## **Tucker Project**

**2022 Annual Performance Report** 





#### **Advisories**



#### **Special Note Regarding Forward-Looking Statements**

Certain statements relating to Strathcona Resources Ltd. (the "Company") in this document constitute forward-looking statements or information (collectively referred to herein as "forward-looking statements") within the meaning of applicable securities legislation. Forward-looking statements can be identified by the words "believe", "anticipate", "expect", "plan", "estimate", "target", "continue", "could", "intend", "may", "potential", "predict", "should", "will", "objective", "project", "forecast", "goal", "guidance", "outlook", "effort", "seeks", "schedule", "proposed", "aspiration" or expressions of a similar nature suggesting future outcome or statements regarding an outlook. Disclosure related to expected future commodity pricing, forecast or anticipated production volumes, royalties, production expenses, capital expenditures, income tax expenses and other targets provided throughout this presentation, constitute forward-looking statements. In particular, this document contains forward-looking statements pertaining to, without limitation, the following: plans relating to and expected results of existing and future developments, including, without limitation, those in relation to the Company's assets at Tucker; the development and deployment of technological innovations; the financial capacity of the Company to complete its growth projects and responsibly and sustainably grow in the long term; the non-condensable gases ("NCG") coinjection strategies of the Company and the anticipated impacts and benefits thereof; regulatory matters, including the anticipated approval and undertaking of certain projects and facilities; expected regulatory and scheme amendments and the timing and impacts thereof; future development plans of certain assets and projects of the Company, including the timing and location thereof; and future events that may impact the performance of the Company.

In addition, statements relating to "reserves" are deemed to be forward-looking statements as they involve the implied assessment based on certain estimates and assumptions that the reserves described can be profitably produced in the future. There are numerous uncertainties inherent in estimating quantities of proved and proved plus probable crude oil, natural gas and NGLs reserves and in projecting future rates of production and the timing of development expenditures. The total amount or timing of actual future production may vary significantly from reserves and production estimates.

The forward-looking statements are based on current expectations, material factors and assumptions, which speak only as of the earlier of the date such statements were made or as of the date of the report or document in which they are contained. Although the Company believes the expectations, material factors and assumptions reflected in these forward-looking statements are reasonable as of the date hereof, there can be no assurance that these expectations, factors and assumptions will prove to be correct. These forward-looking statements are not guarantees of future performance and are subject to a number of known and unknown risks and uncertainties that could cause actual events or results to differ materially, including, but not limited to: general economic and business conditions; the actions of the Petroleum Exporting Countries Plus ("OPEC+") and the impact thereof on the demand, supply and market prices of the Company's products; the availability and cost of resources required by the Company's operations; price volatility of crude oil, natural gas NGLs and other commodities; fluctuations in currency and interest rates; industry capacity; the ability of the Company to implement its business strategy, including exploration and development activities; the impact of competition; the availability and cost of equipment required by the Company to complete capital programs; the Company's ability to secure adequate transportation for its products; potential delays or changes in plans with respect to exploration or development projects or capital expenditures; the ability of the Company is a capital expenditures; the ability of the Company's ability to meet its targeted production levels; timing and success of integrating hazards and safety issues; the availability and cost of financing; fluctuations in operating results; the Company's apolity to meet its targeted production levels; timing and success of integrating the business and operations of acquired companies and assets; production levels; imprecision of rese

Readers are cautioned that the foregoing list of factors is not exhaustive. Unpredictable or unknown factors not discussed in this document could also have adverse effects on forward-looking statements. All subsequent forward-looking statements, whether written or oral, attributable to the Company or persons acting on its behalf are expressly qualified in their entirety by these cautionary statements. Except as required by applicable law, the Company assumes no obligation to update forward-looking statements in this presentation, whether as a result of new information, future events or other factors, or the foregoing factors affecting this information, should circumstances or the Company's estimates or opinions change.

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# Introduction Tucker In Situ Oil Sands

#### **Project Overview**

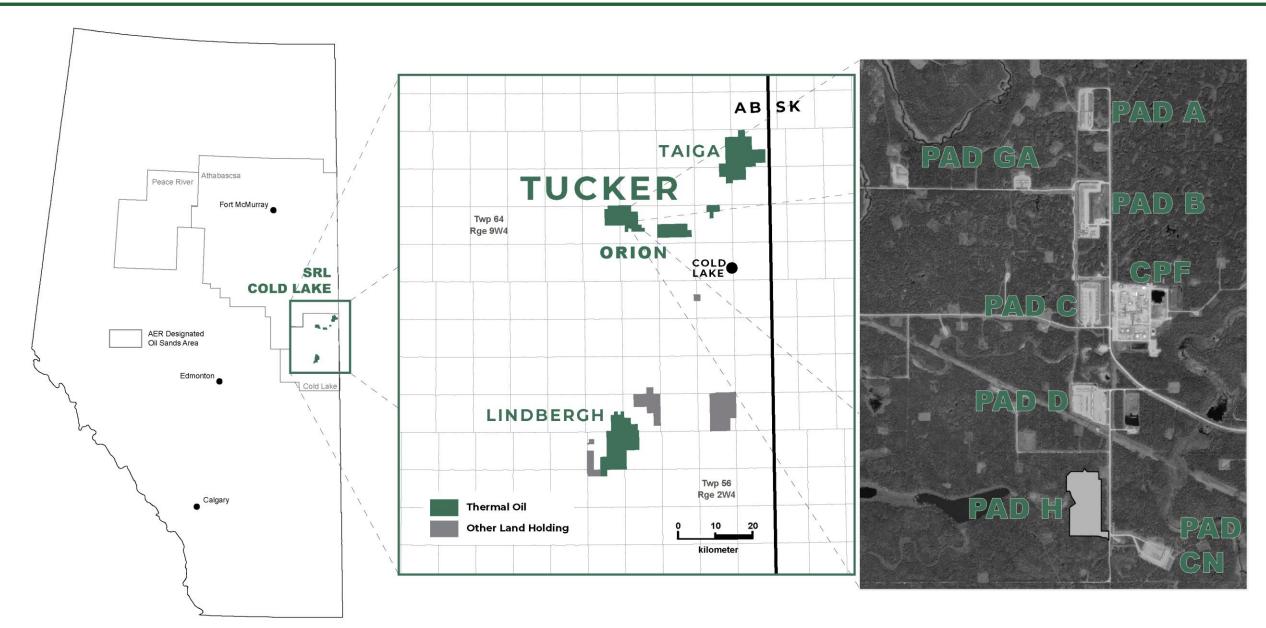


- AER Commercial Scheme Approval No. 9835
- Strathcona Resources Ltd. (SRL) acquires administrative control of Tucker Thermal Project on January 31, 2022
- Multiple Reservoirs
  - Clearwater (CW)
  - Upper Grand Rapids (UGR) Colony (CN)
  - Lower Grand Rapids (LGR) Sparky
- API Bitumen 9-12°
- First Steam August 2006
- First Production November 2006
- Field Facilities
  - Seven surface well pads + twelve subsurface patterns
  - Various infield flowlines, central field separation facility (CFF)
- Central Processing Facility (CPF)
  - Emulsion Treating & Blending
  - Water Treatment
  - Steam Generation



#### **Introduction- Project Location**



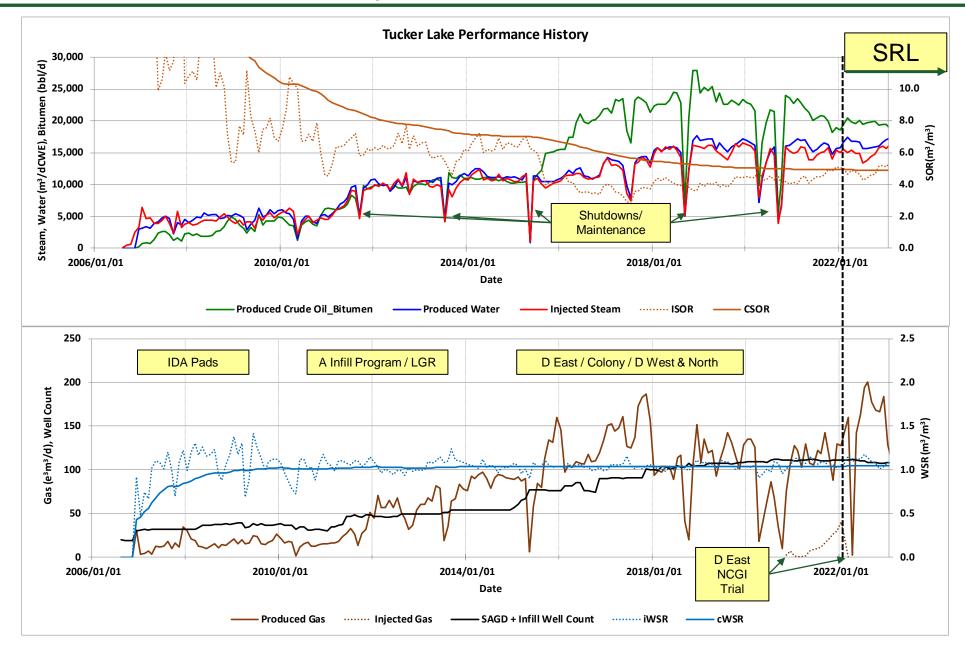




# **Subsurface**Tucker In Situ Oil Sands

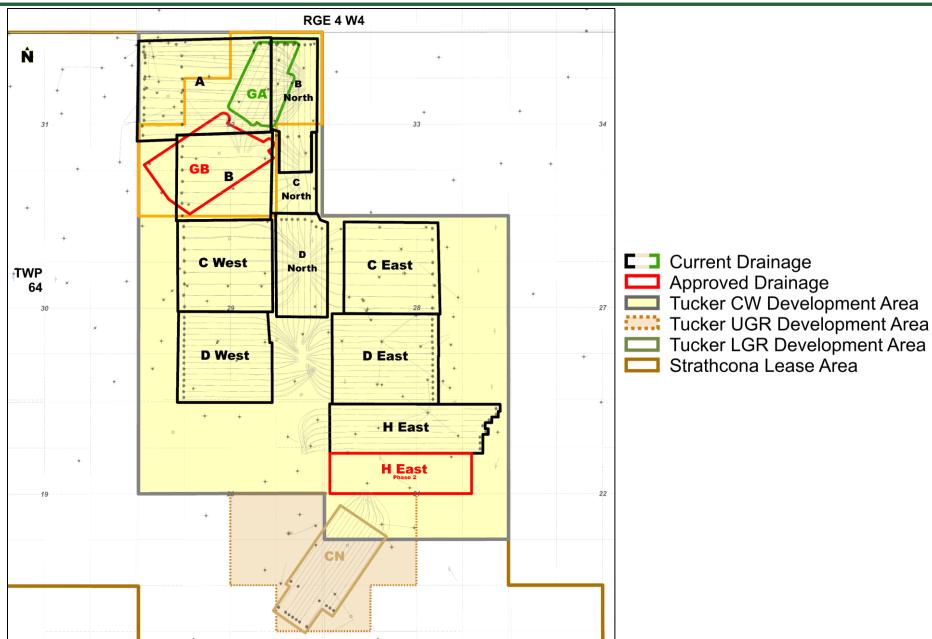
#### **Tucker Lake Performance History**





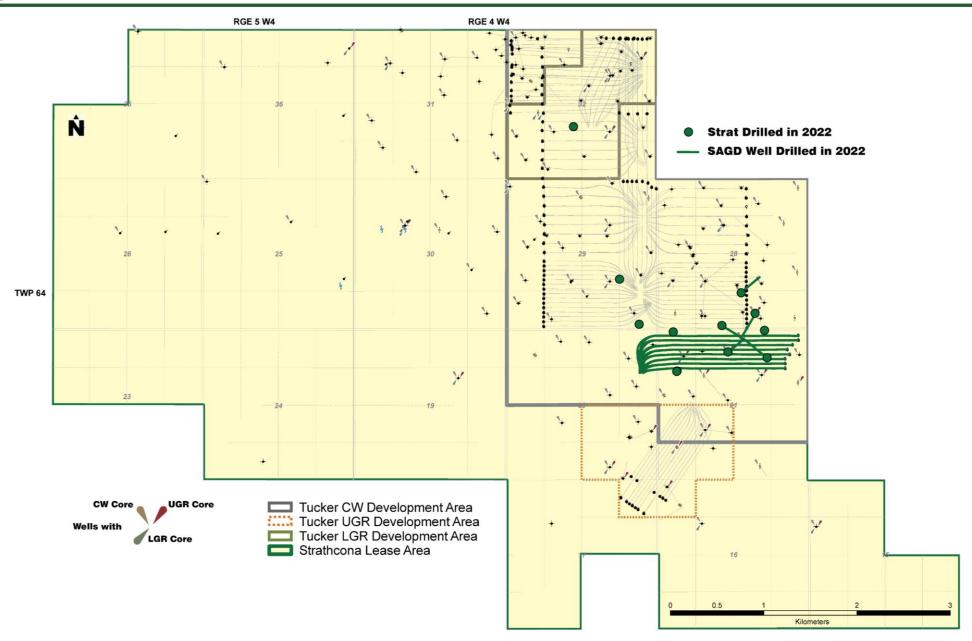
#### **Drilled and Approved Drainage Patterns**





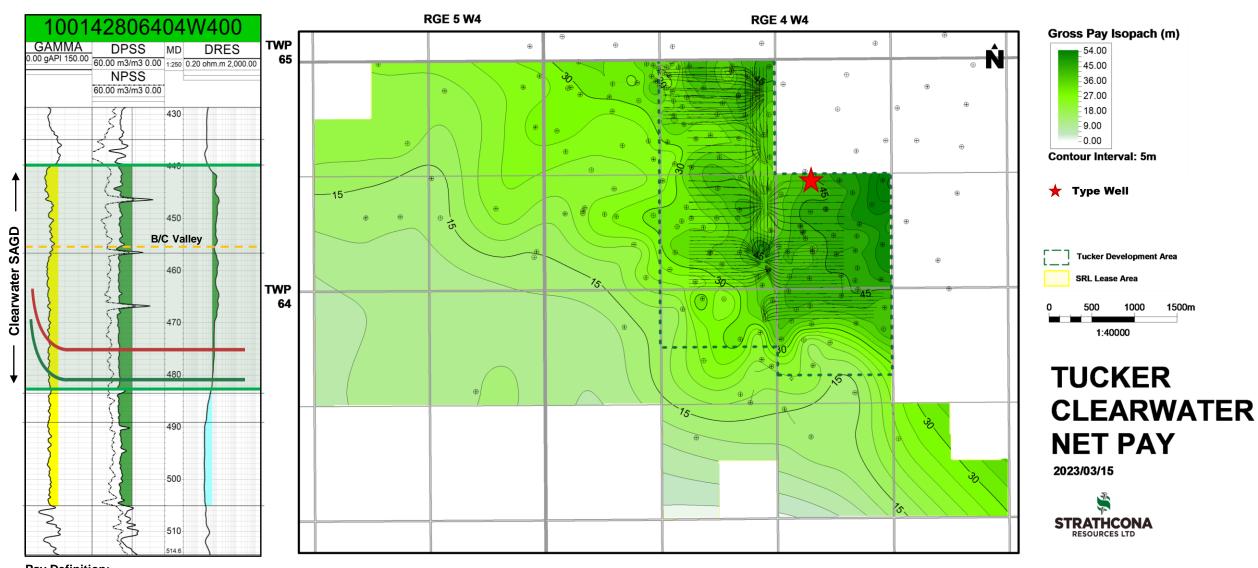
#### **Project Area and Well Data**





### **SAGD Net Pay Isopach Map - Clearwater**





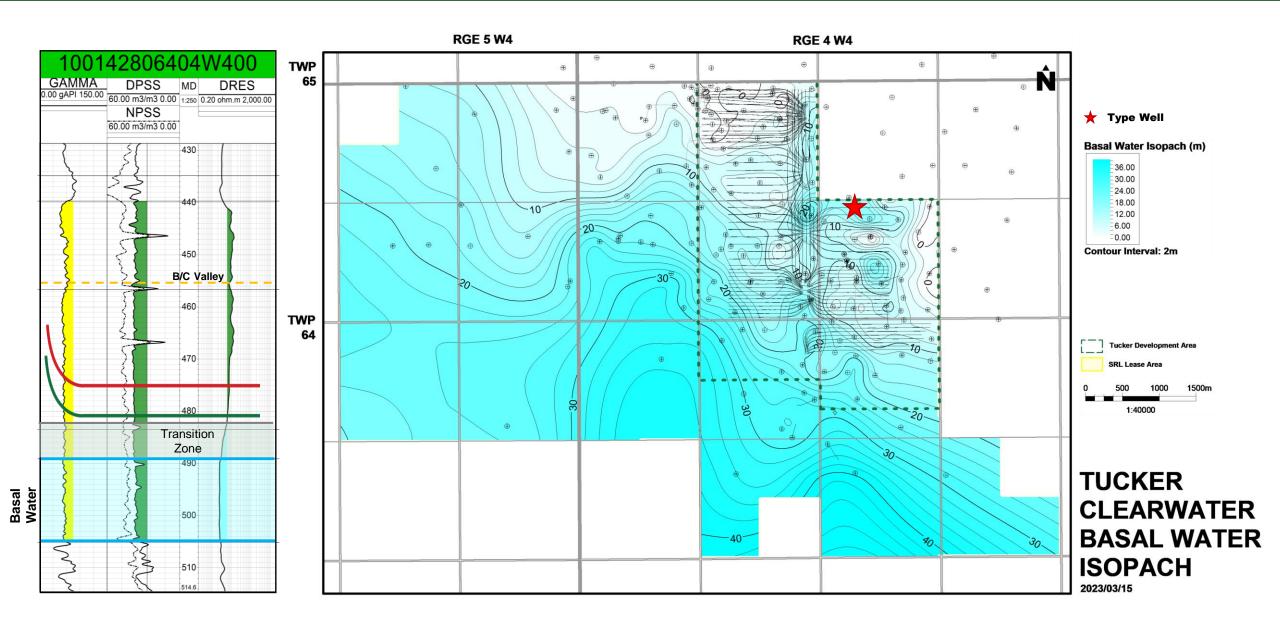
Pay Definition:

Top of Clearwater – SAGD Base

So > 50%

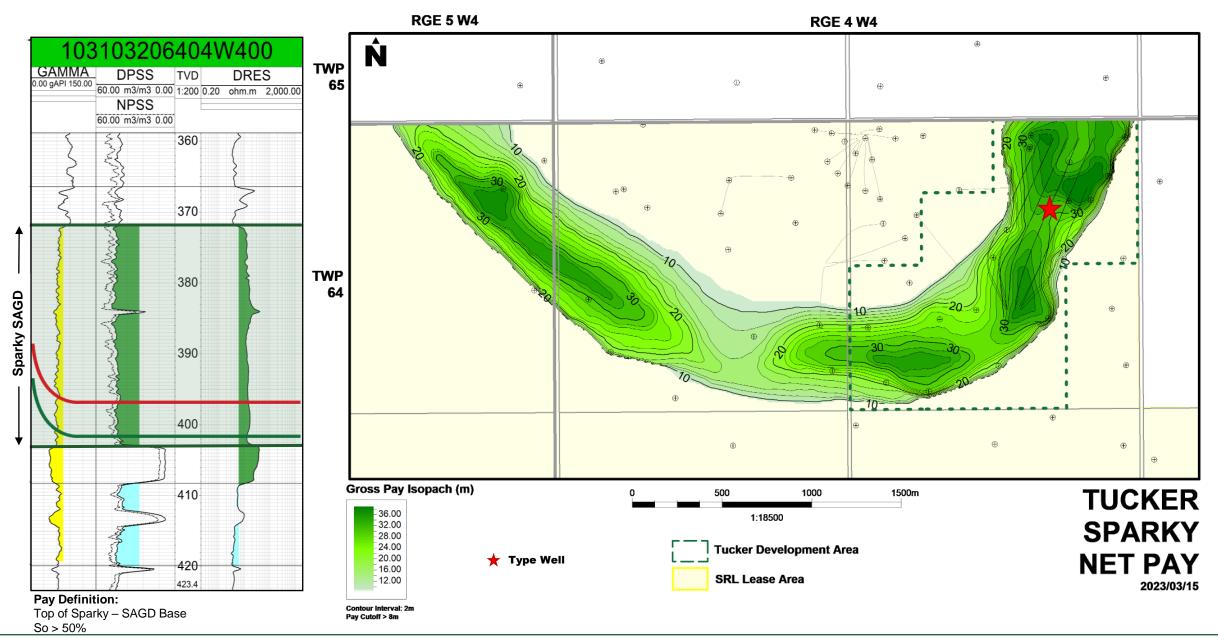
### **Basal Water Isopach Map - Clearwater**





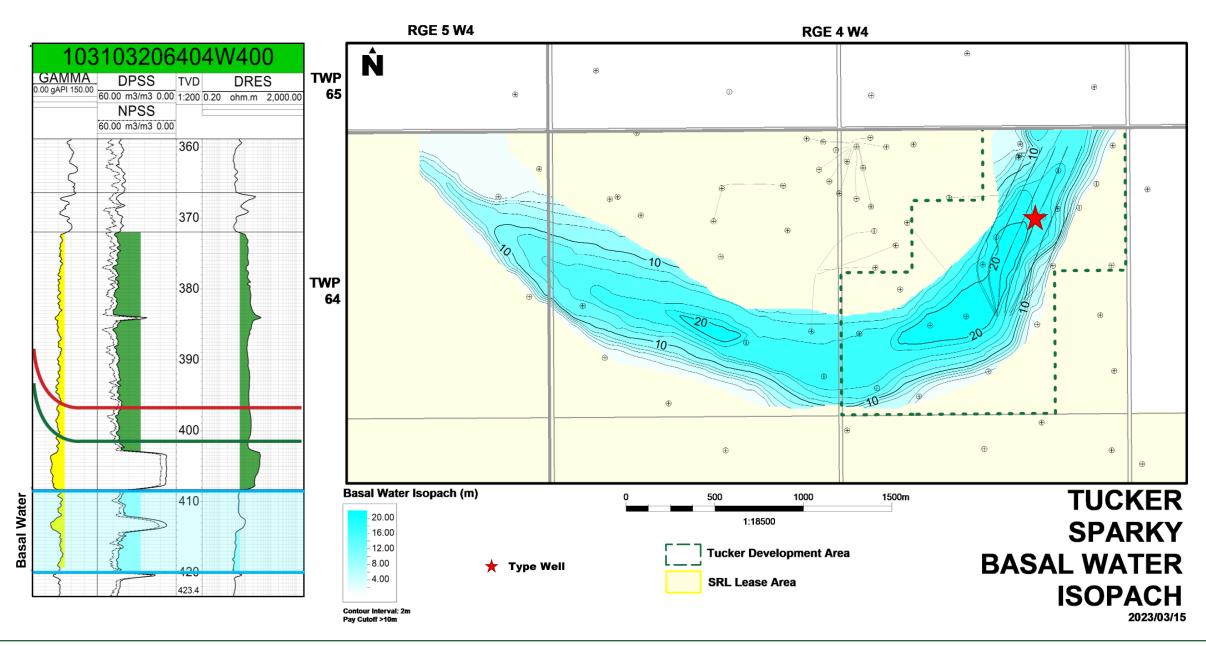
#### **SAGD Net Pay Isopach Map – Lower Grand Rapids**





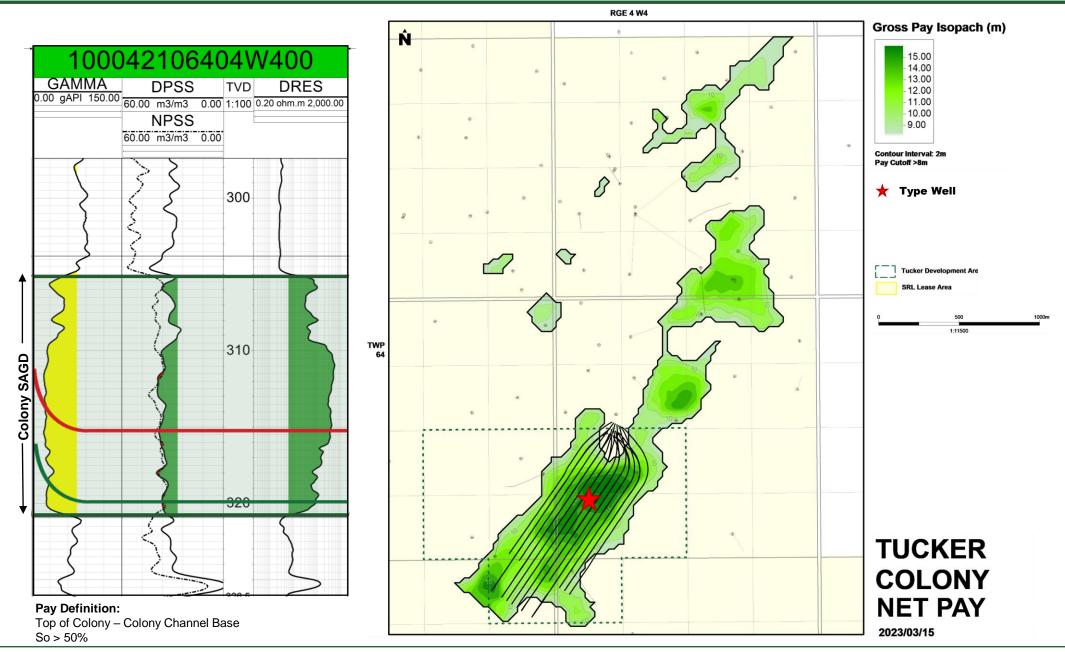
### **Basal Water Isopach Map – Lower Grand Rapids**





#### **SAGD Net Pay Isopach Map – Colony**





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### **Geomechanical Data / Analysis**



Caprock Properties								
Pad	Caprock Issues to Date	Frac Pressure Exceeded	Shale Depth (m)	Measured Fracture Gradient (kP/m)	Measured Fracture Pressure (kP/m)	Fracture Regime		
A, B, C, D	No	No	305	20	6,100	Horizontal		
GA	No	No	357	19.9	7,120	Horizontal		
CN	No	No	426	21.8	9,280	Horizontal		

	Sand Properties					
Pad	Sand Depth (m)	Measured Fracture Gradient (kP/m)	Measured Fracture Gradient (kP/m)	Fracture Regime		
GA	375	17	6,360	Vertical		
CN	446	16	7,140	Vertical		

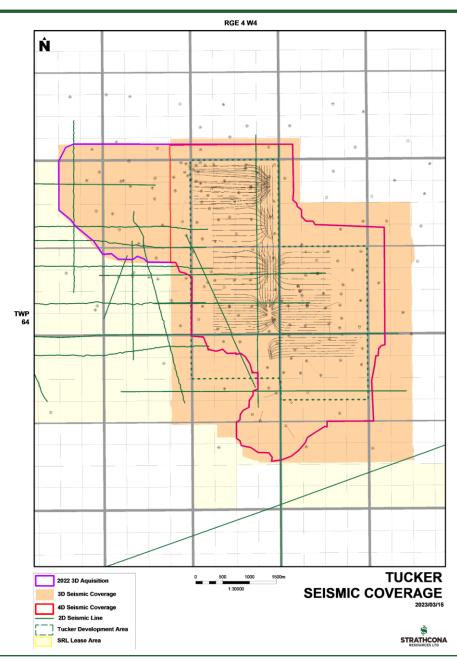
#### **Geomechanical – Surface Heave Update**



- Surface heave monitoring is not a condition of Commercial Scheme Approval No. 9835
- The Project is operating near reservoir pressure
- Surface heave monitoring has not been implemented since Project initiation
- As noted in previous Directive 054 presentations, the Project is committed to further investigate the possible extent of surface heave if there is a change in operating conditions

#### **Seismic Data**



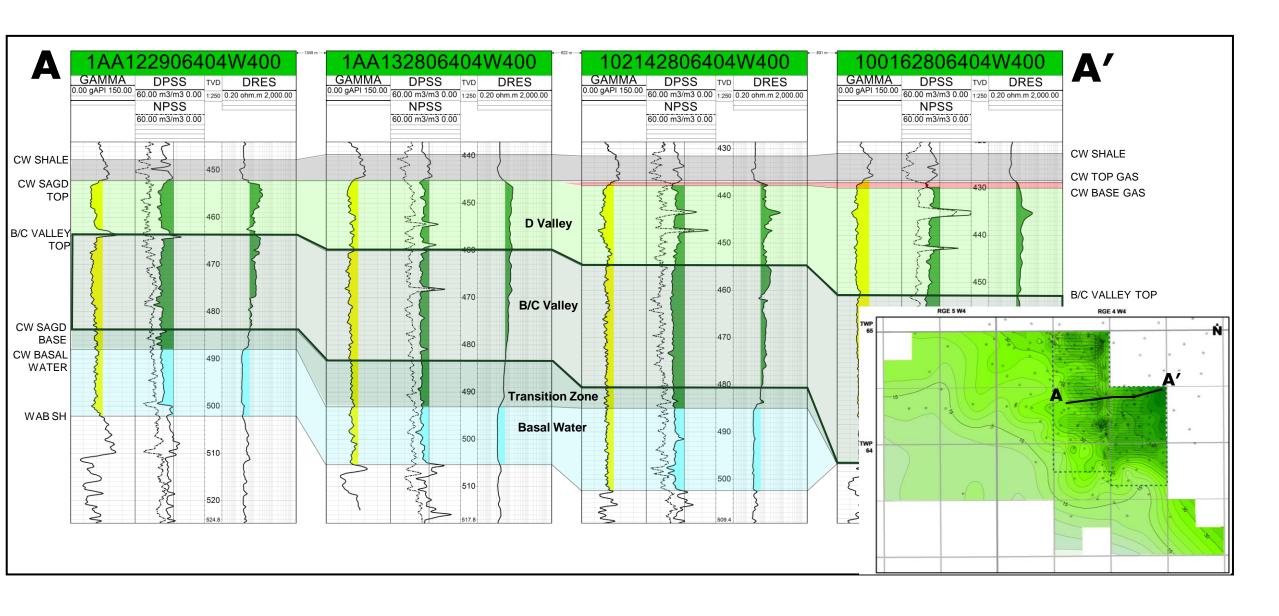


#### 2D, 3D and 4D Datasets:

- 20 2D lines with cumulative line length of ~100 km
- 27.5 km<sup>2</sup> of 3D seismic data over the Tucker lease
- 15.77 km<sup>2</sup> of 4D seismic
  - Baseline acquired February 2005, 8.6 km<sup>2</sup>
  - 2007 3D, 10.9 km<sup>2</sup> (2005 & 2007 surveys merged in 2007)
  - First monitor acquired March 2010, 7.7 km<sup>2</sup>
  - Second monitor acquired February 2012, 7.7 km<sup>2</sup>
    - Additional 3D coverage acquired February 2012, 6.9 km<sup>2</sup>
  - Third monitor acquired December 2013, 7.7 km<sup>2</sup>
  - Fourth monitor acquired January 2018, 10.2 km<sup>2</sup>
  - Fifth monitor, acquired January 2022, 20.2 km<sup>2</sup>
    - Additional 3D coverage acquired January 2022, 4.1 km<sup>2</sup>

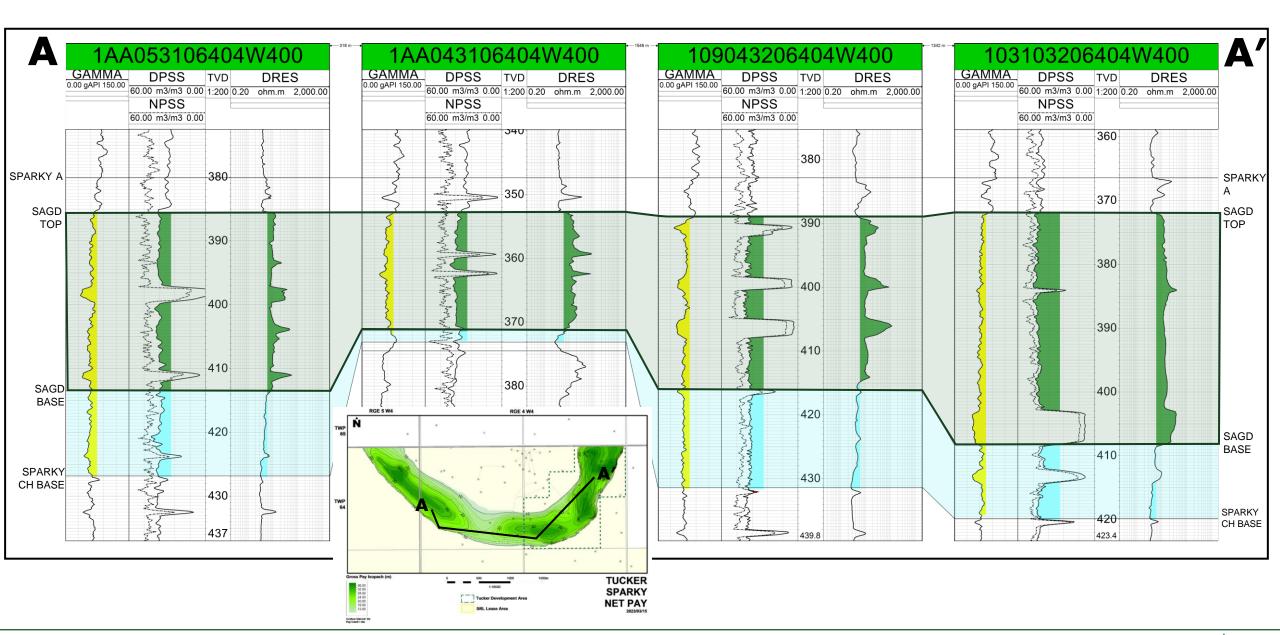
#### Representative Stratigraphic Cross-Section - Clearwater





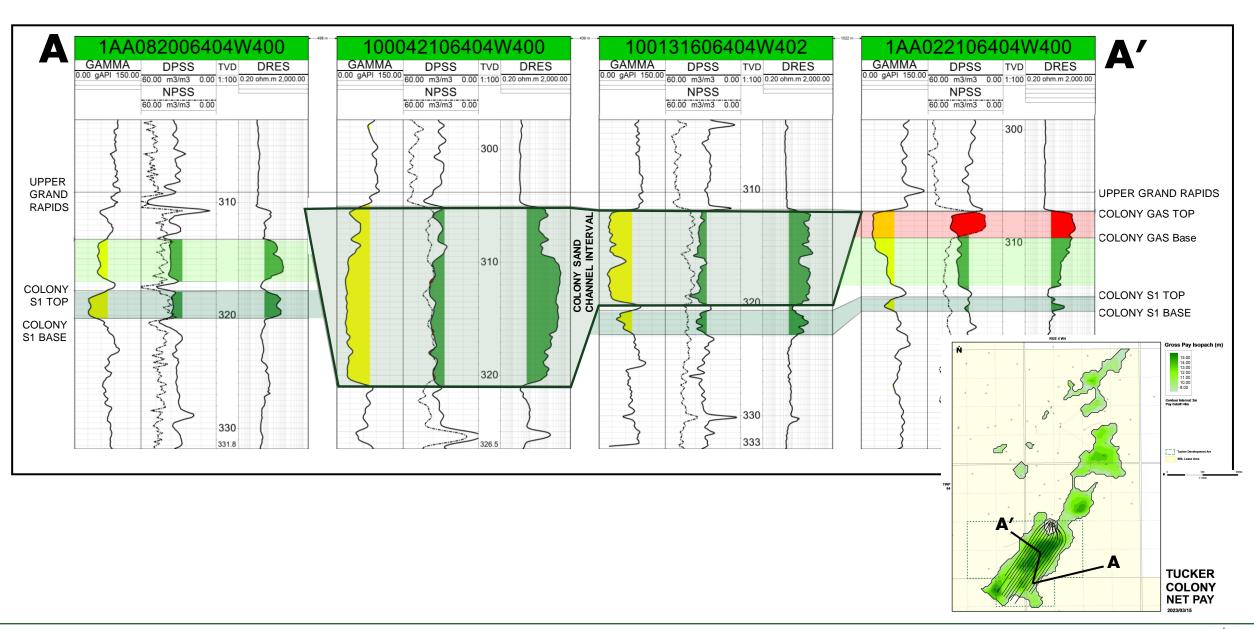
#### Representative Stratigraphic Cross-Section – Lower Grand Rapids, Sparky





#### Representative Stratigraphic Cross-Section – Upper Grand Rapids, Colony





#### **OBIP Volumes and Reservoir Properties**



- Project Area
  - 98MMm<sup>3</sup>
- Development Area
  - 93MMm<sup>3</sup>
- Combined Active Well Patterns
  - 38.1MMm<sup>3</sup>
- Cumulative Recovery
  - 17.9MMm<sup>3</sup>
  - **47.1%**

	SAGD Reservoir Properties				
	Units	CW	LGR	UGR	
Depth	metres	470	390	320	
Pay Thickness	metres	34.0	27.4	13.0	
Average Porosity	%	31	29	33	
Average Oil Saturation	%	66	69	86	
Average Bitumen Weight	%	9.6	9.2	13.5	
Horizontal Permeability	Darcies	4,400	1,800	4,500	
Kv:Kh		0.4	0.4	0.8	
Temperature	°C	16	14	12	
Pressure	MPa	3,200	2,600	2,400	
Oil Gravity	°API	8.7	9.4	11.8	
Viscosity at 16°C	сР	300,000- 1,300,000	100,000-350,000	30,000	

#### **Reservoir Properties and Bitumen in Place**



OBIP and Recovery to Date													
Pad	Start Date	Operating Well Pairs (#)	Well Length (m)	Well Pair Spacing (m)	Net Pay (m)	Porosity (%)	Permeability (D)	Initial Oil Saturation (%)	Initial Water Saturation (%)	Total OBIP (MMm³)	Total PBIP (MMm³)	Current Recovery <sup>(1,2)</sup> (%)	Estimated Ultimate Recovery <sup>(2)</sup> (%)
А	2006	24	1,050 (avg)	50	29	31	4.3	66	34	5.4	4.9	41	50-60
В	2006	8	730	50	31	31	3.9	66	34	3.7	3.4	22	30-40
B North	2006	4	865 (avg)	100	36	31	5.2	66	34	3.5	3.2	20	30-40
C West	2006	8	725	100	34	31	4.0	66	34	4.4	3.9	19	30-40
C North	2006	4	710	100	34	31	5.0	66	34	1.1	1.0	9	10
C East	2008	8	725	100	40	31	4.7	66	34	5.0	4.6	40	50-60
D West	2017	15	710	50	28	31	2.4	66	34	3.4	2.9	18	50-60
D North	2016	8	780	50	34	31	5.1	66	34	2.1	1.8	26	50-60
D East	2015	15	830	50	39	31	4.9	66	34	5.6	4.9	41	60-70
GA	2011	6	650	75	27	29	1.8	69	31	1.8	1.5	40	50-60
CN	2016	6 (+7IF)	875 (avg)	75	13	33	4.5	86	14	2.0	1.8	60	>80

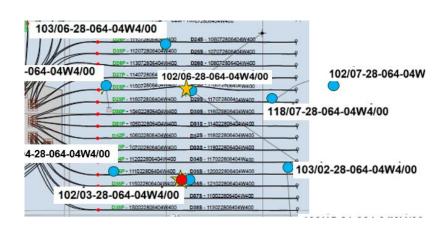
<sup>(1)</sup> Recovery as of December 2022

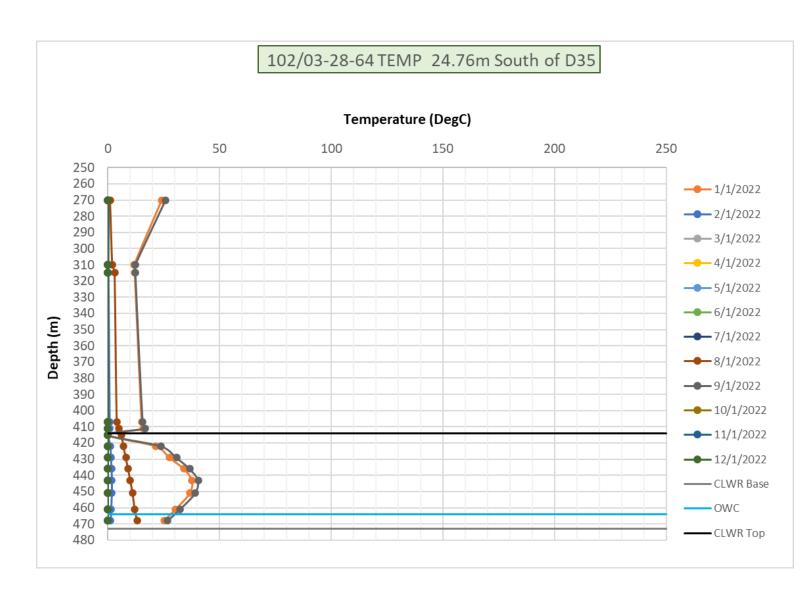
<sup>(2) %</sup> recovery of OBIP

#### Monitoring Update – OSCA Approval Clause 14b Well 102/03-28-064-04W4



- No temperature increases in 2022.
- Low risk to neighboring nonthermally compatible well



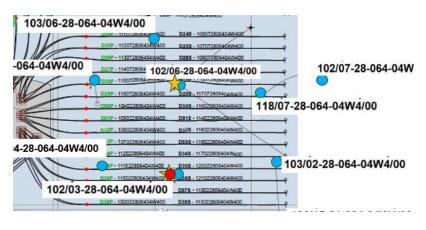


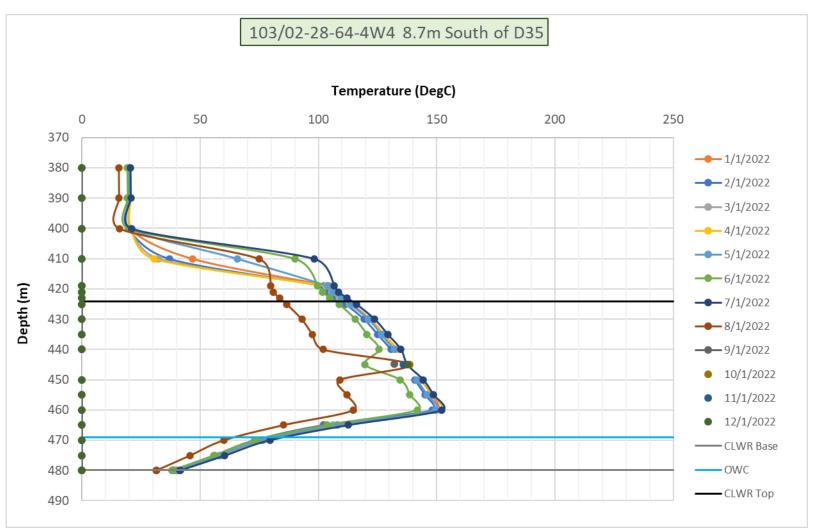
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#### Monitoring Update – OSCA Approval Clause 14b Well 103/02-28-064-04W4



 No appreciable temperature changes in 2022.

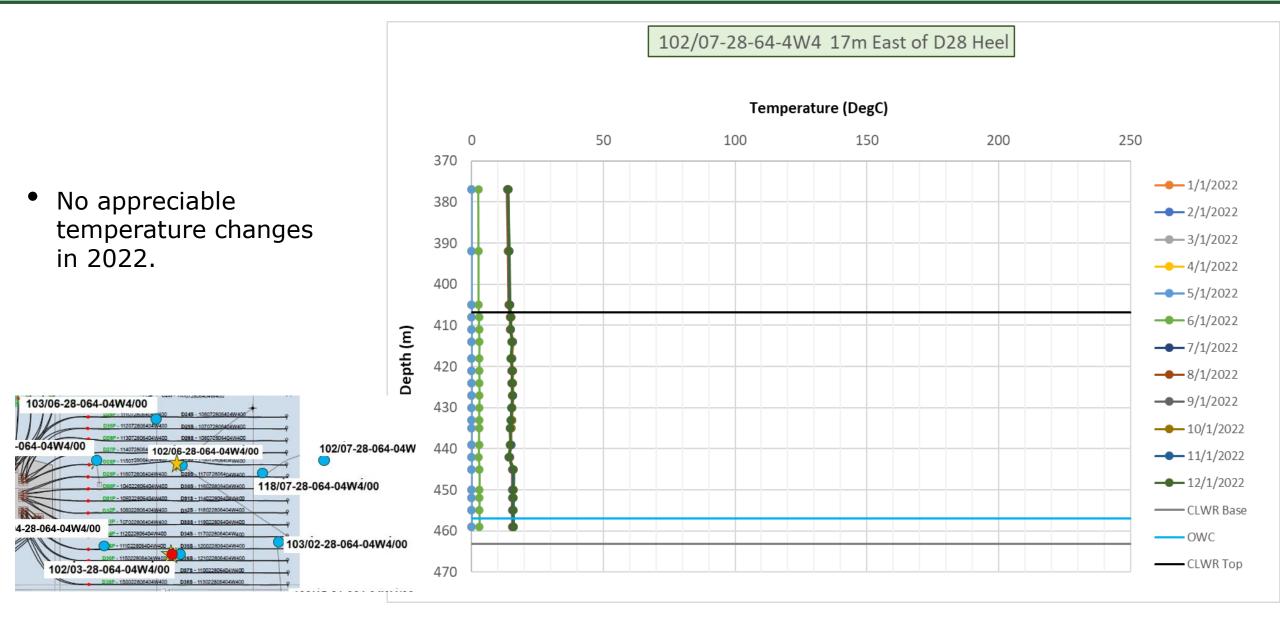




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#### Monitoring Update – OSCA Approval Clause 14b Well 102/07-28-064-04W4





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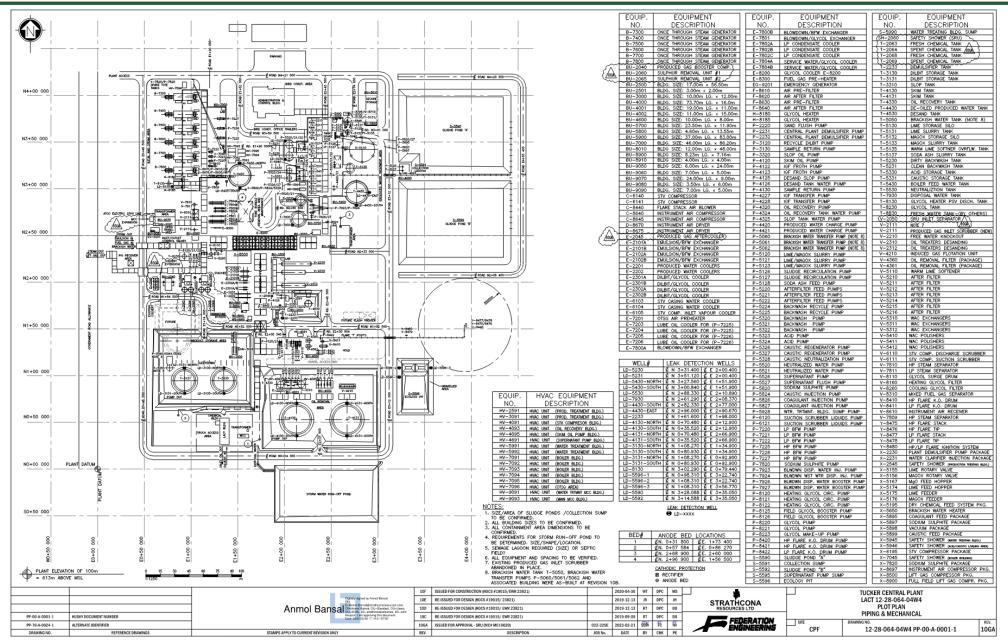


# **Surface**Tucker In Situ Oil Sands

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#### **Central Processing Facility - Plot Plan**





### **Central Processing Facility Modifications**

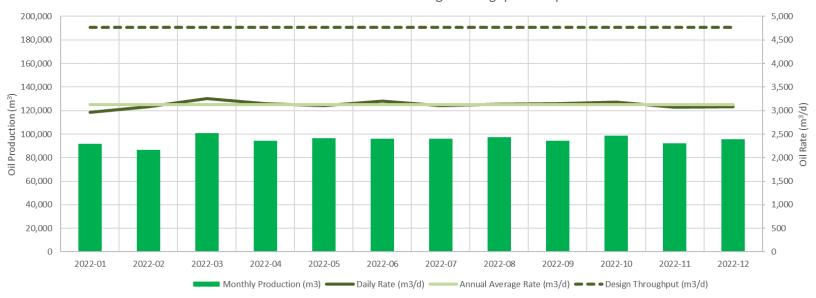


No facility modifications were conducted during the reporting period

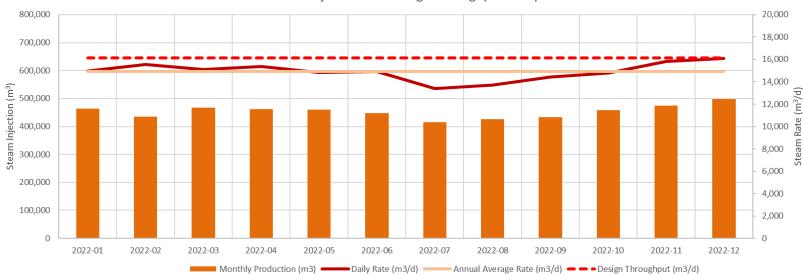
### **Annual and Design Throughput Comparison**







#### Annual Steam Injection and Design Throughput Comparison





## Historical and Upcoming Activity Tucker In Situ Oil Sands

#### **Suspension and Abandonment Activity**



- No active SAGD patterns transitioned to blowdown in 2022
- No suspension or abandonment work was completed in 2022 on any active SAGD patterns
- Standing well at 100/01-28-064-04W4 was abandoned
  - Deemed thermally non-compliant
  - Abandoned prior to the start of steaming operations at Pad H East

#### **2022 Scheme/EPEA Amendments**



Scheme 9835 / EPEA 147753 Amendments	Description	Submission / Approved Date		
OSCA 9835 BB Application #1938601	Pad H Amendment Application	July 8, 2022 / July 29, 2022		
OSCA 9835 CC Application #1938661	Commercial Scheme Approval Transfer	July 14, 2022 / August 24, 2022		
OSCA 9835 DD Application #1939114	Amendment of Appendix A Figure (9835 CC rescinded)	August 26, 2022 / August 29, 2022		
EPEA 147753-01-04	EPEA Approval Transfer	July 8, 2022 / August 8, 2022		
EPEA 147753-01-05 Application 014-147753	Amendment of SO <sub>2</sub> Emissions Limit	October 24, 2022 / January 19, 2023		

## **2022 Compliance Summary**



Approval Number	Reportable Incidents/Contraventions/Commitments	Corrective Actions			
	- Edge 0389811 - Annual Soil Monitoring Report submitted to AER late	- Annual report submitted			
EPEA 00147753	- EDGE 0404372 - CEMS code 90% uptime not met due to B-7800 CEMS GM-32 Spectrometer failure	- GM-32 replaced February 2023			
	- EDGE 0407569 - CEMS code 90% uptime not met due to B-7300 SICK GM32 reflector failure	- Repaired and made operational			
Directive 13	- Compliant	- No well abandonments or suspensions were required in 2022			
Reportable Incidents	- EDGE 0407503 - Emulsion release at Well A5 due to piping elbow failure	- Remediation completed, closure report and ROSC pending submission			
OSCA 9835 DD Clause 7	- 100/01-28-064-04W4 - Standing, cased well was deemed thermally non-compliant	- Abandoned in support of Pad H East development prior to steaming			

#### **Operational Changes**



35

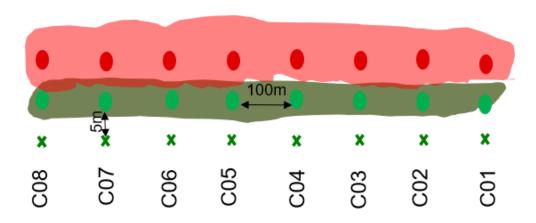
- No material changes to facility capacity
- SRL operating strategy accepts more live steam production compared to previous operators leading to a strong performance year
  - Higher fluid returns + higher heat loading required some minor debottlenecking work within the central processing facility to accommodate

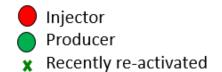
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#### **Lessons Learned Successes or Failures**



- Opportunity exists in restarting original wellpairs that were drilled lower in section and previously shut-in due to poor performance
  - Resource below producer level is conductively heated over time as SAGD progresses
  - Pad C West re-activations complete
    - Remaining five suspended wellbores on Pad C West were re-activated in 2022 and are now operational
    - Three other suspended wells were re-activated in 2021 by previous operator
- Assessing other patterns for similar lower re-activations and drills, once thermal readiness reached





#### **Pilots or Technical Innovations**

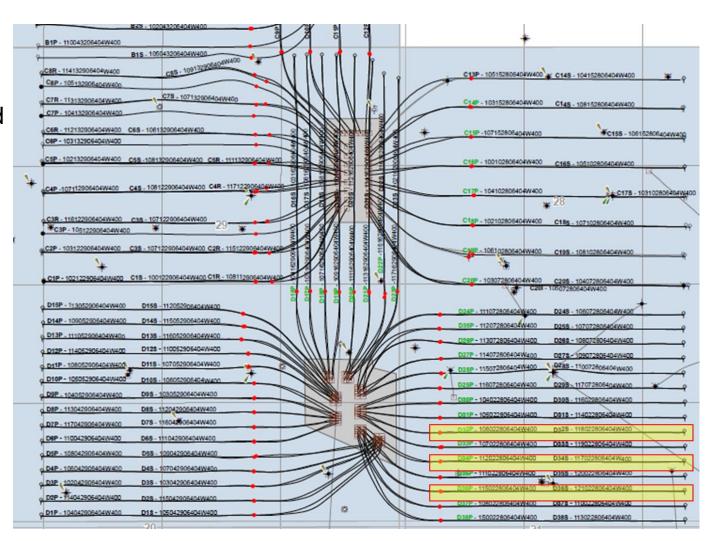


- NCG co-injection on Pad D East was halted in February as overall reservoir strategy was adjusted to try and remove excess gas from chambers
- Several wells were converted to a donor/receiver system with an induced differential pressure to promote fluid migration from chamber to chamber and to remove excessive gas accumulation from the chambers
  - Objective being the removal of excess gas allows steam chamber to grow unimpeded to top of zone
  - Preliminary results are encouraging and show increased oil production; limited applicability to date as increased gas production also results in increased sulphur content
    - Potential to expand this strategy once permanent sulphur removal in place

#### **NCG Co-Injection Information**



- Non-Condensable Gas (NCG) co-injection halted on February 15, 2022
- NCG injected into 3 wells; D32S, D34S and D36S
- Cumulative NCG injection is 1,869 e<sup>3</sup>sm<sup>3</sup> for the reporting period
- The average NCG injection concentration (Jan 1 to Feb 15) was approximately 4.2%
- NCG co-injection results from the period of Jan to Feb 15, 2022 did not show any negative impacts to oil production or SOR during this limited period



NCG Co-injection wells

#### **Future Plans**

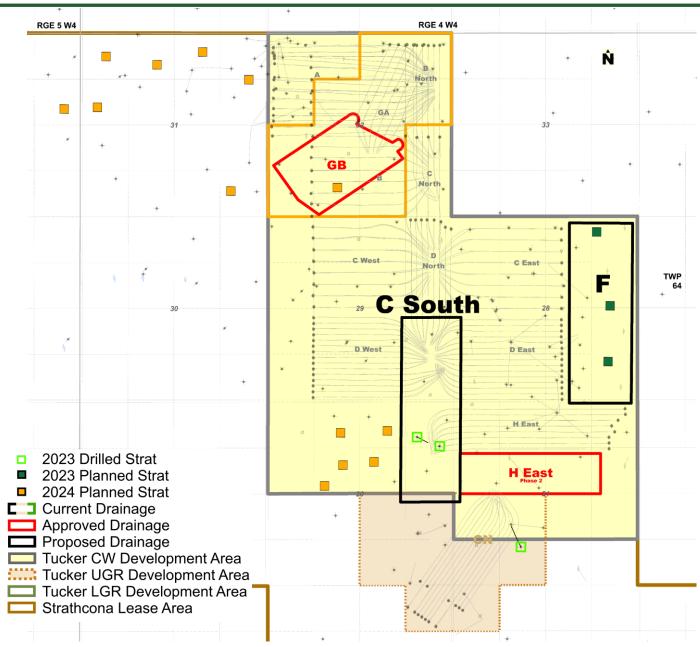


#### **Future Regulatory Applications**

- Q2 2023
  - Pad C South Directive 23 Category 2 Amendment
- Q4 2023
  - Pad F Directive 23 Category 2 Amendment
- 2024
  - Water Act renewal application
  - EPEA renewal application

#### **Planned 2023 Activity**

- Q3 2023
  - Pad H East Startup
  - Pad CN NCG Injection Startup
- Q4 2023
  - Pad C South Lease Construction
  - Winter Delineation Program (into Q1 2024)
  - Permanent Sulphur Recovery Unit Installation and Commissioning (Q1 2024)





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