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WELCOME

TO OUR VIRTUAL OPEN HOUSE

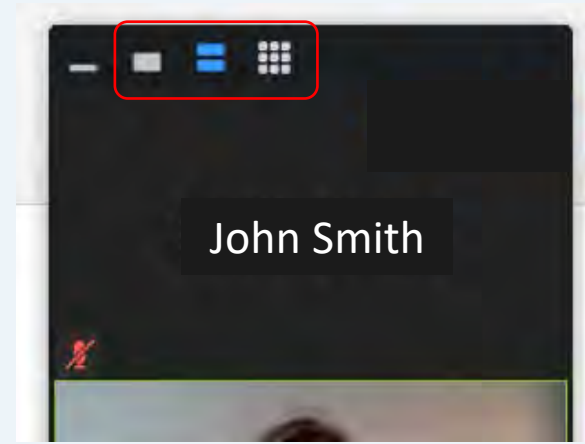
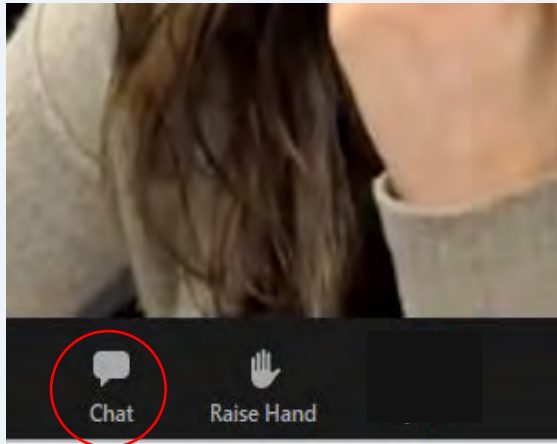
**YOU HAVE QUESTIONS
WE HAVE ANSWERS**



PRESENTED BY
KAINAI RESOURCES INC. & TAMARACK VALLEY ENERGY LTD.

SEPTEMBER 24, 2020

HOW TO USE ZOOM



Trouble logging on? Please call 403-410-3126

INTRODUCTIONS

MODERATOR

Carolyn Moore-Robin, Consultant

KAINAI RESOURCES INC.

- Clayton Blood, General Manager
- Vanessa Frank, Surface Land

TAMARACK VALLEY ENERGY LTD.

- Brian Schmidt, *Aakaikkitstakii*, President & CEO
- Steve Buytels, CFO & VP Finance
- Kevin Screen, VP Production and Operations
- Ken Cruikshank, VP Land

TAMARACK VALLEY ENERGY LTD. (cont.)

- June Marie Innes, Director of Finance & Sustainability
- Jesse Neudorf, Senior Production Engineer
- Mike Anderson, Manager, Surface Land
- Doug Nimchuk, Senior Development Engineer
- Carol Ann Bateman, Environmental Coordinator
- Carlha Perez, Office Administrator

PURPOSE OF THE VIRTUAL OPEN HOUSE



ENGAGE our communities in an open and transparent manner



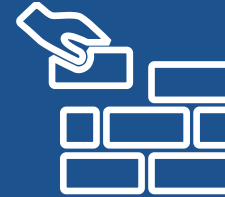
GATHER INPUT, address concerns, and respond to questions



SHARE INFORMATION about our operational activities in your area



Demonstrate our **PROVEN ABILITY** to minimize impacts on both the environment and our communities



BUILD trusting relationships



Outline our **COMMITMENT** to continuous improvement

AGENDA: VIRTUAL OPEN HOUSE

WELCOME

INTRODUCTION VIDEO “You have questions, We have Answers”

KAINAI RESOURCES INC. & TAMARACK VALLEY ENERGY LTD. – Partnership

“THE BANFF PLAY”

TAMARACK’S TRACK RECORD

LIFE CYCLE OF A WELL

OUR OPERATIONS

- Planning
- Drilling
- Completions
- Facilities/Production

COMMITMENT TO CONTINUOUS IMPROVEMENT

CLOSING QUESTIONS

CLOSING VIDEO

CONTACT INFORMATION IF YOU HAVE ADDITIONAL QUESTIONS



VIDEO PRESENTATION

YOU HAVE QUESTIONS - WE HAVE ANSWERS



Click on image to watch video on TVE's YouTube channel

KAINAI RESOURCES INC. (KRI)

KAINAI RESOURCES INC. is working to continue the Blood Tribe's efforts towards **SELF-DETERMINATION** by investing in exploration and production (E&P)

KAINAI RESOURCES INC. was created in 2011 to:

- **OVERSEE E&P OPERATIONS** on reserve
- Invest as a **FULL PARTNER** in selective projects alongside E&P companies
- Provide **LONG-TERM FINANCIAL STABILITY** to the Blood Tribe
- Deliver greater **SOCIAL AND ECONOMIC BENEFITS** to its community and membership



TAMARACK VALLEY ENERGY LTD.

- **TAMARACK VALLEY ENERGY LTD.** is an oil and gas company whose growth strategy targets the sustainable **DRILLING AND ACQUISITION** of long-life resource plays in the Western Canadian Sedimentary Basin.
- Tamarack is committed to **LONG-TERM SUSTAINABILITY**, which includes ongoing environmental, social and governance (“ESG”)
- ESG Initiatives include these 3 areas:
 - **GHG REDUCTION** through methane capture
 - Increased pace of **WELLSITE ABANDONMENTS & RESTORATION**
 - Indigenous reconciliations, such as **RESPECTING TRADITIONAL LANDS** through RJV’s



KRI AND TAMARACK'S PARTNERSHIP



KRI and Tamarack are in continual discussions to enter a **STRATEGIC PARTNERSHIP** to develop the Banff oil formation on and off the Blood Reserve. This will be a model for our industry.

BENEFITS TO THE BLOOD TRIBE AND ITS MEMBERSHIP:

- A full working interest partner making their own investments in the play
- Added benefits of royalties & lease payments directly to the tribe
- Opportunities of **EMPLOYMENT** and **EDUCATION** for blood tribe members
- **SERVICE** contracts for Blood Tribe contractors
- Community **INVESTMENT**
- **INNOVATION** and **KNOWLEDGE SHARING** between KRI and Tamarack
- Producing movies with tribe elders and youth to **SHOWCASE** their **CULTURE AND HISTORY**.
- In 2020 has made significant financial contributions to the Blood Tribe people for **MEDICAL SERVICES** during the Covid-19 pandemic.

... our RJV makes steps towards reconciliation and a better quality of life for our partners

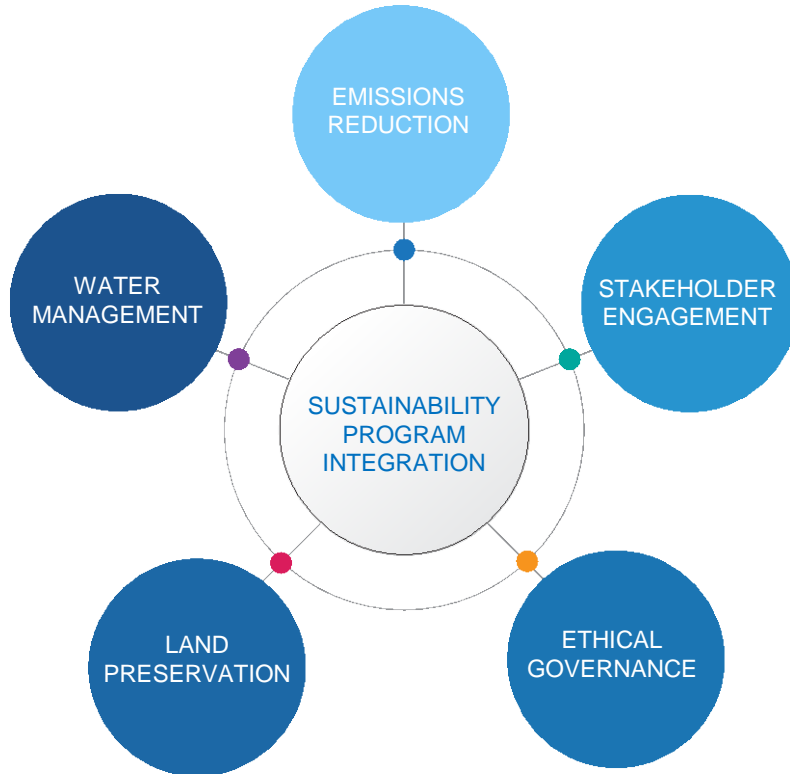
TAMARACK'S RECORD AS AN INDUSTRY LEADER

- Environmental, Social and Governance (ESG)
- Indigenous RECONCILIATION
- COMMITMENT to the Environment and Sustainability
- Community ENGAGEMENT
- Operational HISTORY in the Area
- INNOVATIONS Deployed by Tamarack: Extended Long Reach Horizontal wells, Multi-well pads



Tamarack has an **AER INSPECTION APPROVAL RATING** above the industry average

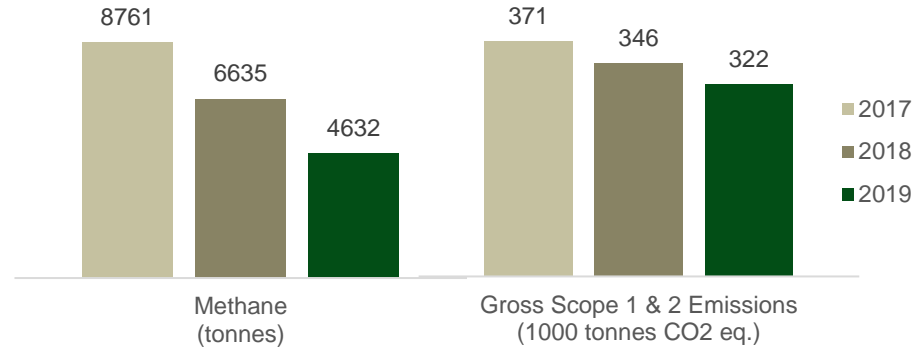
SUSTAINABILITY AT TAMARACK



WHAT DOES ESG MEAN TO TAMARACK?

Tamarack is committed to **CONTINUOUS** analysis and **IMPROVEMENT** through the full cycle of operations. We are building business systems that **INCORPORATE ESG** into strategy and decision making, and seek to demonstrate economic business value and corporate **SOCIAL RESPONSIBILITY**.

HISTORICAL EMISSIONS DATA



TAMARACK'S COMMITMENT TO THE ENVIRONMENT



Tamarack's strong ongoing commitment to the environment is a collaborative process, involving scientists, landowners, communities, local businesses, and government regulators.

ENVIRONMENTAL STUDIES

- Tamarack conducts **PRE-DISTURBANCE** site assessments as part of our initial planning stage on all new well sites

FRESH WATER USAGE

- All fresh water is managed in accordance with government **REGULATIONS** and environmental **APPROVALS**.
- **CONTINUAL IMPROVEMENTS** are being made to reduce fresh water consumption.

ASSET RETIREMENT

- Tamarack is **COMMITTED** to abandoning & reclaiming land with over \$10 million dollars invested since 2017
- 2017 – Present, Tamarack has obtained 77 reclamation certificates, 11 on the Blood reserve
- 2020-2021 – currently planning a well abandonment program in this area consisting of 20-30 wells

TAMARACK: CONTRIBUTING TO OUR COMMUNITIES



LOCAL JOB CREATION

Tamarack provides contract employment opportunities in field operations – Penny operations alone employ 13 local residents.



COMMUNITY INVOLVEMENT

Tamarack actively partners with communities to plan, fund and operate local crime watch programs.

Tamarack considers the economic value and potential local contribution as well as identifies partnership opportunities. We seek to understand and then mitigate or manage risks.



LOCAL ECONOMIC CONTRIBUTION

On a per-well basis Tamarack contributes ~\$1.5MM to the economies of Lethbridge and surrounding area through the support of local businesses including: food and hospitality, line locating, facility decommissioning, heavy equipment, steam cleaning, environmental drilling, trucking, fencing, and vegetation management.

PLANNING, COMMUNITY ENGAGEMENT

Tamarack has been involved with numerous
COMMUNITY BENEFIT INITIATIVES

- **Sheldon Kennedy Child Advocacy Centre**
- **Juvenile Diabetes Research Fund**
- **Special Olympics**
- **Inn From the Cold**
- **Momentum Fund**
- **CUPS**

ANNUALLY SUPPORT

- **Families in Need**
- **Minor hockey, volleyball, and baseball sponsorship**
- **Local rodeo support throughout Alberta**
- **High school sponsorships**
- **Kids Safe Program**





QUESTION & ANSWER PERIOD 1



TAMARACK'S REPUTATION OF SAFE OPERATIONS



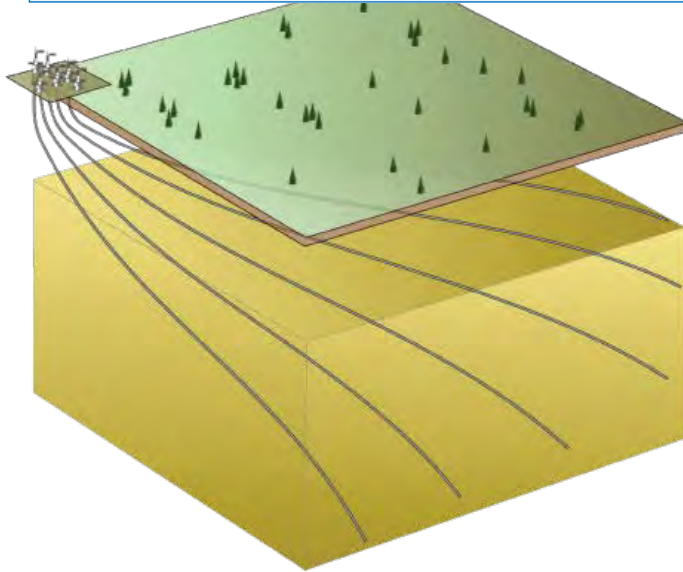
Tamarack has a **PROVEN TRACK RECORD** of operating safely throughout Alberta and Saskatchewan in the past 10+ years.

- Tamarack has an **EMERGENCY RESPONSE PLAN** and is an active member of the Western Canadian Spill Services. This plan ensures that Tamarack and local services are coordinated in the unlikely event of an emergency.
- We have **SAFELY** drilled 10 horizontal wells in the past 4 years in SE Alberta and hundreds throughout Alberta and Saskatchewan.
- Tamarack maintains a Health, Safety, and Environment manual that **DELIVERS ON SAFETY** of the public, Tamarack staff, and contractors as our number one priority.
- Our operations sites have stringent wellsite, facility, and pipeline maintenance programs:
 - operators visit sites on a **REGULAR BASIS**
 - continual pipeline **MONITORING** and maintenance
 - POM – Pipeline Operations Manual is **CONTINUOUSLY REVIEWED AND UPDATED** as required

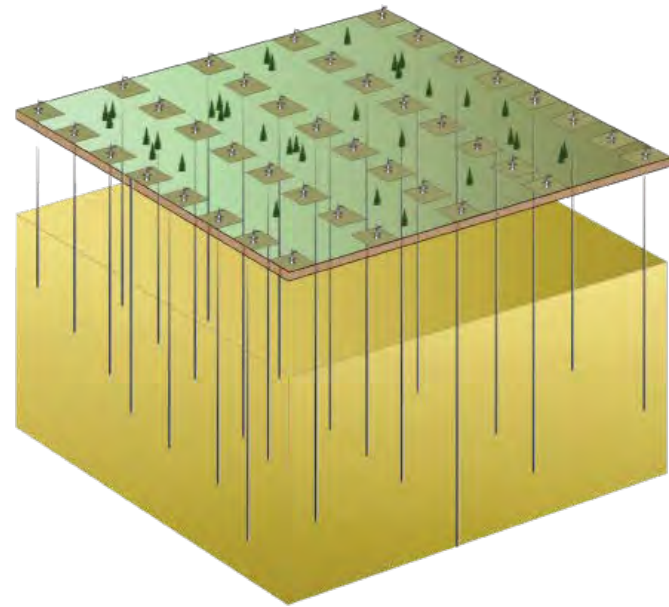
HISTORY OF INNOVATION: MULTI-WELL PAD DRILLING

HORIZONTAL DRILLING TECHNOLOGY

Continually extending lateral length
Up to 3 miles



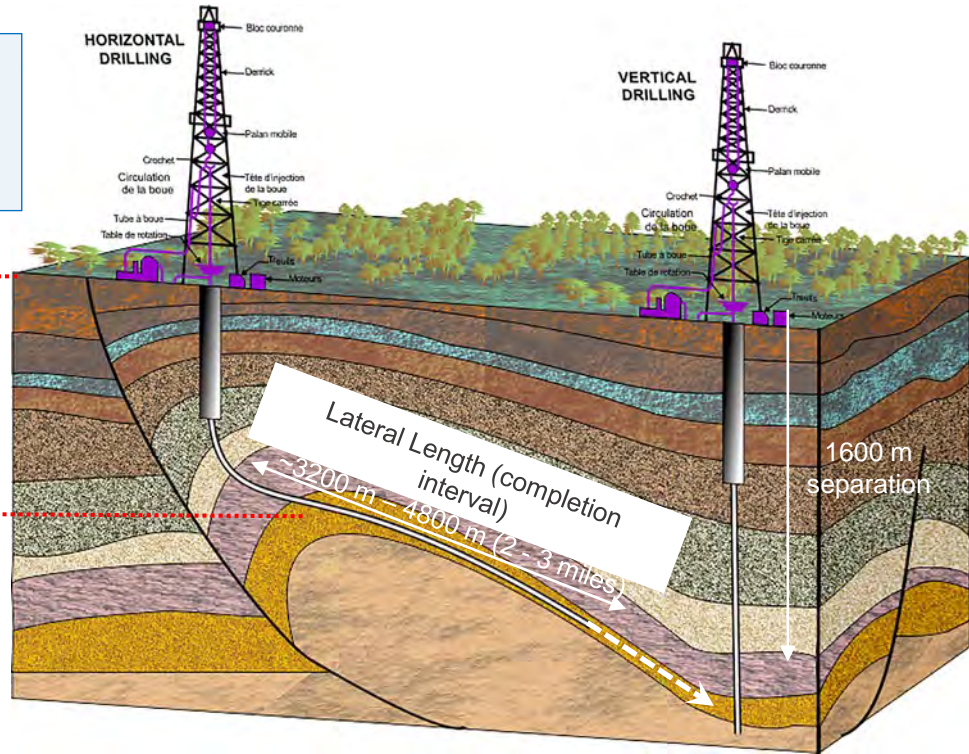
CONVENTIONAL DRILLING Pre-2000's



HISTORY OF INNOVATION: ELRH

TAMARACK is an Industry leader in deploying **Extended Long Reach Horizontal Drilling (ELRH)** technology.

Ground Level
Base of Ground Water Protection 425m True Vertical Depth (TVD)
True Vertical Depth of reservoir ~2000 m (TVD)
2000 m (1.25 miles)



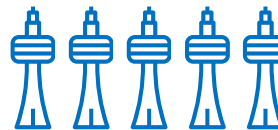
EXTENDED REACH HORIZONTAL DRILLING (ELRH)

Did You KNOW?

The depth of wells created with Extended Long Reach Horizontal Drilling (ELRH) technology are 10 Calgary Towers stacked up and the lateral length is up to 25 Calgary Towers end to end.

DEPTH
→ 10
TOWERS

LENGTH
→ 25
TOWERS

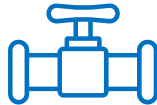


HISTORY OF INNOVATION: MULTI-WELL PAD BENEFITS

MULTI-WELL PAD DRILLING VS CONVENTIONAL DRILLING



FEWER SURFACE
LOCATIONS



LESS PIPELINE
REQUIRED



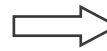
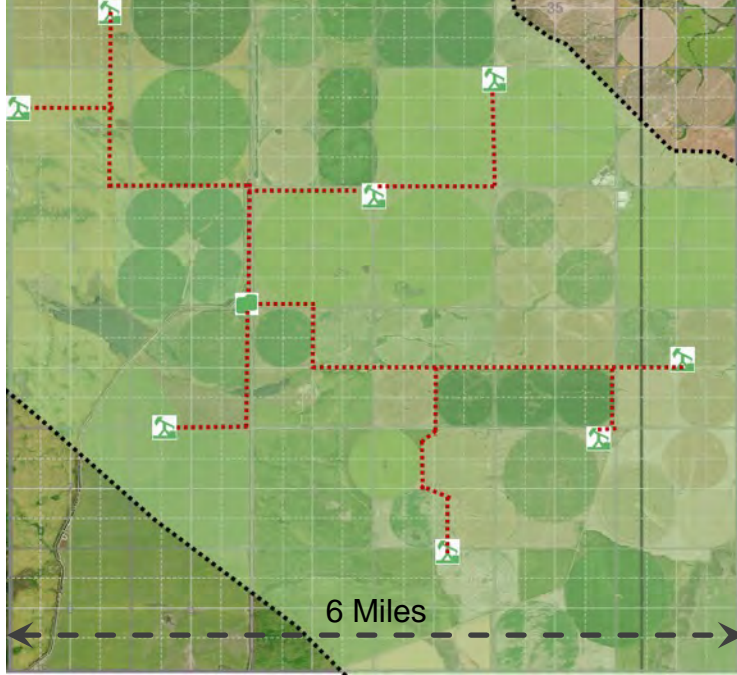
FEWER
FACILITIES



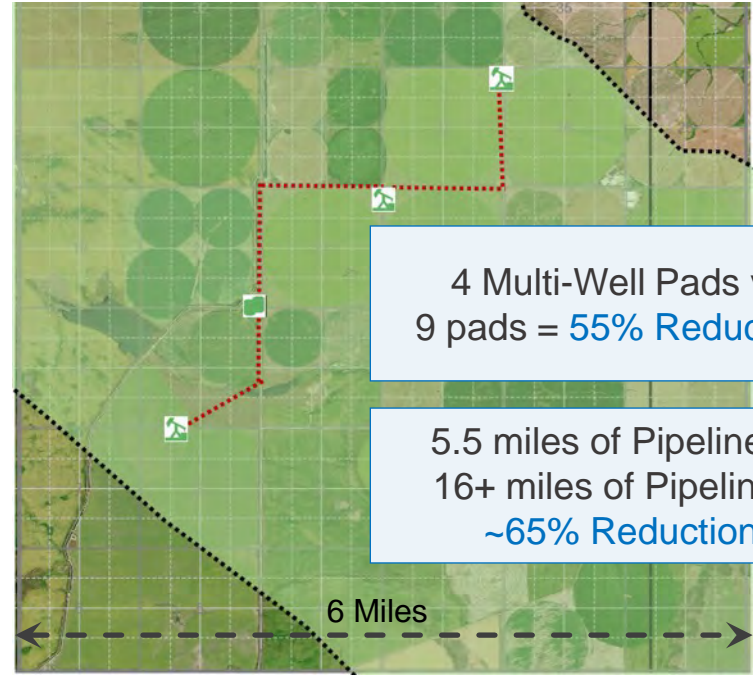
LESS
DISRUPTION

REAL LIFE EXAMPLE: ELRH WELLS VS 1MILE WELLS

1 Mile Long Horizontal Wells



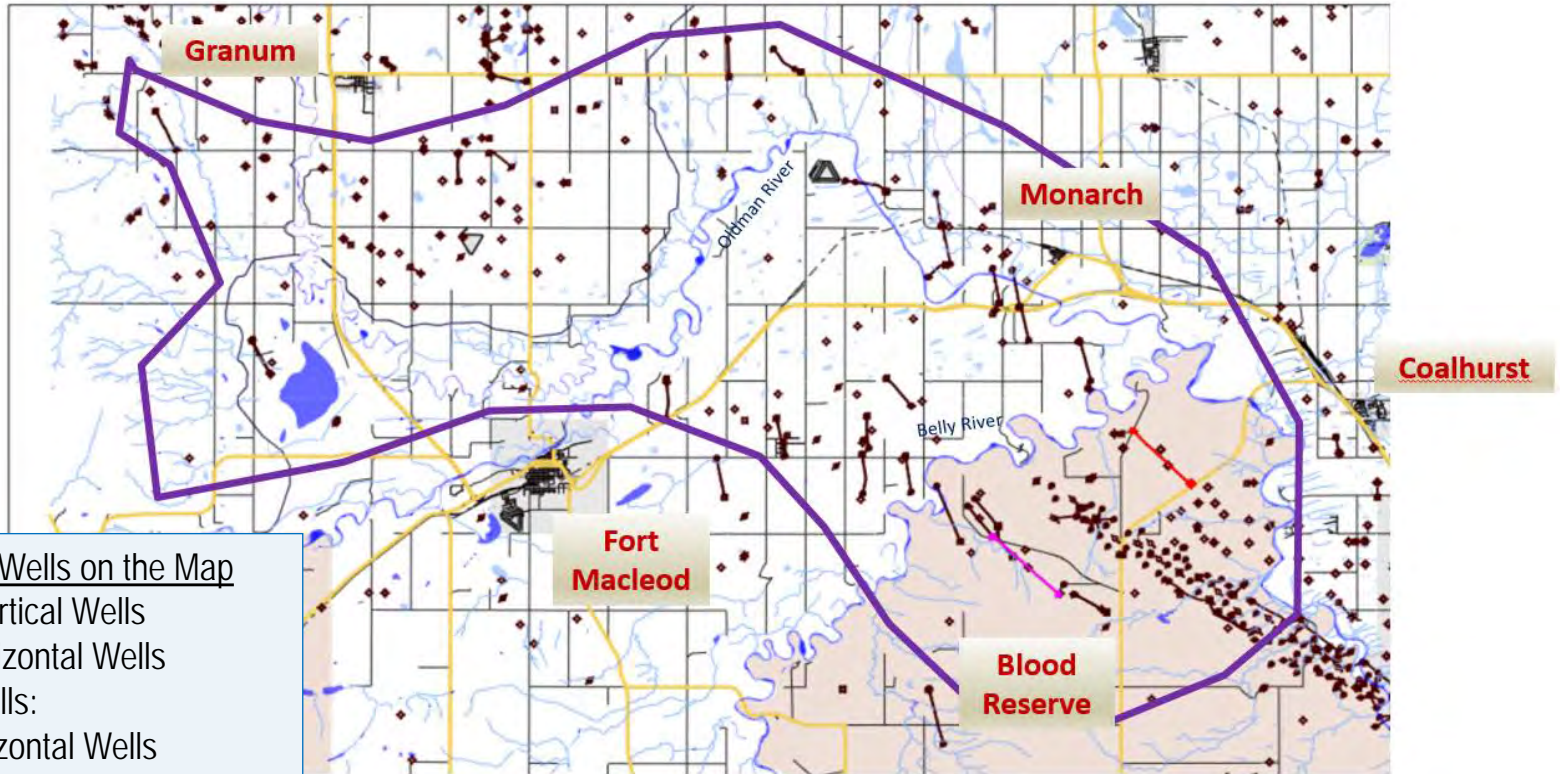
3 Mile Long horizontal wells



4 Multi-Well Pads vs
9 pads = **55% Reduction**

5.5 miles of Pipeline vs
16+ miles of Pipeline =
~65% Reduction

“THE BANFF PLAY”: AN OVERVIEW



BANFF RESERVOIR

- The Banff prospect is an “Unconventional” Carbonate Mudstone reservoir
- 12 Producing wells in SE Alberta
- Depth ranges from 2000m to +3000m (TVD)
- Average thickness of the mudstones is ~7m
- 7.5% of the formation is oil – 92.5% is mudstone
- The formation “extremely tight” with respect to conventional standards – limited oil flow

Did You KNOW?

Sidewalk concrete has
~30% MORE porosity and
permeability than the Banff
Reservoir.

BANFF RESERVOIR CORE SAMPLES





QUESTION & ANSWER PERIOD 2



LIFE CYCLE OF A WELL



OPERATIONS: FIELD ACTIVITY

DRILLING



COMPLETIONS



FACILITIES / PRODUCTION



Tamarack is accountable to the community, shareholders, and regulatory authorities to ensure safe operations.

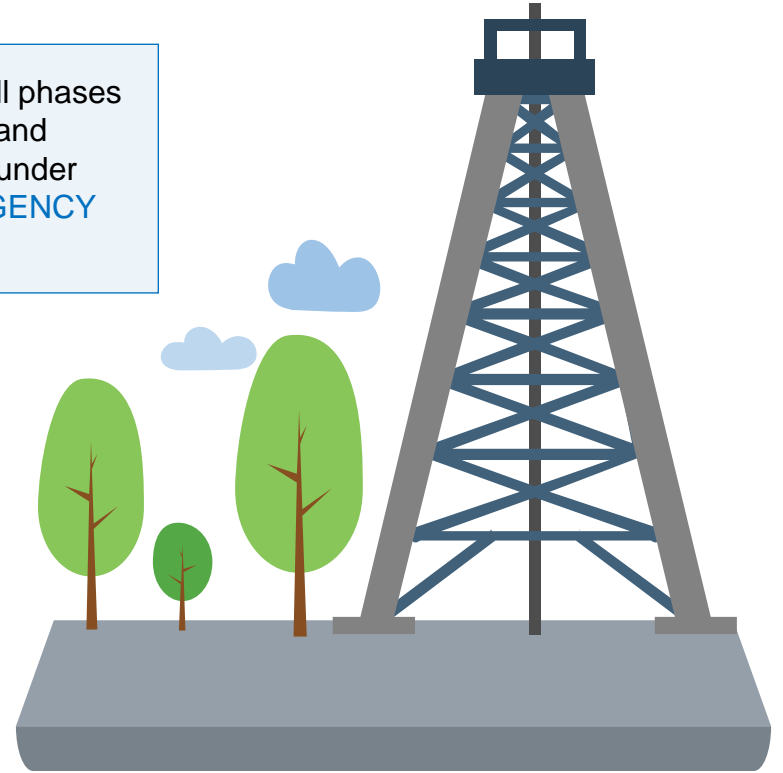
DRILLING OPERATIONS

Did You KNOW?

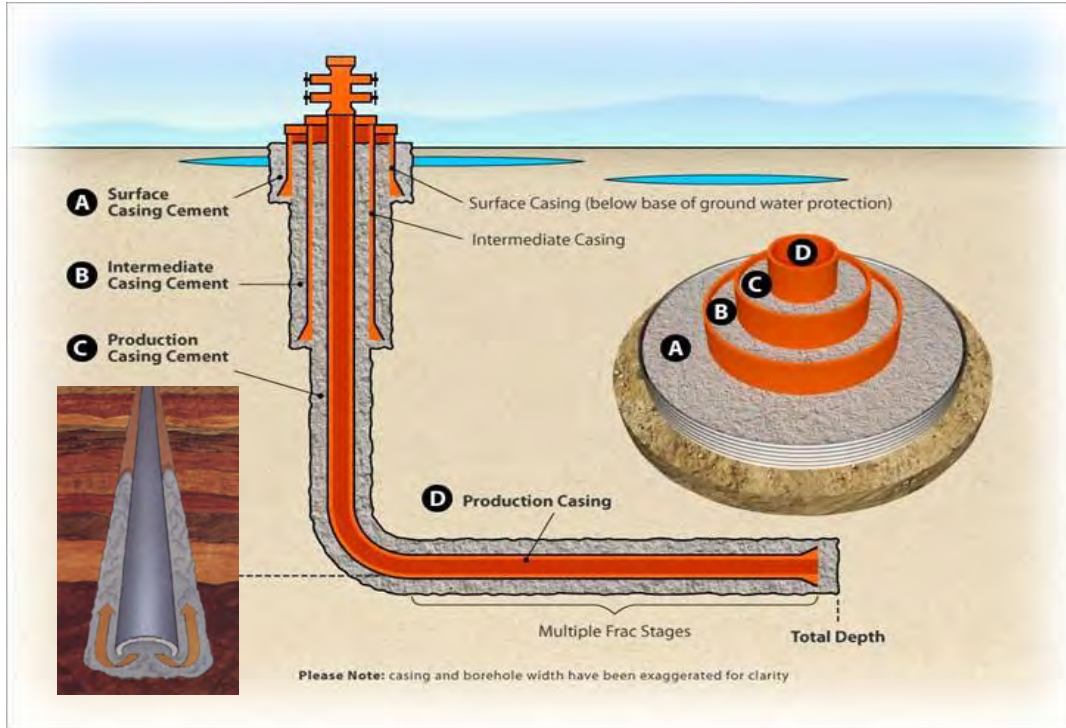
All operations carried out for all phases of well construction, servicing and routine operation are covered under Tamarack's Corporate **EMERGENCY RESPONSE PLAN**.

Drilling Operations in Alberta are subject to the **HIGHEST REGULATORY STANDARDS IN THE WORLD** including:

- Well Licensing
- Wellbore casing design & cementing
- Drill waste management
- Noise limitations
- Flaring
- Blowout prevention



GROUND WATER PROTECTION



Groundwater exists almost everywhere below the surface. Most subsurface fresh water sources are found in the shallowest unconsolidated horizons lying at depths ranging from 0 - 150 metres.

- Average water well depth in this area is 60 - 100 meters (200 - 325 feet).
- Tamarack installs surface casing to a depth of ~ 500 meters (>1600 feet).
- Ground water is further protected using intermediate casing on these Banff wells (Dual barrier system).
- Surface casing setting depth, casing design and casing cementing are regulated by the AER & Industry best practices.

DRILLING OPERATIONS: SAFETY AND SUSTAINABILITY



WATER UTILIZATION

Water utilization amounts to approximately 200 - 400m³ per well or about 6 - 12 truck loads for our drilling operations.



SUSTAINABILITY AND QUALITY OF GROUND-WATER RESOURCES

We offer to conduct pre-drilling quality and quantity (yield) tests on water wells within 400m of our new oil and gas wells.



FLARING AT DRILLING OPERATIONS

No flaring is normally associated with drilling operations, however a flare stack will be on location for emergency purposes.



SAFE DISPOSAL PRACTICES

All drilling waste is properly disposed of off-site.

DRILLING: CONSIDERATIONS

- Speed limits are **SET, POSTED AND ENFORCED** for operations associated with Tamarack's operations.
- Traffic flow is adjusted in areas where school buses operated to **ENSURE THE SAFETY OF CHILDREN** in the community.
- Tamarack works closely with the County to **MAINTAIN ROAD QUALITY** and address dust control.
- Tamarack makes a **SPECIAL EFFORT TO REDUCE NOISE** by:
 - scheduling louder activities during appropriate working hours,
 - positioning louder equipment so the noise source is facing away from residences
 - ensuring our contractors are not using engine retarder brakes in proximity to residents





QUESTION & ANSWER PERIOD 3: DRILLING



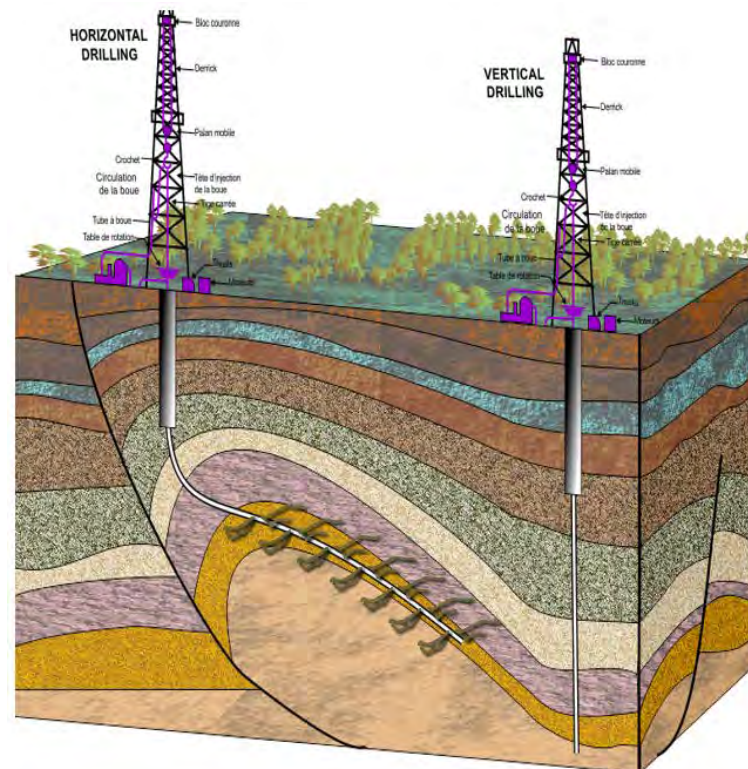
COMPLETIONS

Did You KNOW?

A **COMPLETION** is a technique used to connect a wellbore to a reservoir.

TECHNOLOGY USED BY TAMARACK IN THE “BANFF PLAY”

- Multi-stage hydraulic frac
- Fracture stimulations are **FOCUSED** on only the lateral portion of the well (2000 m below surface)
- 80 - 120 stimulation stages per well
- ~20 - 40 tonnes of sand per stage
- The completion is concentrated on the formation of interest

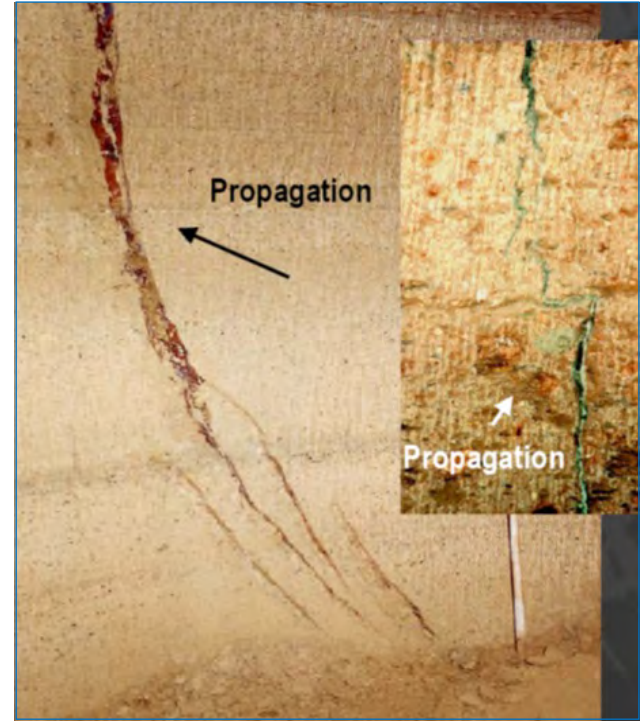


WHAT IS A FRAC?

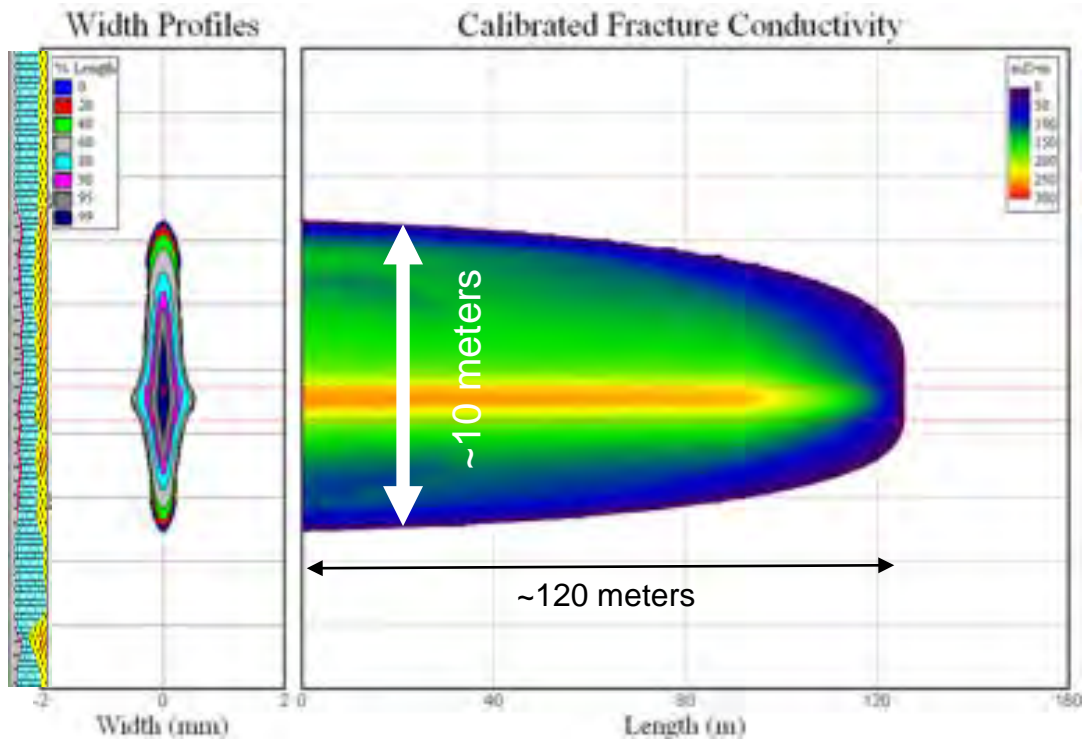
- Fracturing (frac) is a well stimulation process performed to improve production from geological formations where natural flow of hydrocarbons are restricted (tight formations)
- A frac is a crack/fracture created in the rock by pumping fluid at high pressure
- The frac is filled with sand to prop open the formation creating a pathway for oil to make it to the wellbore
- Frac'ing is a common completion practice throughout Alberta

Did You KNOW?

In Canada, more than 200,000 wells have been horizontally frac'ed. It is now estimated that 80% of new oil and gas wells in Canada are frac'ed.



FRAC MODELLING: HOW BIG IS THE FRAC?

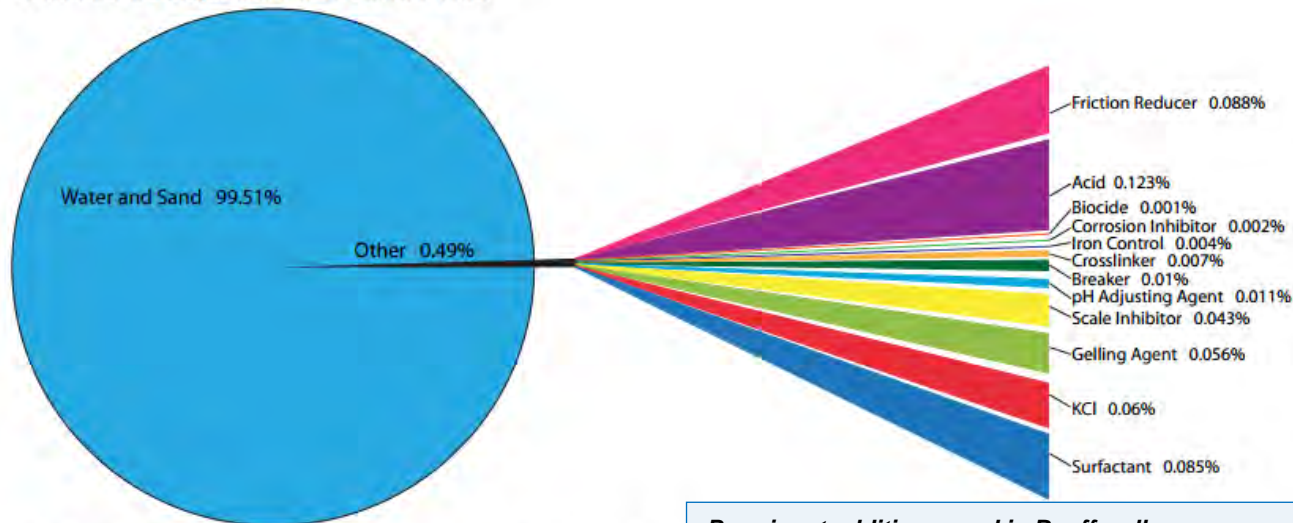


Tamarack conducts tracer studies, obtains fluid analysis, and monitors seismic activity to further understand the frac geometry

- Frac modelling shows that the frac height in this reservoir is ~7-10 meters.
- The growth of the frac is contained by the formations above and below.
- The fracture half length – lateral displacement is calculated to be ~65-120 meters.
- Modelling suggests the thickness of each frac is ~5-7 mm (0.5 - 0.7cm).

FRAC FLUIDS: WHAT FLUIDS ARE PUMPED?

Volumetric Composition of a Fracture Fluid



Modified from: ALL Consulting, based on data from a fracture operation in the Fayetteville Shale, 2008

Prominent additives used in Banff wells:

- Polyacrylamide commonly used in water treatment, cosmetics, skin products
- Alcohols, C12-15 ethoxylated commonly used in cleaning products, laundry detergents

99.5% is water and sand

- Viscosifiers or Friction Reducer
- Viscosity Breaker
- Clay Stabilizer (sea water substitute)
- Flowback Enhancer
- Scale Inhibitor
- Bactericide (for natural occurring bacteria in water)
- pH Control (to enhance effectiveness of viscosifier)
- Acid

Visit www.fracfocus.org for more information

COMPLETION: WATER CONSIDERATIONS

- To-date, water used for frac operations has come from the Old Man River & Belly River through a Temporary Diversion License (TDL) obtained through the AER and AEP
- Approvals stipulate the volume of water allowed and the rate at which it is pulled from the river. TDL's will only be granted if the in-stream objectives for the river are maintained.
- TDL's for oil and natural gas development are low priority relative to municipal, agriculture, irrigation, etc.

Did You KNOW?

Flowback water after frac'ing is complete is captured in **SEALED TANKS** and trucked off site to an approved disposal/recycle facility.



COMPLETION: CONSIDERATIONS

- The wellbore is **TESTED FOR INTEGRITY** prior to the start of well stimulation and through the frac'ing operations
- During the frac'ing process parameters are **CONSTANTLY RECORDED**
- The sites have **MULTIPLE EMERGENCY SHUTDOWNS** which automatically shut down in case of abnormal conditions
- Frac'ing sends vibrations from the fracturing zone to the surface and are detected and measured at the surface, but are **TOO SLIGHT** to be noticed by humans.
- Tamarack has adopted seismic activity protocols regulated by the AER for areas throughout Alberta where seismic activity has been observed as a result of frac'ing
- Tamarack **WILL** monitor seismic activity during Banff well frac operations

AER Traffic Light System - Duvernay Zone, Fox Creek



4.0M_L
cease operations,
inform the AER

2.0M_L
inform the AER,
invoke response plan

2.0M_L
no action required

March 2016

Alberta Energy Regulator



Hydraulic fracturing is a **SAFE, PROVEN & GOVERNMENT-REGULATED TECHNOLOGY** that has been used in Canada since 1953.



QUESTION & ANSWER PERIOD 4: COMPLETIONS



FACILITIES & PRODUCTION: WELL CHARACTERISTICS

- Banff wells are pumping crude oil wells with associated natural (solution) gas
- The oil is considered light crude oil ~ 30 deg API or 870 kg/m³
- Associated natural gas contains <0.1% up to 4% H₂S (1000 – 40000 ppm),
- Tamarack wells are currently <0.1% H₂S (1000 ppm)
- No produced water expected but flowback water is produced early in the life of the well



FACILITIES AND PRODUCTION: REQUIREMENTS



Tamarack **HIGHLY TRAINED** operators visit production sites regularly to **MONITOR** and **MAINTAIN** facilities.

- Pumpjack, group separator, test separator, tanks, oil treater, and incinerator will be on site
- Oil will be **TREATED AND STORED ON LOCATION** until trucked to sales
- Natural gas will be **SEPARATED FROM THE OIL** and **INCINERATED** as per AER Directive 60
- Facilities are engineered with **INSTRUMENTATION** and **MONITORING** systems and **EMERGENCY SHUT DOWN DEVICES**
- Wells are configured with redundant **EMERGENCY SHUT DOWN DEVICES**



CONTINUOUS IMPROVEMENT



Tamarack is **COMMITTED** to **CONTINUOUS IMPROVEMENT** in all aspects of our business.

- **ENHANCE** community involvement and **CREATE OPPORTUNITIES** in the areas where we operate
- Drill longer wells, **MINIMIZE** surface impact, and **FEWER** wellbores
- Increase water **RECYCLING** and reduce fresh water use
- Being responsible for the full life cycle of our wells by Returning the land to the **ORIGINAL CONDITION**
- **ACCOUNTABLE** Environment, Social, and Governance (ESG) performance
- Work together to **COORDINATE** efforts and best practices to minimize impacts on the environment and community

CLOSING REMARKS



In closing we hope that you enjoyed attending our **FIRST VIRTUAL OPEN HOUSE** and gained a better **UNDERSTANDING** of:

- Who both Kainai Resources and Tamarack Valley Energy are, and their **PARTNERSHIP**
- Tamaracks **COMMITMENT** to delivering on Environmental, Social and Governance standards
- The “**BANFF PLAY**” oil exploration, including life cycle and operations associated in the process
- **INNOVATION** that decreases impacts
- Environmental **PROTECTION**
- **SAFE** operating practices
- Community **ENGAGEMENT** and **INVESTMENT**



QUESTION & ANSWER PERIOD 5: CLOSING QUESTIONS





“WE ARE RESPONSIBLE DEVELOPERS OF OIL AND GAS AND
CONTRIBUTE TO THE ECONOMIC WELL BEING OF COMMUNITIES.”

THANK YOU





CLOSING VIDEO PRESENTATION

VIRTUAL OPEN HOUSE KAINAI RESOURCES INC. & TAMARACK VALLEY ENERGY LTD.



Click on image to watch video on TVE's YouTube channel



CONTACT INFORMATION



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