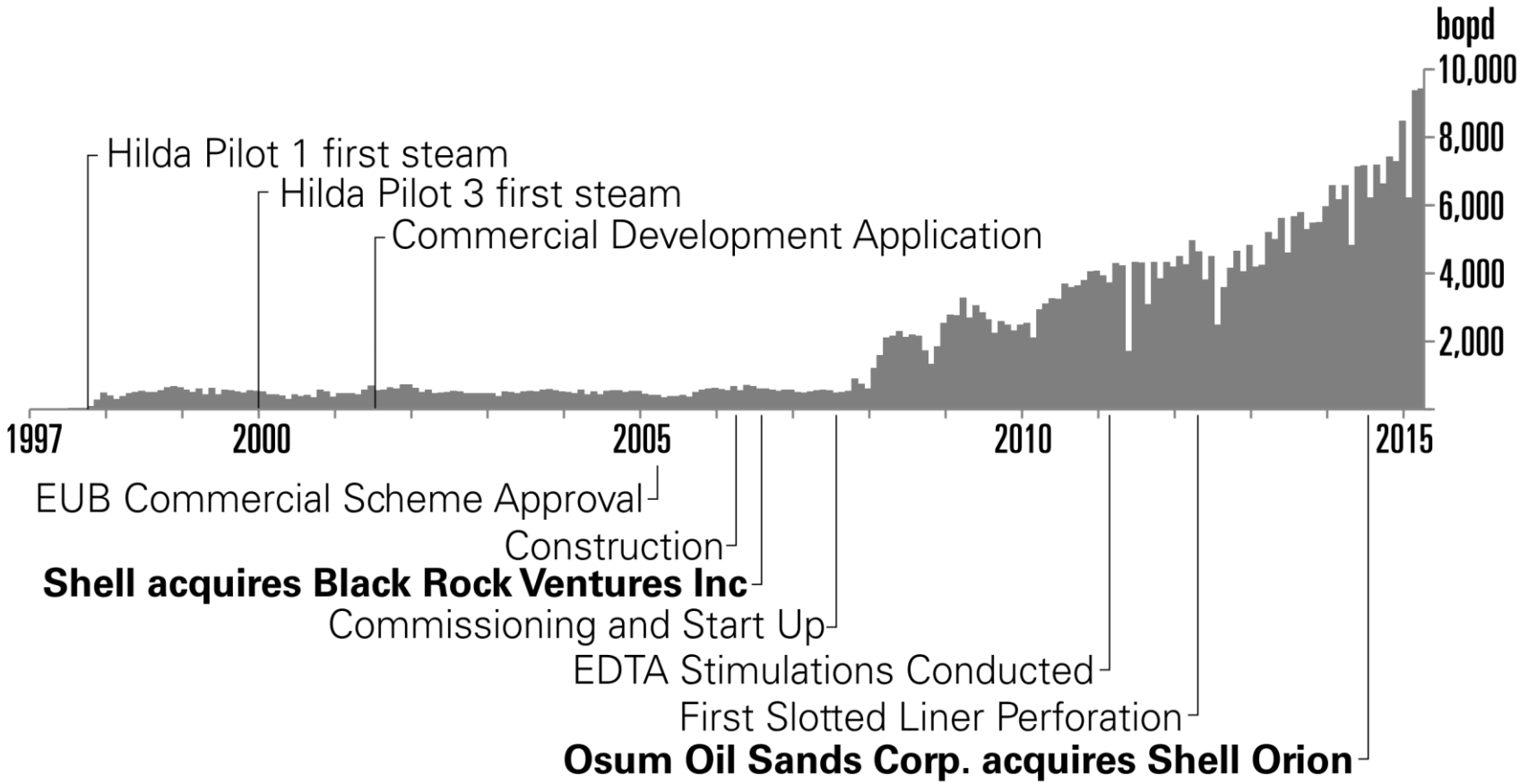
Orion In Situ Oil Sands 2014 Progress Update

Presented May 21, 2015

Agenda

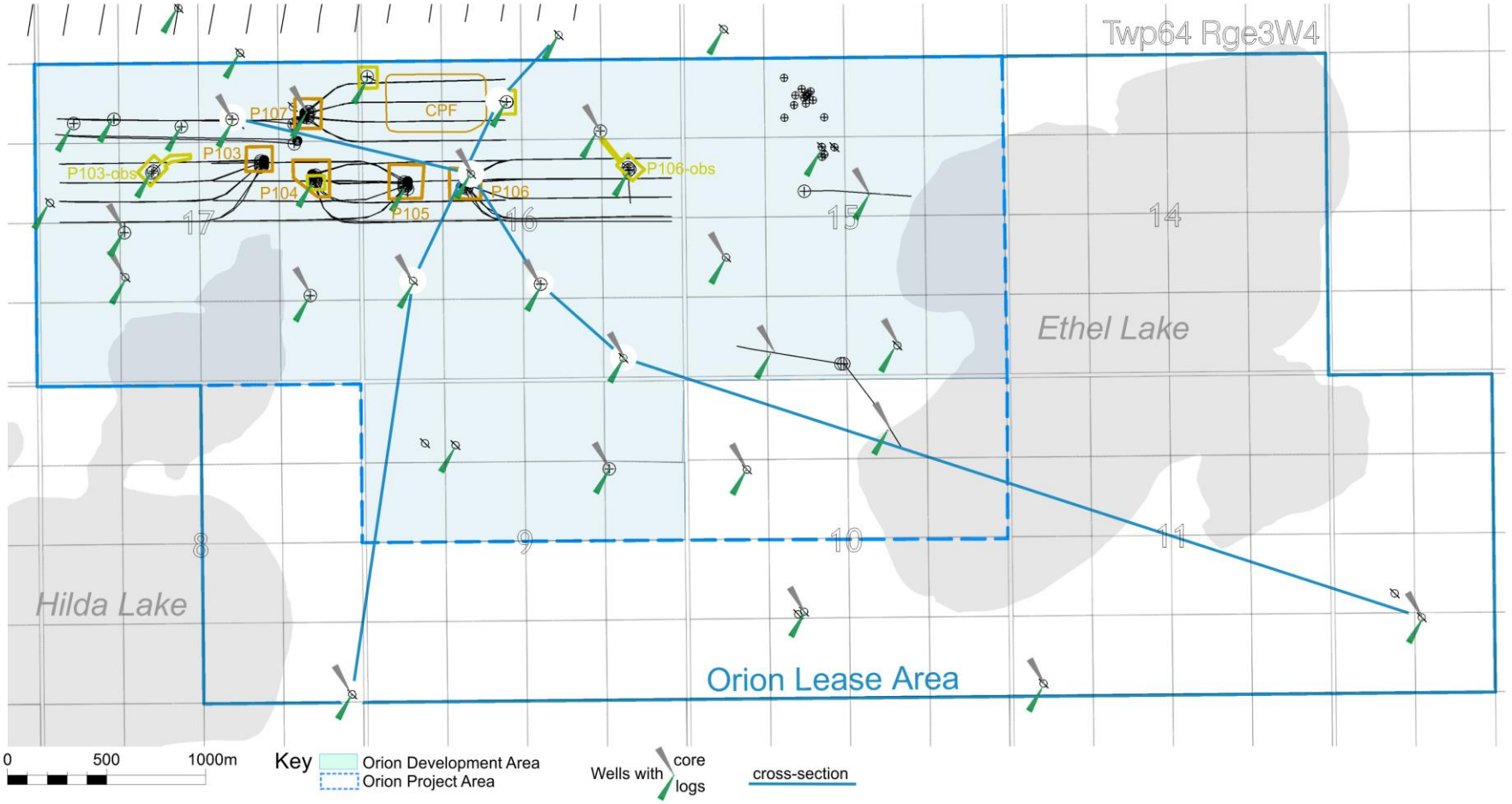
Introduction	Bruce Thornton
Geoscience	Jack Pels
Scheme Performance	Daniel Nugent
Surface Operations	Mario Caya
Compliance	Heather Harms
Future Plans	Bruce Thornton

The Orion Project - History

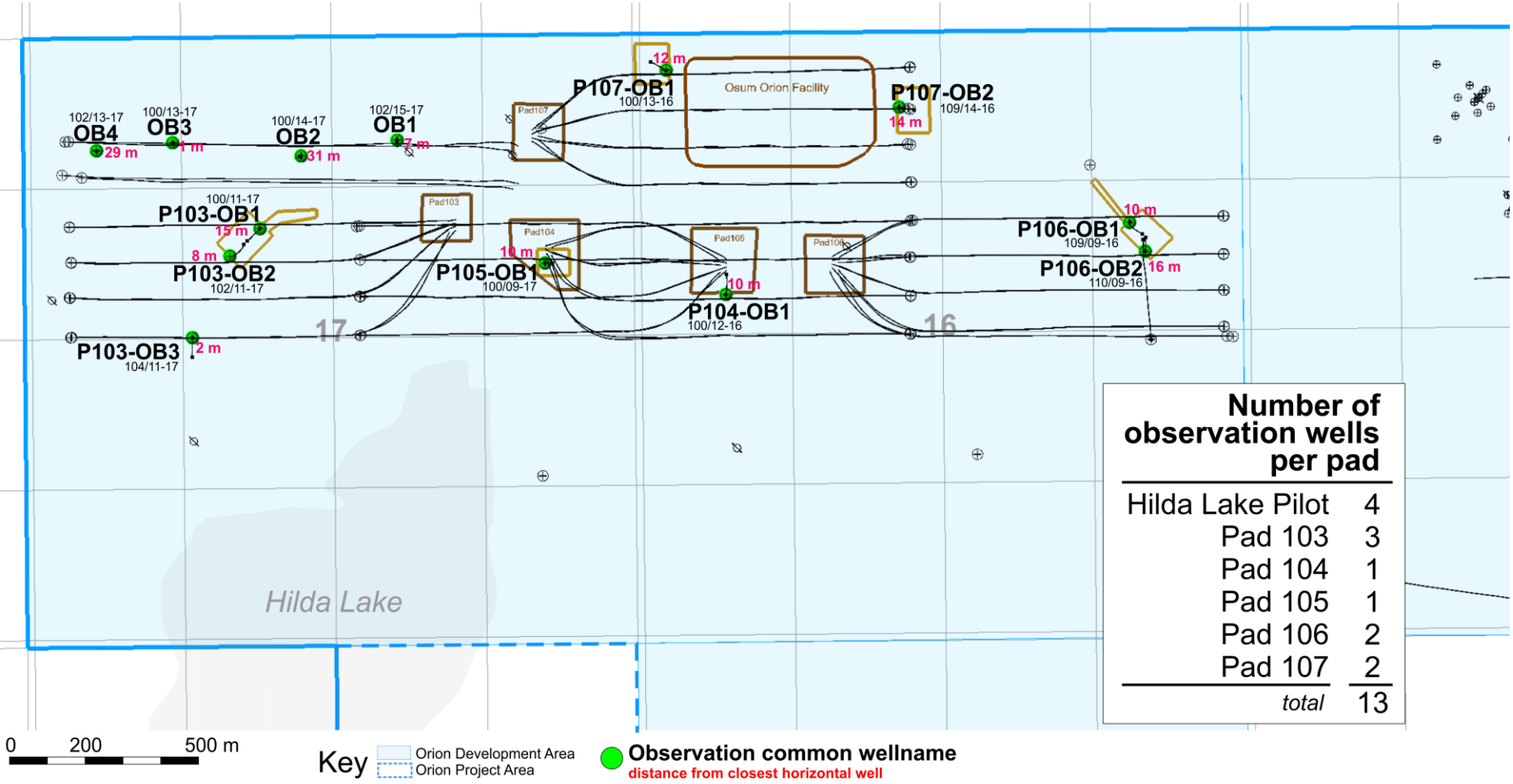


Geoscience
Jack Pels

Well Data


Twp64 Rge3W4
CPF
P107
P103
P103-obs
P104
P105
P106
P106-obs
17
16
15
14
Ethel Lake
8
9
10
11
Hilda Lake
Orion Lease Area
0
500
1000m
Key
Orion Development Area
Orion Project Area
Wells with
core
logs
cross-section

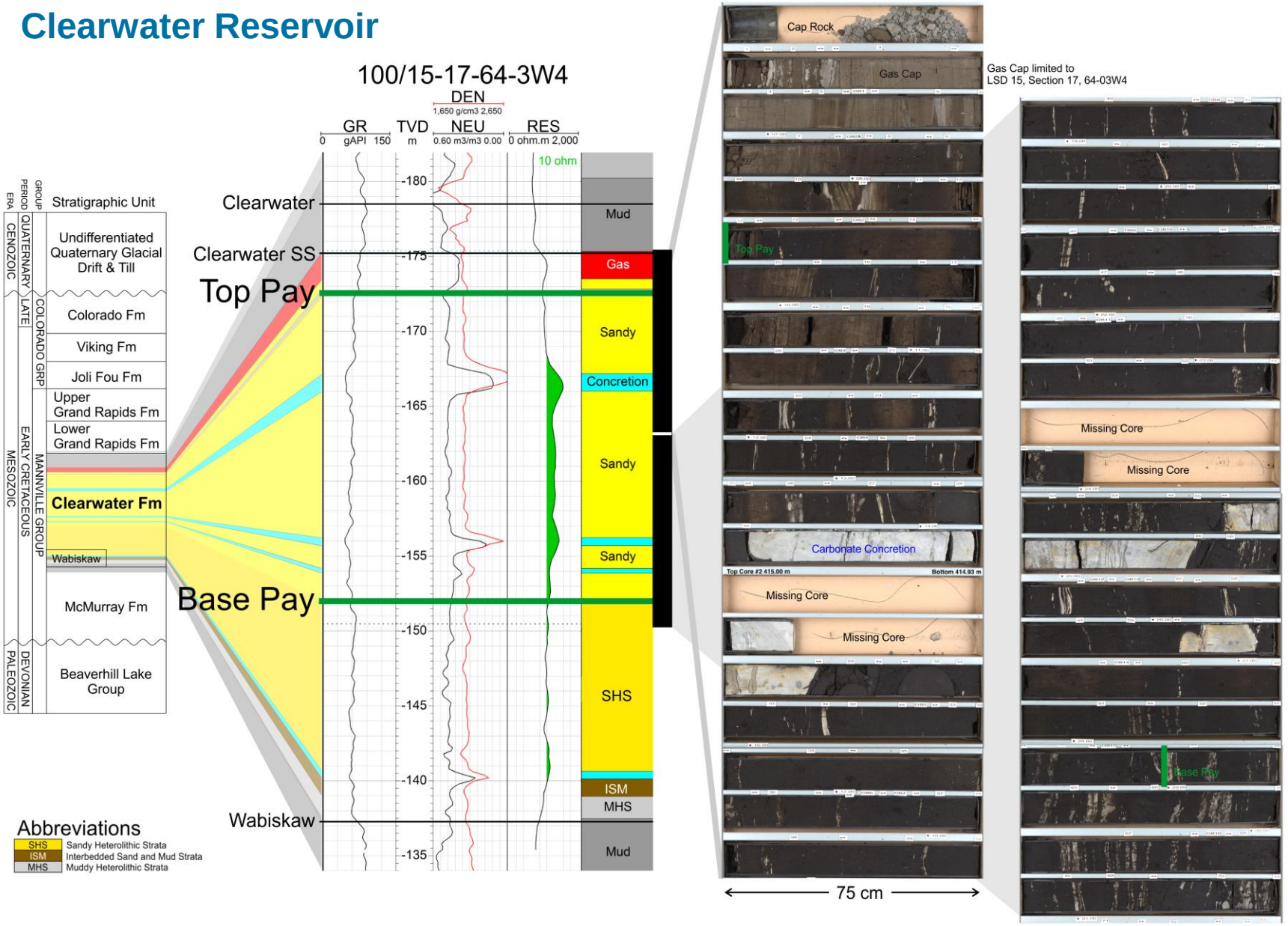
Orion Observation Well Location Map



Number of observation wells per pad	
Hilda Lake Pilot	4
Pad 103	3
Pad 104	1
Pad 105	1
Pad 106	2
Pad 107	2
total	13

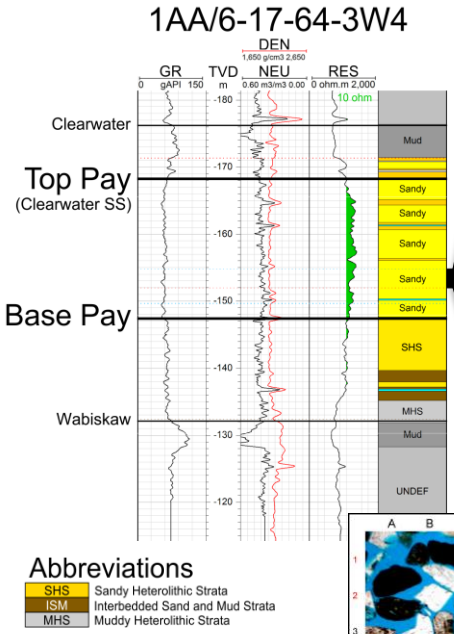
Note: **Only 2 out of 13 Observation wells had acceptable readings.**
Currently recalibrating or looking at replacements on most of these wells.

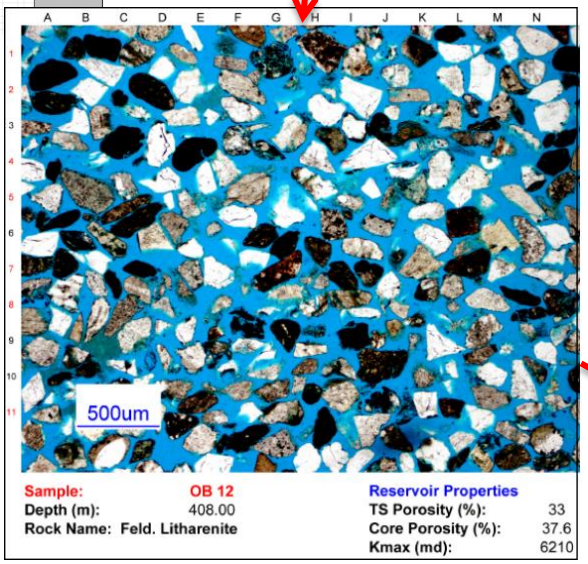
Clearwater Reservoir

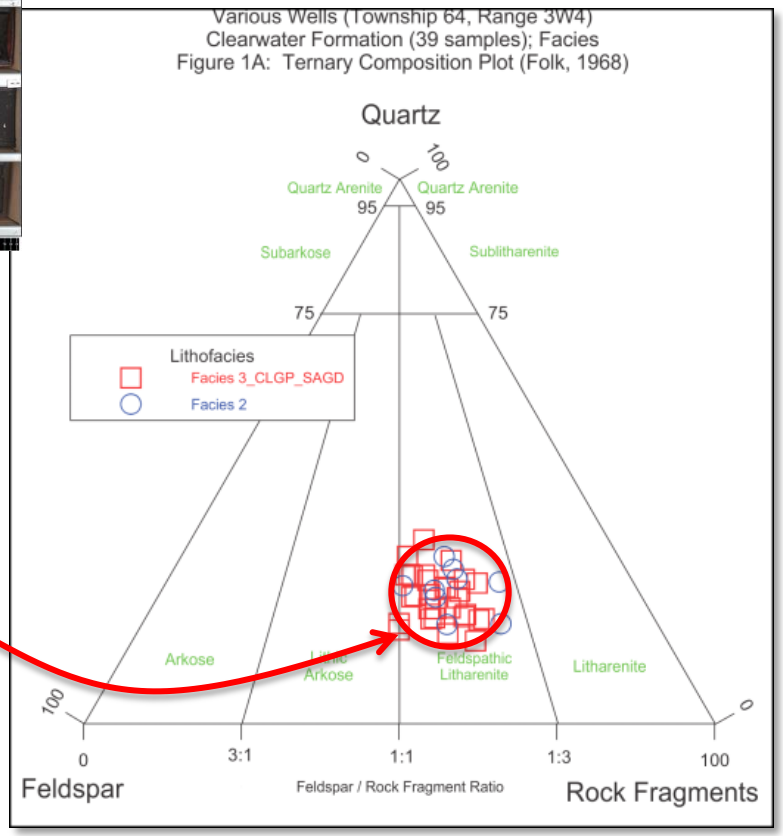


Clearwater Sand Mineralogy

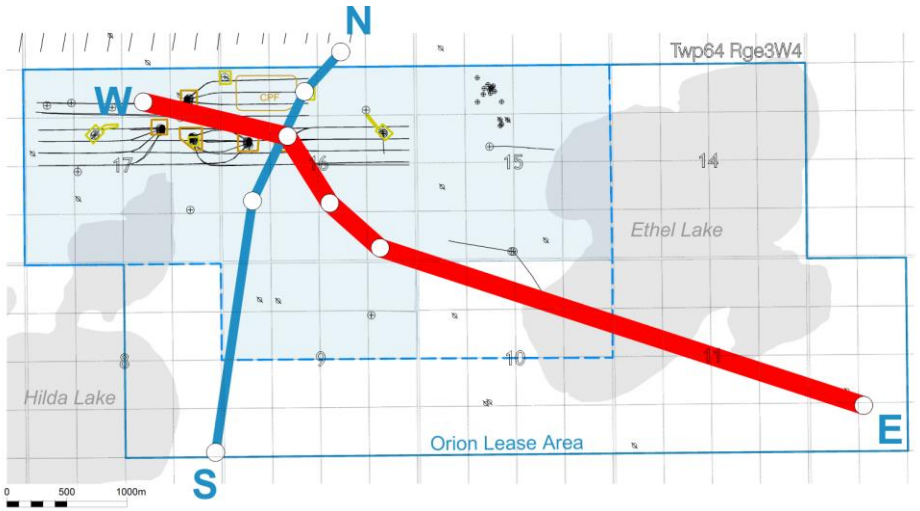
- Sand is angular very fine- to fine-grained feldspathic litharenite
- Clay content is less than 2% of total rock
- Clay composition is Kaolinite, Illite, Chlorite, and Smectite

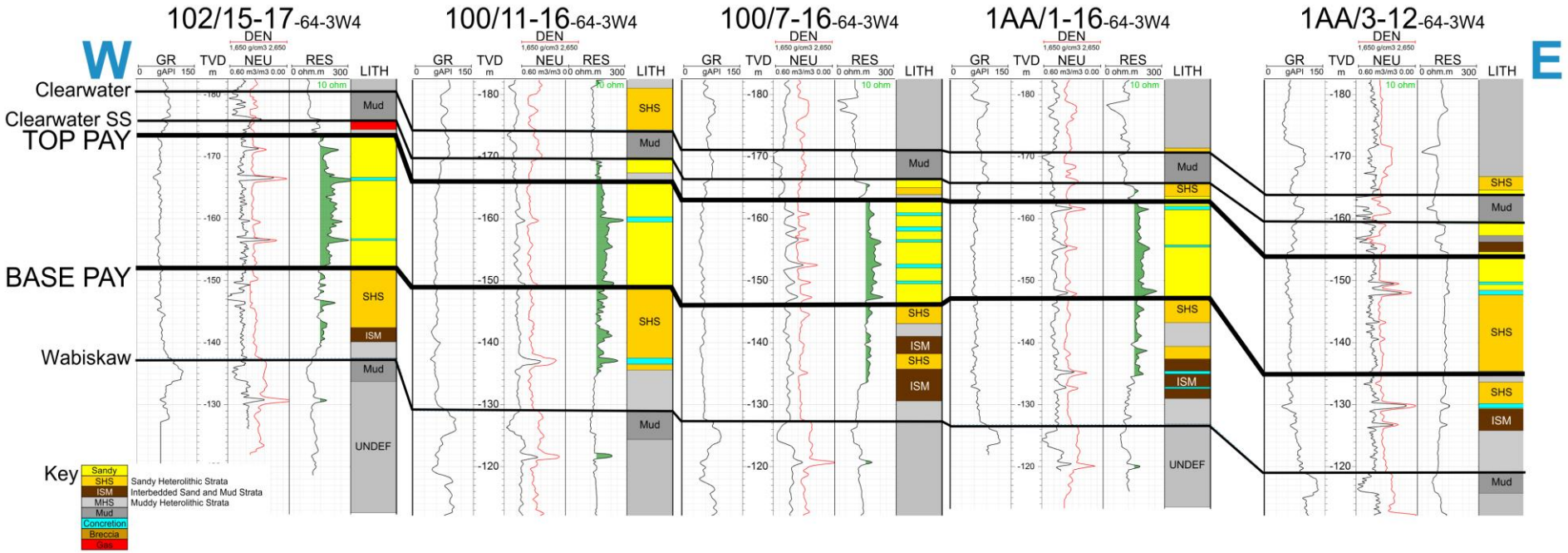




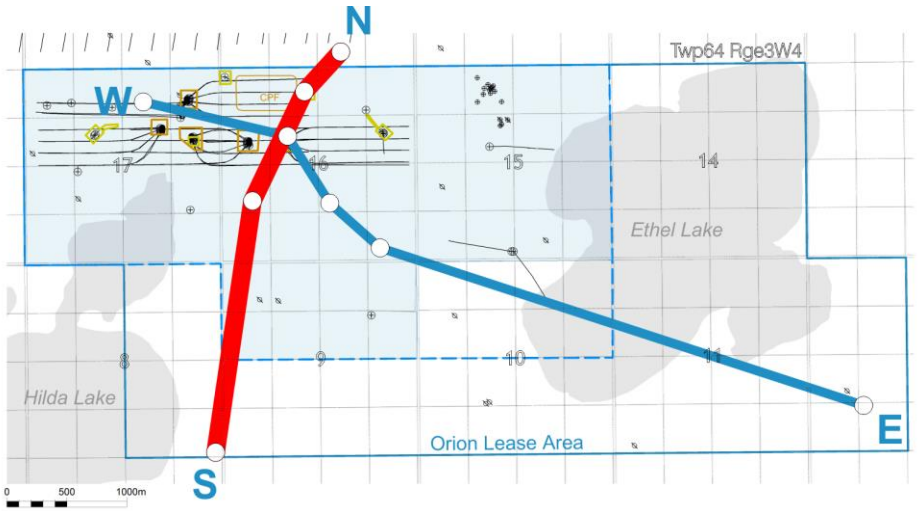


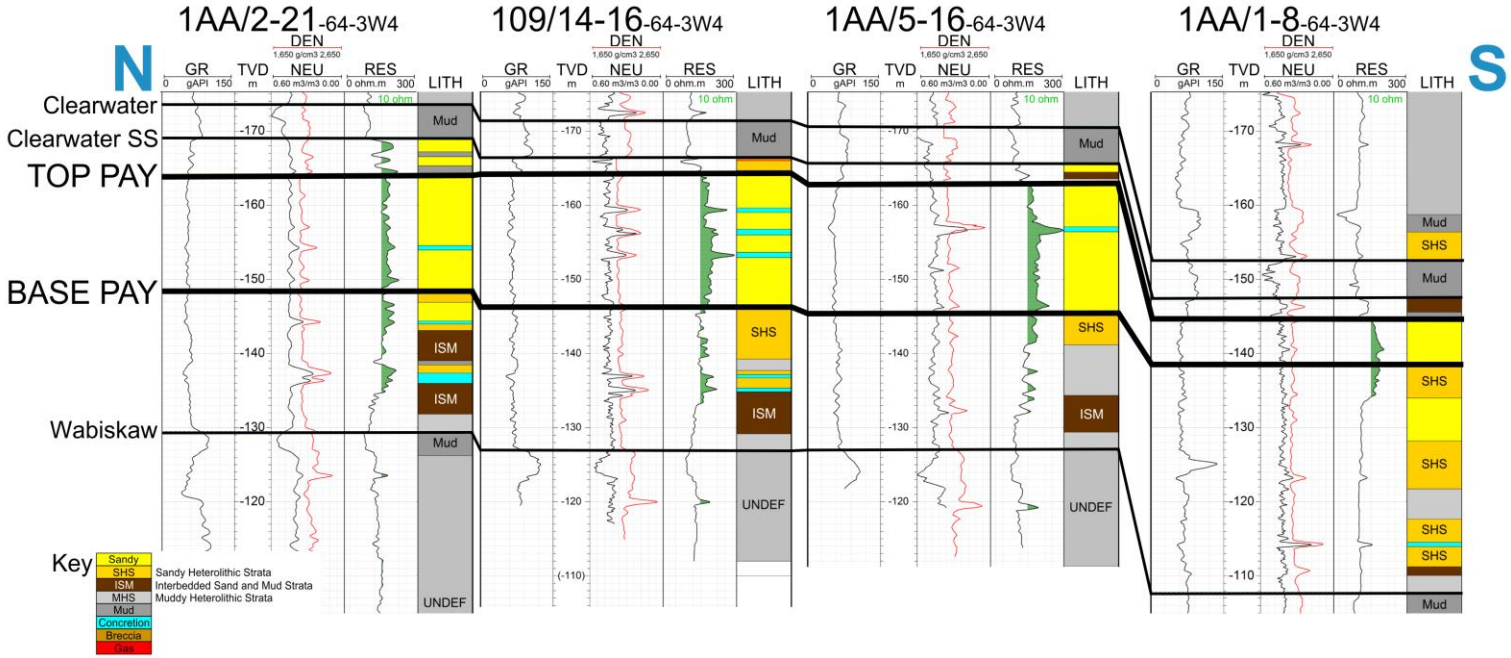
Cross Section W-E





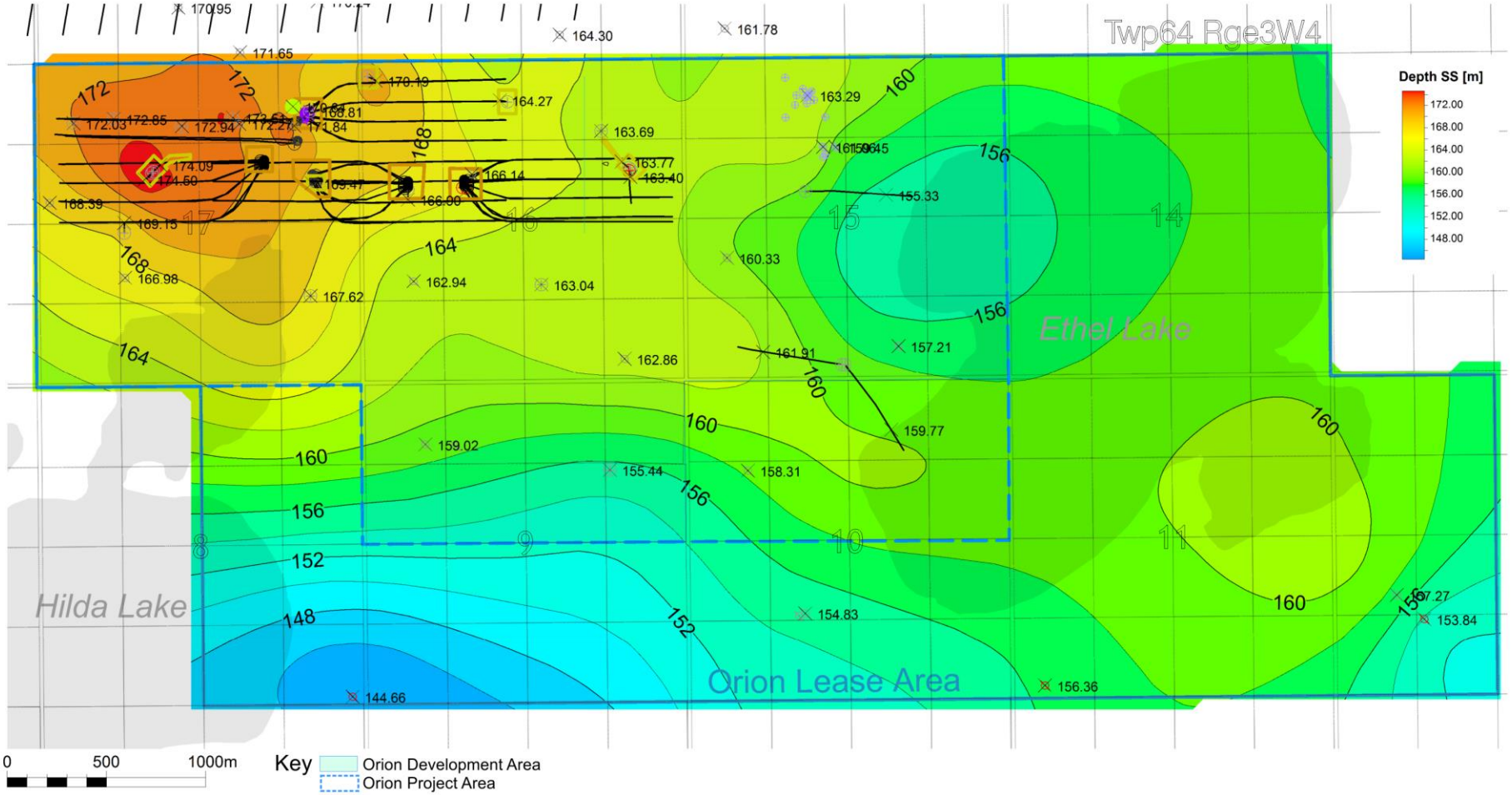
Cross Section N-S





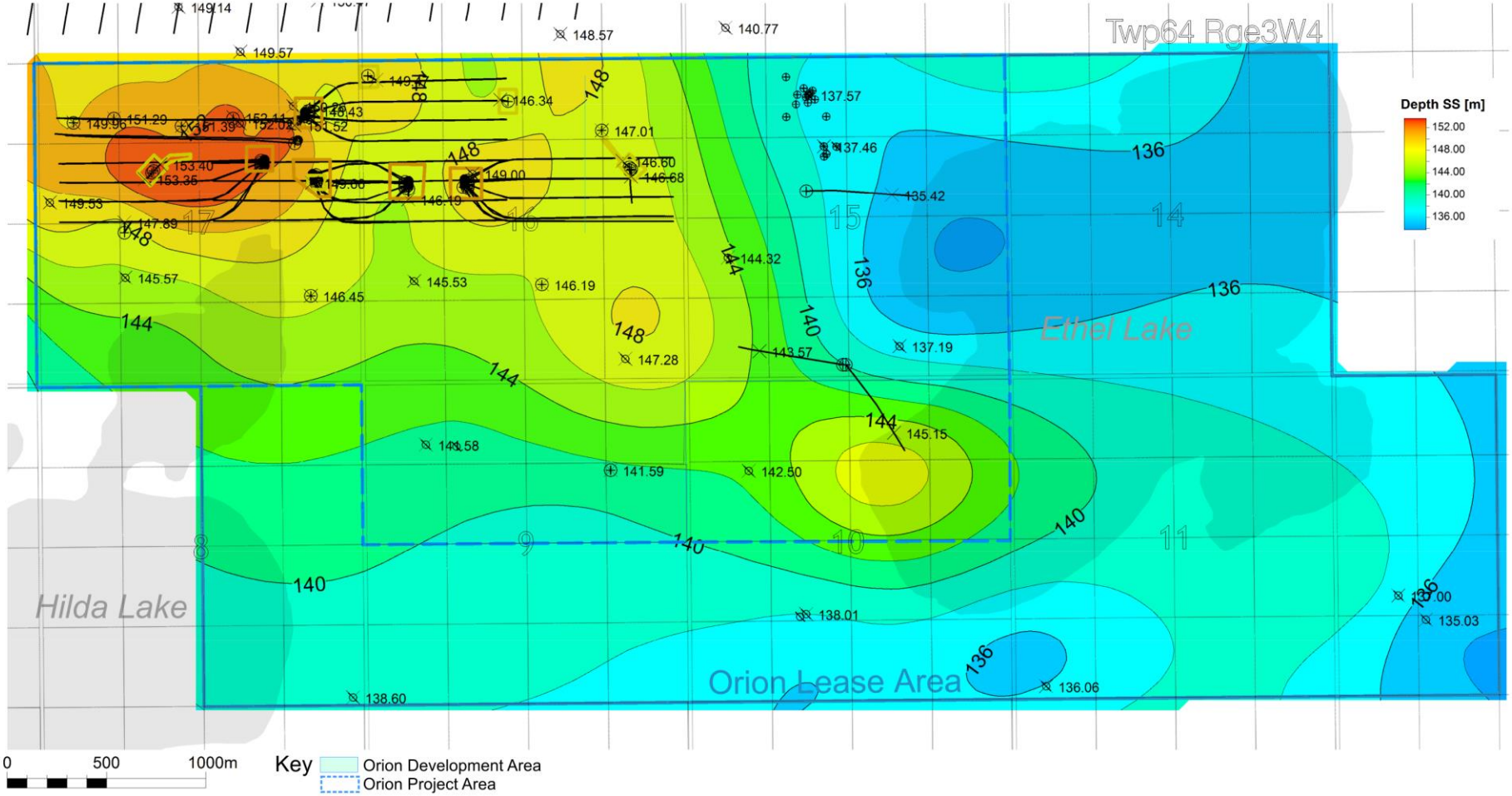
Clearwater SAGD Reservoir – Top Pay

as per Commercial Scheme Approval 10103G



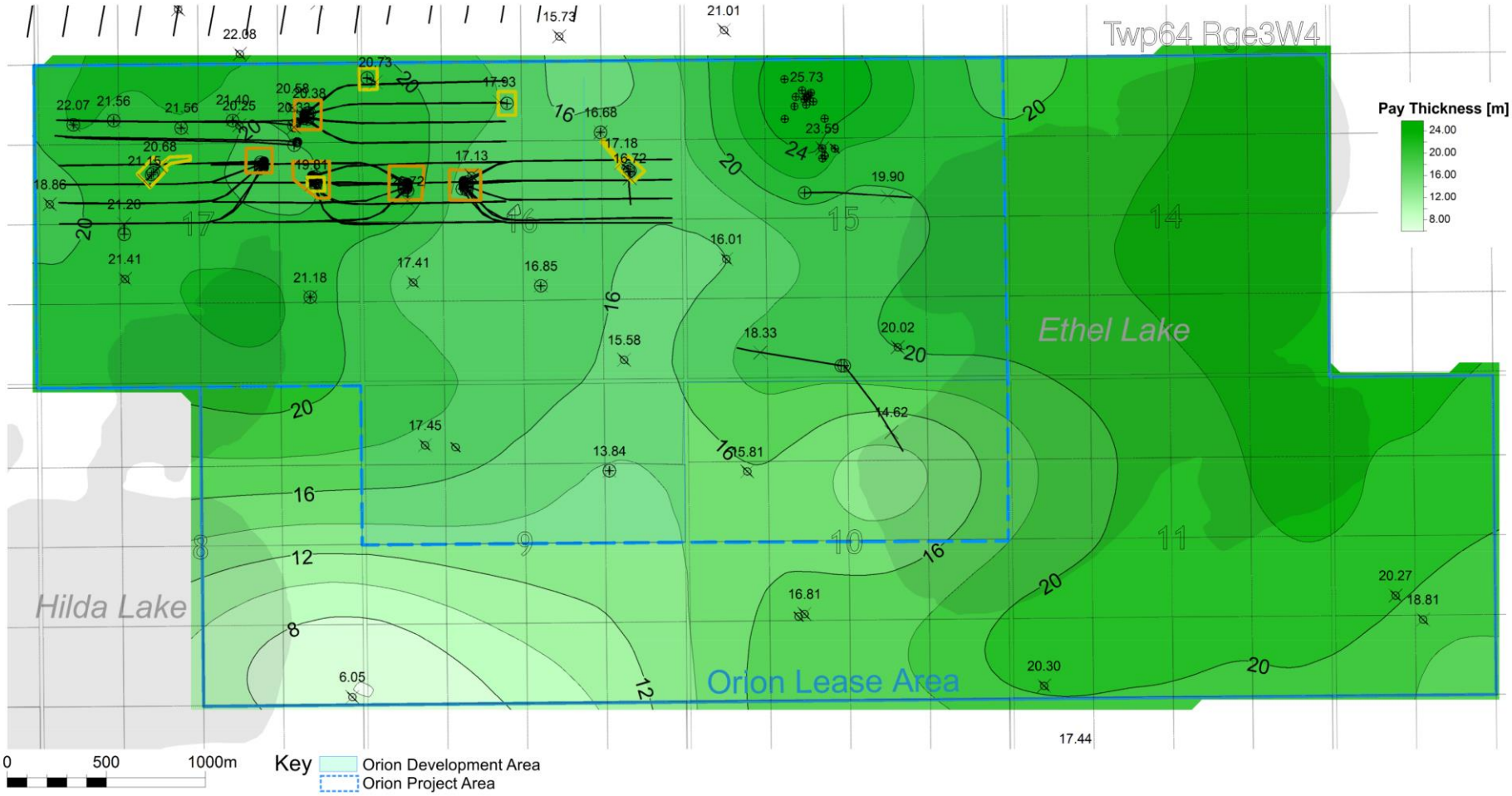
Clearwater SAGD Reservoir – Base Pay

as per Commercial Scheme Approval 10103G



Clearwater SAGD Reservoir – Pay Thickness

as per Commercial Scheme Approval 10103G



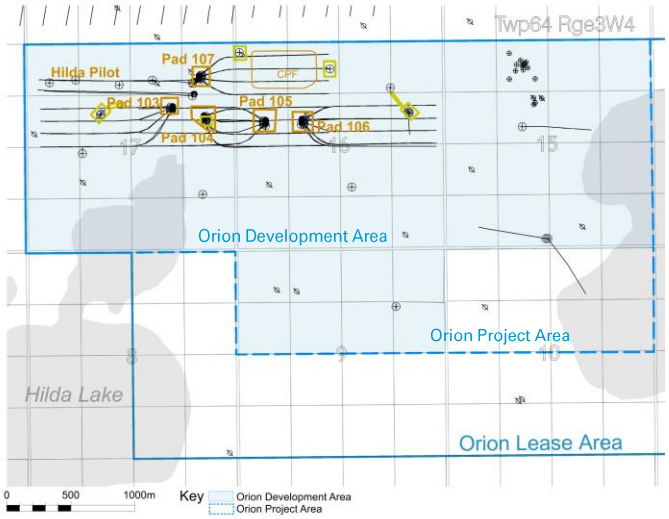
Original Bitumen in Place (OBIP) and Recovery

	Drainage Area, 50 m boundary (10^2 m ^{2})	Average Net Thickness (m)	Porosity (frac)	Oil Saturation (frac)	Total OBIP (10^6 m^2)	Current Recovery %	Estimated Recovery %
Pad 103	103	21.0	0.33	0.70	1.46	24%	60%
Pad 104 *	300	23.0	0.33	0.67	1.53	12%	50%
Pad 105	300	20.0	0.33	0.70	1.39	28%	60%
Pad 106 *	300	23.0	0.33	0.67	1.53	12%	50%
Pad 107	300	20.0	0.33	0.69	1.37	25%	60%
Hilda Lake Pilot	223	20.0	0.33	0.70	1.03	51%	60%
Orion Operating Area	1723	21.02	0.33	0.69	8.29		
Orion Development Area	9208	18.9	0.33	0.69	40.33		
Orion Project Area	10523	18.5	0.33	0.69	45.04		

* Net thickness measured from production well to top pay

- Net thickness based on maps TOP to BASE of interpreted Clearwater SAGD Reservoir
- Porosity and oil saturation from logs and core; formation volume factor (FVF) = 1

OBIP = Area x Net Pay x porosity x oil saturation x FVF

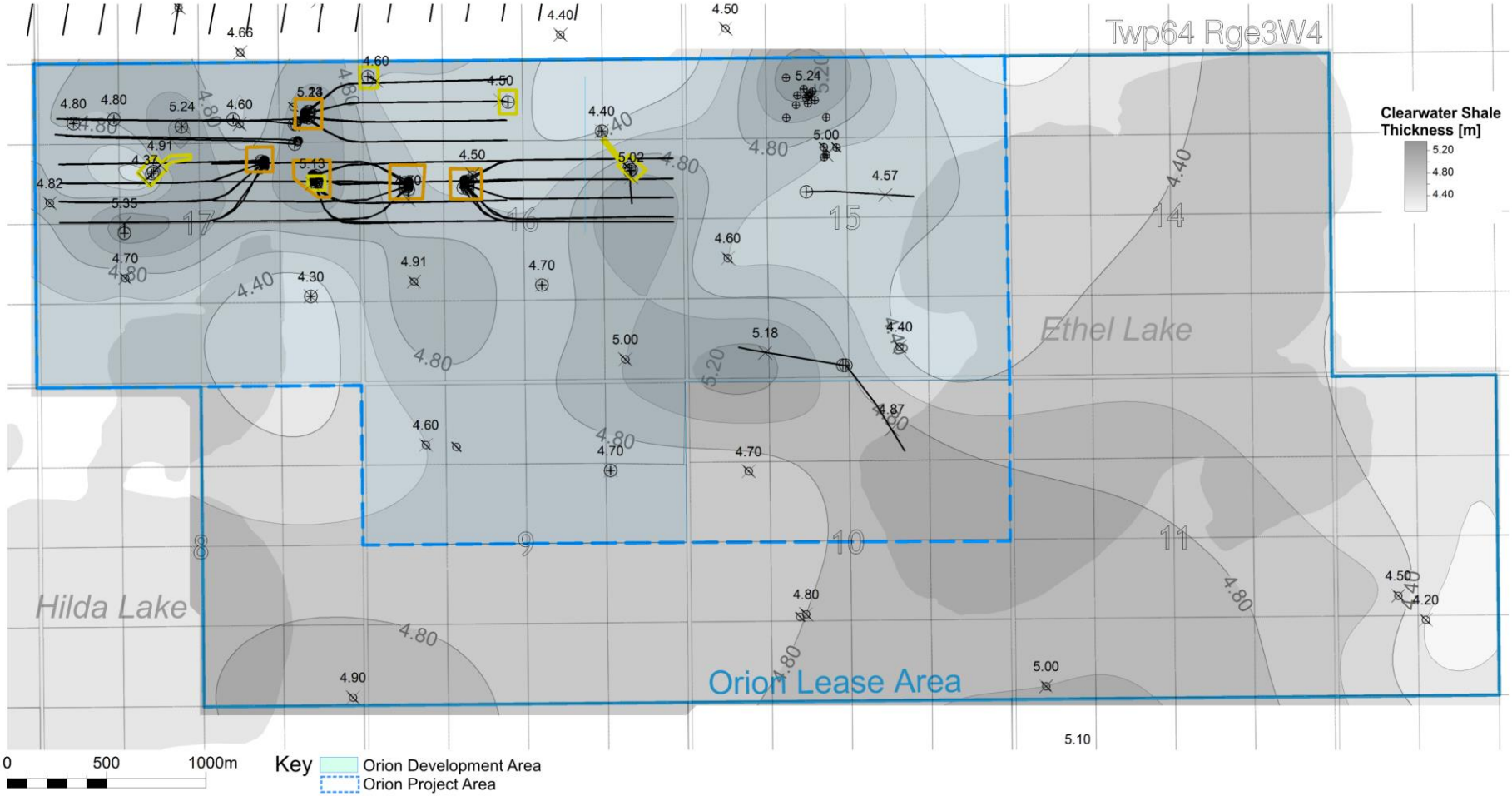


Reservoir Properties

- Horizontal Permeability ~2 – 6 D
- Vertical Permeability ~1.7 - 5.1 D (Kv/Kh = 0.85)
- Viscosity ~100,000 cP
- Oil Saturation 67 – 70%
- Porosity 32 – 34%
- Thickness 14 – 23 m
- Reservoir Depth ~425 m KB
- Reservoir Pressure 3.2 MPa
- Initial Reservoir Temp 15C
- Basal water ~10 m below pay
- Sandy heterolithic strata (SHA) facies between pay and basal water
- Minimal Top Gas Limited to LSD 15, Section 17, 64-03W4

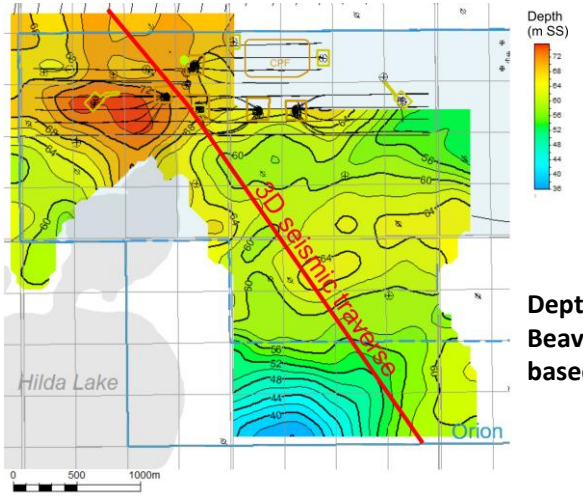
Orion Project Area within reservoir interval
SAGD Top and Base as per Approval 10103G

Clearwater Shale – Caprock Thickness



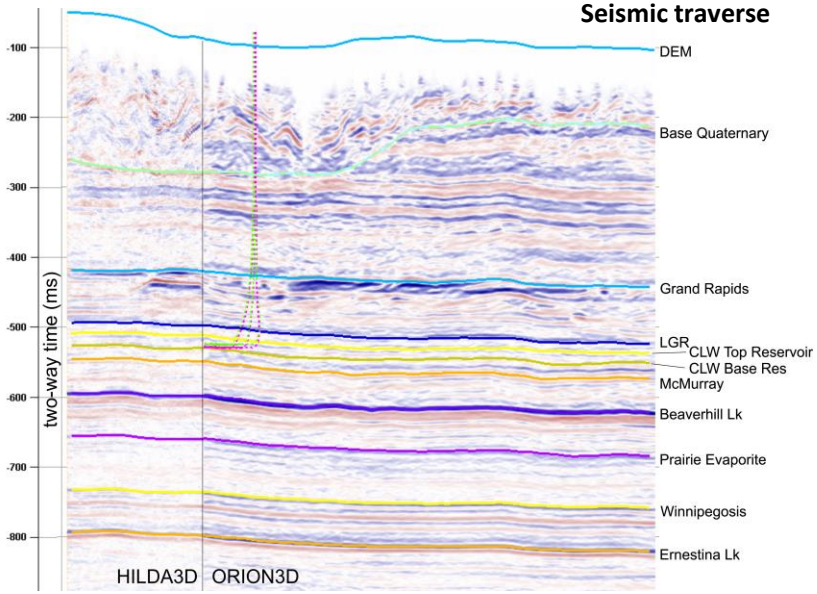
Caprock

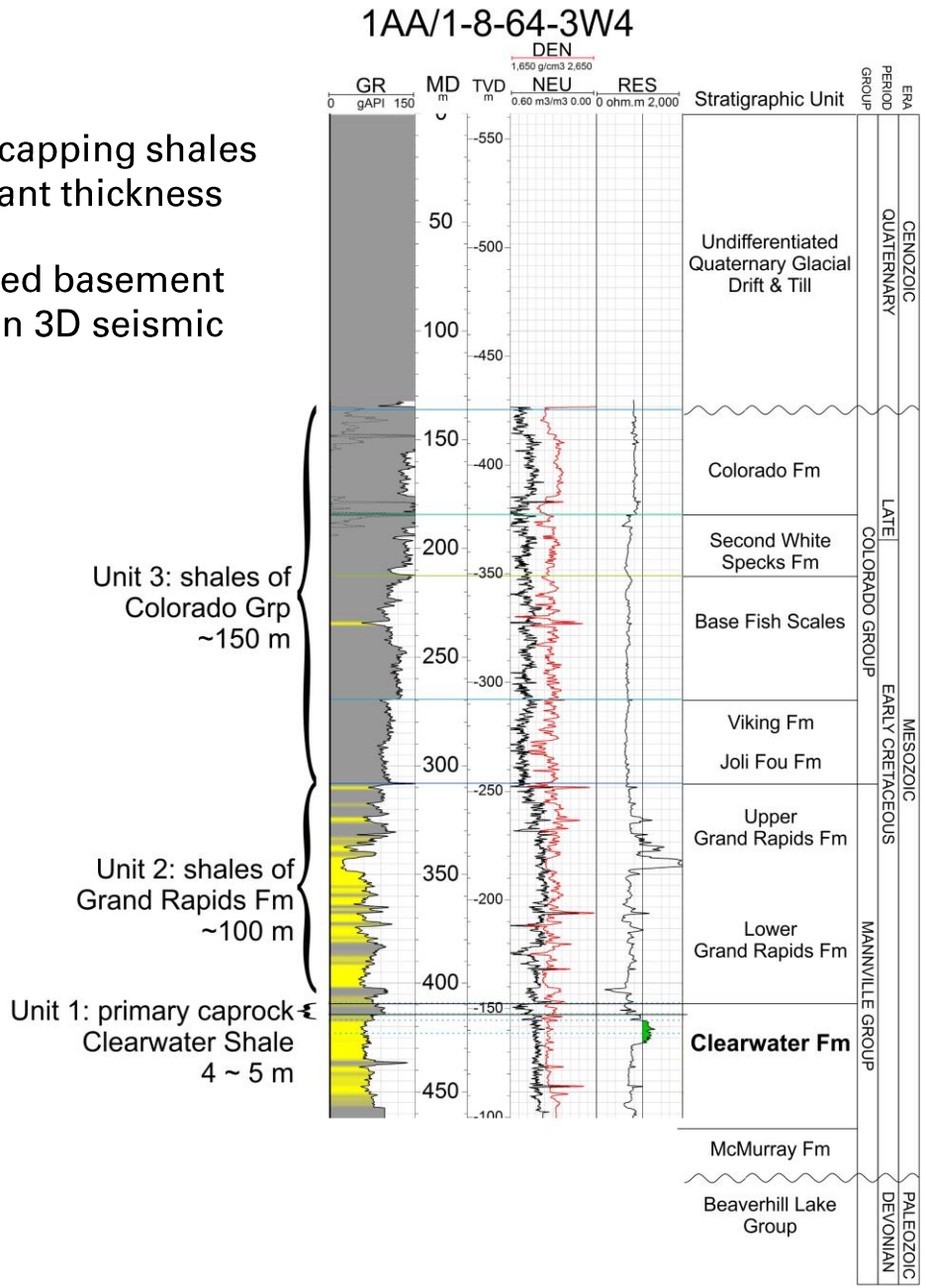
- 3 units of capping shales of significant thickness
- Undisturbed basement mapped on 3D seismic



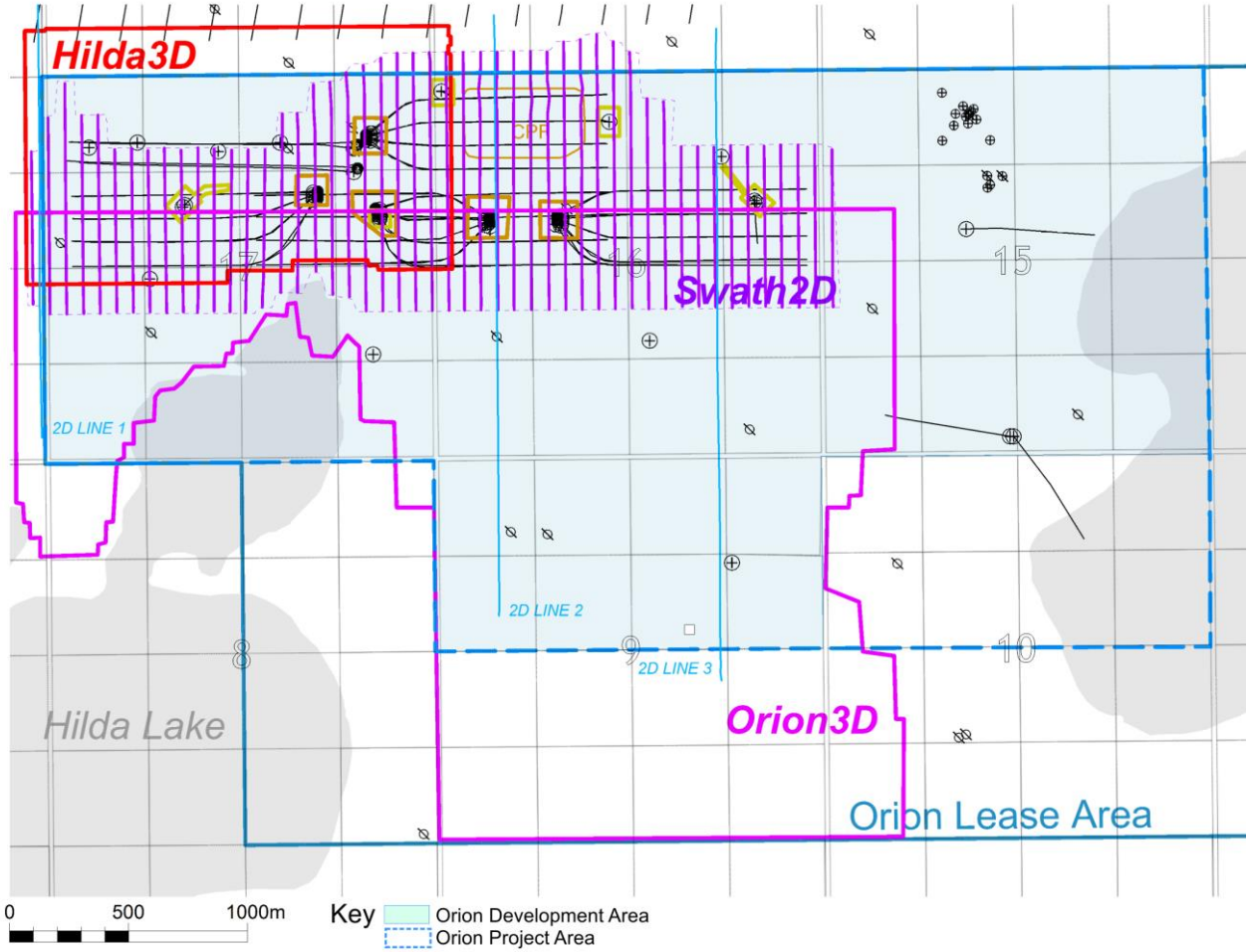
Depth Structure of Beaverhill Lake based on 3D seismic

Seismic traverse





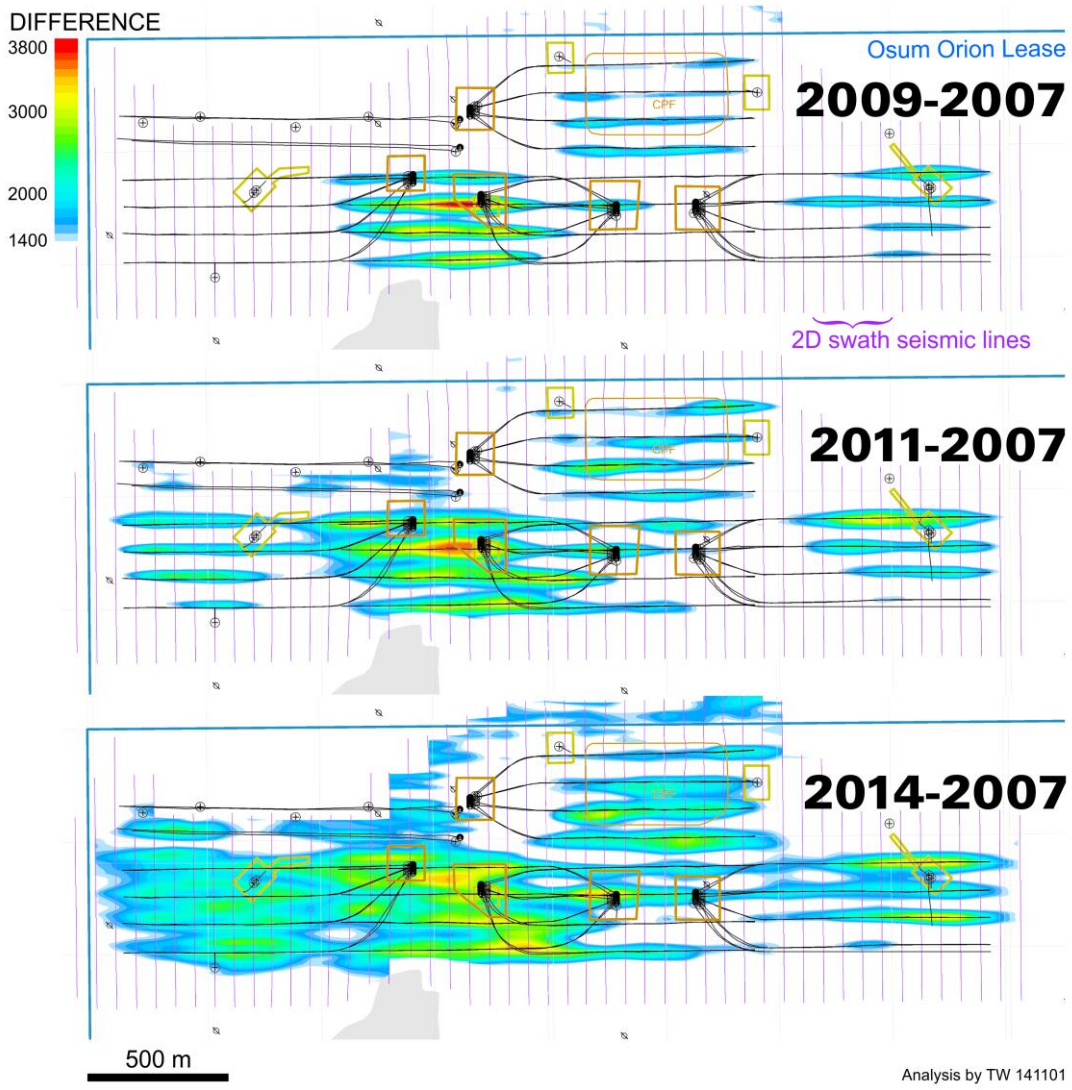
Seismic Data



3D, 2D, Swath2D

- Hilda 3D
  March 2005, 1.8 km^2
- 2D seismic
  Blackrock, 2005
- Orion baseline Swath 2D
  July 2007, 50 km
- Orion 3D
  April 2009, 8.4 km^2
- Orion monitor1 Swath 2D
  November 2009, 50 km
- Orion monitor2 Swath 2D
  February 2011, 40 km
- Orion monitor3 Swath 2D
  February 2014, 35 km

Repeat Seismic 2D Swath

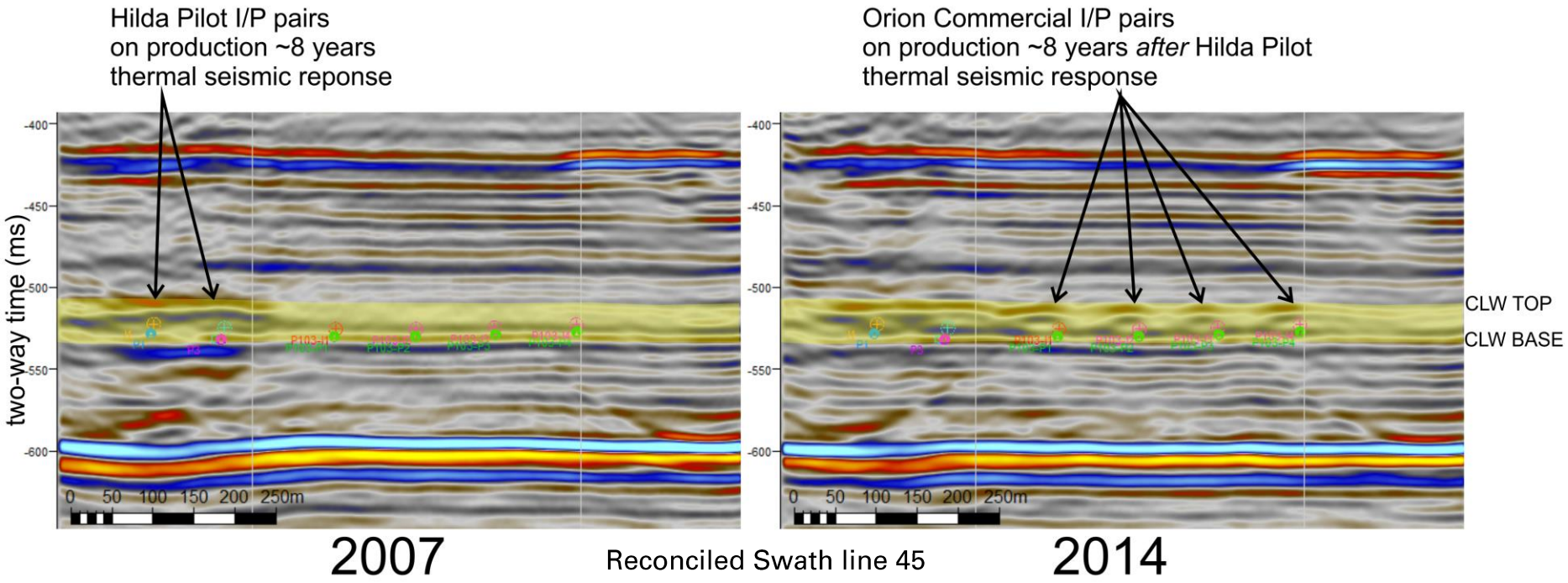


RMS extractions of quadrature trace amplitude difference in the Clearwater Reservoir interval: 5 ms above to 3 ms below.

Observations:

- Good thermal conformance and steam-chamber growth along individual horizontal well bores
- Good lateral resolution allow estimates of perpendicular reach of steam chambers, to enable in-fill planning

Repeat Seismic 2D Swath



Scheme Performance
Daniel Nugent

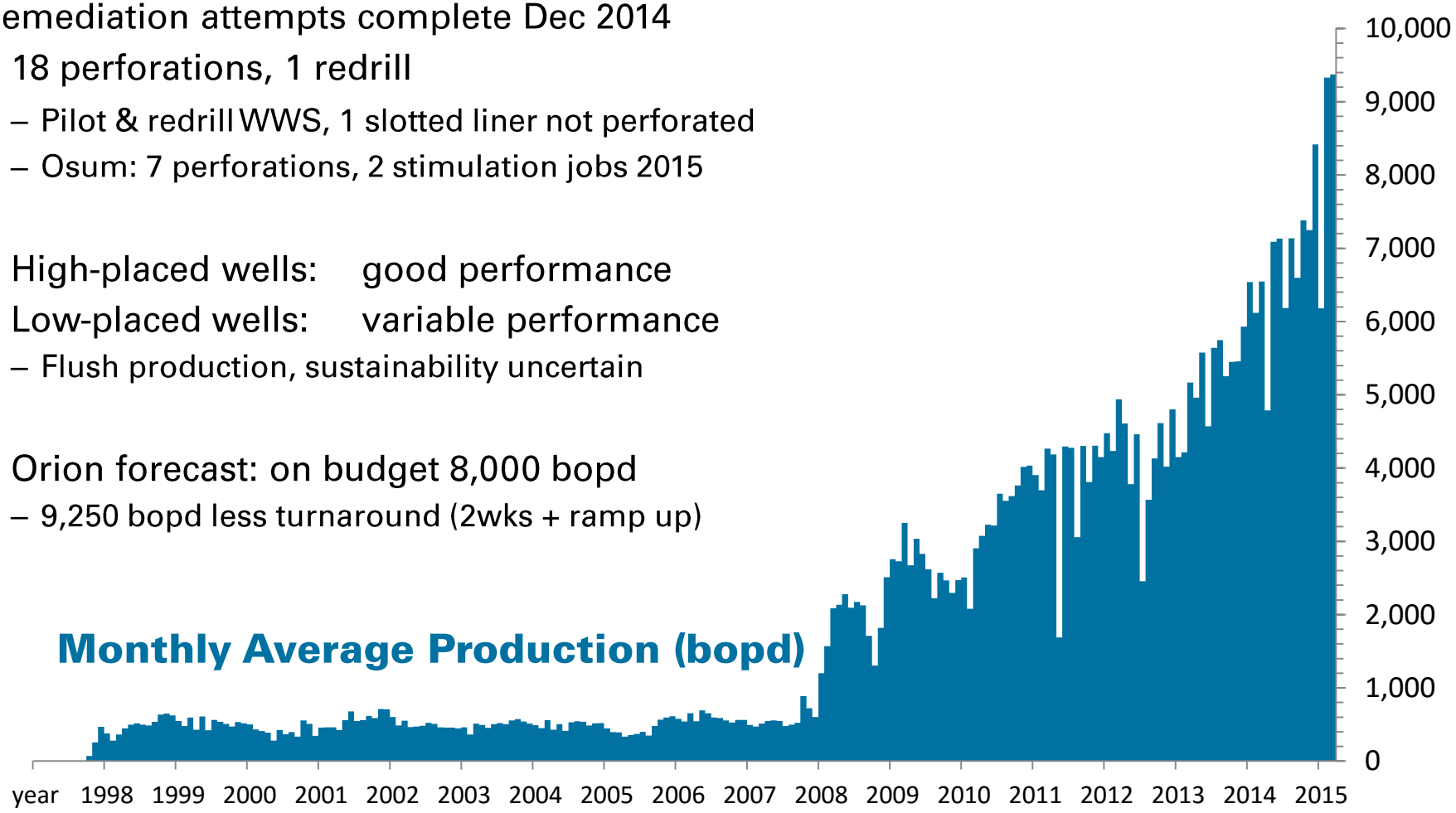
Orion Update

Remediation attempts complete Dec 2014

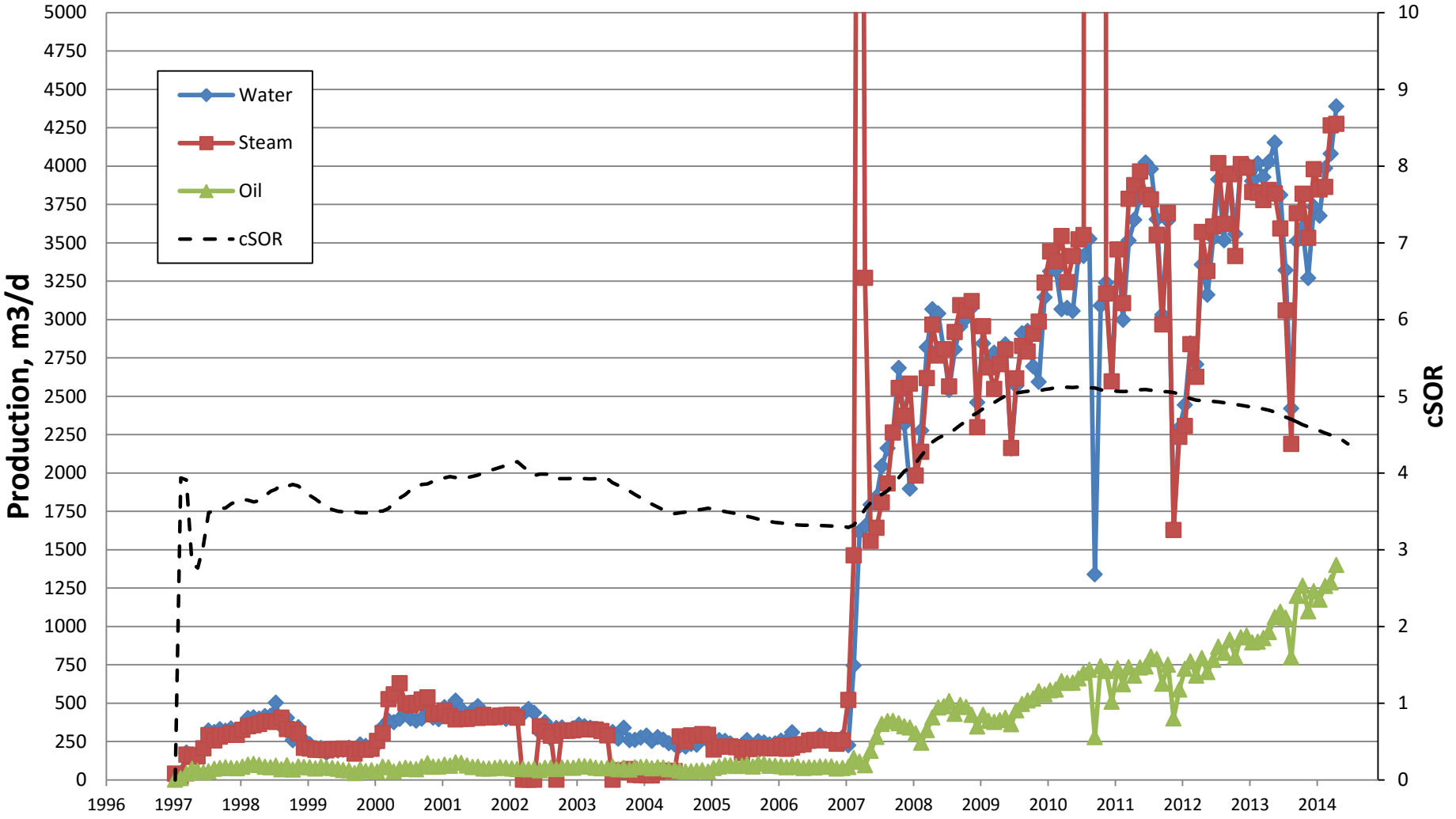
- 18 perforations, 1 redrill
  - Pilot & redrill WWS, 1 slotted liner not perforated
  - Osum: 7 perforations, 2 stimulation jobs 2015

- High-placed wells: good performance
- Low-placed wells: variable performance
  - Flush production, sustainability uncertain

- Orion forecast: on budget 8,000 bopd
  - 9,250 bopd less turnaround (2wks + ramp up)



Orion Field Production

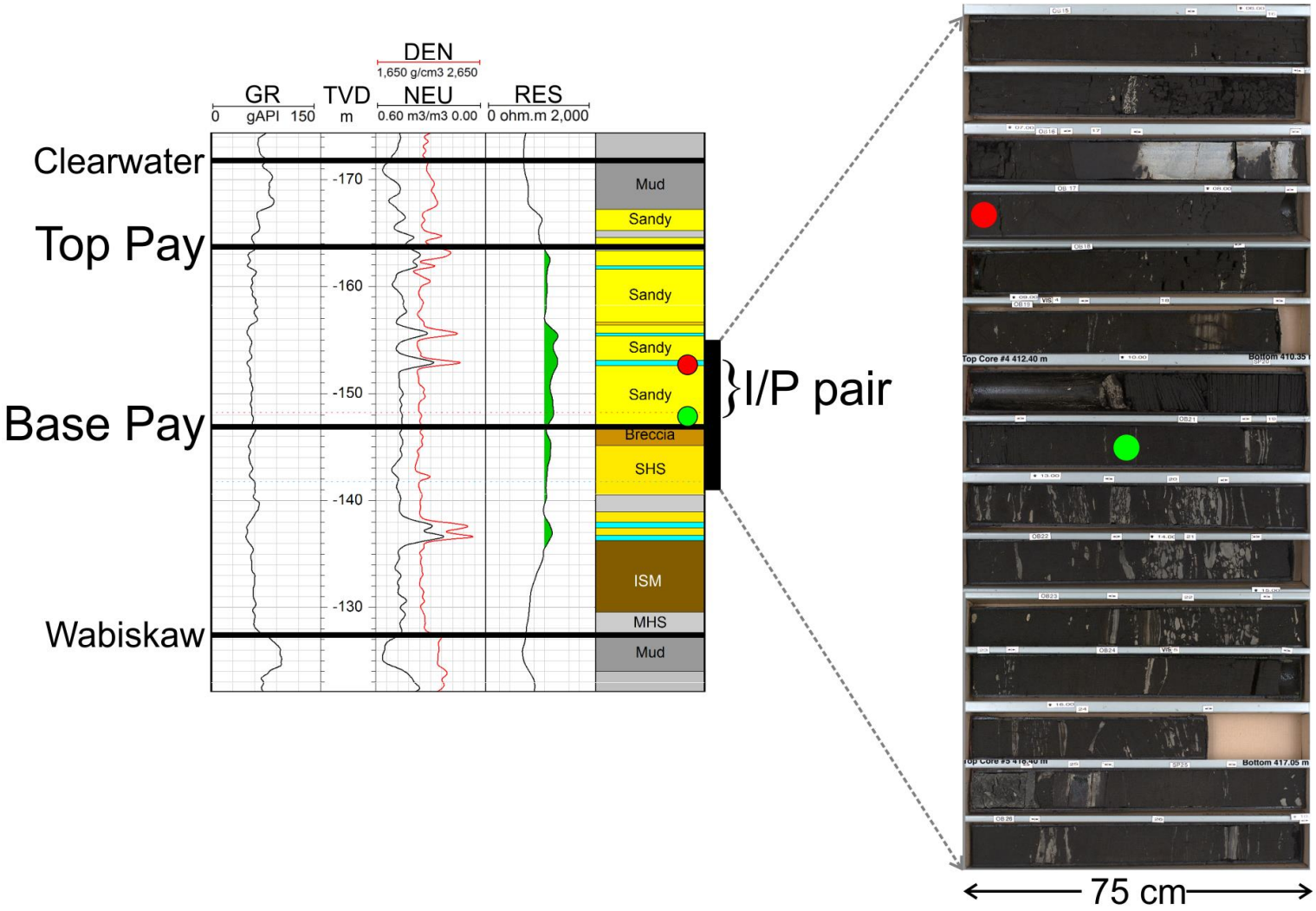


Initial Phase 1 Commercial SAGD

- Why has pilot success not been repeated?

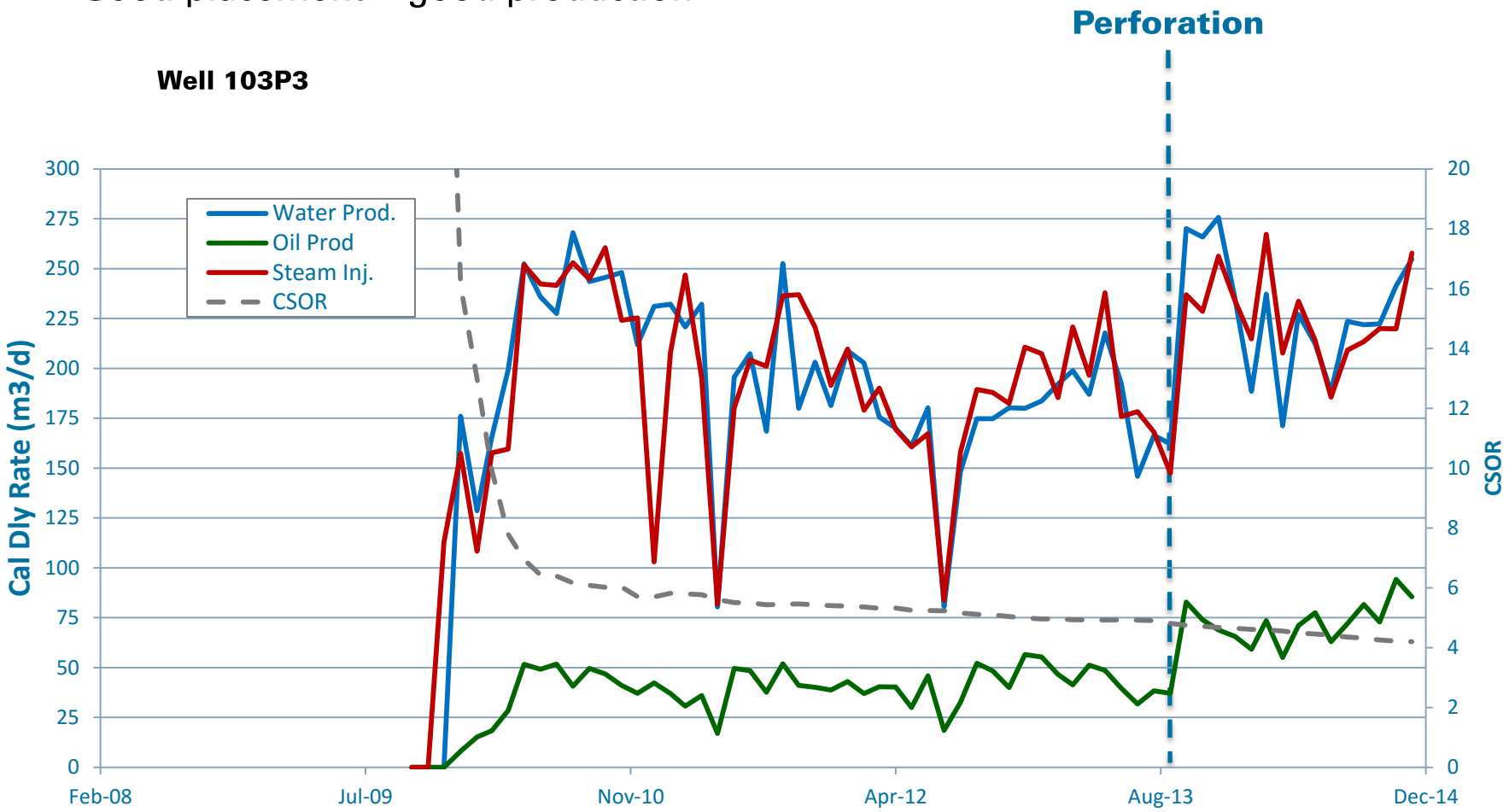
Problem	Remediation
• Liner plugging & completion - slots too small - open area too small - slotted vs wirewrap liner	• Perforations
• Well placement - too low, in SHS facies - sand dominated, but lower Kv	• Redrill & perforations

Good Well Placement – Pilot, Pad 103, Pad 105

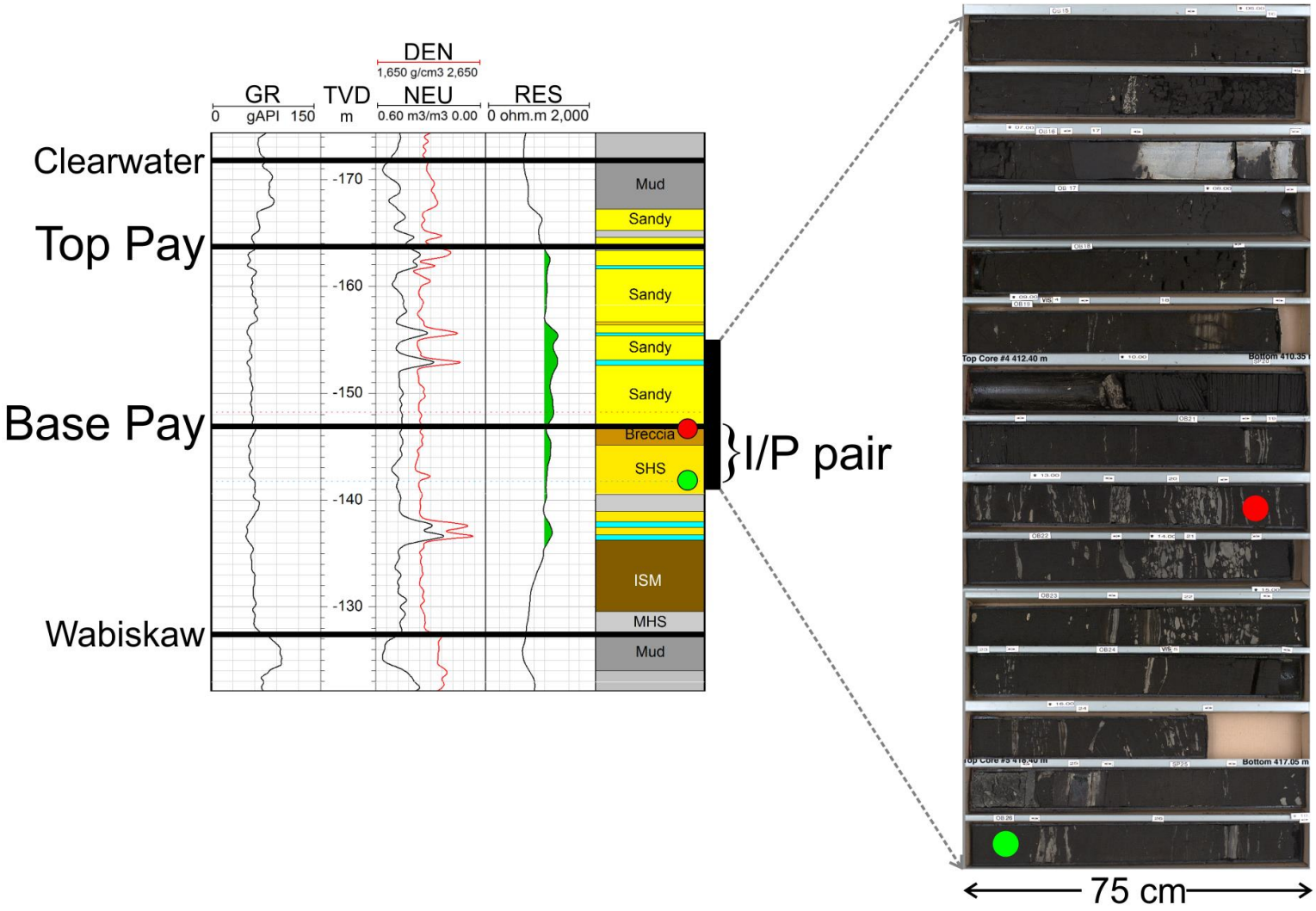


Post Perforation Success

- Good placement = good production

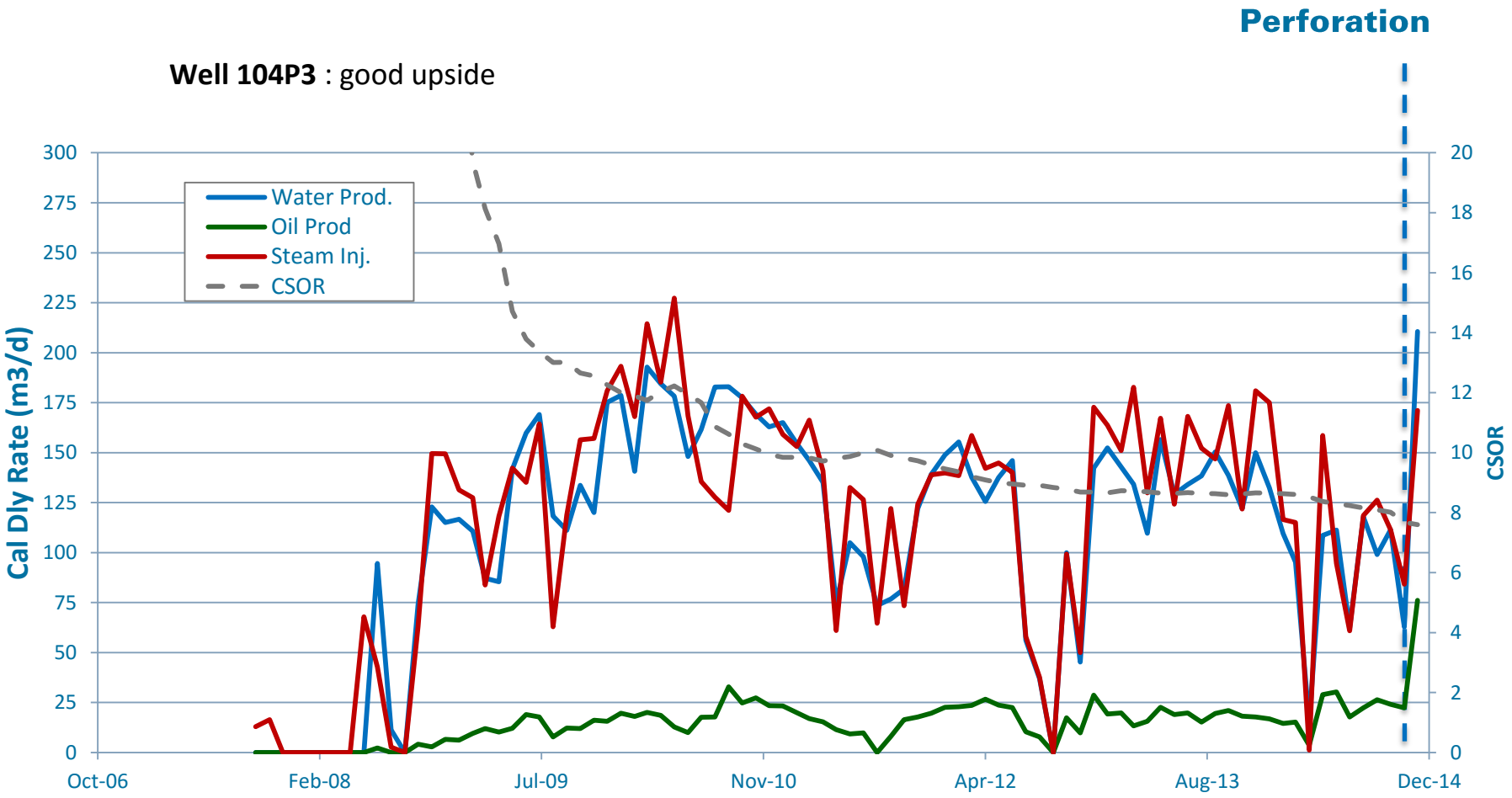


Well Placement Too Low – Pads 104 & 106

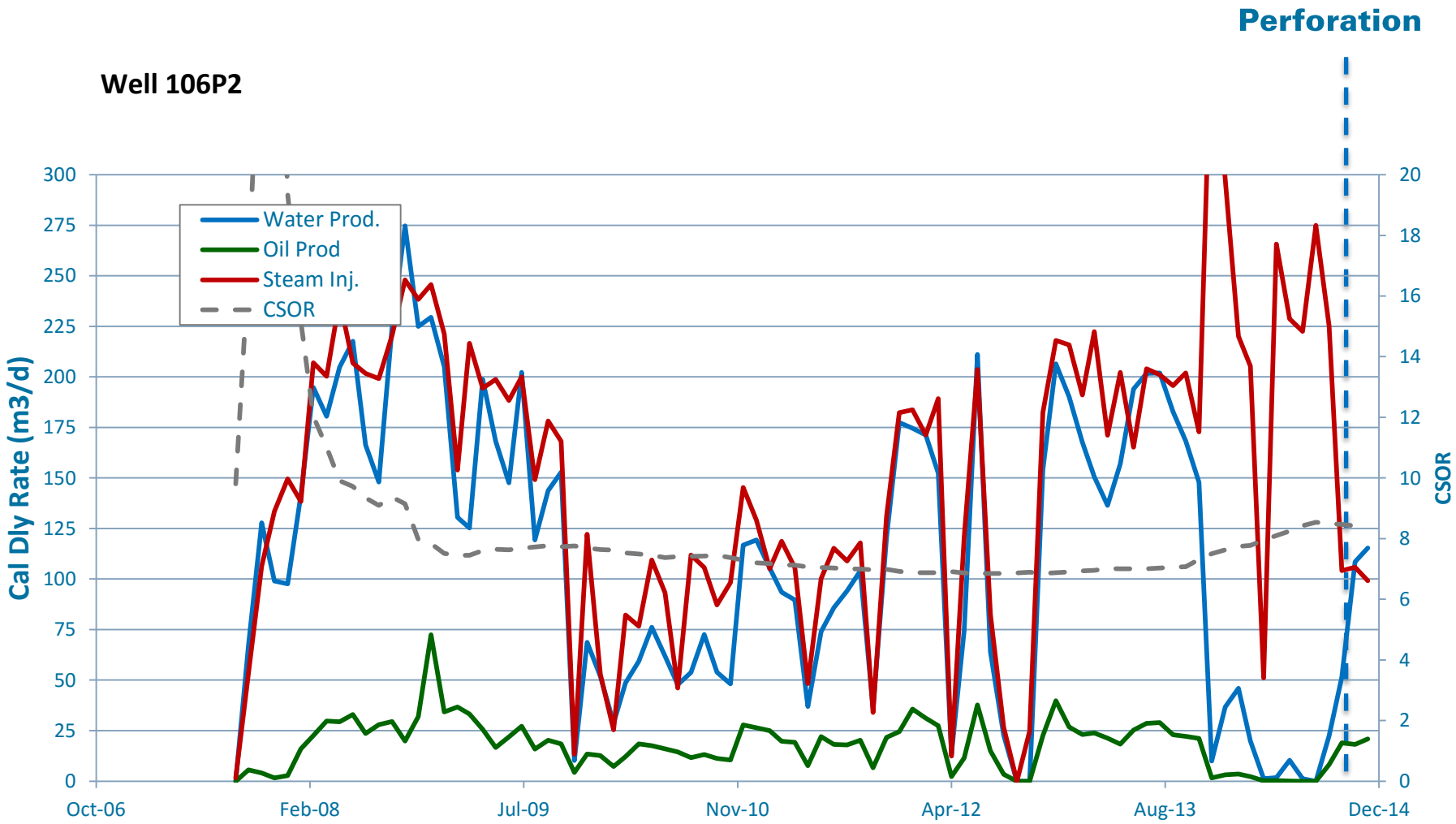


Well Placement Too Low (Pads 104 & 106)

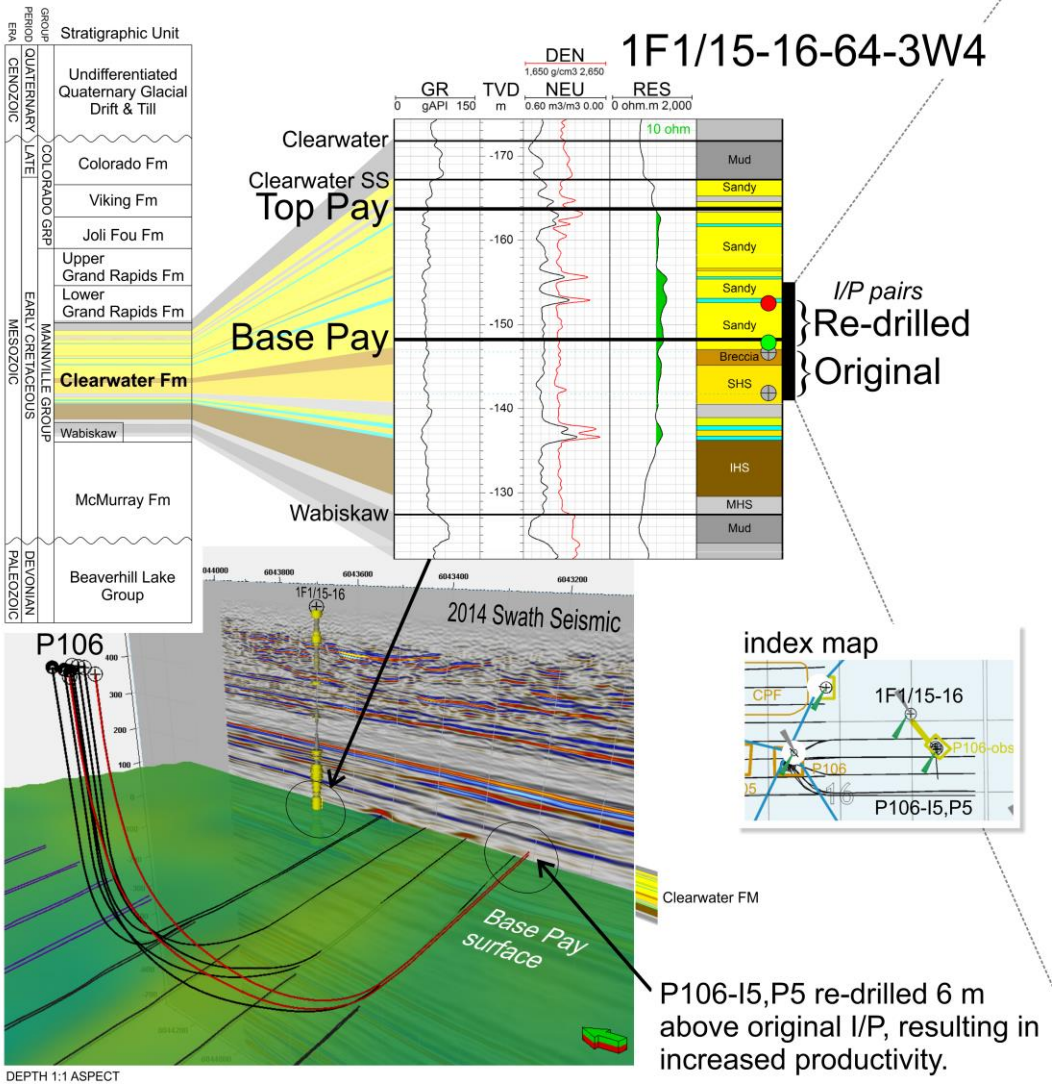
Well 104P3 : good upside

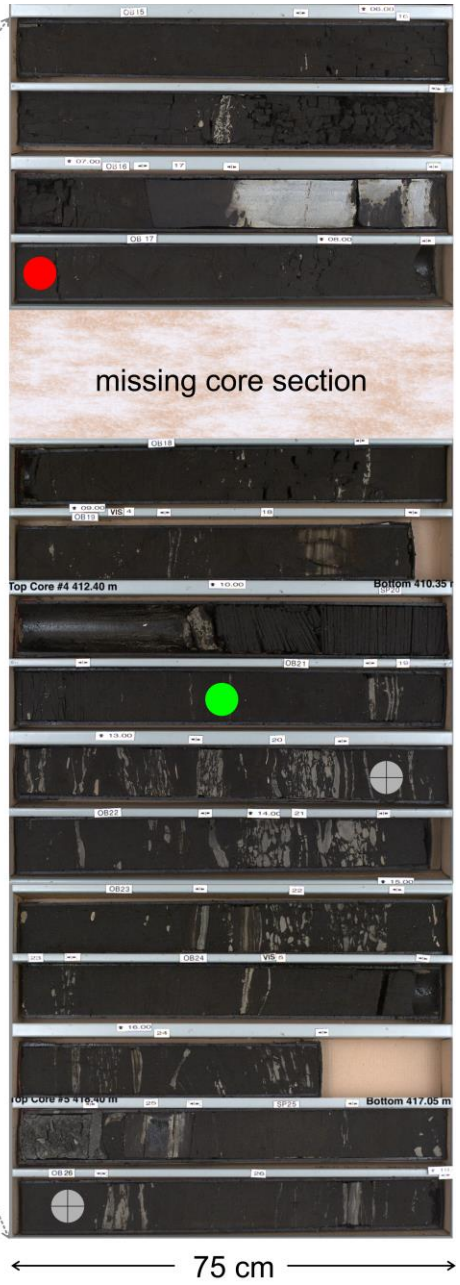


Well Placement Too Low (Pads 104 & 106)



Clearwater Redrill

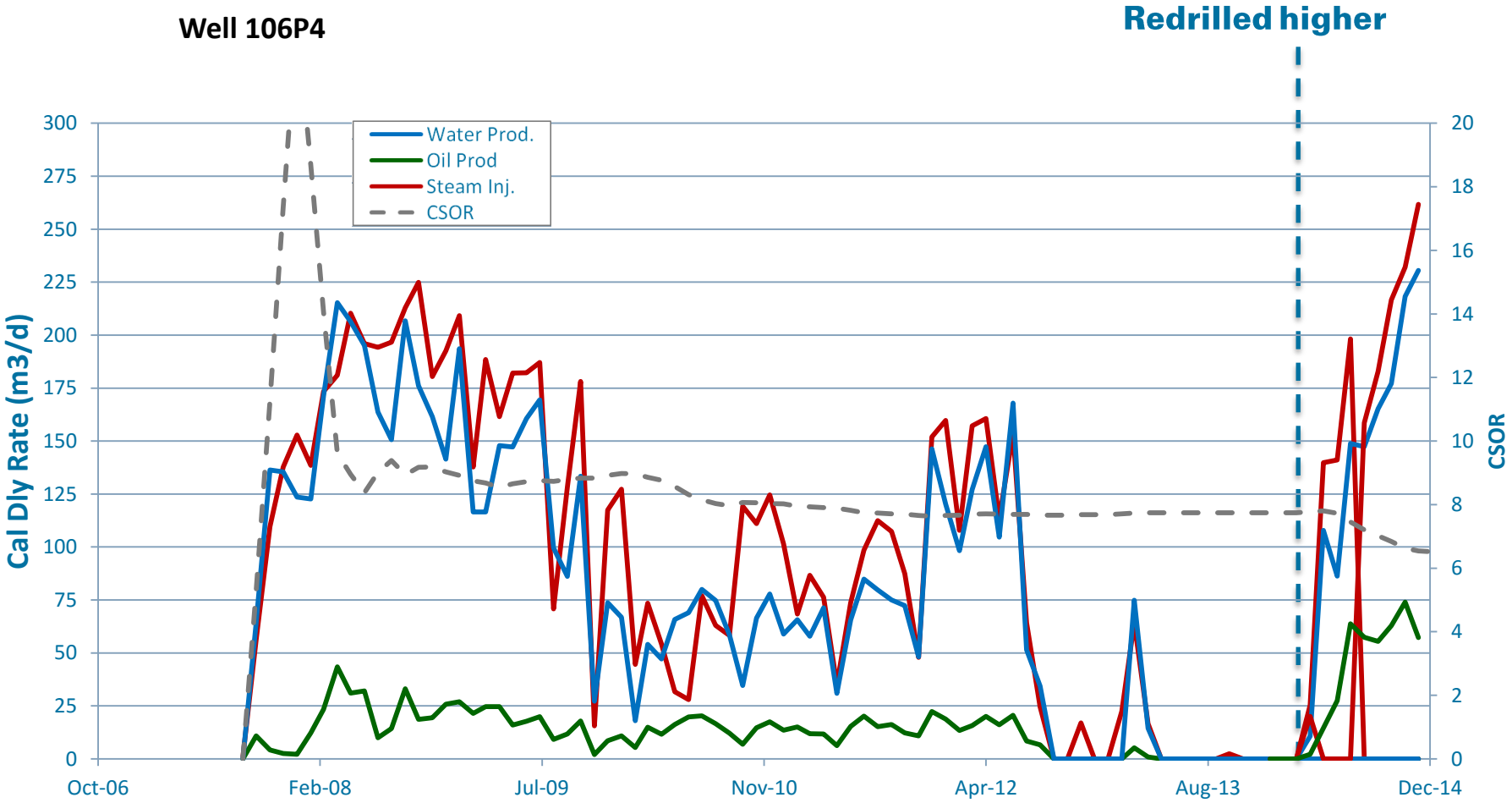




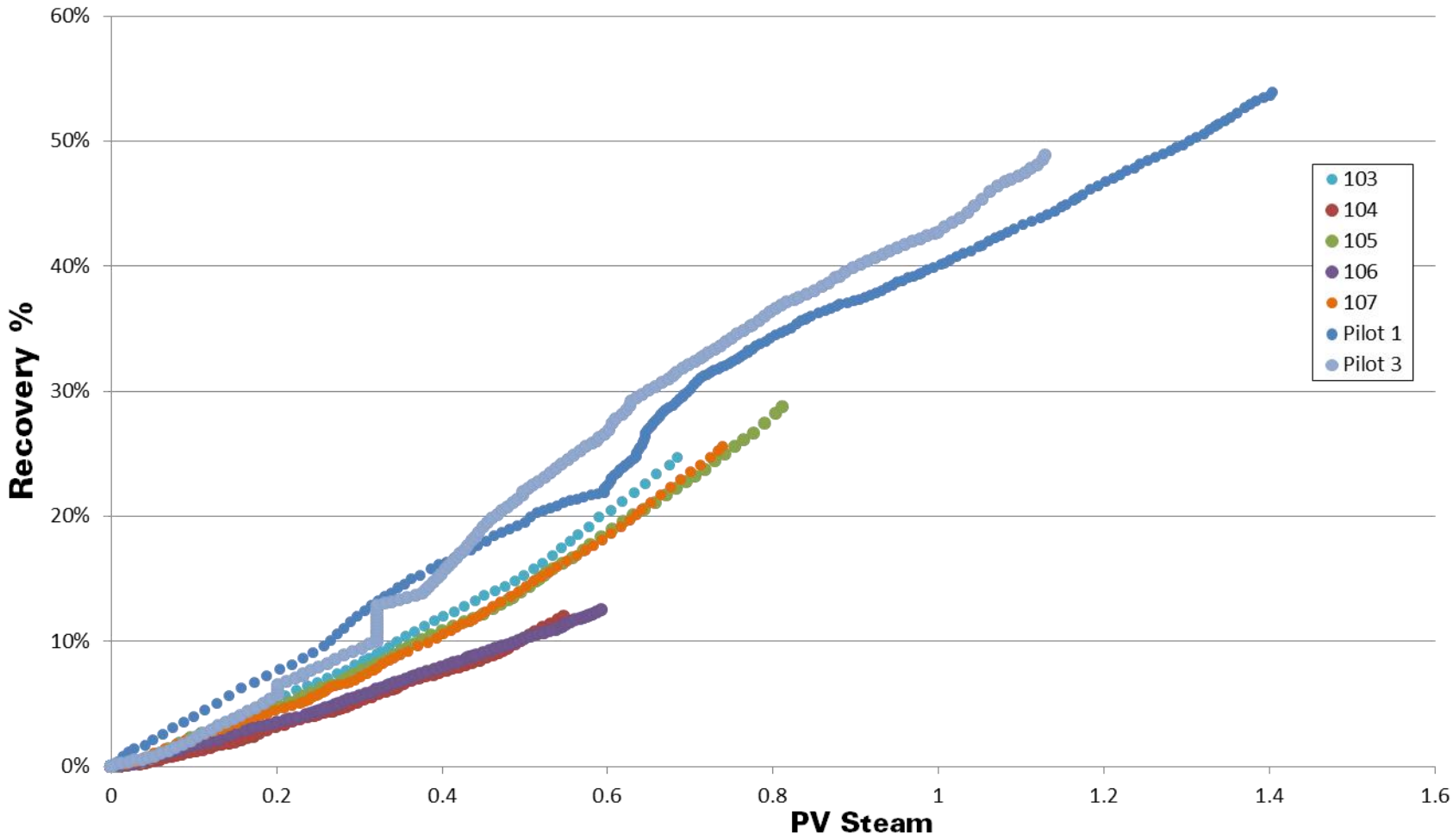
P106-I5,P5 re-drilled 6 m above original I/P, resulting in increased productivity.

Well Redrill – Pads 106

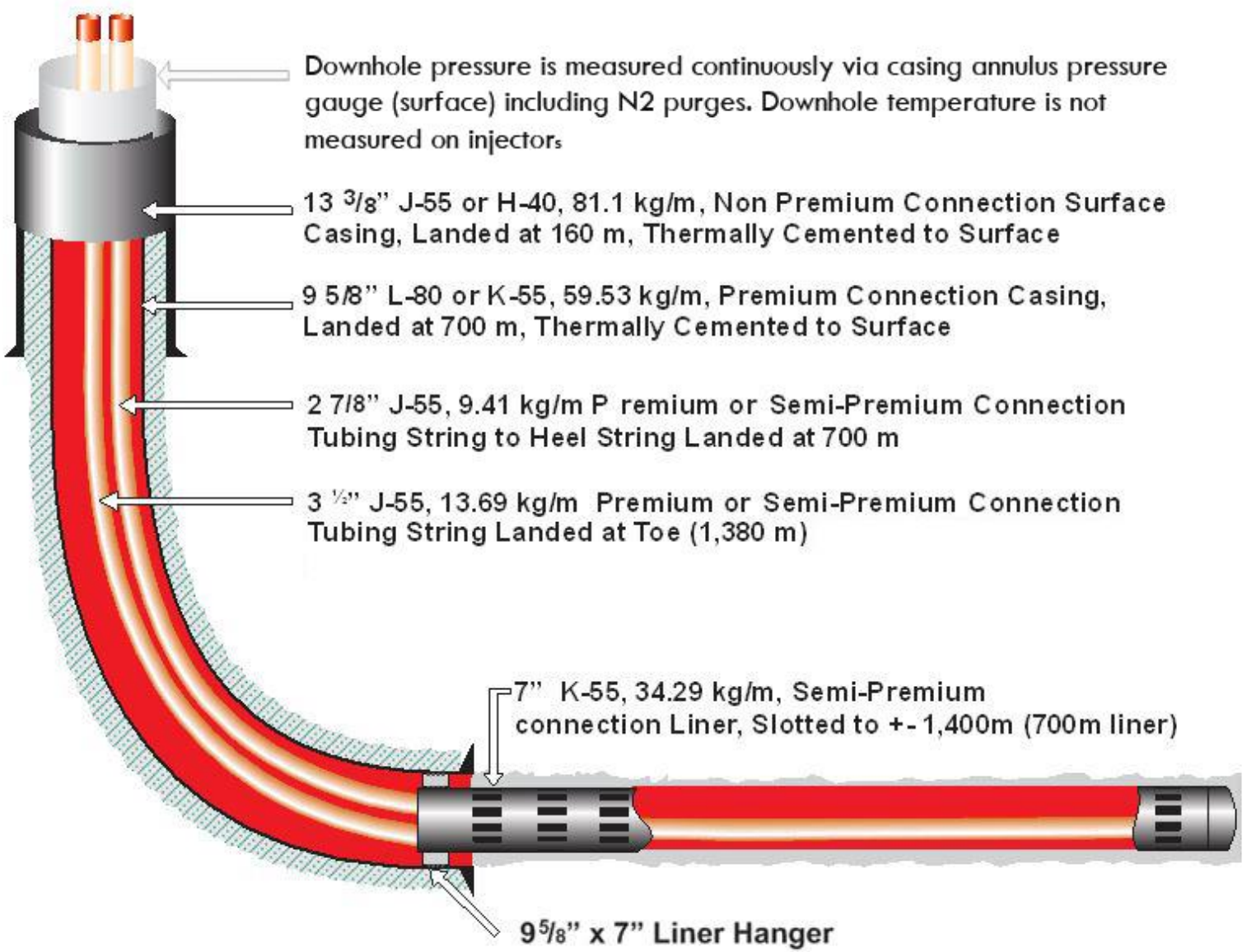
- Redrilled well placed above SHS facies



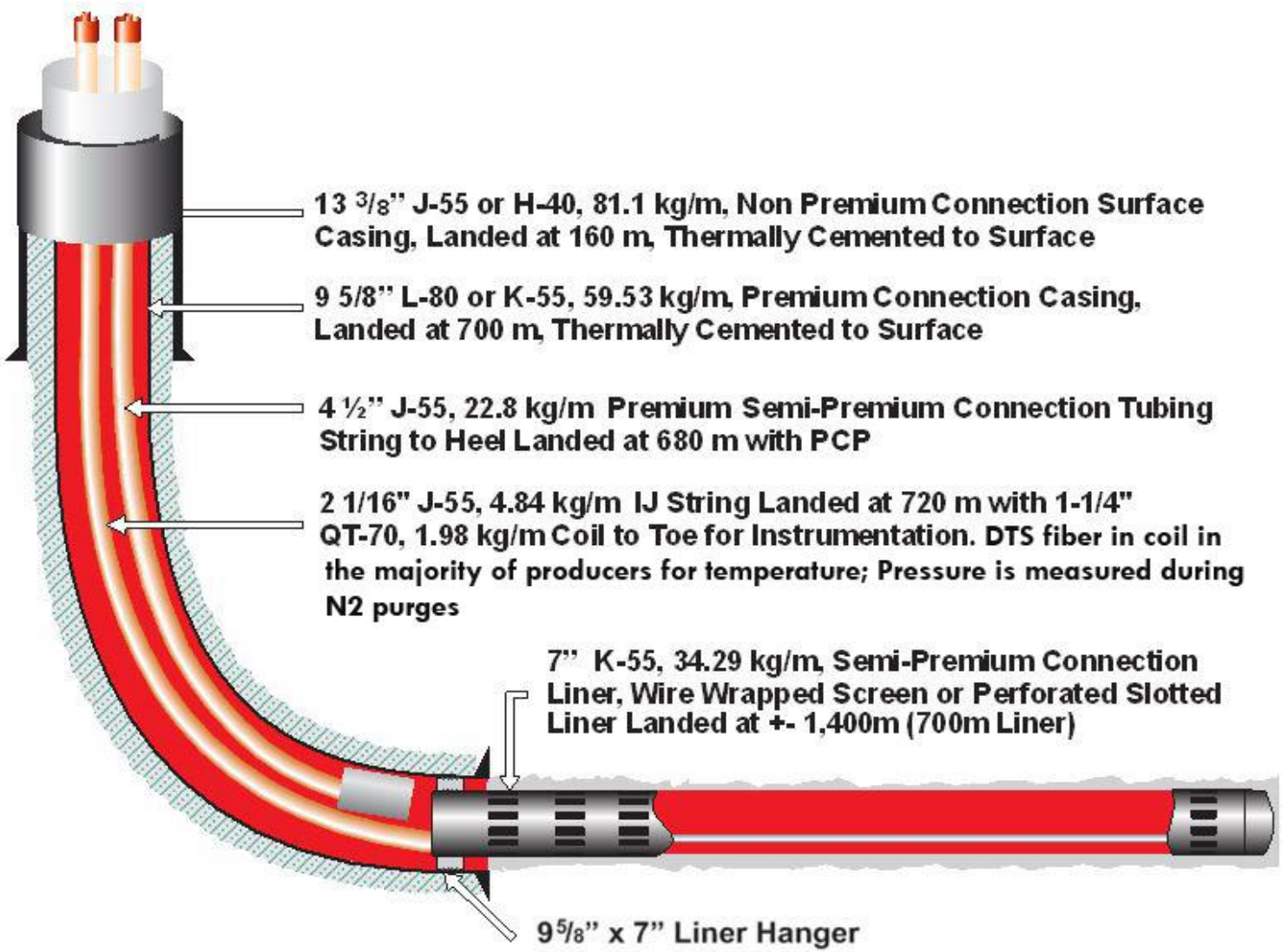
Pad Recovery & Performance



Typical Injector Completion

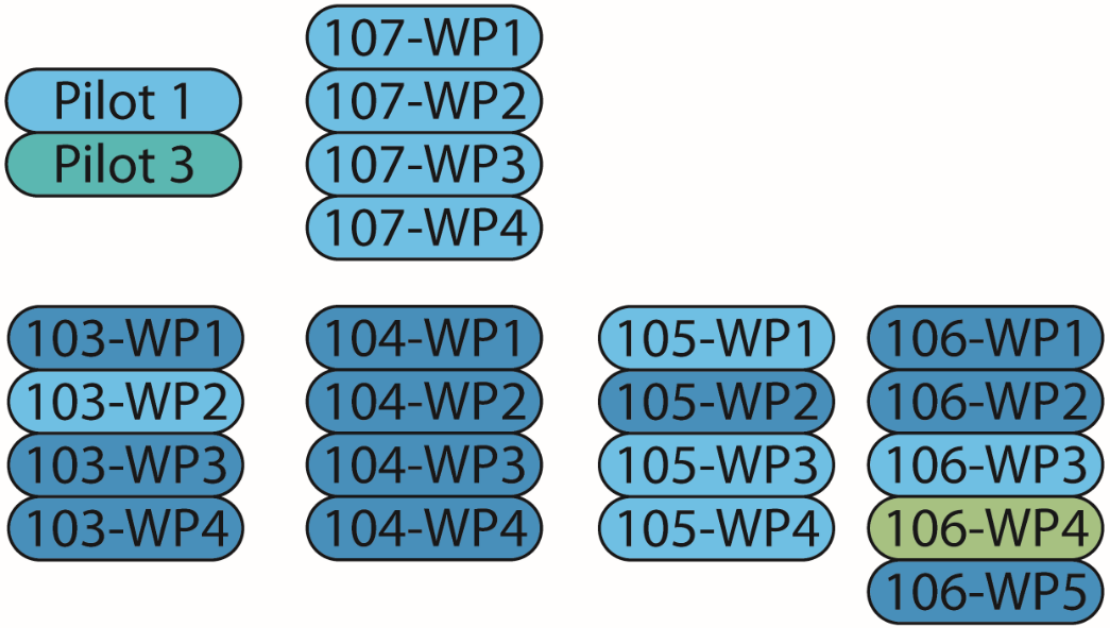


Typical Producer Completion – PCP



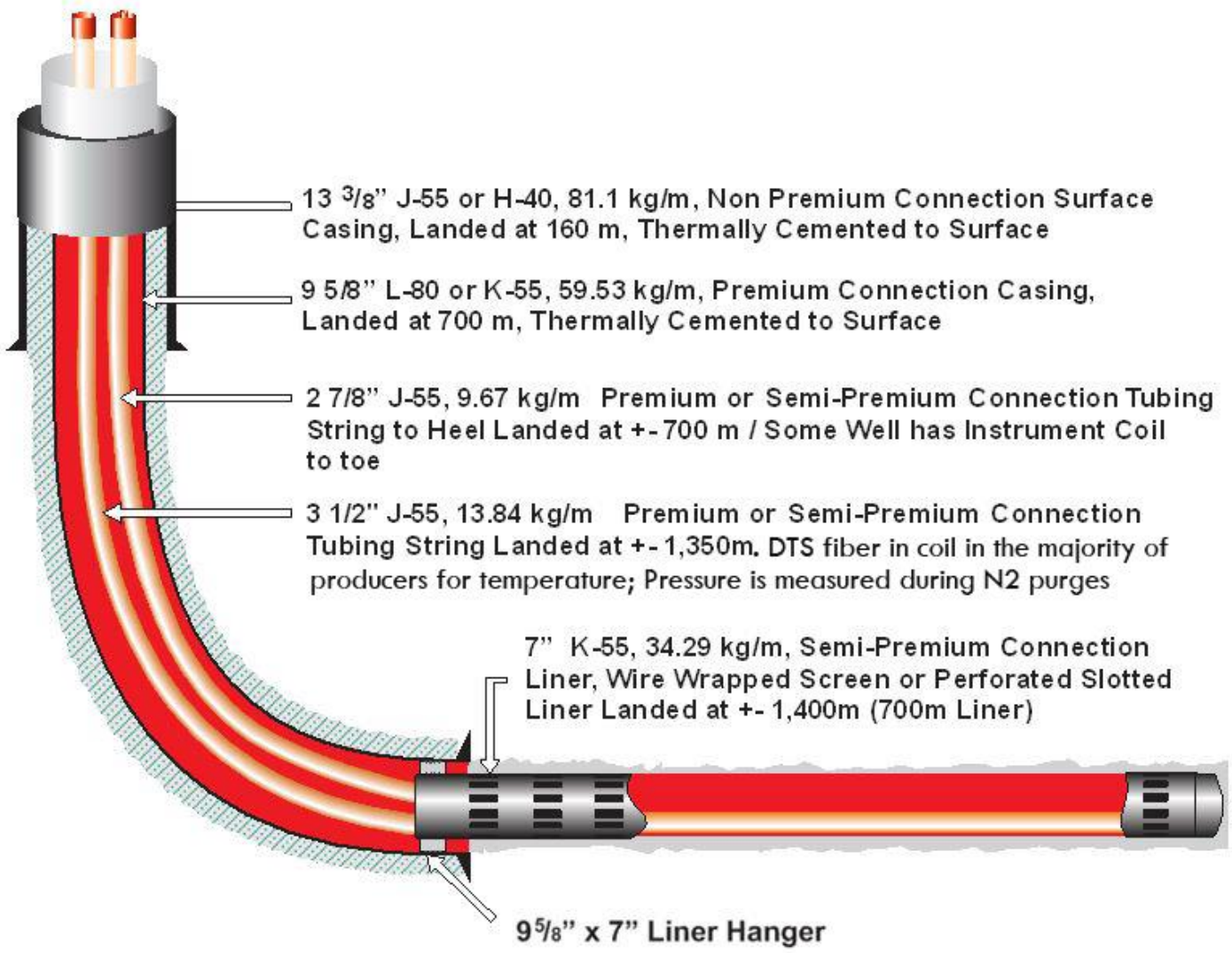
Artificial Lift – Orion Wells

Natural Lift SAGD	11 Wells
PCP SAGD	10 Wells
ESP SAGD	1 Well
Abandoned	1 Well



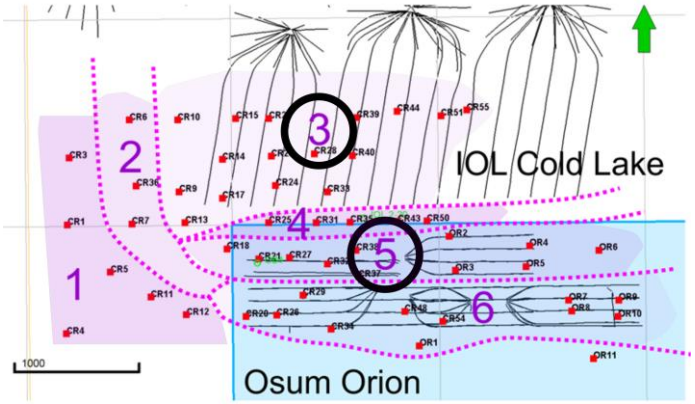
Criteria	ESP	All Metal PCP
Operating Temperature Range	250°C	350°C
Rate	280 - 450 m^3/d 40 - 60 Hz	100 - 370 m^3/d 100 - 350 RPM
Run Life - Range	5 - 46 months	10 - 43 months
Run Life - Average	12 months	25 months

Typical Producer Completion – Steam Lift

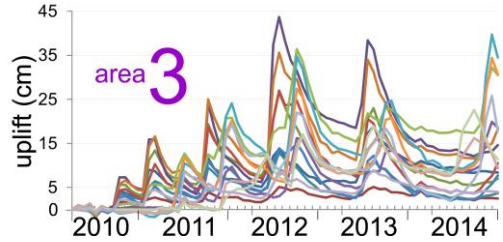


Ground Uplift Monitoring

- Ground deformation measured with InSAR since March, 2010
- 53 corner reflectors; 938 coherent targets



Map location of InSAR corner reflectors assigned to areas 1-6



Within CSS operations, uplift up to 45 cm/cycle

Within SAGD operation, near CSS, observe cyclic overprint; uplift < 1.5 cm/yr, < 8 cm over 5 yrs

- Ground uplift is normal and expected with thermal operations
- Osum Orion SAGD operations coincides with < 1.5 cm/yr uplift
- Imperial Oil Ltd CSS operations coincides with < 45 cm/cycle uplift
- No detrimental cap-rock, production or HSE impact reported, or expected
- Five years of monitoring have confirmed SAGD operations result in < 8 cm uplift

Source
InSAR Deformation Monitoring Osum Orion and Boundary 2014 Milestone 2, Quarter 4, MDA Geospatial Services, January 20, 2015

Orion Production Performance

- 2014 showed a significant improvement in production performance by reducing differential pressure between injectors and producers
  - Perforations remove source of pressure drop (“mechanical skin”) and therefore subsequent scale precipitation issue as well
  - Sand has not proved to be a significant concern
- Production performance is highly dependant on well pair placement within the reservoir Top and Base Pay interval.
- Future wells in Phase 2 will incorporate this knowledge in order to improve their SAGD efficiency and productivity

Orion SAGD Pressure Scheme

- Osum's intention is to maintain a constant SAGD chamber pressure of 3.0 - 3.7 MPa until late life SAGD
  - Higher recovery pads (pilot) have begun a slow pressure decline
- Osum is working to optimize the chamber pressure strategy for late life SAGD

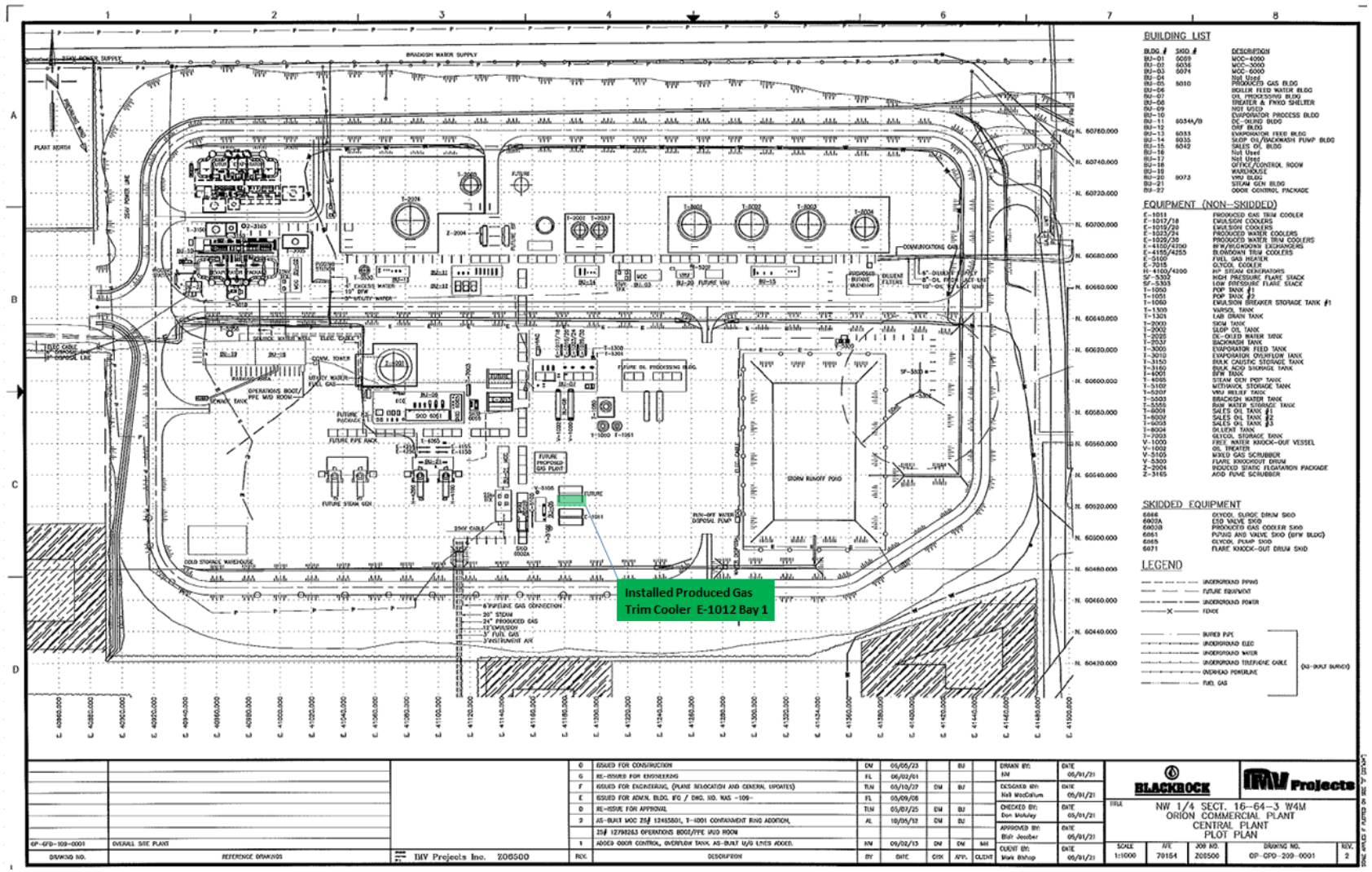
Surface Operations
Mario Caya

Plant & Facilities Summary

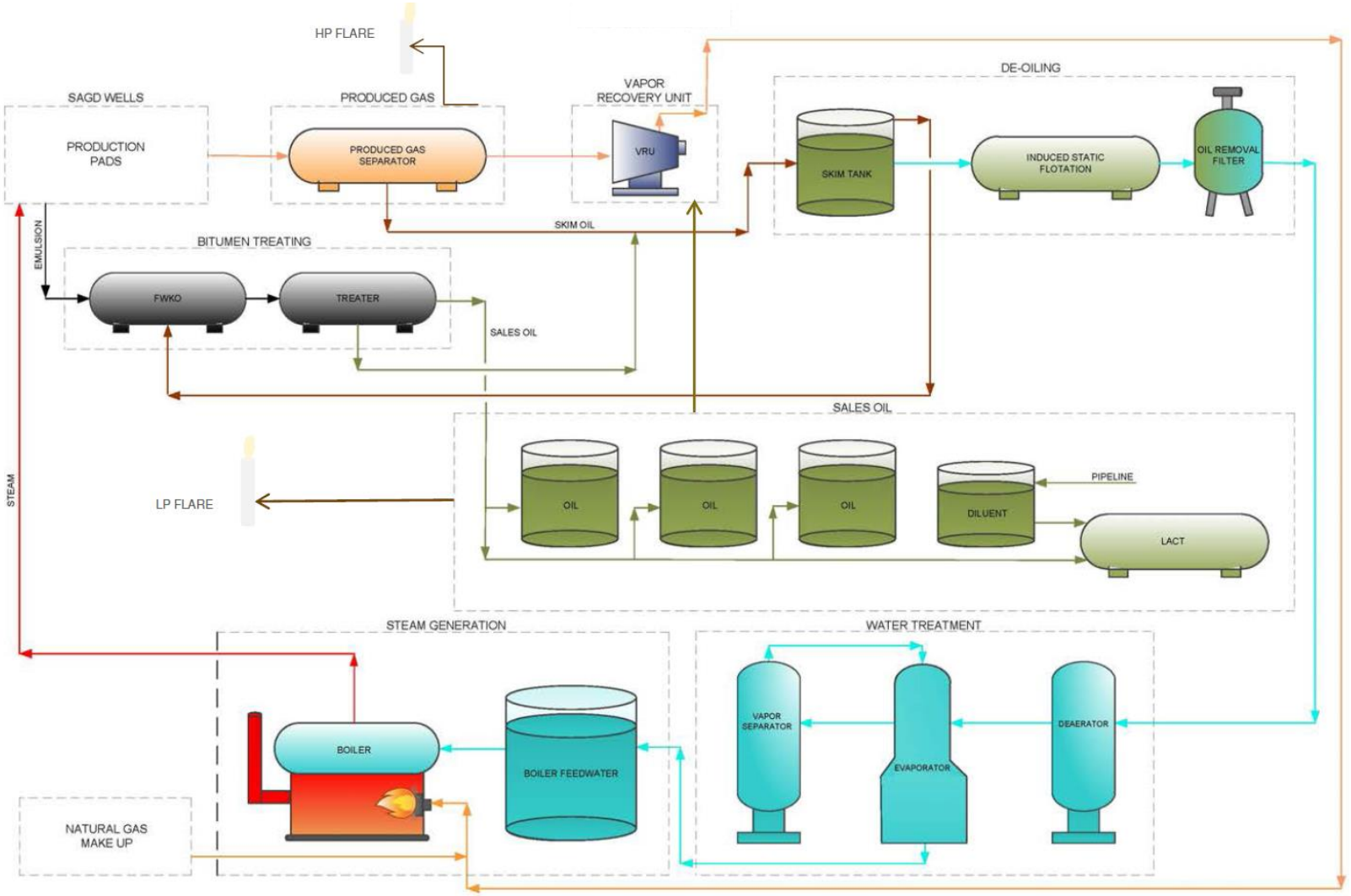
- Osum has focused on maintaining:
  - A safe operating environment
  - Increasing asset reliability
  - Improving production performance
  - Meeting or exceeding regulatory license requirements
- The steam generation boilers are the primary focus for increased reliability efforts

Orion CPF Plot Plan

Produced Gas Trim Cooler E-1012 Bay 1 was added to provide the additional cooling capacity required by increased produced gas rates from the well pads.



Orion Block Flow Diagram



Orion Central Processing Facilities (CPF)

- The CPF has two conventional drum boilers to generate steam to inject into the reservoir
- The crude emulsion is in three phases: bitumen, water and casing gas
- The emulsion is delivered (via pipeline) to the CPF for separation
- The small amount of gas separated from the bitumen, along with purchased Natural Gas and Vapor Recovery Unit (VRU) gas, is burned as fuel in the boilers
- The water treatment facilities clean and treat the produced water allowing it to be re-used to generate steam. The process allows us to reuse almost all the Produced Water. Brackish Water from the McMurray formation is the source of the industrial make-up water
- The waste produced during the water recycling and treatment process is trucked offsite to an AER approved waste disposal facility

Orion Well Pad Facilities

- The facility has 6 well pads with a total of 22 SAGD well pairs
- Typical well pad configuration is 4 SAGD well pairs, which consists of 4 injector and 4 producer wells

Orion Bitumen Production Treatment

- The Bitumen treating system allows for three phase separation (Oil, Water, Gas) of the produced emulsion fluid.
- Primary equipment consists of:
  - Diluent injection system for emulsion separation and to meet sales oil blending specifications
  - Chemical injection to aid emulsion separation
  - 3 Phase separation equipment; Free Water Knock Out and Treater (the treater is equipped with an electrostatic grid); Heat exchange equipment; shell and tube for bitumen coolers and produced water cooling. Rejected heat is captured in both the Glycol and BFW systems as part of the heat integration
  - Vapour recovery system
  - Bitumen storage and blending for transport via pipeline
  - Bitumen quality (Sales Oil) is < 0.5% BS&W

Orion Vapour Recovery System

- The vapour recovery system allows for collection, compression and complete utilization of produced vapours. All recovered vapour is used as fuel in the steam generation system. The sources of vapour are:
  - Evaporator vent recovery
  - 10 storage tanks
  - Diluent recovery system
  - Induced Gas Flotation
- The vapour recovery system is integrated with the Low Pressure (LP) flare system. If the vapour recovery system is not available the recovered vapour is diverted to the LP flare system

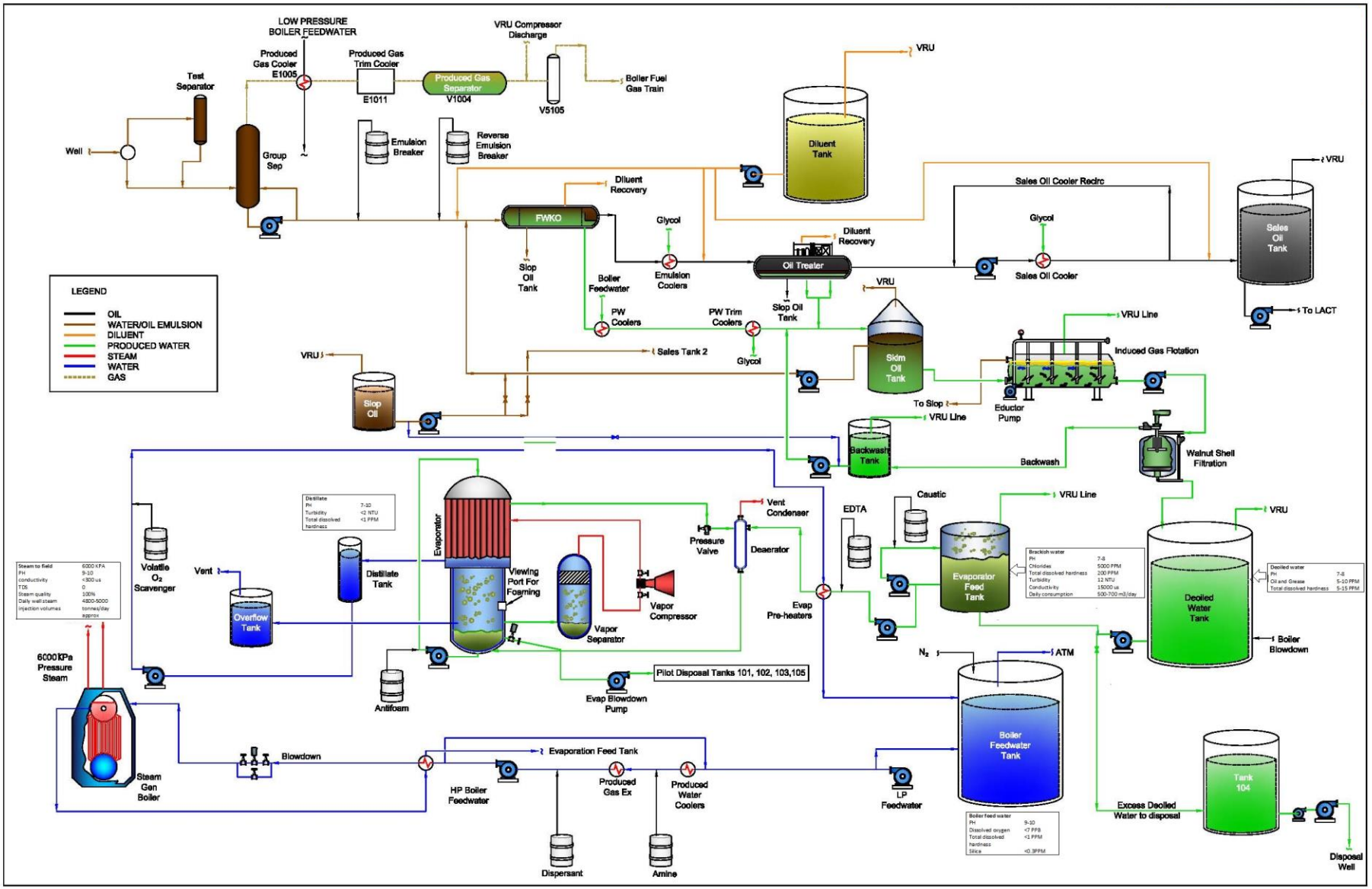
De-Oiling

- Produced Water from the Production Treating Train is Deoiled using the following equipment:
  - Skim Tank – Designed to maximize retention time
  - Induced Gas Flotation Vessel – Micro-Bubble Flotation (Hydrocarbon Content < 10ppm oil/water)
  - Oil Removal Filters – walnut shell Deep Bed Filtration

Water Treatment

- Evaporator technology is utilized to produce Boiler Feedwater (BFW). The evaporators at Orion:
  - Produce BFW that meets or exceeds the water criteria set out by ASME
  - Generate a concentrated brine waste stream that is disposed of at an AER approved facility
  - Have a 95% design conversion rate of feed to distillate

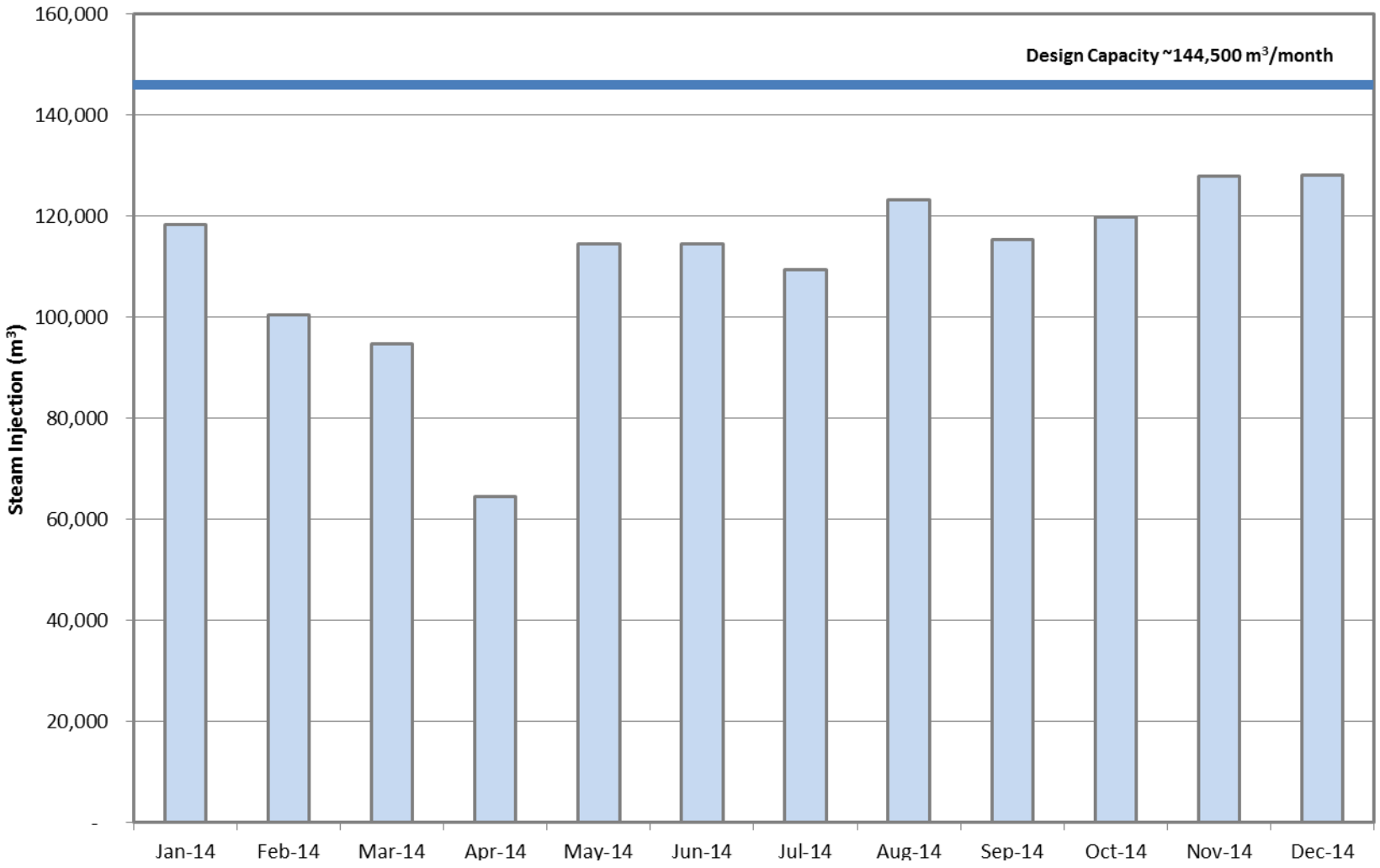
Orion Water Usage and Treatment



Steam Generation

- Conventional Boilers generate 100% quality steam at 6,000 kPag for injection at the Well Pads
- A small concentrated blowdown of 3-5% of the inlet mass flow is recycled back to the Evaporator Feed Tank for re-use

Monthly Steam Production – 2014



Plant & Facilities Summary

- It is expected that the boiler reliability improvement measures identified will be fully implemented in 2015 to support production and operating cost targets:
  - Increased boiler and overall plant reliability to target measures
  - Stabilized reservoir conditions / production
  - Predictability of operation and reduced downtime
  - Minimized safety exposure
  - Minimized maintenance capital costs
- Facility performance and site condition improvements:
  - Well pad berm rebuild for improved containment capability
  - Site grounds grading for better run-off management
  - Revised Well pad maintenance program
  - Optimized process chemical usage
  - Improvements to boiler control parameters yielding higher steam production rates
  - Maintain oil production rates during short term steam production reductions

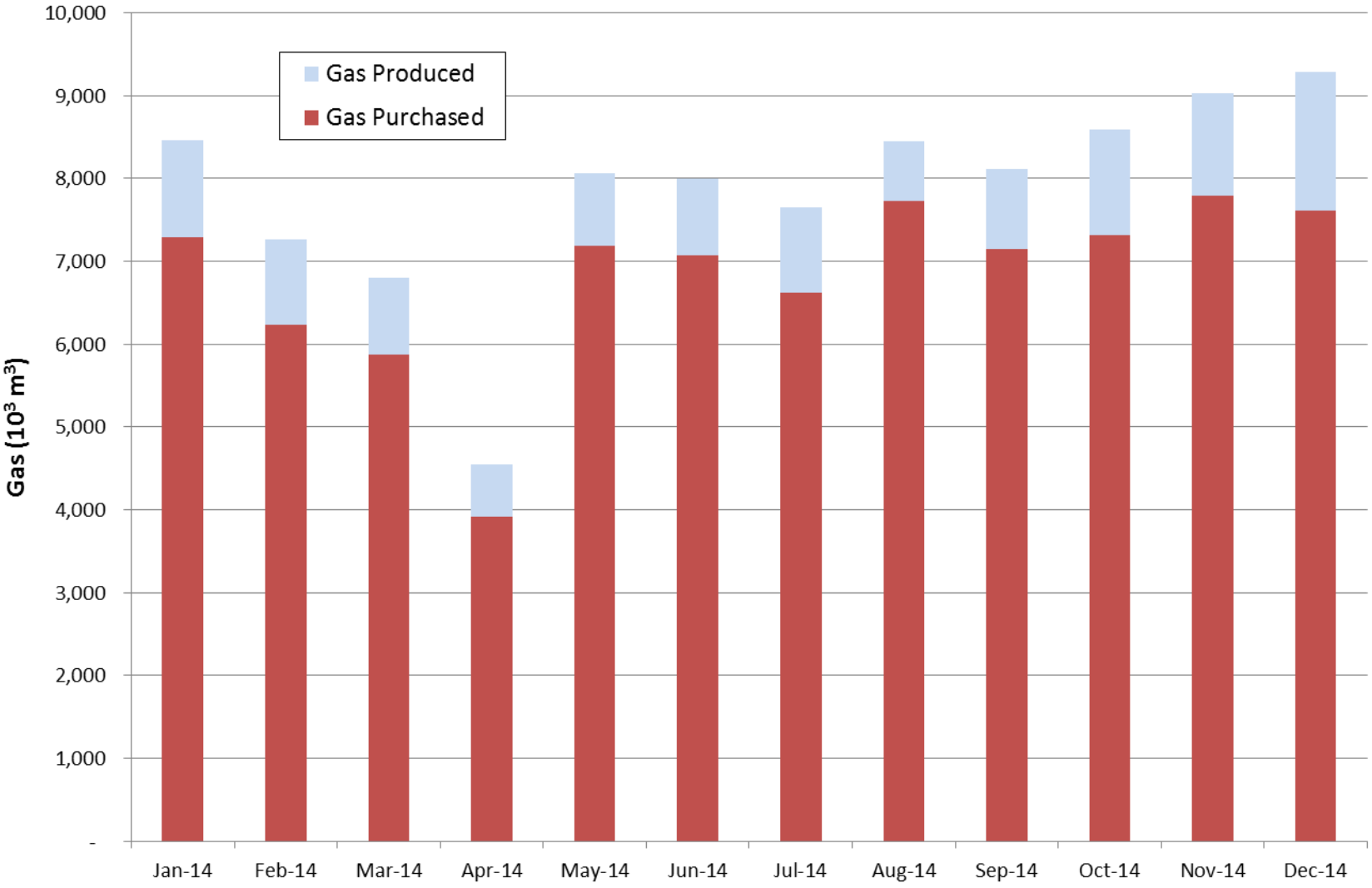
Measurement, Accounting & Reporting Plan (MARP)

- Approved Phase 1 MARP
- Annual revision submitted April 6th, 2015
- Accounting meters calibrated / verified on an annual basis
- A Phase 2 MARP application is planned for Q3/2015

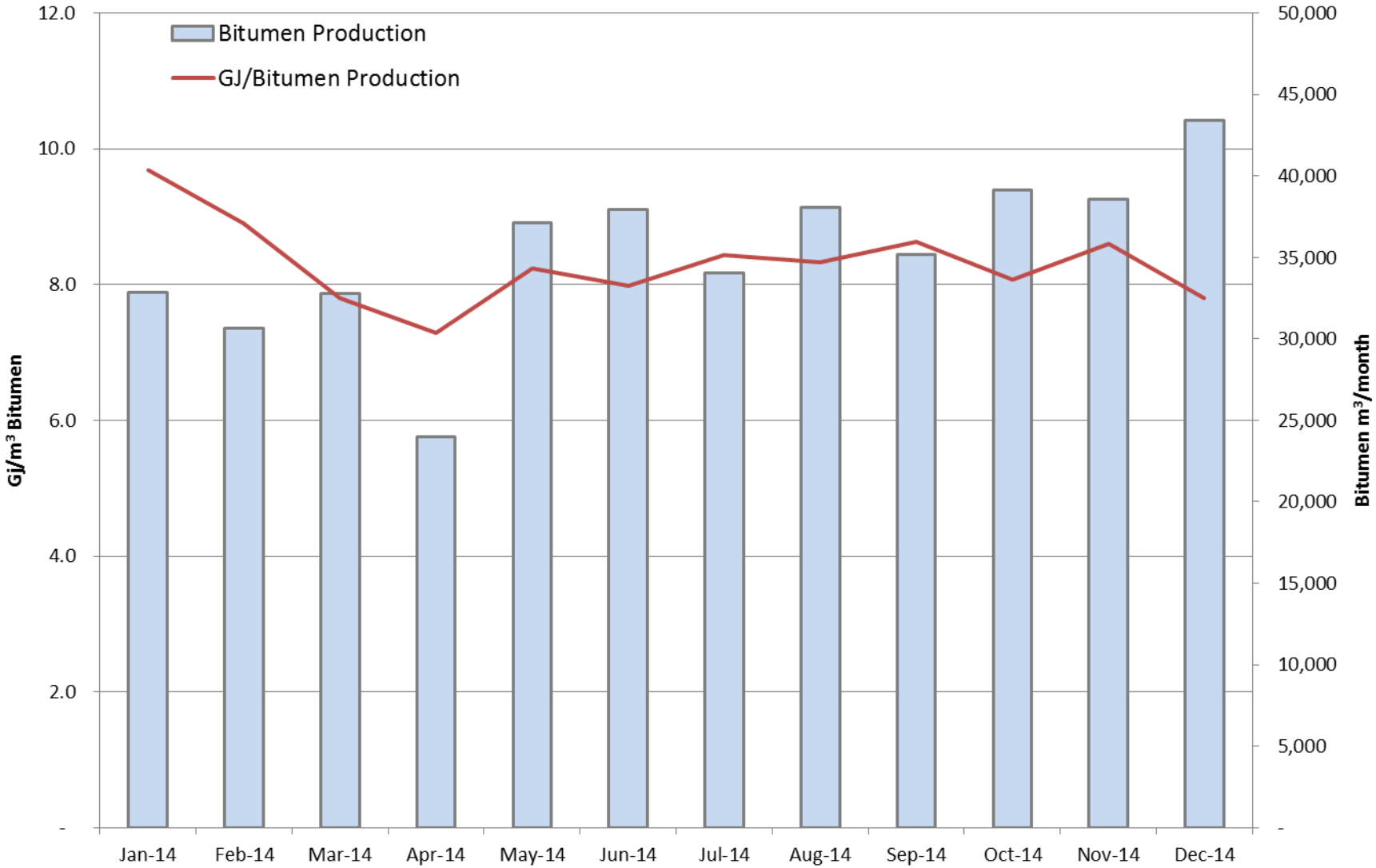
Orion Well Integrity

- Wellhead Integrity Maintenance
  - Include wellhead integrity checks as part of all completions activities
  - Yearly Wellhead Integrity Maintenance scheduled in June, 2015: Total 218 valves will be greased and purged; 46 thermal wellheads and its components will be visually inspected and re-torqued to specification
  - Wellhead components inventory and tracking system components specifications, up-to-date pictures, scheduled maintenance information will be available online through service provider's website
- Sept 2014 – May 2015
  - Caliper Log was run on the intermediate casing string of P104-P1 SAGD producer. No issues were identified
  - Ran a detailed temperature log on P104-P3 SAGD Producer Horizontal section to confirm bottom hole temperature before perforating
  - MFC Caliper and Cement Bond Logs run on 15-16-64-3W4M Brackish Water Source Well. Logs were required to identify a casing leak. AER approval received for a casing patch

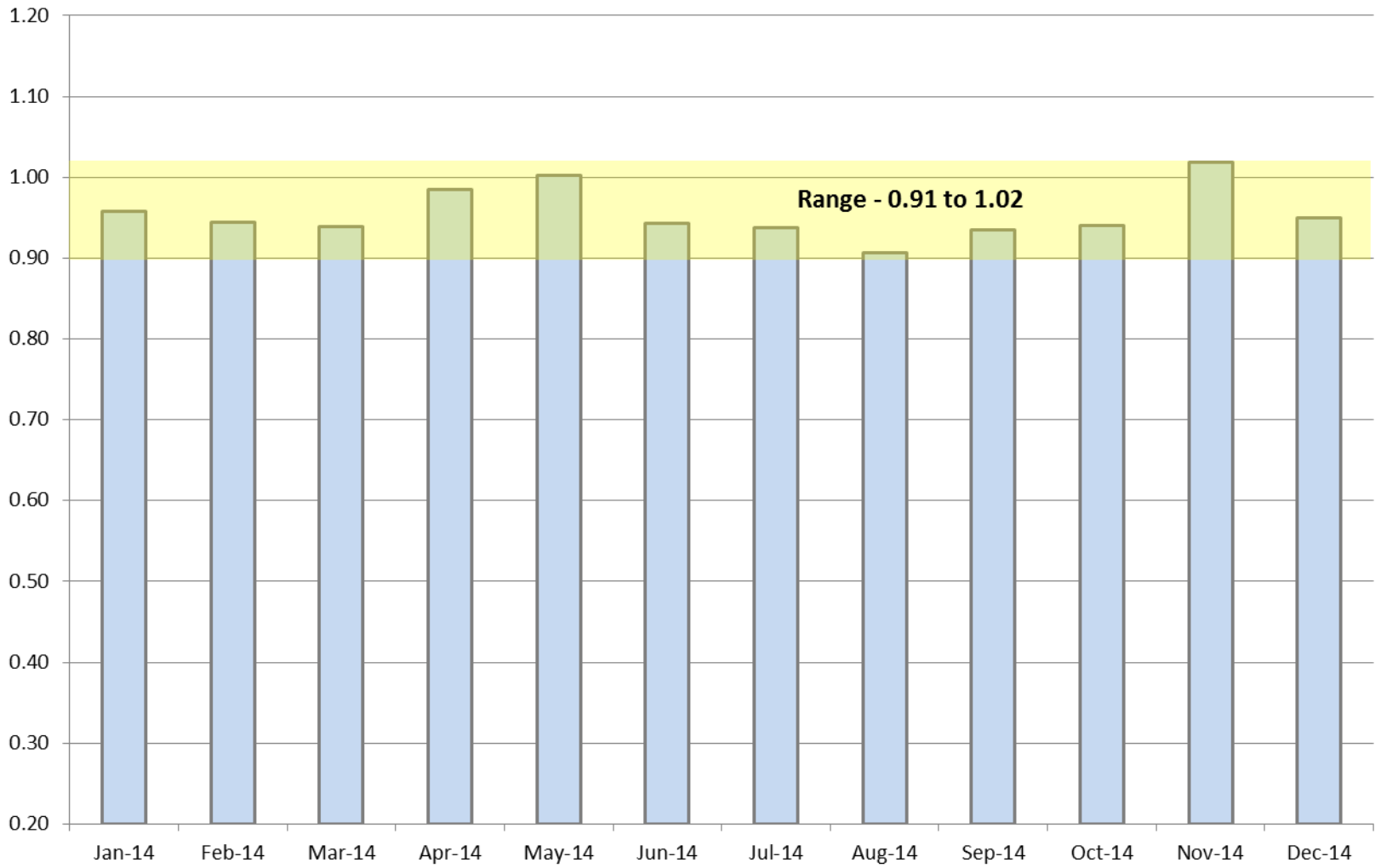
Monthly Gas Usage – 2014



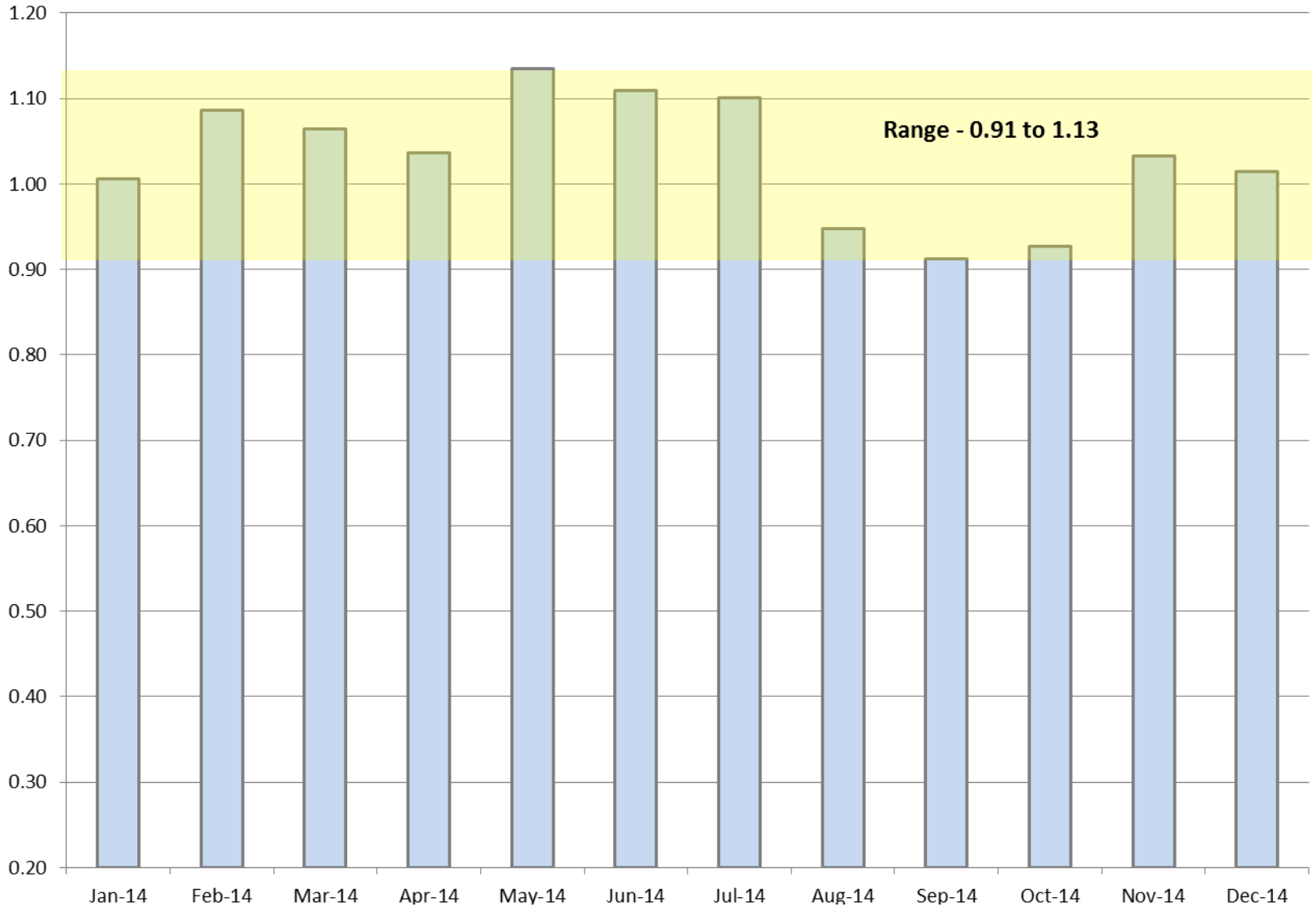
Monthly Energy Intensity – 2014



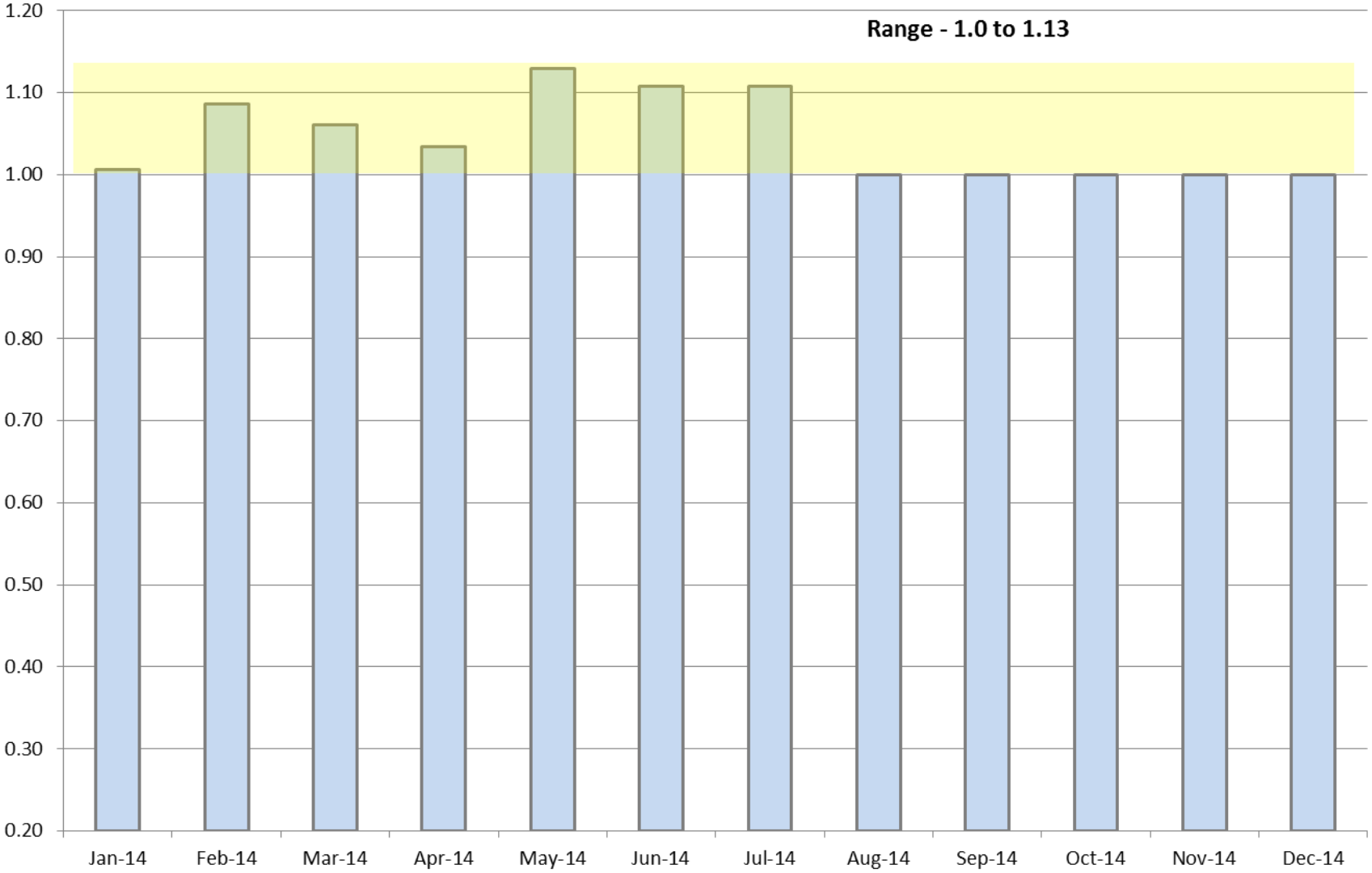
Water Proration Factors – 2014



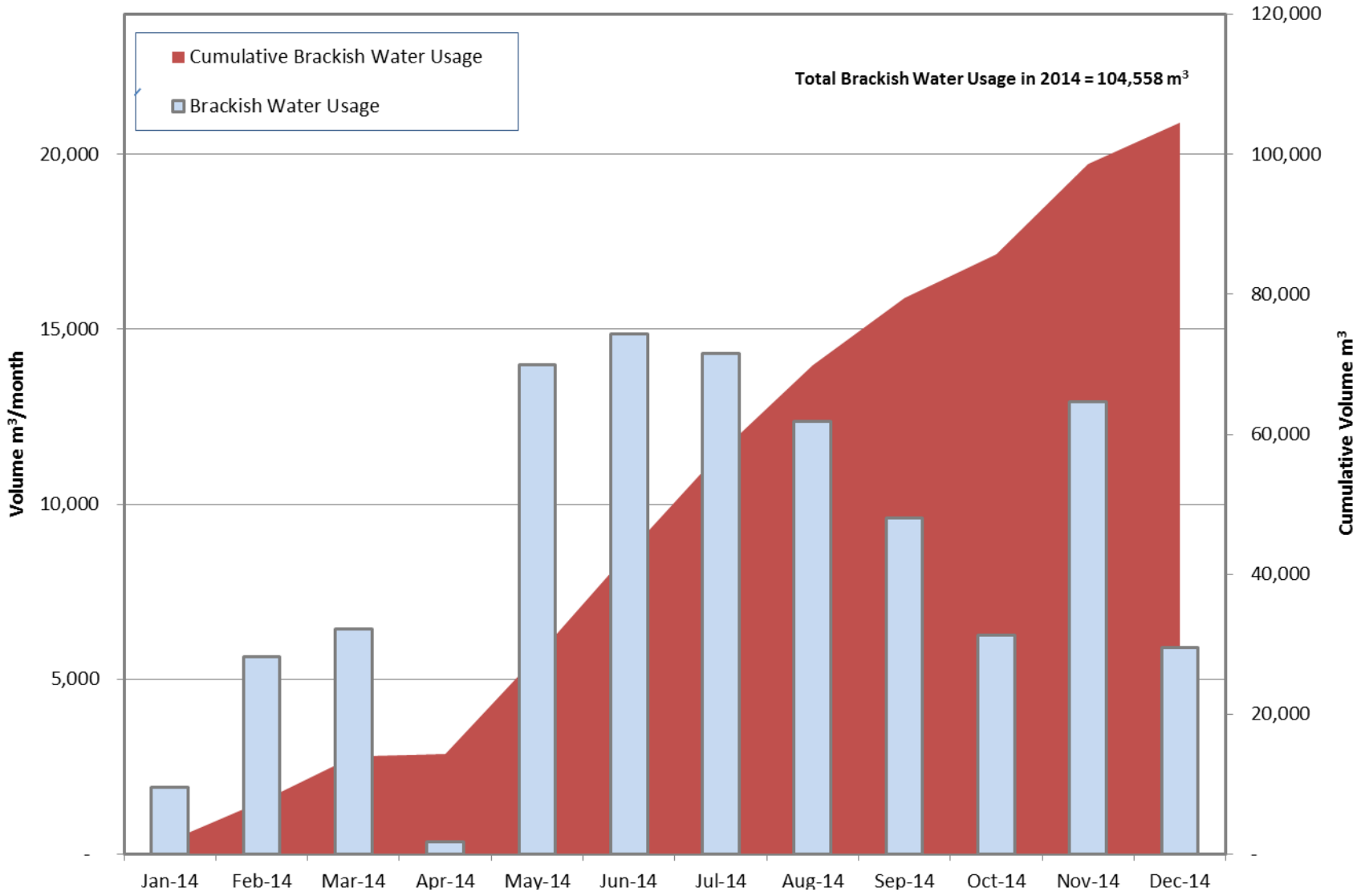
Oil Proration Factors – 2014



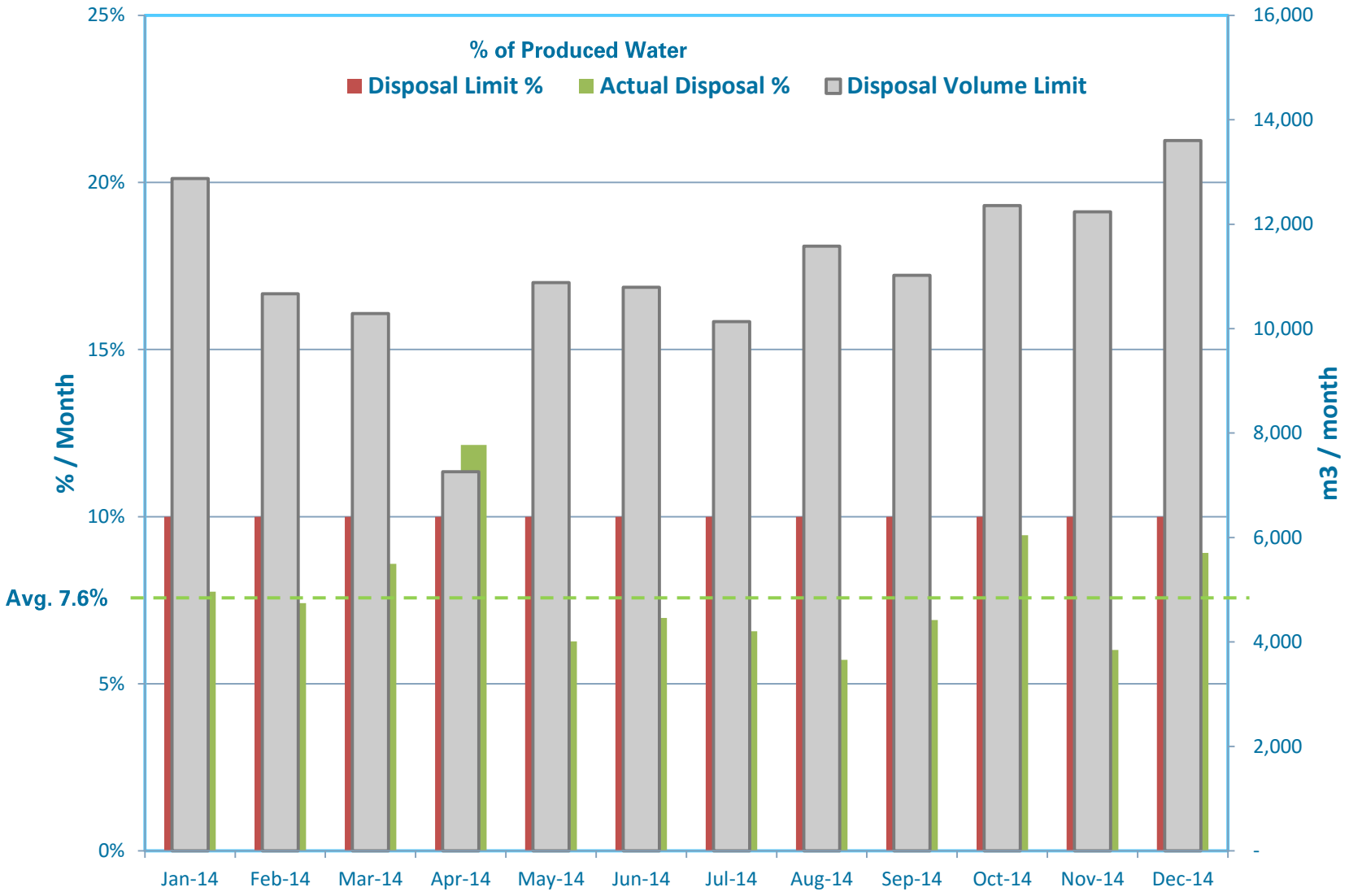
Gas Proration Factors – 2014



Brackish Water Usage – 2014



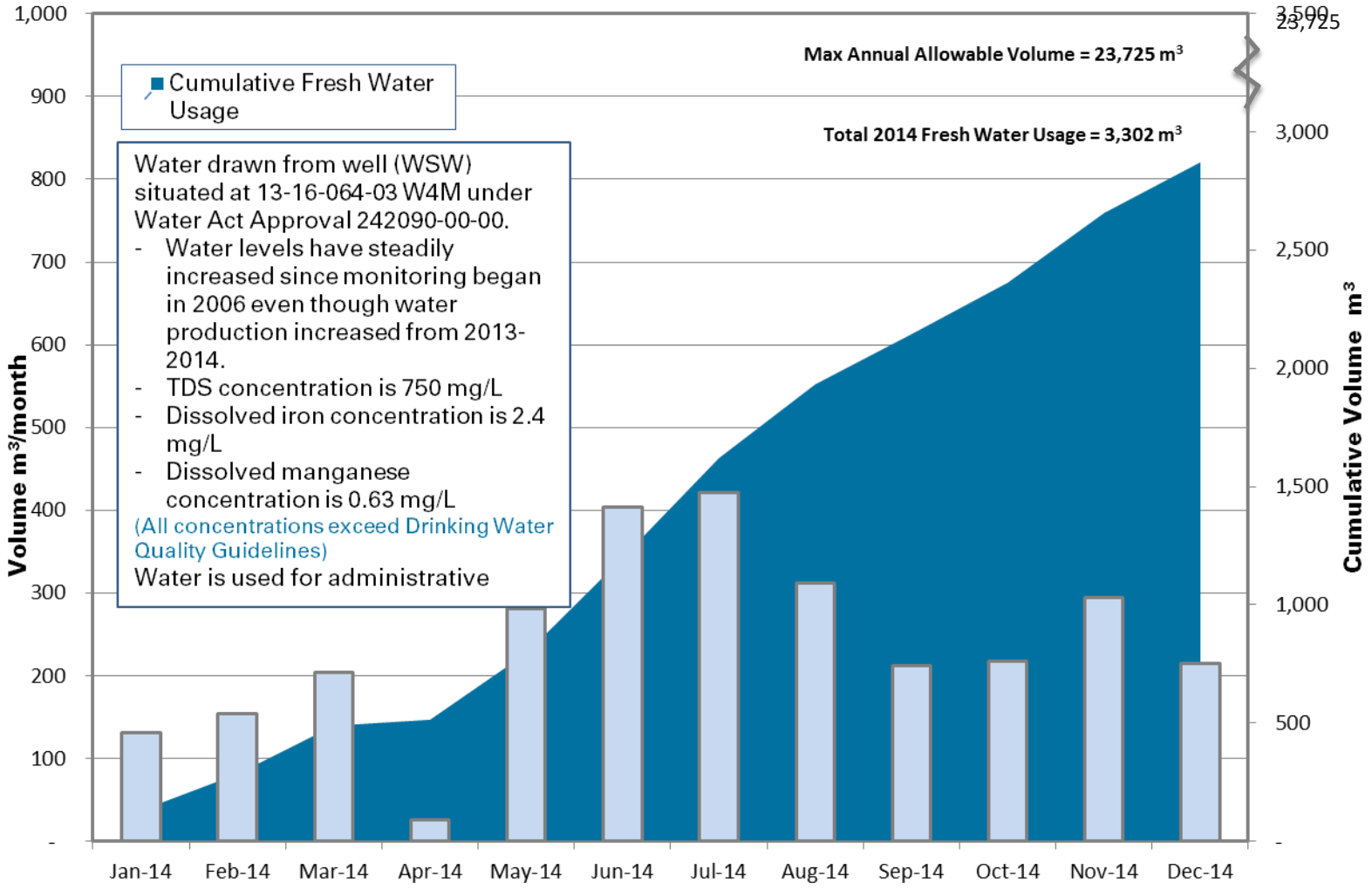
Water Disposal Limits - 2014



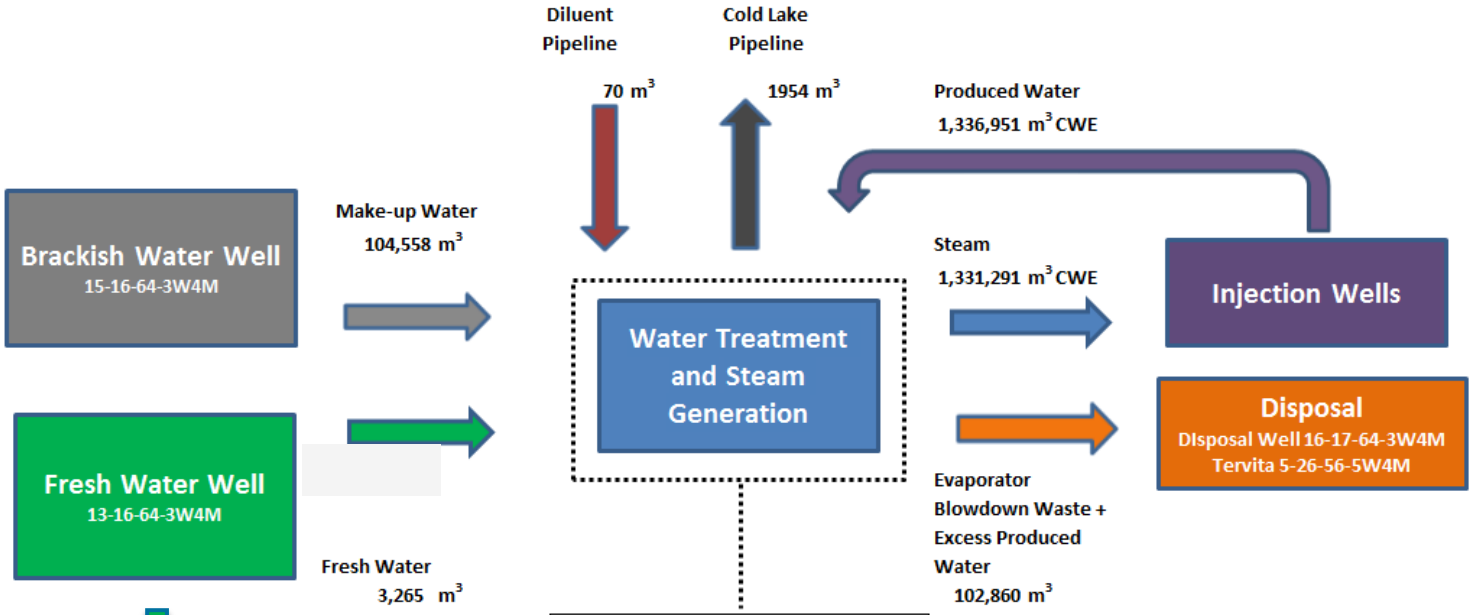
On-Site Water Disposal – 2014

- License permits produced water and recovered steam condensate to be disposed into the Granite Wash formation. Disposal Approval #8175
- Granite Wash water disposal well – 02/16-17-064-03W4M (AER License # 0192346)
  - Normal Operating Pressure Range: 10000 - 12000 KPa
  - protected by a high pressure shutdown limit of 13,950 KPa
  - Normal Disposal Temperature Range: 60 - 80 deg C
  - 2014 Disposal Volume: 26,582 m^3
- McMurray water disposal well – 03/16-17-064-03W4M (AER License # 0196880)
  - Suspended Nov. 2011

Fresh Non-Potable Water Usage – 2014



2014 Cumulative Water Balance



In		
Produced Water	1,336,951	m^3
Fresh Water	3,265	m^3
Diluent Pipeline	70	m^3
Brackish Water	104,558	m^3
Total	**1,444,844**	**m^3**
Out		
Steam	1,331,291	m^3
Sales Oil Pipeline	1,954	m^3
Disposal	102,860	m^3
Total	**1,436,105**	**m^3**
Difference	**8,739**	**m^3**
(metering error)	**0.6%**	
Disposal Limit	**12%**	
Actual Disposal	**7%**	

Compliance
Heather Harms

Off-Site Waste Disposal – 2014

- Tervita-Lindbergh – Class 1b – 05-26-056-05W4M
  - Evaporator Blowdown – 54,934 m^3
  - Contaminated Surface Water 79 m^3
  - Contaminated Snow 58 m^3
  - Drilling Waste and Sludge 86 m^3
- Tervita-Bonnyville – Class II Landfill – NE-09-061-03-W4M
  - Contaminated Soil – 143 m^3
- RBW Waste Management
  - Disposal or Recycling
  - Glycol, Lube Oil, Filters, Oily Rags, Aerosols, Methanol 8.9 m^3

Domestic Waste Disposal – 2014

- Domestic waste water from the administrative offices washrooms and kitchens are collected in holding tanks and disposed of weekly by a commercial septic service. Total volume disposed of at a Town of Bonnyville Waste Facility was 948 m^3
- Domestic waste is hauled to municipal landfills in either Cold Lake or Bonnyville. Approximately 67 tonnes was disposed
- A paper and cardboard recycling program is in effect

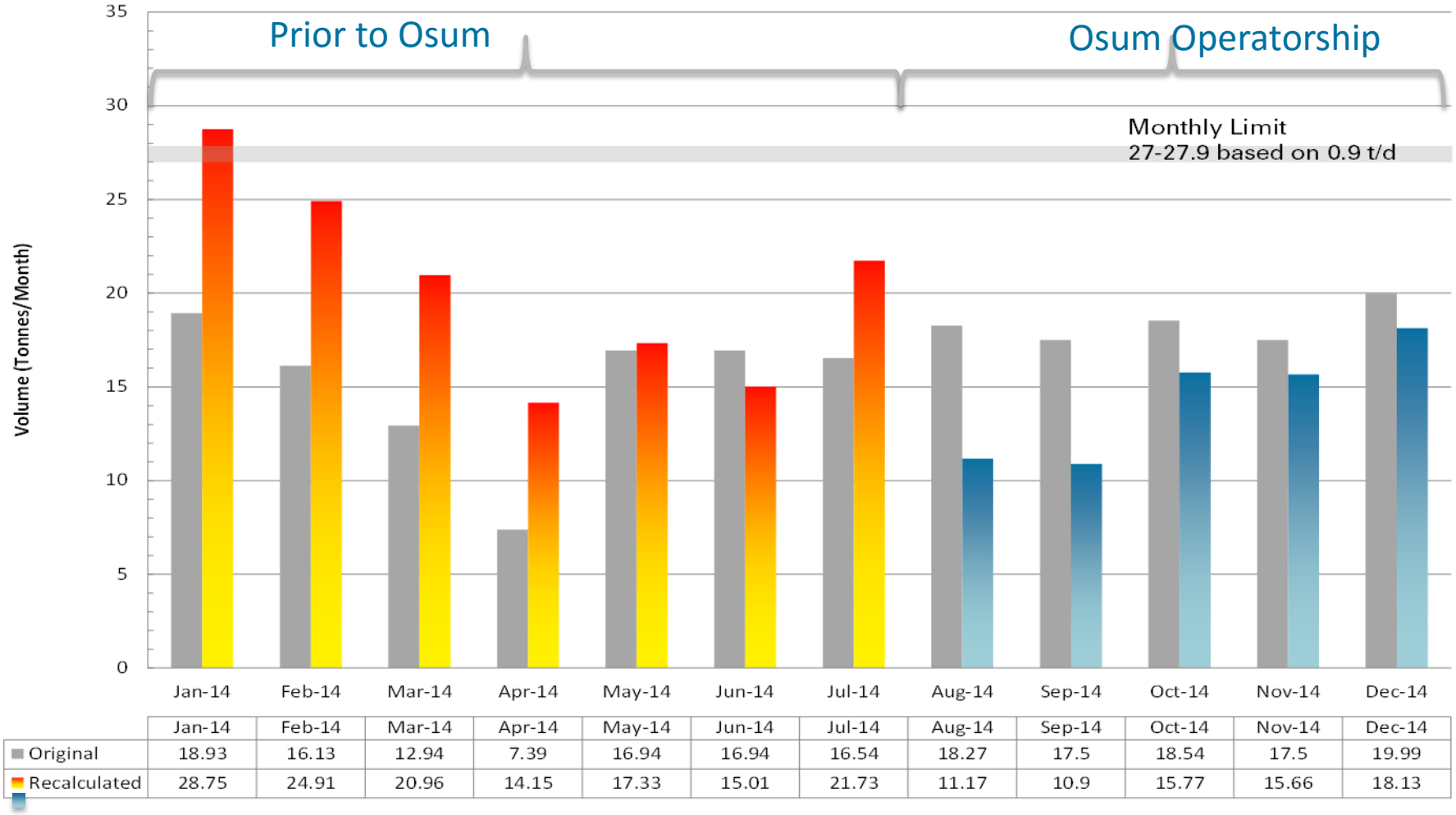
Air Monitoring Program – 2014

- Monthly air contaminant concentrations for SO_2/NOx, annual manual stack survey results, fugitive emissions, greenhouse gas emission and summarized monthly emission reporting is submitted in accordance with EPEA Approval requirements

- Sulphur dioxide numbers were revised for 2014 as produced gas volumes and recorded volumetric concentrations of H_2S did not yield the reported values of SO_2 emissions. Recalculated emissions were based on standard methodology

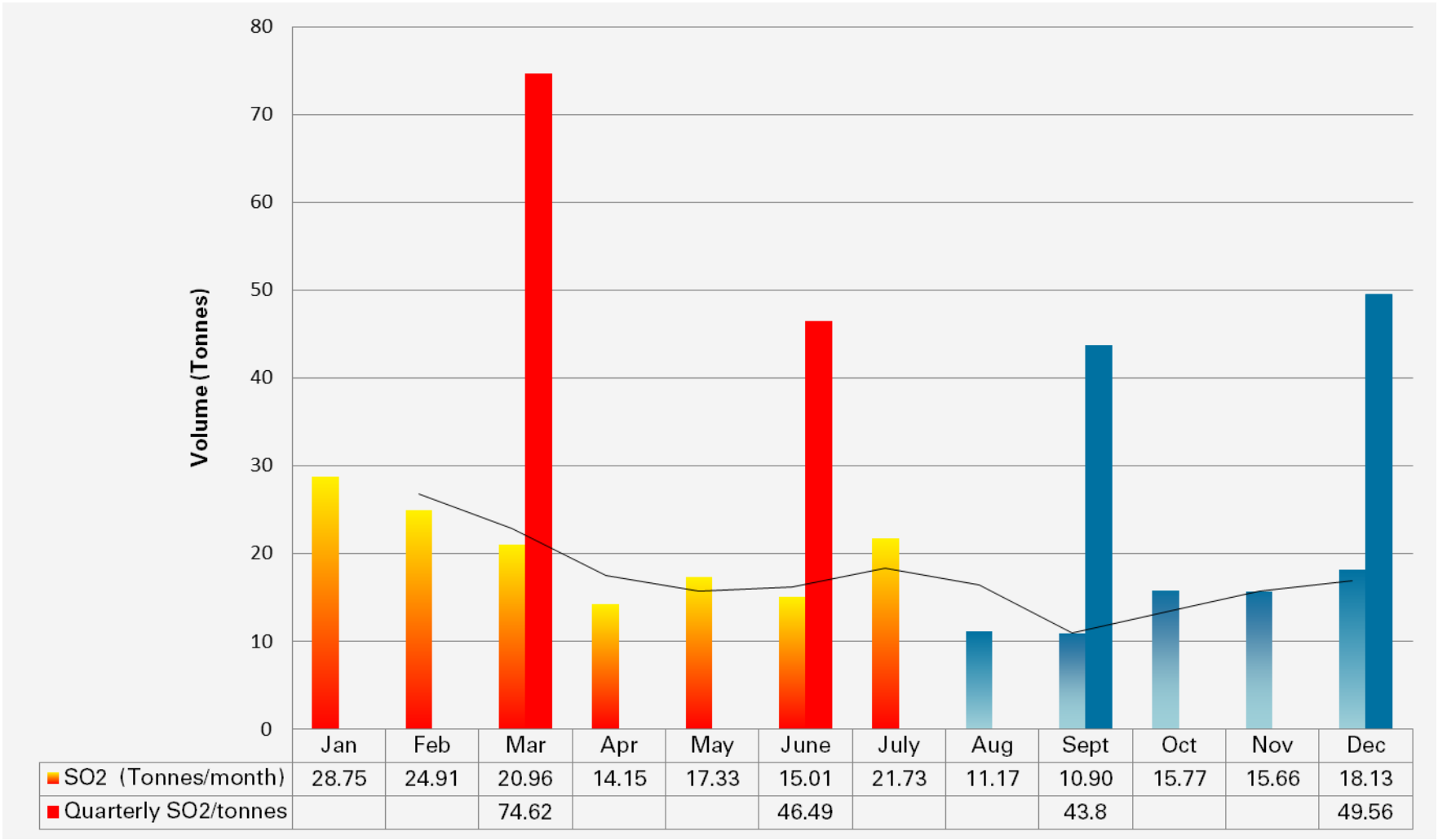
- Exceedances of SO_2 limits were discovered after recalculation in January and select dates in February 2014, these were self-reported by Osum

Original SO_2 Submitted Values with Re-Calculated Values



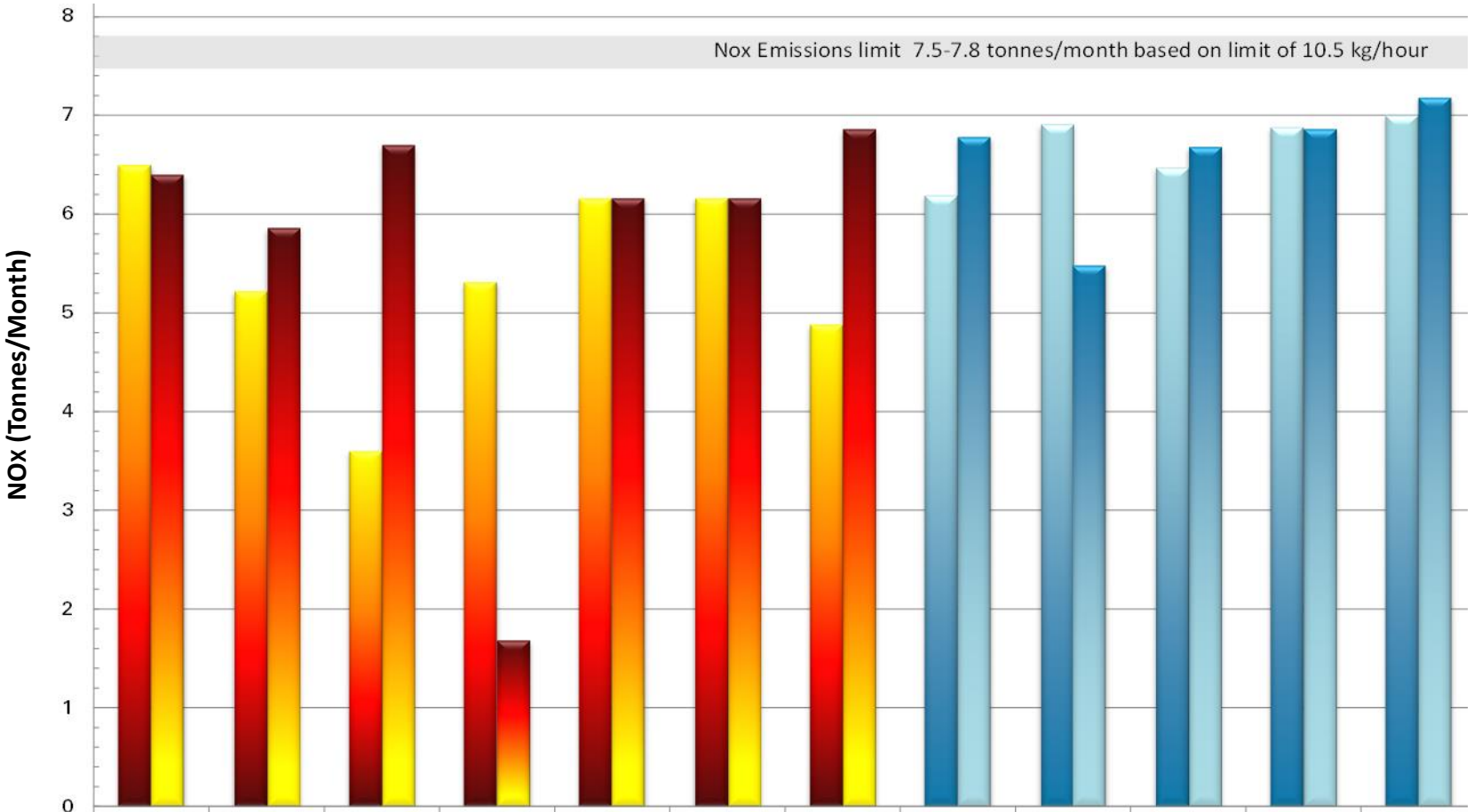
	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Original	18.93	16.13	12.94	7.39	16.94	16.94	16.54	18.27	17.5	18.54	17.5	19.99
Recalculated	28.75	24.91	20.96	14.15	17.33	15.01	21.73	11.17	10.9	15.77	15.66	18.13

Quarterly SO_2 Volumes



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
SO2 (Tonnes/month)	28.75	24.91	20.96	14.15	17.33	15.01	21.73	11.17	10.90	15.77	15.66	18.13
Quarterly SO2/tonnes			74.62			46.49			43.8			49.56

Monthly NOx Emissions Per Boiler



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Boiler 1	6.50	5.22	3.60	5.31	6.16	6.16	4.88	6.19	6.91	6.47	6.88	7.00
Boiler 2	6.40	5.86	6.70	1.68	6.16	6.16	6.86	6.78	5.48	6.68	6.86	7.18

Air Monitoring Program – 2014 Passive

- The passive air network was re-evaluated with the EPEA renewal air modeling - it was determined that the fence-line monitoring will continue and one station at a stakeholder request (H4) reducing number of stations from 11 to 5

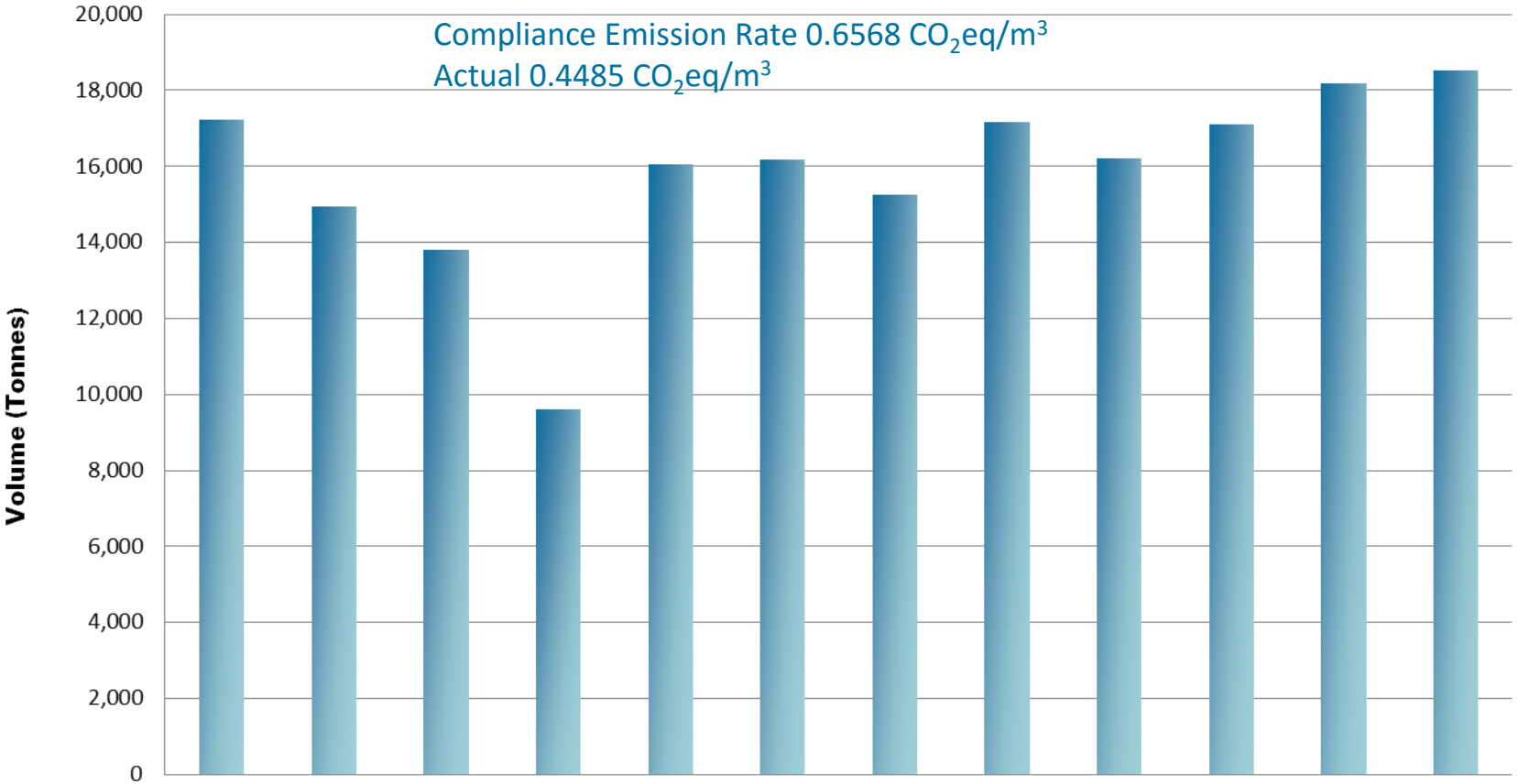
- Ambient air monitoring is fulfilled by supporting the LICA Airshed through AEMERA and participating on the Airshed steering committee

Air Monitoring Program – 2014 Passive

- Fugitive Emissions testing indicated 22 small volume leaking components
- All components requiring shutdown have been moved into the turnaround event
- All others were promptly fixed
- The vessels that require work to Pressure Relief Valves (PRV) or Pressure Vacuum Relief Valve (PVRV) are being addressed through a deductive process as an evaluation of the blanket gas system. Initially, the pressure control valve regulators will be inspected to determine operability as they are suspect in over-pressuring the blanket gas system. Should these valves be deemed faulty, they will be serviced and / or replaced. If these actions do not rectify the leaks, the PRV's and PVRV's will be replaced

Noralta Tag Number	Facility	Equipment tank Type Noralta Name (Osum Name)	Component Noralta Name (Osum Name)	Status
644	Wellpad	P1 wellhead	Wing valve to wellhead flange	Fixed
645	Wellpad	P1 wellhead	Gate valve on upper line to piperack	Fixed
638	Wellpad	P1 wellhead	Mid flanged connection	Fixed
639	Wellpad	P3 wellhead	Upper mid flanged connection	Fixed
640	Wellpad	P3 wellhead upper	Flange to wing valve	Fixed
641	Wellpad	P3 wellhead upper	Top right flex union	Fixed
642	Wellpad	P1 wellhead mid	Top flange on wing valve	Fixed
1001	CPF	Sales Oil Tank 3	Vent Hatch (PRV)	Fixed
1002	CPF	Sales Oil Tank 3	Thief Hatch (PVRV)	Turnaround if replacement required
1003	CPF	Diluent Tank	Green Tank PSV (PRV)	Turnaround if replacement required
1004	CPF	Diluent Tank	Thief Hatch (PVRV)	Fixed
1005	CPF	Skim Tank	Thief Hatch (PRV)	Turnaround if replacement required
1006	CPF	Slop Tank	Thief Hatch(PVRV)	Turnaround if replacement required
1007	CPF	Backwash Tank	Green tank PSV (PRV)	Turnaround if replacement required
643	CPF	Backwash Tank	Gate valve packing	Fixed
1008	CPF	Sales Tank 1	Thief Hatch (PRV)	Turnaround if replacement required
1009	CPF	Sales Tank 1	Right green tank PSV (PVRV)	Turnaround if replacement required
1010	CPF	Sales Tank 1	Left green tank PSV (PVRV)	Turnaround if replacement required
635	CPF	Tank 3005 (Evaporator Feed Tank)	Thief Hatch	Fixed
636	CPF	Bu-07 (Oil Processing Building)	Y strainer top gate valve plug	Fixed
637	CPF	Bu-07 (Oil Processing Building)	Gate valve plug	Fixed

Monthly Greenhouse Gas Emissions (Tonnes CO_2E)



	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14
Volume (Tonnes CO2E)	17,199	14,939	13,797	9,599	16,028	16,170	15,230	17,146	16,188	17,088	18,182	18,497

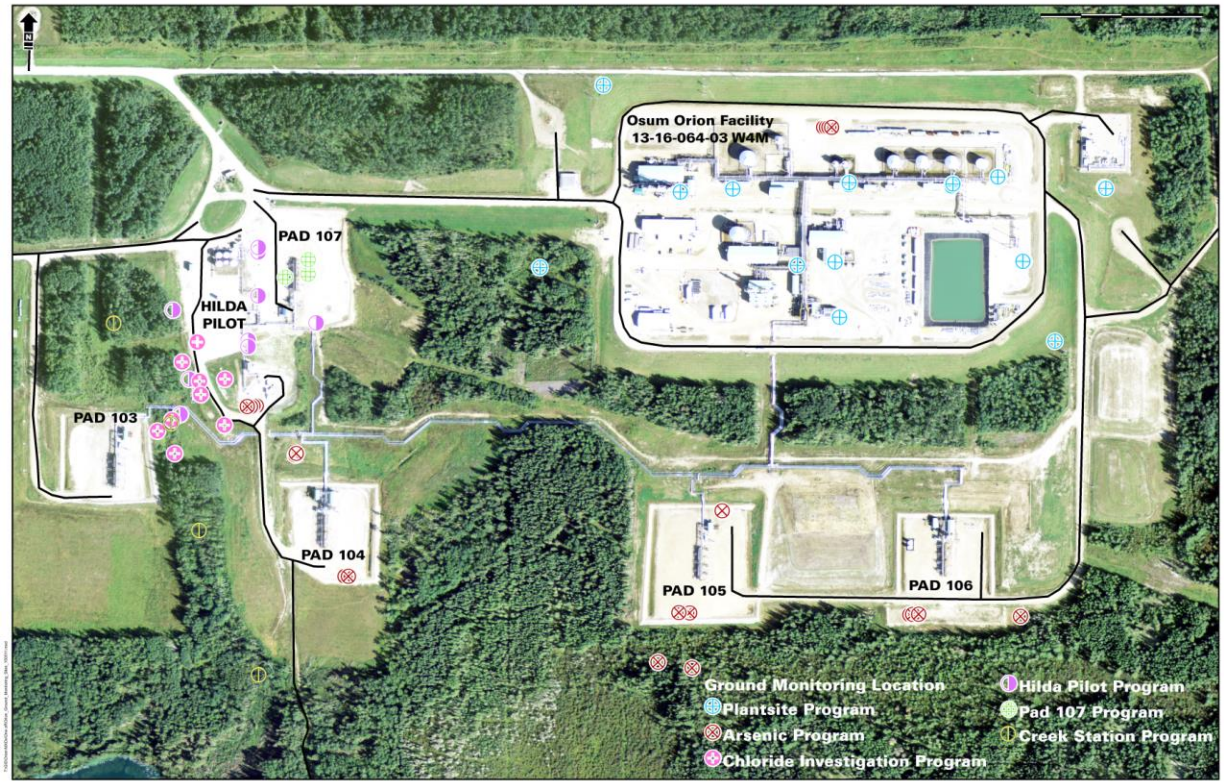
Soil Monitoring Program – 2014

- Soils monitoring program was executed in August 2014
- Historical salinity and hydrocarbon impacts associated with the Hilda pilot and Pad 107 pilot area are consistent with previous monitoring events
- Salinity impacts in the evaporator area and heavy metals at the Hilda Lake tank farm are surficial
- A soils management program proposal will be prepared in 2015 to progress remedial activity

2014 SMP Borehole
Exceeds EC Ratings of "Poor" Guideline
Exceeds SAR Ratings of "Fair" to "Unsuitable" Guideline
Exceeds Various Metal Parameter Guideline
Exceeds Hydrocarbon Guideline

Groundwater Monitoring Program – 2014

- The groundwater monitoring program was consistent with previous years, no negative trends were detected
- No new wells were added
- Arsenic well program sampling events were increased to quarterly



Wildlife Monitoring Program – 2014

- The wildlife monitoring program included a breeding bird, yellow rail and amphibian survey and a winter tracking event
- A comprehensive report summarizing the last 7 years of monitoring will be submitted in 2016
- The 2015 monitoring program is augmented with the addition of remote cameras for above ground pipeline crossing utilization and acoustical recorders in addition to the approved program

Environmental Monitoring Program – 2014

- In accordance with Conditions outlined in EPEA Approval 141258-00-00 and Water Act Approval 242090-00-00 the remaining annual reports were prepared and submitted for:
  - Industrial Waste Water and Surface Water
  - Surface Water Quality
  - Conservation and Reclamation
  - Domestic Water Use
- Conditions were reflective of previous years for these reports

Amendments to Existing Approvals

- Osum Production Corp. acquired the Orion facility in August 2014, Scheme Amendment 10103l and EPEA Amendment 141258-00-03 authorize the change in ownership of the facility

- EPEA Approval 141258-00-00 expires on July 31, 2015. An EPEA Renewal Application was submitted on April 30, 2015 in accordance with the authorization to extend the required submission date from January 31, 2015 to April 30, 2015

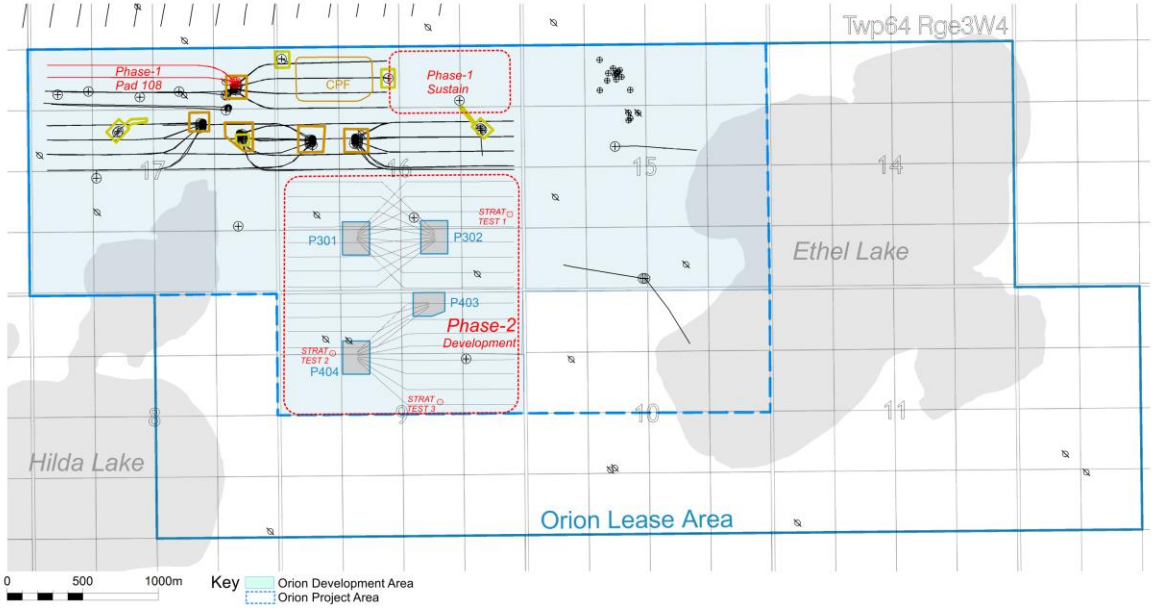
Compliance

- Sulphur dioxide emissions were recalculated based on accepted methodology. This resulted in a non-compliance for January – February 2014 which was then self-reported by Osum (Reference Number 295757)
- Osum has not had any compliance issues since acquiring ownership
- Osum has requested an audit of the facility by the AER to ensure continued compliance efforts and identify any gaps requiring correction

Future Plans
Bruce Thornton

Future Plans – Field Development for Orion Phase 2

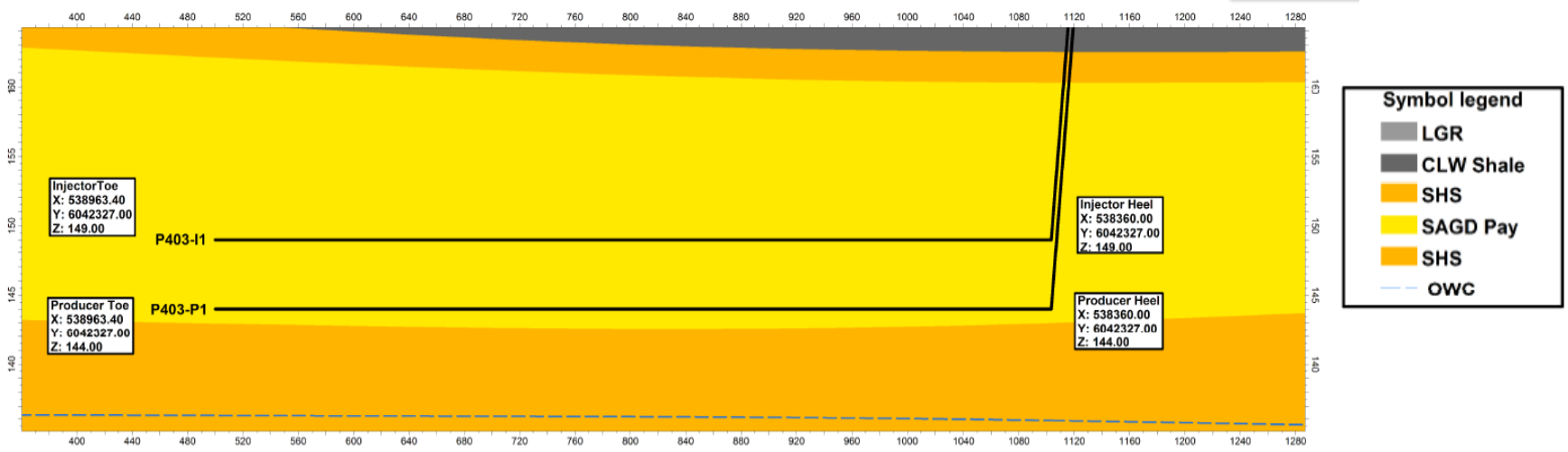
- Osum has reviewed the previous work associated with the Phase 2 Expansion which was approved by AER in Scheme Approval 10103E to increase growth and sustain the current production at 20,000 bopd
- Overall Osum is planning on 4 Pads (Pads 301, 302, 404 and 403) as outlined in the recently submitted Amendment Application
- The Project and Development Areas remain the same as well as the steam generation capacity (5 boilers) and associated emissions
- Amendment Application Approval is requested by September 2015 to allow for clearing to commence by winter 2015/2016. First steam for Phase 2 would be mid 2017



Phase 2 – Well Placement / Design

Key Design Elements for Success

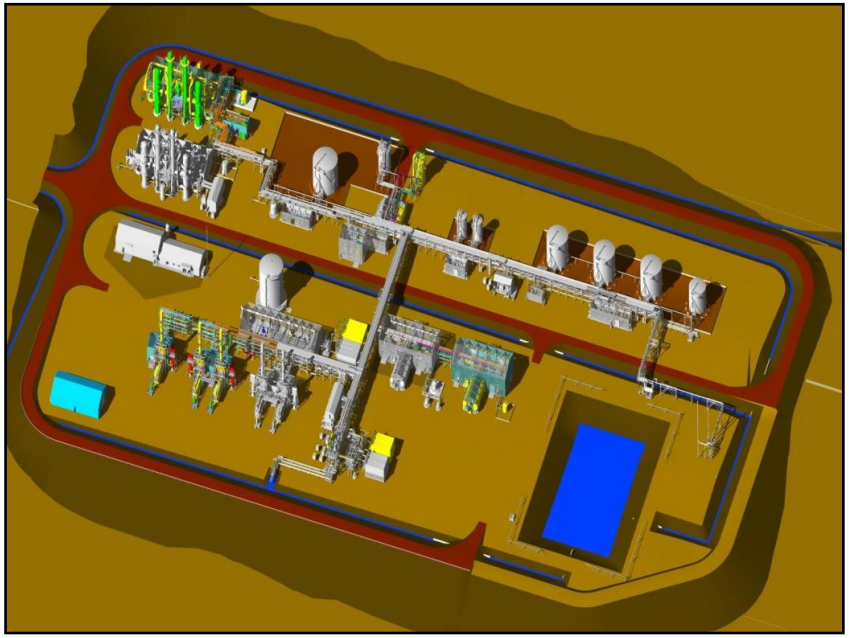
- Well Placement: above SHS facies
  - Avoid baffle intensity
- Liner Selection/Sizing
  - Wirewrap liners, Weatherford test, avoid plugging
- Startup
  - Artificial lift, manage pressure difference injection / production
  - Effective circulation strategy



P403-1 Trajectory

Orion Central Plant Facilities Expansion

- Central Processing Facility (CPF) is a 10,000 BPD capacity expansion
- Existing (pre-built) infrastructure for:
  - Sales system
  - Instrument air
  - Piperacks
- New “Brownfield” construction for:
  - Evaporators (water treatment)
  - Steam generation
  - Oil treatment
  - Skim tank
  - Misc. small systems



- Long Lead Boilers and Evaporators at site

Orion Pads & Pipelines Expansion

- New Well Pads, complete with:
  - Group separation and pumps
  - Test separators
  - Standard well modules
  - M2M PCP artificial lift system
- 1.8 km of above-ground Pipelines to/from CPF:
  - Production
  - Steam
  - Casing gas
  - Natural gas
  - Instrument air

Brackish Water Wells

(1F1/16-17-064-03W4/00 & 1F1/15-16-064-03W4/00)

- As per Clause 8 of the Commercial Scheme Approval 10103I Osum was required to submit a report detailing the information from a long term supply pumping test performed in the McMurray formation
- Makeup brackish water supply requirement is estimated at 1300 m^3/d for Phase 1 & 2 combined
- An aquifer test was conducted in March 2015 on WSW 15-16. The well efficiency has significantly improved which led to a lower drawdown since the original well test in 2005
- It was concluded from this test and the prior year testing by Shell that the total predicted drawdown for the regional and local drawdowns is sustainable over the long term from both the 15-16 and 16-17 WSW's

Future Plans for Resource Recovery

- Continue with SAGD recovery as per existing Scheme Approval
- Evaluation of infill feasibility/viability
  - Currently reviewing optimal timing, well TVD placement, well spacing and steam capacity
  - Existing interwell spacing on Phase 1 wells is 100 meters and consideration is being given to placing infill producer wells at 50 meter spacing between existing SAGD pairs on a single Pad initially to evaluate overall recovery and productivity
  - Modelling is also being done on the optimum interwell spacing for future SAGD pairs beyond Phase 2

Thank you