Manitoba

Memorandum

DATE: December 1, 2025

TO: Eshetu Beshada
Environmental Approvals Branch
Environment and Climate Change
14 Fultz Boulevard
Winnipeg MB R3Y 0L6

FROM: Sonja Bridges
Environmental Compliance and Enforcement
Environment and Climate Change
14 Fultz Boulevard
Winnipeg MB R3Y 0L6

SUBJECT: Environment Act Proposal – SiMbA Sand Extraction Project (Client File No. 6275.00)

Environmental Compliance and Enforcement Branch has reviewed the above noted proposal and has the following comments to make:

- ECE will defer to the subject matter experts in EAB, groundwater and mining branches to evaluate and comment on the technical aspects of the proposal.

Environment and Climate Change
Office of Drinking Water
Box 19, 14 Fultz Boulevard, Winnipeg MB, R3Y 0L6

November 25, 2025

To Eshetu Beshada, PhD., P. Eng.:

Re: Additional Information Request - Environment Act Proposal, File # 6275.00, Sio Silica Corporation, SiMbA Sand Extraction Project

The Office of Drinking Water was invited to review and provide comments on the Environment Act Proposal File # 6275.00, Sio Silica Corporation, SiMbA Sand Extraction Project by December 1, 2025.

Based on a review of the information provided in the proposal, the Office of Drinking Water is unable to provide a comprehensive response at this time. We are therefore formally requesting additional technical information to inform our comments on Environment Act Proposal File # 6275.00 and an extension of the deadline for submission for this reason.

Specifically, the Office of Drinking Water requests the following:

1. Can the proponent clarify and state if the proposed water treatment process for the extracted-then-returned water is designed to produce treated water meeting drinking water (potable) standards or wastewater (environmental) standards?
2. Has a preliminary engineered design of the proposed water treatment process been completed? If so, can the proponent provide this design package in their response to the Additional Information Request.
3. Can the proponent provide a detailed water treatment process drawing or schematic showing each treatment step in sequence, including pumps, each filtration step (e.g. 5 micron, 1 micron absolute), and the UV disinfection system? Details to include:
    a. the quantity (number of treatment units) and arrangement (e.g. in-series or in-parallel) of the treatment equipment
    b. any duty/standby and bypass configurations
    c. the location and type of valves and sampling taps
4. Can the proponent provide the design details for the UV disinfection system including certifications (e.g. NSF 55A or US EPA UVDGM (dose-validated) standard and if there is an associated flow restrictor to ensure validated dose control)? Details provided should include the manufacturer/ make/ model number of the UV units (if available).
5. What is the proposed log (inactivation) value (e.g. 3 or 4 log) for the proposed UV disinfection system?
6. Can the proponent provide the technical details regarding the expected operating conditions (low to high range values) of the influent water for the UV disinfection system? Typical parameters include flow rate and water quality parameters such as UV Transmittance (UVT) in percentage (%), hardness, and iron levels. Non-typical water quality parameters may include turbidity, suspended solids, colour, tannins, and manganese levels.
7. Can the proponent provide the expected water quality of the effluent (treated water) from the water treatment process?

…2/

8. Can the proponent detail or list the technical industry standards and certifications, with potable water standards (e.g. NSF, FDA, CSA, AWWA, etc…) clearly noted for all water treatment equipment including piping and valves? The associated manufacturer specification sheets are expected to be included.
9. Can the proponent provide the Process Control Narrative (PCN) technical document (if available) that describes how the water treatment process operates under various conditions including if the UV disinfection system is in alarm status or not operating within validated conditions? Details provided should include under what conditions the water treatment process and/or production is paused or stopped.

If you have any questions regarding this request, please contact Cory Vitt, P.Eng., Senior Approvals Engineer at 1-204-806-1363 or Cory.Vitt@gov.mb.ca.

Sincerely,

Sacha Janzen
Director
Office of Drinking Water

c. Cory Vitt, P.Eng., Senior Approvals Engineer, Office of Drinking Water

From: Wiseman, Kylene <Kylene.Wiseman@gov.mb.ca>
Sent: November 3, 2025 2:28 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: Hay, David <David.Hay@gov.mb.ca>
Subject: FW: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Good afternoon Eshetu,

The Water Use Licensing Section, within the Drainage and Water Rights Licensing Branch, requires that Sio Silica Corporation submit an application for a Water Rights Licence for “other-mining” purposes to capture well drilling and groundwater extraction activities as described in the proposal.

Thank you,

Kylene Wiseman, P.Geo.

Water Use Licensing Section
Drainage and Water Rights Licensing Branch
Environment and Climate Change
Kylene.Wiseman@gov.mb.ca / Cell: 431-337-7946
Box 16 – 14 Fultz Boulevard Winnipeg MB R3Y 0L6

From: Osborne-Anderson, Daniel <Daniel.Osborne-Anderson@gov.mb.ca>
Sent: December 1, 2025 1:05 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Subject: RE: Environment Act Proposal Update - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Good Afternoon,

On behalf of Drainage and Water Rights Licencing Branch – Drainage Section, there is a concern of a lack of information pertaining to any proposed water control works and the potential impact to designated wetlands under the Water Rights Act. There does not appear to be any map showing the specific location of the proposed wells that would allow us to assess whether the well site is in, on or in close proximity to a designated wetland. There also does not appear to be an inventory of assessed wetlands within the project area to assists us with determining if the proposed project will have an impact on designated wetlands.

In addition to this, there does not appear to be any mitigation plan to avoid impacting designated wetlands. There also does not appear to be any mention of whether water control works such as drains or culverts will be required to accommodate this project. If new access crossings are required that would include culverts this is something we would like to asses but this information does not appear to exist. Our concern is that allot of focus has went into investigating the potential impact to ground water and drinking water sources but there does not appear to be the same level of information regarding the potential impact to the surface hydrology.

Considering the project would be exempt from the requirement to obtain a Licence under The Water Rights Act if authorized under the Environment Act, it is imperative that any potential impact to designated wetlands or the local drainage conditions be addressed through the Environment Act proposal process.

Thank you,

Daniel Osborne-Anderson
Senior Water Resource Officer
Manitoba Environment & Climate Change
(204) 641-3663
manitoba.ca/drainage

From: Burton, Andrew <Andrew.Burton@gov.mb.ca>
Sent: December 2, 2025 8:51 AM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Subject: RE: Environment Act Proposal Update - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Hi Eshetu,

The Water Quality Management Section reviewed the Environment Act Proposal for the Sio Silica Corporation SiMbA Sand Extraction Project and have no comments to provide.

The effects to surface water quality are expected to be negligible due to the absence of natural waterbodies within the local project area. Project operations do not involve the discharge of wastewater to surface waters. The highest risk to surface water quality would be through spills and/or leaks or through the alteration of drainage pathways for surface runoff (e.g., snowmelt and rainwater). The WQMS would be interested in reviewing the Erosion and Sediment Control plan once prepared.

Sincerely,

Andrew

Andrew Burton, M.Sc., P. Ag.
Manager | Water Quality Management
Environment and Climate Change | Government of Manitoba
Box 14, 14 Fultz, Winnipeg, Manitoba, R3Y 0L6
Andrew.Burton@gov.mb.ca |204-232-7851

Manitoba

DATE: December 19, 2025, Revised Feb 05, 2026

Memorandum

TO: Eshetu Beshada, PhD., P. Eng.
Senior Environmental Engineer
Environmental Approvals Branch
Environment and Climate Change

FROM: Groundwater Management Section
Water Science Watershed Management
Environment and Climate Change

FILE: 5.07.04.02

Re: Groundwater Management Section Technical Advisory Committee (TAC) Comments – 6275.00 SiMbA Project Environment Act Proposal

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The Groundwater Management Section (GMS) has completed the review request of 6275.00 SiMbA Project Environment Act Proposal (EAP) circulated by the Environmental Approvals Branch (EAB). Our review considered the new submission materials, Appendix A (CEC Recommendations Concordance), and supporting technical appendices. The comments below summarize key changes from the original proposal, strengths and improvements aligned with CEC recommendations, a consolidated overview of Groundwater Management's review and findings, and our recommendations to the proponent.

1. SUMMARY OF KEY CHANGES (as compared to the 2021 EAP Submission and Responses to CEC Recommendations)

1. The new SiMbA EAP proposes initially scaling down operations and increasing phased activities. Annual production is capped at 100,000 t in Year 0, 300,000 t in Year 1, and 500,000 t in Years 2–4 (about 63% below the original EAP). Well counts and cluster density are reduced, the annual surface footprint is smaller (~0.65 km²/year vs. ~1.2 km²/year), and the licensed areas for both Project Site and Life-of-Project are narrowed. Licensing is now framed as a step-wise, four-year block with subsequent blocks contingent on future Notices of Alteration and performance evidence.

Consistent with CEC recommendations for a step-wise program, the proponent commits to:

- Phased development with low-volume Years 0–1 to validate geotechnical and hydrogeologic assumptions before scaling up.
- Additional geotechnical evidence of caprock heterogeneity: inclined boreholes, OTV/ATV imaging, and coring to detect vertical/sub-vertical fractures; per-site enforcement of minimum cover (≥15 m competent limestone) and ≥60 m long-term edge-to-edge pillars; stop-work triggers via a geotechnical Trigger Action Response Plan (TARP).
- Cavity monitoring: immediate post-extraction sonar and longer-term sonar to confirm geometry and stability.
- Strengthened subsidence and hydraulic monitoring: surface displacement, extensometers at the caprock, and piezometers; hydrogeologic TARP with thresholds and stop-work.
- Water treatment clarification: filtration prior to UV and enclosed reinjection loop; one-time priming volume retained to limit new withdrawals; real-time loop integrity monitoring.
- Expanded planning suite: Waste Characterization & Management, Groundwater Monitoring and Impact Mitigation Plan (GMIMP), Progressive Well Abandonment, Erosion and Sediment

Control Plan (ESCP), Environmental Emergency Response Contingency Plan (EERCP), Revegetation, Heritage, Noise, Complaint Handling, Wildlife Monitoring/Mitigation, and Closure (table of contents). The proponent expresses willingness to work with a provincial monitoring committee as contemplated by the CEC.

2. SUMMARY OF TECHNICAL REVIEW

The key technical issues affecting groundwater risk and model reliability are summarized below. Several foundational items in the hydrogeological appendices must be corrected or completed before predictions can be relied upon for authorization decisions.

Geochemistry:
Concerns include data gaps that remain, comingling of separate and distinct aquifers, timely laboratory analyses reporting in addition to the in-situ data reporting, reliance on treated well samples and missing return water quality data. Future efforts should focus on untreated water sampling, thorough water quality testing after processing and exploring long-term changes in water quality that could occur as a result of the extraction and injection. Monitoring should include comprehensive laboratory analyses and characterization of water quality following processing and prior to reinjection.

Data and Inventories:
The submission leans on GIN records (many pre-2007). The provincial well database -GWDRILL should be used as the primary source for well counts, locations, aquifer assignments, and pumping; the proponent is recommended to conduct their own well inventory survey in the area. Updates should be conducted for the 3D Model, for demand totals, and for the verification of all project wells in GWDRILL.

Recharge and Mapping:
Recharge zones were assigned based on surficial geology but Figure 6-1 likely overstates the extent of the “coarse/high-recharge” areas within the Sandilands region. Recharge zones should be reconciled with provincial mapping, show correlations for before and after in areas, and re-run the steady-state water balance.

Boundary Conditions:
The perimeter is set to no-flow along a topographic divide; this may suit shallow Quaternary, but deeper carbonate/sandstone aquifers likely have regional through-flow. Provide layer-specific boundary maps, justify any deep no-flow zones, or switch to general-head/specified-head tied to the provincial wells, and report perimeter fluxes. Additionally ensure well boundaries are reconciled with up-to-date licensed-use loads from Groundwater Use Licensing to reflect realistic external stresses.

Calibration and Testing:
Steady-state used GIN snapshots and the calibration were performed at a regional scale, whereas the transient calibration relies on a single 72-hour, local pumping test—these calibration scales are spatially and temporally mismatched. An approximately +3 m bias indicates heads run high. It is recommended to calibrate/validate to multi-year provincial records, add a domain-wide transient check, report metrics for that network, and adjust recharge/boundaries/properties where needed. Additional pump test data should be utilized and the slug-test methods should be revisited to better represent aquifer heterogeneity.

Receptor-Focused Reporting and Operations:
Provide decision outputs: counts of domestic/licensed wells within 0.5 m and 1.0 m drawdown by year and aquifer (with/without reinjection), drawdown/recovery time series at potentially impacted wells, and vertical head differences across the Winnipeg Shale. Recommendations include a commitment to pre-season outreach, a 48 to 72-hour response time limit for pump-lowering/backup supply, public reporting, and clarify priming volume, loop water balance, and metering of the approximately 15% water content to be retained, as expected with the sand.

Regulatory Clarity and Sealing:
Confirm the governing acts for drilling, reinjection, and abandonment. Ensure well sealing complies with the Well Standards Regulation (tremie-placed bentonite/cement; no shale backfill); any competent drill-cuttings used should be only above grouted intervals and in compliance with regulations.

Geology and Pathways:
Winnipeg Shale continuity/condition is incorrectly based on assumed homogeneity， weathered zones, fractures, and legacy cross-connecting wells (from GWDRILL) should be incorporated into the conceptual model and sensitivity analyses. The stratigraphic surfaces and figures should be updated with current data.

Plans and Monitoring:
Submit completed plans specifying monitoring locations, parameters, frequencies, thresholds, and triggers for operations, closure, and post-closure. Extend post-closure monitoring beyond five years as trends warrant. As per CEC recommendations, worst-case scenarios need to be evaluated.

Details supporting each item noted above are provided below in Section 3 (Detailed Review Table).

3. DETAILED REVIEW TABLE

Comment #	EAP Location	Reference (verbatim quotation)	Comment
1	EAP_part_1 – Executive Summary – viii	Consistent with the results of field testing, water levels were simulated to recover relatively rapidly, with approximately 80% recovery approximately two days following the end of production at each well cluster. Water levels in the Winnipeg Sandstone and Red River Carbonate aquifers are anticipated to return to near static water groundwater levels within approximately 60 days after production ceases each year.	Statement aligns with Appendix B (Section 6.5.2 and Figure 6-7). Recommend adding an explicit cross-reference to Figure 6-7 and clarifying whether the ~60-day "near-static" recovery also holds under the projected climate scenario (Appendix B Section 6.6; ~14% recharge reduction). If recovery differs materially, briefly note magnitude and operational implications.
2	EAP_part_1 – Executive Summary – viii	…the estimated 0.5 m drawdown cone. However, several licensed wells fall between the estimated 0.5 m and 5 m drawdown cones and pumps installed a short distance below the water table may experience diminished well yield during operations.	To support receptor-focused decision-making, please add a table or figure listing counts of domestic wells ***must be according to the latest GWDRILL**** within 0.5 m and 1.0 m drawdown isopleths for Years 0–4 under 0% and 42.5% reinjection, categorized by aquifer (Red River Carbonate vs Winnipeg Sandstone) and minimum distance to active clusters.
3	EAP_part_1 – Executive Summary – ix	Effects on groundwater quality will be minor and, in some cases, positive.	Appendix B supports this via redox and mixing predictions (Sections 4.3.1–4.3.3). Suggest committing to a commissioning comparison (in situ vs treated vs pre-reinjection) for DO, Fe, Mn, ORP, turbidity at several Year 0 wells to empirically verify the "minor/positive" claim and close the loop with the process description (Appendix B Section 2.2).
4	EAP_part_1 – Section 2.2.1 Extraction Method – 21	Approximately 15% moisture content will remain with the sand = (approximately 8 to 25 US gpm	The conversion and range are consistent with the extraction loop design narrative. Recommend adding a concise water balance statement for the

		[approximately 30 to 95 L/min]) will stay with the sand.	loop (initial priming volume; expected reinjection efficiency; metered inflow/outflow), and note how the 15% “loss with sand” is tracked and validated via operational meters.
5	EAP_part_1 – Section 2.2.5 Groundwater Treatment and Return to the Aquifer – 25	Filtration of the water following sand removal is being added as a part of the process because it will increase the efficiency of the UV process and reduce maintenance on the UV system.	The rationale is sound. Given public interest in oxygenation/oxidation, please include a simple schematic confirming the treated stream remains enclosed (no atmospheric contact) prior to reinjection and commit to in situ vs treated vs reinjection comparison for DO, Fe, Mn, ORP, turbidity to confirm negligible unintended oxidation. This aligns with Appendix B Section 4.3.1 conclusions.
6	EAP_part_1 – Section 6.2.1 Geology/Topography – 72	Limit extraction to areas with competent limestone thicker than 15 m	Please indicate 1. if any additional operational limits (e.g., reduced span where caprock is at the lower bound or more weathered) are applied, and reference how span/spacing was verified in Year 0 via pre-extraction measurements and post-extraction sonar checks.
7	EAP_part_1 – Section 6.2.1 Geology/Topography – 73	Subsidence monitoring network	The plan mentions extensometers “anchored to the caprock top surface.” Consider clarifying whether instruments will also target the caprock/shale contact and near-surface benchmarks to distinguish subsurface closure from surface settlement.
8	EAP_part_1 – Section 6.2.1 Geology/Topography – 73	Progressive annual decommissioning of extraction wells...	Ensure consistency with drill cuttings reuse language: please state that well sealing follows The Groundwater and Water Well Act and Well Standards Regulation, with tremie-placed bentonite/cement to avoid bridging, and that only compliant lithologies are used as zonal backfill (no shale). This aligns with best practice already described in the overall plan set.
9	EAP_part_1 – Section 6.2.3 Groundwater – 75	Very little groundwater from the aquifer will be permanently withdrawn	Recommend indicating that metered inflow/outflow and reinjection efficiency will be tracked and reported (and used to update model mass balance if needed).

10	EAP_part_2 – Section 6.2.3 Groundwater – 74–77	Filtration and UV treatment; reinjection loop; Groundwater Monitoring and Impact Mitigation Plan	To harmonize with Appendix B recommendations, please prepare a clear operational commitment in the final monitoring and mitigation plan: (i) pre-season outreach to well owners near planned clusters; (ii) a 48–72 hr rapid-response protocol for pump lowering or alternative supply during peak extraction; and (iii) public reporting of groundwater levels/quality (including laboratory data) during active seasons.
11	APP_B_part_1 – Executive Summary – 1–6	Groundwater model simulations indicate drawdown extents of up to 2.3 km (0% reinjection) vs 1.3–1.4 km (42.5% reinjection).	Same recommendation as **Comment #2**
12	APP_B_part_1 – Executive Summary – 1–6	Interconnection between the two aquifers is a common occurrence because many drinking water wells have been screened across the Red River Carbonate and the Winnipeg Sandstone.	For accuracy, note that such cross-screened wells represent fewer than 10% of wells in the area—approximately 30 wells within a 6 km radius centered on Vivian.
13	APP_B_part_1 – Section 1.4 Existing Groundwater Use – 16; APP_B_part_1 – Section 5.3 Well Inventory – 61	A water well inventory for the study area (defined as the area encompassing the Project Site, Local Project Area and Regional Project Area) was obtained from the Groundwater Information Network (GIN) data base. ; New wells are frequently installed and commissioned so it is important to regularly update well users and verify the location of wells by way of windshield survey if a higher degree of accuracy is required for the analysis.	The Manitoba records in GIN are largely outdated (many entries pre-2007) and are no longer suitable as a primary source for well-dependent analyses (e.g., stratigraphy, groundwater levels/quality, and use summaries). Because GIN has not captured post-2007 activities (new well construction, decommissioning, changes in use), relying on GIN for Manitoba data can misrepresent current hydrogeologic conditions. Please use the current well dataset – **GWDRILL (attached)** as the primary source, with GIN only as a secondary reference.
14	APP_B_part_1 – Section 2.2 Silica Sand Extraction Process – 21	UV treatment… commonly used in municipal water treatment facilities.	Same recommendation as **Comment #6**

15	APP_B_part_1 – Section 2.2.3 Sand Slurry Pre-Screening – 24	Overs… temporarily stockpiled in a covered containment bin… prior to disposal or use in well sealing.	Same recommendation as **Comment #10**
16	APP_B_part_1 – Section 5.3 Well Inventory – 61	Some of the wells are part of an extensive groundwater observation well network maintained by Manitoba Sustainable Development.	Now by “Groundwater Management Section-Environment and Climate Change”
17	APP_B_part_1 – Section 5.3 Well Inventory – 61	The well inventory was used in combination with information derived from the literature to construct a three-dimensional geologic model.	If wells constructed since 2008 were not incorporated, please cross-validate the 3D geologic model against the updated GWDrill dataset (2008–2025). This will minimize bias and uncertainty from legacy data, particularly because most wells installed in the past two decades include GPS-measured locations and provide more reliable lithologic picks.
18	APP_B_part_1 – Section 5.3 Hydrostratigraphy – 64	Lithological descriptions from water supply wells and borehole logs were classified according to major hydrostratigraphic units and interpolated to surfaces using the implicit Radial Basis Function (RBF) method within Leapfrog™ Works.	Please specify the lithology classification process.
19	APP_B_part_1 – Section 5.6.3 Winnipeg Shale – 66	…AECOM’s interpretation that the Winnipeg Shale is continuous across the study area.	Reasonable at regional scale, but logs indicate variability/weathering. Add a map showing control points (presence, thickness, weathering) and identify lower-confidence areas; tie these to the 80 m “shale degradation” zone applied in scenarios (Section 6.5) to demonstrate uncertainty bracketing.
20	APP_B_part_1 – Section 5.8.1 Groundwater Recharge – 67-68	General comment	According to the text and Figure 6-1, the spatial pattern of vertical recharge appears to be assigned from surficial lithology and considered as typical practice. The assignment general aligns with the map, but there is a notable discrepancy in the

			"Sandilands area". Figure 6-1 classifies much of the eastern domain as "coarse-textured deposits" (high recharge), whereas the surficial lithology map (see **Review Figure 1**) indicates only the southeastern corner comprises these coarser units (use the formal unit names from the map), not the entire eastern area. Over-assigning the "coarse/high-recharge" class would overestimate model inflow and influence calibration and mass balance. Please justify or revise and re-run steady-state mass balance, and report revised recharge totals.
21	APP_B_part_1 – Section 5.8.2 Groundwater Elevations and Gradients – 68	It is unclear if any new wells interconnecting the Red River Carbonate and Winnipeg Sandstone were installed near the observation well that may have affected water levels and vertical gradients.	Any interconnection is far more likely from legacy wells rather than new construction. Under Manitoba Well Standards Regulation, Part 2, 3(1), a person must not construct or seal a well or test hole in a manner that allows the interconnection or mixing of groundwater between the Winnipeg Formation and any overlying aquifer.
22	APP_B_part_1 – Section 5.8.4 Groundwater Discharge – 68	Based on an estimated 45,000 wells pumping at a rate of 0.5 m3/day, they estimated the total pumping rate to be 8,211,500 m3/year.	Please validate the current counts of active domestic and licensed wells within the model domain **using the GWDRILL database** and update the total pumping estimate accordingly.
23	APP_B_part_1 – Section 6.2.4.2 Specified Head – 73 – 74	Similarly, specified head boundary conditions along the northwest perimeter were applied to the Red River Carbonate layer based on the regional groundwater level data.	Please confirm whether the "regional groundwater level data" incorporate provincial monitoring well (see **Review Figure 2**) records. If so, indicate how well the specified-head boundary values match those observations and, if not, consider reconciling boundary heads to the provincial network to improve consistency.
24	APP_B_part_1 – Section 6.2.4.3 No Flow – 74	General comment	According to Figure 5-2 and Figure 6-1, the model domain appears to follow the surface topographic divide, which is implicitly treated as a groundwater divide in the Quaternary sediments. Please clarify the rationale for this choice and how it was implemented along the full perimeter, given that

			the three key hydrostratigraphic units (Quaternary sediments, Red River Carbonate, Winnipeg Sandstone) have different flow systems and degrees of confinement. Specifically, describe how the no-flow boundary was assigned vertically across layers, layer maps are preferred. A divide in the water-table does not necessarily coincide with divides in the deeper carbonate and sandstone units, which may exhibit regional flow underlain by different potentiometric surfaces. If deeper units were also assigned no-flow along the same perimeter, provide justification or considering apply general-head boundaries for those layers, and re-calibrate the model.
25	APP_B_part_1 – Section 6.2.4.4 Wells – 74	Well boundary conditions represent licensed users…	Licensed-only pumping under-represents total domestic use. Please clarify if domestic consumption is implicitly embedded in calibrated recharge and consider a sensitivity with a spatially distributed domestic demand layer (e.g., per parcel) to bound mass balance and local head impacts.
26	APP_B_part_1 – Section 6.2.4.4 Wells – 74	Table 6-A. Licensed Water Wells Incorporated as Well Boundary Conditions	The license inventory underpinning the model is outdated and materially underestimates total licensed groundwater use within the domain. Reviewer recommends proponent to obtain the latest license dataset directly from Groundwater Use Licensing then update well counts and total use, and update well boundaries in the model and rerun the water-balance/calibration accordingly.
27	APP_B_part_1 – Section 6.2.5 Key Assumptions – 75; APP_B_part_1 – Section 6.3 Calibration – 75	The steady state calibration makes use of available groundwater elevations in the Manitoba database; Simulated groundwater levels from the groundwater model were calibrated to 2,534 observation points from the	Recommend to use groundwater levels from provincial monitoring wells as the primary calibration targets, assigning greater weight to stations nearer the Project Area. GIN groundwater levels are single “snapshot” measurements taken shortly after well completion and may not represent long-term conditions, which undermines recharge assumptions based on multi-year means.

		Groundwater Information Network database.	
28	APP_B_part_1 – Section 6.3 Calibration – 75	The steady state groundwater model was converted to transient and subsequently calibrated to a 72-hour pumping test	The steady-state calibration was performed at a regional scale, whereas the transient calibration relies on a single 72-hour, local pumping test—these calibration scales are spatially and temporally mismatched. A single short-term test does not adequately constrain regional transient behavior. Recommend adding an intermediate, domain-wide transient calibration against multi-year groundwater level records from provincial monitoring wells (**Review Figure 2**). This step would strengthen confidence in the global parameterization given the great effort has been made assembling the regional model.
29	APP_B_part_1 – Section 6.3 Calibration – 76 APP_B_part_1 – Section 6.3.2.1 Transient Calibration – 77	Calibration was attained with a mean residual of 3 m, root mean square error of 5 m, normalized root mean squared error of 3.6%, and correlation coefficient of 0.97. ; Calibrated aquifer properties (hydraulic conductivity, specific storage and recharge) are summarized in Table 6-C and Table 6-D.	Request for information: please report calibration metrics separately for the provincial monitoring well network (e.g., mean residual, RMSE, NRMSE, r). A nonzero mean residual of approximately +3 m suggests a systematic positive bias (simulated heads higher than observed). Identifying whether this bias persists within the provincial network—and where spatially—will help target boundary heads, recharge, or layer property adjustments.
30	APP_B_part_1 – Section 6.4 Sensitivity – 79	For all sensitivity analysis model runs, groundwater levels were recorded at each observation point and calibration statistics were calculated to illustrate the effects of changes to the model on goodness of fit to the observed groundwater elevations.	Recommend shifting from purely global head-fit metrics to impact-focused sensitivity outputs that inform decisions, such as: (i) maximum drawdown at nearby private wells, (ii) vertical head differences across the Winnipeg Shale at specified offsets, and (iii) post-extraction recovery times, global statistics can dilute local project effects.

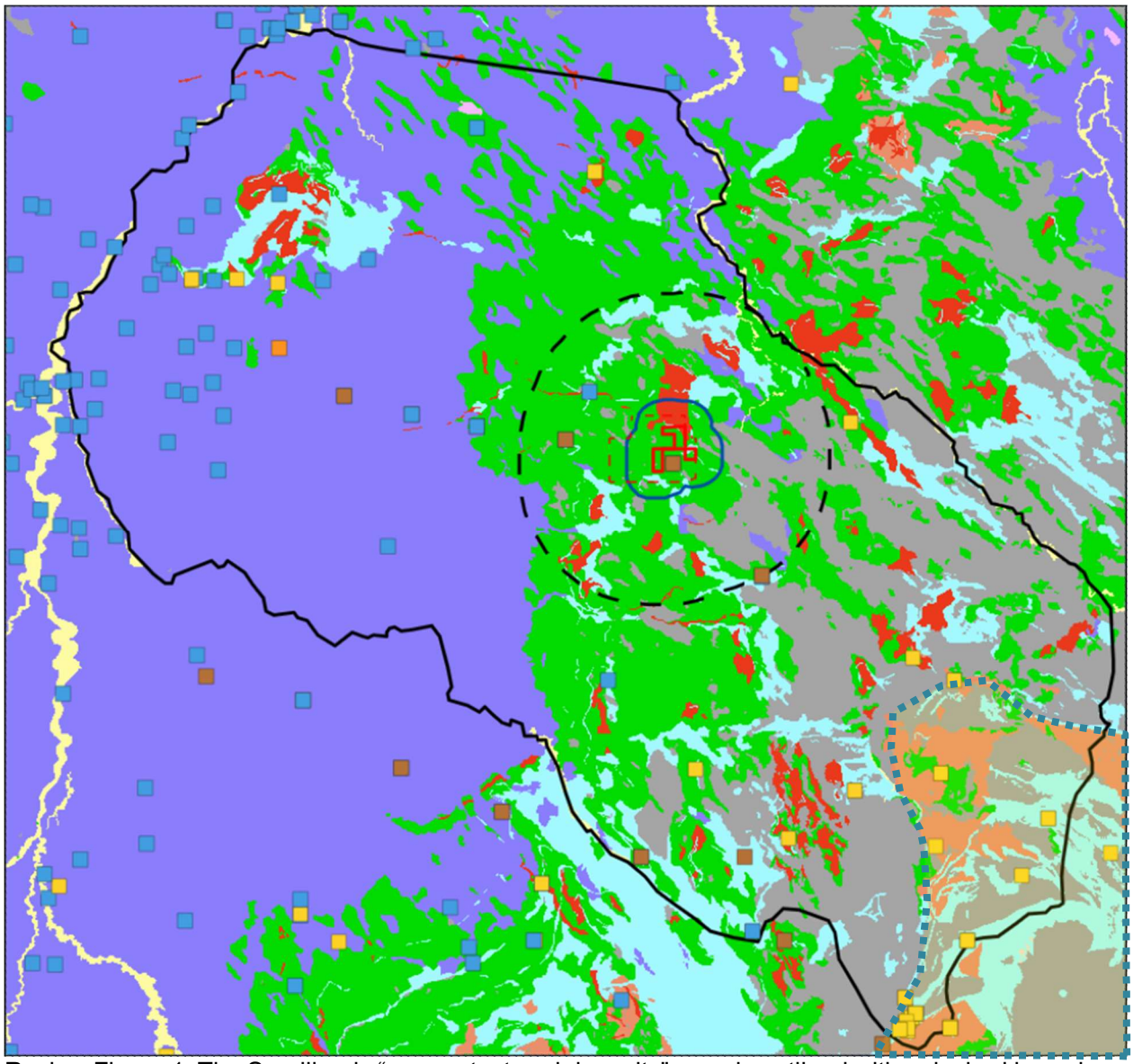
31	APP_B_part_1 – Section 6.5.2 Predictive Scenarios Results – 84	Largest 1.0 m contour… up to 270–320 m; 0.5 m extends up to 2.3 km in 0% reinjection.	In line with earlier sensitivity recommendations, please add decision-focused outputs: (i) maximum drawdown time series at the nearest domestic wells, and (ii) vertical head differences across the Winnipeg Shale at set offsets from active wells during peak extraction and subsequent recovery. These receptor-oriented metrics will better inform mitigation and monitoring.
32	APP_B_part_1 – Section 6.6 Climate Scenario – 84–87	Recharge scaled from CMIP5 RCP8.5; annual −14%; steady-state comparison.	Recognize Manitoba's strongly seasonal recharge pattern (near-zero in winter; dominant spring snowmelt pulse with smaller summer storm pulses). Include a transient, seasonally varying recharge case for Year 4 (e.g., spring and late-summer pulses; winter near-zero) to evaluate whether drawdown timing and the stated ~60-day recovery remain acceptable under realistic intra-annual variability.
33	APP_B_part_1 – Section 7 Vulnerability Analysis – 88–90	Modified DRASTIC (V=K+H+D); local post-collapse increase ≤0.15.	Method is suitable for intrinsic vulnerability. Recommend adding a qualitative overlay of known legacy cross-connecting wells (**GWDRILL**) and noting that the Progressive Well Abandonment Plan is designed to prevent new conduits—closing the loop on non-matrix pathway risks.
34	APP_B_part_1 – Section 8.2 Effects – 91–96	Residual impacts minor; pump lowering/alternative supply as needed.	Please quantify expected potentially affected well counts per year (e.g., ≥0.5 m and ≥1.0 m within specified distances during worst-overlap weeks), linked to the Appendix H schedule.
35	EAP_part_1, Several Section (p.97,98..)	Groundwater Monitoring and Impact Mitigation Plan and Water Management Plan	Several sections reference a Groundwater Monitoring Plan, but the plan is not provided. Without details on monitoring locations, parameters, frequency, thresholds, and response actions, the groundwater protection framework cannot be evaluated. It is recommended to submit a comprehensive Groundwater Monitoring Plan that defines the monitoring network, parameters, thresholds, and trigger actions to enable assessment of groundwater protection and adaptive management.

36	EAP_part_1, multiple sections	The majority of groundwater that is withdrawn with the sand during the extra process is referred to as ‘re-injection’	Reinjection of water to the subsurface is referenced in the report but without clear confirmation that authorization under the Groundwater and Water Well Act will be obtained. It is recommended to explicitly confirm compliance with this legislative requirement and ensure permitting obligations are addressed alongside technical performance measures to protect aquifer conditions.
37	EAP_part_1, Section 8.5, Follow-up Plans (P. 98)	Follow-up plans; A Groundwater Monitoring and Impact Mitigation Plan will be developed and implemented….W.Q and other plans	This section lists plans related to monitoring, W.Q parameters, frequency or mitigating actions but no details are provided, so it is recommended for the proponent to provide completed versions of these plans for proper assessment consistent with CEC recommendations.
38	APP_B_part_1, Section 2, Description of Proposed Development, development (P.19-23)	The proposed SIMBA Project is anticipated to have an operational life of approximately 25 years.” “The hydrogeological and geochemical assessment presented herein focuses on the initial phase of the Project, corresponding to Years 0 to 4 of extraction activities	The current development focuses on Years 0–4 while the project life is approximately 25 years, with no explanation of how cumulative and longer-term hydrogeological effects will be evaluated beyond the initial phase. It is recommended to include an approach for assessing delayed and cumulative impacts such as geochemical shifts, leakage development, and pressure changes over the full project duration to ensure consistency with the long-term focus emphasized in CEC proceedings.
39	APP_B_part_1, Section 3.7.2.3, Pumping Test Analysis, (P.29-33)	For the purposes of the analysis, the Winnipeg Sandstone aquifer was assumed to have a uniform thickness of 20.14 m, which was the measured distance between the bottom of the Winnipeg Sandstone aquifer and the contact	Pumping test analysis is based on a single location (Bru 95-7). Spatial variability is expected in sandstone and fractured carbonate systems; a single test is insufficient to characterize parameter ranges needed for reliable predictive modelling. Therefore, it is recommended that multiple pumping tests be conducted across the extraction area to capture spatial variability in hydraulic properties.

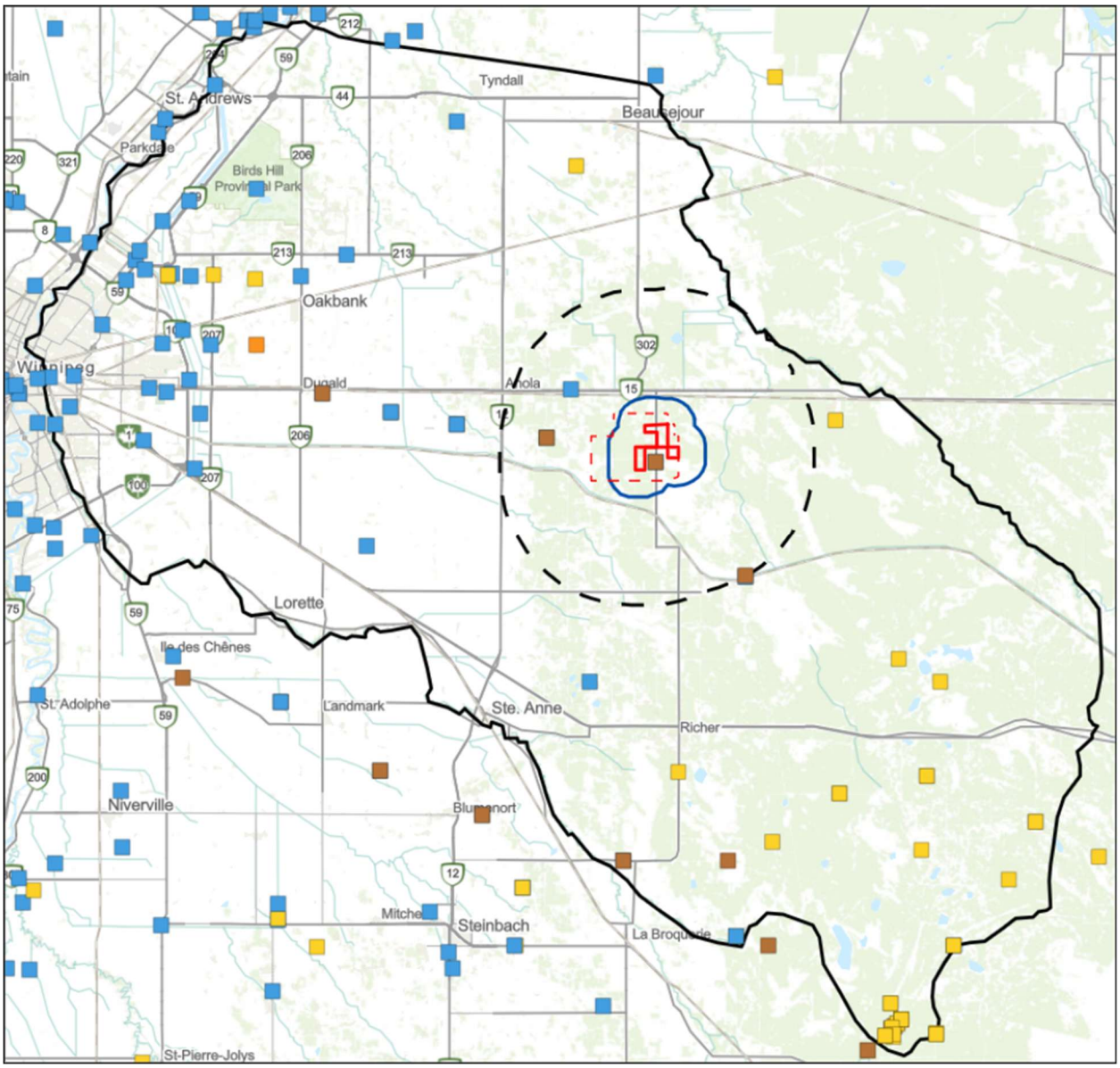
		with the overlying Winnipeg Shale aquitard at the pumping well (Bru 95-7).. “The pumping test conducted at well Bru 95-7 was used to estimate hydraulic properties of the Winnipeg Sandstone aquifer	
40	APP_B_part_1, Section 3.7.2., Pumping Test Analysis, (P.29)	A pumping test was conducted on the newly installed water well (Bru 95-7)… to measure properties… of the Winnipeg Sandstone	Conduct additional pumping tests at multiple locations to characterize spatial variability in hydraulic properties. At minimum, tests should be performed in each major hydrostratigraphic unit and in areas with contrasting structural or lithologic conditions
41	APP_B_part_1, Section 5.3 Well Inventory, (P.61)	A groundwater well inventory was completed in December 2020 to identify the groundwater users in proximity to the Project Site, Local Project Area and Regional Project Area.	Update the groundwater well inventory to reflect current conditions by incorporating the most recent data from the provincial well water database. The existing inventory, completed in December 2020, is five years old and may not accurately represent current groundwater users within the Project Site, Local Project Area, and Regional Project Area. In addition to the nearby wells noted in the proposal or in the provincial database, other wells may also be present. An assessment should be undertaken in an effort to locate all wells on the site or areas that could potentially be impacted by the operation.
42	APP_B_part_1, Section 5.6 , Hydrostratigraphy (P. 64-65)	The top of each hydrostratigraphic surface was interpreted from GIN borehole data and they are shown together with isopachs of the overlying unit on Figure 5-5 (Red River Carbonate), Figure 5-6 (Winnipeg Shale), Figure 5-7	Update hydrostratigraphic surface interpretations by integrating the most current data from the provincial well water database for each unit. This will improve the accuracy of aquifer delineation and refine the conceptual model to reflect current well data and spatial variability.

		(Winnipeg Sandstone) and Figure 5-8 (Precambrian Bedrock / Lower Shale).	
43	APP_C_ Overall Comments		Appendix C is dated January 14, 2022 and appears to be unchanged from the version previously reviewed.
44	APP_H, Section , Post Closure Monitoring	Post-closure monitoring will be conducted for up to five years following decommissioning." "Monitoring requirements will be based on the results of the Groundwater Monitoring Plan." "The details of monitoring parameters, locations, and frequencies will be finalized in the Groundwater Monitoring Plan."	A detailed Groundwater Monitoring Plan is required to support closure and post-closure phases. The plan should clearly identify monitoring parameters (e.g., groundwater levels, groundwater chemistry, and relevant geochemical indicators), monitoring locations, and monitoring frequency, as well as define thresholds and trigger actions to allow timely response to adverse trends. In addition, the proposed post-closure monitoring period of five years may not be sufficient to capture long-term groundwater and subsurface responses; the duration of monitoring should be informed by observed trends during operations and early closure to adequately address longer-term risks.
45	EAP_part_1, multiple sections	CEC Recommendation 7) indicated that "The proponent be required to carry out a risk assessment that considers the probability of worst-case scenarios (collapse of the limestone layer leading to sinkholes, failure of well-sealing) and the consequences of these scenarios and what the response would be to remediate such damage."	Worst-case scenarios were not considered as part of a detailed risk assessment. Collapse of the limestone layer and failure of well sealing were not reviewed in detail, nor were potential remediation scenarios for such events provided.
46	APP_B_part_1 – Section 4.2 Aqueous Geochemistry – page 44 – 48	Isotope data, regional and site-specific water quality, Piper diagrams	The analysis relies in part on data from private wells that were likely sampled after treatment by a water softener. Private well sampling was limited. This

			limits the representativeness of the results for natural groundwater chemistry.
47	APP_B_part_1 – Section 4.2.3.6 Red River Carbonate – page 51	The elevated sodium and low calcium/magnesium concentrations are likely due to the use of a water softener (i.e. water softener salt), which is primarily composed of sodium chloride. Without application of the water softener, groundwater in these two private wells would likely be similar to water samples from the carbonate or sandstone units.	Proponent noted that two of three wells sampled after softener—limits value for raw groundwater characterization. The recommendation is that private sampling efforts should be more expansive and use untreated water.
48	APP_B_part_1 – Section 4.3	DO and ORP data pre/post test	There is no reported DO or microbiological data for the return or injection water after sand separation during initial production testing. This information is important for the geochemical equilibrium modeling and operational risk assessment. It is recommended that future testing include DO, ORP, and microbial parameters for return/injection waters after processing.



Review Figure 1. The Sandilands “coarse-textured deposits” zone is outlined with a dashed boundary.



Review Figure 2. Provincial groundwater monitoring wells within the model domain, blue square: carbonate monitoring, brown square: sandstone monitoring, yellow square: quaternary deposit monitoring.

Conclusion

GMS does not consider the current hydrogeological investigation, assessment, and modeling results and findings sufficiently robust for authorization decisions, as extensively detailed in Section 3.
We thank you for the opportunity to be of review on this project. Should you require anything further or have any questions, please contact us at groundwater@gov.mb.ca.

Groundwater Management Section
Water Science and Watershed Management Branch
Water Stewardship
Manitoba Department of Environment and Climate Change

From: +WPG137 - Parks Circulars <ParksCirculars@gov.mb.ca>
Sent: December 1, 2025 4:29 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: +WPG137 - Parks Circulars <ParksCirculars@gov.mb.ca>
Subject: RE: Environment Act Proposal Update - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Hello,

Lewis Bog Ecological Reserve, Brokenhead River Ecological Reserve, Ste. Anne Bog Ecological Reserve, and the Cedar Bog Ecological Reserve are the nearest sites to The Project that are managed by Parks Branch. These are in the International Union for Conservation of Nature (IUCN) protected area management category 1a - protected area managed for strict nature protection, available primarily for scientific research and/or environmental monitoring. These protected lands are free from logging, mining, hydroelectric development, oil and gas development, exploring for or harvesting peat, and any other activities that may significantly or adversely affect habitat.

These ecological reserves are designated under The Ecological Reserves Act to be set aside in the interests of the people of Manitoba to enhance the overall well being of present and future generations of Manitobans. These sites may rely on groundwater to support rare species, and those groundwater discharge zones within are then vulnerable to aquifer disturbance, which may adversely affect habitat. The proposal should define how the moisture level and water chemistry in the ecological reserves may be impacted by the project, even if temporary or minimal and include mitigations to prevent adverse impacts to these ecological reserves.

Sincerely,
Jessicca Lagimodiere
Park Ecologist
Parks Branch | Environment and Climate Change
258 Portage Ave, 4th Floor, Box 50, Wpg MB, R3C 0B6
Jessicca.Lagimodiere@gov.mb.ca | pronouns: she/her
204-619-8646
ManitobaParks.com

Parks Branch

From: +WPG569 - Wildlife Circulars <wildlifecirculars@gov.mb.ca>
Sent: December 1, 2025 3:21 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: +WPG569 - Wildlife Circulars <wildlifecirculars@gov.mb.ca>; Brannen, Dennis <Dennis.Brannen@gov.mb.ca>
Subject: RE: Environment Act Proposal Update - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Hello Eshetu,

After the review of the materials provided Wildlife has the following comments and concerns regarding File 6275, the SiMbA Sand Extraction Project request.

Avian Concerns:
It is noted that there were no environmental studies that focused on avian species within the Local or Regional Project Areas (e.g. 2018 to 2020). It is unclear how the proponent will identify areas where protected birds may occur, including their nests, breeding and foraging habitat.
Federally identified Critical Habitat for both the Golden-winged Warbler (Threatened, ESEA and SARA) and the Red-headed Woodpecker (Threatened- ESEA, Endangered-SARA) overlap the Regional and Local Project Areas. All vegetation clearing and rehabilitation/ revegetation plans must take into account the habitat and vegetation structural needs of these legally protected birds.

In section 7.7. Revegetation Monitoring Program, it states that the "*Golden-winged Warbler …is a Species at Risk that may occur in the Regional Project Area*." In Table 5 of Part 2 of the EAP, it is suggested that the Golden-winged warbler has a low to moderate probability of occurrence, possibly based on a visual inspection of this map in the MB Atlas of Breeding Birds. In addition to federally identified Critical Habitat there are multiple records of known occurrences of both the Golden-winged Warbler and the Red-headed Woodpecker within the Local and the Regional Project Area. Other legally protected birds with known occurrences within the regional or local areas include Eastern Wood-Pewee (Special Concern- SARA), Bobolink (Threatened, SARA), Eastern Whip-poor-will (Threatened- ESEA, SARA).

Vegetation concerns:
According to the proposal, 50% of the project area is under natural/ perennial vegetation cover, much of this is forested habitat. There is no mention of vegetation surveys to determine whether any plant species of conservation concern (including Species at risk and provincially tracked [S1 to S3] species) occur in the project footprint.

It is unclear how woody vegetation be cleared. Woody debris must be managed in such as way as to not impede wildlife movements or impede vegetation regeneration. Once areas are cleared of vegetation, how will terrestrial exotic and invasive species be managed? The many access roads throughout the project area have the potential to facilitate weed transmission. Areas of disturbed ground cover that result in bare soil increase the likelihood of colonization by exotic and invasive species. Invasive species and their sites of occurrence within the project area should be identified prior to any construction activities, as well as a plan to address and mitigate their potential spread. With no baseline of surveys of

invasive species present the proponent will be unable to measure the spread of invasive species related to the project activities.

The proposal states that disturbed areas will be allowed to revegetate naturally each year, and suggests that after two monitoring seasons the need for augmented revegetation will be assessed. How will it be determined whether there is a need for augmented revegetation using native seeding and native plantings? Will re-seeding and replanting also be monitored for success? Native species must be used for revegetation; there is no mention of what species will be used.

There is a 60 – 70 m distance between proposed well clusters (p43, closure plan). These access trails may potentially be used for extended periods, given that a cluster of wells may be accessed over multiple years for each of the five separate drill holes per cluster. How will access trails be decommissioned? What is the revegetation protocol for areas that may be compacted by heavy machinery access or other use, such as transport lines for the sand slurry?

The absence of consideration of cumulative effects is noted. There are other active and likely proposed aggregate extraction interests within and adjacent to the local project area, as well as throughout the regional area. The proponent does not clarify how other aggregate withdrawals or other regional development projects may interact with the activities in the Sio Silica proposal.

Karin Newman (she/her/elle)
Habitat Mitigation Specialist
Wildlife Branch | Natural Resources and Indigenous Futures
Box 24 - 14 Fultz Blvd. | Winnipeg, Manitoba R3Y 0L6
E. wildlifecirculars@gov.mb.ca | C. 431-844-1625

From: +WPG569 - Forestry and Peatlands Circulars <FPB.circulars@gov.mb.ca>
Sent: November 28, 2025 2:11 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Subject: RE: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Comments from Forestry and Peatlands Branch.

What replaces sand in filtering/water holding capacity once the silica sand is removed from the ground?

How will the removal of sand & re-introduction of water impact forest and peatland resources?

How will the surface be impacted (subsidence) by the extraction of up to 500,000 tonnes of silica per year?

How will this project impact aggregate withdrawals in the area – cumulative effects question

If water head and supply have decreased over the past 100 years without removal of the aquifer aggregate material, how will this project improve, or maintain current water supply and quality? – concern related to ground water and impacts to forest sustainability. Forestry climate change models show drying environment so public use of water may require deep well drills to provide access to potable water. If we approve the project how will the removal of the aggregate impact future water supplies for a growing population?

Concerned about the cumulative impacts of this project. It sounded like their would be no cumulative effects report completed until all 24 years were completed.

Todd Ringash
Provincial Scaler
Forestry and Peatlands Branch
204-391-2133

Manitoba

Memorandum
Note de service

Date: December 8, 2025

To: Eshetu Beshada, Ph.D., P. Eng.
Environmental Engineer Municipal
and Industrial Section 204-250-1932
Eshetu.Beshada@gov.mb.ca

From: Mines Branch
Minerals, Petroleum and
Geoscience
Business, Mining, Trade and Job
Creation

Telephone: 204-945-1119

Subject: **Request for Environment Act Proposal Review - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project**

Mining

1. The project has been structured into multiple smaller components that may not, on their own, appear to result in significant impacts, consideration should be given to ensure assessed as a whole.
2. Re: CEC recommendation #2 (1), Sio proposes one or two holes in some clusters. Layout for clusters with spacing and dimensions should be shown on a diagram as in Fig 2-3 (page 44) of the EAP.
3. Sio should complete the layout and update Figure 2-1 (Page 6 of app_b_part_2-Figure 1-25) with clarification whether the colour coded 'dots' represent holes or clusters of holes.
4. The EAP informs (page vii) that
   "Impacts to geology are assessed as being minor due to the abundance of remaining sand resource with approximately 0.0125% of sand removed in the first five years of the Project, and approximately 0.082% over the 25-year mine life of the known 15,252,000,000 tonnes of sand from resource estimate studies. The extracted sand will not be replaced; therefore, impacts to the geology will be irreversible/permanent."

   The extraction ratio (0.0125% %) as indicated in the EAP appears to be based on the amount of proposed extraction as percentage of the sand resource available within all the claims and beyond (including the 25 years). This is inaccurate as extraction ratio is based on the production quantity expressed as a percentage of the available resource in the project area. Which is 1.3% in the first year, and 1.4% every year for 2nd to 5th year on cumulative production basis, over 100 times (100 x) larger than what is mentioned in the EAP, therefore, the impact on ground stability will be higher in the same proportion. The ground instability potential or ground subsidence potential is directly related to % extraction.

   There are two technical reports (Stantec 2019. Technical Report DEN Property Manitoba, Canada; and Stantec 2019 and Technical Report BRU Property Manitoba, Canada) prepared in accordance with the requirements of National Instrument 43-101 Standards of Disclosure for Mineral Projects, according to Stantec. Both reports in their section 15

confirm that "*This Technical Report does not include an estimate of reserves. The available exploration data is not sufficient to support the preparation of a Pre-Feasibility Study; therefore, in accordance with the requirements of NI 43-101, the reported resources cannot be classified as reserves*"

Furthermore, the two reports together (tables 14.2 of the reports) indicate that the total estimated resource (Indicated and Inferred) as of May 2019, is 531 Mt (531,000,000 t). So the % extraction based on the proposed 5-year extraction and the total reported resource within the DEN and BRU combined is 0.36% and not 0.0125% as claimed in the EAP. Moreover, the reported mine life estimate of 25 years has no reference to how it has been estimated

- No reference for 15,252,000,000 tonnes could be found in the EAP based on which the 25 years mine life is projected.
- As there is no reserve estimate, a 25-years mine life projection is not reasonable. Mine life is estimated based on Total Mineable Reserve and Annual Production Rate as below according to the following formula.

Mine Life (years)= Total Mineable Ore Reserves (tonnes) / Annual Ore Production Rate (tonnes/year)

Geotechnical

1. The design and layout of holes is based on the findings and recommendations of Stantec 2022 report. The strength parameters used for analysis is based on data collected from nine boreholes; however, only one of them (BH 10-17) is located within the 25-year project area and not within the proposed 5-years currently proposed area. As a result, the applicability of these assumptions to the proposed development area is limited.

2. The most significant recommendation is to limit the extraction to areas with competent limestone thickness greater than 15m therefore, it is critically important to ensure that no extraction must occur if the thickness of limestone layer is less than 15m. Limestone layer (15m thickness) is the caprock that supports the overburden (Quaternary deposits). If the cap rock fails, the quaternary deposits will "cave" into the void, thereby creating subsidence at surface. In addition to supporting the overburden, the limestone layer is also a freshwater aquifer that is used extensively throughout the local and regional areas surrounding the Project site.

3. CEC made several recommendations re: mining and geotechnical based on Stantec 2022 and Arcadis 2022 reports. The recommendations are related to drilling of reduced number of wells in a cluster, some as small as one or two wells, but with no more than five wells per cluster. As these tests were not undertaken, consideration may be given to approving the proposal on a pilot basis only, limited to a small number of well clusters.

   For this reason, CEC recommended collecting more data by drilling inclined holes and conduct more laboratory strength tests to prove the competence of the limestone.

Recommendations Re mining and geotechnical

1. Prototype testing would support a better understanding of rock mass behaviour, stability, hydrogeological conditions, and other relevant parameters. Where testing results are positive and supported by sufficient, evidence-based data and analysis, the information could inform consideration of a gradual production ramp-up through the drilling of additional boreholes.

2. Data collection and testing should follow a phased approach, with each borehole logged to document the thickness of geological units and confirm a minimum limestone thickness of 15 metres at each location.
3. The EAP should clearly and comprehensively describe all proposed testing and monitoring activities, including an implementation schedule, informed by the Stantec (2002), Arcadis (2022), and CEC (2023) reports. These activities should commence with the initial borehole drilling.
    a. Angled bore-hole testing to verify presence of vertical fractures
    b. Acoustic Televiewer/Optical Televiewer (ATV/OTV) surveys
    c. Coring to confirm overburden, and competent caprock thickness
    d. Side scan sonar to confirm cavity development and long-term cavity shape
4. Prior to commencing sand extraction and following completion of drilling for the initial cluster of five boreholes, a report summarizing all testing results and interpretations should be submitted for review, including the testing identified above.
5. In-situ strength testing of the sand deposit must be completed prior to extraction and at adjacent boreholes following extraction. The FLAC model shall be updated using additional data obtained from full-scale extraction monitoring results.
6. The FLAC geotechnical model (Stantec, 2022) was developed using data from one or two boreholes and does not account for effects associated with extraction from multiple boreholes within a cluster. Data collected from two to three borehole clusters must be used to update the model. Revised model outputs and interpretations shall be provided and results shall be used to refine extraction methods for subsequent full-scale operations.
7. Surface and caprock settlement must be monitored during extraction activities, along with changes in piezometric head within the upper aquifer.
8. A side-scan sonar survey must be completed following each borehole completion, and results shall be evaluated against cavity extraction assumptions.

References:

1. Stantec 2019. Technical Report DEN Property Manitoba, Canada
2. Stantec 2019. Technical Report BRU Property Manitoba, Canada
3. Clean Environment Commission 2023. Clean Environment Commission Report on the Vivian sand Extraction Project
4. app_a- CEC RECOMMENTAIONS
5. app_h-CLOSURE PLAN DRAFT
6. Arcadis 2022. Technical Review of Sio silica Corporation’s Environment Act proposal Vivian sand Extraction Project 2022
7. Stantec 2022. Geotechnical Analysis for Sio Silica Extraction Project

From: Leonen, Leonardo <Leonardo.Leonen@gov.mb.ca>
Sent: December 1, 2025 2:53 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: Curtis, Jasmine <Jasmine.Curtis@gov.mb.ca>
Subject: RE: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Hello Eshetu, Petroleum Branch has no concerns. Thank you.

Leo

Manitoba

Memorandum

DATE: **2025-11-24**

TO: **Environmental Approvals Branch**
Attn: Eshetu Beshada
Manitoba Environment and Climate Change
Box 35, 14 Fultz Blvd.,
Winnipeg MB R3Y 0L6

FROM: **Archaeological Assessment Services Unit**
Historic Resources Branch
Manitoba Sport, Culture, Heritage and Tourism
Main Floor – 213 Notre Dame Avenue
Winnipeg, MB
R3B 1N3

T: (204) 945-2118 F: (204) 948-2384
e: HRB.archaeology@gov.mb.ca

FOR: **Sio Silica Corporation**
1800-201 Portage Avenue,
Winnipeg MB R3C 0B9

SUBJECT: **Environment Act Proposal Review – File 6275.00 SiMbA Sand Extraction Project**
AAS File AAS-25-24632
Sio Silica Corporation – Carla Devlin

Conditional Approval – Implement a heritage resource protection plan (HRPP)
Further to your e-mail regarding the above noted application, Manitoba's Historic Resources Branch (HRB) has examined the location in conjunction with Branch records for areas of potential concern. The potential to impact heritage resources is believed to be low based on analysis of current data, therefore, the Historic Resources Branch has no concerns with the proposed project at this time. HRB requires a HRPP be included in planning, development, and operations, in the event heritage resources (including human remains and palaeontological resources) are accidentally encountered.

Legislation
Under Section 46 and 51 of the Heritage Resources Act (the Act), if at any time, heritage resources are encountered in association with these lands during testing and development, there is an obligation to report any heritage resources and a prohibition on destruction, damage or alteration of said resources. HRB may require that an acceptable heritage resource management strategy be implemented by the proponent/developer to mitigate the effects of their activity on the heritage resources.

Under Section 12(2) of the Act, the minister may require such other plans, documents, material and information, with respect to the work, activity, development or project, prior to commencement.

Heritage Resource Protection Plan
The HRPP consists of operational procedures to limit damage or destruction of heritage resources. This document assists proponents, landowners, managers, employees, and/or contractors etc. on what to do and whom to call should heritage resources accidentally be encountered when testing and development is underway on site.

Changes to current proposed activities and/or footprint
If any details of the current application undergo modification or if future work necessitates a change to the plans, the applicant is to contact HRB for re-evaluation.

If you have any questions, please contact as above for proper assignment and queueing.

Historic Resources Branch
Archaeological Assessment Services Unit

From: +STE1000 - Easternutilities <Easternutilities@gov.mb.ca>
Sent: November 26, 2025 10:32 AM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: Crang, Robert <Robert.Crang@gov.mb.ca>; Fleury, Nicole <Nicole.Fleury@gov.mb.ca>
Subject: RE: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Good day,

- Concerning the highway network, the Eastern Region of Transportation Operations Division has no concerns with this proposal providing that Access Management has no concerns with the draft Traffic Impact Study. If construction activities require the need to construct a new access, modify an existing, intensify its use or relocate an existing access connection onto Provincial Road (PTH, PR, or PA), the proponent should be informed that, under the Transportation Infrastructure Act, a permit will be required from Manitoba Transportation and Infrastructure (MTI). A permit may also be required for:
    - Any construction (above or below ground level) within a control area or circle of a Provincial Road (PTH, PR, or PA). Information regarding control areas and circles can be found at the following link: controlled_area_map.pdf (gov.mb.ca);
    - Discharge of water or other liquid materials into the ditches of a Provincial Road (PTH, PR, or PA);

Permit applications and information can be obtained at the following link: https://www.gov.mb.ca/mit/hpd/permits.html .

Regards,

Rob Fender
Planning Technologist
Easternl Region | Transportation Operations Division
Manitoba Transportation and Infrastructure
316-323 Main Street | Steinbach MB R5G 1Z2 | 204.371.6858

From: DiNella, Jeff <Jeff.DiNella@gov.mb.ca>
Sent: December 3, 2025 1:30 PM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: +STE1000 - Easternutilities <Easternutilities@gov.mb.ca>; +WPG969 - Traffic Impact Studies <trafficimpactstudies@gov.mb.ca>; +WPG969 - Access Management <accessmgmt@gov.mb.ca>
Subject: RE: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Hi Eshetu:

We have reviewed EAP 6275 - Sio Silica Corporation for a sand extraction project and have no concerns. The development proposes a new access road connecting onto PR 302. An approved permit was issued on May 8, 2024 for the public road connection onto PR 302 and expires May 8, 2026. If the work has not been completed, the permit will need to be extended before it expires. For permit information, please email accessmgmt@gov.mb.ca or call 204-583-2433. Permit information can also be found at https://forms.gov.mb.ca/highway-permits-application/index.html;

We understand EAP 6275 is a revision to the original EAP for the same project and involves changes to the amount of material being extracted within the first few years of operation. In addition, a draft traffic impact study dated March 2024 has been submitted for review. We note this traffic impact study has not been finalized or approved. Taking this into account, we are requiring an amended/updated traffic impact study:

Therefore, please include the following as conditions of approval:

- The developer provides written confirmation from our department that we have received and approved an amended/updated Traffic Impact study for this development. The Traffic Impact Study will have to be prepared by a qualified transportation engineer. It will identify the amount and type of traffic that will be generated by the development and its potential impact on the adjacent road network. The study will identify the type of on-highway improvements that will be required to safely accommodate the traffic generated by this development. The cost of the Traffic Impact Study and any required on-highway improvements would be the responsibility of the developer (the applicant will have to enter into an agreement with the department for the construction of the on-highway improvements). For more information regarding the Traffic Impact Study and On-Highway Improvement agreement please email trafficimpactstudies@gov.mb.ca or call 204-583-2433.

Please note the following statutory requirements for PR 302.

Statutory Requirements:
Under the Transportation Infrastructure Act, a permit is required from Manitoba Transportation and Infrastructure to construct, modify, relocate, remove or intensify the use of an access. A permit is also required from Manitoba Transportation and Infrastructure to construct, modify or relocate a structure or sign, or to change or intensify the use of an existing structure (including the alteration of existing buildings) within the **38.1** (125ft) controlled area from the edge of the highway right-of-way.

In addition, a permit is required from the Manitoba Transportation and Infrastructure for any planting placed within **15 m** (50 ft) from the edge of the highway right-of-way.

Please email or call if you have any questions regarding our comments

Thank You

Jeff DiNella
Senior Development Review Technologist
Manitoba Transportation and Infrastructure
Highway Design
Cell: (204) 430-7176

1420-215 Garry Street
Winnipeg, MB R3C 3P3

Manitoba

From: +WPG969 - Roadside Development <RoadsideDevelopment@gov.mb.ca>
Sent: October 29, 2025 2:09 PM
To: DiNella, Jeff <Jeff.DiNella@gov.mb.ca>
Subject: FW: Environment Act Proposal Review Request - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Comments Due December 1, 2025

Juanita Mowbray
Roadside Development Support Technician
Highway Design | Engineering and Technical Services
1420-215 Garry St, Winnipeg MB R3C 3P3

Manitoba
Transportation and Infrastructure

From: Benoit, Peter <Peter.Benoit@gov.mb.ca>
Sent: December 5, 2025 10:40 AM
To: Beshada, Eshetu <Eshetu.Beshada@gov.mb.ca>
Cc: Hilderman, Tim <Tim.Hilderman@gov.mb.ca>; Robinson, Karen <Karen.Robinson@gov.mb.ca>; Sturgess, Yvonne <Yvonne.Sturgess@gov.mb.ca>; Burland Ross, Siobhan <Siobhan.BurlandRoss@gov.mb.ca>
Subject: RE: Environment Act Proposal Update - File 6275.00 - Sio Silica Corporation - SiMbA Sand Extraction Project

Good morning Eshetu,

Thank you for giving us the opportunity to review. Our comments are as follows:

Health Seniors and Long Term Care (HSLTC) has reviewed the proposal. A detailed hydrogeological assessment report was included in the submission outlining potential impacts to aquifer/groundwater quantity and quality and monitoring plans to mitigate the potential impacts. It is beyond the expertise of HSLTC to comment further on potential impacts to groundwater.

Reviewed by: Dr. Peter Benoit, Dr. Tim Hilderman, Dr. Karen Robinson

Dr. Peter Benoit
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Manitoba Health
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