Memo

SUBJECT
Remediation Certification Application

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Introduction

Arcadis Canada Inc. (Arcadis) is submitting this Remediation Certificate Application on behalf of Imperial Oil Limited (Imperial) for the former Bulk Petroleum Plant and Cardlock Facility located 3.5 kilometers (km) west of the town of Peace River, Alberta, on the north side of Highway 2 (**the Site; shown on Appendix F, page 39-40**).

Site Ownership

The Site was purchased by Imperial in 1987 and was subsequently developed into a bulk petroleum plant and cardlock facility, which was active until 2015. Former site infrastructure included two warehouse buildings with barrel fill meters, an office with underground water and wastewater tanks, an aboveground storage tank (ASTs) farm with associated piping, pumps, loading and unloading racks, underground spill containment tank, and a cardlock facility with pumps and underground storage tanks (USTs) (Golder,2015a). Six ASTs were removed in 2003, three USTs were removed in 2008, and the remaining infrastructure were removed in 2015 (Golder, 2015b). The Site is approximately 4.0 hectares in area, with current ground surface comprised of grass, asphalt, and gravel.

Previous Investigations

Previous site investigations were conducted by Golder Associates (Golder) between 2015 to 2018 to assess the soil and groundwater quality. Investigation work comprised of three Phase II Environmental Site Assessments (ESAs) resulting in the advancement of 8 boreholes and 23 test pits, along with the completion of associated soil sampling.

Soil samples were previously collected across the Site as part of the ESA field program and included a mix of boreholes, monitoring wells, test pits (TP) and excavations. The details of the field program are presented in the Golder Phase II ESA reports (attached). Soil conditions at the site are composed of silty clay to clayey silt to a confirmed depth of 16.8 meters below ground surface (mbgs). Between 2.0 and 5.5 mbgs and between 15.5 and 16.8 mbgs, discontinuous sand and silty sand layers were observed. Based on field observations and grain size analysis, fine-grained soils represent the dominant soil type at the Site.

Soil analytical results from the field programs indicated petroleum hydrocarbon (PHC) impacts. The historical soil sample data from the previously completed site investigation reports are presented in **Appendix F, page 41-44.**

Due to the absence of a shallow aquifer on Site, groundwater monitoring and sampling was not completed during the Phase II ESA programs. All accessible monitoring wells were noted to be dry. Light non-aqueous phase liquid (LNAPL) has not previously been detected in any of the monitoring wells (Golder, 2018).

Remedial Excavation

Between June 7 and August 1, 2023, five major excavations (EX1 to EX5) were completed to remediate soils impacted by hydrocarbons exceeding regulatory guidelines. Additional work was undertaken between February 13 and April 9, 2024, including the excavation of extensions EX5A and EX5A1, which required re-digging areas of EX3 and EX4 to greater depths based on contamination found in deeper zones. Clean overburden material generated from these activities was stockpiled on site for later use as backfill. Figure of excavation plan is presented in **Appendix F, page 45.**

To further delineate the extent of hydrocarbon-impacted soils, seven test pits were excavated in June 2023 and February 2024, within the limits of EX2 and EX5A. These test pits were sampled at regular intervals for field screening and laboratory analysis to confirm hydrocarbon presence. In addition, twelve boreholes were drilled in September 2023, in the vicinity of EX5 to a maximum depth of 16.2 metres below ground surface. Soil samples collected from these boreholes allowed vertical and lateral delineation of PHC impacts in soil.

Approximately 4,360 m^3 of clean overburden from various excavation areas was stockpiled, field screened, and tested to confirm suitability for reuse as backfill. Impacted soils, totaling about 9,211 tonnes, were excavated and disposed of off-site at a licensed landfill facility. Excavated areas were carefully sampled on a grid basis, with samples collected from both the base and walls of the excavations to verify that remaining soils met the applicable environmental guidelines. Confirmatory samples for laboratory analysis were selected based on field observations and screening results, and all sample locations were documented on the Site plans presented on **Appendix F, page 45-51.**

Following confirmation of clean excavation limits, backfilling was completed using approximately 8,214 tonnes of imported materials, supplemented by the validated clean overburden stockpiles. The backfill was track-packed and compaction tested to ensure stability, with all work conducted under supervision by Arcadis and third-party quality assurance by Beairsto & Associates Engineering.

The remediation program successfully addressed hydrocarbon-impacted soils at the site through a combination of targeted excavations, comprehensive sampling, and careful management of both impacted and clean soils. Overall, the remediation activities were completed in accordance with regulatory requirements, reducing environmental risk and supporting future site use.

Conclusion

Based on the assessments and remedial activities completed at the Site, unacceptable risks to human health or ecological receptors from soil and groundwater are not expected. Therefore, the Site is eligible to pursue regulatory closure by obtaining a Remediation Certificate from Alberta Environment and Protected Areas.

Remediation Certificate Application Package

The following reports are attached as part of the application package:

- Completed Remediation Application Package
- Golder 2015 Phase I ESA Report
- Golder 2015 Phase II ESA Report
- Golder 2017 Phase II ESA Report
- Golder 2018 Phase II ESA Report
- Arcadis 2025 Remedial Action Plan and Remediation Report