APPENDIX F

Erosion and Sediment Control Plan

REPORT

Erosion and Sediment Control Plan

Environmental Site Assessments at the Ikhil I-37 and Reindeer C-36 Former Wellsites, East-central Mackenzie Delta, Inuvialuit Settlement Region, Northwest Territories

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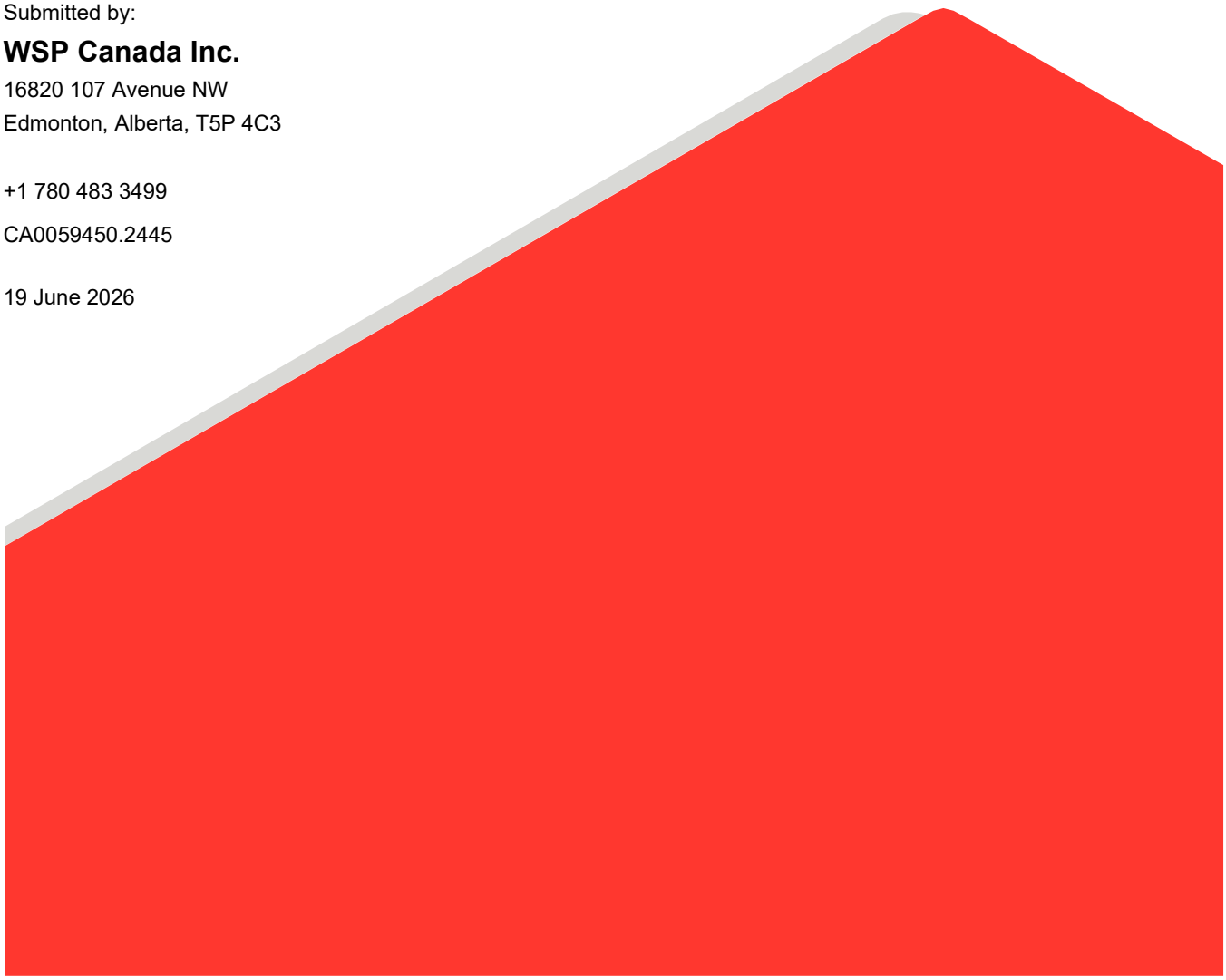
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1.0 INTRODUCTION

1.1 Background

WSP Canada Inc. has prepared this Erosion and Sediment Control Plan (the Plan) on behalf of Shell Canada Limited (Shell) to support the environmental site assessments (ESAs) at the Ikhil I-37 and Reindeer C-36 former wellsites (the Sites) on Inuvialuit 7(1)(A) Private Land in the east-central Mackenzie Delta of the Inuvialuit Settlement Region (ISR), Northwest Territories (the Project). The Plan provides measures to control erosion and sedimentation during ESA activities at the Sites as well as ice road and temporary overland winter access construction, maintenance and use by identifying potential Project-related effects and mitigation measures to minimize erosion and sedimentation potential.

All personnel will have access to paper and digital copies of the Plan.

1.2 Location and Description

The Sites are between 49 and 90 kilometres (km) northwest of Inuvik, in the ISR. The location of the Sites are presented in Figure 1 (Appendix A) and in Table A.

Table A: Locations of the Sites

Site Name	Latitude	Longitude	Distance from Inuvik (km)
Ikhil I-37	68°46'33.53" N	134° 7'51.26" W	49
Reindeer C-36	69° 5'10.47" N	134°39'25.13" W	90

Access to the Sites in summer will be via helicopter or boat (Reindeer C-36 only). Access to the Sites in winter will be via ice road extension from the Inuvik to Aklavik public ice road, snowpack ramps and temporary overland winter access, as presented in Figure 2 (Appendix A).

Gulf Canada developed and subsequently abandoned the Sites for oil and gas exploration in 1973 (Komex/IEG 2006). Based on a review of available historical information, historical features potentially include: a well centre, drilling waste sump, a former fuel storage area, flare pit, camp sump, wood pilings and/or former access roads.

1.3 Project Summary

The multi-season, multi-year Project will allow staged ESAs to be completed at the Sites. The stages will include summer and winter activities as outlined in the following text.

Summer Scope of Work

The multi-season, multi-year Project will allow staged ESAs to be completed at the Sites. The stages will include summer and winter activities as outlined in the following text.

Summer Scope of Work

The summer stage of the Project may consist of the following activities.

- Light Detection and Ranging and orthographic imagery of the Sites collected through overflights between May and September.

- Site access via helicopter or boat (Reindeer C-36 only). If accessed by boat, a low ground pressure non-rutting summer vehicle [e.g., ARGO/SHERP or similar] may be used to transport field staff and equipment from the boat landing area(s) to the assessment area(s).
- Aerial (via helicopter) and ground-based visual inspection of the Sites, including site photography and drone surveys to collect high resolution imagery.
- Completion of soil sampling from approximately 20 hand auger boreholes. Additional hand auger boreholes may be completed based on field observations.
- Completion of sediment, surface water and porewater sampling from approximately 10 locations using appropriate hand tools and equipment. Co-located sediment, surface water and porewater samples may be collected from ponded areas (potential drilling waste sump, camp sump and/or flare pit) and from background locations.
- Completion of geotechnical soil sampling using hand tools (e.g., hand auger, shovel/spade) from areas near the drilling waste sumps.
- Assessing the depth of the active layer at locations on and around the Sites using a hand auger or a thaw probe/poking rod.
- Collecting ecological information (such as information on aquatic and terrestrial habitats and incidental observations, and vegetation tissue samples).
- Temporary fuel storage at the Sites will be in jerry cans for refueling of the ARGO/SHERPs, if applicable. The boats will be fueled in Inuvik at the start of each trip and at the Sites from jerry cans, as needed.
- Loose and accessible historical debris, if encountered, that can be safely transported by helicopter or boat may be recovered and transported off site for disposal at a licensed facility (e.g., in Inuvik).
- Geophysical surveys (e.g., electromagnetic [EM], electrical resistivity tomography [ERT] or other) and sump pond bathymetry may be completed.

This multi-year (2026 to 2031) Project is proposed to allow for the flexibility to complete the summer scopes of work over multiple summers, as needed.

Winter Scope of Work

The winter stage of the Project may consist of the following activities.

- Construction of an ice road extension from a junction approximately 30 km along the Inuvik to Aklavik public ice road to the Sites (Figure 2, Appendix A). This will allow site access for equipment as well as the off-site transport and disposal of waste materials. The ice road extension may be approximately 70 km long. It is expected that ice road reconnaissance and profiling will begin in early winter and construction will be finished in January/February.
- Construction of spur ice road, snowpack ramps and temporary overland winter access to allow access to the Sites (Figure 2, Appendix A). Access to the Sites will be completed in late winter/early spring.
- Limited vegetation (e.g., willows and small growth trees) brushing may be required for site and borehole access.

- Mobilization of equipment (e.g., environmental drilling rig, trucks) to the Sites on the ice road/temporary overland winter access for the duration of the winter stage of the Project.
- Completion of soil sampling using an environmental drill rig. Approximately 35 boreholes will be drilled at each Site to depths appropriate for assessment. Additional boreholes may be completed based on field observations. Several of these boreholes may be completed with temporary thermistor installations.
- Temporary fuel storage at the Sites will be in a fuel truck and pick-up truck with slip tank for refueling of equipment and vehicles.
- Loose and accessible historical debris, if encountered, may be collected, transported and disposed of off site at approved facilities.
- Geophysical surveys (e.g., EM, ERT or other) may be completed.

This multi-year (2026 to 2031) Project is proposed to allow for the flexibility to complete the winter scopes of work over multiple winters, as needed.

1.4 Project Contacts

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1.5 Roles and Responsibilities

Shell is responsible for the overall content and assignment of responsibilities of this Plan. Shell's contractors are responsible for the implementation of this Plan and are expected to adhere to it. All personnel working on the Project, including Shell employees, contractors and consultants, will be made aware of this Plan.

1.6 Guidelines and Standards

The Plan was developed using the following guidelines.

- Erosion and Sediment Control Manual (GNWT 2016); and
- Code of Practice: Ice Bridges and Snow Fills (DFO 2025, internet site).

2.0 MITIGATION MEASURES

The following sections describe the planned erosion and sediment control measures for the access and ESA components of the Project.

2.1 Ice Road and Temporary Overland Winter Access Construction, Maintenance and Use

- In early winter, an approximately 70 km long ice road extension will be constructed from the Inuvik to Aklavik public ice road to allow site access for the crew and equipment (e.g., trucks, environmental drilling rig, warming trailer) as well as off-site transport and disposal of waste materials. The route from Inuvik to the Sites will originally follow the Government of Northwest Territories Inuvik to Aklavik public ice road to approximately the 30 km mark. From there, the ice road extension may follow the Mackenzie River East Channel for approximately 70 km crossing through Inuvialuit 7(1)(A) Private Lands with snowpack ramps and temporary overland winter access to the Sites.
- At approximately the 25 km point of the ice road extension, a short snowpack ramp and an approximately 7.5 km long temporary overland winter access will be constructed to access the Ikhil I-37 site (Figure 2, Appendix A). The proposed temporary overland winter access to Ikhil I-37 may follow the existing access historically used to construct and later re-supply the Ikhil plant, for approximately 3.5 km. From the Ikhil plant, the overland access continues northeast approximately 1.5 km to Peter Lake where a short snowpack ramp may be constructed to the lake surface, an approximately 950 metre ice road constructed to cross the lake, and another short snowpack ramp constructed onto land with a final overland access of approximately 1.5 km to the Ikhil I-37 site.
- At approximately the 70 km point of the ice road extension, an approximately 3.3 km long spur ice road will be constructed leading west along a channel and lake from where a short snowpack ramp and an approximately 0.4 km long temporary overland winter access will be constructed to access the Reindeer C-36 site, utilizing the former access road (Figure 2, Appendix A).

- Dolly Varden (*Salvelinus malma*) is the only aquatic species potentially occurring in the surrounding area that is listed under Schedule 1 of the federal *Species at Risk Act* (SARA 2026, internet site).
- The work will not alter the bed or banks of any water course.
- No temporary or permanent structures will be constructed below the high-water mark (with the exception of the snowpack ramps).
- For constructed water course crossings, and when removing or v-notching snow fills at snowpack ramps and temporary overland winter access decommissioning, Fisheries and Oceans Canada's (DFO's) Code of Practice: Ice Bridges and Snow Fills (DFO 20265, internet site) will be implemented to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately.

2.1.1 Fish Protection

The following measures will be implemented to protect fish.

- Water pumps used to withdraw water for winter access construction will include screened intake pipes to prevent entrainment or impingement of fish as per DFO's Water Intake End-of-Pipe Fish Screens (DFO 2026, internet site). This code of practice was developed to guide water intake rates of up to 150 litres per second. Any water withdrawal required for the Project will not exceed this limit. Water will be withdrawn from the Mackenzie River for ice road construction, and for construction of snowpack ramps and temporary overland winter access construction (if required to strengthen the thickness of compacted snow for the protection of underlying vegetation and terrain to a thickness of 20 centimetres [cm]).
- Speed limits will be implemented on the ice road and public use will be limited to minimize auditory disturbance of fish.

2.1.2 Protection of Fish Passage

Fish passage is not expected to be affected by the Project. The temporary snowpack ramps, temporary overland winter access and water course crossings will be built to a minimum thickness of 20 cm. Clean snow, and if required, water from the Mackenzie River will be used with no logs or woody debris required to strengthen the structure.

2.1.3 Protection of the Riparian Zone

Protection of the riparian zone will include the following.

- Use existing trails and previously disturbed areas to the extent possible.
- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- Construct the snowpack ramp perpendicular to the water bodies.
- Construct the snowpack ramp and temporary overland winter access using clean compacted snow and ice to a minimum thickness of 20 cm.
- Restore the banks and riparian vegetation affected by the activities to their natural state through grading and recontouring to facilitate natural revegetation, if needed.
- Implement DFO's Code of Practice: Ice Bridges and Snow Fills (DFO 2025, internet site) if water course crossings need to be constructed, and when removing or v-notching snow fills at snowpack ramps and

temporary overland winter access decommissioning to not impede drainage during breakup. Any woody or other debris observed on water course crossings will be removed immediately.

- If snowbanks were created during access construction, they will be removed before breakup to allow the temporary overland winter access route to drain.

2.2 Environmental Site Assessments

The ESA component of the Project will include soil, sediment, surface water and porewater sampling, collection of ecological information and assessing the depth of the active layer (Section 1.3).

2.2.1 Protection of Surface Water Bodies from Sedimentation

The environmental sampling of soil, sediment and surface water may cause increased sedimentation into adjacent water bodies. Protection of surface water bodies from sedimentation will include the following.

- Use existing trails and previously disturbed areas to the extent possible.
- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- If needed, backfill boreholes with original material or with bentonite/barite mix and/or sand.
- Conduct sediment sampling from the shoreline, where the bank is stable, or surface of the water body. Obtain sediment samples using appropriate hand tools and implement best practices (i.e., slow movements, no digging around) to reduce disturbance to the sediment to a minimum. Process samples and discard excess sediment above the high-water mark.
- Conduct surface water sampling from the shoreline, where the bank is stable, or surface of the water body. Obtain surface water samples using appropriate hand tools and implement best practices without disturbing the sediment at the bottom.
- Conduct porewater sampling using industry standard drive-point piezometers installed into the sediment at the shoreline of the water body. Implement best practices (i.e., slow movements, no digging around) to reduce disturbance to the sediment to a minimum.

2.2.2 Protection of the Riparian Zone

Protection of the riparian zone includes the following.

- Use track-mounted or low ground-bearing heavy equipment where possible.
- Minimize overall vehicle use (trucks, heavy equipment, ARGO/SHERP) and, where possible, travel around the Sites on paths/trails that are either existing or established at the outset of the work.
- Use snow to compact the ramps and temporary overland winter access to the Sites for the protection of underlying terrain to a thickness of 20 cm. If required, use water to strengthen the ramps and overland access.
- Spread all snow berms created at the Sites and level at time of demobilization to allow the Sites to drain.
- Keep travel to level terrain and avoid traversing steep slopes in mobile equipment/vehicles, where possible, except for the ascent on the slopes of Blueberry Hill and the descent to Peter Lake. These slopes are part of the temporary overland winter access to Ikhil I-37 following (to the extent possible) the existing access

historically used to construct and later re-supply the Ikhil gas plant. These slopes will be protected with packed snow and water, if required, to a minimum thickness of 20 cm.

- Protect trails, as needed, with wood and/or drill mats that will be removed at time of demobilization.
- Minimize access to the shorelines by mobile equipment/vehicles (i.e., restrict to mobilization/demobilization).
- Locate warming trailer (winter), fuel storage area and equipment/supplies staging area in previously disturbed areas of the Sites, where possible.
- Minimize overall truck and equipment use to the extent feasible.

3.0 REFERENCES

Literature Cited

GNWT (Government of the Northwest Territories). 2016. Erosion and Sediment Control Manual. https://www.inf.gov.nt.ca/sites/inf/files/resources/dot_erosion_and_sediment_control_manual_-_mar_31_16.pdf

Komex/IEG (Komex International Ltd. and IEG Environmental). 2006. 2005 Drilling Waste Sump Inventory Study in the Inuvialuit Settlement Region. Prepared for ConocoPhillips Canada. June 2006.

Internet Sites

DFO (Fisheries and Oceans Canada). 2025. Code of practice: Ice bridges and snow fills. https://www.dfo-mpo.gc.ca/pnw-ppe/codes/ice-bridges-ponts-glace-eng.html. Accessed April 2026.

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SARA. 2026. Species at Risk Public Registry. Available at: https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html. Accessed: April 2026.

4.0 STATEMENT OF LIMITATIONS

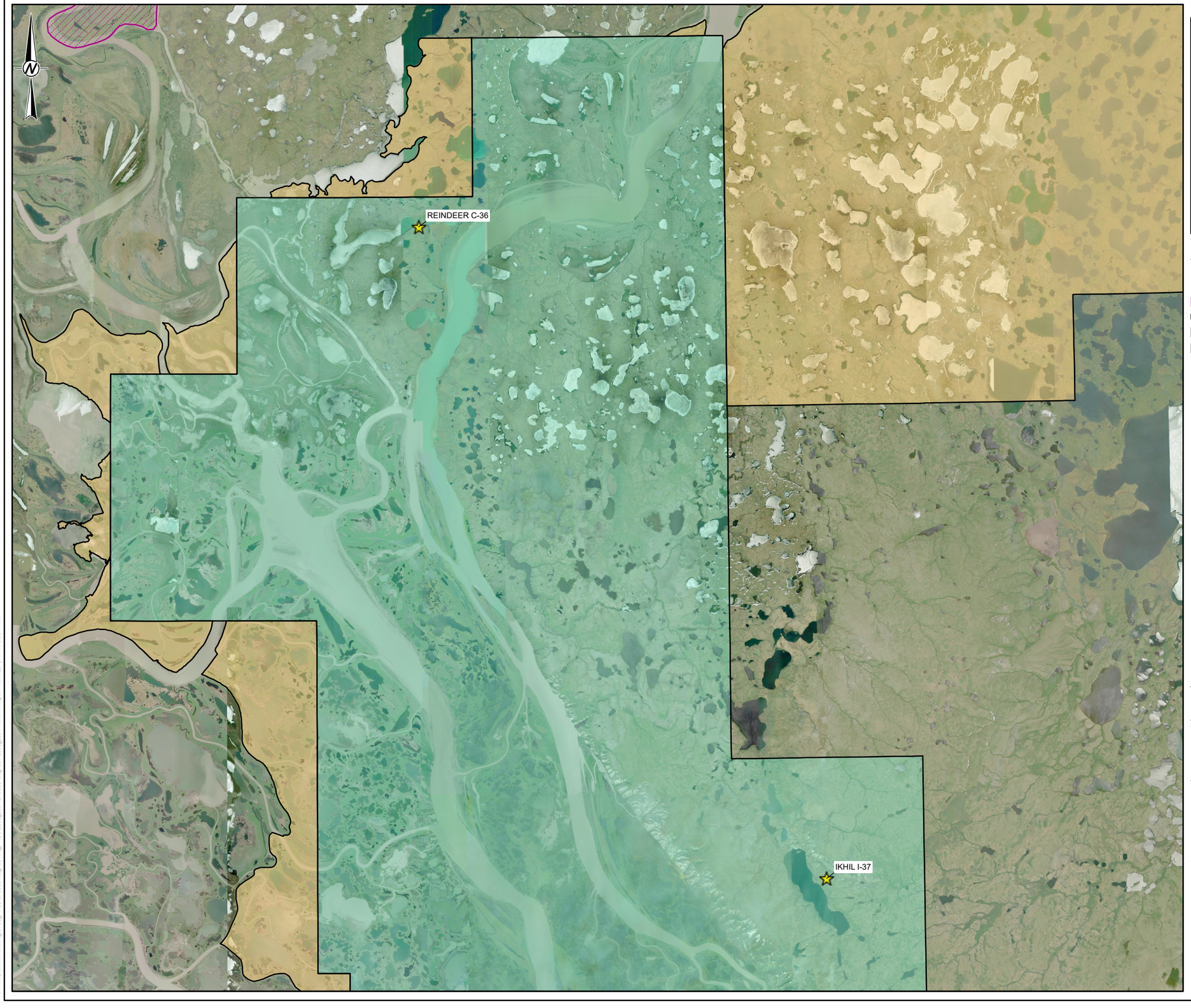
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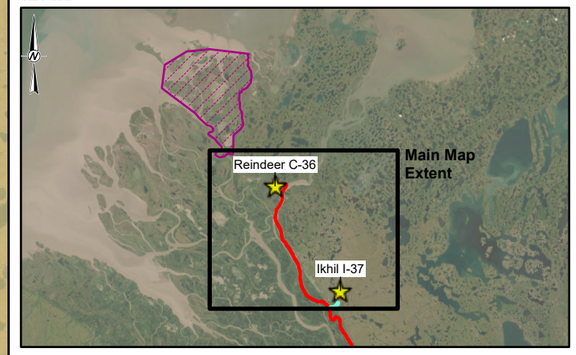
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APPENDIX A

Figures



KEY MAP



SCALE: 1:1,960,000

LEGEND

- SITE LOCATION
- KENDALL ISLAND BIRD SANCTUARY

INUVIALUIT PRIVATE LANDS

- INUVIALUIT 7(1)(A) LANDS FOR SURFACE AND SUBSURFACE TITLE
- INUVIALUIT 7(1)(B) LANDS FOR SURFACE TITLE

0 1,500 3,000 6,000

1:200,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - CANADA
2. BASE MAP: EARTHSTAR GEOGRAPHICS
3. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 8N

CLIENT
SHELL CANADA LIMITED

PROJECT
ENVIRONMENTAL SITE ASSESSMENTS
IKHIL I-37 AND REINDEER C-36 FORMER WELLSITES
INUVIALUIT SETTLEMENT REGION, NORTHWEST TERRITORIES

TITLE
IKHIL I-37 AND REINDEER C-36 SITE LOCATION

CONSULTANT

wsp

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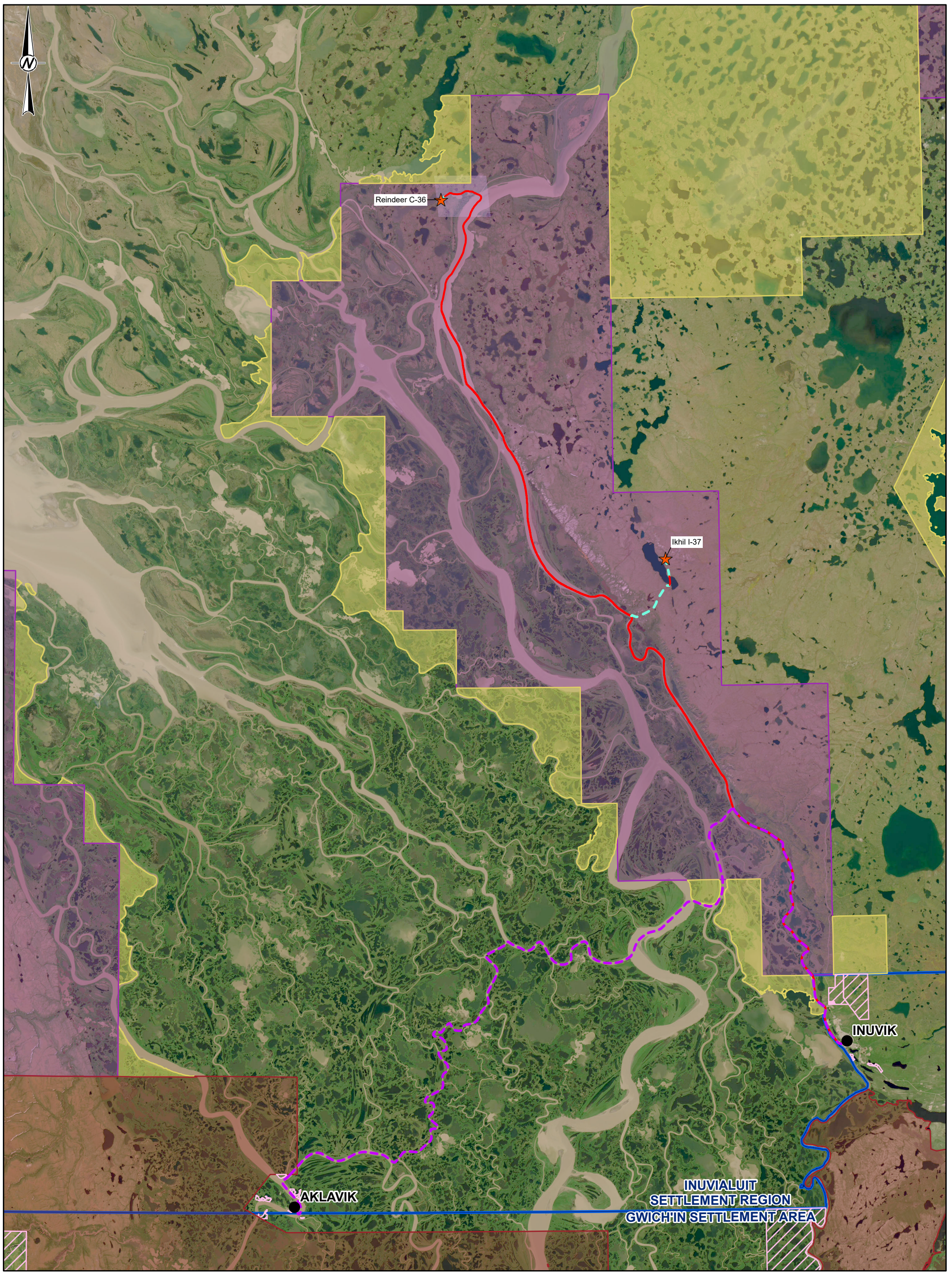
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LEGEND

- SITE LOCATION
- PUBLIC SEASONAL ICE ROAD
- PROPOSED ICE ROAD
- PROPOSED TEMPORARY OVERLAND WINTER ACCESS
- SETTLEMENT REGION BOUNDARY

PRIVATE LANDS TITLES AND RIGHTS

- INUVIALUIT 7(1)(A) LANDS FOR SURFACE AND SUBSURFACE TITLE
- INUVIALUIT 7(1)(B) LANDS FOR SURFACE TITLE
- GWICH'IN LANDS SURFACE AND SUBSURFACE RIGHTS
- GWICH'IN LANDS SURFACE RIGHTS

0 3,000 6,000 12,000

1:350,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - CANADA
2. BASE MAP: EARTHSTAR GEOGRAPHICS
3. COORDINATE SYSTEM: NAD 1983 CSRS UTM ZONE 8N

CLIENT
SHELL CANADA LIMITED

PROJECT
ENVIRONMENTAL SITE ASSESSMENTS
IKHIL I-37 AND REINDEER C-36 FORMER WELLSITES
INUVIALUIT SETTLEMENT REGION, NORTHWEST TERRITORIES

TITLE
IKHIL I-37 AND REINDEER C-36 SITE LOCATIONS WITH PROPOSED ICE ROAD AND TEMPORARY OVERLAND ACCESS

CONSULTANT

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YYYY-MM-DD	2026-06-18
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PREPARED	C.MEDINA
REVIEWED	T.GRENDUS
APPROVED	J.KRIZAN

PROJECT NO.	PHASE-TASK	REV.	FIGURE
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