

MGM ENERGY - CLOSURE AND RECLAMATION MANAGEMENT PLAN (CRMP)

REVIEW AND OTHER ASSOCIATED DOCUMENTS

Topic: General

Comment: The Government of the Northwest Territories, Environment and Climate Change (GNWT-ECC) has retained ARKTIS Solutions Inc. (ARKTIS) to review MGM Energy's application and associated documents for a Water Licence (WL) to conduct well abandonment and reclamation activities at Langley E-07, Langley K-30, and Kumak I-25. GNWT-ECC has extracted comments and recommendations from ARKTIS' memorandum and provided them herein. These comments are to better refine any financial security estimate recommendations for the project, as the Proponent has not submitted an updated estimate to replace their existing \$685,000 security tied to the expired licence (WL N7L1-1815).

Recommendation: None.

Closure and Reclamation Management Plan (CRMP)

1. Topic: Well abandonment

Comment: The CRMP indicates that well abandonment work at E-07, K-30 and I-25 wells will be completed. Documentation available on the IWB public registry provides project descriptions for the previous water licences associated with the wells that include the anticipated well characteristics (e.g., well type is sweet or sour, depth, completion zones, presence of surface casing vent flow/gas migration). However, subsequent documentation confirming the completed well characteristics was not found on the IWB public registry, Office of the Regulator of Oil and Gas Operation (OROGO) public registry, or within the documents provided with MGM's current WL application. Therefore, it is uncertain the characteristics of the completed wells requiring abandonment work. These details will help to further define the reclamation activities and associated implications for costing.

Recommendation: The Government of Northwest Territories, GNWT-ECC recommends that MGM Energy provide documentation detailing the characteristics of the wells that require abandonment work, including well type (sweet or sour), well depths, number of completion zones and potential for surface casing vent flow or gas migration.

2. Topic: Sump remediation

Comment: The CRMP Section 3.3 identifies soil and/or water quality exceedances of applicable guidelines at both drilling waste sump sites. The CRMP Table 5-1 indicates sumps will continue

to be monitored and risk assessment completed to assess conditions and potential remediation/reclamation options. Section 4.5 indicates remedial options may include excavation and removal of soils with concentrations above applied guidelines, or risk assessment against site-specific soil quality criteria developed with consideration of site conditions, receptor pathways, and local and regional background data which may still include some excavation of contaminated soils. The extent of soil contamination and potential quantities requiring remediation, as well as timing for a risk assessment, are uncertain. The CRMP Section 5.6.2 notes Phase 1 Environmental Site Assessment (ESA) will occur before the abandonment program, with a Phase 2 ESA completed if needed during abandonment. It is unclear if risk assessment of the sumps will be completed as part of the ESAs, and the implications for the proposed ESA/risk assessment timing on when sump remediation (if necessary) is expected to occur. These details are needed to further define the remediation and reclamation activities, their timing, and associated implications for costing. It is recommended that once ESA's and/or risk assessments are complete, the CRMP is updated to document the proposed reclamation/remediation activities, the closure criteria, and associated evaluation of environmental risks and to be subject to review and evaluation by the IWB and parties. Such a review process aims to reduce uncertainty associated with the reclamation/remediation of the project site.

Recommendation: GNWT-ECC recommends that MGM Energy:

- a. Identify the estimated extent of soil contamination at the sump sites and quantity of contaminated soil requiring remediation (i.e., excavation) based on current available information and applicable guidelines.
- b. Clarify the anticipated timing for completion of a risk assessment for the sumps to identify necessary remedial measures, and whether it will be completed as part of the site ESAs.
- c. Clarify the anticipated timing for remediation work at the sump sites if needed.
- d. Conduct Phase I/II ESAs or a risk assessment and incorporate the results into an updated CRMP for IWB review. The updated CRMP must clearly detail the proposed remediation activities, definitive closure criteria, and the environmental risk evaluations established by the assessments.

3. Topic: Well site remediation

Comment: The CRMP indicates sampling and site assessment during abandonment will identify any contaminated soils around the well heads which will be excavated and removed. Although potential volumes may be unknown at this time, an estimate of the likely quantity of any contaminated soil that is to be encountered and/or generated should be provided.

Recommendation: GNWT-ECC recommends that MGM Energy identify the approximate quantity of contaminated soil at the well sites that could require management at closure.

4. Topic: Well site, sump site and other disturbed area surface reclamation

Comment: The CRMP Table 5-1 indicates where ground or vegetation disturbance has occurred, reclamation treatments will be carried out to prevent erosion and re-establish vegetation. The CRMP Table 2-3 and 2-4 indicate depressions at one or both sump sites will be backfilled and/or revegetated. Section 5.6.3 also notes seeding and erosion repairs may occur at the sumps. The figures provided in the CRMP Appendix A and information in past environmental monitoring reports provide an indication of the footprint or quantities for the areas potentially needing work at the sumps; however, this information is absent from the main body of the CRMP, nor is it identified the potential size or quantity of work needed at the well sites or other potential disturbances (e.g., camp sites, helicopter pads, flare pads, staging areas, winter roads). These details are needed in the CRMP to define the scale of the reclamation activity for costing.

Previous site environmental monitoring reports and the need for current repairs indicate sump degradation does occur over time with a need for it to be managed. Backfill/cover that is placed to grade can experience settlement, as well as cause further subsidence of underlying material from the added weight. Settlement and subsidence can result in depressions and water pooling causing more settlement, as well as permafrost thawing leading to more settlement. For areas requiring backfill at the Project site, it is uncertain whether a maximum lift thickness and/or compaction have been considered to limit future settlement.

Recommendation: GNWT-ECC recommends that MGM Energy:

- a. Provide details on the activities (e.g., backfilling, revegetation, erosion repair), areas/dimensions, and anticipated quantities (e.g., footprints, material volumes, etc.) for surface reclamation work at each well site, sump site, and other anticipated disturbances (e.g., camp sites, helicopter pads, flare pads, staging areas, winter roads).
- b. Confirm if a maximum lift thickness and/or compaction for backfill placement have been considered to limit short-term settlement and risk of additional future repairs, and if so, the proposed thickness of backfill. If overbuilding above grade is not considered required, explain why.

5. Topic: Construction, abandonment and reclamation personnel, equipment, materials and fuel

Comment: The CRMP and Project Description (PD)ⁱ indicates that equipment, materials and fuel may be mobilized to a base location (e.g., Inuvik, Tuktoyaktuk) for further mobilization to

the Project area by winter road and/or barge. However, the CRMP and PD is unclear from where equipment, materials, fuel and personnel needed to complete the Project will be originally sourced. These details will help to further define the reclamation activities and associated implications for costing.

Recommendation: GNWT-ECC recommends that MGM Energy clarify the anticipated source location of equipment, materials, fuel, and personnel to complete the Project.

6. Topic: Project timelines for crew, equipment and camp

Comment: The CRMP indicates construction will occur November to mid-April, and abandonment activities from December to mid-April. The PD Section 6.4.3 identifies that construction activities will occur from November to January, with maintenance continuing until mid-late April. However, the WL Application form indicates water usage for 151 days for construction and maintenance, 150 days for the abandonment camp, and 90 days for abandonment. Therefore, the expected timelines for construction and abandonment are unclear. The PD identifies a construction crew of 60 personnel, and abandonment crew of 35 personnel. The number of workers, and associated camp and equipment requirements needed over the course of the Project and how they may change over time as Project needs change is unclear. Other uncertain logistical details include the size and frequency of crew rotations, and idle/storage time for equipment awaiting start of construction, abandonment, or reclamation activities. Further detail on the Project timelines and associated crews, equipment, and camp use will help to further define the reclamation activities and approach for costing.

Recommendation: GNWT-ECC recommends that MGM Energy provide additional detail on the Project timeline/schedule and associated crew, camp and equipment requirements, including:

- a. Timeline detailing the time requirements (e.g., days, weeks, months) for each Project activity and/or area, including mobilization, construction, maintenance, well abandonment, reclamation/remediation, and demobilization.
- b. Anticipated Idle/storage time for equipment awaiting the start of construction, abandonment, and reclamation activities.
- c. Number of workers and associated equipment and camp requirements over the course of the Project and how they change over time as Project needs change.
- d. Frequency and size of crew rotations.

7. Topic: Summer reclamation timeline, personnel, and equipment

Comment: The CRMP indicates that revegetation treatments for disturbed areas will be completed either May to June or late August to early October. Although general personnel and equipment requirements are provided with the PD, these details are specific to the winter abandonment and reclamation portion of the work. Details on the time requirements for summer reclamation work, and the personnel and equipment required, remains uncertain. These details will help to further define the reclamation activities and associated implications for costing.

Recommendation: GNWT-ECC recommends that MGM Energy provide:

- a. A timeline of spring/summer reclamation activities detailing the time requirements (e.g., days, weeks, months) for each Project activity and/or area.
- b. The number of personnel required for spring/summer reclamation; and,
- c. The number and type of equipment required to complete spring/summer reclamation.

8. Topic: Winter road access

Comment: The CRMP and PD indicates that mobilization/demobilization of equipment, materials, fuel, waste, etc. to/from the Project sites will occur either through the use of winter ice roads built north from Inuvik, or by barging from Inuvik combined with some ice road construction. The PD also indicates that in a barging scenario, two construction crews would work simultaneously, one building north from Inuvik and the other building out to the Project sites from the barge landing. If barging is used, it is unclear why a winter road to Inuvik is required. The site maps provided with the CRMP identify various routes for winter roads and barging. It is uncertain the anticipated route(s) and total length of winter roads required should barging occur or not occur to access all Project well and sump sites. These details will help to further define the construction activities and associated implications for costing.

Recommendation: GNWT-ECC recommends that MGM Energy:

- a. Clarify if barging is to occur, whether a winter road is still required to be constructed north from Inuvik and why.
- b. Confirm the anticipated route(s) and total length of winter roads required to access all well and sump sites should barging either occur or not occur.

9. Topic: Fuel storage

Comment: The PD Section 6.5.10 identifies proposed fuel storage to include 100,000 L Envirotanks. The PD Table 6-8 identifies various tanks ranging from 15,000 L to 60,000 L tanks,

while Table 6-7 identifies four 50 m3 fuel tanks for abandonment. The Spill Contingency Plan Table 3.1 further identifies different storage containers and volumes. Therefore, the anticipated size, type and number of fuel storage containers to be used at the Project site is unclear. These details will help to further define the mobilization activities and associated implications for costing.

Recommendation: GNWT-ECC recommends that MGM Energy confirm the anticipated size, type and number of fuel storage containers to be used at the Project site.

10. Topic: Waste and sewage quantities and disposal locations

Comment: The Waste Management Plan identifies various potential waste types that may be produced during the Project. The anticipated quantity of each waste type generated that will require removal and disposal off-site is not provided. The Waste Management Plan and PD indicate hazardous and non-hazardous wastes and sewage will be disposed of in Inuvik or potential other locations outside the NWT (i.e., British Columbia or Alberta). The PD notes sewage will be disposed of in Inuvik following granting of authorization from the town, while the Waste Management Plan identifies sewage to be disposed of in British Columbia or Alberta). Confirmation of which facilities will be used and any agreements with them to dispose of waste is not provided. The Waste Management Plan also indicates contaminated soils will be disposed of in British Columbia or Alberta; however, it is understood that Inuvik has a contaminated soil treatment facility, and other licenced treatment, disposal, or transfer facilities may be present in the Yukon. It is uncertain if such disposal locations have been considered for the Project. Further information on the total anticipated quantity of waste to be removed from site, confirmation of receiving locations and any agreements with waste disposal facilities should be provided to inform the security estimate. In addition, details regarding the anticipated costs/fees associated with waste disposal at each location will help to further inform reclamation security.

Recommendation: GNWT-ECC recommends that MGM Energy:

- a. Provide the estimated quantity of waste generated during the Project from construction, well abandonment and reclamation, and the camps.
- b. Confirm the receiving locations for Project waste.
- c. Provide any agreements obtained with waste disposal facilities.
- d. Provide estimated fees applicable to each waste disposal facility.
- e. Clarify if other disposal locations for contaminated soils and other wastes (e.g., sewage, cement returns, etc.) have been or will be considered for the Project (e.g., Inuvik, Yukon, etc.) and the potential for disposal of wastes at these locations.

11. Topic: Barging costs

Comment: The CRMP identifies barging may potentially occur to mobilize and demobilize equipment and materials to/from site. The barge would mobilize to site in the fall, remain at the Project site over winter where it could be utilized as a camp for construction and/or abandonment crew, and then demobilized following spring break-up. Details and/or documentation indicating the potential costs associated with this barging operation, such as quotes from barging operators, are not provided. Details regarding the costs associated with the proposed barging operations would help to support and inform their use in estimating the reclamation security.

Recommendation: GNWT-ECC recommends that MGM Energy provide details and/or documentation (e.g., contractor quotes) where available for proposed barging costs.

12. Topic: Closure criteria

Comment: Closure objectives and criteria are described in Section 5.5 of the CRMP. With regards to soil and water quality objectives and criteria, the CRMP references various federal, provincial or other guidelines or standards (e.g., Canadian Council of Ministers of the Environment [CCME], Alberta Environment [AENV]) used to interpret soil and water chemistry in achieving the closure objective. However, it is not clear the specific concentrations that soils or water at each sump and well site is required to achieve for remediation and reclamation to be considered successful and the objective achieved. With regards to objectives and criteria for stability, erosion, and drainage, defined quantifiable metrics for what constitutes consistent drainage with off-site areas, and acceptable erosion potential or ponding are not provided. Similarly, for revegetation objectives and criteria, defined quantifiable metrics for what constitutes compatible species diversity and composition with surrounding land-use is not provided. Nor is it identified the range of shrub and forb vegetation presence needed that would signify their likelihood to continue (i.e., become self-sustaining) and diversify with future successional development. It is also not clear for what duration site data is required to show criteria are achieved for the objectives to be met. Given that MGM is currently seeking approval of the CRMP to commence abandonment and reclamation activities as early as 2026, it is recommended that the CRMP and closure criteria are advanced with additional information to a level of closure planning that is considered reasonable for a Project at this stage and of sufficient detail to inform the estimation of reclamation security.

Recommendations: GNWT-ECC recommends that MGM Energy provide:

- a. The closure criteria which include:
 - i. Specific concentrations from applicable guidelines/standards that soil and water quality must achieve for the closure objective to be met.

- ii. Performance metrics to demonstrate drainage is consistent with off-site areas and does not result in increased erosion potential or excess ponding to achieve the closure objective.
 - iii. Performance metrics to demonstrate species diversity and composition is compatible with surrounding land-use to achieve the closure objective
 - iv. Performance metrics for the range of shrub and forb vegetation presence that signifies their likelihood to continue (i.e., become self-sustaining) and diversity with future successional development to achieve the closure objective.
- b. The duration for which the closure criteria must be met (e.g., vegetation cover over 70% for a minimum 5 years, etc.) for reclamation to be considered successful and closure objectives achieved should be specified. Include rationale for the duration selected.
 - c. The specific confirmatory actions and documentation within the closure criteria. This evidence must clearly demonstrate whether the associated closure criteria and overarching environmental objectives have been successfully achieved.

13. Topic: Post-closure monitoring timeline

Comment: The CRMP Section 5.10 indicates post-closure vegetation and terrain monitoring of the well sites will occur, including sampling of any observed standing water, and confirmatory soil sampling during the first-year post-reclamation. The CRMP Table 5-1 also notes sumps will continue to be monitored. It is unclear if the same post-closure monitoring proposed for the well sites will also occur for the sumps. A proposed duration for post-closure monitoring and maintenance is not identified. The CRMP notes monitoring will continue until the sites have met the applicable closure criteria. The CRMP does not indicate when closure criteria and objectives are expected to be achieved and monitoring may cease.

No documentation has been provided to verify if the construction and closure of the drilling waste sumps was completed in accordance with regulatory requirements and acceptable to the Inspector. It is understood that previous water licences and/or land use permits required specific closure conditions for the sumps to be met as listed in the CRMP Section 2.5; however, although the CRMP generally indicates these conditions are to be met, this has not been demonstrated. The CRMP indicates sumps will be monitored and possibly remediated, including up to the removal of the sumps if needed as noted in Table 5-1. Sufficient evidence to preclude long-term risks on sump performance is not provided or available. The sump covers may be vulnerable to freeze-thaw cycles, animal intrusion, and climate change impacts, all of which could compromise their integrity. Additional backfill/cover that is loosely placed can experience settlement, as well as cause further subsidence of underlying material from the added weight. Settlement and subsidence can result in depressions and water pooling causing more settlement.

This could lead to further surface-to-waste interactions and migration of water and contaminants remaining as possible pathways such that closure criteria are no longer achieved. Consideration of the influence of vegetation on long-term sump performance is also unclear; it's stated in the CRMP Section 5.6.3 that seeding at sumps will occur following remediation and/or reclamation. Vegetation establishment may influence the thermal regime of the sumps, such as through increased snow capture and insulation leading to potential thawing and further issues (settlement, pooling, more thawing) that could contribute long-term to failure of the sump. As indicated by previous studies for historical sumps in the Northwest Territories, sumps are noted to potentially degrade over the long-term with degradation and potential or actual environmental impacts not becoming apparent until up to 10 or more years after closure. Without monitoring, there is no assurance that sump integrity remains and contaminants will remain contained. It is uncertain if additional studies are to occur to further define the long-term risk of the sumps. The proposed timeline for monitoring and maintenance of sump integrity with consideration of climate change and long-term degradation is uncertain, as well as the management response that may be needed for sumps that no longer perform as intended

It is noted drilling and likely sump closure was completed between 2003 and 2007, providing an extended duration for subsequent site assessments and inspections to characterize potential degradation and impacts. However, to address uncertainty in continuing long-term performance of the sumps following completion of final reclamation activities, longer-term monitoring of soil, surface water and sump covers to show closure criteria are achieved is considered beneficial to ensure continued performance and any off-site migration is understood. Based on the timelines for sump degradation and impacts identified for historical sumps in the north, monitoring that extends up to 10 years or more following final remediation and reclamation of the sumps may be considered warranted. The frequency of this monitoring could be at a reduced rate from the proposed annual visits.

Recommendation: GNWT-ECC recommends that MGM Energy:

- a. Clarify whether the post-closure monitoring identified for the well sites in the CRMP Section 5.10 will also occur for the sump sites. If not, explain why.
- b. Identify the proposed post-closure monitoring and maintenance duration and how it was selected, including any consideration of potential timelines to achieve required closure objectives and criteria for soil and water quality, stability, erosion, ponding, and vegetation cover, diversity, and composition, including if and/or why it is sufficient to demonstrate adequate performance of each objective/criteria.
- c. Identify how the potential influence of climate change on long-term sump performance is considered in the proposed post-closure monitoring and maintenance activities and duration for site, and if it has not been considered, provide an explanation for why.

- d. Provide additional detail how the potential influence of vegetation on long-term sump performance was considered in the proposed reclamation approach for each sump and monitoring duration.
- e. Provide its contingency plan for sumps that do not perform as intended. This plan must specify the monitoring parameters, trigger thresholds, and subsequent response actions. If no plan is established to address long-term sump degradation, the proponent must explain why.
- f. Identify whether the risk assessment and/or ESAs proposed in the CRMP, or additional studies are anticipated to further inform the long-term sump performance and risk.

14. Topic: Post-closure monitoring and maintenance activities

Comment: The CRP describes monitoring and maintenance of site locations will occur to ensure vegetation recovery, residual environmental impacts, and terrain stability are satisfactorily addressed. However, details of the proposed monitoring and maintenance programs following closure reclamation efforts are not described, such as the anticipated quantity of soil and/or water samples to be collected and the testing parameters, as well as the expected on-site time requirements to complete the monitoring program each year. It is also unclear what adaptive management thresholds, triggers, and responses will be used to determine when and what maintenance or other activities may be required to ensure criteria and objectives will be met. Further, although not identified in the CRMP, it should be confirmed if wildlife will also be monitored given it is typically included within closure monitoring programs for other oil and gas exploration sites in the Northwest Territories.

The CRMP does not propose monitoring of groundwater to demonstrate if any migration of contaminants is occurring downgradient of the sumps at acceptable levels. The quality of sump material is not identified, and whether it will be necessary to demonstrate achievement of any groundwater quality criteria at a downgradient monitoring compliance point.

Recommendation: GNWT-ECC recommends that MGM Energy provide the following:

- a. Details regarding the anticipated post-closure monitoring to occur, including on-site time requirements, monitoring locations, anticipated quantity of soil and water samples and testing parameters.
- b. Response framework thresholds, triggers, and potential response actions used to determine when and what maintenance or other activities will be required to be completed in the event monitoring indicates closure activities are not performing as desired to achieve closure criteria and reclamation success.
- c. If wildlife monitoring will occur post-closure.

- d. Identify what is being done to confirm there is no contaminant migration to an unacceptable level occurring downgradient of sumps, including if there is a need for one or more compliance monitoring point where specific groundwater quality criteria must be met, where the compliance monitoring points would be located, what the groundwater criteria should be, and what adaptive management would be needed to ensure criteria are not exceeded or that any exceedances that do occur are addressed. If no groundwater monitoring is proposed, provide justification as to why there is no need to confirm whether no unacceptable contaminant migration is occurring from the sumps in shallow groundwater as well as in deeper groundwater in the long-term as a potential impact of climate change.

Topic: Security

Comment: Following the preceding comments and recommendations from GNWT-ECC and ARKTIS, GNWT-ECC still requires additional information to make a recommendation regarding the project's security. GNWT-ECC recommends that the Board issue a security review following issuance of the authorizations based on the responses thereafter, as the security assessed by GNWT, based on the preliminary information, is significantly greater than what is currently held.

Recommendation: GNWT-ECC recommends that the Board initiate a separate process for a security update, following MGM's responses and the Board's directions regarding the closure plan.

Topic: Project-Description (PD) Review

Reliance on Town of Inuvik Disposal Capacity

Comment: The Project Description (PD) states that solid waste, hazardous waste, and effluent will be transported to Inuvik for disposal under a working arrangement with the Town of Inuvik, and that recycling will be routed to Inuvik if the facility is operational. Section 6.4.8 of the Project Description states that effluent disposal at Inuvik's municipal facility depends on receiving formal approval from the Town and ensuring the facility has sufficient processing capacity. However, the document lacks current authorization or capacity confirmation from the Town of Inuvik and fails to provide an alternative backup disposal plan if the municipal facility becomes unavailable or reaches capacity.

Recommendation: The Government of Northwest Territories, GNWT-ECC recommends that MGM Energy include an appendix to the Waste Management Plan (WMP), referenced in Section 6, that provides current written confirmation from the Town of Inuvik or its designated operator agreeing to accept the program's domestic solid, hazardous, and effluent waste. This appendix should also include specific annual capacity reservation details and a contingency disposal plan identifying an alternative licensed facility to be used if the Inuvik site declines acceptance or exceeds its processing capacity.

Daily On-site Incineration of Combustible Waste and Food Wastes

Comment: Section 6.5.6 of the PD indicates that combustible materials and food wastes will be incinerated on-site daily, with incinerator ash trucked out for disposal at an appropriate facility. However, the Project Description fails to identify the incinerator make and model, engineered emission controls, operating temperatures, minimum residence times, feedstock screening protocols to exclude plastics or hazardous materials, residual ash testing procedures, and operator qualifications. On-site incineration within the Inuvialuit Settlement Region (ISR) has implications for air quality, hazardous ash management, and wildlife attraction. Consequently, these technical omissions make it impossible to verify compliance with territorial and federal environmental protection guidelines.

Recommendation: GNWT-ECC recommends that MGM Energy develop and append an Incinerator Management Plan to the Waste Management Plan (WMP) that details incinerator specifications, operating temperatures, permitted and excluded feedstock, emissions controls, and the specific site location with GPS coordinates. This plan should include operator training records and daily logs documenting load weights, residence times, and operator IDs.

Effluent Storage on Barge

Comment: Sections 6.4.8 and 6.5.5 of the PD state that wastewater effluent will be stored in 400-barrel (63.6 m³) heated tanks on barges and at sleigh camps, with on-site treatment expressly excluded from the scope of work. However, the Project Description fails to specify critical operational details, including total tank inventories, cumulative holding capacities, engineered berm and secondary containment volumes, the required frequency of vacuum truck haulage to Inuvik, emergency storage protocols during winter access route closures, and maximum allowable effluent holding times. Based on standard consumption and generation rates, construction camps housing up to 60 personnel for a 151-day operating window can generate more than 9,000 m³ of domestic effluent per season.

Recommendation: GNWT-ECC recommends that MGM Energy provide a comprehensive Effluent Management Schedule to be appended to both the Waste Management Plan (WMP) and the Spill Contingency Plan (SCP). This new schedule should detail the assumed per-capita wastewater generation rates, the projected total daily and cumulative seasonal effluent volumes broken down by project phase and operational location, and a complete tank inventory specifying the exact locations, types, and engineered storage capacities of all containment vessels. To ensure logistical viability, this schedule should also clearly define the required haulage frequencies, total estimated vacuum truck trips, and maximum allowable effluent holding times.

Coastal Erosion at K-30 and Long-Term Wellhead Integrity

Comment: Section 13.9.3 of the PD states that coastal erosion of Langley Island has resulted in an average loss of 6 m/year of shoreline and that the K-30 wellsite is at significant risk for integrity within the next 10 years if erosion continues. Figure 3-1, depicting 1972 to 2018 shoreline positions, supports the trend. While the 10 m below-ground cut-and-cap procedure for K-30 provides confidence regarding long-term wellbore depth, the Project Description fails to address the unique geomorphological risks of the site. Specifically, the document fails to establish a long-term monitoring protocol to track the wellhead's position relative to the rapidly receding shoreline post-abandonment.

Recommendation: GNWT-ECC recommends that MGM Energy amend Section 13.9.3, Section 17 of the PD, or the forthcoming Closure and Reclamation Plan (CRP) to incorporate a long-term Erosion Monitoring program for K-30. This program should explicitly define the post-abandonment monitoring intervals, mandate high-precision GPS shoreline mapping standards, and establish clear, action-based engineering triggers to govern future remediation before coastal erosion threatens the capped wellbore.

Topic: Spill Contingency Plan (SCP) Review

Sewage and Greywater Spill Volumes and Notification Thresholds Not Specified

Comment: Table 3.1 of the SCP fails to quantify anticipated greywater and sewage volumes, listing them as “to be determined” despite the Project Description (PD) specifying a sleigh-camp capacity of two to five 400-barrel (63.6 m³) heated tanks per camp. Furthermore, Section 3.5 lacks a sewage-specific notification threshold, and Table 3.4 omits both sewage and greywater entirely. Given the sensitive environment of the outer Mackenzie Delta; specifically, the Kendall Island Migratory Bird Sanctuary at I-25, which has the potential for sewage releases onto snow, or ice, or near waterbodies, poses a significant risk to water quality and human/wildlife health.

Recommendation: GNWT-ECC recommends that MGM Energy update the Spill Contingency Plan by populating Table 3.1 with the confirmed greywater and sewage tank inventory and total holding capacities for each camp. Additionally, MGM should include sewage and greywater in Table 3.4 with established notification thresholds and integrate a sewage-specific containment and recovery procedure into Table 3.2.

Spill Response Equipment Inventory and Mobilization Time Not Quantified

Comment: Section 3.4 notes MGM’s membership in the Mackenzie Delta Spill Response Corporation (MDSRC) and its access to response containers in Inuvik. However, the Spill Contingency Plan (SCP) defers providing detailed equipment lists and on-site locations until the pre-construction phase. This delay prevents the Inuvialuit Water Board (IWB) and GNWT-ECC from verifying during the licensing stage whether response capacities are sufficient for a worst-case scenario. Additionally, the SCP fails to specify mobilization timelines from Inuvik to well sites and barge landings for both summer (open water) and winter (ice road) conditions, making it impossible to evaluate the effectiveness of the proposed response timelines.

Recommendation: GNWT-ECC recommends that MGM Energy submit an Equipment and Mobilization Annex (or a comprehensive update to Appendix E) at least 60 days prior to the start of the first season. This submission should include:

- (a). Itemized inventories of on-site spill kits for every wellsite, camp, barge landing, and rig.
- (b). A detailed list of MDSRC container contents to supplement the information currently in Appendix E.
- (c). Estimated mobilization timelines to each Program location for both summer and winter operating seasons.

(d). A confirmation that the combined on-site and regional resources (Inuvik) are sufficient to contain a worst-case scenario within a defined, acceptable response timeframe.

Training, Exercises, and Record-keeping Provisions Lack Regional Specificity

Comment: Section 4.2 of the SCP states that Paramount routinely trains its staff on emergency situations and that the training schedule includes mock emergency situations for Alberta and British Columbia operations, with NWT-specific exercises to occur “prior to Program construction.” The SCP lacks essential commitments regarding training, exercises, and documentation. Specifically, it fails to provide for a pre-season tabletop exercise or an annual full-scale mock spill exercise within the Program area. Furthermore, the plan does not establish a defined record-retention period for training certificates or after-action reports (AARs).

Recommendation: GNWT-ECC recommends that MGM Energy amend Section 4.2 of the SCP to include formal commitments to:

- (a) Conduct a tabletop exercise prior to each operational season.
- (b) Execute an annual full-scale mock spill exercise, with the results documented in an after-action report and submitted within the Annual Water Licence Report.

Topic: Waste Management Plan (WMP) Review

Anticipated Waste Volumes Listed Entirely as ‘TBD’

Comment: While the proponent intends to update waste volumes 30 days prior to construction, Table 3.1 of the WMP currently lacks the estimated quantities required by IWB 2014 (Guidance for the Preparation of Waste Management Plans), and the September 2023 IWB AIR (Application Information Requirements). Provision of these indicative volumes is necessary for GNWT-ECC to assess the capacity of proposed disposal facilities in Inuvik and Alberta/BC, and for the Inspector to establish suitable licence conditions.

Recommendation: GNWT-ECC recommends that MGM Energy populate Table 3.1 of the WMP with indicative waste volumes; including daily per-stream, seasonal, and total program estimates that are benchmarked against similar regional abandonment projects. Furthermore, the proponent should commit to a Water Licence condition requiring final volume confirmation and capacity-acceptance letters from all receiving facilities, at least 60 days prior to construction.

Reliance on Shell Camp and Town of Inuvik Without Documented Agreements

Comment: Section 2.1.1 of the WMP indicates that MGM intends to use the accommodations camp owned and operated by Shell, with Shell taking responsibility for camp-related wastes. Section 3 indicates that solid, hazardous, and effluent wastes will be transported to Inuvik “under a working arrangement with the Town of Inuvik,” with the WMP assuming that authorization will be granted and capacity will be available. The absence of a formal agreement with Shell and a confirmation letter from the Town of Inuvik presents a regulatory risk.

Recommendation: GNWT-ECC recommends that prior to the commencement of the first operational season, MGM Energy submit the following as appendices to the Waste Management Plan (WMP):

- (a). Third-Party Camp Authorization: A current letter from Shell confirming MGM’s authorization to utilize the camp and Shell’s formal acceptance of all camp-derived waste streams.
- (b). Municipal Waste Acceptance: A current letter from the Town of Inuvik (or its designated operator) confirming the acceptance of solid waste, hazardous waste, and effluent, including a documented annual capacity reservation for MGM-generated volumes.
- (c). Contingency Planning: A defined disposal pathway identifying a named alternate facility to be utilized in the event either primary party declines service or exceeds established capacity limits.

Incinerator Make/Model, Permit Status, and Air Emissions Not Specified

Comment: Section 3.2 of the WMP commits to daily on-site incineration of food and kitchen waste, food containers and wrappings (including food-contaminated plastics), paper, and cardboard. The make/model and selected incinerator technology are stated as “still to be determined,” the location is unspecified, the maximum daily volume is undefined, and operating permit limits under the NWT Environmental Protection Act are referenced generically without an actual permit number. To assess the environmental impact of onsite incineration, MGM Energy should provide specifications for operating temperature, residence time, and emissions controls. Without these safeguards, the project poses an unmitigated risk of dioxin/furan and PAH emissions within the sensitive Mackenzie Delta ecosystem.

Recommendation: GNWT-ECC recommends that MGM Energy provide an Incinerator Management Plan (IMP) prior to project commencement. The plan must detail design specifications (make/model), confirm a minimum operating temperature, and outline emissions characterization.

Diesel-Fired Snow Evaporator Disclosed but Unspecified

Comment: Section 3.1.2 of the WMP indicates that diesel-fueled evaporators will be used to reduce the volume of contaminated snow and ice prior to transportation and disposal. Consistent with concerns raised by GNWT-ECC herein regarding the Spill Contingency Plan, the WMP provides insufficient detail on the proposed evaporator system. To ensure environmental protection, the proponent must specify the system’s make and model, the chemical thresholds triggering its use, and a comprehensive characterization of air emissions. The plan remains incomplete without a clear strategy for the management of residues and the fate of concentrated effluent streams.

Recommendation: Consistent with concerns previously raised regarding the SCP, GNWT-ECC recommends that MGM Energy provide technical details for the evaporator in the WMP. This should include make/model specifications, the specific contaminant concentrations that trigger use, and a detailed characterization of potential air emissions. The proponent should reference the Ambient Air Quality Monitoring Guideline.

Hazardous Waste Disposal Endpoints Marked ‘To Be Determined’

Comment: In Table 3.1 of the WMP, the disposal area for several hazardous waste streams (hazardous batteries, pipe dope products, lube oil filters, lead-based products, hydraulic oil) is listed as “To be determined.” For hazardous waste generated in the Inuvialuit Settlement Region and ultimately exported to Alberta or British Columbia for disposal, the GNWT-ENR 2017 Guideline for Hazardous Waste Management requires manifest-traceable transport to a permitted

receiving facility, which must be identified in advance. Operating with undefined endpoints would not satisfy the Transportation of Dangerous Goods Regulations.

Recommendation: GNWT-ECC recommends that MGM Energy identify, by name and permit number, the receiving facility for each hazardous waste stream prior to first season commencement. The Annual Water Licence Report should include a Hazardous Waste Manifest Summary.

Effluent Storage Capacity Not Quantified Against Camp Population

Comment: Section 3.1.1 of the WMP indicates that effluent will be hauled by vacuum truck to the Inuvik Water and Sewage Plant, and that during access road interruptions effluent will be stored at the barge landings or staging areas in heated tanks. The WMP does not quantify total effluent storage capacity, the maximum allowable holding time before mandatory haulage, or the haulage frequency.

Recommendation: GNWT-ECC recommends that MGM Energy provide an Effluent Management Schedule covering: assumed per-capita generation rate; total daily and seasonal effluent volume by phase and location; tank inventory with locations and capacities; haulage frequency and total trips; maximum allowable holding time; and contingency procedures during ice road or weather restrictions. The schedule should be coordinated with the Spill Contingency Plan and the Town of Inuvik authorization letter.

Topic: Environmental Protection Plan (EPP) Review

Internal Inconsistency Regarding Camp Infrastructure and Discharge

Comment: Section 3.4 of the EPP states that there will be no discharge of grey or black water because “the onsite supervisor trailer will be self-contained.” However, Table 3 contemplates the storage of sewage in a “Sewage Sump or Storage Tank” and grey water in a “Sewage Sump or Grey water holding tank,” and Appendix 2 contemplates the establishment of a temporary camp “depending on the infrastructure required (e.g., trailers, sewage sumps, vehicle parking, etc.)” over an area of up to 100 m by 100 m. It is therefore unclear whether the Program will involve a single self-contained supervisor trailer only, or a full temporary camp with sumps. The two scenarios carry materially different water management, waste, and authorization implications.

Recommendation: GNWT-ECC recommends that MGM clarify whether a temporary camp will or will not be established for this Program. If a self-contained trailer only is proposed, references to sewage sumps and grey water holding tanks in Table 3 and Appendix 2 should be removed or clearly identified as not applicable. If a camp is proposed, the Environmental Protection Plan (EPP) should specify the camp location, the sewage management pathway, the design capacity of any sump or holding tank, and the disposal pathway for collected waste.

Typographical and Formatting Errors in Section Headings and Appendix Titles

Comment: The titles of Appendix 1 of the EPP (“FUNDEMENTAL MITIGATION”) and Appendix 2 (“TASK SPECIFIC MITIGATION”) contain spelling errors and are inconsistent with their internal usage of the correct spellings (“Fundamental” and “Task-specific”). In addition, Section 3.3.1 is numbered in the Table of Contents but appears as Section 3.4 in the body of the document. While minor, errors of this nature in a regulatory submission can affect the document’s credibility and complicate cross-referencing during compliance verification.

Recommendation: GNWT-ECC recommends that MGM Energy undertake a final editorial review of the document, correcting typographical errors and ensuring that section and appendix titles, headings, and numbering are consistent between the Table of Contents and the body of the document.

Surface Water Risk Characterization Lacks Supporting Specifics

Comment: Section 2.1.2 of the EPP concludes that surface water impacts carry a low environmental consequence, relying on winter operations and the promise of cleanup before contaminants enter the watershed. However, the Environmental Protection Plan (EPP) lacks site-specific evidence, failing to map local hydrology, define exact proximity, or quantify the

maximum credible spill volume for the three well sites. Relying on a generic 100-metre setback in Appendix 1(e) is insufficient to substitute for a site-specific water resources assessment.

Recommendation: GNWT-ECC recommends that MGM Energy update Section 2.1.2 of the EPP with a targeted water resources summary for the Langley K-30, Langley E-07, and Kumak I-25 well sites. For each site, this summary should explicitly identify:

- (a). The nearest mapped water body and its exact measured distance.
- (b). The surface drainage direction.
- (c). The maximum credible spill volume the Environmental Protection Plan (EPP) is equipped to contain.

Topic: Erosion and Sediment Control (ESC) Plan Review

Structural Insufficiency of Erosion and Sediment Control Measures due to Reliance on Curlex Sediment Logs

Comment: Section 3.2 of the ESC relies on Sediment Retention Fiber Rolls (SRFR) for well centres, access routes, and barge landings, with unspecified measures at I-25. This single-measure framework is insufficient given the project's scale (14 km of ice roads, shoreline disturbance, reclamation excavation) and non-compliant with the GNWT-DOT (2013) and Alberta Transportation (2011) ESC Manuals cited as project references.

Recommendation: GNWT-ECC recommends that MGM Energy submit a revised, site-specific Erosion and Sediment Control (ESC) Plan prior to project initiation. The revised plan should replace the single-measure approach with a comprehensive suite of best management practices, explicitly mapping out where and how the following controls will be deployed:

- (a). Runoff and Velocity Controls: Diversion swales, berms, and velocity dissipators at outfalls.
- (b). Sediment Trapping: Sediment ponds, traps, and check dams.
- (c). Site Stabilization: Slope-break devices, stabilized site entrances, and active dust control.

Spring Freshet and Snow-Melt Runoff Not Adequately Addressed

Comment: Section 1.2 of the ESC correctly identifies water erosion from spring runoff as the highest risk for this winter-construction program. However, Section 4 under-represents this risk by stating that “rainfall and snow melt are not anticipated” during active operations and only triggering monitoring after exceptional weather events (e.g., rainfall over 12.5 mm). This operational framing ignores the full lifecycle of winter infrastructure. Ice roads, ice pads, and shoreline snow-fills constructed between November and April will inevitably melt during the May–June freshet, mobilizing sediments, accumulated hydrocarbons, or underlying ground disturbances directly into the Mackenzie Delta. To address this gap, the plan should explicitly commit to a pre-freshet site check by a qualified professional, a defined inspection frequency during the active freshet period, a formal freshet-period contact and reporting protocol, and erosion and sediment control measures specifically engineered to manage sub-snowpack runoff and ice-melt conditions.

Recommendation: GNWT-ECC recommends that MGM Energy add a Spring Freshet Management subsection to the Erosion and Sediment Control (ESC) Plan committing to:

- (a). Conduct a comprehensive site walkdown by a qualified professional by April of each operational year to identify and remediate any debris, ground issues, or hidden risks before active melting begins.
- (b). Establish a mandatory field inspection frequency of every 48 hours during the active spring freshet period to monitor the stability of melting infrastructure.
- (c). Install freshet-specific erosion and sediment control measures across all disturbed footprints and infrastructure alignments prior to final winter demobilization.
- (d). Submit a formal post-freshet inspection report that uses detailed field photographs to thoroughly document any sediment migration, ground rutting, or vegetation damage, and a time-bound protocol for corrective recovery actions.

Ice Road and Ice Pad Decommissioning ESC Measures Not Specified

Comment: The ESC Plan fails to address the controlled decommissioning of the proposed 14 km of ice roads, ice pads, temporary airstrips, and helicopter pads (Section 2.1.1). Unaddressed risks during the demobilization and ice-out periods include melting snow-fills at shoreline interfaces that will release sediment and entrained materials directly into waterbodies, compacted vegetation mats that will recover at varying rates and create localized erosion risks before full stabilization is achieved, and concentrated meltwater from ice pads that could generate high-velocity runoff leading to thermal and physical erosion of nearby slopes and watercourses. Consequently, the ESC Plan should prescribe specific mitigation measures for the demobilization and thaw phases rather than limiting controls exclusively to the construction phase.

Recommendation: GNWT-ECC recommends that MGM Energy add an Ice Road and Ice Pad Decommissioning subsection to the Erosion and Sediment Control (ESC) Plan that outlines specific protocols for seasonal changes that comprehensively addresses:

- (a). Mechanical Break-up Procedures: Methodologies for the controlled structural breaching and dismantling of ice features to prevent ice-jam formations and subsequent shoreline scouring.
 - (b). Shoreline Approach Mitigation: Dedicated sediment control interventions to capture and filter localized runoff at shoreline interfaces during the spring melt-out period.
 - (c). Freshet Corrective Action Protocol: A clear framework defining immediate mitigation and remediation steps to be triggered if the freshet inspection identifies any environmental non-conformances.
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