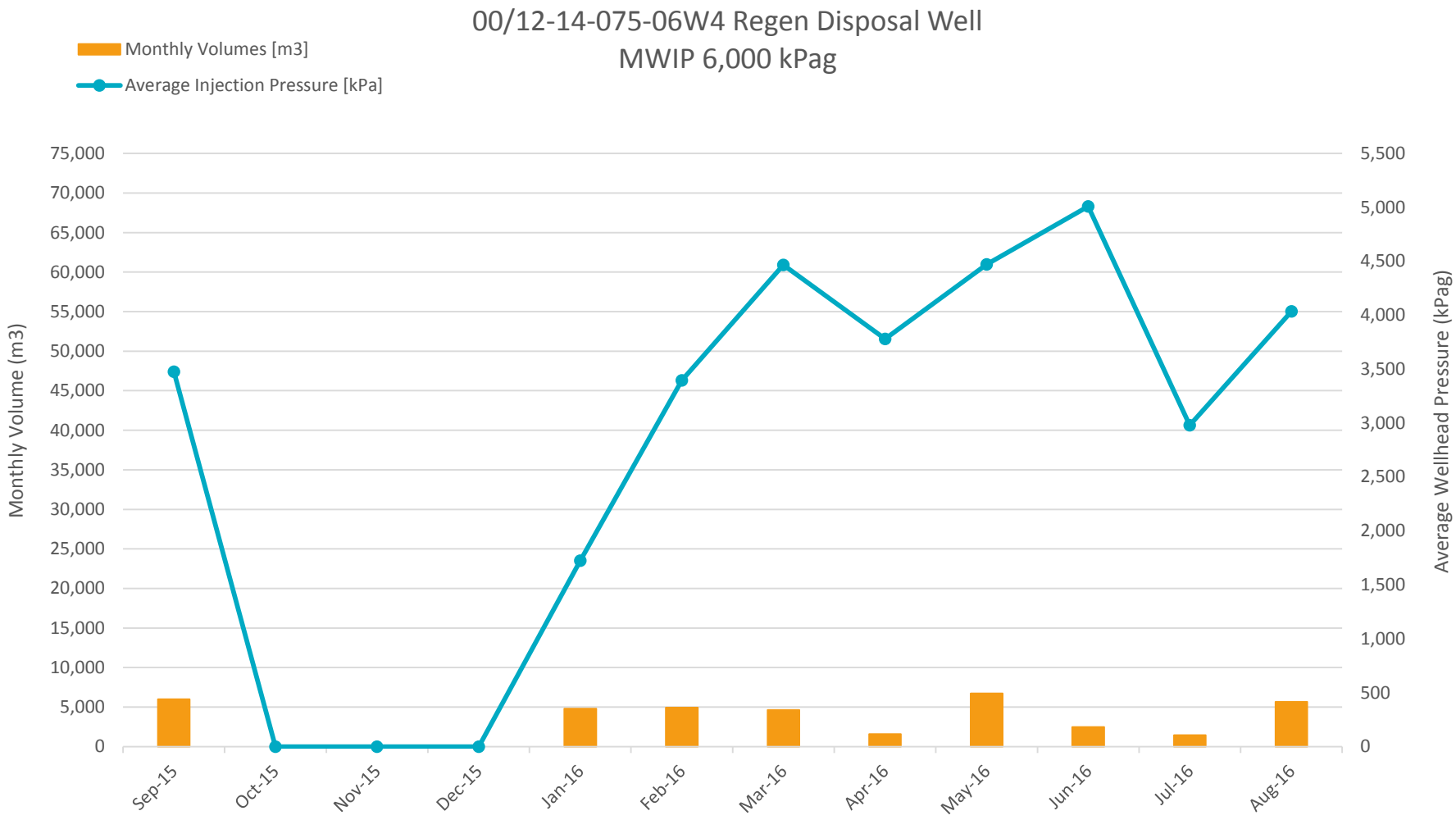
3.1.2-5b



Water Disposal – Approval No. 10790

00/12-14-075-06W4

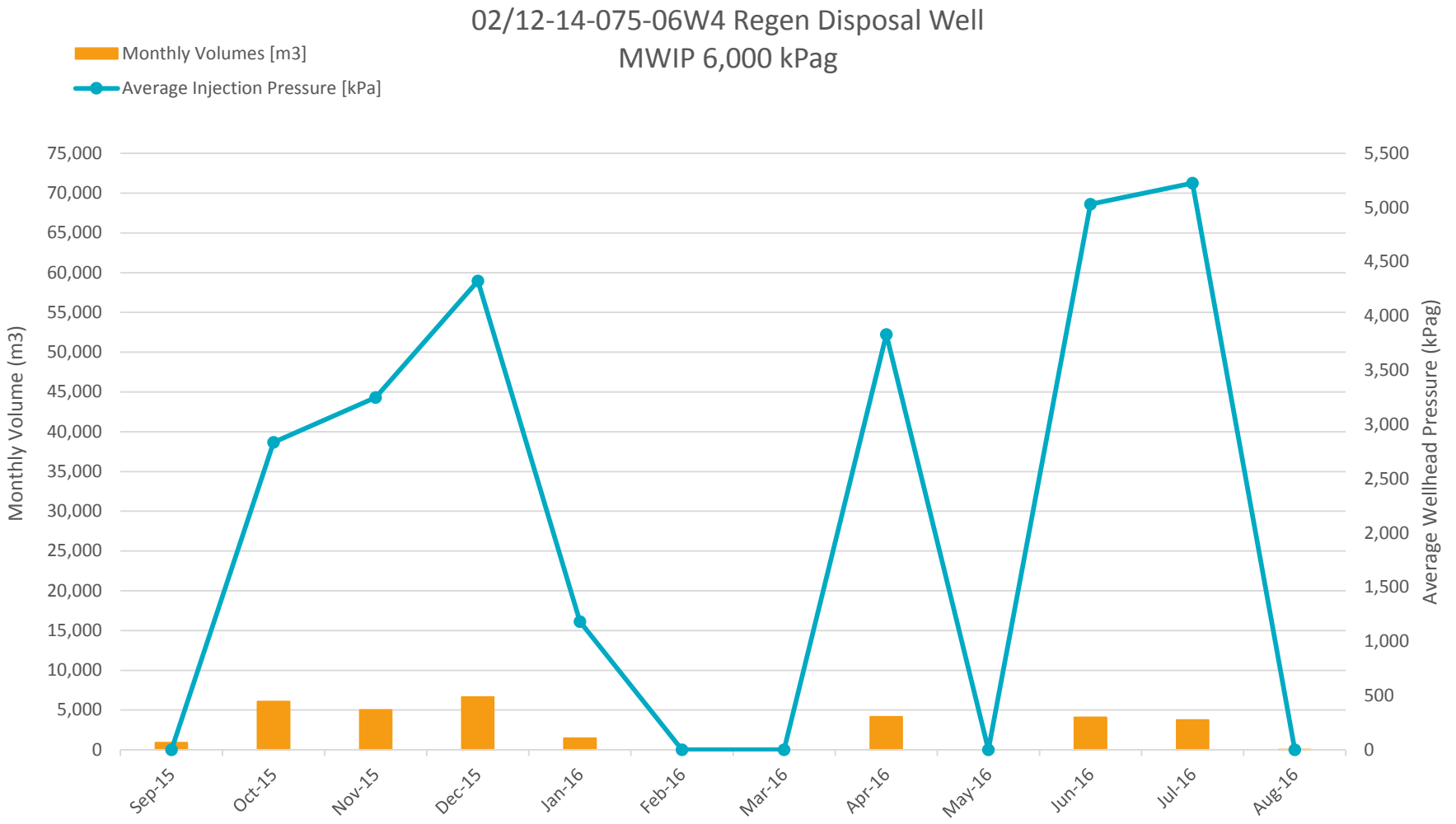
3.1.2-5b



Water Disposal – Approval No. 10790

02/12-14-075-06W4

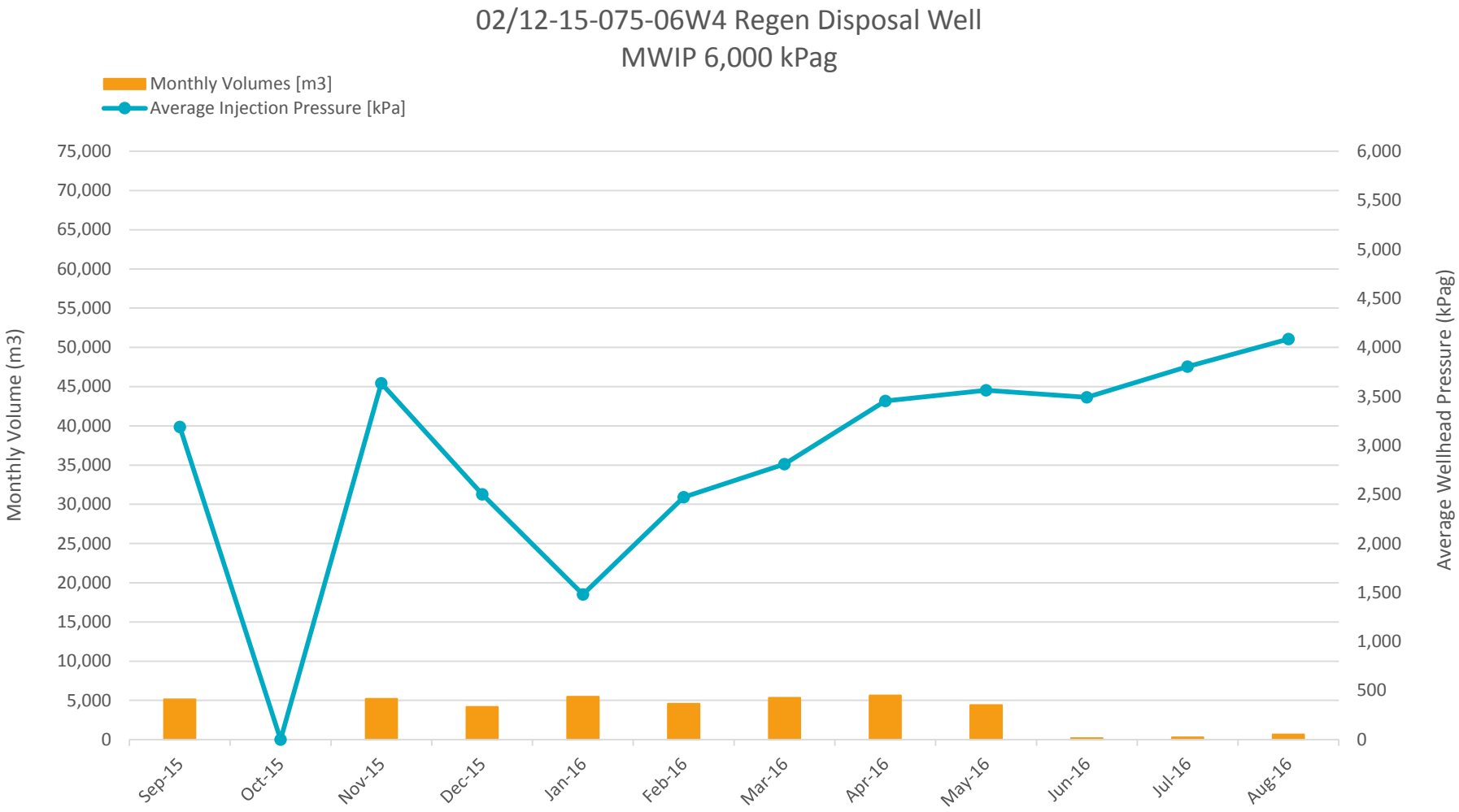
3.1.2-5b



Water Disposal – Approval No. 10790

02/12-15-075-06W4

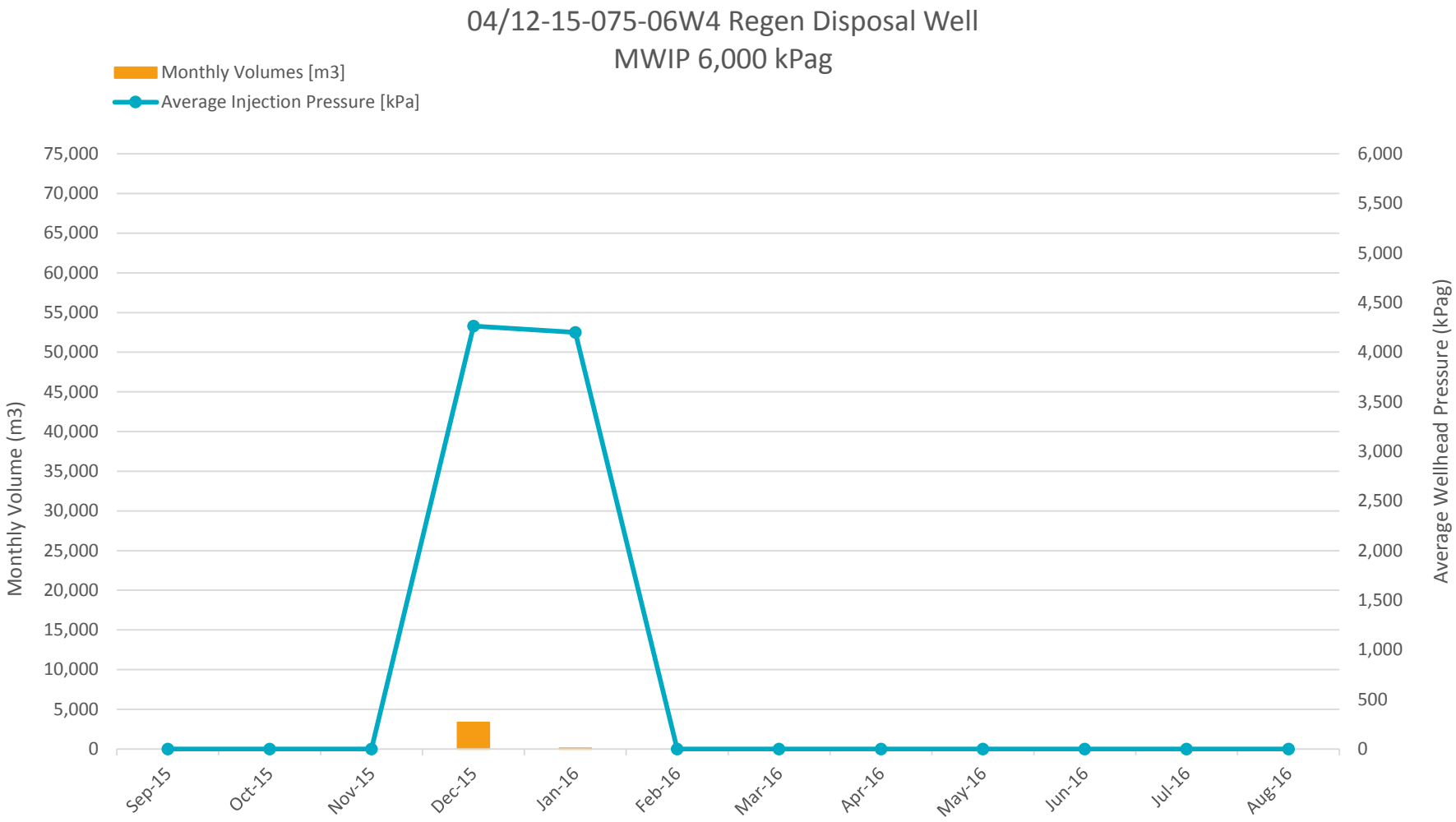
3.1.2-5b



Water Disposal – Approval No. 10790

04/12-15-075-06W4

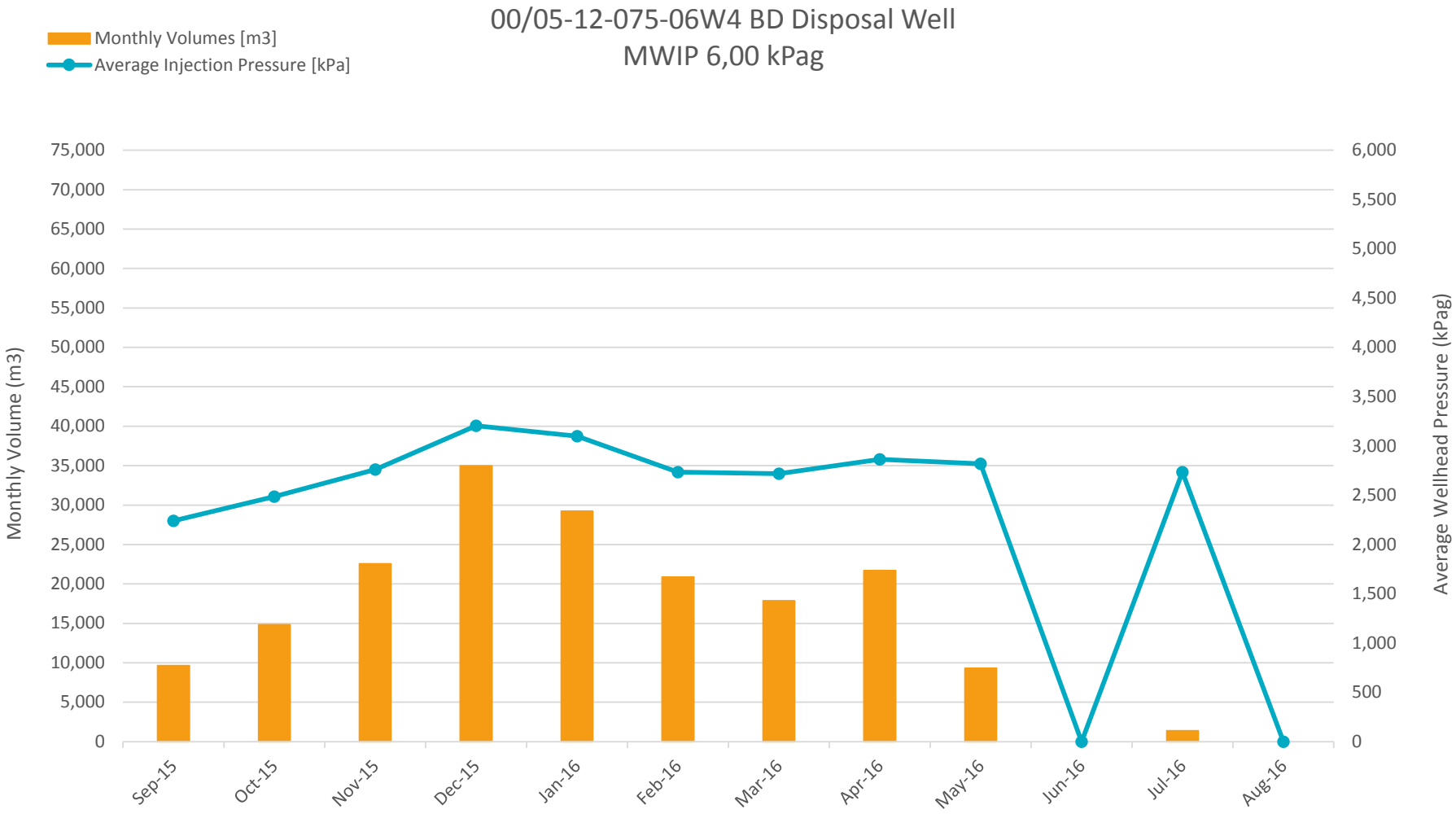
3.1.2-5b



Water Disposal – Approval No. 10790

00/05-12-075-06W4

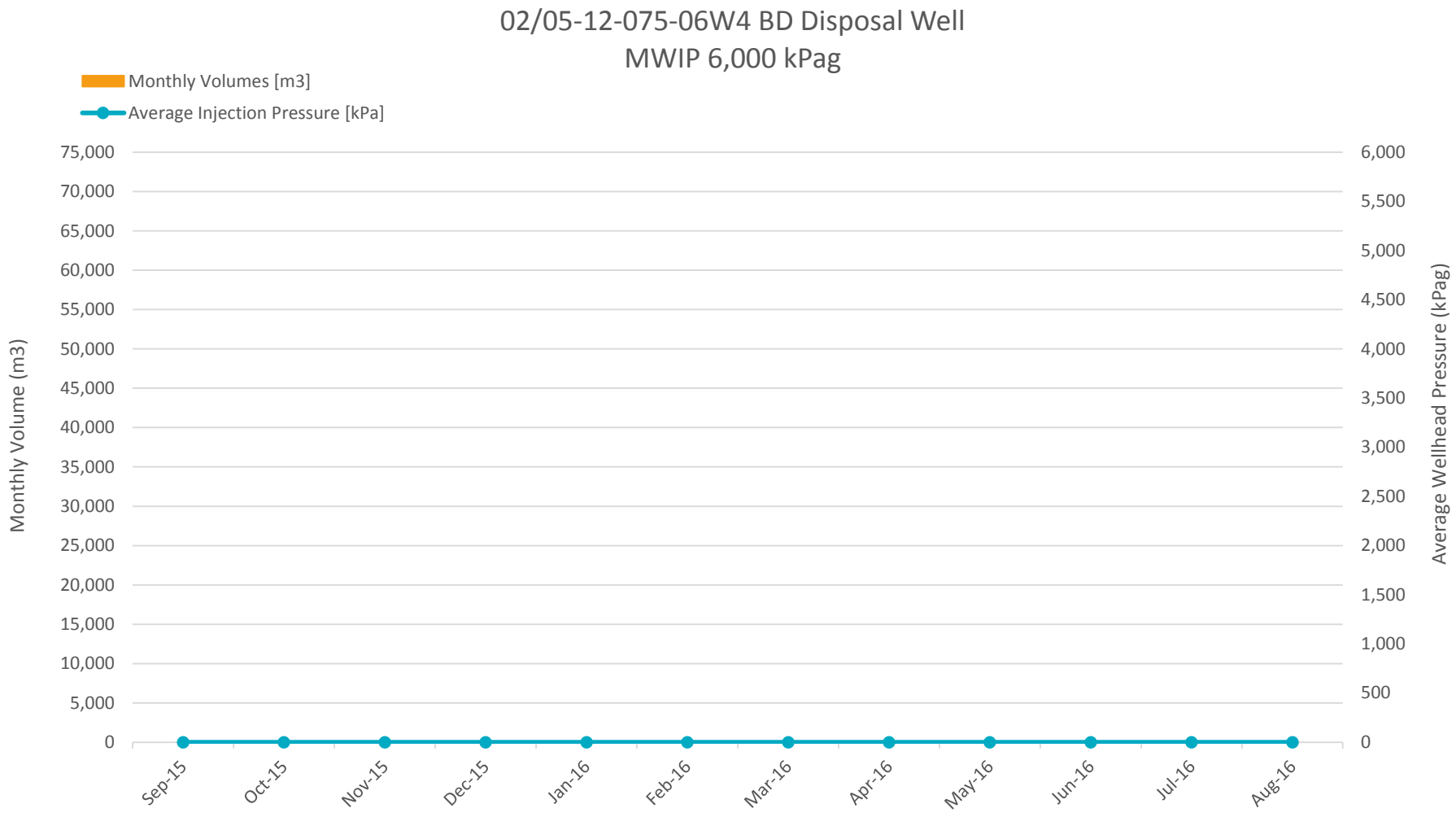
3.1.2-5b



Water Disposal – Approval No. 10790

02/05-12-075-06W4

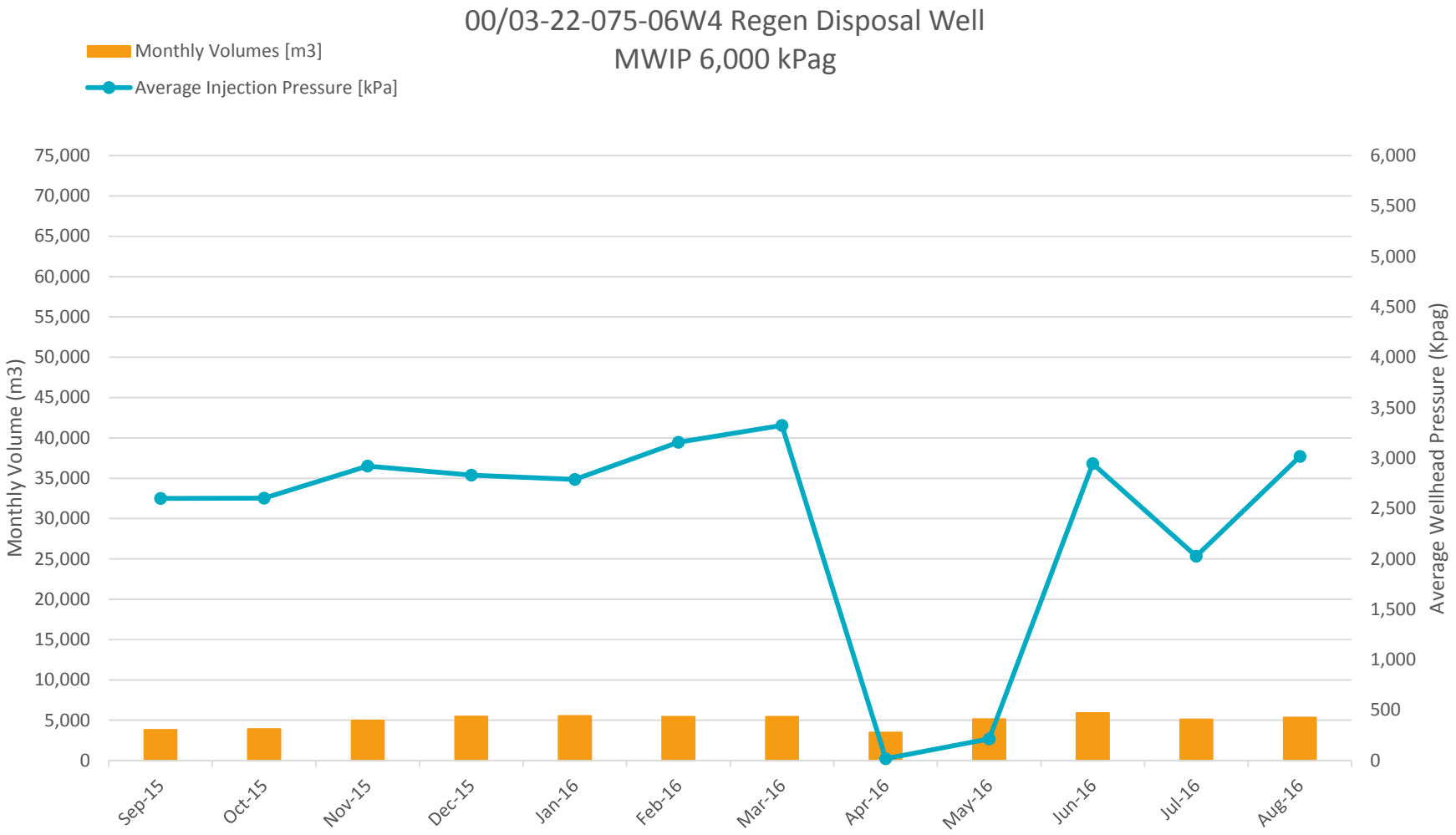
3.1.2-5b



Water Disposal – Approval No. 10790

00/03-22-075-06W4

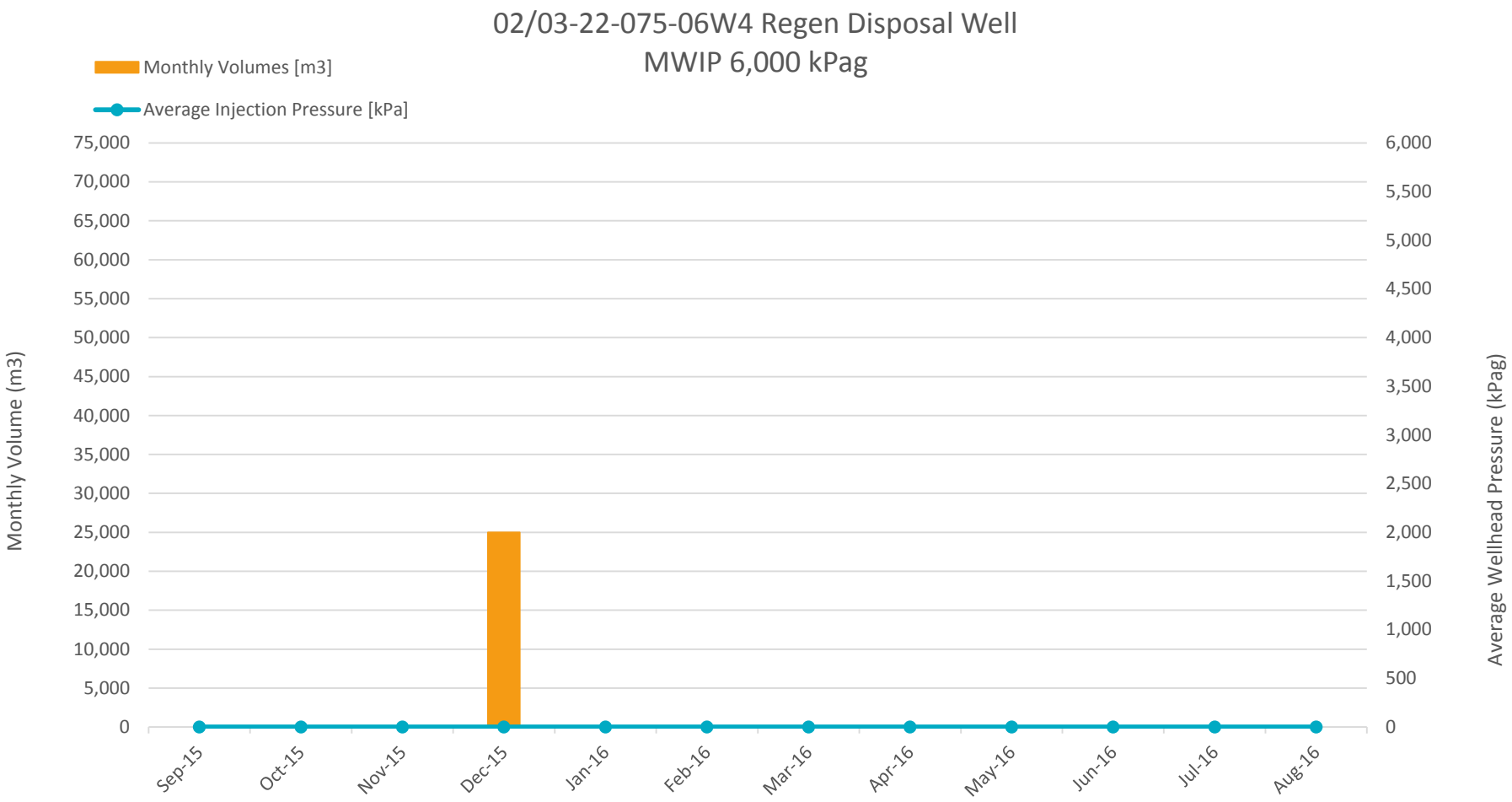
3.1.2-5b



Water Disposal – Approval No. 10790

02/03-22-075-06W4

3.1.2-5b



Off-site Water Disposal Volumes

3.1.2-5c

Facility	Volume (m^3)
Access pipeline	5,939
Newalta Elk Point WP	783
Newalta Fort McMurray	129
Newalta Hughenden	21
Tervita Lindberg WP	1,302
Total	**8,174**

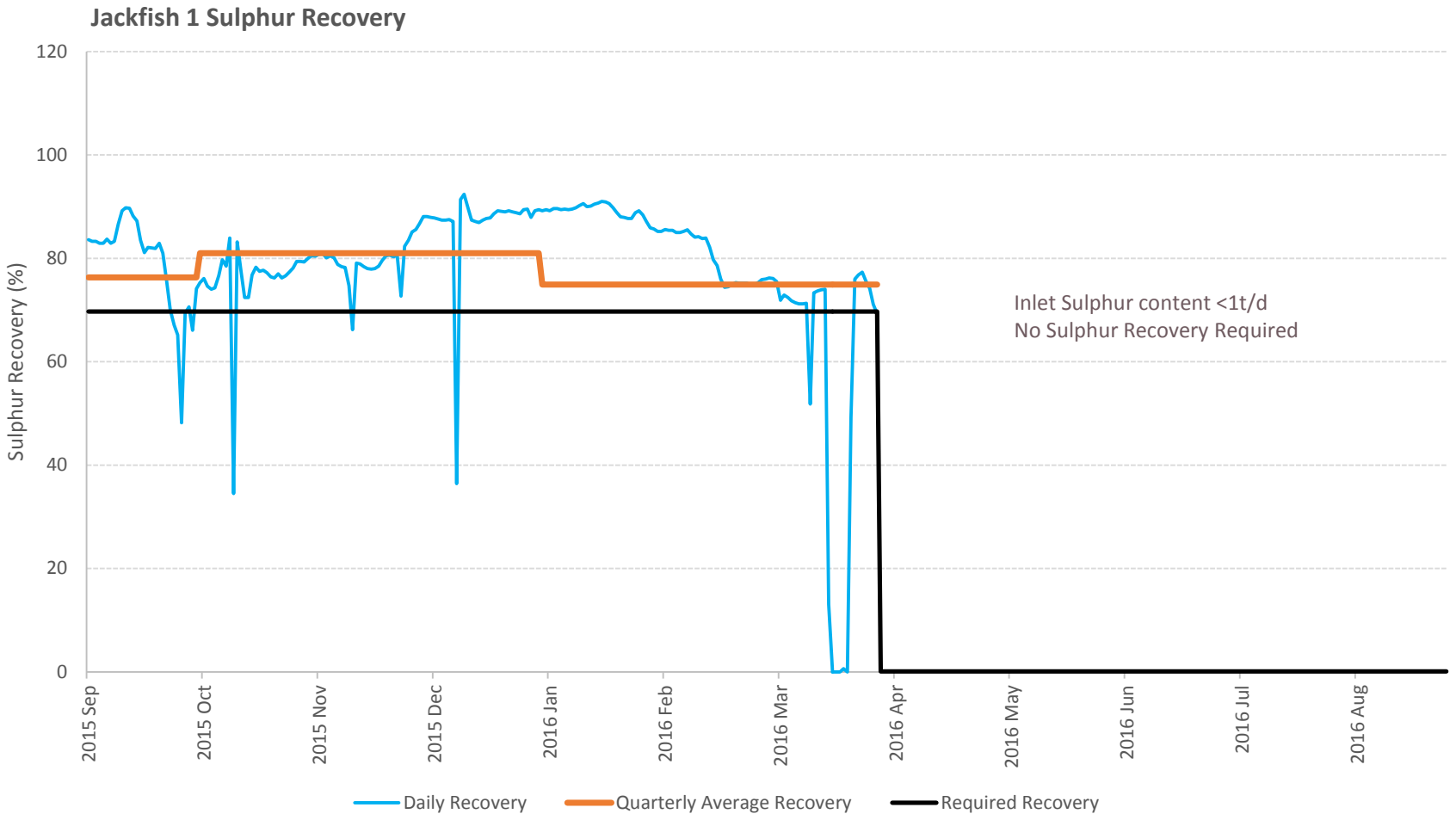
Sulphur Production & Air Emissions

Section 3.1.2-6

Sulphur Production

Operations with Sulphur Recovery

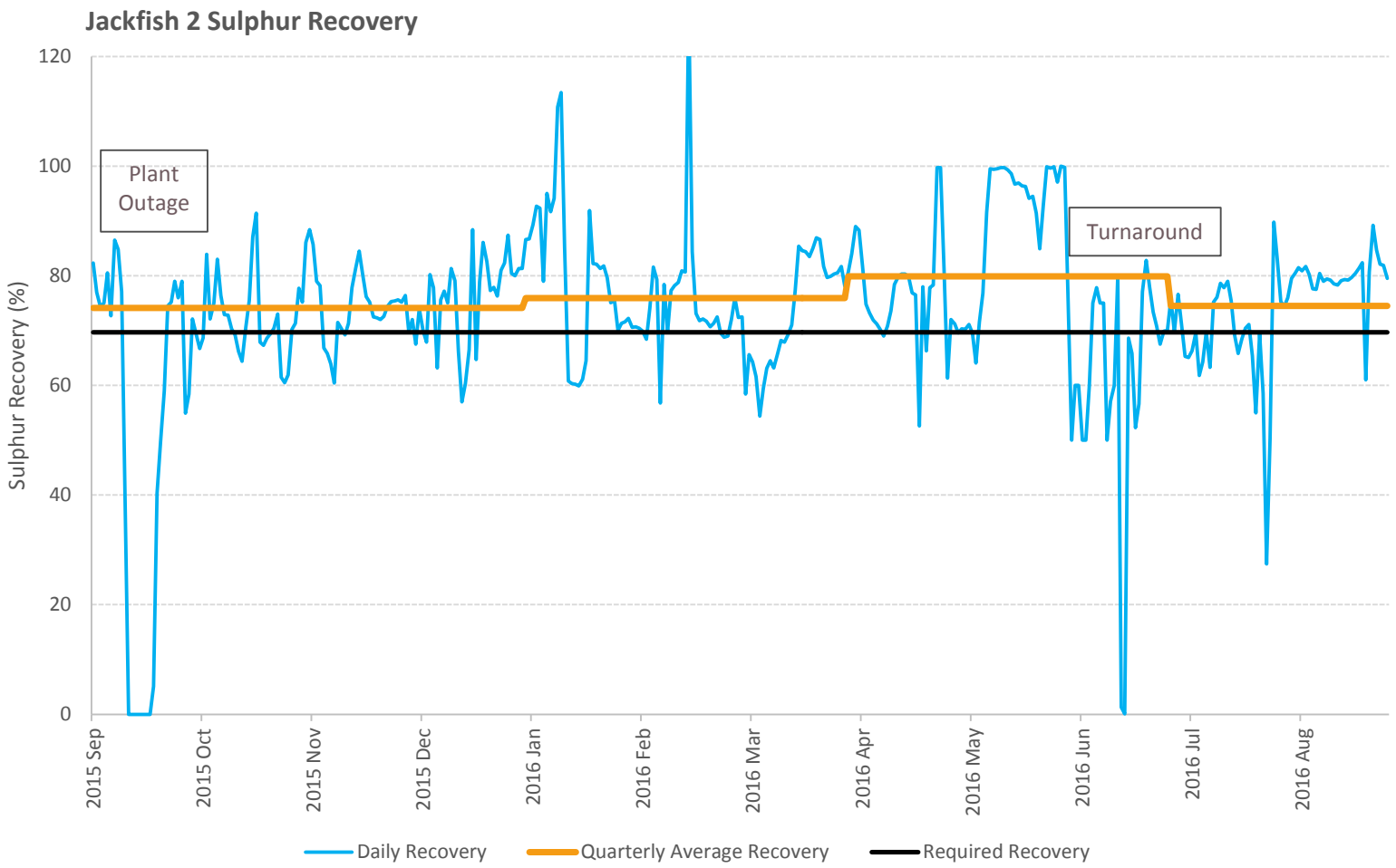
3.1.2-6a (i) and (ii)



Sulphur Production

Operations with Sulphur Recovery

3.1.2-6a (i) and (ii)

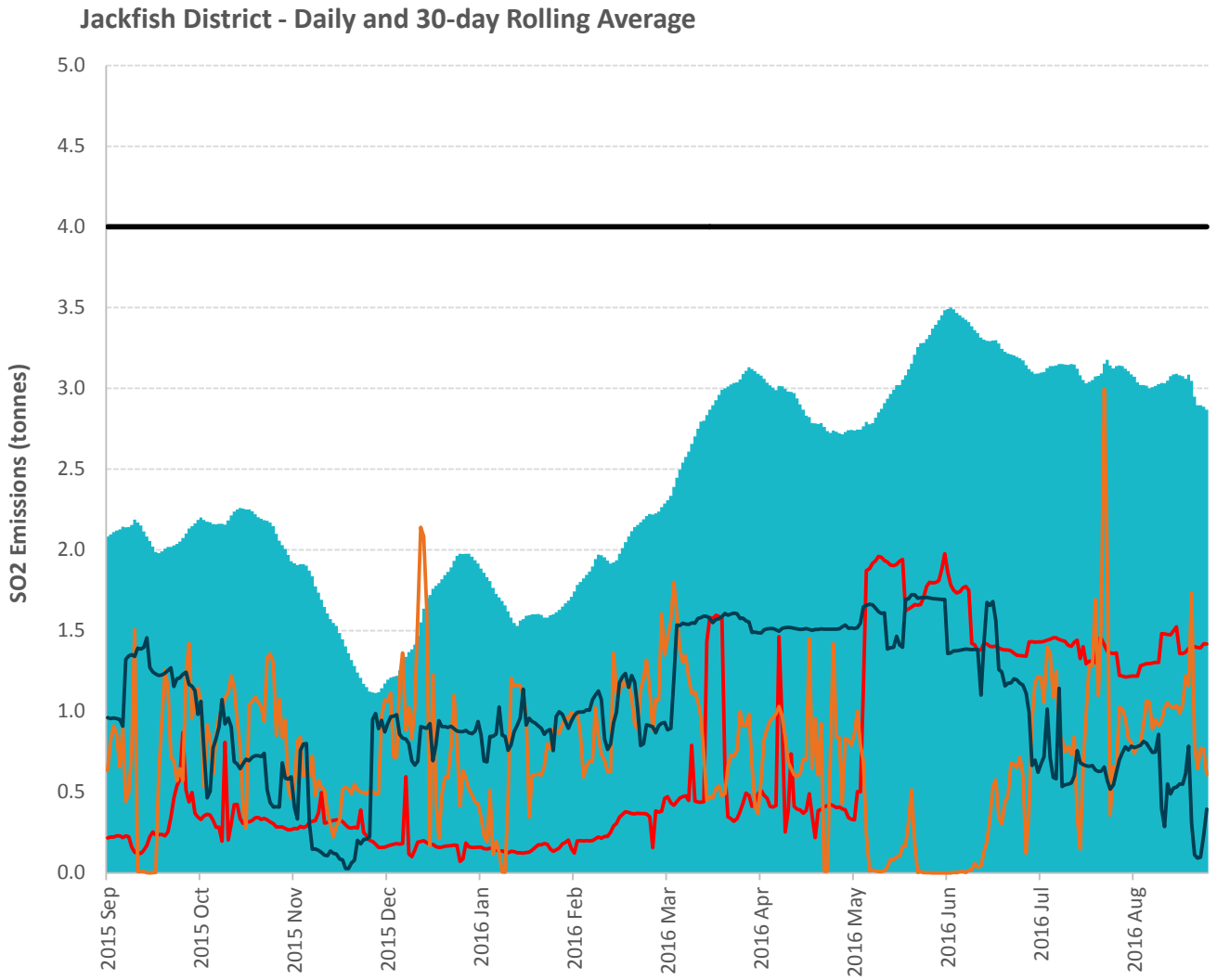


Sulphur Production

Peak Daily and Rolling Averages – SO_2 Emissions

3.1.2-6c

(30 day rolling average of the J1, J2 & J3 daily SO2 emissions)



Ambient Air Quality Monitoring

3.1.2-6d

Passive air monitoring

- At least four passive stations located at each Jackfish site to monitor sulphur dioxide and hydrogen sulphide

Continuous ambient monitoring

- Monitored parameters: sulphur dioxide, hydrogen sulphide, nitrogen dioxide, total hydrocarbons, wind speed and direction

2015-2016 monitoring and reporting requirements were satisfactorily met.

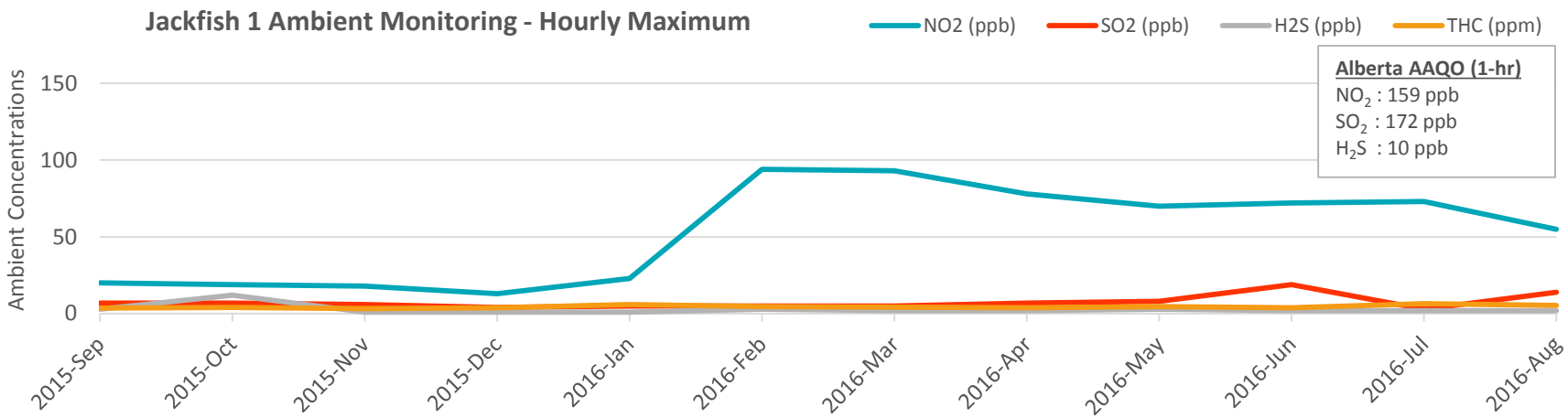
Ambient Air Quality Monitoring

3.1.2-6d

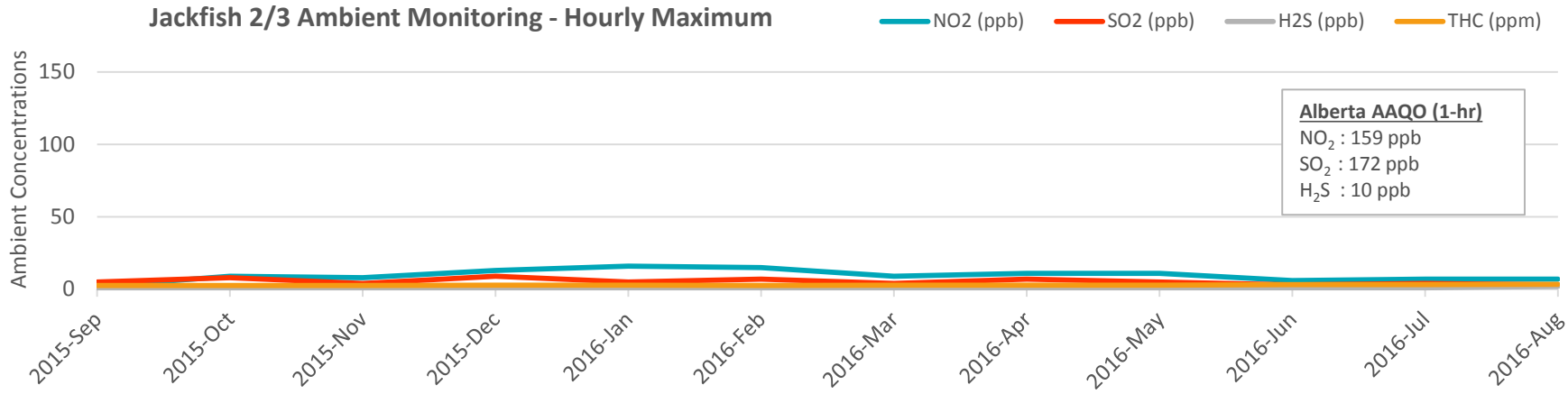
Ambient Air Quality Monitoring

Results

3.1.2-6d



- Marginal increase in NO_2 concentrations due to nearby construction activities



Environmental Issues

Section 3.1.2-7

Environmental Issues
Environmental Non-Compliances

devon

3.1.2-7a

Date	Event	Corrective Action
Sep 2015	Jackfish 1 domestic wastewater treatment plant TSS exceedance	• Maintenance procedures reviewed an updated to ensure proper cleaning of membrane filters
Oct 2015	H_2S exceedance detected at Jackfish 1 ambient air monitoring trailer	• Investigation has found no upset or operating condition that would result in an H_2S exceedance • Cause suspected to be naturogenic (natural source of H_2S) in combination with poor meteorological conditions
Nov 2015	Jackfish 3 CEMS Downtime	• New probe installed • Probe material compatibility is under review
Apr 2016	Jackfish CEMS Data Acquisition System failure	• System memory card replaced and issue resolved
Jun 2016	Significant rainfall resulted in an uncontrolled release of surface water collected on a source water pad	• Water tested and met surface water discharge criteria • Berm was repaired and a dedicated pump is on-site
Jul 2016	Jackfish 2 SRU compressor upset resulted in SO_2 emissions above daily limit	• Sulphur recovery unit operating procedure altered across Jackfish CPF's

AER Regulatory Approval Summary

3.1.2-7b

D78 Amendments – September 2015 to August 2016

* Indicates current approval as of August 31, 2016

Amendment			Category
Jackfish Pad EEE and Development Area Request	September 10, 2015	10097CC	2
Jackfish 1 NCG Injection and Wind-down	September 16, 2015	10097DD	2
Jackfish 2 NCG Injection	September 16, 2015	10097DD	2
Pad O Revised Well Trajectories	December 9, 2015	10097EE	2
Pad R Revised Well Trajectories	January 5, 2016	10097FF	2
Jackfish 1 Sulphur Recovery	April 15, 2016	Letter	1
Pad QQ Proposal	April 29, 2016	10097GG*	2

AER Regulatory Approval Summary

3.1.2-7b

D56 Facilities Licences

- Jackfish 1 F33125 Licence Amendments – Changes to H_2S content of inlet gas, continuous sulphur emissions, sulphur inlet rate and facility category
- Jackfish 2 F39950 Licence Amendments – Changes to H_2S content of inlet gas, continuous sulphur emissions, inlet rates and compressors
- Jackfish 3 F44113 Licence Amendment - Changes to H_2S content of inlet gas, continuous sulphur emissions, inlet rates and facility category

D65 Disposal Approval No. 10790

- No Amendments

AER Regulatory Approval Summary

Jackfish Class II Landfill

3.1.2-7b

D58 Approval WM105

Date Issued	Approval To:
Nov 24, 2015	• One time approval to accept additional waste from Devon OSE programs
Nov 27, 2015	• One time approval to accept additional waste from the Devon Pike Project Area
Dec 10, 2015	• Amendment Approval WM105E for expansion of the landfill lease boundary
Dec 16, 2016	• One time approval to accept additional waste from Devon Northeast Gas sites
Jul 8, 2016	• One time approval to accept additional waste from Devon OSE programs

Water Act Approval No. 383956-00-00 - Issued August 19, 2016

- For the operation of underdrains below Landfill Cell 2 and Leachate Pond

AER Regulatory Approval Summary

Jackfish District

3.1.2-7b

EPEA Operating Approval No. 224816-00-04

- No Amendments

Water Diversion Licence No. 337687-00-00

- No Amendments

Water Diversion Licence No. 336307-00-00 & 336307-00-01

- No Amendments

Water Diversion Licence No. 336306-00-00

- No Amendments

AER Regulatory Reporting Requirements

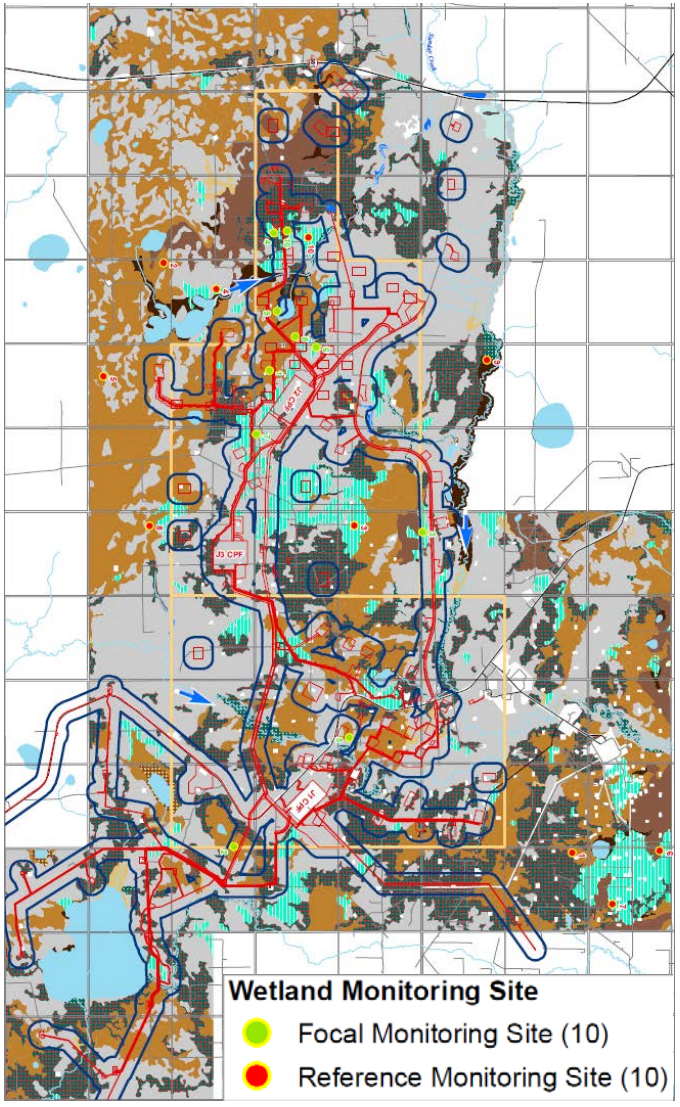
3.1.2-7c

- Industrial Wastewater and Industrial Runoff Report
- Groundwater Monitoring Report
- Wetland Monitoring Report
- Potable Water Monitoring Report
- Air Monitoring Report
- Soil Management Report
- Soil Monitoring Report
- Conservation and Reclamation Annual Report
- Wildlife Mitigation and Monitoring Program
- Caribou Mitigation and Monitoring Program

Water Management

Jackfish 1, 2 and 3

3.1.2-7c



Groundwater

- Jackfish 1, 2 & 3 groundwater monitoring twice yearly at CPF, well pads and Tank Farm as per EPEA approval
- Minor issues to date include slightly elevated chlorides due to road safety and rebalancing of water table below Jackfish 1 CPF
- Monitoring ongoing

Wetlands

- Wetland monitoring program amendment approved by AER (Sept, 2016)
- Wetland monitoring sites were surveyed in Q2 & Q3 2016
- No significant impacts observed to date

Soil Monitoring & Soil Management

Jackfish 1, 2 and 3

3.1.2-7c

- Jackfish 1 soil monitoring report submitted in 2011
- Ongoing monitoring of Jackfish 2 operational areas (CPF and wells pads)
- The next soil monitoring proposal for Jackfish 1, 2 and 3 is due November 2016
- The next soil monitoring report for Jackfish 2 is due in 2017

Environmental Monitoring & Progress

Wildlife Monitoring

3.1.2-7c

- As per EPEA Approval Condition, Devon's Jackfish Wildlife Monitoring Program was authorized in July 2012
- First comprehensive wildlife report submitted July 2015
- Long term monitoring ongoing
- No significant project related impacts observed to date

Regional and Other Initiatives

3.1.2-7d

- Christina Lake Regional Water Management Agreement (CLRWMA)
- Canada's Oil Sands Innovation Alliance (COSIA)
- Alberta Biodiversity Monitoring Institute (ABMI)
- Regional Aquatics Monitoring Program (RAMP)
- Monitoring Avian Productivity and Survivorship (MAPS Program)
- Regional Industry Caribou Collaboration (RICC)
- Clean Air Strategic Alliance (CASA)
- Wood Buffalo Environmental Association (WBEA)

Other Environmental Initiatives

3.1.2-7d

COSIA (Canada's Oil Sands Innovation Alliance)

- Devon is an active participant of the Water, Land and GHG Environmental Priority Areas (EPAs) and the COSIA Monitoring Working Group
- Aspirations for each EPA have been developed and Devon is striving to:
  - GHG: Produce oil with lower greenhouse gas emissions than other sources of oil
  - Land: Be world leaders in land management, restoring the land and preserving biodiversity of plants and animals
  - Water: Be world leaders in water management, producing Canadian energy with no adverse impact on water
- Devon is a participant and, in some cases leading, Joint Industry Projects in each of the EPAs

Other Environmental Initiatives

3.1.2-7d

MAPS Program (Monitoring Avian Productivity and Survivorship)

- Continued annual support (technical, financial) of the MAPS Program
- This program analyzes the influence of industry throughout NE Alberta

RICC (Regional Industry Caribou Collaboration)

- Devon is leading a consortium of organizations in implementing a collaborative caribou conservation program for the Cold Lake Range, which comprises the JF and Pike district
- This program focuses on:
  - Managing and reducing industry's current and future footprint
  - Identifying effective techniques to reduce wolf and bear movements throughout the caribou habitat

Regulatory Compliance

Section 3.1.2-8, -9

Statement of Compliance

3.1.2-8

Devon Canada Corporation believes the Jackfish Project is in compliance with AER approvals and regulatory requirements. As of August 31, 2016, Devon has no unaddressed non-compliant events.

AER Summary of Noncompliance

3.1.2-9

The following list summarizes non-compliant events in the reporting period. For all events corrective actions were identified and tracked to completion.

Date	Event	Corrective Actions
Oct 2015	Notice of Noncompliance re: Outstanding Serious SCVF/GM Repairs	• SCVFs have been reclassified to non-serious • Authorization also received for deferral of repair
May - Jul 2016	Notice to Submit Well Logs, 5 wells	• Devon submitted required information
Sept 2016	Notice of Noncompliance re: J1 injection facility water imbalance 2015-2016	• DCS programming error found to be main contributing factor and has been corrected.

AER Spill Reporting		
Site	No. of Reportable Spills	Volume Released (m^3)
Jackfish 1	3	17
Jackfish 2	6	34
Jackfish 3	4	63

Future Plans

Section 3.1.2-10

Future Plans (2016 – 2017)

Surface Operations

3.1.2-10a, b, c, d

Jackfish 3

- Plant Maintenance Turnaround planned for 2017

Thank you.