PROPOSED WASKADA UNIT NO. 23

Application for Enhanced Oil Recovery Waterflood Project

Lower Amaranth Formation

Lower Amaranth A (03 29A)

Waskada Field, Manitoba

June 30, 2017

Tundra Oil and Gas Partnership

INTRODUCTION

The Waskada Oil Field is located in Townships 1 and 2, Ranges 23-26 W1 (Figure 1). The Waskada Lower Amaranth Oil pool was discovered in June 1980. Secondary recovery through waterflood has been initiated throughout much of the pool. Tundra Oil and Gas (Tundra) currently operates Waskada Lower Amaranth Unit 1, 2, 3, 4, 5, 6, 7, 8, 13, 14, 15, 16, 17, 18, 19, 20 and 21.

In the eastern part of the Waskada field, potential exists for incremental production and reserves from a Waterflood EOR project in the Lower Amaranth oil reservoirs. The following represents an application by Tundra to establish Waskada Unit No. 23 (LSDs 3-6, 11-16 Section 35-1-25W1, LSDs 1-8, 11-14 Section 2, LSDs 1-11, 16 Section 3, LSDs 1-2, 7-8 Section 4, LSD 1 Section 10, LSDs 3-6, 9-15 Section 11-2-25W1) and implement a Secondary Waterflood EOR scheme within the Lower Amaranth Formation as outlined on Figure 2.

The proposed project area falls within the existing designated 03-29A Lower Amaranth A Pool of the Waskada Oilfield (Figure 3).

SUMMARY

1. The proposed Waskada Unit No. 23 will include 59 horizontal wells and 13 of the 21 vertical wells (8 of the vertical wells are abandoned) within 50 Legal Sub Divisions (LSD) of the Lower Amaranth producing reservoir. The project is located east of Waskada Unit No. 16 and Waskada Unit No. 17 and north of Waskada Unit No. 19 (Figure 2).

2. Total Net Original Oil in Place (OOIP) in Waskada Unit No. 23 has been calculated to be **6,002** e^3m^3 (37,755 Mbbl) for an average of **120.0 net e^3m^3 (**755.0 Mbbl) OOIP per 40 acre LSD based on a 0.5 md cutoff for the Green to Red Sands.

3. Cumulative allocated production to the end of February 2017 from the 80 wells within the proposed Waskada Unit No. 23 project area was **386.6** e^3m^3 (2,431 Mbbl) of oil, and **1058.6** e^3m^3 (6,658 Mbbl) of water, representing a **6.4%** Recovery Factor (RF) of the Net OOIP.

4. The production from the Waskada Unit No. 23 peaked in December 2010 at 278.1 m^3 oil per day (OPD) as shown in Figure 4. As of February 2017, production was 46.6 m^3 OPD, 391.9 m^3 of water per day (WPD) and an 89.4% watercut.

5. In December 2010, production averaged 6.6 m^3 OPD per well in Waskada Unit No. 23. As of February 2017, average per well production has declined to 1.0 m^3 OPD. Decline analysis forecasts total primary oil to continue declining at an annual rate of approximately **24.8%** in the project area.

6. Estimated Ultimate Recovery (EUR) of Primary Proved Producing oil reserves in the proposed Waskada Unit No. 23 project area has been calculated to be **449.0** e^3m^3 (**2,824** Mbbl), with **62.4** e^3m^3 (**392.4** Mbbl) remaining as of the end of February 2017.

7. Ultimate oil recovery of the proposed Waskada Unit No. 23 OOIP, under the current Primary Production method, is forecasted to be **7.5%.**

8. Estimated Ultimate Recovery (EUR) of proved oil reserves under Secondary WF EOR for the proposed Waskada Unit No. 23 has been calculated to be **606.2** e^3m^3 (**3,812** Mbbl), with **219.6** e^3m^3 (**1,381** Mbbl) remaining. An incremental **157.2** e^3m^3 **988.7** Mbbl) of proved oil reserves, or **2.6%**, are forecasted to be recovered under the proposed Unitization and Secondary EOR production vs the existing Primary Production method.

9. Total RF under Secondary WF in the proposed Waskada Unit No. 23 is estimated to be **10.1%**.

10. Based on offset waterflood response in the Waskada field, the Lower Amaranth Formation in the proposed project area is believed to be a suitable reservoir for WF EOR operations.

11. Existing horizontal wells, with multi-stage hydraulic fractures will be converted to injection to provide waterflood support to existing horizontal/vertical producing wells (Figure 5) within the proposed Waskada Unit No. 23 to complete waterflood patterns.

GEOLOGY

Stratigraphy:

The Triassic aged Lower Amaranth formation is the oil producing reservoir that is the subject of this unit application. The stratigraphy of the reservoir section for the proposed unit is shown on the structural cross section attached as Appendix 1. The section runs SW to NE approximately through the mid-point of the proposed unit. The Lower Amaranth is bounded on top by the Amaranth Evaporite and by the Mississippian Unconformity at the base.

The producing sequence in descending order consists of the Lower Amaranth A Unit, Lower Amaranth Green Sand, Lower Amaranth Blue Sand, Lower Amaranth Purple Sand, Lower Amaranth Brown Sand, Lower Amaranth Red Sand, and the Lower Amaranth Lower Sand. The reservoir units are primarily represented by the Green, Blue, Purple, Brown, and Red Sands. The Upper portion of the Lower Amaranth A unit is considered tight, and represents the top seal for the reservoir.

Sedimentology:

The Lower Amaranth reservoir units (top of Green through to base of Red Sand) comprise interlaminated shale, siltstone, and fine grained sandstone. The laminations tend to be range from > 1 cm up to 20 cm in thickness, often show signs of scouring at the base of each laminae, and tend to fine upwards. There are anhydrite beds capping each sub unit within the producing sequence; these anhydrite layers are generally correlatable over the entire Pierson / Waskada / Goodlands area. These anhydrite layers are the basis for the stratigraphic framework that is being used to describe the reservoir within the proposed unit.

The units within the producing sequence have very similar characteristics. Color tends to vary with grain size in that the finer grained material tends to be brick red, while the courser grained material generally tends to be grey to light brown. All of the sub units have a varying component of anhydrite cement, which will appear as mm sized nodules in heavily cemented areas. Finally, well rounded, floating, course, frosted quartz grains are common throughout the entire productive interval.

Lower Amaranth reservoir is interpreted as having been deposited in an arid tidal flat (Sabkha) setting. The stratigraphic divisions (Green, Blue, Purple, Brown, Red, and Lower Sands) are interpreted as representing individual evaporitic cycles, each exhibiting relatively higher depositional energy at the base, grading into very low energy towards the top.

Since each cycle is bound by an erosive surface on the top and bottom, there can be lateral variability in sediment preservation within each cycle. Occasional preservation of high angled cross stratification suggests periods of very high energy during deposition which are interpreted as channel deposits, which help support a tidal flat setting depositional model.

The Upper portion of the Upper Amaranth A unit is made up of brick red shale that is generally not bedded and does not tend to exhibit any sedimentary structures. It is a low permeability zone that represents the top seal to the Lower Amaranth reservoir.

The Lower Sand portion of the Lower Amaranth (immediately beneath the Red Sand), has a lot of the same characteristics as the productive interval, but tends to have much less effective porosity due to abundant anhydrite cement.

Structure:

Structure contour maps are provided for the top and base of the reservoir interval (Appendices 2 and 3). The reservoir units dip to the southwest, which is consistent with regional dip. Structural mapping based on well control does not indicate the presence of large scale structural features that would indicate an increased risk of faulting within the proposed unit boundary.

Reservoir Continuity:

There are limited barriers to reservoir continuity that are apparent from the data available. Available data from well logs do not show any apparent lateral facies changes within the proposed unit that would result in significant lateral permeability barriers. An Isopach map of the reservoir interval (Appendix 4) shows that the reservoir thickness remains consistent at about 10.5 meters.

Also, as mentioned above, there are no indications of any structural features that could set up any lateral permeability barriers within the proposed unit. The lack of lateral permeability barriers suggests this pool is well suited for secondary oil recovery.

Reservoir Quality:

Net pay determination within the proposed unit was done by using a sonic porosity cut off. There are a number of steps that were undertaken in order to determine net pay from sonic log data:

- Core data from the entire Waskada / Goodlands area (Appendix 5) was used to determine a relationship between porosity and permeability. Based on a best fit line through the available core analysis it was determined that a core porosity of 10% represents 0.5 md of permeability (Appendix 6).
- Sonic porosity was calculated for wells in which digital sonic data was available (Appendix 7) using the following formula:

$$Sonic\ Porosity = \frac{Dt - Dtmatrix}{Dtwater - Dtmatrix}$$

Where

Dt = Sonic travel time (ms/m)
Dt_{matrix} = Sonic travel time of the rock matrix (198 ms/m)
Dt_{water} = Sonic travel time of the formation water (681 ms/m)

- In order to translate this relationship to well logs, a comparison between sonic porosity and core porosity was undertaken. A total of 52 wells were found in the Waskada / Goodlands area that had digital sonic curves along with core analysis over the Lower Amaranth reservoir interval (Appendix 8). Sonic Porosity from logs was compared to core porosity from core analysis (Appendix 9), and the data suggests that there is a good relationship between porosity from core and porosity from Sonic data.

From this relationship, a sonic log porosity cut of 10% was used as a pay determination for each logged well. In this way, the porosity / permeability relationship as determined from core can be translated into wells where there is log data available. In turn, this increases the control points for OOIP determination, which increases the resolution of OOIP mapping.

OOIP Estimates

OOIP values were calculated using the following volumetric equation:

$$OOIP = \frac{Area * Net\ Pay *\ Porosity * (1 - Water\ Saturation)}{Initial\ Formation\ Volume\ Factor\ of\ Oil}$$

or

$$OOIP(m3) = \frac{A * h * \emptyset * (1 - Sw)}{Bo} * \frac{10{,}000m2}{ha}$$

or

$$OOIP(Mbbl) = \frac{A * h * \emptyset * (1 - Sw)}{Bo} * 3.28084\frac{ft}{m} * 7{,}758.367\frac{bbl}{acre * ft} * \frac{1Mbbl}{1{,}000bbl}$$

where

OOIP	= Original Oil in Place by LSD (Mbbl, or m3)
A	= Area (40acres, or 16.187 hectares, per LSD)
h * Ø	= Net Pay * Porosity, or Phi * h (ft, or m)
Bo	= Formation Volume Factor of Oil (stb/rb, or sm3/rm3)
Sw	= Water Saturation (decimal)

For the purposes of this unit application, Bo and Sw were held constant at 1.17 and 40% respectively. The initial oil formation volume factor was derived from a PVT taken from the 8-26-1-26W1, which is representative of the fluid characteristics in the reservoir. Sw determination was set at 40% which is consistent with historic unit applications in the Waskada / Goodlands area.

Average sonic porosity for the proposed Unit area has been included as Appendix 10.

Phi * h maps were created from sonic porosity log data (Appendix 11). The average phi * h value within each LSD was calculated using IHS Petra software, this provided the final input into the OOIP calculation.

Total volumetric OOIP for the Lower Amaranth within the proposed unit has been calculated to be 6,002 e^3m^3 (37,755 Mbbls).

Tabulated parameters for each LSD from the calculations can be found in Table 4.

Historical Production

A historical group production history plot for the proposed Waskada Unit No. 23 is shown as Figure 4. Oil production commenced from the proposed Unit area in December 1985 and peaked in December 2010 at 278.1 m^3 (OPD) as shown in Figure 4. As of February 2017, production was 46.6 m^3 OPD, 391.9 m^3 of water per day (WPD) and an 89.4% watercut.

From peak production in December 2010 to date, oil production is declining at an annual rate of approximately 34.1% under the current Primary Production method.

The remainder of the field's production and decline rates indicate the need for pressure restoration and maintenance. Waterflooding is deemed to be the most efficient means of secondary recovery to introduce energy back into the system and provide a real sweep between wells.

UNITIZATION

Unitization and implementation of a Waterflood EOR project is forecasted to increase overall recovery of OOIP from the proposed project area.

Unit Name

Tundra proposes that the official name of the new Unit shall be Waskada Unit No. 23.

Unit Operator

Tundra Oil and Gas Partnership (Tundra) will be the Operator of record for Waskada Unit No. 23.

Unitized Zone

The Unitized zone to be waterflooded in the Waskada Unit No. 23 will be the Lower Amaranth formation.

Unit Wells

The 59 horizontal wells and 13 vertical wells to be included in the proposed Waskada Unit No. 23 are outlined in Table 3.

Unit Lands

The Waskada Unit No. 23 will consist of 50 LSDs as follows:

LSDs 3-6, 11-16 Section 35 of Township 1, Range 25, W1M
LSDs 1-8, 11-14 Section 2 of Township 2, Range 25, W1M
LSDs 1-11, 16 Section 3 of Township 2, Range 25, W1M
LSDs 1-2, 7-8 Section 4 of Township 2, Range 25, W1M
LSD 1 Section 10, LSDs 3-6 of Township 2, Range 25, W1M
9-15 Section 11 of Township 2, Range 25, W1M

The lands included in the 40 acre tracts are outlined in Table 1.

Tract Factors

The proposed Waskada Unit No. 23 will consist of 50 Tracts based on the 40 acre LSDs containing the existing 59 horizontal and 13 vertical wells.

The Tract Factor contribution for each of the LSD's within the proposed Waskada Unit No. 23 was calculated as follows:

- Gross OOIP by LSD, minus cumulative production to date for the LSD as distributed by the LSD specific Production Allocation (PA) % in the applicable producing horizontal or vertical well (to yield Remaining Gross OOIP)

- Last twelve (12) months production to date for the LSD as distributed by the LSD specific PA % in the applicable producing horizontal or vertical well.
- Tract Factor by LSD = Fifty percent (50%) of the product of Remaining Gross OOIP by LSD as a % of total proposed Unit Remaining Gross OOIP, and fifty percent (50%) of the product of the Last 12 Months Production as a % of total proposed Unit Last 12 Months Production.

Tract Factor calculations for all individual LSDs based on the above methodology are outlined within Table 2. In the past, multiple methods of assigning tract participation factors have been used in the Waskada area. Tundra believes that the above given method provides the most equitable assignment of tract participation factors to all mineral owners, given the geological, reservoir and well completion risks associated with waterflooding horizontal to horizontal wellbores in Lower Amaranth formation.

Working Interest Owners

Table 1 outlines the working interest (WI) for each recommended Tract within the proposed Waskada Unit No. 23. Tundra Oil and Gas Partnership holds a 100% WI ownership in all the proposed Tracts.

Tundra Oil and Gas Partnership will have a 100% WI in the proposed Waskada Unit No. 23.

WATERFLOOD EOR DEVELOPMENT

Technical Studies

The waterflood performance predictions for the proposed Waskada Unit No. 23 Lower Amaranth project are based on internal engineering assessments, as well as empirically observed waterflood performance in nearby Waskada Units 16 and 17, which employed a vertical to vertical waterflood. Utilizing project area specific reservoir and geological parameters, a Black oil simulation model using Exodus software was created by Tundra to evaluate the potential waterflood response using horizontal injectors to flood horizontal producers, which is the configuration that Tundra proposes in Waskada Unit No. 23. While the model was created using geological and historical production data from Waskada Unit 19, in Section 34-1-25W1, the results observed in the model were similar to those observed empirically in Waskada Units 16 and 17, and deemed representative of what Tundra would expect in Waskada Unit No. 23.

Horizontal Injection Wells and EOR Development

Primary production from the original vertical/horizontal producing wells in the proposed Waskada Unit No. 23 has declined significantly from peak rate indicating a need for secondary pressure support. Through the process of developing similar waterfloods, Tundra has measured a significant variation in reservoir pressure depletion by the existing primary producing wells. Placing new horizontal wells immediately on water injection in areas without significant reservoir pressure depletion has been problematic in similar low permeability formations, and has a negative impact on the ultimate total recovery of oil.

Tundra's plan includes a first phase of converting up to 19 horizontal oil producing wells to Water Injection Wells (WIW), as well as drilling up to 15 new wells to fully complete development in the area, as shown in Figure 5. This development plan allows for approximately 30 acre spacing between offset injection wells. Alternative injection configurations may be considered depending on results from offset waterflood areas in the Lower Amaranth formation, within the Waskada field. These changes could result in the conversion of more or less wells to injection than what is shown in Figure 5. New horizontal wells will be drilled if they are deemed to be essential to improving recovery in the unit. Some of the new drills may be horizontal injection wells. If new injection wells are drilled in this area, Tundra believes an initial period of producing all new horizontal wells prior to placing them on permanent water injection is essential and all Unit mineral owners will benefit.

Tundra will continue to monitors reservoir pressure, fluid production and decline rates in each pattern to determine when the well will be converted to water injection.

Reserves Recovery Profiles and Production Forecasts

The primary waterflood performance predictions for the proposed Waskada Unit No. 23 are based on oil production decline curve analysis. The secondary predictions are based primarily on internal engineering analysis performed by the Tundra reservoir engineering group, utilizing an Exodus simulation model generated in Waskada Unit 19 (described previously), and simulating horizontal injectors offsetting horizontal producers for waterflood development. These results were then compared and contrasted to empirically observed data in Waskada Unit 16 and 17 to ensure proper calibration of data and results.

Primary Production Forecast

Cumulative allocated production in the Waskada Unit No. 23 project area, to the end of February 2017 from 80 wells was **386.6** e^3m^3 (2,320 Mbbl) of oil, and **1058.6** e^3m^3 (5,951 Mbbl) of water, representing a **6.4%** Recovery Factor (RF) of the Net OOIP.

Ultimate Primary Proved Producing oil reserves recovery for Waskada Unit No. 23 has been estimated to be **449.0** e^3m^3, or a **7.5**% Recovery Factor (RF) of OOIP. Remaining Producing Primary Reserves has been estimated to be **62.4** e^3m^3 to the end of February 2017.

The expected production decline and forecasted cumulative oil recovery under continued Primary Production is shown in Figures 7 and 8.

Pre-Production Schedule/Timing for Conversion of Horizontal Wells to Water Injection

Tundra proposes to implement an initial phase which consists of 6-8 horizontal conversions throughout 2018 to test the efficiency of the Waskada Unit No. 23 Waterflood. Tundra will continue to convert existing wells and drill new wells as needed in the following years. Observed waterflood response will affect the timing and pattern of future conversions and new wells drilled.

Criteria for Conversion to Water Injection Well

Tundra will monitor the following parameters to assess the best timing for each individual horizontal well to be converted from primary production to water injection service.

- Measure reservoir pressures through primary production
- Fluid production rates and any changes in decline rate
- Any observed production interference effects with adjacent vertical and horizontal wells
- Pattern mass balance and/or oil recovery factor estimates
- Reservoir pressure relative to bubble point pressure

The above schedule allows for the proposed Waskada Unit No. 23 project to be developed equitably, efficiently, and moves to project to the best condition for the start of waterflood as quickly as possible. It also provides the Unit Operator flexibility to manage the reservoir conditions and response to help ensure maximum ultimate recovery of reserves.

Secondary EOR Production Forecast

The proposed project oil production profile under Secondary Waterflood has been developed based on the response observed to date in Waskada Unit 16 and 17 (Figure 6), as well as internal Black Oil Simulation model of Section 34-1-25W1 in Waskada 19, which simulates a horizontal to horizontal waterflood.

Secondary Waterflood plots of the expected oil production forecast over time and the expected oil production vs. cumulative oil are plotted in Figures 7 and 8, respectively. Total Secondary EUR for the proposed Waskada Unit No. 23 is estimated to be **606.2** e^3m^3 with **219.6** e^3m^3 remaining representing a total secondary recovery factor of **10.1%** for the proposed Unit area. An incremental **157.2** e^3m^3 of oil, or

a **2.6%** recovery factor, are forecasted to be recovered under the proposed Unitization and Secondary EOR production scheme vs. the existing Primary Production method.

Estimated Fracture Pressure

Completion data from the existing producing wells within the project area indicate an actual fracture pressure gradient range of 17.0 to 18.0 kPa/m true vertical depth (TVD).

WATERFLOOD OPERATING STRATEGY

Water Source

The injection water for the proposed Waskada Unit No. 23 will be alternately supplied from the existing Waskada 15-9-2-25W1 Battery source and injection water system, or a newly installed injection plant and associated water source well at 15-21-1-25W1. At the 15-9 Battery, all existing injection water is obtained from the Swan River formation in the 100/05-09-002-25W1 and 100/10-09-002-25W1 licensed water source wells. Swan River water from the two source wells is pumped to the main Waskada Units Water Plant at 15-9-2-25W1, filtered, and pumped up to injection system pressure. A diagram of the Waskada water injection system and new pipeline connection to the proposed Waskada Unit No. 23 project area injection wells is shown as Figure 9. A similar configuration is employed at the 15-21-1-25W1 injection facility. Swan River source water from 103/02-28-001-25W1/02 is delivered to the 15-21 battery, where it is filtered and pumped up to injection system pressure. A diagram of the injection system at 15-21-1-25W1 is shown in Figure 10.

Based on past experience, Tundra does not believe that the produced water can be cleaned to the required specifications feasibly. Therefore, Tundra plans to use source water from a Swan River well as a source supply for Waskada Unit No. 23.

A mixture of produced waters from the Lower Amaranth has been extensively tested for compatibility with the 100/05-09-002-25W1 source Swan River water, by a highly qualified third party, prior to implementation of waterflood by Tundra. All potential mixture ratios between the two waters, under a range of temperatures, have been simulated and evaluated for scaling and precipitate producing tendencies. Testing of multiple scale inhibitors has also been conducted and minimum inhibition concentration requirements for the source water volume determined. At present, continuous scale inhibitor application is maintained into the source water stream out of the Waskada injection water facility. Review and monitoring of the source water scale inhibition system is also part of an existing routine maintenance program.

Injection Wells

New water injection wells for the proposed Waskada Unit No. 23 will be cleaned out and configured downhole for injection as shown in Figure 11. The horizontal injection well will be stimulated by multiple hydraulic fracture treatments to obtain suitable injection. Tundra has extensive experience with horizontal fracturing in the area, and all jobs are rigorously programmed and monitored during execution. This helps ensure optimum placement of each fracture stage to prevent, or minimize, the potential for out-of-zone fracture growth and thereby limit the potential for future out-of-zone injection.

The new water injection wells will be placed on injection after the pre-production period and approval to inject. Wellhead injection pressures will be maintained below the least value of either:

- the area specific known and calculated fracture gradient, or
- the licensed surface injection Maximum Allowable Pressure (MOP)

Tundra has a thorough understanding of area fracture gradients. A management program will be utilized to set and routinely review injection target rates and pressures vs. surface MOP and the known area formation fracture pressures.

All new water injection wells are surface equipped with injection volume metering and rate/pressure control. An operating procedure for monitoring water injection volumes and meter balancing will also be utilized to monitor the entire system measurement and integrity on a daily basis.

The proposed Waskada Unit No. 23 horizontal water injection well rate is forecasted to average 20 - 40 m^3 WPD, based on expected reservoir permeability and pressure.

Reservoir Pressure

No representative initial pressure surveys are available for the proposed Waskada Unit No. 23 project area in the Lower Amaranth producing zone. Tundra assumed operatorship of these properties in 2015 and has been unable to recover any pressure surveys from the original operators.

Reservoir Pressure Management during Waterflood

Tundra expects it will take 2-4 years to re-pressurize the reservoir due to cumulative primary production voidage and pressure depletion. Initial monthly Voidage Replacement Ratio (VRR) is expected to be approximately 1.25 to 2.00 within the patterns during the fill up period. As the cumulative VRR approaches 1, target reservoir operating pressure for waterflood operations will be 75-90% of original reservoir pressure.

Waterflood Surveillance and Optimization

Waskada Unit No. 23 EOR response and waterflood surveillance will consist of the following:

- Regular production well rate and WCT testing
- Daily water injection rate and pressure monitoring vs target
- Water injection rate/pressure/time vs. cumulative injection plot
- Reservoir pressure surveys as required to establish pressure trends
- Pattern VRR
- Potential use of chemical tracers to track water injector/producer responses
- Use of some or all of: Water Oil Ratio (WOR) trends, Log WOR vs Cum Oil, Hydrocarbon Pore Volumes Injected, Conformance Plots

The above surveillance methods will provide an ever increasing understanding of reservoir performance, and provide data to continually control and optimize the Waskada Unit No. 23 waterflood operation. Controlling the waterflood operation will significantly reduce or eliminate the potential for out-of-zone

injection, undesired channeling or water breakthrough, or out-of-Unit migration. The monitoring and surveillance will also provide early indicators of any such issues so that waterflood operations may be altered to maximize ultimate secondary reserves recovery from the proposed Waskada Unit No. 23.

On Going Reservoir Pressure Surveys

Any pressures taken during the operation of the proposed unit will be reported within the Annual Progress Reports for Waskada Unit No. 23 as per Section 73 of the Drilling and Production Regulation.

Economic Limits

Under the current Primary recovery method, existing wells within the proposed Waskada Unit No. 23 will be deemed uneconomic when the net oil rate and net oil price revenue stream becomes less than the current producing operating costs. With any positive oil production response under the proposed Secondary recovery method, the economic limit will be significantly pushed out into the future. The actual economic cut off point will then again be a function of net oil price, the magnitude and duration of production rate response to the waterflood, and then current operating costs. Waterflood projects generally become uneconomic to operate when Water Oil Ratios (WOR's) exceed 100.

WATER INJECTION FACILITIES

The Waskada Unit No. 23 waterflood operation will utilize the existing Tundra operated source well supply and water plant (WP) facilities located at 15-9-2-25 W1M and 15-21-1-25W1M Batteries. Injection wells will be connected to the existing high pressure water pipeline system supplying other Tundra-operated Waterflood Units.

A complete description of all planned system design and operational practices to prevent corrosion related failures is shown in Figure 12 and Figure 12a.

NOTIFICATION OF MINERAL AND SURFACE RIGHTS OWNERS

Tundra is in the process of notifying all mineral rights and surface rights owners of this proposed EOR project and formation of Waskada Unit No. 23. Copies of the notices and proof of service, to all surface and mineral rights owners will be forwarded to the Petroleum Branch when available to complete the Waskada Unit No. 23 Application.

Waskada Unit No. 23 Unitization, and execution of the formal Waskada Unit No. 23 Agreement by affected Mineral Owners, is expected during Q3 2017. Copies of same will be forwarded to the Petroleum Branch, when available, to complete the Waskada Unit No. 23 Application.

Should the Petroleum Branch have further questions or require more information, please contact Robert Prefontaine at 403.767.1248 or by email at robert.prefontaine@tundraoilandgas.com.

TUNDRA OIL & GAS PARTNERSHIP

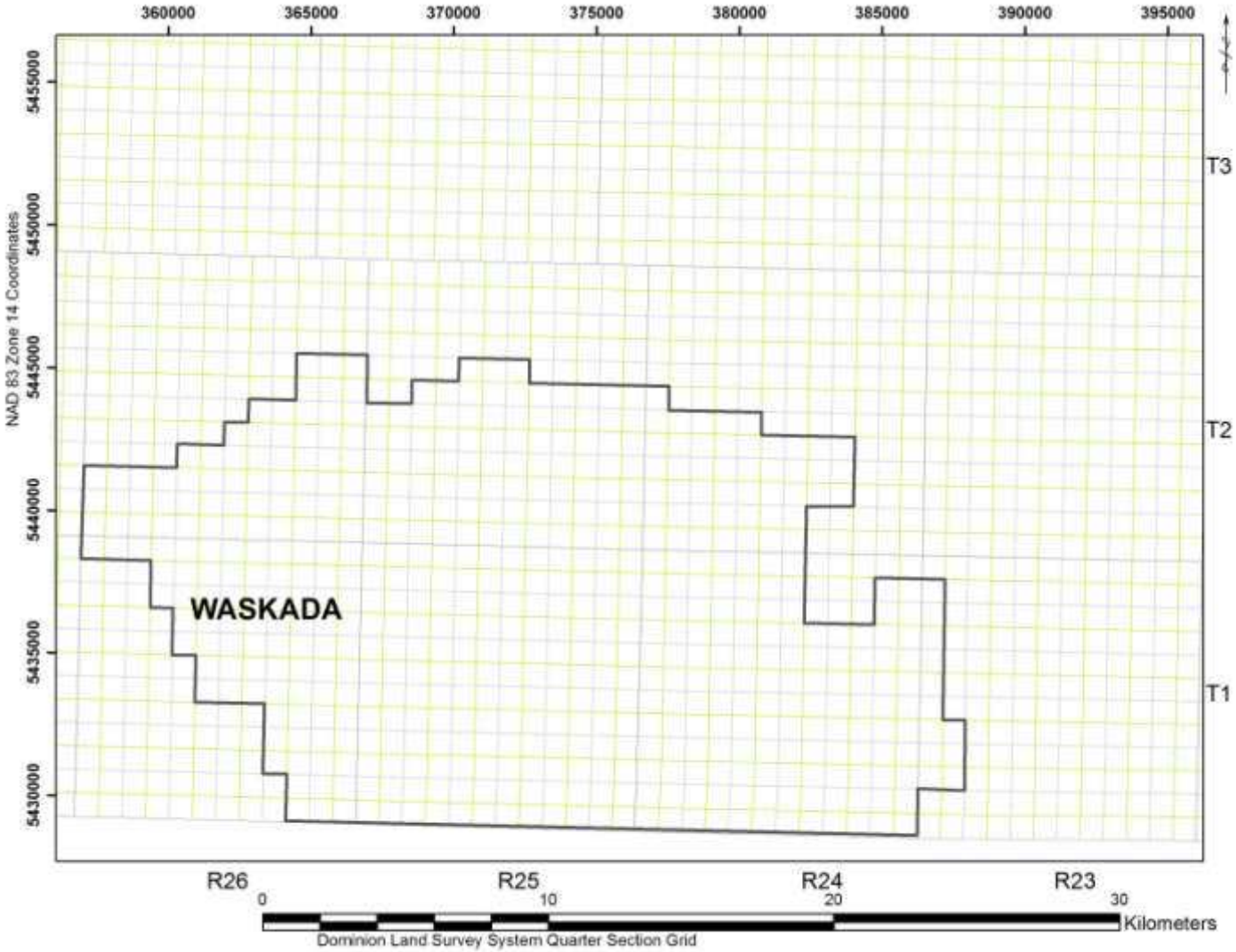
Original Signed by Robert Prefontaine, June 30, 2017, in Calgary, AB

Proposed Waskada Unit No. 23

Application for Enhanced Oil Recovery Waterflood Project

List of Figures

Figure No. 1



Waskada Field (03)

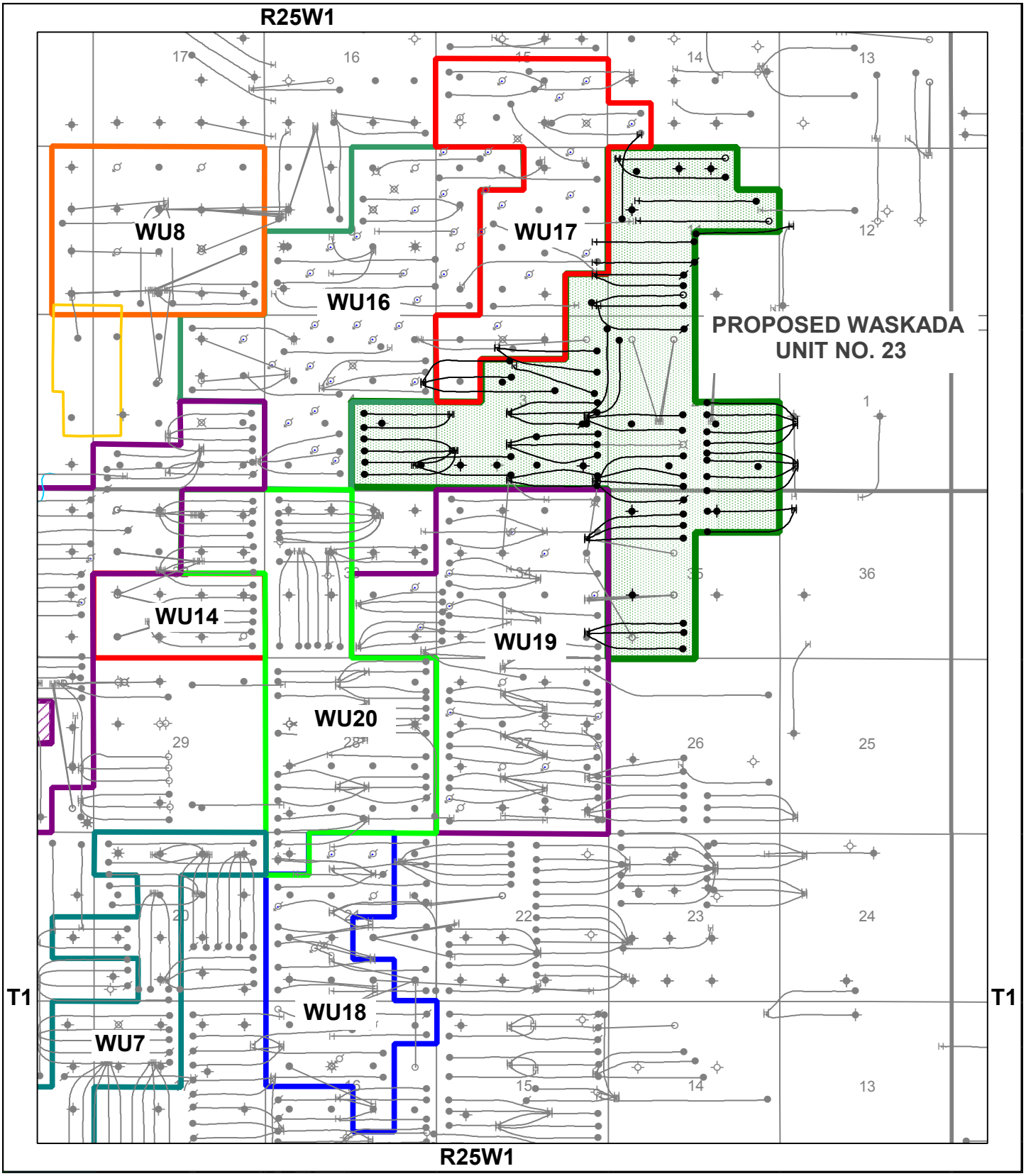


Figure No. 2 Datum: NAD27 Projection: Stereographic DLS Version AB: ATS 2.6, BC: PRB 2.0, SK: STS 2.5, MB: MLI07

Well Legend

- Abandoned Gas
- Abandoned Heavy Oil
- Abandoned Oil
- Abandoned Oil & Gas
- Abandoned Service
- Canceled
- Drilling
- Dry & Abandoned
- Gas
- Gas Injection
- Heavy Oil
- Injection
- Location
- Oil
- Oil & Gas
- Service or Drain
- Suspended
- Suspended Gas
- Suspended Heavy Oil
- Suspended Oil
- Suspended Oil & Gas

Lists

- Wells - Proposed WU23 Well List

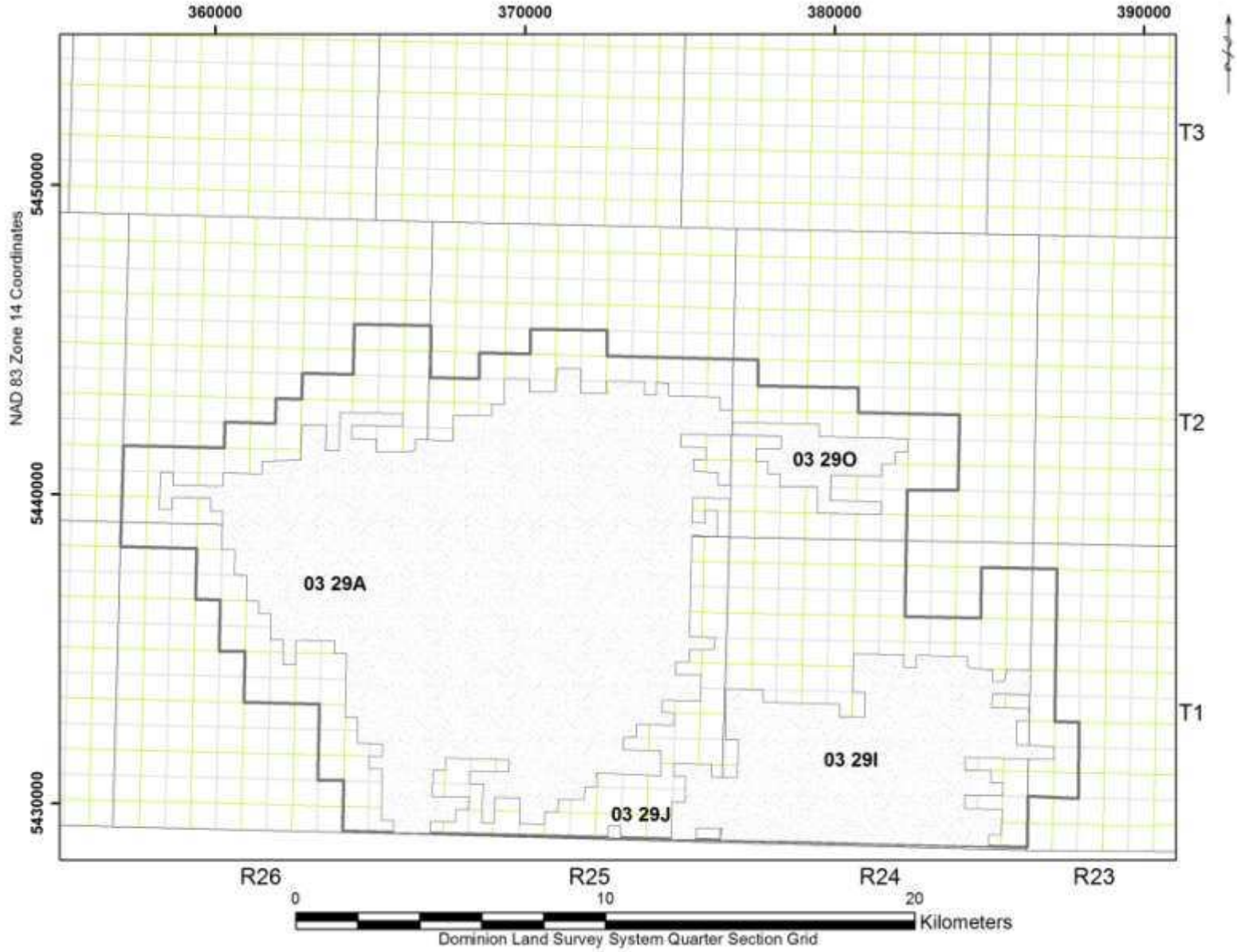
Figure No. 2

Proposed Waskada Unit No. 23 Area

Sharon Baker, June 27, 2017

\\FS02\AccuMapData$\Sharon.Baker\New_AccuMap\Waskada Units\Waskada Approved Unit Map.accumap

Figure No. 3



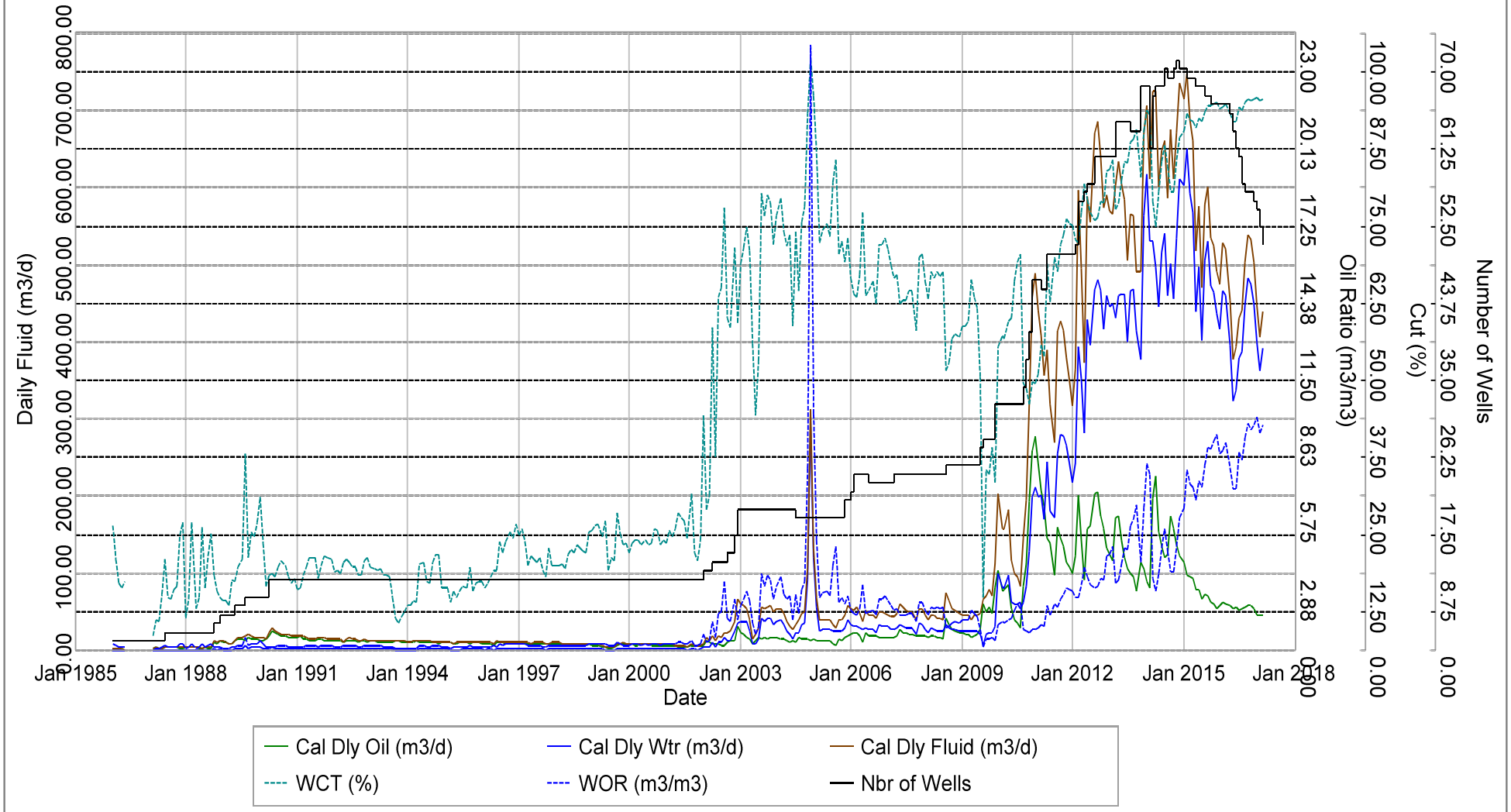
Waskada Lower Amaranth Pools (03 29A, I, J, K & O)

Well Information as of 4/20/2017 - Group Well Report

Figure No. 4

Production Graph

Group:	proposed wu23 well list.lwell	**On Prod:**	1985-12 to 2017-02	**Cum Oil:**	406154.3 m3
# of Wells:	80	**Prod Form:**	AMRNTHL; AMRNTH	**Cum Gas:**	8069.2 E3m3
Fluid:	Oil	**Field:**	WASKADA (MB3)	**Cum Wtr:**	1081709.3 m3
Mode:	Producing; Abandoned Zone; Suspended; Pumping; Abandoned...	**Pool Code:**	MB000329A	**Cum Inj Oil:**	0.0 m3
		Unit Code:	329A05	**Cum Inj Gas:**	0.0 E3m3
				Cum Inj Wtr:	0.0 m3



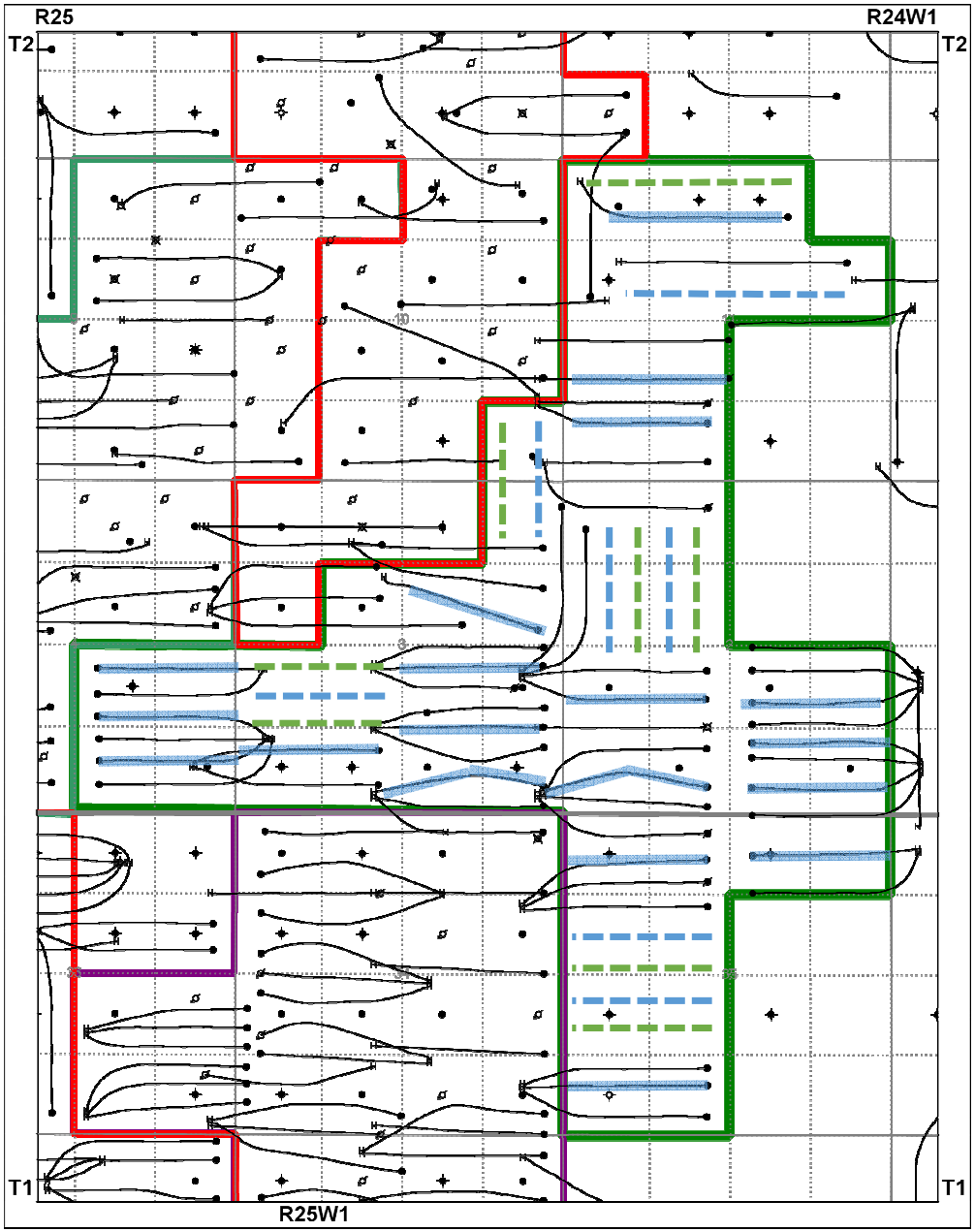

R25
R24W1
T2
T2
T1
T1
R25W1
Potential Injector Conversion
Injector Drill
Producer Drill

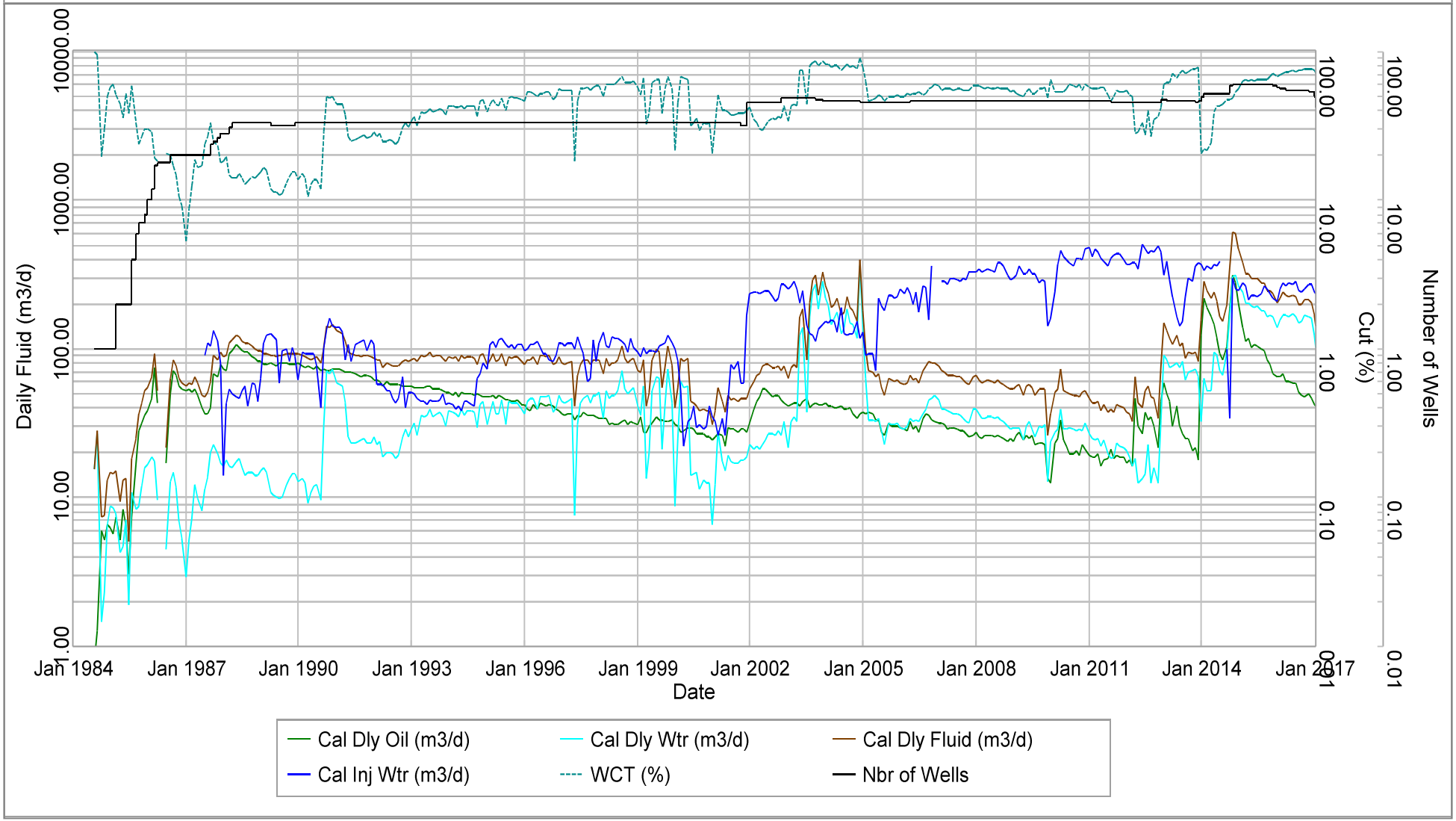
Figure No. 5

Well Information as of 6/15/2017 - Group Well Report

Figure No. 6a

Production Graph

Group:	waskada unit no. 16 well list.lwell	**On Prod:**	1984-07 to 2017-04	**Cum Oil:**	568570.8 m3
# of Wells:	73	**Prod Form:**	AMRNTHL	**Cum Gas:**	2579.0 E3m3
Fluid:	Water Injection; Oil	**Field:**	WASKADA (MB3)	**Cum Wtr:**	604232.4 m3
Mode:	Injection; Producing; Abandoned; Abandoned Zone; Pumping...	**Pool Code:**	MB000329A	**Cum Inj Oil:**	0.0 m3
		Unit Code:	329A16	**Cum Inj Gas:**	0.0 E3m3
				Cum Inj Wtr:	1971878.3 m3



Well Information as of 6/15/2017 - Group Well Report

Figure No. 6b

Production Graph

Group:	waskada unit no. 17 well list.lwell	**On Prod:**	1982-12 to 2017-04	**Cum Oil:**	315297.4 m3
# of Wells:	47	**Prod Form:**	AMRNTHL	**Cum Gas:**	1579.8 E3m3
Fluid:	Oil; Water Injection	**Field:**	WASKADA (MB3)	**Cum Wtr:**	231815.5 m3
Mode:	Producing; Pumping; Abandoned; Injection; Abandoned Zone	**Pool Code:**	MB000329A	**Cum Inj Oil:**	0.0 m3
		Unit Code:	329A17	**Cum Inj Gas:**	0.0 E3m3
				Cum Inj Wtr:	692654.2 m3

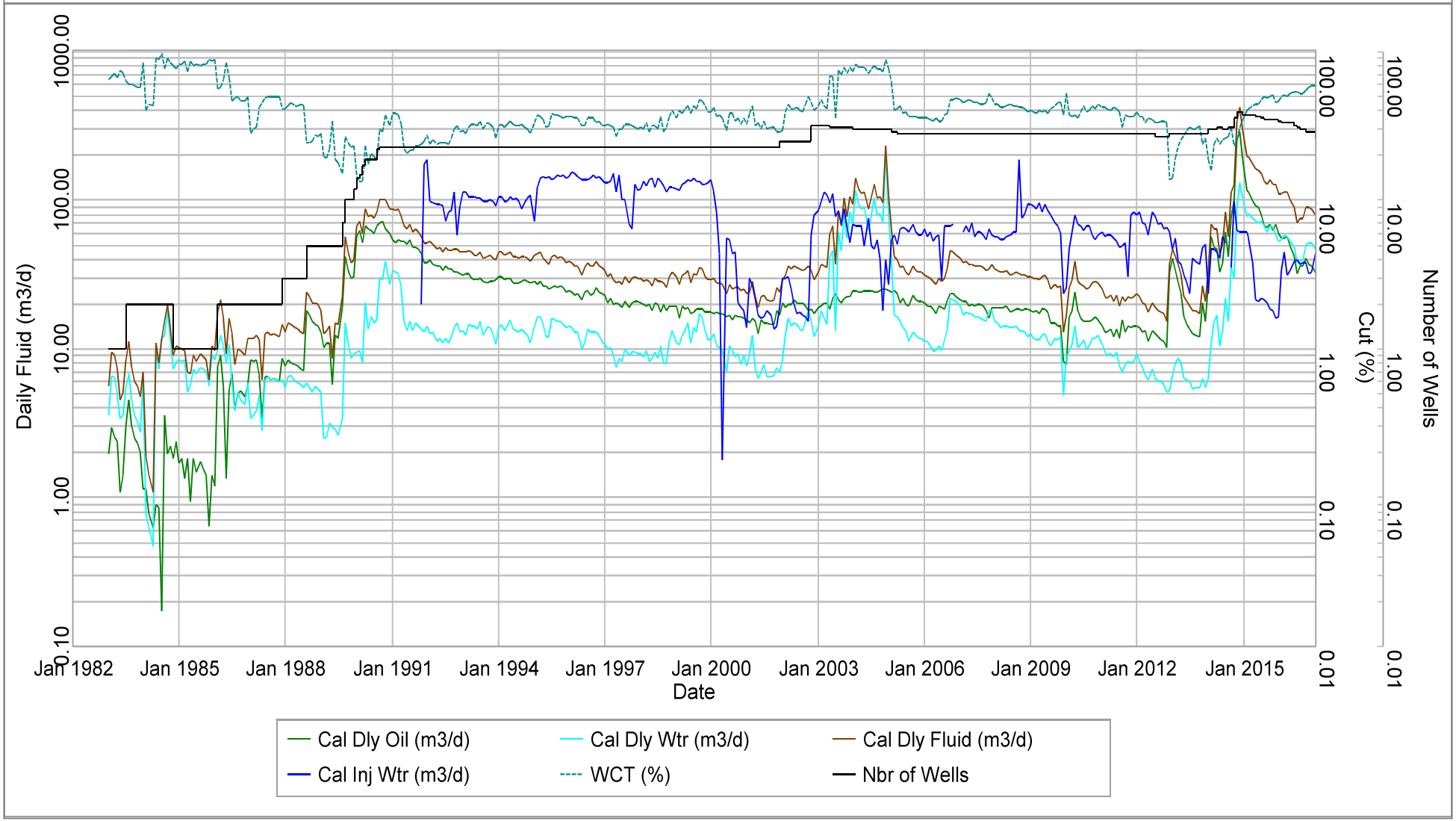


Figure No. 7

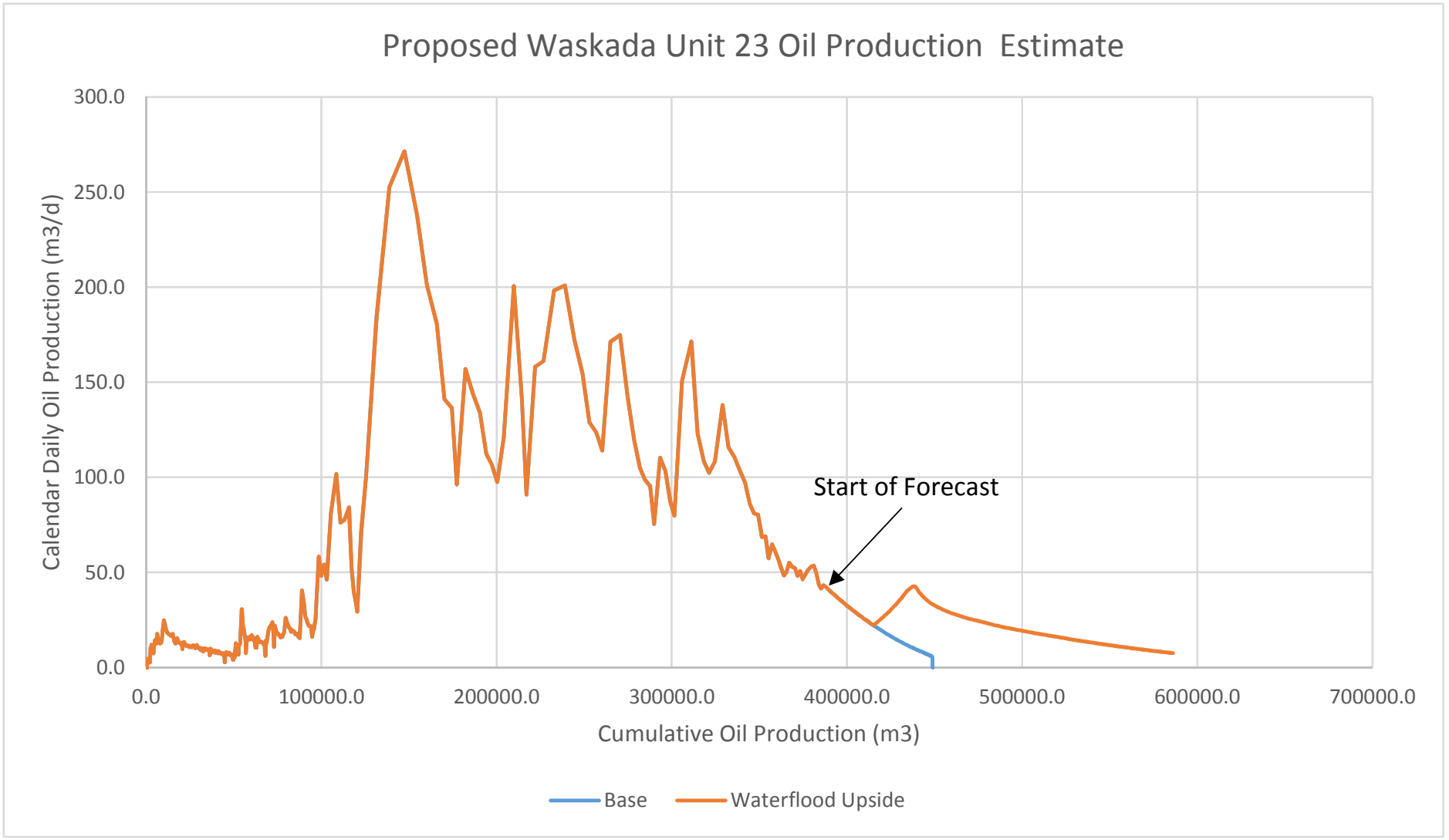
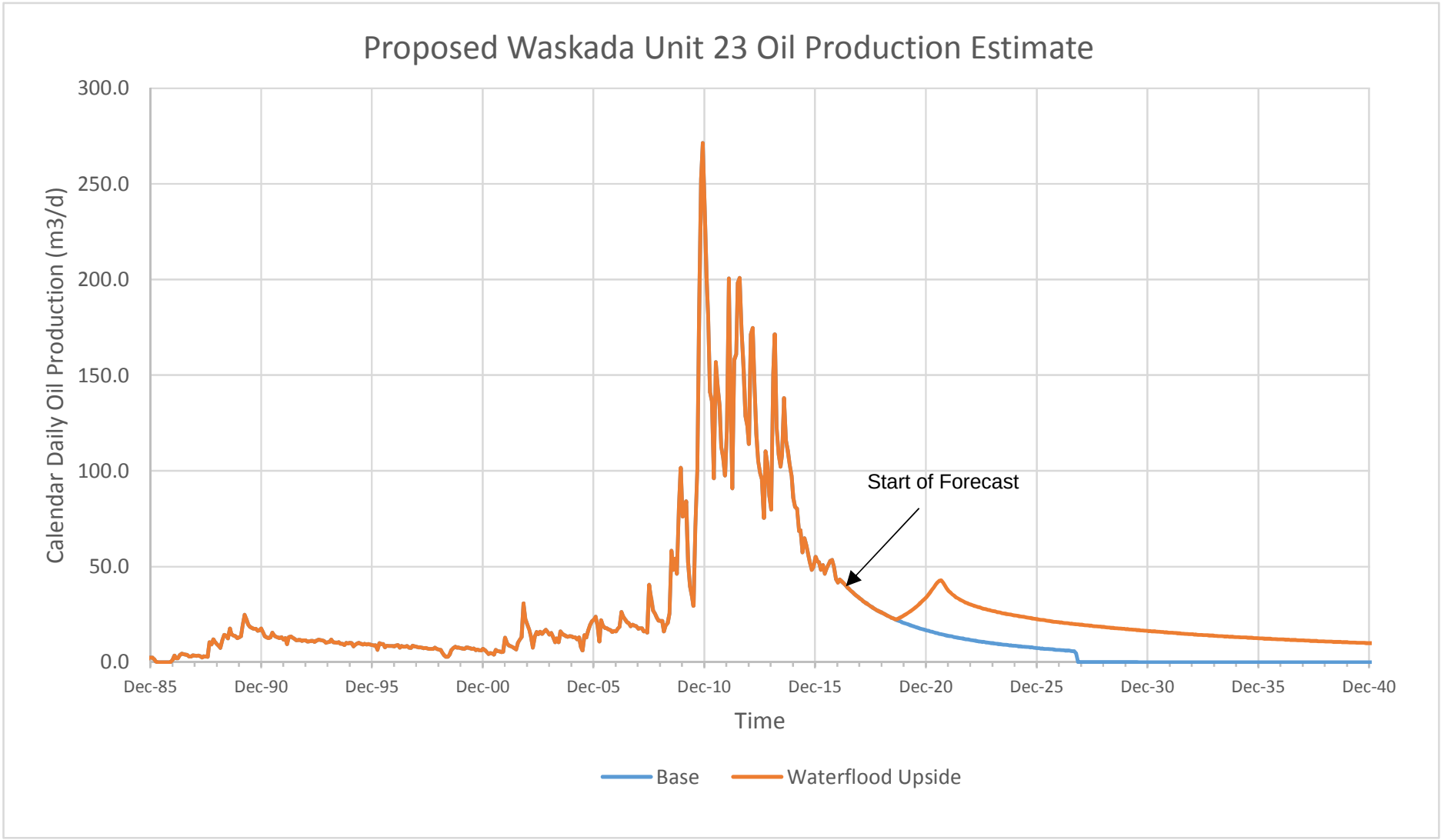

Proposed Waskada Unit 23 Oil Production Estimate
Calendar Daily Oil Production (m3/d)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
0.0
100000.0
200000.0
300000.0
400000.0
500000.0
600000.0
700000.0
Cumulative Oil Production (m3)
Start of Forecast
Base
Waterflood Upside

Figure No. 8


Proposed Waskada Unit 23 Oil Production Estimate
Calendar Daily Oil Production (m3/d)
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Dec-85
Dec-90
Dec-95
Dec-00
Dec-05
Dec-10
Dec-15
Dec-20
Dec-25
Dec-30
Dec-35
Dec-40
Time
Start of Forecast
Base
Waterflood Upside

P-530	M-530	BH-550/555	F-540	F-545	P-505 (P5)	F-500	P-510 (P6)	M-510	P-520 (P7)	M-520	V-565	M-560
CHARGE PUMP PEERLESS	PUMP MOTOR BALDOR HP: 5 RPM: 3450	BUILDING HEATER RUFFNECK FX4 ELECTRIC	WATER FILTER JL FLUID STABILIZERS INC. MAWP: 1379 kPa @ 121°C/-29°C CRN: M-5439.23 S/N: JL9584	WATER FILTER GRAND VALLEY DESIGN INC. MAWP: 1034 kPa @ 204°C/-29°C CRN: L3309.23 S/N: 126	WATER CHARGE PUMP VIKING PUMP OF CANDA INC. S/N: 030717	WATER FILTER JL FILTRATION INC. MAWP: 1034 kPa @ 260°C/-29°C CRN: T1478.2134 S/N: JL2006-054	WATER DISPOSAL PUMP NATIONAL OILWELL MODEL: 100T-4L PUMP #: 10520 S/N: 212720 INPUT: 100HP @ 450 RPM MAX. OUTPUT: 90HP @ 450 RPM	PUMP MOTOR TECO-WESTINGHOUSE HP: 75 HZ: 60, 6# VOLTS: 575 AMP: 69 S/N: K07394290001	WATER INJECTION PUMP NATIONAL OILWELL Model: A-336 TRIPLEX MAX. OUTPUT: 540m3/d @ 2550PSI 6"x2.25" Plunger	PUMP MOTOR TOSHIBA INTERNATIONAL CORP. MODEL: B0754LFJ30MHD01 HP: 75 VOLTS: 575 HZ: 60 RPM: 1775 S/N: 98090337	AIR RECEIVER QUINCY MODEL: X-2 HP: 1/2 HZ: 60, 3# VOLTS: 575 SPEED: 1800 RPM	MOTOR C-560 I/A COMPRESSOR

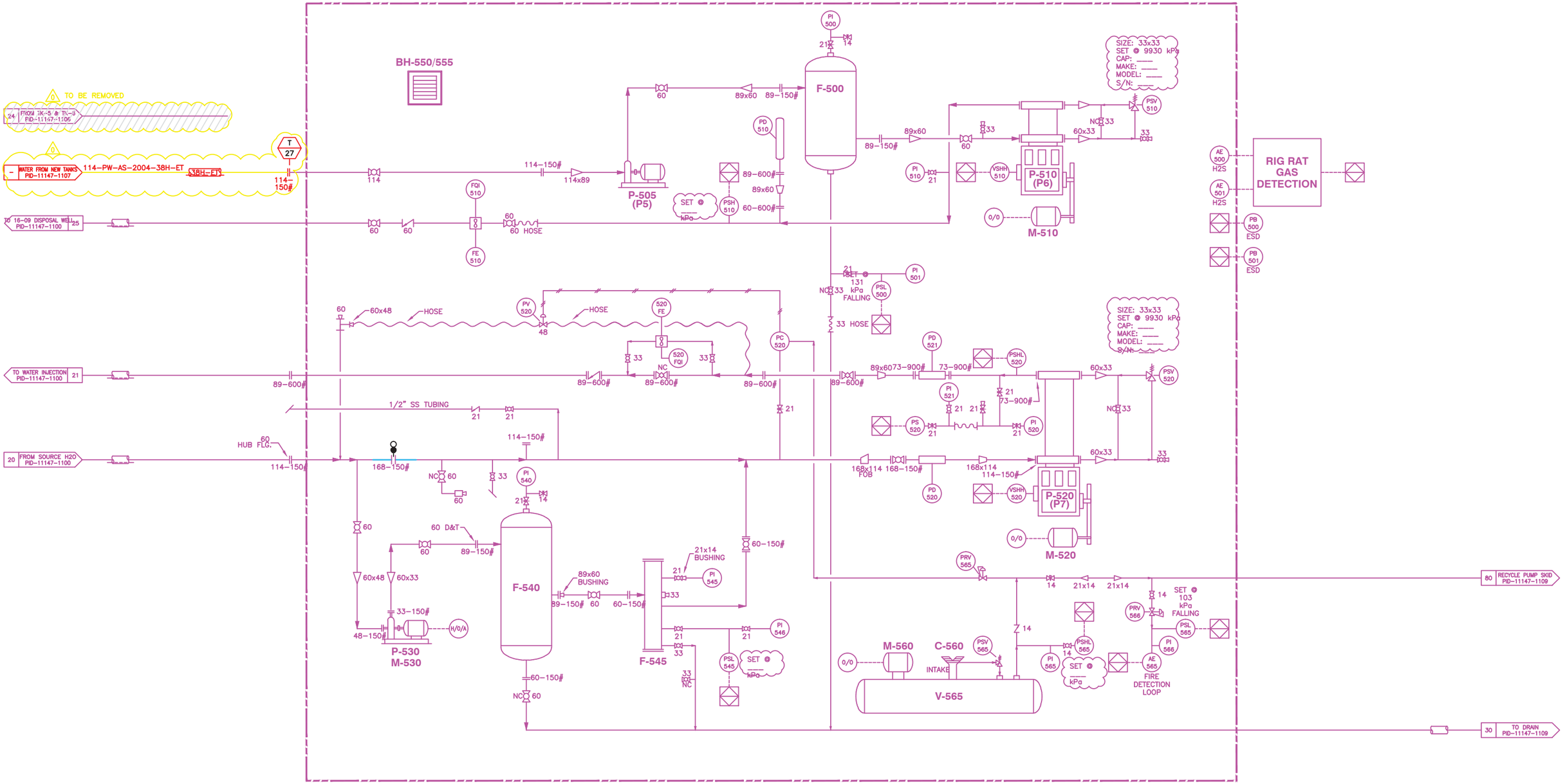


Figure No. 9

XREF: 11147PIDMSTR.DWG
Q:\11147\PID\L1147-1108.DWG
PLOTTED: JUN 25, 2012 10:06 AM

No.	Revision	By	Date	Chk.	E.Chk	E.App	Client
0	2011 ADDITIONS - ISSUED FOR CONSTRUCTION (GLE #11147)	AMP	12-02-28	CDK			
B	2011 ADDITIONS - ISSUED FOR REVIEW (GLE # 11147)	AMP	12-02-06	CDK			
A	2011 ADDITIONS - AS BUILT (GLE # 11147)	STK	11-10-14	MBG			

Stamps

Engineering Record		
RFE		
Client		
Approved		
Eng. Check		
Date		
Eng. By		
	IFC	AB

eogresources
GAS LIQUIDS ENGINEERING

WASKADA 15-09 BATTERY

PROCESS & INSTRUMENTATION DIAGRAM
WATER INJECTION BUILDING
LSD 15-09-002-25 W1M

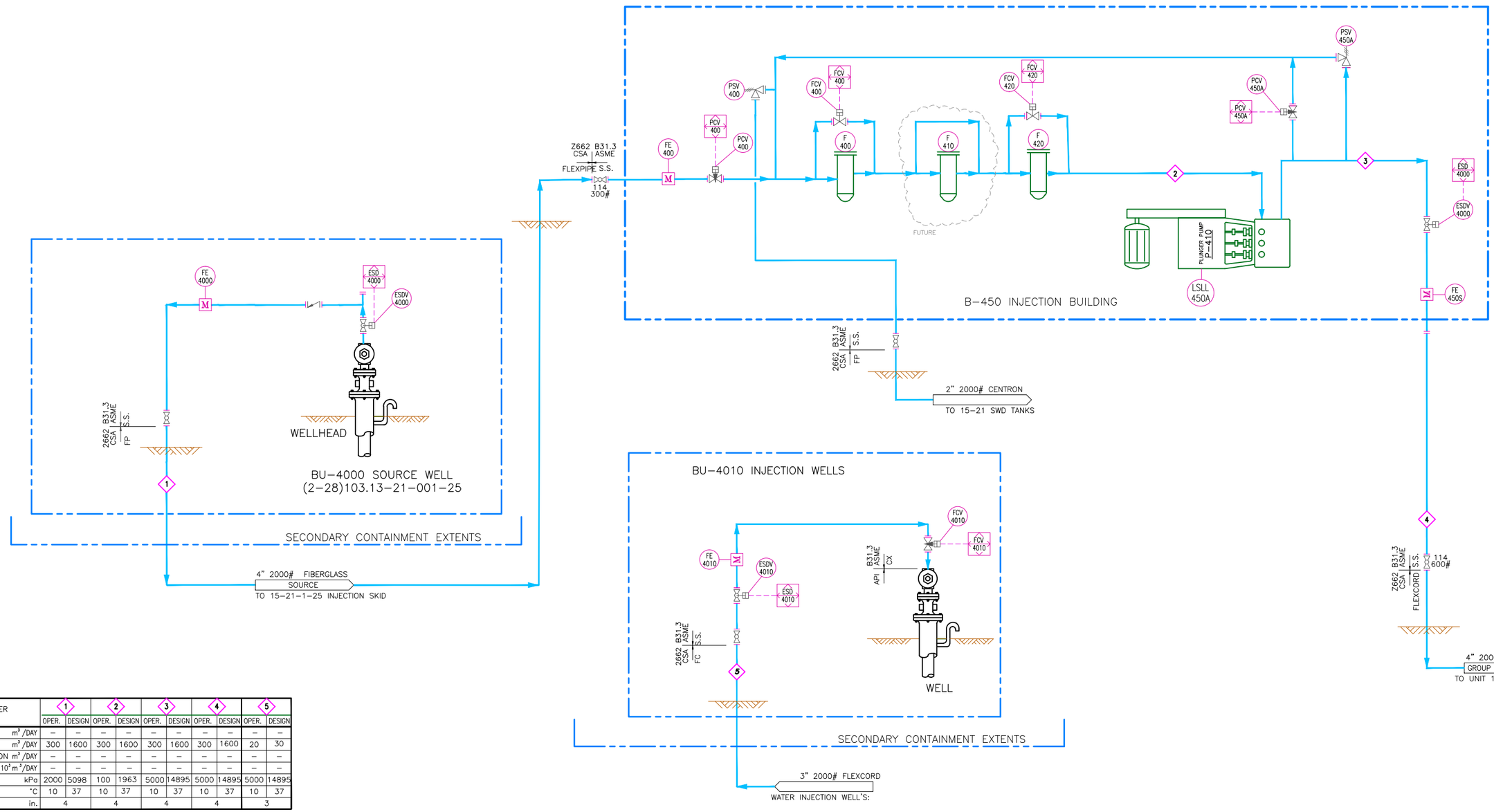
Scale	Size	Drawing Number	Rev.
NONE	D	PID-11147-1108	0

F-400
SS 6 BAG WATER FILTER
MAKE: PECO
MODEL NO.:
CAP: 1100 M3/D (200 GPM)
MAWP: 150 PSI @ 225°F
FILTER: 1 MICRON NOMINAL

F-410
SS 6 BAG WATER FILTER
FUTURE BAG FILTER

F-420
SS CARTRIDGE WATER FILTER
MAKE: PECO
MODEL NO.:
CAP:
MAWP: 150 PSI @ 225°F
FILTER: 0.5 MICRON NOMINAL

P-450
WATER INJECTION PUMP
VENDOR: Gardner Denver 100T-L
PLUNGERS: 2.25" RATE FOR 12877kPa (1869PSI)
CAP: 225-450M3/DAY
DRIVER: 100 HP TECO WESTINGHS
DP: 1200 RPM, 600V/3P/60Hz
S/N:



STREAM NUMBER	1		2		3		4		5	
COMPONENT	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN	OPER.	DESIGN
OIL m^3/DAY	–	–	–	–	–	–	–	–	–	–
WATER m^3/DAY	300	1600	300	1600	300	1600	300	1600	20	30
PROD. EMULSION m^3/DAY	–	–	–	–	–	–	–	–	–	–
PROD. GAS $10^3 m^3$/DAY	–	–	–	–	–	–	–	–	–	–
PRESSURE kPa	2000	5098	100	1963	5000	14895	5000	14895	5000	14895
TEMPERATURE °C	10	37	10	37	10	37	10	37	10	37
LINE SIZE in.	4		4		4		4		3	

REV	DESCRIPTION	BY	DATE	CHK	APP
1	ISSUED FOR REVIEW	YQ	17MAR2017		

REFERENCE DRAWING
–

NOTES:

Figure No. 10

TUNDRA OIL & GAS PARTNERSHIP

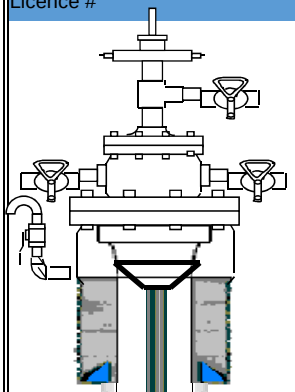
PROCESS FLOW DIAGRAM
15-21-1-25 W1M

PROCESS FLOW DIAGRAM 1 OF 1
PILOT WATER INJECTION

DRAWN BY:	SCALE:	AFE:	DRAWING NUMBER:	REV NO:
YQ	NTS		15-21-001-25W1-PFD-001	1

Figure No. 11

Licence #



Tundra Oil & Gas

WELLBORE SCHEMATIC

WELL NAME: WASKADA UNIT 23 HZNTL Cemented Liner **DATE:** 5/5/2016

LOCATION: **Prepared by:** GP

MEASUREMENTS ARE IN METERS / DEPTHS ARE MEASURED IN DEPTH KB UNLESS OTHERWISE NOTED

ELEVATIONS					WELLHEAD DESCRIPTION		
KB EL	GRD EL	KB to GRD	KB to SCF	KB to TH	Make / Type	Size / Rating	
470.46	466.80	3.7	3.77	2.7	Metra	11"x 8 5/8"	3000 psi

CASING	O.D. mm	WEIGHT kg/m	GRADE	I.D. mm	LANDED DEPTH	TVD	TOP
SURFACE	219.1	35.72	J-55	205.66	172.0	172.0	0
PRODUCTION	139.7	25.3	E-80	124.3	1717.0	909.5	0
LINER	N/A						

K.O.P.	591.0
PBTD	1700.0 Est

REMARKS 5.5" Monobore well. Both strings cemented to surface.

FORMATION	PERFORATIONS INTERVAL	TVD	REMARKS
Lower Amarath	1151.9-1650.0	909.0	16 Stages - Baker Frac Ports
			16 x 5T Fracs x 1.0m3/min x 100-800 conc

WELLBORE EQUIPMENT

No. joints	DESCRIPTION	LENGTH	DEPTH KB
1	73mm ENC Re-Entry "Mule shoe"	0.13	3.04
1	73mm ENC Pup Joint	1.24	4.28
1	73mm ENC Tryton TX-8 "DG" mechanical set packer	2.17	6.45
1	73mm ENC Tryton RH-Release on-off barrel	0.55	7.00
Est 119 jnts	73mm TK-99 IC Tubing or 73mm Polycoer Lined Tubing	1138.7	1145.70
1	73mm ENC EUE tubing nipple	0.1	1145.80
1	73mm Weatherford split bushing coated tubing hanger	0.21	1146.01
			1146.01
	Subtract 1.0m from bottom of packer to COE	-1.00	1145.01
			1145.01
			1145.01
			1145.01
			1145.01
			1145.01
			1145.01

WEIGHT OF TBG STRING (daN)	9,321	TOTAL TUBING STRING	1142.1	
TENSION / COMPRESSION (+/- daN)	6,000	KB to THF	2.7	
LANDED STRING WEIGHT	15,321	STRETCH/ COMPRESSION m	0.21	1145.01

ROD STRING

No. RODS	SIZE	DESCRIPTION	GRADE	NEW / USED	LENGTH	DEPTH KB
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00
						0.00

BOTTOM HOLE PUMP

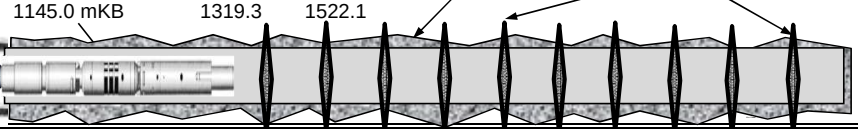
DESCRIPTION:				PUMP No.	
BARREL TYPE:		PLUNGER TYPE:		MAX. STROKE:	
BALLS/SEATS:		PULL ROD:		FISH NECK:	
COMMENTS:					

Inhibited Annular Fluid

TOP OF Baker Frac Ports

PKR COE 1145.0 mKB

	1151.9	1353.1	1555.9
	1185.7	1386.9	1589.7
	1219.6	1420.7	1623.4
	1252.0	1454.5	1650.0
	1285.6	1488.3	
	1319.3	1522.1	



Waskada Unit No. 23

EOR Waterflood Project

Planned Corrosion Control Program **

Source Well

- Continuous downhole corrosion inhibition
- Continuous surface corrosion inhibitor injection
- Downhole scale inhibitor injection
- Corrosion resistant valves and internally coated surface piping

Pipelines

- Source well to 15-9-2-25 Water Plant – Fiberglass
- New High Pressure Pipeline to Unit 20 injection wells – 2000 psi high pressure Fiberglass

Facilities

- 15-9-2-25 Water Plant and New Injection Pump Station
    - Plant piping – 600 ANSI schedule 80 pipe, Fiberglass or Internally coated
    - Filtration – Stainless steel bodies and PVC piping
    - Pumping – Ceramic plungers, stainless steel disc valves
    - Tanks – Fiberglass shell, corrosion resistant valves

Injection Wellhead / Surface Piping

- Corrosion resistant valves and stainless steel and/or internally coated steel surface piping

Injection Well

- Casing cathodic protection where required
- Wetted surfaces coated downhole packer
- Corrosion inhibited water in the annulus between tubing / casing
- Internally coated tubing surface to packer
- Surface freeze protection of annular fluid
- Corrosion resistant master valve
- Corrosion resistant pipeline valve

Producing Wells

- Casing cathodic protection where required
- Downhole batch corrosion inhibition as required
- Downhole scale inhibitor injection as required

Figure 12

** subject to final design and engineering

Waskada Unit No. 23

EOR Waterflood Project

Planned Corrosion Control Program **

Source Well

- Continuous downhole corrosion inhibition
- Continuous surface corrosion inhibitor injection
- Downhole scale inhibitor injection
- Corrosion resistant valves and internally coated surface piping

Pipelines

- Source well to 15-21-2-25 Water Plant – Composite Flex Cord
- New High Pressure Pipeline to Unit 20 injection wells is a combination of:
    - 2000 psi high pressure Fiberglass
    - 2000 psi high pressure Flex-Cord
    - 600# ANSI carbon steel - internally coated

Facilities

- 15-21-2-25 Water Plant and New Injection Pump Station
    - Plant piping – 600 ANSI schedule 80 316 Stainless steel pipe
    - Filtration – 316 Stainless steel vessels
    - Pumping – Ceramic plungers, stainless steel disc valves

Injection Wellhead / Surface Piping

- Corrosion resistant valves and stainless steel and/or internally coated steel surface piping

Injection Well

- Casing cathodic protection where required
- Wetted surfaces coated downhole packer
- Corrosion inhibited water in the annulus between tubing / casing
- Internally coated tubing surface to packer
- Surface freeze protection of annular fluid
- Corrosion resistant master valve
- Corrosion resistant pipeline valve

Producing Wells

- Casing cathodic protection where required
- Downhole batch corrosion inhibition as required
- Downhole scale inhibitor injection as required

Figure 12a

** subject to final design and engineering

Proposed Waskada Unit No. 23

Application for Enhanced Oil Recovery Waterflood Project

List of Tables

TABLE NO. 1: TRACT PARTICIPATION FOR PROPOSED WASKADA UNIT NO. 23

Working Interest				Royalty Interest		Tract Participation		
Tract No.	Land Description	Owner	Share (%)	Owner	Share (%)	Tract (%)	Per Owner Tract (%)	
1	03-35-001-25W1M	Tundra Oil & Gas	100%	4138598 Manitoba Ltd.	50%	2.043166978%	1.021583489%	
				4138598 Manitoba Ltd.	50%		1.021583489%	
2	04-35-001-25W1M	Tundra Oil & Gas	100%	4138598 Manitoba Ltd.	50%	2.105673856%	1.052836928%	
				4138598 Manitoba Ltd.	50%		1.052836928%	
3	05-35-001-25W1M	Tundra Oil & Gas	100%	4138598 Manitoba Ltd.	50%	1.115199432%	0.557599716%	
				4138598 Manitoba Ltd.	50%		0.557599716%	
4	06-35-001-25W1M	Tundra Oil & Gas	100%	4138598 Manitoba Ltd.	50%	1.094424810%	0.547212405%	
				4138598 Manitoba Ltd.	50%		0.547212405%	
5	11-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	1.388197957%	1.388197957%	
6	12-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	1.444225687%	1.444225687%	
7	13-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	1.915181901%	1.915181901%	
8	14-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	1.963844142%	1.963844142%	
9	15-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	2.409813914%	2.409813914%	
10	16-35-001-25W1M	Tundra Oil & Gas	100%	61454 Manitoba Ltd.	100%	2.427011324%	2.427011324%	
11	01-02-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.530887637%	1.530887637%	
12	02-02-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.568256862%	1.568256862%	
13	03-02-002-25W1M	Tundra Oil & Gas	100%	MBR Holdings Ltd.	75%	3.513563546%	2.635172660%	
				D&D Oil Company Ltd.	25%		0.878390887%	
14	04-02-002-25W1M	Tundra Oil & Gas	100%	MBR Holdings Ltd.	75%	3.676498670%	2.757374003%	
				D&D Oil Company Ltd.	25%		0.919124668%	
15	05-02-002-25W1M	Tundra Oil & Gas	100%	MBR Holdings Ltd.	69.65625%	2.065154404%	1.438509115%	
				D&D Oil Company Ltd.	23.21875%		0.479503038%	
				Missing Royalty Owner 34	7.125%		0.147142251%	
16	06-02-002-25W1M	Tundra Oil & Gas	100%	MBR Holdings Ltd.	69.65625%	2.032956434%	1.416081216%	
				D&D Oil Company Ltd.	23.21875%		0.472027072%	
				Missing Royalty Owner 34	7.125%		0.144848146%	
17	07-02-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.853595870%	1.853595870%	
18	08-02-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.873329566%	1.873329566%	
19	11-02-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	1.077655719%	1.077655719%	
20	12-02-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	2.436668168%	2.436668168%	
21	13-02-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	2.109665899%	2.109665899%	
22	14-02-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	1.097348860%	1.097348860%	
23	01-03-002-25W1M	Tundra Oil & Gas	100%	McFamco Ltd.	16.667%	2.905860520%	0.484319773%	
				Jimco Ltd.	16.667%		0.484319773%	
				McFamco Ltd.	33.333%		0.968610487%	
				Jimco Ltd.	33.333%		0.968610487%	
24	02-03-002-25W1M	Tundra Oil & Gas	100%	McFamco Ltd.	16.667%	2.870604242%	0.478443609%	
				Jimco Ltd.	16.667%		0.478443609%	
				McFamco Ltd.	33.333%		0.956858512%	
				Jimco Ltd.	33.333%		0.956858512%	
25	03-03-002-25W1M	Tundra Oil & Gas	100%	M&V Oils Ltd.	100%	2.011771720%	2.011771720%	
26	04-03-002-25W1M	Tundra Oil & Gas	100%	M&V Oils Ltd.	100%	1.994729366%	1.994729366%	
27	05-03-002-25W1M	Tundra Oil & Gas	100%	M&V Oils Ltd.	92.7125%	1.062439393%	0.985014122%	
				Missing Royalty Owner 33	7.2875%		0.077425271%	
28	06-03-002-25W1M	Tundra Oil & Gas	100%	M&V Oils Ltd.	92.7125%	1.063897328%	0.986365810%	
				Missing Royalty Owner 33	7.2875%		0.077531518%	
29	07-03-002-25W1M	Tundra Oil & Gas	100%	McFamco Ltd.	15.47083000%	1.803764377%	0.279057320%	
				Jimco Ltd.	15.47083000%		0.279057320%	
				McFamco Ltd.	30.94167000%		0.558114821%	
				Jimco Ltd.	30.94167000%		0.558114821%	
				Heritage Royalty Resource Corp	7.17500000%		0.129420094%	Petroleum Only
30	08-03-002-25W1M	Tundra Oil & Gas	100%	McFamco Ltd.	15.47083000%	1.851750797%	0.286481218%	
				Jimco Ltd.	15.47083000%		0.286481218%	
				McFamco Ltd.	30.94167000%		0.572962621%	
				Jimco Ltd.	30.94167000%		0.572962621%	
				Heritage Royalty Resource Corp	7.17500000%		0.132863120%	Petroleum Only
31	09-03-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	2.683374220%	2.683374220%	
32	10-03-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	3.039986591%	3.039986591%	
33	11-03-002-25W1M	Tundra Oil & Gas	100%	Patlet Ventures Ltd.	100%	3.097285354%	3.097285354%	
34	16-03-002-25W1M	Tundra Oil & Gas	100%	60145 Manitoba Ltd.	100%	2.038245970%	2.038245970%	
35	01-04-002-25W1M	Tundra Oil & Gas	100%	Judith Anne Sheppard	33.333%	2.437473669%	0.812483098%	
				Lillian Linda Smith	33.334%		0.812507473%	
				Katherine P. Trickett (Estate)	33.333%		0.812483098%	
36	02-04-002-25W1M	Tundra Oil & Gas	100%	Judith Anne Sheppard	33.333%	2.567105005%	0.855693111%	
				Lillian Linda Smith	33.334%		0.855718782%	
				Katherine P. Trickett (Estate)	33.333%		0.855693111%	
37	07-04-002-25W1M	Tundra Oil & Gas	100%	Judith Anne Sheppard	33.333%	3.440355933%	1.146773843%	
				Lillian Linda Smith	33.334%		1.146808247%	
				Katherine P. Trickett (Estate)	33.333%		1.146773843%	
38	08-04-002-25W1M	Tundra Oil & Gas	100%	Judith Anne Sheppard	33.333%	3.507075862%	1.169013597%	
				Lillian Linda Smith	33.334%		1.169048668%	
				Katherine P. Trickett (Estate)	33.333%		1.169013597%	
39	01-10-002-25W1M	Tundra Oil & Gas	100%	Nelson Oils Limited	100%	1.097919508%	1.097919508%	
40	03-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.560629488%	1.560629488%	
41	04-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.588316687%	1.588316687%	
42	05-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.132759849%	1.132759849%	
43	06-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.107112580%	1.107112580%	
44	09-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.184930126%	1.184930126%	
45	10-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.336680100%	1.336680100%	
46	11-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.276497183%	1.276497183%	
47	12-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.084588112%	1.084588112%	
48	13-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	1.652966995%	1.652966995%	
49	14-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	2.986634057%	2.986634057%	
50	15-11-002-25W1M	Tundra Oil & Gas	100%	Minister of Finance - Manitoba	100%	2.872923332%	2.872923332%	
						100.000000000%	**100.000000000%**	

TABLE NO. 2: TRACT FACTOR CALCULATIONS FOR WASKADA UNIT NO. 23

TRACT FACTORS BASED ON OIL-IN-PLACE (OOIP) - CUMULATIVE PRODUCTION & LAST 12 MONTHS OF PRODUCTION TO FEBRUARY 2017

LS-SE	Tract	OOIP (m3)	HZ Wells Cum Alloc Prod (m3)	Vert Wells Cum Prodn (m3)	Sum Hz + Vert Alloc Cum Prodn	OOIP - Cum	OOIP-Cum by LSD/Total OOIP	Last 12 Months Alloc Hz Prod (m3)	Last 12 Months Vert Prod (m3)	Sum Hz + Vert Alloc Last 12 Months Prod (m3)	Alloct Last 12 Months Prod by LSD/Total Prod	50% OOIP-Cum + 50% Last 12 Months Prod Tract Factor	Tract
03-35	03-35-001-25W1M	119,778	3,155.2	0.0	3,155.2	116,623	0.02076595890	356.5	0.0	356.5	0.02009738066	0.020431669780	03-35-001-25W1M
04-35	04-35-001-25W1M	121,741	3,302.6	0.0	3,302.6	118,439	0.02108933384	372.9	0.0	372.9	0.02102414329	0.021056738560	04-35-001-25W1M
05-35	05-35-001-25W1M	124,247	82.0	2,395.1	2,477.1	121,770	0.02168246902	5.6	5.4	11.0	0.00062151963	0.011151994320	05-35-001-25W1M
06-35	06-35-001-25W1M	121,226	82.1	0.0	82.1	121,144	0.02157104561	5.6	0.0	5.6	0.00031745059	0.010944248100	06-35-001-25W1M
11-35	11-35-001-25W1M	120,993	1,574.2	0.0	1,574.2	119,418	0.02126375488	115.3	0.0	115.3	0.00650020426	0.013881979570	11-35-001-25W1M
12-35	12-35-001-25W1M	125,279	1,698.9	0.0	1,698.9	123,580	0.02200476495	122.0	0.0	122.0	0.00687974880	0.014442256870	12-35-001-25W1M
13-35	13-35-001-25W1M	123,781	8,178.4	2,190.3	10,368.7	113,412	0.02019433432	321.2	0.0	321.2	0.01810930371	0.019151819010	13-35-001-25W1M
14-35	14-35-001-25W1M	121,226	8,436.8	0.0	8,436.8	112,789	0.02008339860	340.4	0.0	340.4	0.01919348423	0.019638441420	14-35-001-25W1M
15-35	15-35-001-25W1M	115,744	4,582.5	1,508.1	6,090.6	109,654	0.01952506916	508.5	0.0	508.5	0.02867120911	0.024098139140	15-35-001-25W1M
16-35	16-35-001-25W1M	108,150	4,805.1	0.0	4,805.1	103,344	0.01840161998	534.5	0.0	534.5	0.03013860649	0.024270113240	16-35-001-25W1M
01-02	01-02-002-25W1M	111,339	8,763.1	2,371.7	11,134.8	100,204	0.01784242354	226.6	0.0	226.6	0.01277532920	0.015308876370	01-02-002-25W1M
02-02	02-02-002-25W1M	116,622	8,412.6	0.0	8,412.6	108,209	0.01926787551	214.6	0.0	214.6	0.01209726173	0.015682568620	02-02-002-25W1M
03-02	03-02-002-25W1M	119,705	6,990.4	3,098.6	10,089.0	109,616	0.01951829421	900.2	0.0	900.2	0.05075297671	0.035135635460	03-02-002-25W1M
04-02	04-02-002-25W1M	121,873	7,327.2	0.0	7,327.2	114,546	0.02039619413	942.4	0.0	942.4	0.05313377927	0.036764986700	04-02-002-25W1M
05-02	05-02-002-25W1M	120,358	2,674.3	3,263.9	5,938.2	114,420	0.02037374413	371.2	0.0	371.2	0.02092934394	0.020651544040	05-02-002-25W1M
06-02	06-02-002-25W1M	119,086	2,545.0	0.0	2,545.0	116,541	0.02075145395	353.1	0.0	353.1	0.01990767473	0.020329564340	06-02-002-25W1M
07-02	07-02-002-25W1M	117,043	8,174.3	2,309.3	10,483.6	106,560	0.01897413434	321.0	0.0	321.0	0.01809778307	0.018535958700	07-02-002-25W1M
08-02	08-02-002-25W1M	112,752	8,615.3	0.0	8,615.3	104,137	0.01854272762	335.6	0.0	335.6	0.01892386370	0.018733295660	08-02-002-25W1M
11-02	11-02-002-25W1M	121,043	0.0	0.0	0.0	121,043	0.02155311439	0.0	0.0	0.0	0.00000000000	0.010776557190	11-02-002-25W1M
12-02	12-02-002-25W1M	122,000	2,809.7	0.0	2,809.7	119,191	0.02122323610	487.9	0.0	487.9	0.02751012726	0.024366681680	12-02-002-25W1M
13-02	13-02-002-25W1M	123,024	3,784.8	0.0	3,784.8	119,240	0.02123192979	371.8	0.0	371.8	0.02096138819	0.021096658990	13-02-002-25W1M
14-02	14-02-002-25W1M	122,767	1,622.7	0.0	1,622.7	121,144	0.02157105276	6.7	0.0	6.7	0.00037592444	0.010973488600	14-02-002-25W1M
01-03	01-03-002-25W1M	122,163	13,247.7	23.3	13,271.0	108,892	0.01938935702	686.9	0.0	686.9	0.03872785339	0.029058605200	01-03-002-25W1M
02-03	02-03-002-25W1M	121,048	12,936.3	2,009.4	14,945.7	106,102	0.01889272234	683.2	0.0	683.2	0.03851936250	0.028706042420	02-03-002-25W1M
03-03	03-03-002-25W1M	118,053	5,212.7	6,697.8	11,910.5	106,142	0.01889981806	378.4	0.0	378.4	0.02133561634	0.020117717200	03-03-002-25W1M
04-03	04-03-002-25W1M	116,589	5,282.1	8,841.3	14,123.4	102,465	0.01824505519	383.2	0.8	384.0	0.02164953212	0.019947293660	04-03-002-25W1M
05-03	05-03-002-25W1M	119,334	0.0	0.0	0.0	119,334	0.02124878783	0.0	0.0	0.0	0.00000000000	0.010624393930	05-03-002-25W1M
06-03	06-03-002-25W1M	119,498	0.0	0.0	0.0	119,498	0.02127794656	0.0	0.0	0.0	0.00000000000	0.010638973280	06-03-002-25W1M
07-03	07-03-002-25W1M	121,415	7,544.7	4,845.3	12,390.0	109,025	0.01941318627	295.5	0.0	295.5	0.01666210126	0.018037643770	07-03-002-25W1M
08-03	08-03-002-25W1M	121,595	7,544.7	1,724.9	9,269.6	112,325	0.02000079772	295.5	6.6	302.1	0.01703421823	0.018517507970	08-03-002-25W1M
09-03	09-03-002-25W1M	122,179	8,644.1	0.0	8,644.1	113,534	0.02021605870	593.3	0.0	593.3	0.03345142570	0.026833742200	09-03-002-25W1M
10-03	10-03-002-25W1M	122,783	9,597.6	0.0	9,597.6	113,185	0.02015386040	720.9	0.0	720.9	0.04064587142	0.030399865910	10-03-002-25W1M
11-03	11-03-002-25W1M	121,732	6,578.2	5,016.1	11,594.3	110,138	0.01961120935	744.8	6.1	750.9	0.04233449774	0.030972853540	11-03-002-25W1M
16-03	16-03-002-25W1M	123,443	3,221.3	0.0	3,221.3	120,221	0.02140670933	343.3	0.0	343.3	0.01935821008	0.020382459700	16-03-002-25W1M
01-04	01-04-002-25W1M	119,460	8,573.0	7,467.9	16,040.9	103,419	0.01841489246	538.0	0.0	538.0	0.03033458093	0.024374736690	01-04-002-25W1M
02-04	02-04-002-25W1M	126,552	8,573.0	0.0	8,573.0	117,979	0.02100751916	538.0	0.0	538.0	0.03033458093	0.025671050050	02-04-002-25W1M
07-04	07-04-002-25W1M	124,264	13,348.5	17,181.1	30,529.6	93,735	0.01669052519	924.4	0.0	924.4	0.05211659346	0.034403559330	07-04-002-25W1M
08-04	08-04-002-25W1M	123,659	12,719.4	0.0	12,719.4	110,939	0.01975398012	893.7	0.0	893.7	0.05038753712	0.035070758620	08-04-002-25W1M
01-10	01-10-002-25W1M	125,306	0.0	1,986.4	1,986.4	123,319	0.02195839015	0.0	0.0	0.0	0.00000000000	0.010979195080	01-10-002-25W1M
03-11	03-11-002-25W1M	123,090	7,257.5	0.0	7,257.5	115,832	0.02062517630	187.8	0.0	187.8	0.01058741347	0.015606294880	03-11-002-25W1M
04-11	04-11-002-25W1M	125,051	7,355.8	0.0	7,355.8	117,696	0.02095702128	191.7	0.0	191.7	0.01080931245	0.015883166870	04-11-002-25W1M
05-11	05-11-002-25W1M	124,843	3,911.7	0.0	3,911.7	120,931	0.02153318312	19.9	0.0	19.9	0.00112201386	0.011327598490	05-11-002-25W1M
06-11	06-11-002-25W1M	121,318	4,455.3	0.0	4,455.3	116,863	0.02080877662	23.7	0.0	23.7	0.00133347497	0.011071125800	06-11-002-25W1M
09-11	09-11-002-25W1M	109,200	4,270.5	0.0	4,270.5	104,930	0.01868393294	88.9	0.0	88.9	0.00501466959	0.011849301260	09-11-002-25W1M
10-11	10-11-002-25W1M	118,101	5,360.7	0.0	5,360.7	112,740	0.02007457688	118.1	0.0	118.1	0.00665902512	0.013366801000	10-11-002-25W1M
11-11	11-11-002-25W1M	119,946	4,362.9	0.0	4,362.9	115,584	0.02058092323	87.8	0.0	87.8	0.00494902042	0.012764971830	11-11-002-25W1M

LS-SE	Tract	OOIP (m3)	HZ Wells Cum Alloc Prod (m3)	Vert Wells Cum Prodn (m3)	Sum Hz + Vert Alloc Cum Prodn	OOIP - Cum	OOIP-Cum by LSD/Total OOIP	Last 12 Months Alloc Hz Prod (m3)	Last 12 Months Vert Prod (m3)	Sum Hz + Vert Alloc Last 12 Months Prod (m3)	Alloct Last 12 Months Prod by LSD/Total Prod	50% OOIP-Cum + 50% Last 12 Months Prod Tract Factor	Tract
12-11	12-11-002-25W1M	121,190	6,577.8	4,274.6	10,852.4	110,337	0.01964676331	33.9	2.4	36.3	0.00204499893	0.010845881120	12-11-002-25W1M
13-11	13-11-002-25W1M	108,572	8,168.7	8,038.7	16,207.4	92,365	0.01644660628	294.6	0.0	294.6	0.01661273363	0.016529669950	13-11-002-25W1M
14-11	14-11-002-25W1M	116,949	7,708.2	10,379.1	18,087.3	98,862	0.01760349351	746.0	1.2	747.2	0.04212918763	0.029866340570	14-11-002-25W1M
15-11	15-11-002-25W1M	115,499	7,132.0	3,736.0	10,868.0	104,632	0.01863080092	688.7	0.0	688.7	0.03882766572	0.028729233320	15-11-002-25W1M
		6,002,611	**287,202**	**99,359**	**386,561**	**5,616,051**	**1.00000000000**	**17,713.9**	**22.5**	**17,736.4**	**1.00000000000**	**1.000000000000**	

Table No. 3: Waskada Unit No. 23

UWI	License Number	Rig Release Date	Type	Pool Name	Producing Zone	Mode	On Prod Date	Prod Date	Cal Dly Oil (m3/d)	Monthly Oil (m3)	Cum Prd Oil (m3)	Cal Dly Water (m3/d)	Monthly Water (m3)	Cum Prd Water (m3)	Cal Dly Gas (E3m3/d)	Monthly Gas (E3m3)	Cum Prd Gas (E3m3)	WCT (%)
100/03-35-001-25W1/0	008394	9/18/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/21/2013	Feb-2017	1.1	30.0	3,273.1	28.8	805.2	45,332.6	0.1	2.4	76.4	96.41
102/03-35-001-25W1/0	008395	9/21/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/18/2013	Feb-2017	0.6	15.7	2,221.2	3.0	85.2	9,649.6	0.0	1.2	53.0	84.44
103/03-35-001-25W1/0	008396	9/25/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/24/2013	Feb-2017	0.1	2.1	1,127.6	3.1	85.7	9,157.2	0.0	0.2	33.5	97.61
100/11-35-001-25W1/0	008277	1/13/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/8/2012	Feb-2017	0.3	7.9	3,104.2	41.3	1156.2	92,564.0	0.0	0.6	111.7	99.32
100/14-35-001-25W1/0	007170	9/6/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Suspended	11/10/2010	Mar-2015	0.0	0.0	4,806.4	0.0	1.1	17,576.1	0.0	1.3	245.9	100.00
102/14-35-001-25W1/0	008276	1/6/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/6/2012	Feb-2017	2.1	60.0	6,720.4	1.5	41.0	5,216.3	0.2	4.8	148.4	40.59
103/14-35-001-25W1/0	008278	1/10/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Suspended	2/7/2012	Oct-2016	0.1	4.6	3,679.7	11.2	347.5	48,304.8	0.0	1.3	382.9	98.69
102/15-35-001-25W1/0	009522	9/14/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/2/2013	Feb-2017	1.0	27.1	4,612.0	0.7	18.9	2,102.5	0.0	0.0	0.0	41.09
103/15-35-001-25W1/0	009905	6/14/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	9/27/2014	Feb-2017	0.8	23.3	4,389.3	0.5	12.8	1,934.2	0.0	0.0	0.0	35.46
104/15-35-001-25W1/0	009906	6/18/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	6/27/2014	Feb-2017	1.5	42.3	4,032.3	0.9	23.8	2,019.6	0.0	0.0	0.0	36.01
100/01-02-002-25W1/0	005091	10/10/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	10/30/2002	Dec-2013	0.1	3.0	2,371.7	0.1	1.8	1,709.2	0.0	0.0	0.6	37.50
100/02-02-002-25W1/0	008743	6/30/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	7/6/2012	Feb-2017	0.4	11.1	6,781.5	0.4	10.9	3,366.6	0.0	0.0	0.0	49.55
102/02-02-002-25W1/0	009097	1/18/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/12/2013	Feb-2017	0.3	8.0	3,688.5	14.1	395.3	18,616.4	0.0	0.0	0.0	98.02
103/02-02-002-25W1/0	009098	1/22/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/12/2013	Feb-2016	0.2	6.5	3,142.4	3.2	92.8	13,514.6	0.0	0.0	0.0	93.45
100/03-02-002-25W1/0	005101	8/9/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Pumping	10/2/2002	Mar-2016	0.0	0.0	3,098.6	1.1	33.6	85,963.0	0.0	0.0	18.1	100.00
102/03-02-002-25W1/0	007171	9/14/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/7/2010	Feb-2017	2.8	77.5	8,060.9	5.3	147.6	20,947.5	0.1	2.7	450.0	65.57
103/03-02-002-25W1/0	007271	9/10/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/9/2010	Feb-2017	0.9	25.0	5,639.8	3.1	86.6	14,824.0	0.0	0.9	393.9	77.60
104/03-02-002-25W1/0	010038	9/19/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/24/2014	Feb-2017	1.9	53.1	2,194.6	38.5	1077.1	53,118.0	0.1	1.8	26.1	95.30
100/05-02-002-25W1/0	005102	8/3/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Pumping	11/12/2002	Dec-2013	0.1	1.6	3,263.9	0.0	0.1	1,049.5	0.0	0.0	1.9	5.88
102/06-02-002-25W1/0	009722	1/26/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/17/2014	Feb-2017	1.5	41.2	4,965.3	0.7	20.0	1,840.8	0.1	1.4	51.7	32.68
103/06-02-002-25W1/0	009869	8/18/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	9/19/2014	Feb-2017	0.1	1.7	254.0	54.7	1532.4	43,147.6	0.0	0.1	12.8	99.89
100/07-02-002-25W1/0	005092	10/16/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	11/1/2002	Dec-2013	0.1	3.3	2,309.3	0.0	0.6	792.7	0.0	0.0	1.9	15.38
102/07-02-002-25W1/0	008057	12/17/2011	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	1/3/2012	Feb-2017	0.9	23.9	9,250.7	5.7	158.7	14,974.7	0.0	0.0	0.0	86.91
103/07-02-002-25W1/0	009101	1/7/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/8/2013	Feb-2017	0.4	11.7	3,514.5	0.4	12.3	2,525.5	0.0	0.0	0.0	51.25
104/07-02-002-25W1/0	009102	1/12/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/10/2013	Feb-2017	0.5	13.2	5,555.4	0.8	21.5	4,692.1	0.0	0.0	0.0	61.96
100/10-02-002-25W1/0	009528	9/11/2013	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/3/2013	Jun-2014	0.0	0.0	478.4	2.6	77.4	11,811.6	0.0	0.0	0.0	100.00
100/13-02-002-25W1/0	009721	1/30/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	3/19/2014	Feb-2017	1.6	43.8	3,822.1	1.8	49.7	2,540.5	0.1	1.5	46.9	53.16
100/14-02-002-25W1/0	008742	6/26/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Suspended	7/11/2012	Jun-2016	0.1	1.5	3,285.5	0.0	1.3	1,517.6	0.0	0.7	41.7	46.43
102/01-03-002-25W1/0	007303	7/17/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	8/9/2010	Dec-2016	0.0	1.1	7,218.6	3.9	119.8	29,842.5	0.0	0.0	789.8	99.09
103/01-03-002-25W1/0	007304	7/13/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	8/9/2010	Feb-2017	1.7	48.6	8,813.3	0.8	21.0	8,632.2	0.1	1.7	468.2	30.17
104/01-03-002-25W1/0	007305	8/22/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/21/2010	Feb-2017	0.9	25.4	6,276.2	1.1	30.5	10,139.8	0.0	0.9	308.2	54.56
100/02-03-002-25W1/0	005615	11/13/2005	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	12/16/2005	Dec-2013	0.0	0.8	2,009.4	0.0	0.3	547.6	0.0	0.0	9.5	27.27
100/03-03-002-25W1/2	003837	2/24/1986	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	5/18/1987	Jan-2011	0.0	1.5	6,697.8	0.0	0.1	1,212.8	0.0	0.0	0.0	6.25
102/03-03-002-25W1/0	008477	2/20/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	4/23/2012	May-2016	1.9	59.1	8,170.1	0.6	19.5	5,258.4	0.0	0.0	12.2	24.81
103/03-03-002-25W1/0	008478	2/26/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	5/4/2012	Feb-2017	1.8	50.0	2,324.7	33.6	941.8	68,330.3	0.0	0.0	11.4	94.96
100/07-03-002-25W1/0	005038	12/15/2001	Vertical	LOWER AMARANTH A	AMRNTHL	Pumping	12/30/2001	Dec-2013	0.1	3.9	4,845.3	0.0	0.5	956.2	0.0	0.3	12.7	11.36
100/08-03-002-25W1/0	005616	12/21/2005	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	1/24/2006	Dec-2016	0.0	0.1	1,724.9	0.0	0.1	861.4	0.0	0.0	11.6	50.00
102/08-03-002-25W1/0	007306	8/26/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/21/2010	Feb-2017	0.8	21.6	8,550.6	0.6	17.4	7,107.8	0.0	0.7	1064.5	44.62
103/08-03-002-25W1/0	007307	8/30/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	10/21/2010	Feb-2017	0.6	16.1	4,796.8	0.7	19.5	6,108.7	0.0	0.5	294.4	54.78
104/08-03-002-25W1/0	007308	7/27/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Suspended	9/22/2010	Apr-2016	0.0	0.8	3,541.1	0.1	2.9	3,880.9	0.0	0.7	260.1	78.38
105/08-03-002-25W1/0	007309	8/1/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	9/22/2010	Feb-2017	1.0	28.2	3,519.4	0.4	12.4	4,575.9	0.0	1.0	521.2	30.54
106/08-03-002-25W1/0	007310	8/12/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	9/22/2010	Feb-2017	0.5	15.0	6,229.7	0.2	6.6	3,863.2	0.0	0.5	556.2	30.56
100/09-03-002-25W1/0	006243	2/6/2007	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/24/2007	Feb-2017	0.4	10.7	6,552.0	0.1	2.0	2,718.0	0.0	0.4	95.8	15.75
102/09-03-002-25W1/0	009694	1/17/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/14/2014	Feb-2017	1.1	30.5	4,865.4	0.4	10.9	1,126.1	0.0	1.0	12.4	26.33
100/10-03-002-25W1/0	009691	1/8/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/6/2014	Feb-2017	1.8	50.1	6,723.4	0.7	18.6	1,442.7	0.1	1.7	44.1	27.07
100/11-03-002-25W1/0	005093	9/25/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Pumping	11/2/2002	Apr-2016	0.1	2.3	5,016.1	0.0	0.2	1,326.8	0.0	0.7	38.0	8.00

UWI	License Number	Rig Release Date	Type	Pool Name	Producing Zone	Mode	On Prod Date	Prod Date	Cal Dly Oil (m3/d)	Monthly Oil (m3)	Cum Prd Oil (m3)	Cal Dly Water (m3/d)	Monthly Water (m3)	Cum Prd Water (m3)	Cal Dly Gas (E3m3/d)	Monthly Gas (E3m3)	Cum Prd Gas (E3m3)	WCT (%)
102/11-03-002-25W1/0	009692	6/29/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	8/21/2014	Feb-2017	1.5	40.9	4,143.9	0.9	24.2	1,063.4	0.1	1.4	32.8	37.17
103/11-03-002-25W1/0	009695	1/12/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/6/2014	Feb-2017	0.6	17.0	7,206.0	0.3	8.0	1,179.5	0.0	0.6	47.1	32.00
100/16-03-002-25W1/0	009693	1/20/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/13/2014	Feb-2017	1.1	30.2	5,039.2	0.3	8.0	1,742.2	0.0	1.0	11.9	20.94
102/16-03-002-25W1/0	009723	2/4/2014	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/15/2014	Feb-2017	1.1	31.2	2,870.8	4.0	113.3	5,383.7	0.0	1.1	36.0	78.41
100/01-04-002-25W1/0	004101	11/2/1988	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	11/14/1988	Dec-2013	0.0	0.2	7,467.9	0.1	2.6	3,435.3	0.0	0.0	0.0	92.86
100/02-04-002-25W1/0	007634	10/29/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	4/16/2011	Feb-2017	1.1	30.7	5,826.7	13.0	365.0	32,530.9	0.0	0.0	7.5	92.24
102/02-04-002-25W1/0	007635	11/3/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	4/7/2011	Feb-2017	1.1	29.4	5,476.4	28.9	808.8	88,176.4	0.0	0.0	5.0	96.49
103/02-04-002-25W1/0	007636	11/13/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	4/6/2011	Feb-2017	1.3	37.5	4,178.7	48.1	1346.4	59,723.1	0.0	0.0	9.4	97.29
100/07-04-002-25W1/2	004078	7/15/1988	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	9/8/1988	Dec-2013	0.0	0.5	17,181.1	0.2	4.8	1,644.3	0.0	0.0	0.0	90.57
102/07-04-002-25W1/0	007637	11/8/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	4/6/2011	Feb-2017	2.6	72.4	9,155.1	2.2	62.4	22,875.1	0.0	0.0	4.5	46.29
103/07-04-002-25W1/0	007809	12/8/2011	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/20/2012	Feb-2017	0.5	13.2	2,445.4	44.2	1237.5	79,121.2	0.0	0.0	9.2	98.94
104/07-04-002-25W1/0	007810	12/14/2011	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	2/17/2012	Feb-2017	2.9	81.0	16,131.6	0.6	18.0	5,896.8	0.0	0.0	7.8	18.18
100/01-10-002-25W1/0	005067	6/20/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Pumping	8/13/2002	Jun-2013	0.1	3.4	1,986.4	0.1	4.2	6,841.4	0.0	0.2	11.5	55.26
100/03-11-002-25W1/0	006884	7/12/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/8/2009	Feb-2017	0.6	16.3	5,220.9	0.7	19.9	3,998.8	0.0	0.6	129.9	54.97
102/03-11-002-25W1/0	006885	7/27/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/11/2009	Jan-2017	0.0	0.0	4,100.7	3.7	113.9	27,736.3	0.0	0.0	186.0	100.00
103/03-11-002-25W1/0	006977	7/17/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Potential	11/11/2009	Feb-2017	0.1	2.5	3,445.8	2.9	80.0	6,968.5	0.0	0.0	59.5	96.97
104/03-11-002-25W1/0	006978	7/22/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Suspended	11/11/2009	Oct-2014	0.0	0.8	3,381.4	0.1	2.2	2,436.2	0.0	0.6	157.0	73.33
100/06-11-002-25W1/0	006886	1/29/2009	Horizontal	LOWER AMARANTH A	AMRNTH	Suspended	6/27/2009	Jun-2015	0.0	1.1	3,581.2	0.0	0.3	1,921.2	0.0	0.0	140.9	21.43
102/06-11-002-25W1/0	006887	1/22/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	6/25/2009	Feb-2017	0.1	3.9	3,903.6	0.1	1.6	1,196.0	0.0	0.1	110.6	29.09
100/07-11-002-25W1/0	008586	6/21/2012	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	7/10/2012	Nov-2016	0.2	4.5	1,621.1	0.3	7.7	2,639.9	0.0	0.0	0.0	63.11
100/09-11-002-25W1/0	006629	3/14/2008	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	7/7/2008	Feb-2017	0.4	11.7	6,882.0	0.1	3.3	2,470.0	0.0	0.4	168.5	22.00
102/09-11-002-25W1/0	006900	2/5/2009	Horizontal	LOWER AMARANTH A	AMRNTHL	Potential	7/11/2009	Jan-2017	0.1	1.6	6,417.0	0.9	28.2	7,083.1	0.0	0.1	326.4	94.63
102/12-11-002-25W1/0	007593	10/9/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/10/2010	Feb-2017	0.1	2.8	12,409.6	0.1	3.4	4,762.3	0.0	0.0	0.0	54.84
100/13-11-002-25W1/0	004109	3/24/1989	Vertical	LOWER AMARANTH A	AMRNTHL	Producing	4/25/1989	May-2006	0.1	1.6	8,038.7	1.6	50.3	3,281.9	0.0	0.0	0.0	96.92
102/15-11-002-25W1/0	007591	9/26/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Potential	11/30/2010	Feb-2017	0.6	15.7	9,316.7	1.2	32.6	6,392.9	0.0	0.0	0.0	67.49
103/15-11-002-25W1/0	007592	10/5/2010	Horizontal	LOWER AMARANTH A	AMRNTHL	Producing	11/30/2010	Feb-2017	1.9	52.9	7,860.5	0.7	19.4	3,918.8	0.0	0.0	0.0	26.83

These locations are abandoned and/or did not produce and will not be included in the Unit Well list.

100/05-35-001-25W1/0	005462	10/3/2005	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	10/25/2005	Mar-2016	0.2	5.4	2,395.1	0.0	0.9	1,097.1	0.0	0.0	0.0	14.29
100/13-35-001-25W1/0	005464	10/8/2005	Vertical	LOWER AMARANTH A	AMRNTH	Abandoned Zone	10/25/2005	Aug-2015	0.1	2.0	2,190.3	0.0	1.1	1,380.4	0.0	0.0	0.0	35.48
100/15-35-001-25W1/0	005465	1/5/2006	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	1/26/2006	Dec-2014	0.0	0.1	1,508.1	0.0	0.0	573.1	0.0	0.0	0.0	0.00
100/01-03-002-25W1/0	005056	3/7/2002	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned	3/20/2002	May-2004	0.0	0.0	23.3	1.6	48.2	1,873.9	0.0	0.0	0.0	100.00
100/04-03-002-25W1/0	003754	12/3/1985	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	12/15/1985	Jun-2016	0.0	0.8	8,841.3	0.0	0.0	1,218.7	0.0	0.0	0.0	0.00
100/12-11-002-25W1/0	004117	7/7/1989	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	7/15/1989	Jun-2016	0.1	2.4	4,274.6	0.0	0.0	540.7	0.0	0.0	0.0	0.00
100/14-11-002-25W1/0	004177	3/6/1990	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	3/16/1990	Jul-2016	0.0	1.2	10,379.1	0.0	1.3	1,299.7	0.0	0.0	0.0	52.00
100/15-11-002-25W1/0	004178	3/10/1990	Vertical	LOWER AMARANTH A	AMRNTHL	Abandoned Zone	3/22/1990	Jul-2014	0.0	0.0	3,736.0	0.0	0.1	566.4	0.0	0.0	0.0	100.00
											406,154.3			**1,081,709.3**				

Table No. 4: OOIP Calculation

Tract	OOIP (bbls)	OOIP (m3)
03-35-001-25W1M	753380	119,778
04-35-001-25W1M	765730	121,741
05-35-001-25W1M	781490	124,247
06-35-001-25W1M	762490	121,226
11-35-001-25W1M	761020	120,993
12-35-001-25W1M	787980	125,279
13-35-001-25W1M	778560	123,781
14-35-001-25W1M	762490	121,226
15-35-001-25W1M	728010	115,744
16-35-001-25W1M	680240	108,150
01-02-002-25W1M	700300	111,339
02-02-002-25W1M	733530	116,622
03-02-002-25W1M	752920	119,705
04-02-002-25W1M	766560	121,873
05-02-002-25W1M	757030	120,358
06-02-002-25W1M	749030	119,086
07-02-002-25W1M	736180	117,043
08-02-002-25W1M	709190	112,752
11-02-002-25W1M	761340	121,043
12-02-002-25W1M	767360	122,000
13-02-002-25W1M	773800	123,024
14-02-002-25W1M	772180	122,767
01-03-002-25W1M	768380	122,163
02-03-002-25W1M	761370	121,048
03-03-002-25W1M	742530	118,053
04-03-002-25W1M	733320	116,589
05-03-002-25W1M	750590	119,334
06-03-002-25W1M	751620	119,498
07-03-002-25W1M	763680	121,415
08-03-002-25W1M	764810	121,595
09-03-002-25W1M	768480	122,179
10-03-002-25W1M	772280	122,783
11-03-002-25W1M	765670	121,732
16-03-002-25W1M	776430	123,443
01-04-002-25W1M	751380	119,460
02-04-002-25W1M	795990	126,552
07-04-002-25W1M	781600	124,264
08-04-002-25W1M	777790	123,659
01-10-002-25W1M	788150	125,306
03-11-002-25W1M	774210	123,090
04-11-002-25W1M	786550	125,051
05-11-002-25W1M	785240	124,843
06-11-002-25W1M	763070	121,318
09-11-002-25W1M	686850	109,200

Sw = 40%
Porosity = 10%
Bo = 1.17

Tract	OOIP (bbls)	OOIP (m3)
10-11-002-25W1M	742830	118,101
11-11-002-25W1M	754440	119,946
12-11-002-25W1M	762260	121,190
13-11-002-25W1M	682900	108,572
14-11-002-25W1M	735590	116,949
15-11-002-25W1M	726470	115,499
	37,755,290	**6,002,611**

Table No. 5

Proposed Waskada Unit 23

LOWER AMARANTH FORMATION ROCK & FLUID PARAMETERS

Formation Pressure	8500 kPa	Initial Average Reservoir Pressure
Formation Temperature	45 C	
Saturation Pressure	4220 kPa	Bubble Point
GOR	20 - 50 m3/m3	Gas Oil Ratio
API Oil Gravity	37.2	
Swi (fraction)	0.40	Initial Water Saturation
Produced Water Specific Gravity	1.08	
Produced Water pH	7.1 - 7.3	
Produced Water TDS	180,000	
Wettability	Moderately oil-wet	

Proposed Waskada Unit No. 23

Application for Enhanced Oil Recovery Waterflood Project

List of Appendices

A

00/01-04-002-25W1/0
KB: 476.9 m RR: 1988-11-02
TD: 918.0 m [TVD] FormTD: TILSTNBD
Mode: Prod Fluid: Oil
OMEGA WASKADA 1-4-2-25
724.7m to next well >

00/03-03-002-25W1/0
KB: 477.2 m RR: 1986-02-24
TD: 924.0 m [TVD] FormTD: TILSTNBD
Mode: Abnd Fluid: Oil
OMEGA WASKADA 3-3-2-25
< 724.7m to previous well 465.9m to next well >

00/07-03-002-25W1/0
KB: 477.3 m RR: 2001-12-15
TD: 917.0 m [TVD] FormTD: TILSTNBD
Mode: Pump Fluid: Oil
EOG WASKADA 7-3-2-25 (WPM)
< 465.9m to previous well 919.1m to next well >

00/05-02-002-25W1/0
KB: 475.9 m RR: 2002-08-03
TD: 933.0 m [TVD] FormTD: TILSTNBD
Mode: Pump Fluid: Oil
EOG WASKADA 5-2-2-25
< 919.1m to previous well 2042.9m to next well >

00/12-11-002-25W1/0
KB: 477.1 m RR: 1989-07-07
TD: 905.8 m [TVD] FormTD: TILSTNBD
Mode: Abd Zone Fluid: Oil
OMEGA WASKADA PROV. 12-11-2-25
< 2042.9m to previous well 854.6m to next well >

00/15-11-002-25W1/0
KB: 478.6 m RR: 1990-03-10
TD: 915.0 m [TVD] FormTD: TILSTNBD
Mode: Abd Zone Fluid: Oil
OMEGA WASKADA PROV. 15-11-2-25
< 854.6m to previous well

A`

DST Information (00/01-04-002-25W1/0)

Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	7467.9	0.0	3435.3
Daily	1.0	0.0	0.4

DST Information (00/03-03-002-25W1/0)

1. 901.0[TVD]-902.5[TVD] (TILSTNBD)
   Misrun
   Type: UNDEFINED
   "BLOW DESCRIPTION: NOT AVAILABLE, MISRUN."
2. 899.5[TVD]-901.5[TVD] (TILSTNBD)
   Type: CONVENTIONAL STRADDLE (BLANK OFF) 2 PACKERS
   VO: 5.0/60.0 SI: 60.0/120.0 min
   FP: 484.0/1115.0 kPa
   SIP: 8817.0/8848.0 kPa
   HP: 9802.0/9888.0 kPa
   "BLOW DESCRIPTION: WEAK AIR BLOW, 50.8 MM (2 INCHES) ON PREFLOW. WEAK AIR BLOW, INCREASING TO STRONG IN 20 MINUTES ON FINAL FLOW, NO GAS TO SURFACE. RECOVERY: 19M (62FT) MUD RECOVERY: 19M (62FT) OIL CUT GAS CUT MUD RECOVERY: 5M (16FT) SALTY WATER RECOVERY: 97M (318FT) GAS CUT OIL PMAX: 8817KPA; BHTEMP: 31C; PERMEABILITY: REL-HIGH FORMATION DAMAGE: POSSIBLE"

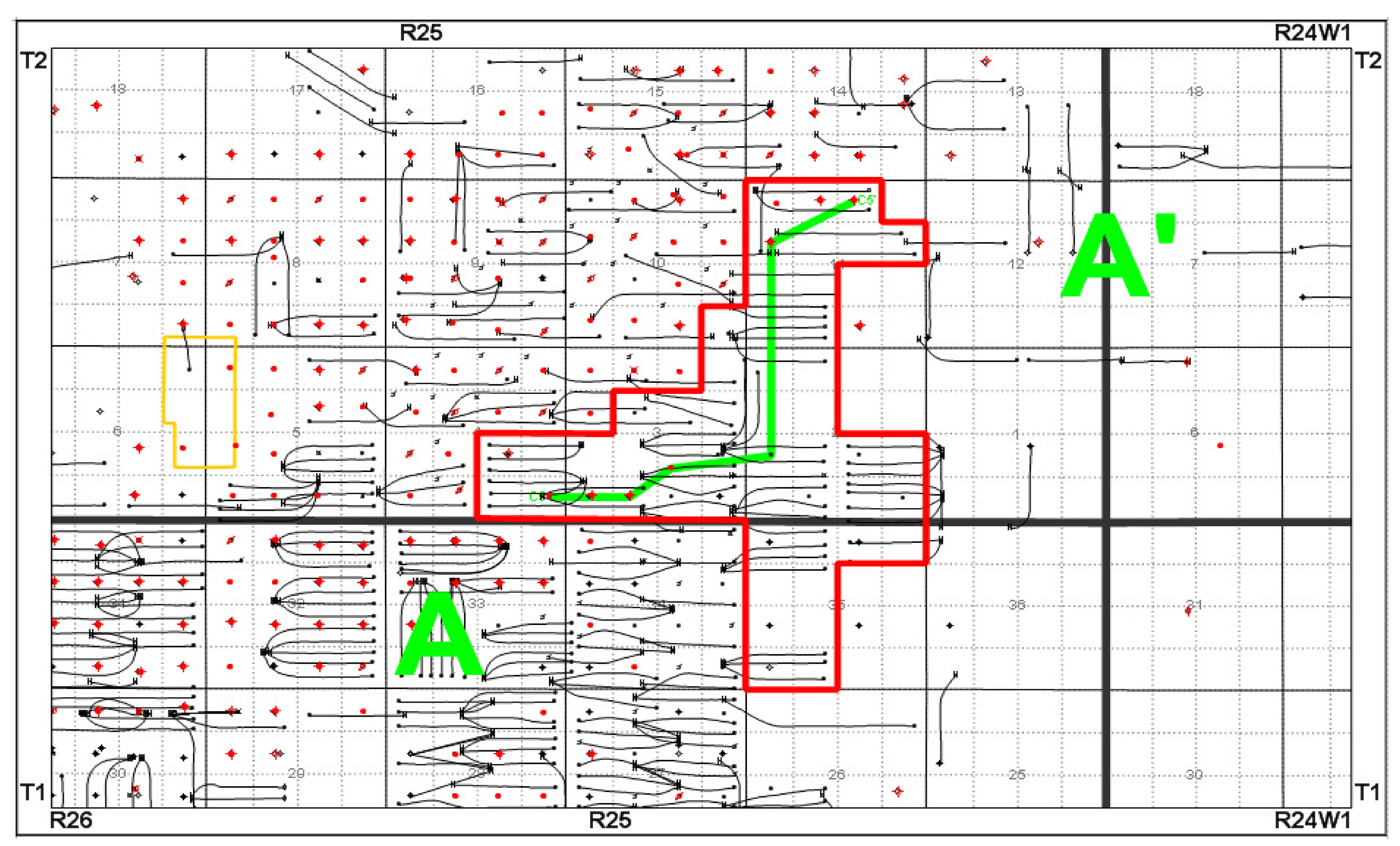
Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	58.3	0.0	322.1
Daily	0.8	0.0	4.6

DST Information (00/12-11-002-25W1/0)

Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	4274.6	0.0	540.7
Daily	0.7	0.0	0.1

DST Information (00/15-11-002-25W1/0)

Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	3736.0	0.0	566.4
Daily	0.5	0.0	0.1



DST Information (00/07-03-002-25W1/0)

1. 898.0[TVD]-903.0[TVD] (TILSTNBD)
   Type: INFLATE STRADDLE
   VO: 3.0/44.0 SI: 43.0/115.0 min
   FP: 263.0/898.0 kPa
   SIP: 8911.0/8912.0 kPa
   HP: 10073.0/9789.0 kPa
   "RECOVERY: 20M (66FT) MUD CUT SALTY WATER RECOVERY: 42M (138FT) OIL CUT GAS CUT MUD BHTEMP: 39C;"

Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	4845.3	12.7	956.2
Daily	1.4	0.0	0.3

DST Information (00/05-02-002-25W1/0)

Prod	Oil (m3)	Gas (E3m3)	Water (m3)
Cum	3263.9	1.9	1049.5
Daily	1.0	0.0	0.3

Legend

- ● Oil
- Abandoned Oil
- Contact Type - Conformity
- Contact Type - Unconformity
- Contact Type - Time Equivalence
- Contact Type - Left Fault
- Contact Type - Right Fault

Well Spacing Scale (actual scale 1: 50000)

Depth Scale (actual scale 1: 480)

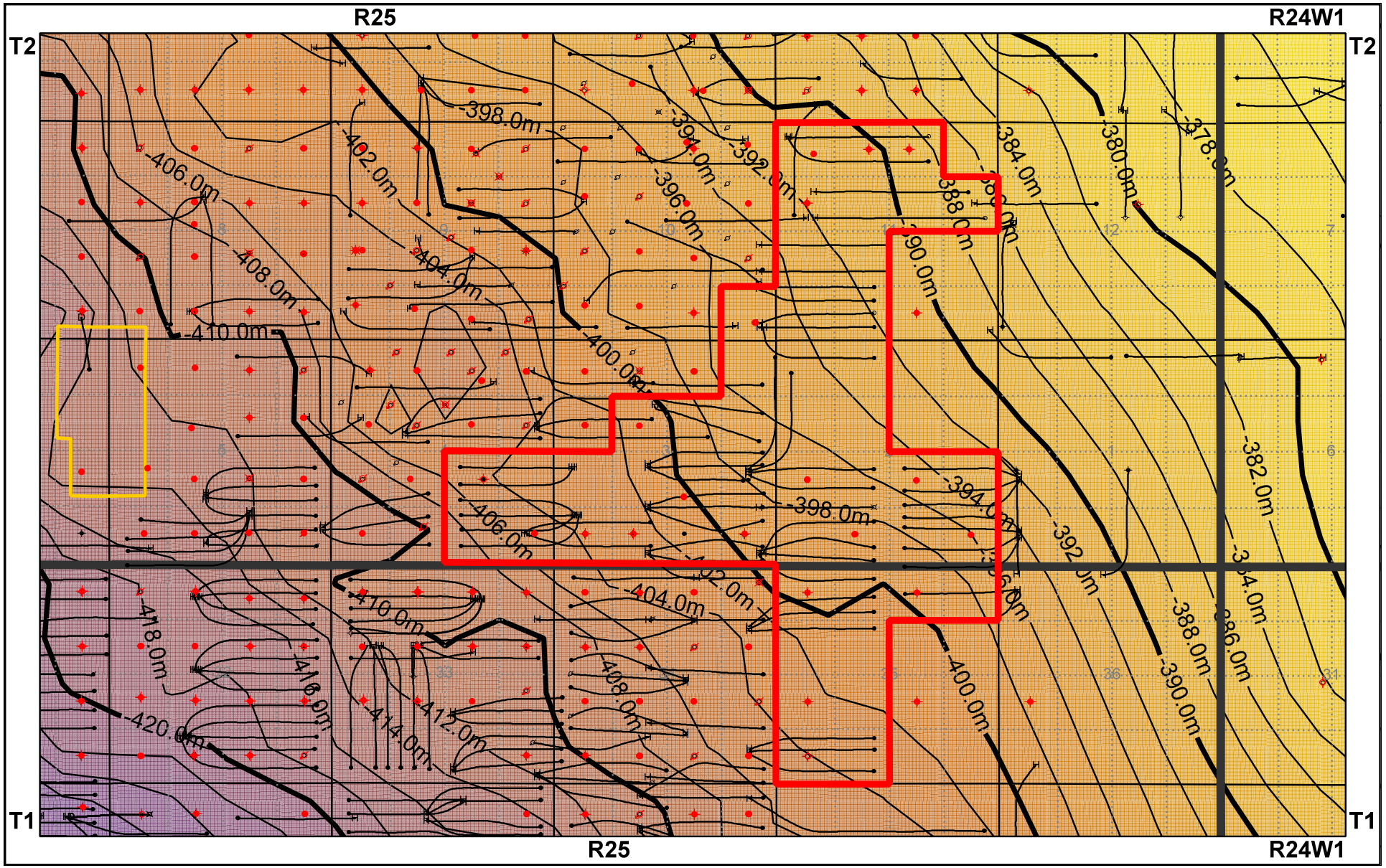
Appendix No. 1

Tundra Oil and Gas

Structural Cross Section Through Waskada Unit 23

Produced by:
AccuLogs
Version 9.0.2.196906
Datum: NAD27

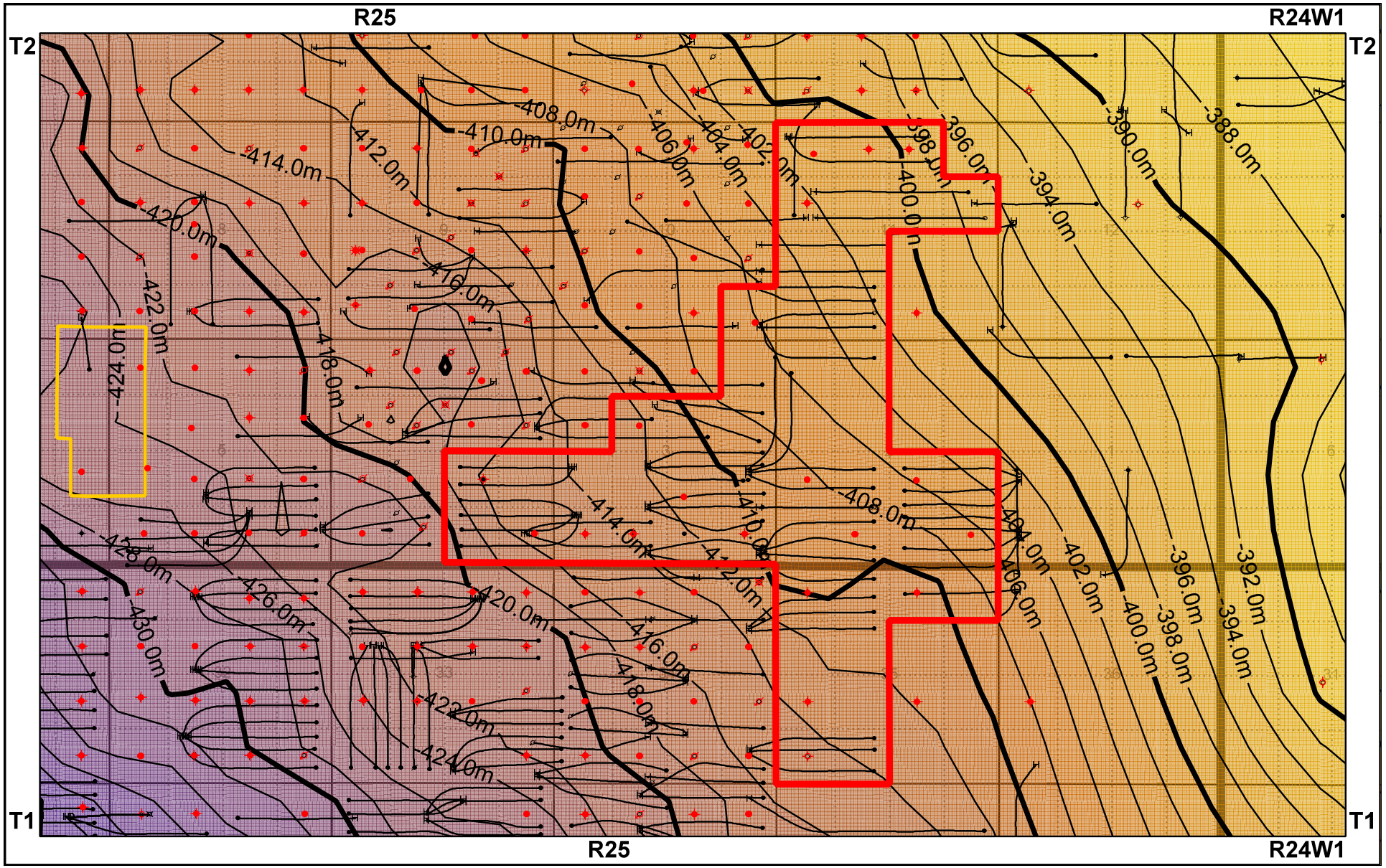
Author:
Modified On: Wednesday, November 23, 2016 05:22PM
Printed On: Wednesday, November 23, 2016 05:22PM
Start Formation: 5m. above AMRNTHL
End Formation: 5m. below U-MSSP
Cross Section Name: WASKADAC5C5



Waskada Unit 23 Application

Appendix No. 2

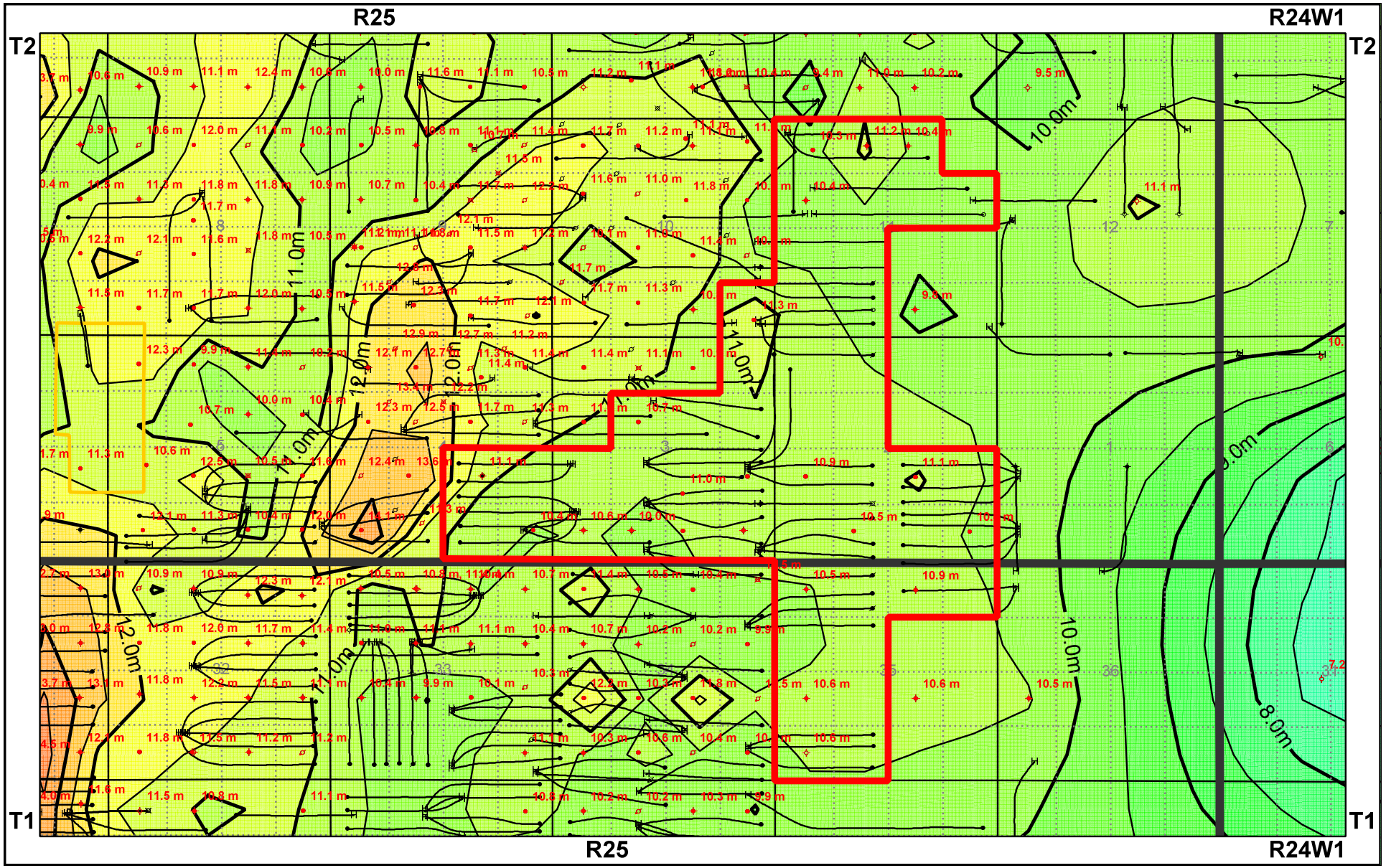
Waskada Unit 23 Application
Green Sand Structure (Top of Reservoir)
November 24, 2016



Waskada Unit 23 Application

Appendix No. 3

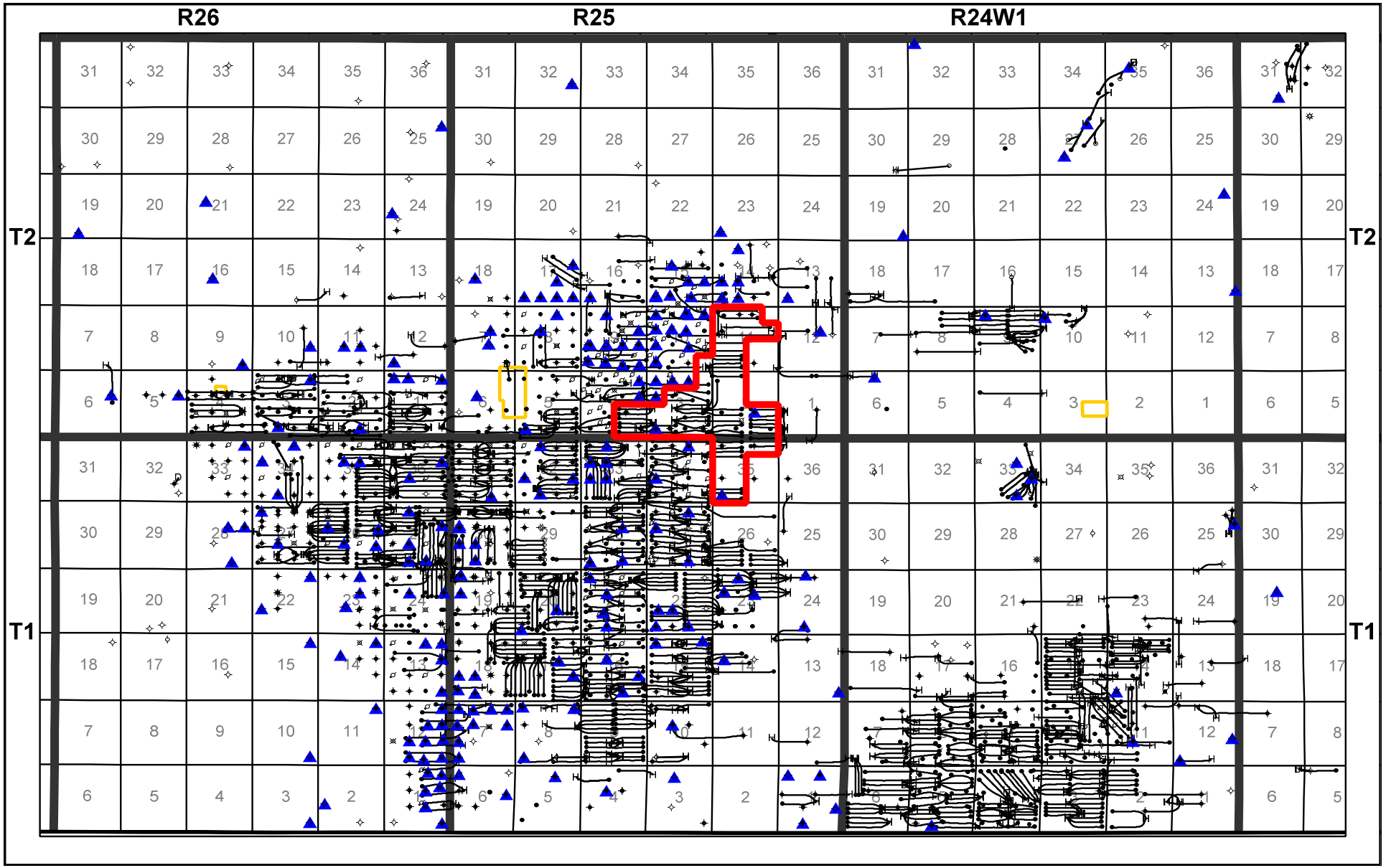
Waskada Unit 23 Application
Lower Sand Structure (Base of Reservoir)
November 24, 2016



Waskada Unit 23 Application

Appendix No. 4

Waskada Unit 23 Application
Reservoir Isopach (Green to Lower Sand Isopach)
December 22, 2016

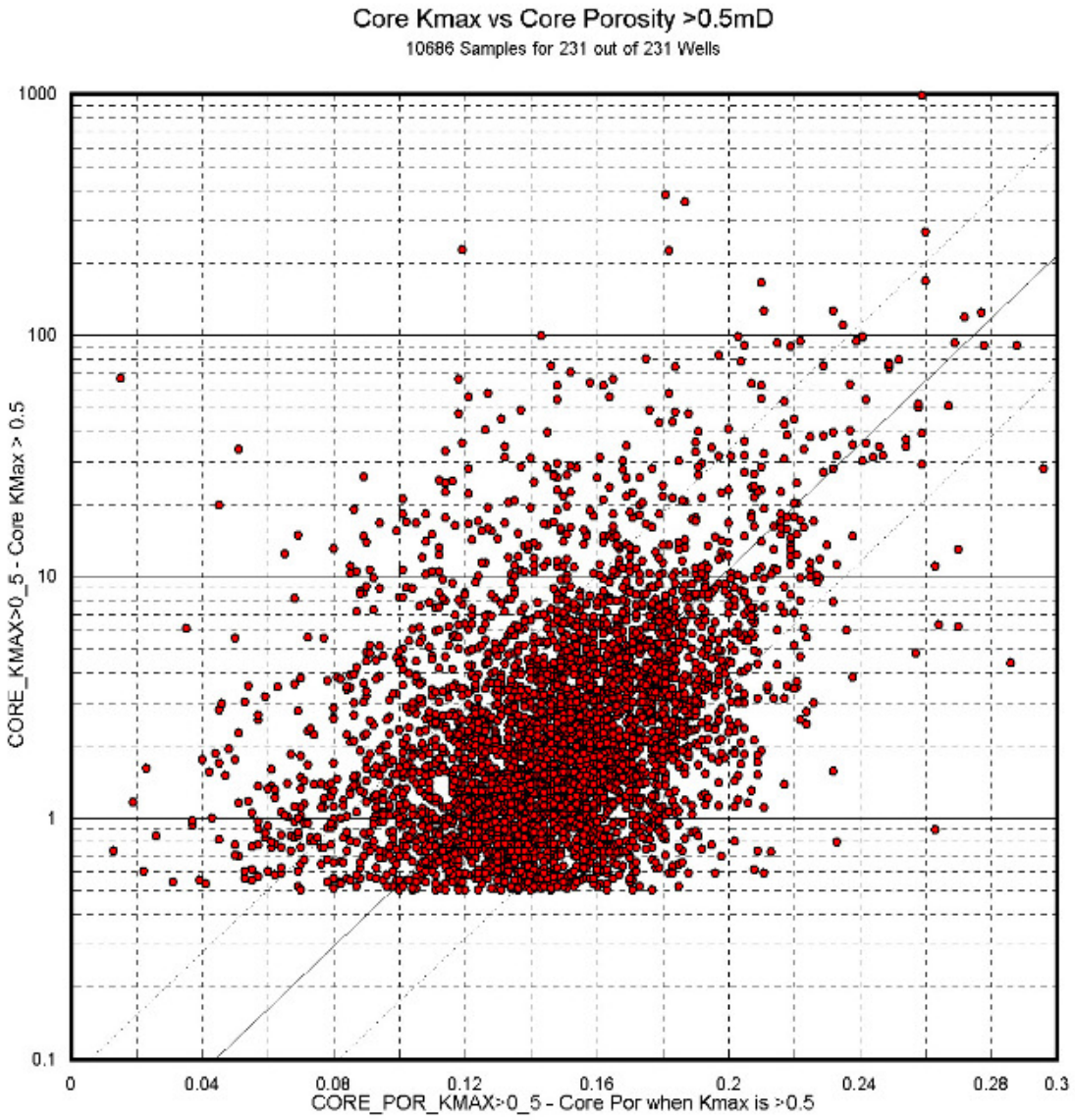


Waskada Unit 23 Application

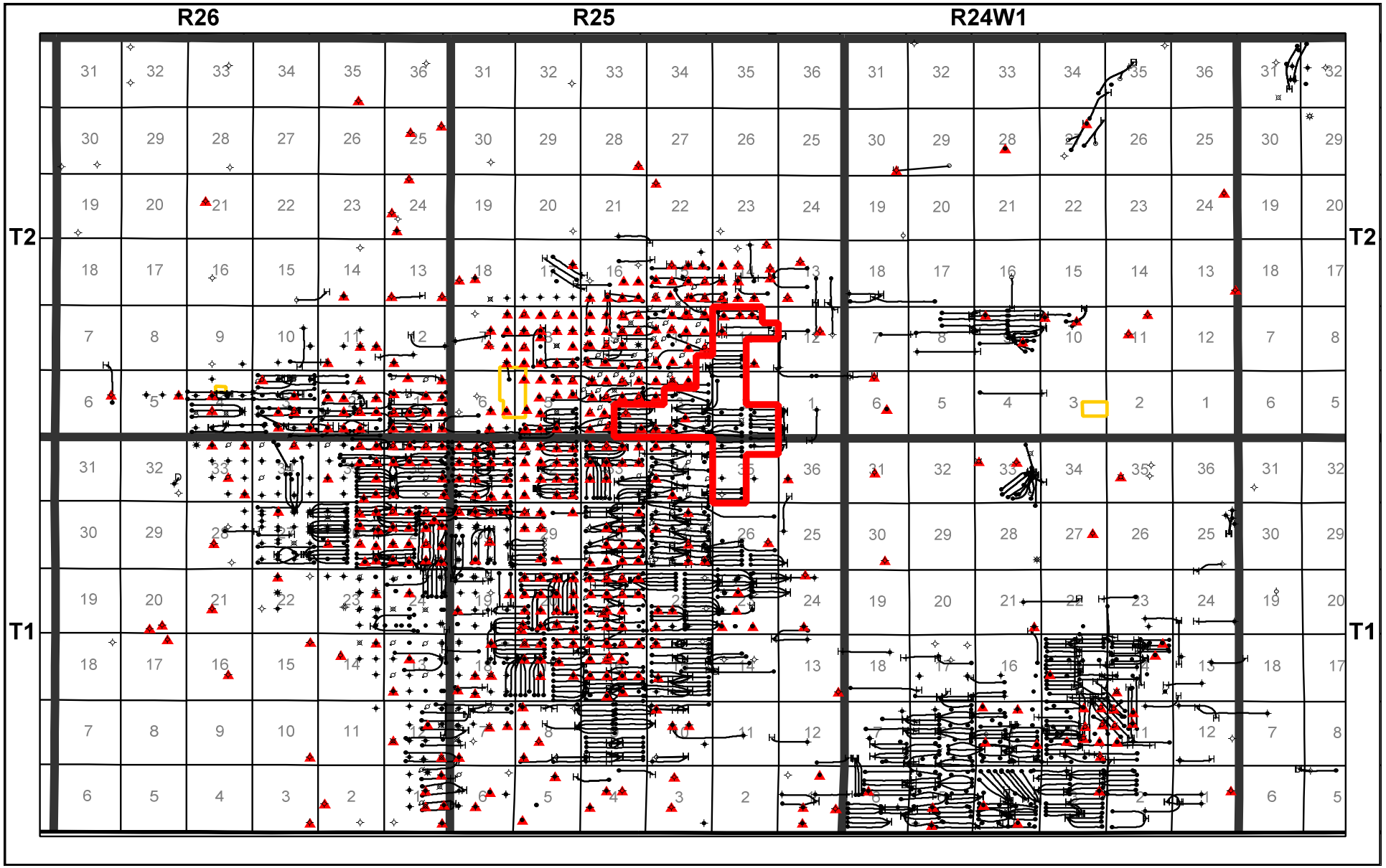
Appendix No. 5

Waskada Unit 23 Application
Wells with Core Analysis Used to Create Core Perm vs Core Porosity Cross Plot
November 23, 2016

Tundra Pierson Waskada Project



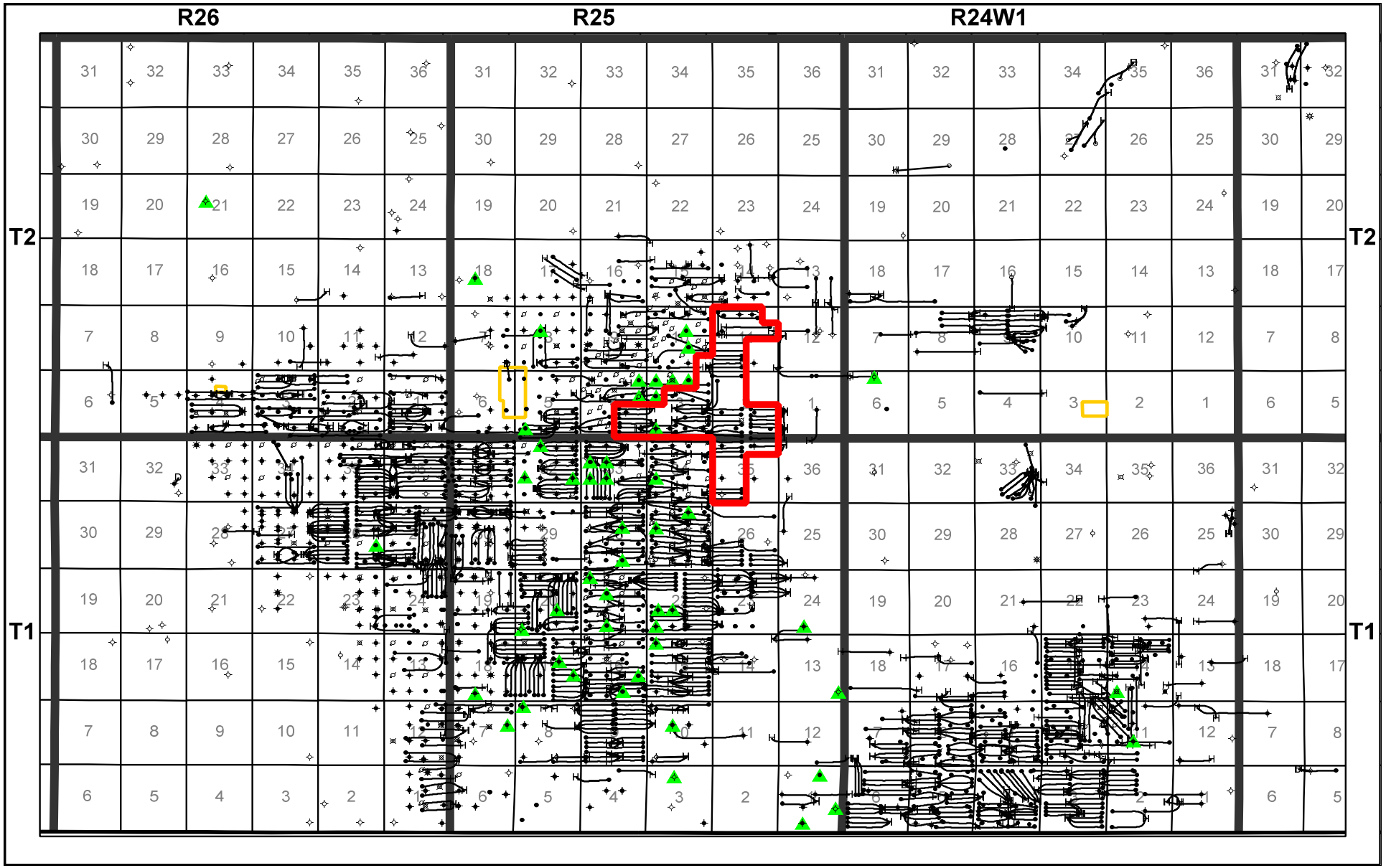
LOG(CORE_KMAX>0_5) = 12.99873743*CORE_POR_KMAX>0_5 - 1.5681 Corr=0.422 StdErr=0.4908



Waskada Unit 23 Application

Appendix No. 7

Waskada Unit 23 Application
Wells with Digital Sonic Logs
November 23, 2016



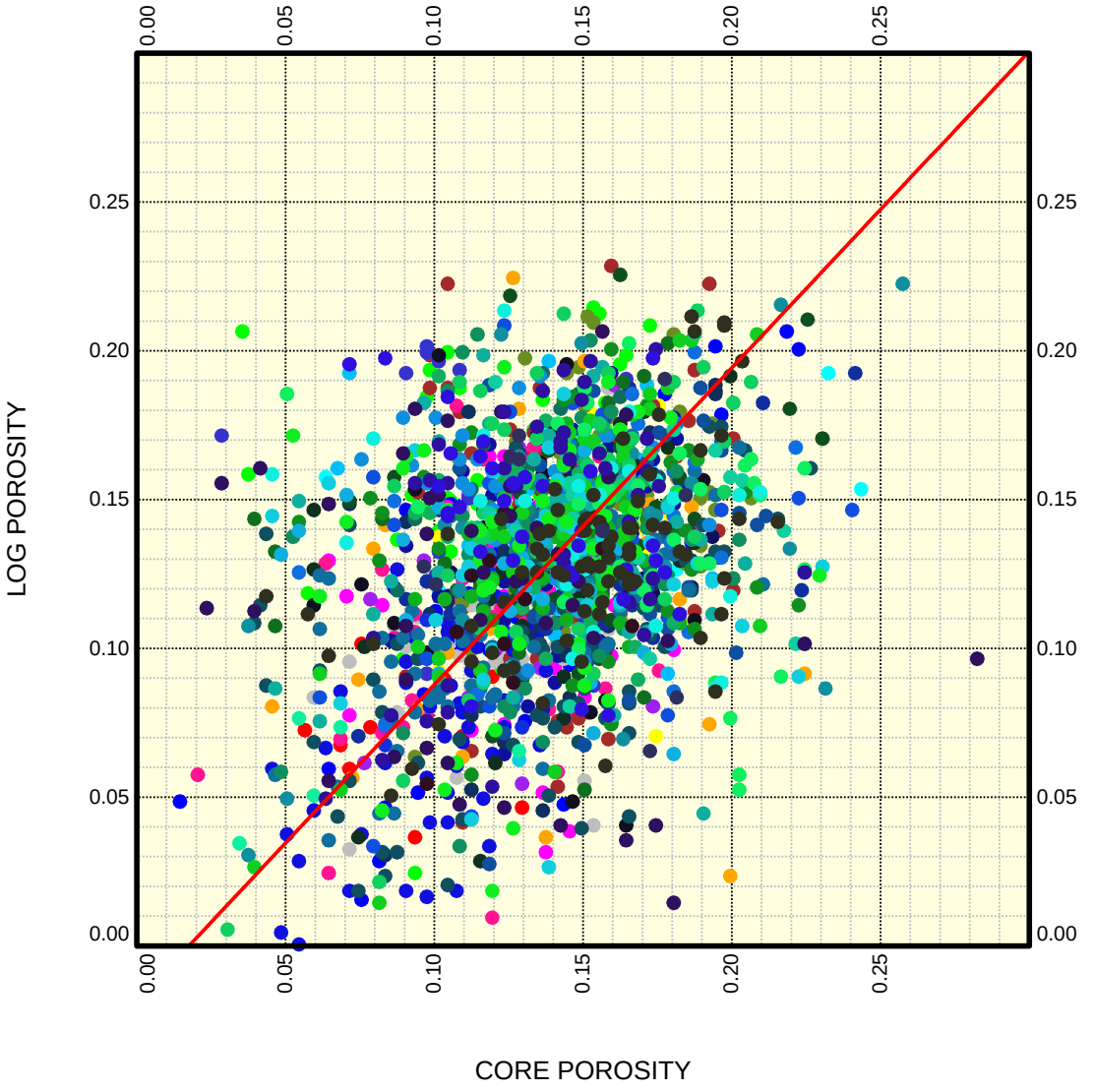
Waskada Unit 23 Application

Appendix No. 8

Waskada Unit 23 Application
Wells with Digital Sonic Logs and Core Analysis over the Lower Amaranth Reservoir Interval
November 23, 2016

Log Porosity vs Core Porosity Crossplot

Well: 52 Wells



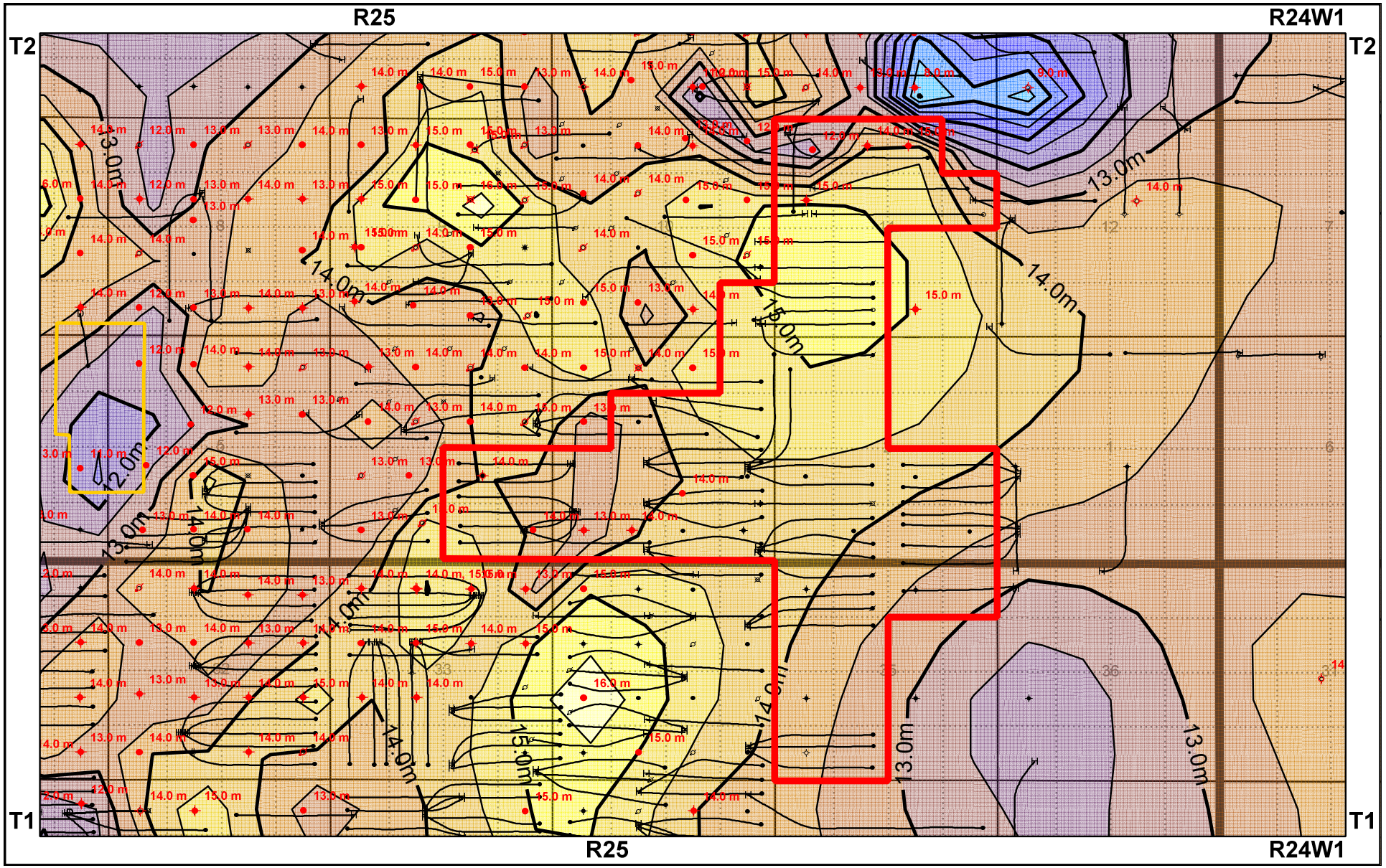
Wells:

100011300125W100	100021600125W100	100022800125W100	100030100125W100	100031800125W100
100032100125W100	100032400125W100	100040300225W100	100040500225W100	100041400124W100
100042000125W100	100042200125W100	100052200125W100	100053200125W100	100053300125W100
100053400125W100	100061100124W100	100061800225W100	100062200125W100	100063300125W100
100071000225W100	100072000125W100	100080100125W100	100081600125W100	100081700125W100
100082600126W100	100083200125W100	100090400225W100	100090700125W100	100101000225W100
100101700125W100	100102800125W100	100110800225W100	100111000125W100	100112100125W100
100112100226W100	100113300125W100	100120300225W100	100122700125W100	100123300125W100
100130300225W100	100130800125W100	100131500125W100	100132100125W100	100140300125W100
100140300225W100	100140600224W100	100143200125W100	100150100125W100	100150300225W100
100152700125W100	100160400225W100			

Intervals: U-GREEN_SAND U-BLUE_SAND U-PURPLE_SAND U-BROWN_SAND U-RED_SAND U-LWR_SAND

Functions:

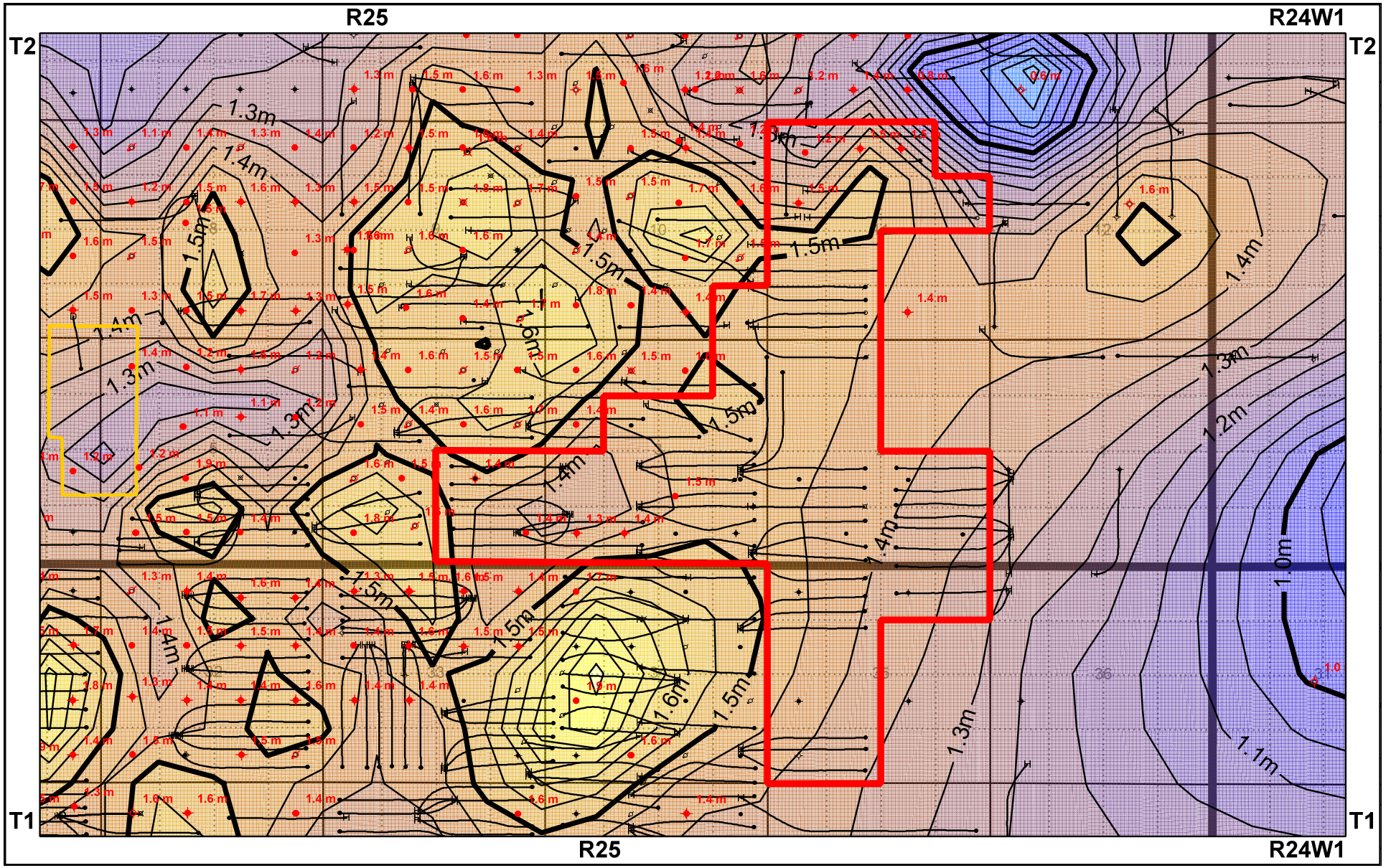
test: Regression Logs: CORE.POROSITY, PHIE, CC: 0.329356
PHIE = (-0.0186548 + 1.06436*(POROSITY))



Waskada Unit 23 Application

Appendix No. 10

Waskada Unit 23 Application
Mean Sonic Porosity from Top Green to Base Red Control Points in Red Values in Percent
December 22, 2016



Waskada Unit 23 Application

Appendix No. 11

Waskada Unit 23 Application
Phi*h at 10% cut off Top Green to Base Red Sand (Total Reservoir)
December 22, 2016