

**To:** MGM Energy2800, 421 - 7 Avenue SW
Calgary, AB T2P 4K9**File:** 123514551**From:** James Hymers, Project Manager
K'alo-Stantec Ltd.

Tulita, NT, Canada X0E 0T0

Date: January 22, 2024

Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

The Maunoir C-34 Wellsite Area (hereinafter referred to as the "Site") is located in the Sahtu Settlement Area (SSA), Northwest Territories (NT), approximately 229 kilometres (km) north of Norman Wells (Attachment A: Figure A.1). The Site is approximately 1.4 hectares (ha) in size and includes the former wellhead, Wellhead Bare Area, Recovered Bare Areas 1 and 2, and Gravel Areas 1 and 2 (Wellsite Area) (Attachment A: Figure A.2 and Figure A.3). Photos of the Site are provided in Attachment B as Photo B.1 to Photo B.9.

Table 1 2023 Site Specifications

Site	Maunoir C-34 Wellsite	Coordinates (centre point)	67° 13' 02.399" N and 125° 07' 06.179" W		
Permittee	MGM Energy		Contractor	K'alo-Stantec Ltd.	
Land Use Permit #	S19A-004	Expiry Date June 6, 2026	Water License #	S19L1-003	Expiry Date June 6, 2026
Site Assessors	Lionel Borges, B.Sc.		Monitoring Date	August 29, 2023	
Type of Inspection	<input type="checkbox"/> Ground <input checked="" type="checkbox"/> Aerial	Current Stage of Remediation/Reclamation	<input checked="" type="checkbox"/> In progress <input type="checkbox"/> Planned <input type="checkbox"/> Complete	Locations Inspected	<input checked="" type="checkbox"/> Well Site <input type="checkbox"/> Sump <input type="checkbox"/> Staging Area
Summary of Ongoing Work Completed to Date	<input type="checkbox"/> Decommissioning <input type="checkbox"/> Erosion Control <input type="checkbox"/> Excavation/Capping <input type="checkbox"/> Phytoremediation <input checked="" type="checkbox"/> Seeded <input type="checkbox"/> Planted <input type="checkbox"/> Other		Key Issues	<input type="checkbox"/> No issues <input type="checkbox"/> On-Site Materials <input type="checkbox"/> Wastes/Spills <input type="checkbox"/> Erosion <input type="checkbox"/> Terrain Conditions <input checked="" type="checkbox"/> Soil Exceedances <input type="checkbox"/> Water Exceedances <input checked="" type="checkbox"/> Vegetation <input type="checkbox"/> Wildlife Signs	Recommended for: <input type="checkbox"/> Closure <input type="checkbox"/> No further environmental monitoring or remediation/reclamation treatments until closure <input checked="" type="checkbox"/> Additional monitoring only <input type="checkbox"/> Additional treatment and monitoring (see Table 3)

Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

1 Key Findings and Recommendations

In 2023, an aerial reconnaissance of the Wellsite Area was conducted. Upon arrival, the field team visually assessed the Site and took photographs (Attachment B) to document site conditions as the helicopter circled above the Wellsite Area.

A summary of observed conditions in 2023 are provided in Table 2. Key findings and recommendations are summarized in Table 3.

Table 2 Summary of 2023 Environmental Monitoring

Parameter	Observation
On-Site Materials	A ^a
Erosion Control/Drainage	A
Terrain Conditions	A
Soil	IP
Standing Water	N/A
Vegetation Cover	IP
Invasive Plants/Weeds	A
Wildlife Signs of Use	A

Notes:

'A' = Acceptable – meeting permit/license conditions, no further work required at this time

- Water – at or below Canadian Council of Ministers of the Environment (CCME) Freshwater Guidelines¹
- Soils – at or below Government of Northwest Territories (GNWT) Environmental Quality Guidelines² and Alberta Environment, Salt Contamination Assessment and Remediation Guidelines³
- Vegetation – 70% vegetation cover and no weed treatment

'IP' = In Progress - Further work required

'N/A' = Not Applicable,

'NI' = Not Inspected, planned for future work

^a A wellhead was still present on the Site. It appeared to be in acceptable condition, as per permit requirements, at the time of the site visit.

¹ CCME, 2022. *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health*. Available from <http://cegg-rcqe.ccme.ca/>. Last checked on May 2023

² Government of Northwest Territories (GNWT), 2003. *Environmental Guideline for Contaminated Site Remediation*. November 2003

³ Alberta Environment. 2001. *Salt Contamination Assessment and Remediation Guidelines*. Table 2.2. Soil Quality Guidelines for Unrestricted Land Use – Topsoil.



Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Table 3 **2023 Summary of Key Findings and Recommendations**

Parameters	Monitoring Observations and Results	Soil and Water Analytical Results (if exceedances)	Future Recommended Work
On-Site Materials	<ul style="list-style-type: none"> A wellhead, sign, and protective culvert were present at the Site during the site visit (Attachment B: Photo B.3). No other surface structures, materials, or waste were observed within the remainder of the Site during the site visit. 	<ul style="list-style-type: none"> Not applicable for this parameter. 	<ul style="list-style-type: none"> No further work related to on-site materials recommended until the wellhead is cut, capped, and abandoned.
Terrain	<ul style="list-style-type: none"> No terrain stability concerns observed at the Site during the site visit. Terrain conditions were observed to be stable. 	<ul style="list-style-type: none"> Not applicable for this parameter. 	<ul style="list-style-type: none"> Continue visual monitoring for potential signs of stress and/or ground movement during a future site visit.
Standing Water	<ul style="list-style-type: none"> No further standing water sampling was recommended as per the 2017 report⁴. No standing water was sampled during the 2023 site visit. Standing water was observed around the wellhead at the time of the site visit. 	<ul style="list-style-type: none"> Water samples were not collected from the wellhead area during the 2023 site visit. 	<ul style="list-style-type: none"> No sampling of standing water recommended, unless visible evidence⁵ triggers sample collection during a future site visit. Monitor the standing water around the wellhead and sample for petroleum hydrocarbons (PHC) if a sheen and/or odour are present.

⁴ Kālo-Stantec, 2017. *2017 Environmental Site Monitoring Report: Maunoir C-34 Wellsite*. Prepared for MGM Energy, November 2017. File No. 123512383

⁵ Evidence that would trigger the collection of soil and/or standing water samples may include: crust formation on exposed soil surfaces, vegetation changes (discoloration, decline in health, or lack of vegetation), discolored soil surfaces (e.g., staining), presence of a hydrocarbon-like sheen on the surface of standing water, standing water on the sump cap or slopes, or reasonably proximate to the sump and perceived to be possibly related to sump changes.

Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Parameters	Monitoring Observations and Results	Soil and Water Analytical Results (if exceedances)	Future Recommended Work
Soils	<ul style="list-style-type: none"> Soil samples were not collected during the 2023 site visit. Previous site visits (2015-2019) have reported PHC odour and sheen on standing water (when present) from around the well centre area. Analytical soil results have reported exceedances of select PHC and metal parameters (calcium, iron, magnesium, and sulfur) as well as pH values exceeding the guideline range⁶. Exceedances at the wellhead area extend deeper than 0.6 m. Permafrost in the area has limited vertical delineation⁷. The soil sample locations are presented on Attachment A: Figure A.2. Analytical results are summarized in the 2022 Report⁷. 	<ul style="list-style-type: none"> Soil samples were not collected during the 2023 site visit. 	<ul style="list-style-type: none"> Delineation and remediation of PHC exceedances at the Wellhead Bare Area not recommended until the wellhead is cut, capped, and abandoned.
Vegetation	<ul style="list-style-type: none"> Site has naturally revegetated in the Wellsite Area around the wellhead location (Attachment B: Photo B.4). Native vegetation cover and health on the Site met the land use permit requirements (i.e., >70% vegetation cover and in healthy condition). <p><i>Recovered Bare 1 and Recovered Bare Area 2 (Attachment A: Figure A.3; Attachment B: Photo B.5).</i></p> <ul style="list-style-type: none"> Recovered Bare 1 and Recovered Bare Area 2 had vegetation cover and vegetation health that met the land use permit requirements (i.e., >70% vegetation cover and in healthy condition) based on aerial observations. 	<ul style="list-style-type: none"> Not applicable for this parameter. 	<ul style="list-style-type: none"> Reconnaissance level vegetation monitoring only, particularly at Recovered Bare 1, Recovered Bare Area 2, Gravel Area 1, and Gravel Area 2 No reclamation treatments on Wellhead Bare Area recommended until the well is cut, capped, and abandoned.

⁶ Kālo-Stantec, 2019. *2019 Environmental Site Monitoring Report: Maunoir C-34 Wellsite*. Prepared for MGM Energy, November 2019, File No. 123513162

⁷ Kālo-Stantec, 2023. *2022 Environmental Site Monitoring Report: Maunoir C-34 Wellsite*. Prepared for MGM Energy, May 2023, File No. 123513945

Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Parameters	Monitoring Observations and Results	Soil and Water Analytical Results (if exceedances)	Future Recommended Work
Vegetation (cont'd)	<p><i>Gravel Area 1 and Gravel Area 2</i> (Attachment A: Figure A.3; Attachment B: Photo B.6 and Photo B.7)</p> <ul style="list-style-type: none"> Gravel Area 1 and Gravel Area 2 underwent reclamation treatments in 2017. Both areas have significantly increased vegetation cover since 2017. Vegetation met the permit requirements (i.e., >70% vegetation cover and in healthy condition) at the time of the 2023 site visit based on aerial observations. Vegetation cover was approximately 80% to 85% at Gravel Area 1 and 75% to 80% at Gravel Area 2. <p><i>Wellhead Bare Area</i> (Attachment A: Figure A.3; Attachment B: Photo B.3 and Photo B.6):</p> <ul style="list-style-type: none"> Area underwent reclamation treatments in 2017; however, vegetation has only established on a small portion of the area. Overall vegetation cover was approximately 25% to 30%, all consisting of grasses. Grass cover was present on the north and south sides. Standing water was also present on the north side. Vegetation appeared to be meeting land use permit requirements for health, but not for cover (i.e., not greater than 70% cover) based on aerial observations. No invasive plants/weeds were observed within the Site during the 2023 site visit. 	<ul style="list-style-type: none"> Not applicable for this parameter. 	<ul style="list-style-type: none"> Reconnaissance level monitoring for invasive plants whenever a site visit is carried out, particularly at Wellhead Bare Area, Recovered Bare 1, Recovered Bare Area 2, Gravel Area 1, and Gravel Area 2. <ul style="list-style-type: none"> Carry out invasive plant/weed control treatments if infestations reach a density that prohibits vegetation establishment and growth, including pulling plants, storing in garbage bags, and disposing off-site at an approved facility. At the Wellhead Bare Area, recommend backfilling and grading low spots with local material sourced around the wellhead to prevent water from accumulating.
Wildlife Signs	<ul style="list-style-type: none"> Three wallows or bedding spots were observed at the north and south ends of Recovered Bare Area 1. The wallows/bedding spots were in dry, soft, peaty material. It is suspected these spots were created by muskox (<i>Ovibos moschatus</i>) (Attachment B: Photo B.8 and Photo B.9). The wallows did not appear larger than last year. Being in peat material, these wallows seemed more like bedding areas rather than areas where the animals lick the material for salts. No other wildlife signs of use were observed within the Site during the 2023 site visit. 	<ul style="list-style-type: none"> Not applicable for this parameter. 	<ul style="list-style-type: none"> Recommend reclamation treatments at the wallows/bedding spots in Recovered Bare Area 1. Treatments should include raking/recontouring of wallows, application of native vegetation seed mix and fertilizer, and installation of grid deterrent structures. Continue monitoring for wildlife use whenever at the Site.



Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

2 Limitations and Closure

This document entitled 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area was prepared by K'alo-Stantec Ltd. (K'alo-Stantec) for the account of MGM Energy (the "Client") to support the regulatory review process for its Annual Site Monitoring Report (the "Report") for the Maunoir C-34 Wellsite Area (the "Site"). In connection therewith, this document may be reviewed and used by the Government of Northwest Territories participating in the review process in the normal course of its duties. Except as set forth in the previous sentence, any reliance on this document by any other party or use of it for any other purpose is strictly prohibited. The material in it reflects K'alo-Stantec's professional judgment in light of the limited scope, schedule and other limitations stated in the document and in the contract between K'alo-Stantec and the Client. The information and conclusions in the document are based on the conditions existing at the time the document was published and does not take into account any subsequent changes. In preparing the document, K'alo-Stantec did not verify information supplied to it by the Client or others, unless expressly stated otherwise in the document. Any uses which another party makes of this document is the responsibility and risk of such party. Such party agrees that K'alo-Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other party as a result of decisions made or actions taken based on this document.

K'alo-Stantec Ltd.

Tamara Tiessen, M.Sc.
Environmental Scientist

Olivier Piraux, M.Sc.
Terrain Scientist

Lionel Borges, B.Sc.
Senior Biologist / Reclamation Specialist



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This report was reviewed and approved for transmittal by:

Lindsay van Noortwyk, P.Geo
Environmental Geoscientist

Amin Kassam, B.Sc.
Senior Principal, Environmental Scientist

Attachments: Attachment A: Figures

Figure A.1 MGM Energy Wellsite, Sump, and Staging Area Locations within the Sahtu Settlement Area

Figure A.2 Maunoir C-34 Wellsite Area – Soil Sample Locations

Figure A.3 Maunoir C-34 Wellsite Area – Reclamation Assessment

Attachment B: Site Photographs



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Page A.1

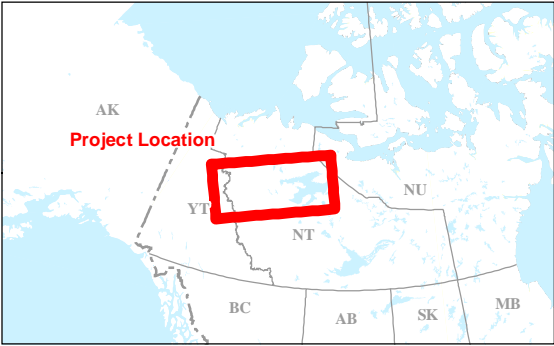
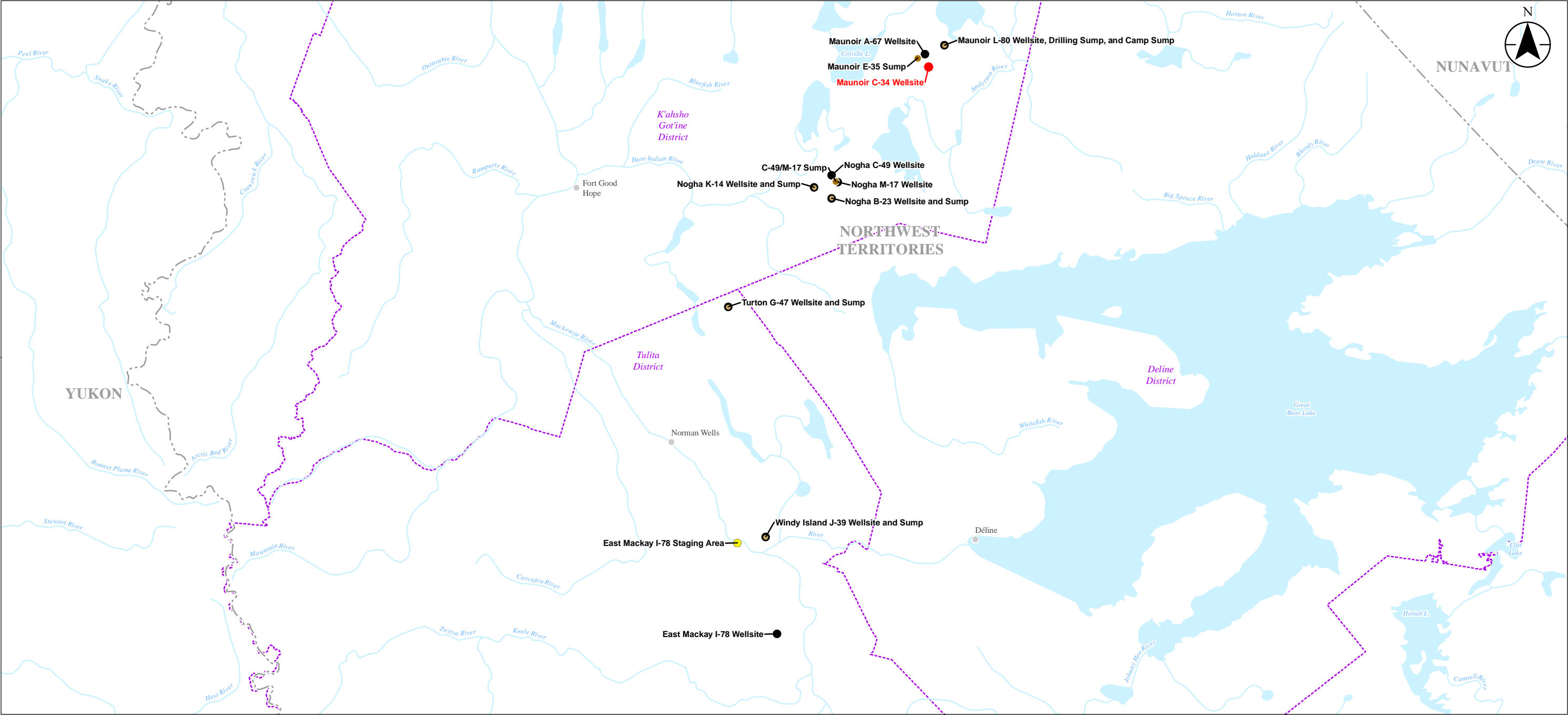
Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Attachment A

Figures



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- Report Location
- Staging Area
- Sump
- Wellsite
- Wellsite and Sump
- District Boundary

0 25 50 kilometers
(At original document size of 11x17)
1:2,000,000



Project Location
Sahtu Settlement Area
NT

Prepared by NFORRESTER on 20231120
QR by LVANNOORTWYK on 20231217
IR by DALBERTI on 20231218

Client/Project
Client: MGM Energy
Project: 2023 Environmental Site Monitoring Report:
Maunoir C-34 Wellsite Area

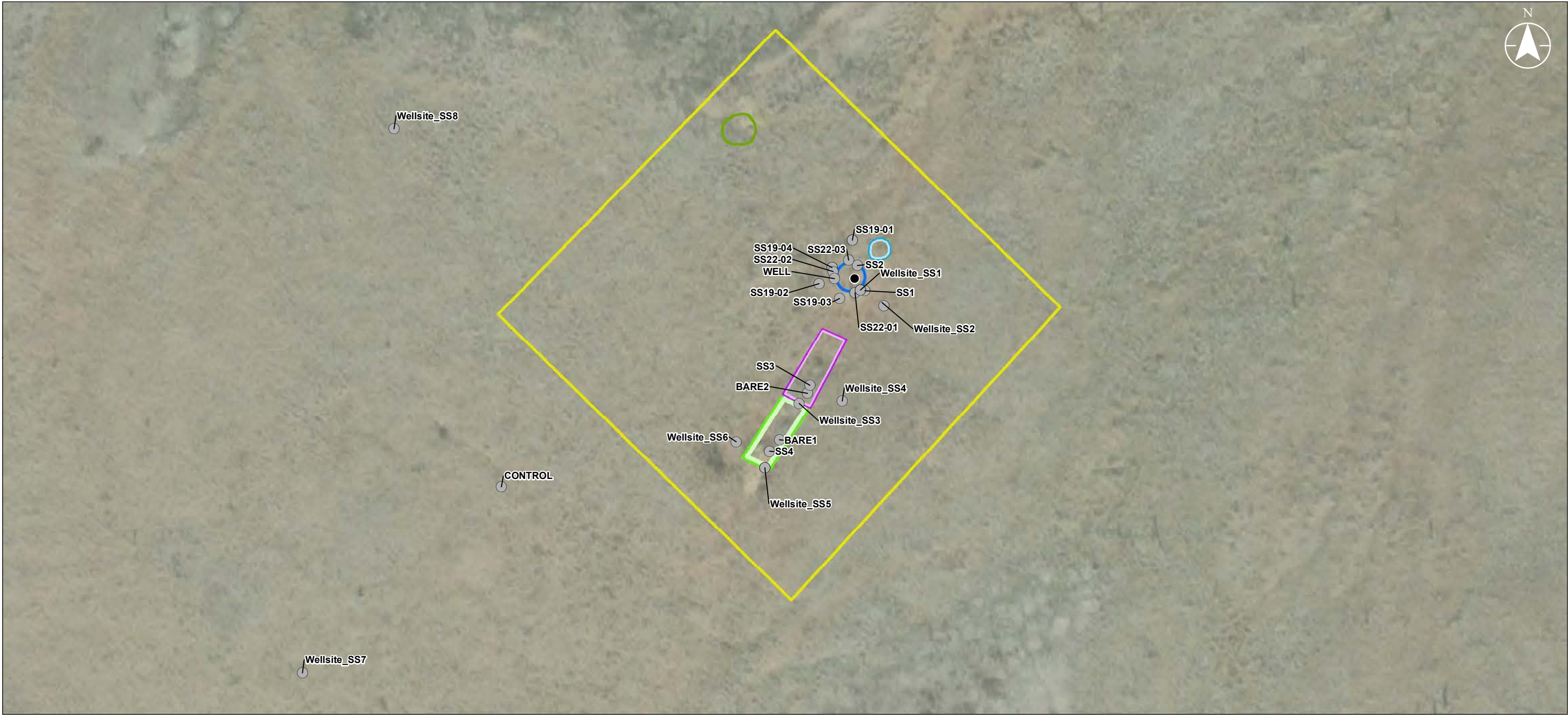
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Figure No.

A.1

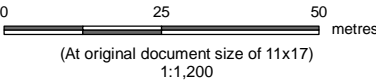
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**MGM Energy Wellsite, Sump, and Staging
Area Locations within the Sahtu
Settlement Area**

Notes
1. Coordinate System: NAD 1983 NWT Lambert
2. Data Sources: Base Data - Natural Earth. Thematic Data - KAVIK-STANTEC Inc.,
Government of Northwest Territories



- Historical Soil Sample
- Wellhead
- Gravel Area 1
- Gravel Area 2
- Recovered Bare Area 1
- Recovered Bare Area 2
- Wellhead Bare Area
- WellSite Area

Notes
1. Coordinate System: NAD 1983 UTM Zone 8N
2. Data Sources: Base Data - Natural Earth, Thematic Data - KAVIK-STANTEC Inc., Government of Northwest Territories
3. GPS coordinates for sampling locations were recorded in the field by an iPad collector tool. Accuracy of GPS coordinates may vary plus or minus 5 metres
4. Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



Project Location
Sahlu Settlement Area
NT

Prepared by NFORRESTER on 20231121
QR by LVANNOORTWYK on 20231217
IR by DALBERTI on 20231218

Client/Project
Client: MGM Energy
Project: 2023 Environmental Site Monitoring Report:
Maunoir C-34 WellSite Area

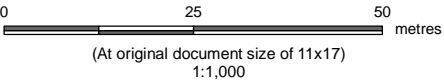
Figure No.
A.2

Title
Maunoir C-34 WellSite Area – Soil Sample Locations



Notes
1. Coordinate System: NAD 1983 UTM Zone 8N
2. Data Sources: Base Data - Natural Earth, Thematic Data - KAVIK-STANTEC Inc., Government of Northwest Territories
3. GPS coordinates for sampling locations were recorded in the field by an iPad collector tool. Accuracy of GPS coordinates may vary plus or minus 5 metres
4. Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- | | |
|---|--|
| ● Wellhead | Revegetation with seeded native grass species and naturally establishing native shrubs and forbs that meets land use permit requirements |
| Further Treatment Required | Revegetation with seeded native grass species that meets land use permit requirements |
| Gravel Area 1 | Wellhead Bare Area |
| Gravel Area 2 | Wellsite Area |
| Natural revegetation with native shrub and forb species that meets land use permit requirements | |
| Recovered Bare Area 1 | |
| Recovered Bare Area 2 | |



Project Location Sahlu Settlement Area NT	Prepared by NFORRESTER on 20231121 QR by LVANNOORTWYK on 20231217 IR by DALBERTI on 20231218
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Figure No. A.3

Title Maunoir C-34 Wellsite Area – Reclamation Assessment

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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Attachment B

Site Photographs



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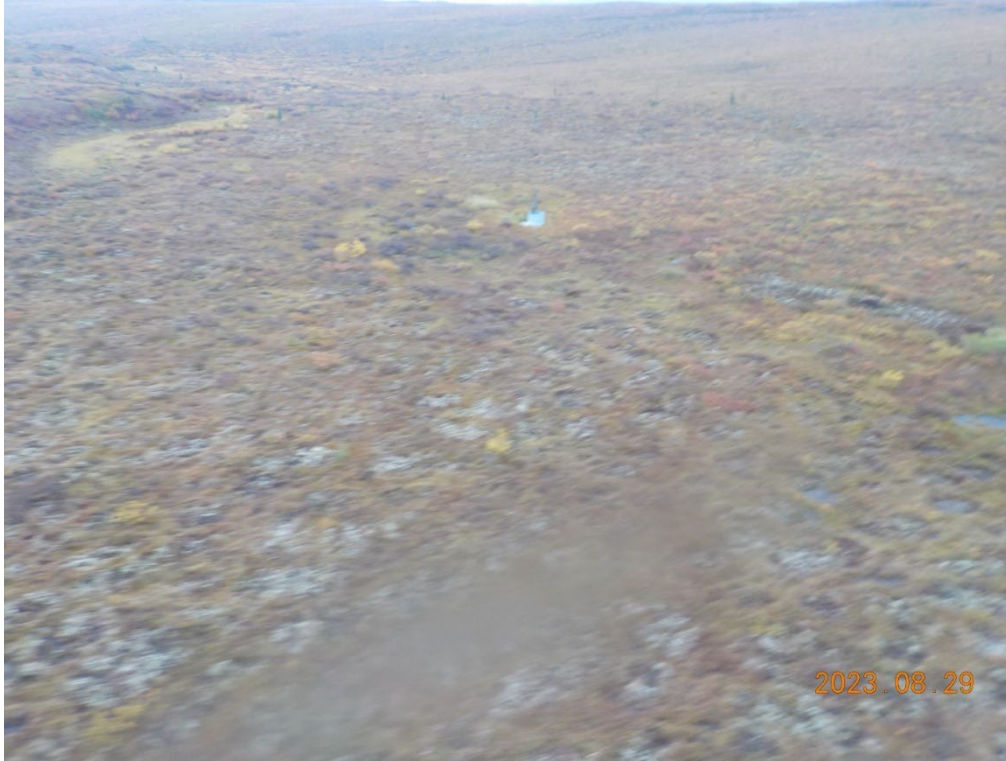
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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.1 C-34 Wellsite Area: Overview



Note: Overview of the Wellsite Area and surrounding area (facing northeast) showing overall terrain and vegetation conditions (August 29, 2023).



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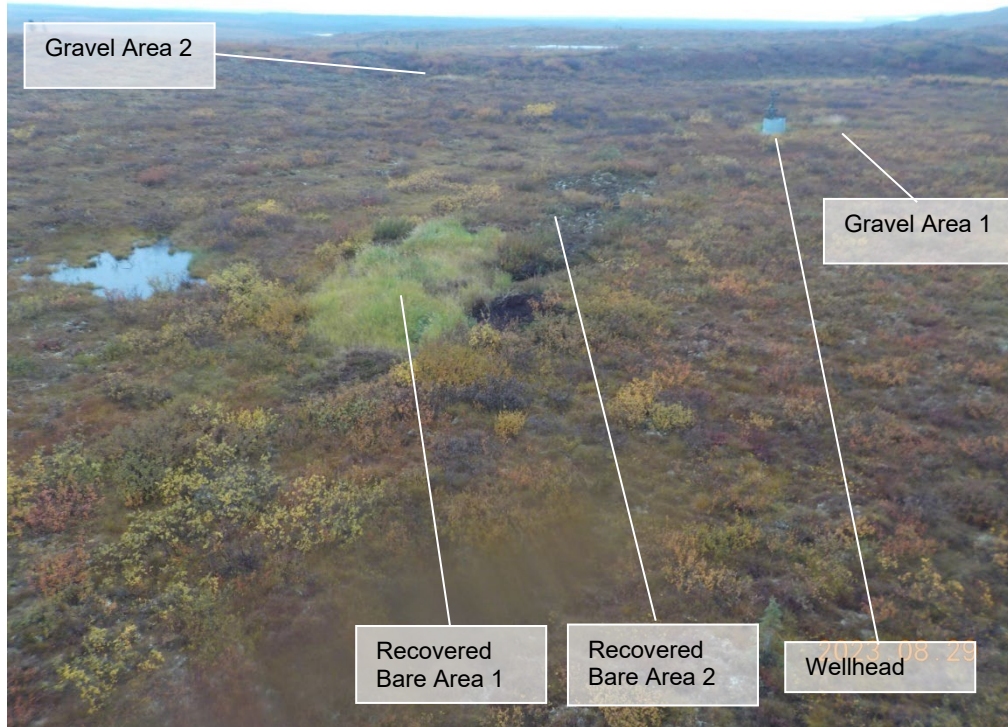
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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.2 C-34 Wellsite Area: Overview



Note: Overview (facing north) showing locations of Wellhead, Recovered Bare Areas 1 and 2, and Gravel Areas 1 and 2 (August 29, 2023).

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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.3 C-34 Wellsite Area: On-Site Materials



Note: View (facing northwest) toward the on-site materials showing the wellhead and protective culvert (August 29, 2023).



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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.4 C-34 Wellsite Area: Vegetation Cover



Note: View of ground and vegetation conditions in the Wellsite Area looking southwest. Wellsite Area revegetated with naturally established trees, shrubs and forbs. Vegetation cover met the permit requirements (i.e., >70% cover and healthy condition) (August 29, 2023).



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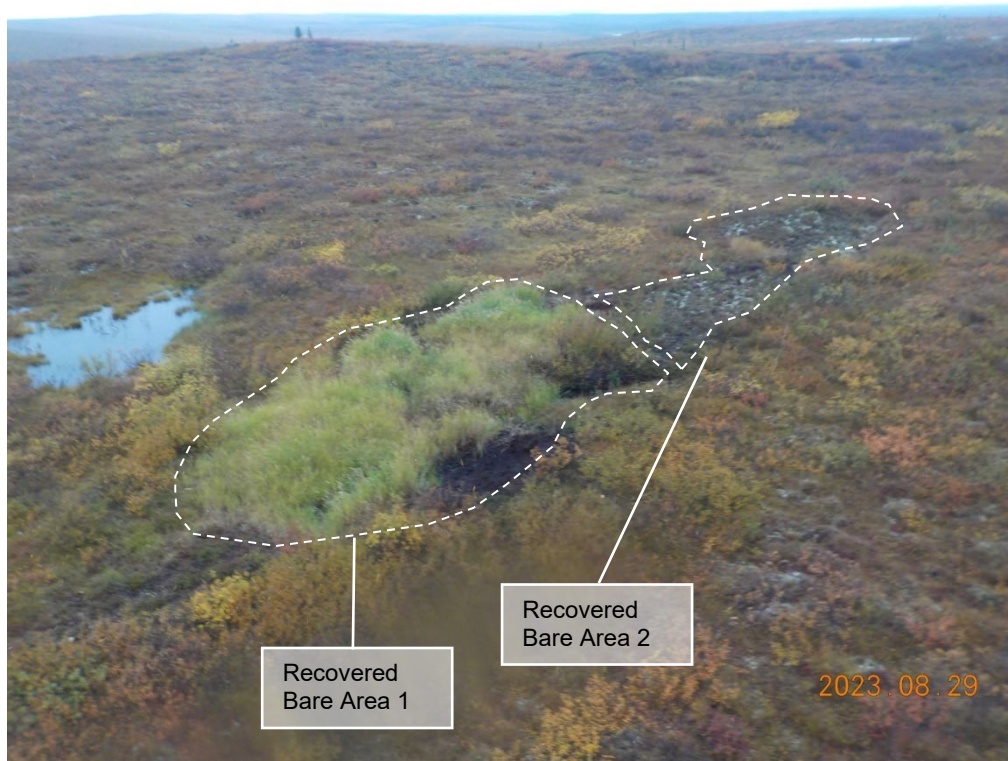
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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.5 C-34 Wellsite Area: Vegetation Cover - Recovered Bare Area 1 and Recovered Bare Area 2



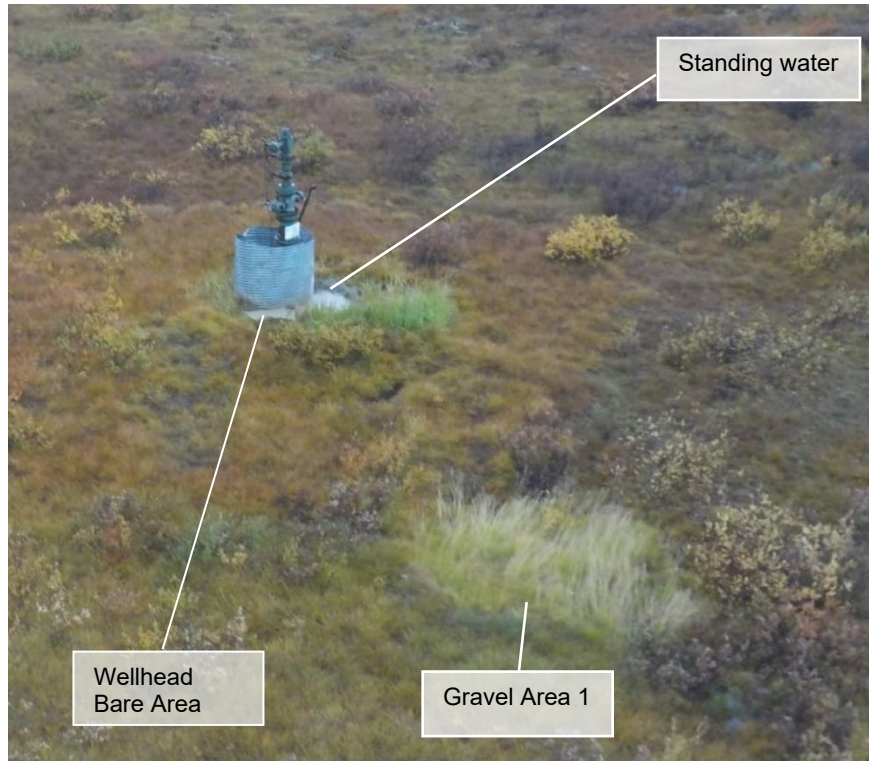
Note: View of ground and vegetation conditions at Recovered Bare Area 1 and Recovered Bare Area 2 looking north. Areas were unchanged in dimensions and shape since 2015 monitoring. At the time of the 2023 site visit, vegetation cover met the permit requirements (i.e., >70% cover and healthy condition) (August 29, 2023).



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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.6 C-34 Wellsite Area: Vegetation Cover – Wellhead Bare Area and Gravel Area 1



Note: View of Wellhead Bare Area and Gravel Area 1 facing southwest. Both areas underwent reclamation treatments in 2017 (organic mulch pellet application, ground tilling, application of native grass seed and fertilizer). In 2023, vegetation cover was approximately 25% to 30% in the Wellhead Bare Area and 80% to 85% in Gravel Area 1 and appeared healthy. Vegetation cover in Gravel Area 1 met the permit requirements (i.e., >70% cover and healthy condition); however, cover in the Wellhead Bare Area met the land use permit requirements for health, but not for cover (i.e., did not have greater than 70% cover) (August 29, 2023).



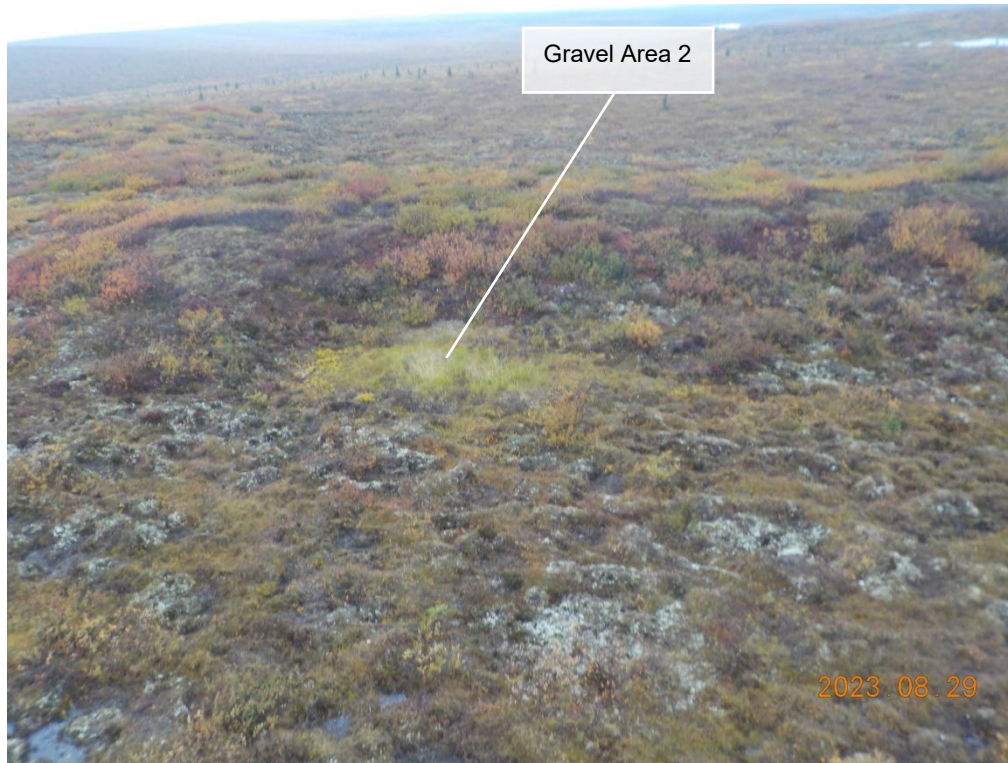
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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.7 C-34 Wellsite Area: Vegetation Cover - Gravel Area 2



Note: View facing northwest toward Gravel Area 2, which underwent reclamation treatments in 2017 (organic mulch pellet application, ground tilling, application of native grass seed and fertilizer). At the time of the 2023 site visit, vegetation cover was approximately 75% to 80%, appeared healthy and met the permit requirements (i.e., >70% cover and healthy condition) (August 29, 2023).



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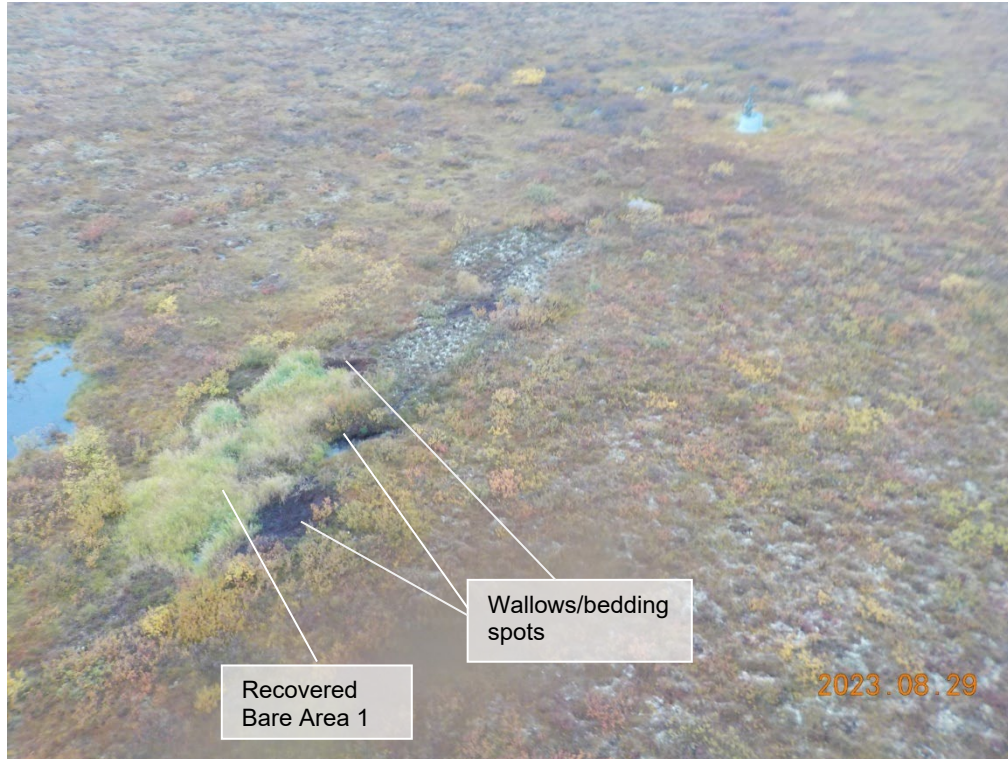
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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.8 C-34 Wellsite Area: Wildlife Signs - Recovered Bare Area 1- wallows/bedding spots



Note: View facing northwest looking at wallows/bedding spots presumed to be created by muskox located at the north and south ends of the Recovered Bare Area 1 (August 29, 2023).



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Reference: 2023 Environmental Site Monitoring Report: Maunoir C-34 Wellsite Area

Photo B.9 C-34 Wellsite Area: Wildlife Signs - Recovered Bare Area 1 - wallows/bedding spots



Note: View of wallows/bedding spots (facing northwest) presumed to be created by muskox located at the north and south ends of the Recovered Bare Area 1 (August 29, 2023).



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