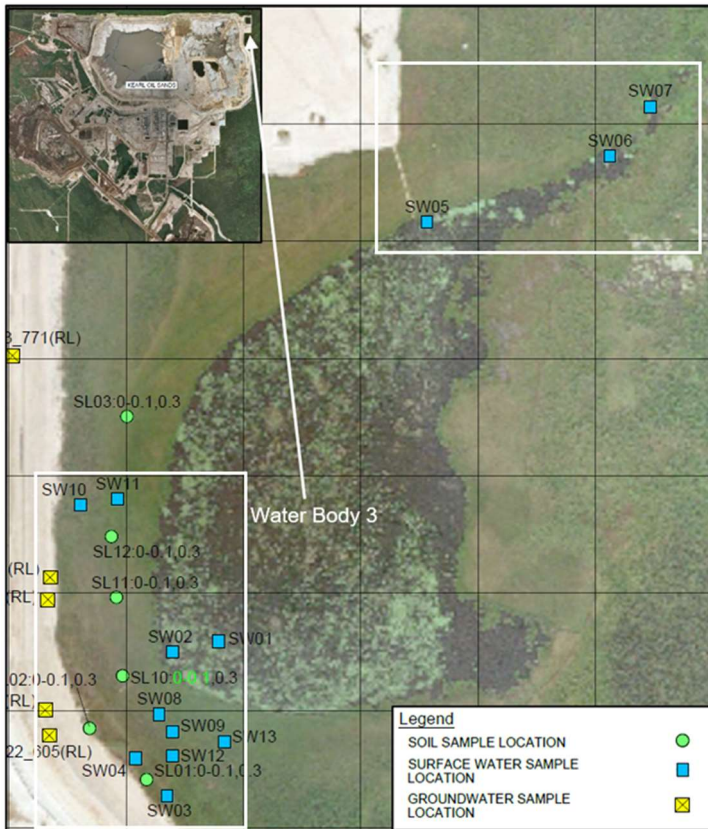


# AER Third-Party Sampling 2023

## Kearl Oil Sands

## Surface Water Quality



Location	Date	PAL Guideline Exceedance*
Receptor (Water Body 3)		
SW01 (receptor-near seep)	22-August-2023	PAL: No exceedances
SW02 (receptor-near seep)	22-August-2023	PAL: No exceedances
SW05 (receptor-near outlet)	22-August-2023	PAL: No exceedances
SW06 (receptor-outlet)	22-August-2023	PAL: No exceedances
SW07 (receptor-outlet)	22-August-2023	PAL: No exceedances
Source		
SW03 (source- seep)	22-August-2023	PAL: F2, total arsenic, total cobalt, total copper, dissolved iron No guideline: naphthenic acids (1.3 mg/L)
SW04 (source- seep)	22-August-2023	PAL: F2, total cobalt, dissolved iron, ammonia No guideline: naphthenic acids (2.7 mg/L)
SW08 (source- onshore)	22-August-2023	PAL: F2, toluene, total cobalt, total zinc, dissolved iron No guideline: naphthenic acids (0.7 mg/L)
SW11 (source- onshore)	22-August-2023	PAL: toluene
SW13 (source- onshore)	22-August-2023	PAL: total zinc, dissolved iron

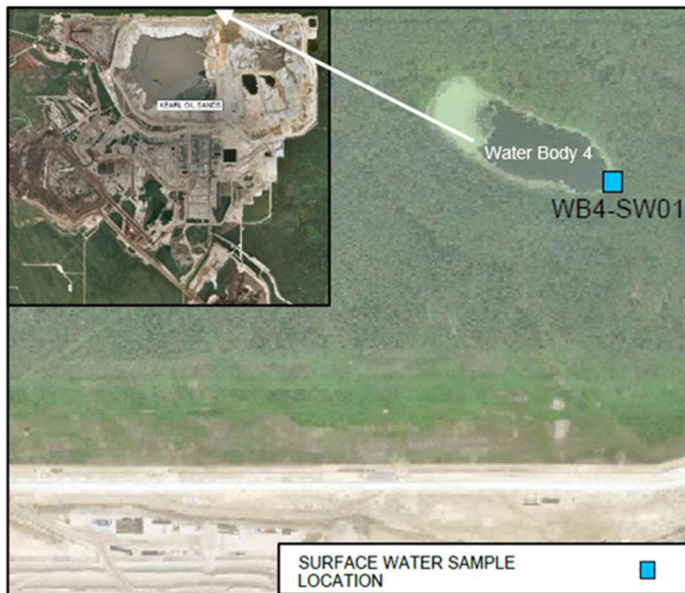
\* Environmental Quality Guidelines for Alberta Surface Waters, Surface Water Quality Guidelines for the Protection of Aquatic Life.

### Interpretation

- Several metals and major ions exceed guidelines in the area prior to Kearl mine development, based on 2003-2004 baseline sampling. This includes iron, sulphide, zinc.
- Naphthenic acids were analyzed using the FTIR method. Naphthenic acids sampled on August 22, 2023 analyzed using the Orbitrap method is not available for this update.
- Total and dissolved sulphide samples were analyzed by a different lab. Therefore, August 22, 2023 data is not available for this update.

# AER Third-Party Sampling 2023

## Kearl Oil Sands



## Surface Water Quality

Location	Date	PAL Guideline Exceedance*
		Water Body 4
WB4-SW01	22-August-2023	PAL: no exceedances

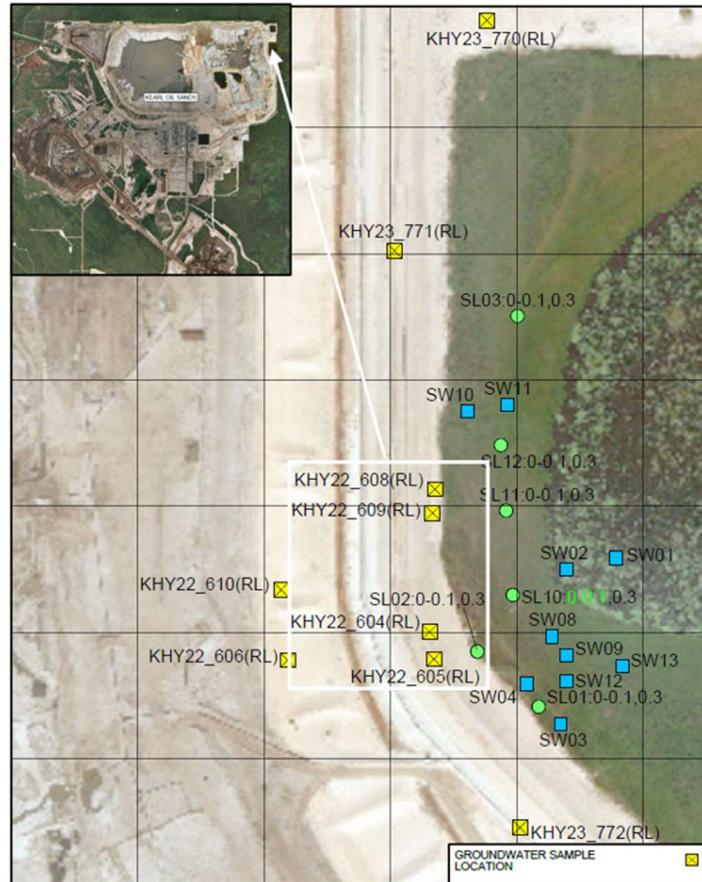
\*Environmental Quality Guidelines for Alberta Surface Waters, Surface Water Quality Guidelines for the Protection of Aquatic Life

### Interpretation

- Naphthenic acids sampled on August 22, 2023 analyzed using the Orbitrap method is not available for this update.
- Total and dissolved sulphide samples were analyzed by a different lab. Therefore, August 22, 2023 data is not available for this update.

# AER Third-Party Sampling 2023

## Kearl Oil Sands



## Groundwater

		Source
KHY22-604 (shallow well)	23-August-2023	AB Tier 1: TDS, sulphate, manganese, iron, PHC F2 Note: Lab analysis for naphthenic acids is underway. Results are not yet available
KHY22-605 (deep well)	23-August-2023	AB Tier 1: iron, manganese Note: Lab analysis for naphthenic acids is underway. Results are not yet available
KHY22-608 (shallow well)	22-August-2023	AB Tier 1: TDS, sulphate, iron, manganese No guideline: naphthenic acids (3.4 mg/L)
KHY22-609 (deep well)	22-August-2023	AB Tier 1: manganese, iron
KHY23-771 (shallow well)	22-August-2023	AB Tier 1: TDS, iron, manganese No guideline: naphthenic acids (0.6 mg/L)
KHY23-772 (shallow well)	22-August-2023	AB Tier 1: TDS, sulphate, iron, manganese, aluminum, arsenic, boron, PHC F2 No guideline: naphthenic acids (17.6 mg/L)

\* Alberta Tier 1 Soil and Groundwater Remediation Guidelines

## Soil

Last sampled on July 27, 2023. Refer to previous update.

## Interpretation

- Exceedances suggest the presence of tailings seepage in shallow groundwater.
- KHY22-605 and KHY22-609 do not show impacts from tailings seepage in deeper groundwater.