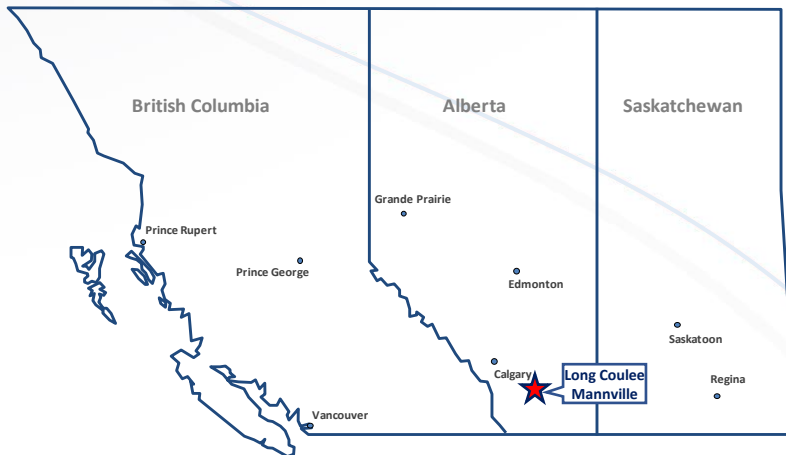


# Long Coulee Mannville Project

[ MKS INVESTMENTS LTD. ]

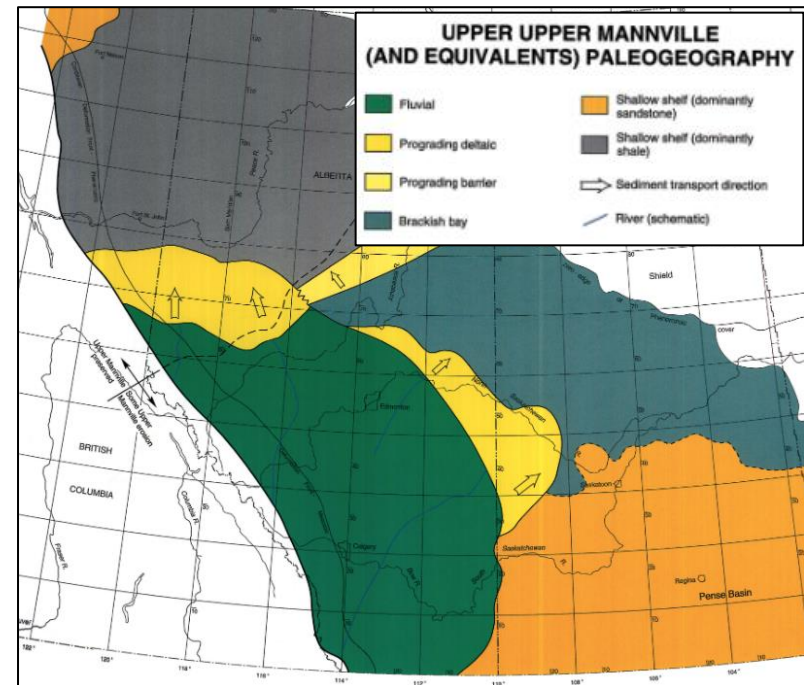
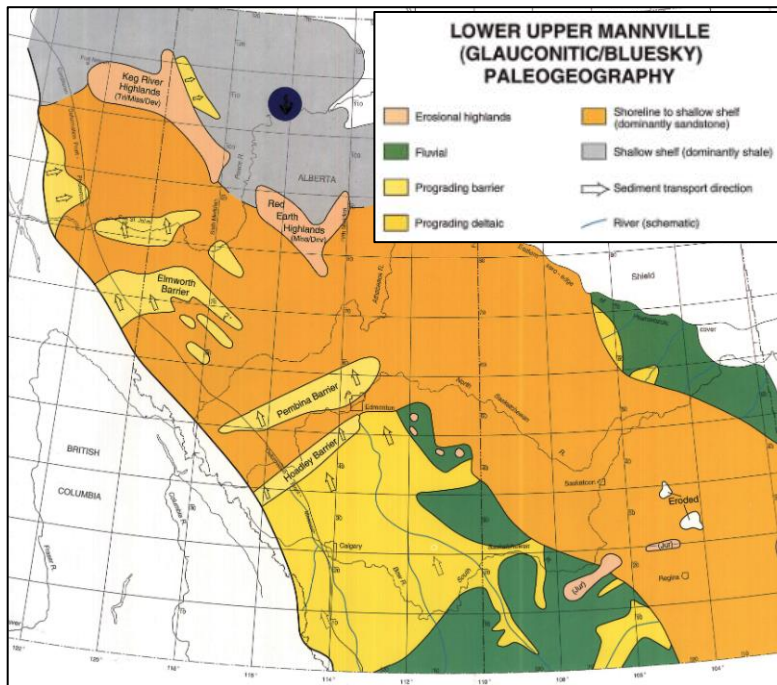
November 2021



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## ■ Cretaceous Mannville Group of the Western Canada Sedimentary Basin

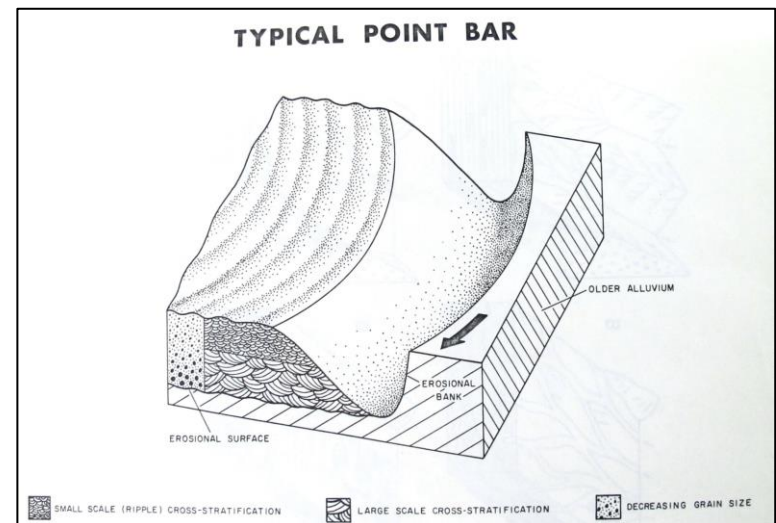
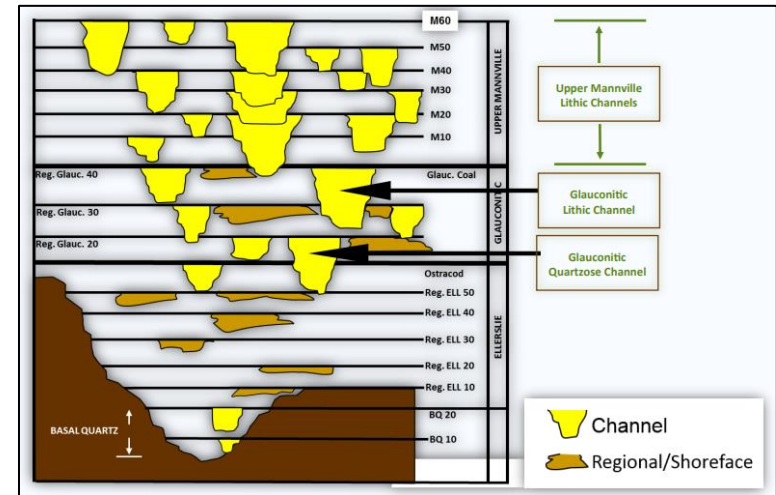
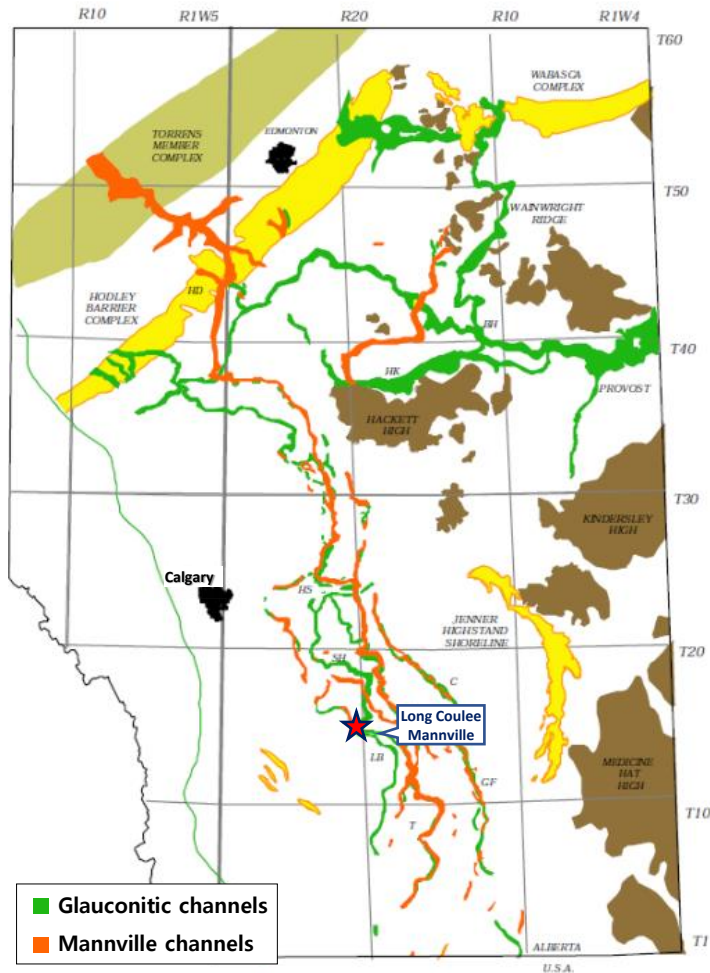
Mannville Group and equivalent strata comprise the oldest Cretaceous rocks over most of the Western Canada Sedimentary Basin (WCSB) and represent a major episode of subsidence and sedimentation following a long period of uplift, exposure and erosion of older strata. All strata within the generally unconformity-bounded interval are referred to as the Mannville as the precise age determinations are difficult to make. Mannville strata cover the entire basin, ranging from less than 40m thick in some areas of the plains to more than 700m thick in the Rocky Mountain Foothills. Enormous reserves of coal, natural gas, and conventional and heavy oils are found in the Mannville. Oil and gas are trapped in numerous fluvial and valley-fill reservoir sandstones in the south, and in more regionally extensive shoreline sandstone complexes throughout northern and central regions.



# I. Overview

## ■ Glauconitic and Post-Glauconitic Upper Mannville Group Lithic Channel Systems

- The channels are considered to be meander river model and exists throughout WCSB
- Deposited in typical point bar system

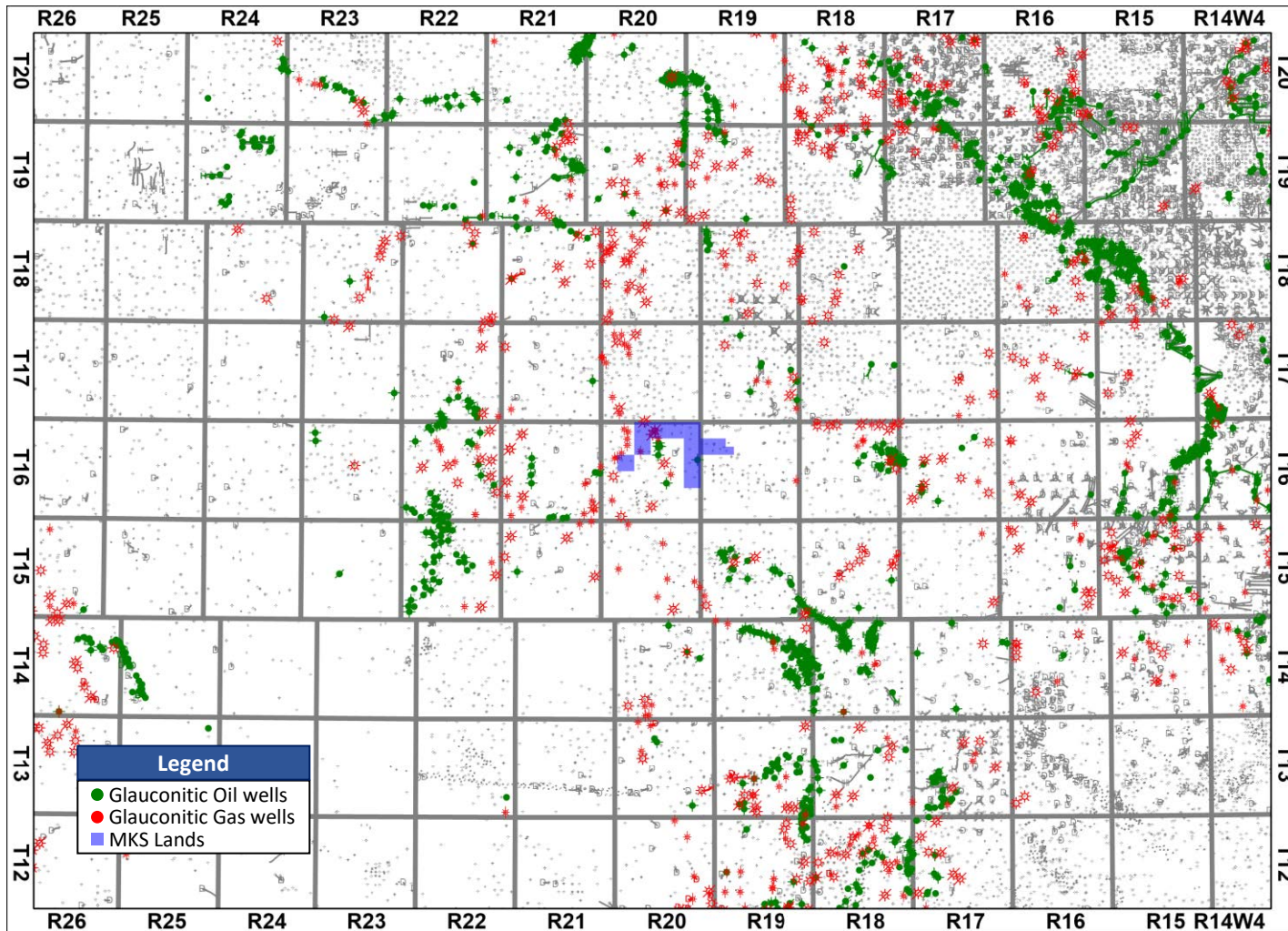




# I. Overview

## ■ Glauconitic Channel Production Areas

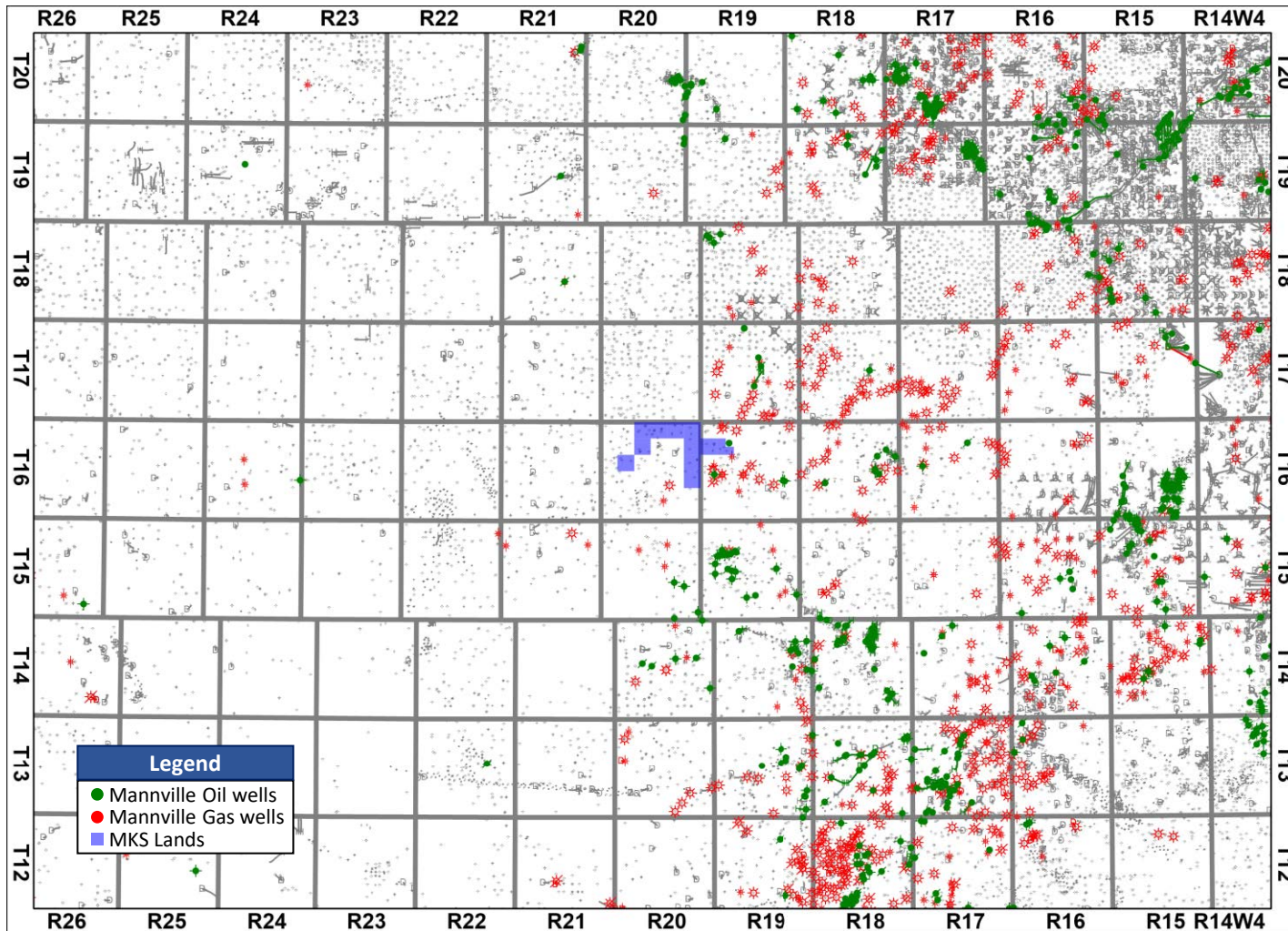
- Glauconitic channel oil & gas producing areas with producing and licensed wells status
- Significant production from vertical wells in surrounding fields and potential to increase productivity by HZ drilling



# I. Overview

## ■ Upper Mannville Channel Production Areas

- Mannville oil & gas producing areas with producing and licensed wells status
- Significant production from vertical wells in surrounding fields and potential to increase productivity by HZ drilling

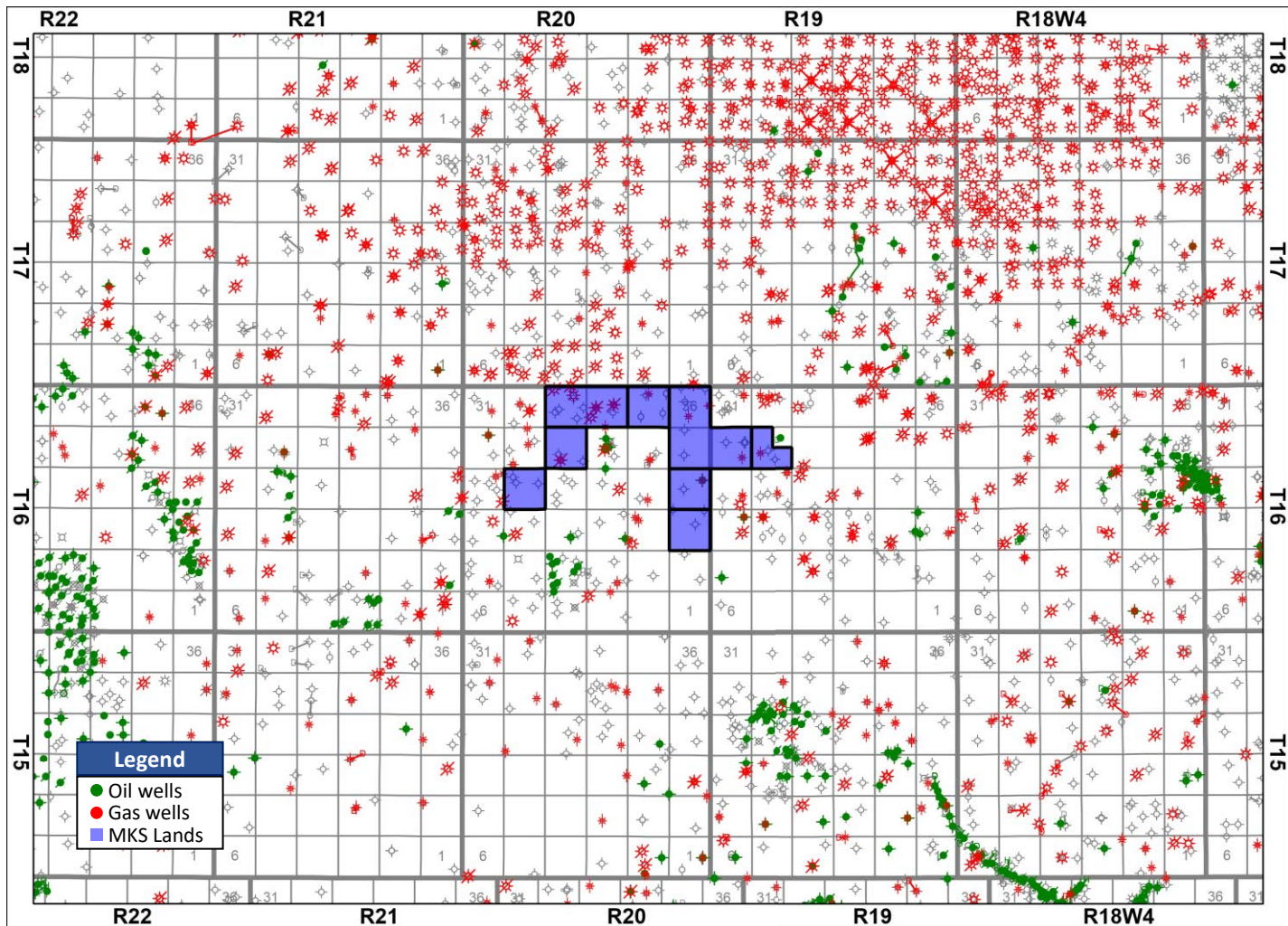




## II. Target Land

### ■ Target Location

- Acquired Long Coulee crown lands are located in the middle of Upper Mannville and Glauconitic Channel production areas



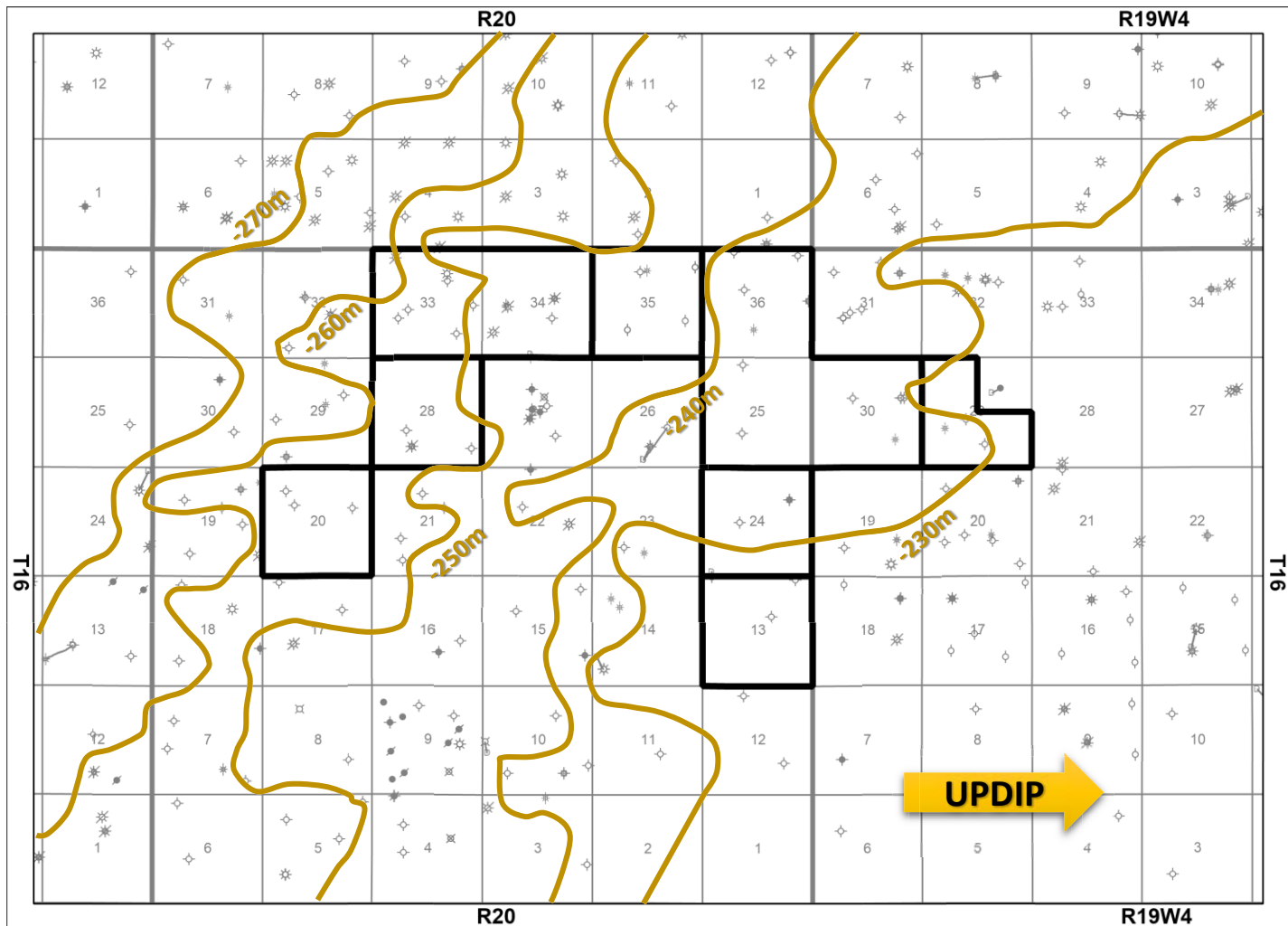
# III. Technical Evaluation

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## ■ Mannville Structure

- Regional dip is to the East due to **Sweetgrass Arch** influence



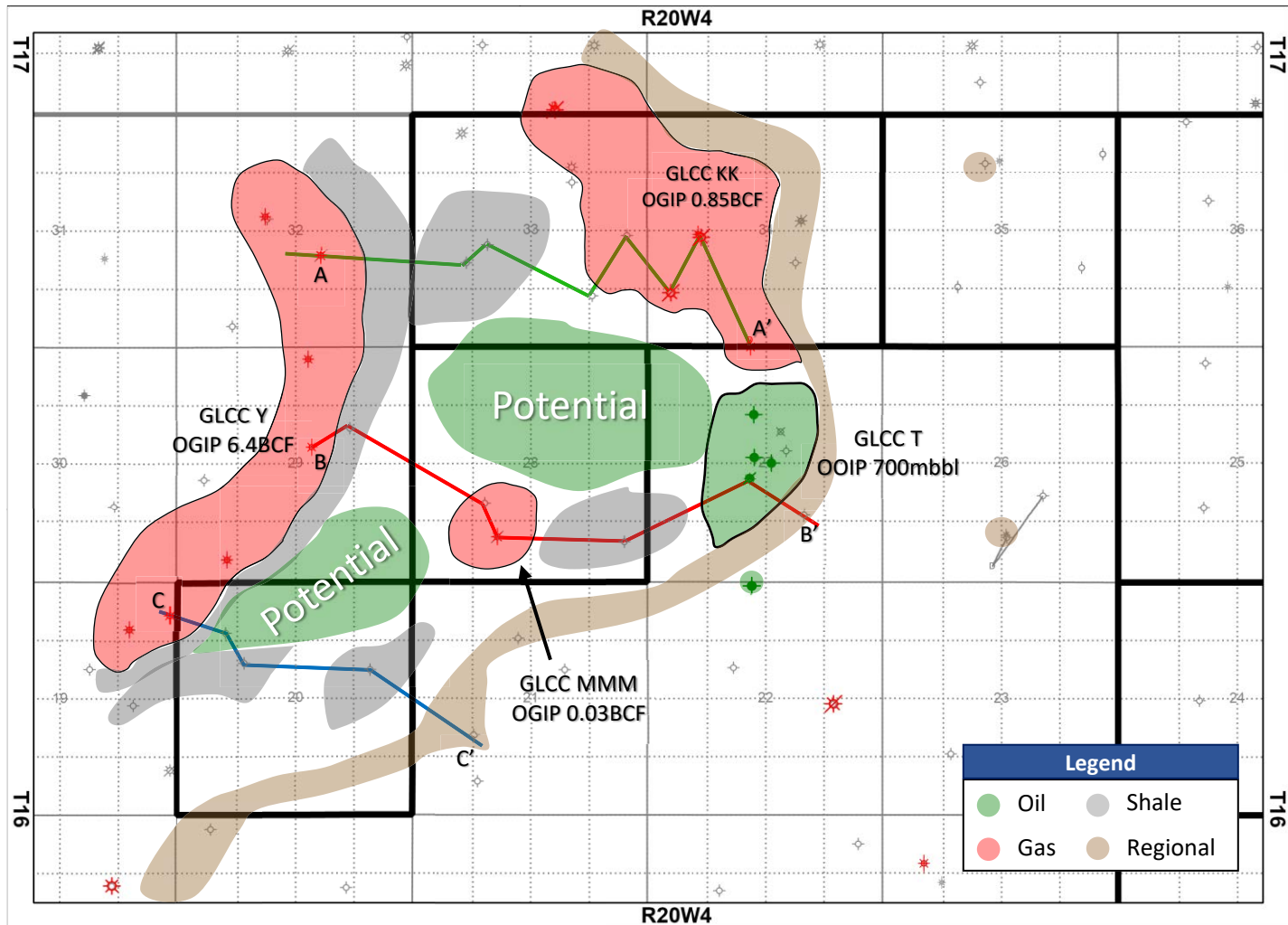
# III. Technical Evaluation

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## ■ Glauconitic Formation Geological Evaluation

- Glauconitic oil and gas pools and potential areas





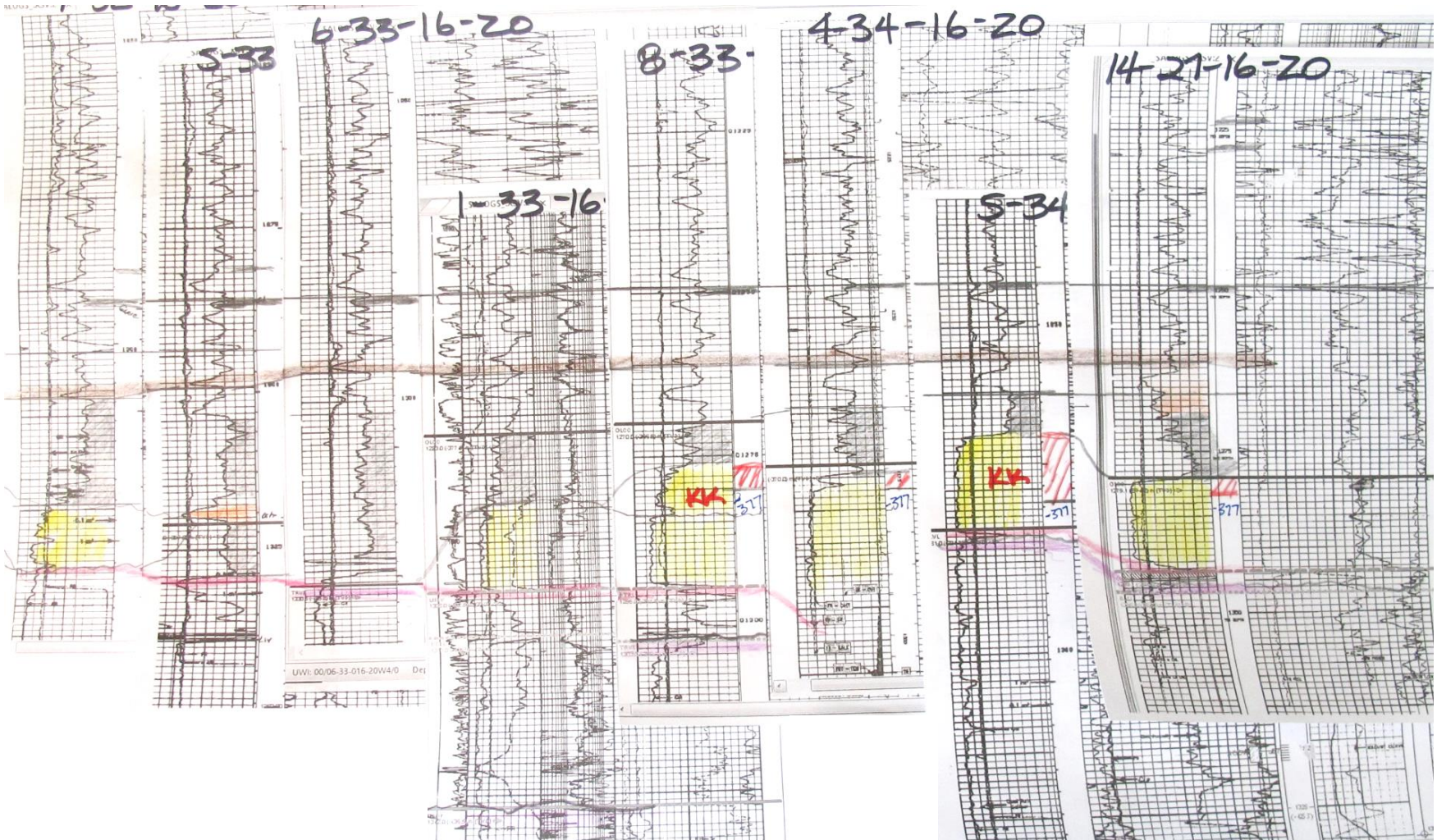
# III. Technical Evaluation

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## ■ Glauconitic Formation Geological Evaluation

- Cross section A-A'





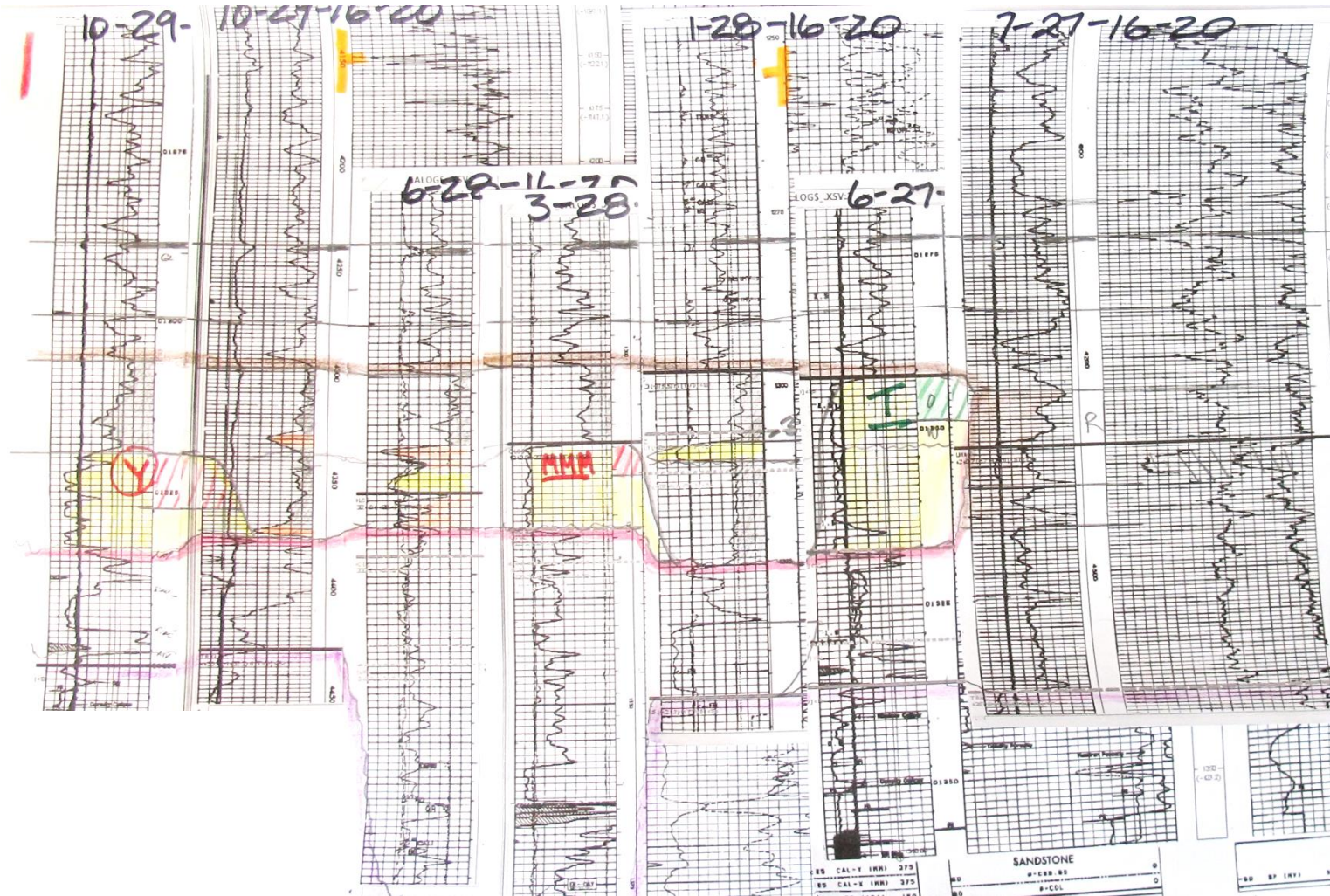
# III. Technical Evaluation

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## ■ Glauconitic Formation Geological Evaluation

- Cross section B-B'





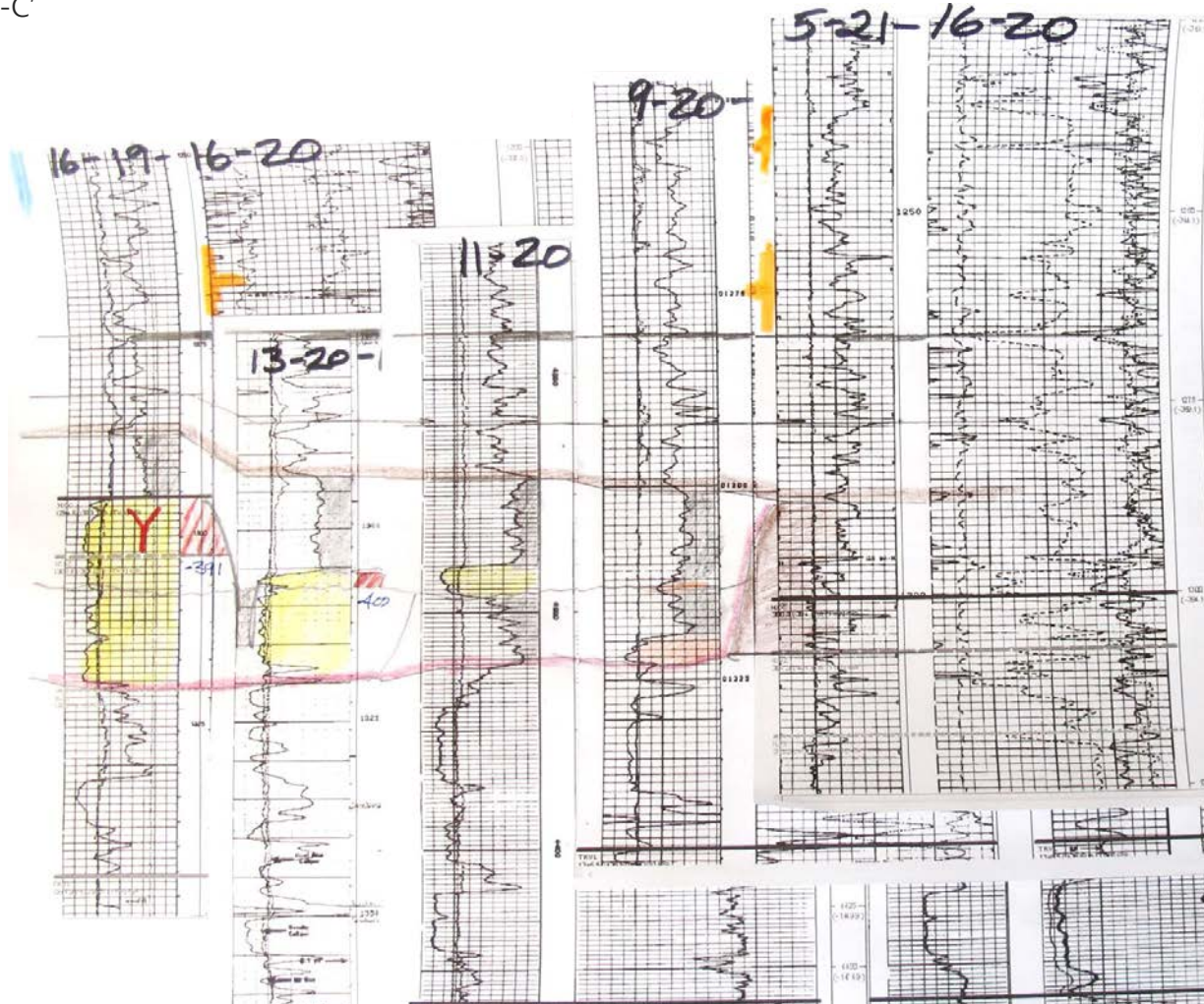
# III. Technical Evaluation

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## ■ Glauconitic Formation Geological Evaluation

- Cross section C-C'





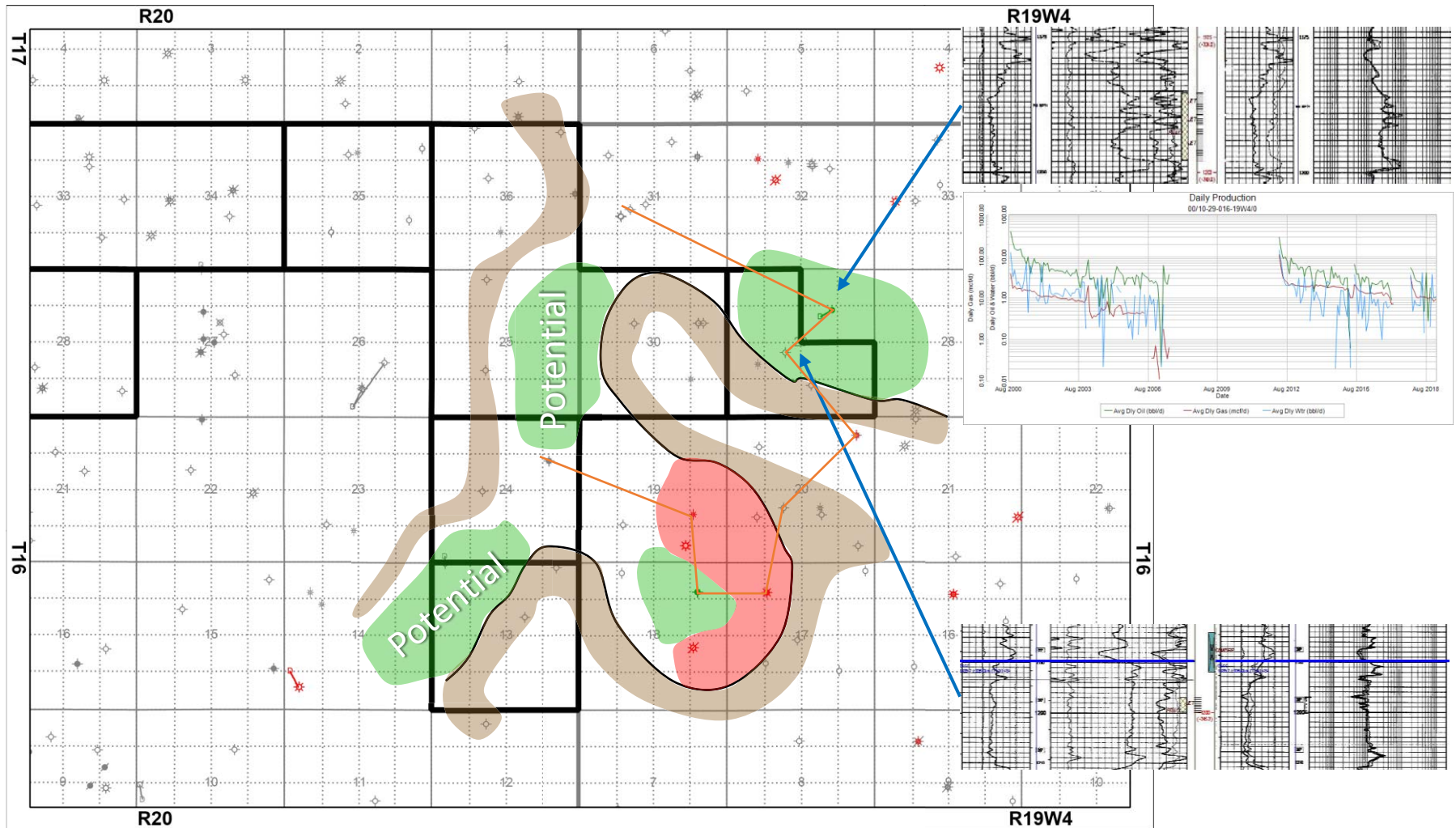
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## ■ Upper Mannville Geological Evaluation

- Mannville 'A' pools and oil potential
- 6-29 analogous to oil producing 10-29



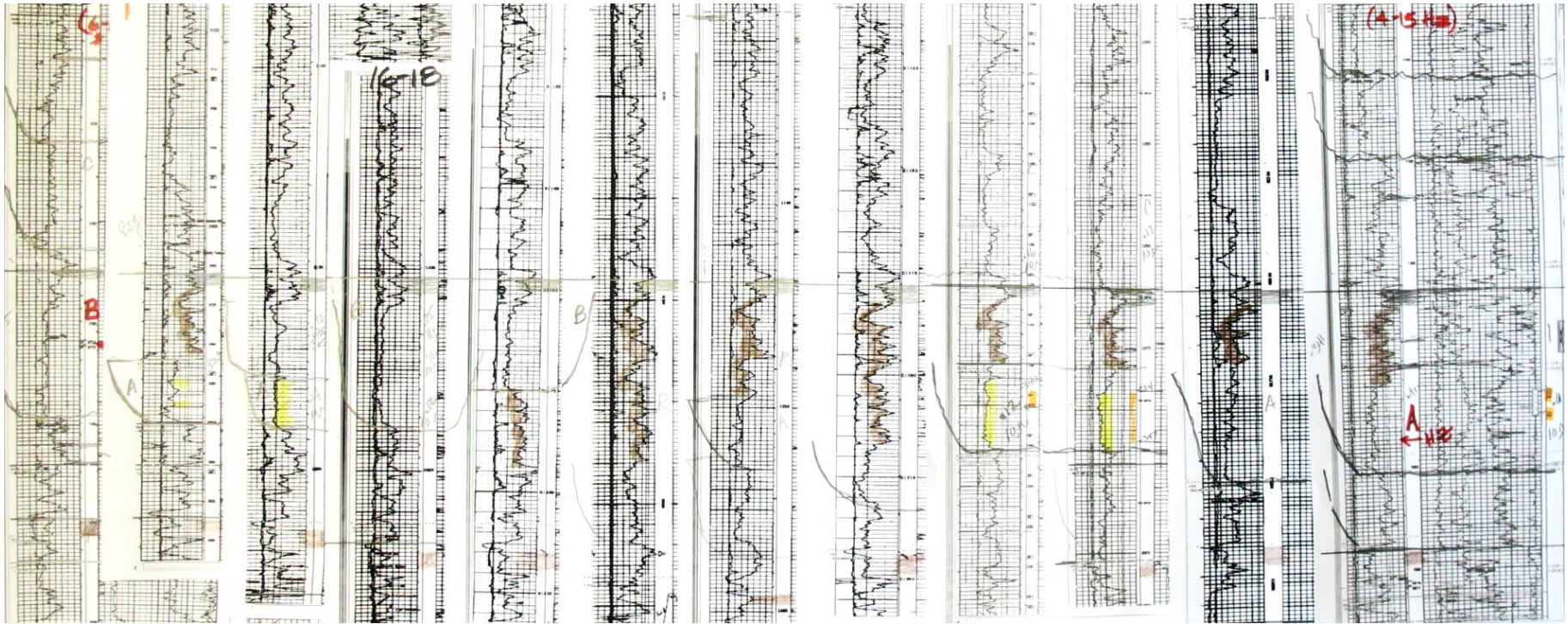
# III. Technical Evaluation

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## ■ Upper Mannville Geological Evaluation

- Upper Mannville cross section





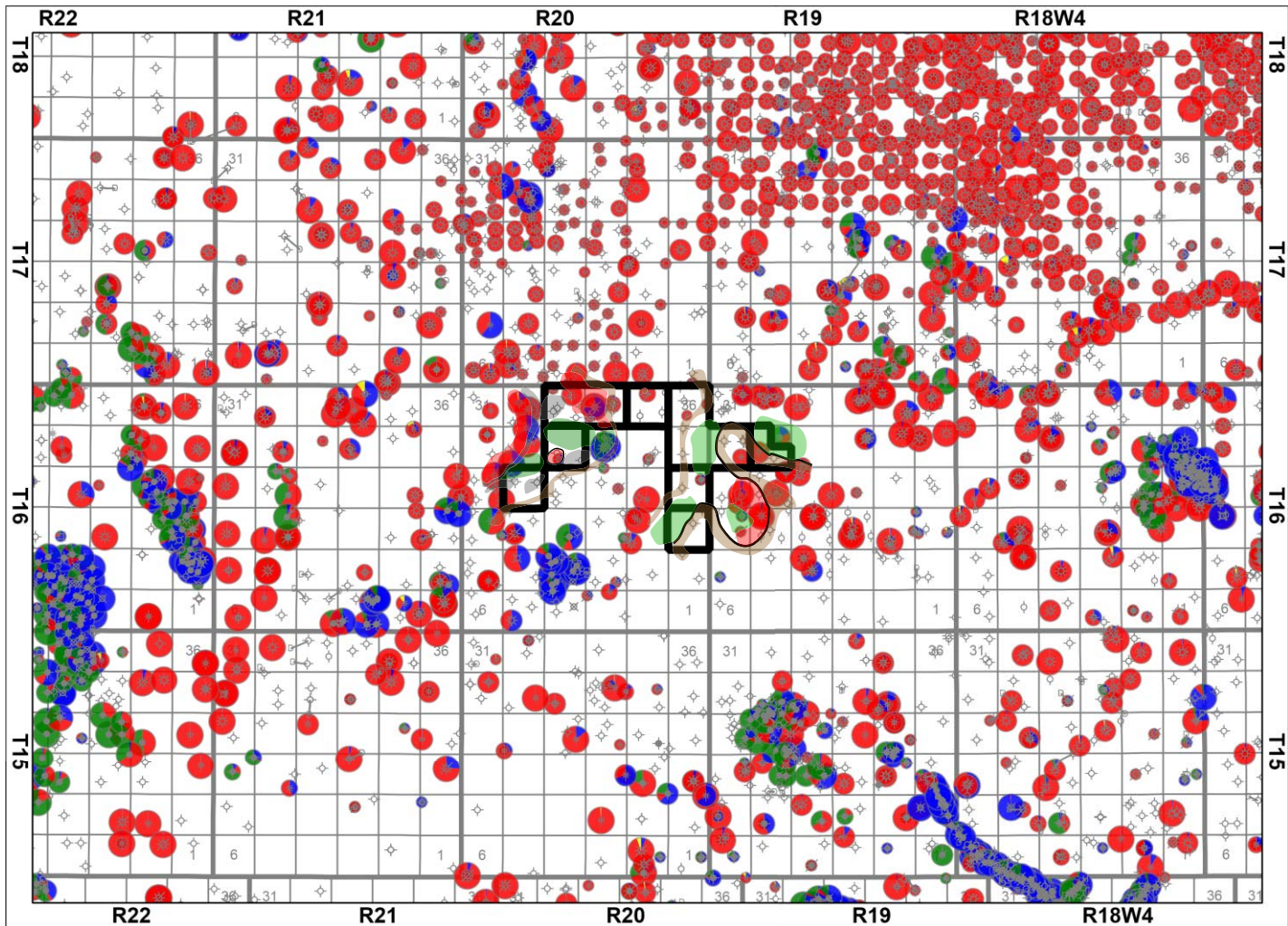
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## ■ Long Coulee Mannville Production

- Oil and natural gas production from offsetting Mannville channels





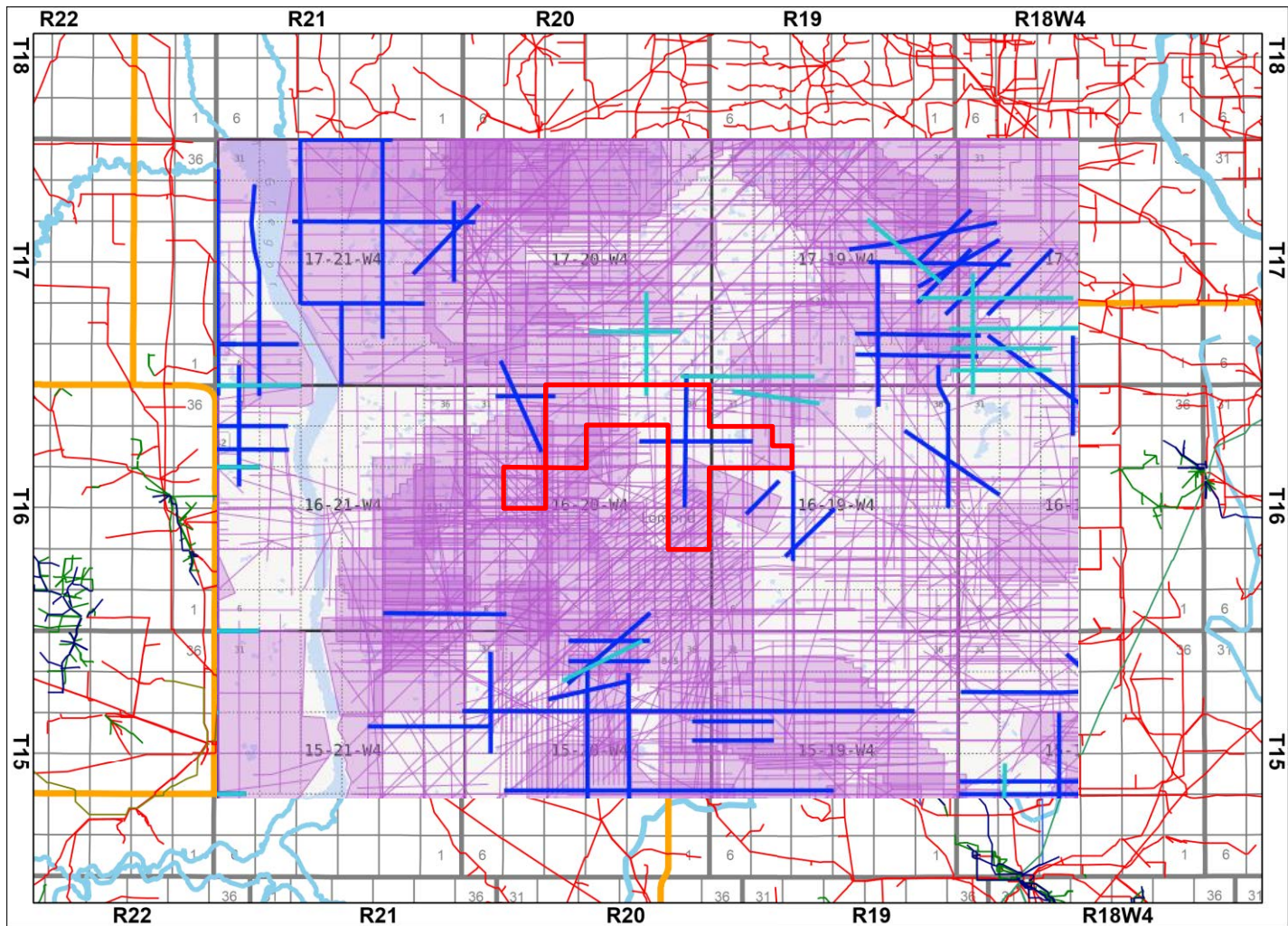
# III. Technical Evaluation

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## ■ Long Coulee Mannville Seismic

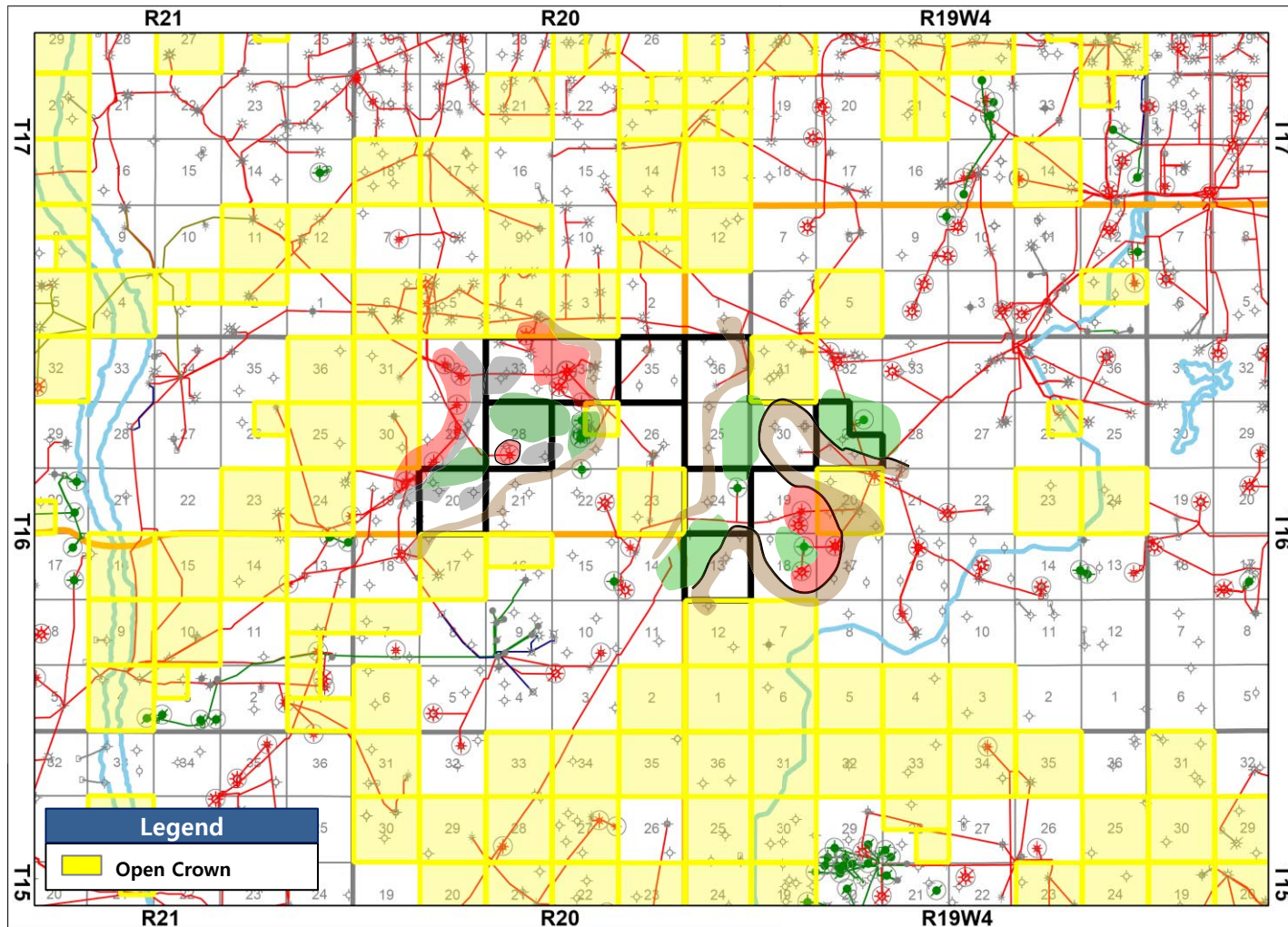
- Extensive 2D & 3D seismic available from Sigma seismic database



# IV. Development

## ■ Target Mannville & Glauconitic Land Position

- 10.75 sections of crown lands → Future expansion potential

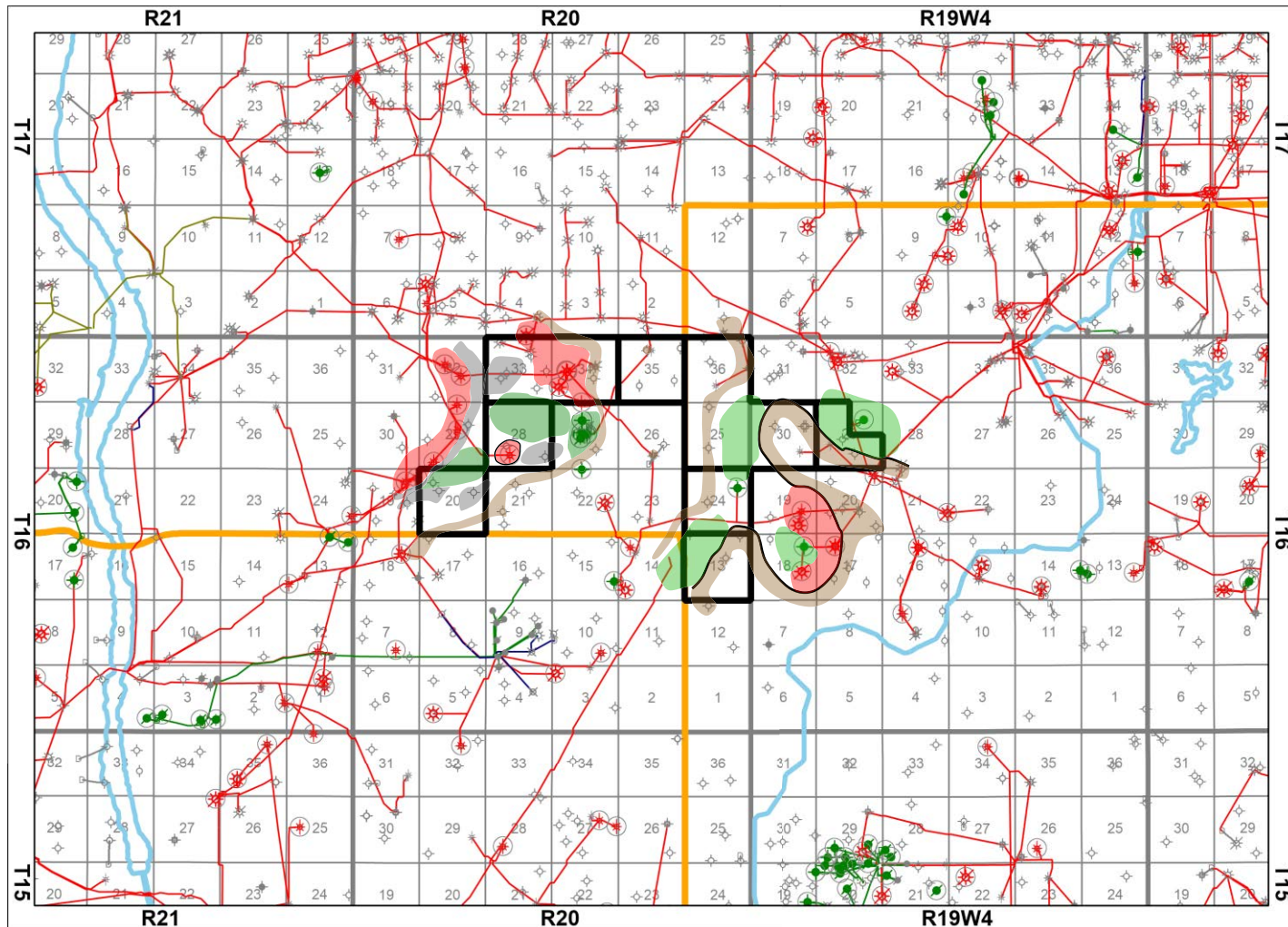




# IV. Development

## ■ Long Coulee Development Plan

- Multiple horizontal and vertical drilling opportunities with existing facilities and pipelines nearby
- Future land expansion potential to offsetting open crown lands





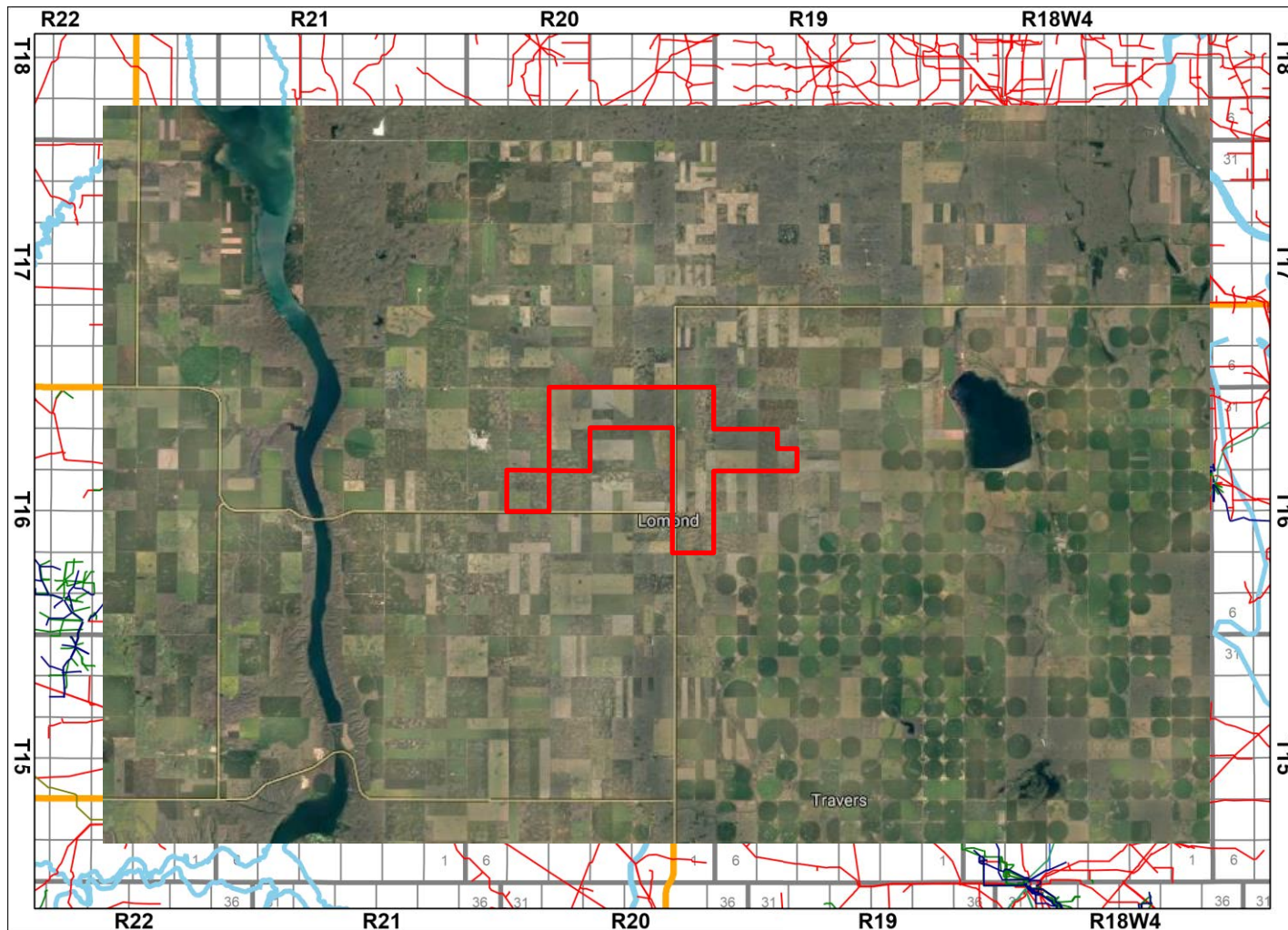
# IV. Development

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## ■ Long Coulee Development Plan

- Access from the AB-531 or AB-845, drill 6 HZ and additional VT wells, install 3 oil battery



# IV. Development

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## ■ Long Coulee Development Economic

- Development program : 10 wells, 3 oil batteries, Seismic acquisition

- Project economic by oil price (excluding natural gas)

- [WTI price / IRR\* / NPV@10] : [70\$/bbl / 55.5% / 16 MM\$], [60\$/bbl / 28.6% / 10 MM\$], [50\$/bbl / 11.3% / 4.3 MM\$]

### ■ CAPEX

- DC&T: 2.0 MM\$

- Armada Upper Mannville

- 3 Batteries : 6 MM\$

- Seismic acquisition : 2 MM\$

- 50 M\$ for abandonment

### ■ Production & OPEX

- Type Curve (Armada Upr.Mann)

Est. EUR 145 Mbbl

- 1<sup>st</sup> year average 95.4 bbl/d

- 2<sup>nd</sup> year average 63.6 bbl/d

- 3<sup>rd</sup> year average 39.0 bbl/d

- 20% decline after 3<sup>rd</sup> year

- Royalty : ARF + New HZ well

- <3.0 km : min. 60 Mbbl or 24m

- OPEX (Southern Alberta Est.)

- Fixed : 3,500 \$/well/month

- Variable : 8 \$/bbl

### ■ Oil price forecast (base case)

- 60 \$/bbl WTI flat (USD=1 CAD)

									NPV (M\$)	10,078	IRR	28.6%
Year	Well no.	Daily Prod (bbl/d)	Cum Prod (bbl/year)	CAD oil price (\$/bbl)	Revenue (M\$)	Royalty (M\$)	OPEX (M\$)	Net OP Income (M\$)	CAPEX (M\$)	Aband (M\$)	BT Cash flow (M\$)	BT Cum cash (M\$)
2019	6	572.5	208,977	60.0	12538.6	626.9	1923.8	9987.9	20,000		-10012.1	-10012.1
2020	6	381.7	139,306	60.0	8358.4	417.9	1366.4	6574.0			6574.0	-3438.1
2021	6	234.0	85,410	60.0	5124.6	1259.1	935.3	2930.3			2930.3	-507.9
2022	6	187.2	68,328	60.0	4099.7	852.7	798.6	2448.4			2448.4	1940.5
2023	6	149.8	54,662	60.0	3279.7	583.2	689.3	2007.2			2007.2	3947.7
2024	6	119.8	43,730	60.0	2623.8	361.8	601.8	1660.2			1660.2	5607.9
2025	6	95.8	34,984	60.0	2099.0	184.1	531.9	1383.1			1383.1	6990.9
2026	6	76.7	27,987	60.0	1679.2	79.8	475.9	1123.5			1123.5	8114.4
2027	6	61.3	22,390	60.0	1343.4	20.7	431.1	891.5			891.5	9006.0
2028	6	49.1	17,912	60.0	1074.7	0.0	395.3	679.4			679.4	9685.4
2029	6	39.3	14,329	60.0	859.8	0.0	366.6	493.1			493.1	10178.5
2030	6	31.4	11,464	60.0	687.8	0.0	343.7	344.1			344.1	10522.6
2031	6	25.1	9,171	60.0	550.2	0.0	325.4	224.9			224.9	10747.5
2032	6	20.1	7,337	60.0	440.2	0.0	310.7	129.5			129.5	10877.0
2033	6	16.1	5,869	60.0	352.2	0.0	299.0	53.2			53.2	10930.2
2034	6	12.9	4,695	60.0	281.7	0.0	289.6	-7.8			-7.8	10922.4
2035	4	10.3	3,756	60.0	225.4	0.0	198.1	27.3		100	-72.7	10849.7
2036	3	8.2	3,005	60.0	180.3	0.0	150.0	30.3		50	-19.7	10830.0
2037	2	6.6	2,404	60.0	144.2	0.0	103.2	41.0		50	-9.0	10821.0
2038	1	5.3	1,923	60.0	115.4	0.0	57.4	58.0		50	8.0	10829.0
Total			767,640	60.0	46,058		10,593	31,079	20,000	250	10,829.0	

\* IRR : Internal Rate of Return

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End of Documents

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