From: [redacted]
Sent: December 2, 2025 8:02 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Additional Public Comments re: Project: null

We must not take any chances with our water supply . No to Sio Silica .
Sent from my iPad

From: [redacted]
Sent: December 1, 2025 11:58 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Mining an aquifer leaves a bad taste

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I implore those entrusted by our province's citizens, to consider the consequences of this risky mining experiment.

Water is life. Full stop.
The safety of our aquifer is paramount to the future of Manitobans. It supplies industry, economy, settlements, wildlife, forests, grasslands.

Due diligence has not been done by the company The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet. CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them. CEC asked for a worst-case scenario plan and the company has not provided it. CEC asked for a cumulative impacts assessment of the 24-year life of the project, but the company said no.

The use of a child's voice on radio ads in favour of this project is a clear example of the manipulation tactics that this company will use to persuade the public to support their objectives, regardless of the damage that will done

[redacted]

From: [redacted]
Sent: December 1, 2025 10:05 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Sio Silica project

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

The Wilderness Committee and the Manitoba Eco-Network have informed me that Sio Silica Corp has filed another proposal to remove millions of tonnes of sand out of the drinking water tables in eastern Manitoba, despite already being rejected by the Manitoba government in 2024.

Independent engineering experts hired by the Manitoba Eco-Network (MbEN) and Our Line in the Sand (OLS) as part of the CEC hearings highlighted serious concerns. These concerns were validated by the CEC in their final report and the government's ultimate decision to not grant a licence.

Sio Silica's failure to address the main concerns and recommendations of the Clean Environment Commission (CEC) and produce credible data to support their novel extraction process is a major red flag and an indication that this project is not being developed with the best interests of Manitobans in mind.

When Sio Silica's extraction project was rejected for the first time, our Premier Wab Kinew said: "In order for Manitobans to be healthy now and for generations into the future, we have to protect a clean, safe and healthy environment." Eastern Manitoba risks not haveing a clean, safe and healthy environment if this project goes ahead. For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Let's apply this principle for the Sio Silica proposal.

Kind regards,

[redacted]

From: [redacted]
Sent: December 1, 2025 9:18 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Your confirmation ID 2393466

To The Director of Environmental Approvals Branch

Regarding the Sio Silica Mine Proposal

I am profoundly concerned about this proposed project as the residents of Springfield Municipality, of which I am one, and the Province of Manitoba will assume the entire environmental risk for the project while the prospective financial gain for the project is for an out-of-province mining company intent on selling the mine as soon as it is established.

First, Canadian mining companies have an abysmal environmental protection record both internationally and domestically (see attached Mining Watch Canada's *Mining Dominance and Failure to Protect Environmental and Human Rights Abroad: Brief Accompanying Testimony provided by Catherine Coumans of MiningWatch Canada on February 6, before The House of Commons' Standing Committee on International Trade (CIIT).* Canadian mining companies can generally not be trusted to fulfill what very limited environmental protections to which they agree to that they are not able to first negotiate away. This is especially true if the company seeking to start the mine is planning to immediately sell it once it is established.

Second, and closely related to the unethical operational culture and history of the broader Canadian mining industry is the unethical practice of past politicians supporting this particular mining project. Recall that former the Manitoba Premier Heather Stefanson and two of her cabinet minsters were found by the provincial ethics commissioner to have violated the Conflict of Interest Act and the "caretaker convention" for attempting to previously push through approval of the Sio Silica mine project after her government lost the October 2023 election. Stefanson was subsequently fined $18,000, a penalty that was unanimously approved by the Manitoba Legislature in October 2025. The fact that the previous attempt to push through approval of the mine was considered unethical by the provincial ethics commissioner raises profound concern for the environmental safety of such a project as, if it truly benefited the people of the province of Manitoba, why did it need to be forced through unethically? Does the current government want to be seen as unethical as the previous one?

Third, the environmental studies outline there is a risk of polluting the ground water of the region surrounding the proposed mine. That region supports the agricultural base of the municipality which relies of drinkable water to support the people and livestock farming in the area. Local farms, and businesses that support them, and their employees , cycle their profits back into the Manitoba economy. An Alberta-owned mining company will extract any profits it makes from the mine, either by running it or selling it, outside of the province. It is only of limited final benefit to the small number of workers who are hired to work at the mine and many of those jobs will end once the mine is established. What citizens of Springfield will be left with instead is the risk to their use of their land which is dependant for most on clean drinking water which the proposed mining project will put at risk.

In summary, the proposed mining project risks the safety of the ground water for the residents of Springfield for the profits of an Alberta mining company. Even contemplating the project is ridiculous but approving it would be disastrous on both an environmental and local economic level. Only the Manitobans who have been paid by the mining company to promote it have anything to gain from its approval.

Sincerely,

[redacted]

Student Affairs – Leaders in cultivating exceptional student experiences

With humility and respect, I acknowledge the University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Ojibwe-Cree, Dakota and Dene peoples, and on the homeland of the Red River Métis. We respect the Treaties that were made on these territories, acknowledge the ongoing and past harms, and dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of Reconciliation and collaboration.

[redacted]

Canada's Mining Dominance and Failure to Protect Environmental and Human Rights Abroad:

Brief Accompanying Testimony provided by Catherine Coumans of MiningWatch Canada on February 6, before The House of Commons' Standing Committee on International Trade (CIIT)

In regard to a study of environmental and human rights considerations regarding Canadian mining firms abroad

February 14, 2023
Catherine Coumans

Contents:

Canada's role in global mining

- 47% of the world's public mining companies are listed on Canadian stock exchanges
- The Toronto exchanges (TSX and TSX Venture Exchange) are home to more mining companies than any other markets in the world
- There are a total of 1,348 Canadian mining and exploration companies[1]
- More than half of Canadian mining and exploration companies operate overseas (730)
- Canadian companies were present in 97 foreign countries in 2020
- In 2022, the value of Canadian mining assets[2] abroad totalled $188 billion, and accounted for about two thirds of the total value of Canadian mining assets
- Canada's mining companies are operating in countries in Latin America, Africa and Asia-Pacific. The largest portion of the overseas value is situated in the regions of Latin America and the Caribbean which hold 45.4% of Canadian mining assets abroad with a value of $85.4 billion in 2020.[3]

Harm caused and contributed to by Canadian mining abroad

Harm caused or contributed to by Canadian mining companies, their subsidiaries and contractors overseas is widespread globally and persistent. It includes environmental degradation that will persist for hundreds of years, a wide range of human rights harms, abuses of Indigenous rights, as well as negative economic and financial impacts at local and national levels. Together, these impacts have serious and long-term repercussions on local and national development.

A consortium of organizations documented human rights and environmental impacts of Canadian mining companies operating in Latin America in a report to the Inter-American Commission on Human Rights.[4] The report focusses on 22 projects involving 20 multinational Canadian mining companies operating in nine countries: Argentina, Chile, Colombia, El Salvador, Guatemala, Honduras, Mexico, Panama, and Peru. The report documents 27 cases of violations of human rights and environmental protection.

In another report, which documents widespread violence associated with the operations of Canadian mining companies in Latin America, academic researchers found the following incidents associated with 28 Canadian mining companies:[5]

- 44 deaths, 30 of which were "targeted" occurred in 11 countries

[1] Exploration companies account for 88% of the total number of mining companies (but only 5.4% of the value).
[2] Mining assets are mineral properties, but also deferred exploration expenses and royalties.
[3] https://www.nrcan.gc.ca/maps-tools-and-publications/publications/minerals-mining-publications/canadian-mining-assets/19323
[4] The impact of Canadian Mining in Latin America and Canada's Responsibility: Executive Summary of the Report submitted to the Inter-American Commission on Human Rights. 2014. Working Group on Mining and Human Rights in Latin America: Observatorio Latinoamericano de Conflictos Ambientales, Colectivo de Abogados José Alvear Restrepo, Due Process of Law Foundation, Centro Hondureño de Promoción para el Desarrollo Comunitario, Asamblea Nacional de Afectados Ambientales, Asociación Marianista de Acción Social y Red Muqui. https://www.dplf.org/sites/default/files/report_canadian_mining_executive_summary.pdf
[5] Imai, Shin and Gardner, Leah and Weinberger, Sarah, The 'Canada Brand': Violence and Canadian Mining Companies in Latin America (December 1, 2017). Osgoode Legal Studies Research Paper No. 17/2017, Available at SSRN: https://ssrn.com/abstract=2886584 or http://dx.doi.org/10.2139/ssrn.2886584

- 403 injuries, 363 of which occurred during protests and confrontations, occurred in 13 countries
- 709 cases of "criminalization" of mine opponents including legal complaints, arrests, detentions and charges occurred in 12 countries[6]

MiningWatch Canada's website provides extensive documentation of human rights and environmental harm caused by Canadian mining companies operating in Latin America, Asia-Pacific and Africa. MiningWatch Canada staff have been engaged in many of these cases since 1999. The following provides brief details of just a small sample of cases of alleged human rights and environmental abuses that Canadian companies have been implicated in abroad:

Killings and injuries caused by mine security and police guarding mines

- Tanzania - Barrick Gold is currently[7] facing the third law suit filed since 2013 on behalf of victims and the families of deceased victims, most of whom are Indigenous Kuria, who have suffered violent excess use of force by mine security and police guarding the North Mara Gold Mine in Tanzania.[8] The first case was settled in the U.K. in 2015 on behalf of 13 plaintiffs.[9] The second case was filed in 2020[10] and is now ongoing in the U.K. on behalf of ten plaintiffs.[11] In November 2022, a third case was filed, in Canada,[12] on behalf of 21 Indigenous Kuria who allege that they or their family members were killed, injured or tortured by police guarding Barrick's North Mara Gold Mine.
- Guatemala - In 2013, seven Guatemalan men were shot by security personnel of Tahoe Resources' Escobal silver mine in Guatemala during a peaceful demonstration to protest the mine. The Guatemalans sustained serious injuries. After Tahoe Resources was acquired by Pan American Silver in 2019, the company issued an apology and provided an out of court settlement.[13]
- Guatemala - Adolfo Ich, a respected community leader and schoolteacher, was attacked with machetes and shot in the head by mine company security personnel of Skye Resources Inc. (later acquired by Hudbay Minerals) on September 27, 2009.[14]
- Guatemala - German Chub was shot and paralyzed by mine company security personnel of Skye Resources Inc. (later acquired by Hudbay Minerals) on September 27, 2009.[15]
- Papua New Guinea - In 2005, as Barrick Gold was preparing to acquire Canadian mining company Placer Dome and its share in the Porgera Joint Venture mine, Placer Dome admitted to eight killings of local villagers by mine security and police guarding the mine.[16]

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[6] In addition, the researchers found that Canadian companies listed on the Toronto Stock Exchange did not report the majority of these incidents in their mandatory reporting.

[7] https://www.theglobeandmail.com/business/article-barrick-gold-tanzania-canadian-lawsuit/

[8] https://www.barrickontrial.ca/

[9] https://www.leighday.co.uk/latest-updates/cases-and-testimonials/cases/barrick-gold/

[10] https://miningwatch.ca/news/2020/2/10/tanzanian-victims-commence-legal-action-against-barrick-gold-uk

[11] https://www.theglobeandmail.com/business/article-barrick-ordered-to-produce-thousands-of-documents-related-to-police/

[12] https://www.barrickontrial.ca/barrick-slapped-with-third-lawsuit-on-same-human-rights-abuses-at-tanzanian-mine-business-as-usual/

[13] https://www.business-humanrights.org/en/latest-news/ccijs-public-cases-and-interventions-tahoe-resources-inc-guatemala/

[14] http://www.chocversushudbay.com/

[15] *Ibid.*

[16] Burton, Bob. 2005. *Canadian Firm Admits to Killings at PNG Gold Mine*.

Also in 2005, Indigenous Ipili and Engan people living around the Porgera Joint Venture Mine compiled a document called "The Shooting Fields of Porgera Joint Venture," detailing 15 killings and 5 serious injuries of local Ipili and Engan men and boys caused by mine security.[17] Reports of shootings of men and boys have continued under Barrick.[18]

Sexual assaults by mine security and police guarding mines

- Papua New Guinea - Indigenous Ipili women have been raped and gang-raped by mine security and police guarding Barrick Gold's Porgera Joint Venture mine in Papua New Guinea since the 1990s.[19] After years of denial, Barrick implemented a non-judicial grievance mechanism that operated from 2012-2014 and provided limited remedy to 119 women in return for signing legal waivers.[20] Another eleven women received a remedy worth four times as much through an out-of-court settlement in 2015.[21] Women who were raped and gang-raped, but not covered by these two remedy options, have yet to receive remedy for the harm they endured.
- Tanzania – Women have endured rape and gang-rape by mine security and police guarding Barrick Gold's North Mara Gold Mine in Tanzania for many years. In 2014, the mine implemented a non-judicial grievance mechanism through which some of these rape victims received limited remedy in return for signing legal waivers.[22] The women have consistently expressed dissatisfaction with the remedy they received.[23]
- Guatemala - Eleven women from Lote Ocho in Guatemala were gang-raped by mine security personnel for Skye Resources Inc. (later acquired by Hudbay Minerals), police and military during the forced eviction of their families and village from their ancestral lands on January 17, 2007.[24]

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[17] Akali Tange Association. 2005. *The Shooting Fields of Porgera Join Venture*: Now a Case to Compensate and Justice to Prevail. A Compensation Specific Submission to the Porgera Joint Venture on behalf of Placer Dome Canada Inc, Durban Roodepoot Deep of South Africa and Mineral Resources Enga ltd. and the Independent State of Papua New Guinea: On the Unlawful Killings of Village Alluvial Gold Miners at the PJV Mine Site—Special Mining Lease (SML) and Lease for Mining Purpose (LMP) Areas." https://miningwatch.ca/sites/default/files/ATA_Case_Documentation.pdf

[18] *Request for Review Submitted to the Canadian National Contact Point Pursuant to the OECD Guidelines for Multinational Enterprises* Specific Instance Regarding: The Operations of Barrick Gold Corp. at the Porgera Joint Venture Mine on the Land of the Indigenous Ipili of Porgera, Enga Province, Papua New Guinea March 1, 2011; https://miningwatch.ca/news/2014/9/11/increased-violence-barrick-s-porgera-mine-indigenous-ipili-send-envoy-papua-new

[19] *Request for Review Submitted to the Canadian National Contact Point of the OECD Guidelines for Multinational Enterprises* by Porgera Landowners Association, Akali Tange Association, MiningWatch Canada. March 2, 2011; Human Rights Watch. *Gold's Costly Dividend: Human Rights Impacts of Papua New Guinea's Porgera Gold Mine*. February 1, 2011.

[20] *Barrick Gold Corp.'s Porgera Joint Venture Mine: A Legacy of Ignoring Human and Environmental Rights Abuses*. June 27, 2022. Catherine Coumans, MiningWatch Canada.; Columbia Law School Human Rights Clinic & Harvard Law School International Human Rights Clinic. 2015. *Righting Wrongs? Barrick Gold's Remedy Mechanism for Sexual Violence in Papua New Guinea: Key Concerns and Lessons Learned.*

[21] EarthRights International. 2017. *Security Guards for World's Largest Gold Mining Company Rape and Kill Locals in Papua New Guinea.* https://earthrights.org/case/barrick/

[22] https://miningwatch.ca/sites/default/files/privatized_remedy_and_human_rights-un_forum-2014-12-01.pdf

[23] Silent No More: Women Speak Out About Abuse at Barrick Gold's North Mara Mine in Tanzania. https://www.youtube.com/watch?v=lizXaJShi8Y

[24] http://www.chocversushudbay.com/

Forced Evictions

- Tanzania – Forced evictions of Indigenous Kuria are currently ongoing at Barrick Gold's North Mara Gold Mine in Tanzania. Houses with clothes still drying on the line are being bulldozed as distraught men, women and children look on. These families, who rely on subsistence agriculture for their food and livelihood, have no resettlement plan that includes land and housing. They are being made homeless.[25]
- Papua New Guinea - Ipili villagers of Wagima (also spelled Wingima and Wuangima) village on the edge of Barrick Gold's Porgera Joint Venture mine suffer repeated violent forced evictions and burning of their houses. After a forced eviction and house burning in 2009, Amnesty International conducted a field assessment and produced a report.[26] Barrick denied any responsibility for the human rights abuses taking place on the edge of its open pit. The victims of these repeated violent forced evictions have never been compensated for their losses. They were evicted again in 2014 and in 2017.[27]
- Guatemala – In January 2007, military police carried out forced evictions of Mayan families on behalf of Vancouver-based mining company Skye Resources. As distraught family members of the Mayan Q'eqchi' community in El Estor looked on, their houses were burnt down leaving them homeless.[28] Canadian film maker Steven Schnoor captured[29] the house burnings.[30]

Threats to human and environmental rights defenders

- Ecuador - Josefina Tunki (President of the Shuar Arutam People) faces repeated threats for speaking out against Solaris Resources' Warintza project and other mining concessions that were granted in Shuar Arutam territory without their Indigenous consent.[31]
- Peru - Threats are not only to local rights defenders but also to Canadians. In 2017, while working as Latin America Program Coordinator for MiningWatch Canada, Canadian Jennifer Moore collaborated with local organizations to screen a documentary film among original Quechua communities affected by the Constancia Mine, located in southern Peru and owned by Canadian company Hudbay Minerals Inc. The documentary presented critical community and expert testimony about Hudbay's operations across the Americas. In the midst of the film screenings, Peruvian authorities detained Moore, banned her from re-entering the country, and labelled her a threat to national security.[32]

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[25] For details see MiningWatch's report: *He was murdered: Violence against Kuria High after Barrick Takeover of Mine*. October 2022. And Letters to Barrick's CEO Mark Bristow of October 2022 and January 2023.

[26] Amnesty International. 2009. Undermining Rights: Forced Evictions and Police Brutality Around the Porgera Gold Mine, Papua New Guinea. https://www.amnestyusa.org/wp-content/uploads/2017/04/asa340012010eng.pdf

[27] https://miningwatch.ca/blog/2009/5/17/backgrounder-issues-related-barrick-s-porgera-joint-venture-mine-papua-new-guinea; https://us5.campaign-archive.com/?u=d015a98e627cd64ec47d63481&id=7492850b72; https://www.globenewswire.com/en/news-release/2014/06/11/1373542/0/en/Villagers-Houses-Burnt-Down-Again-Near-Barrick-Gold-Mine-in-Papua-New-Guinea.html; https://miningwatch.ca/news/2014/6/11/villagers-houses-burnt-down-again-barrick-gold-mine-papua-new-guinea ; https://miningwatch.ca/news/2017/3/28/village-houses-burnt-down-again-barrick-mine-papua-new-guinea-violence-against-local

[28] https://miningwatch.ca/blog/2007/2/2/what-development-looks-skye-resources-and-land-reoccupation-guatemala

[29] http://www.youtube.com/watch?v=Q20YxkM-CGI

[30] https://newint.org/columns/currents/2010/09/01/steven-schnoor-guatemala ; https://miningwatch.ca/es/node/6423

[31] https://miningwatch.ca/blog/2021/8/31/international-organizations-join-shuar-arutam-people-press-canadian-embassy-ecuador

[32] https://miningwatch.ca/sites/default/files/2022-12-09_jcap_thetwofacesofcanadiandiplomacy_reduced-2.pdf

- Mexico - Mariano Abarca was a community leader in Chiapas, Mexico, who spoke out against Blackfire Exploration's mine in his town of Chicomuselo. Mariano received threats and was arrested after participating in a peaceful protest against the project in August 2009. In November 2009, he was murdered. Eyewitnesses allege that several employees and contractors of Blackfire were involved.[33]

Forced labour

- Eritrea - In Eritrea, Nevsun, through its Eritrean subsidiary the Bisha Mine Share Company, and in complicity with the government and military of the State of Eritrea, allegedly committed gross human rights violations such as slavery, forced labour, torture and crimes against humanity during the construction of its copper and gold mine in Eritrea. In 2020, a case on behalf of three plaintiffs was settled out of court by Nevsun.[34]
- China – Canadian mining companies Dynasty Gold and GobiMin both have mining interests in China's Xinjiang region. Vancouver-based Dynasty Gold owns 70 per cent of the Qi2 Gold Mine, with a further 30 per cent held by a local state-owned enterprise, Xinjiang Non-Ferrous Metals Group. Montreal-based GobiMin owns a 70 per cent interest in the proposed Sawayaerdun gold mine. Both are accused of using Uyghur people as slave labour.[35] A complaint has been filed against both companies with the Canadian Ombudsperson for Responsible Enterprise (CORE).

Environmental harm

- Argentina – There have been five toxic spills at Barrick Gold's joint venture Veladero mine causing severe harm to the Jáchal river and downstream communities. Barrick has refused to acknowledge a recent spill in 2022, with the potential to produce a health emergency for impacted communities.[36] The mine continues to operate in violation of the Argentine Mining Code,[37] which states that after three environmental infractions[38] at a mine site, the company must close those operations. In November of 2022, the United Nations Special Rapporteur on Toxics and Human Rights sent a letter[39] to the Government of Canada expressing "grave concern about the impact on human rights caused by spills of cyanide, arsenic, mercury and other hazardous substances from the Veladero mine."[40]
- Brazil - A tailings dam overflowed at Equinox Gold's Aurizona mine in Brazil on March 25, 2021, leaving communities without reliable access to drinking water. Two years later, the company has done little to acknowledge, let alone address, the harm done.[41]

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[33] The impact of Canadian Mining in Latin America and Canada's Responsibility: Executive Summary of the Report submitted to the Inter-American Commission on Human Rights. 2014. https://www.dplf.org/sites/default/files/report_canadian_mining_executive_summary.pdf

[34] https://www.canadianlawyermag.com/practice-areas/litigation/nevsun-settles-with-eritrean-plaintiffs-in-relation-to-landmark-supreme-court-of-canada-case/334916

[35] https://www.theglobeandmail.com/world/article-canadian-firms-operate-in-chinas-xinjiang-region/

[36] https://financialpost.com/commodities/mining/un-barrick-gold-veladero-mine-argentina-toxic-spills

[37] http://servicios.infoleg.gob.ar/infolegInternet/anexos/40000-44999/43797/texact.htm#13

[38] http://servicios.infoleg.gob.ar/infolegInternet/anexos/40000-44999/43797/texact.htm#13

[39] https://miningwatch.ca/news/2022/11/16/un-calls-out-polluting-argentine-mine

[40] For more information on this case see: https://miningwatch.ca/timeline/veladero-mine-argentina

[41] https://miningwatch.ca/news/2021/9/27/brazilians-still-without-water-six-months-after-mine-dam-breach

- Brazil – Canada's Belo Sun Mining Corp.'s Volta Grande Gold project aims to open Brazil's largest open-pit gold mine in the heart of the Amazon rainforest despite opposition from Indigenous Arara da Volta Grande do Xingu and Trincheira Bacajá peoples.[42]
- Chile – Barrick Gold pursued the Pascua-Lama copper and gold mine project in a glacier-rich mountain area between Chile and Argentina in spite of two decades of protest from among other the Indigenous Diaguita Huasco Altinos who rely on runoff from the glaciers for their agricultural livelihood. Chile's First Environmental Court has now ruled that the Chilean portion of its Pascua-Lama mine must be closed but Barrick "continues to investigate the surrounding area for potential projects."[43]
- Colombia - Canadian mining company Eco Oro Minerals sought to mine gold in a páramo in Colombia, a high-altitude wetland with unique plant and animal species that millions of Colombians depend on as a vital source of water.[44] The Government of Colombia decided against the proposed mine. Eco Oro sued the government through an investor-state supranational arbitration claim in 2016, which was decided in Eco Oro's favour in October 2021.[45]
- Dominican Republic – Barrick Gold's Pueblo Viejo mine is the sixth largest gold mine in the world.[46] Legacy and current environmental contamination significantly impact downstream communities. There are several communities directly below the toe of a massive tailings dam, including some within half a kilometre. In 2012, the Interamerican Academy of Sciences' "Diagnosis of Water in the Americas" connected Barrick's operations with the contamination of the Hatillo dam, a source of drinking water in the region.[47] There have been multiple reports of livestock deaths after drinking water from rivers below the tailings dam.[48] The communities near the dam now have to boil their water and drink bottled water. Residents of six communities near the dam and the mine's processing facility have repeatedly asked Barrick to be resettled to no avail.
- Kyrgyzstan – Centerra Gold's controversial Kumptor gold mine is located in the mountains in Kyrgyzstan. The mine has been associated with numerous environmental impacts, including waste spills, but primary among these is the impact on two glaciers (Lysyi and Davidov) that are directly affected by the mine pit and by the dumping of mine waste rock on the glaciers.[49]
- Papua New Guinea – Barrick Gold's Porgera Joint Venture mine is located at 2,200 meters in the mountainous highlands of Papua New Guinea and disposes of its waste rock and

[42] https://www.cbc.ca/news/world/belo-sun-brazil-gold-bolsonaro-amazon-indigenous-environment-rainforest-business-1.5963002 ; https://financialpost.com/commodities/mining/canadian-gold-miner-belo-sun-accused-misleading-investors ; https://miningwatch.ca/news/2022/2/22/canadian-investors-injected-over-us-2-billion-mining-companies-history-human-rights

[43] https://news.climate.columbia.edu/2021/01/15/pascua-lama-mine-shut-down/

[44] https://www.ciel.org/project-update/eco-oro/

[45] https://aida-americas.org/en/press/international-arbitration-tribunal-puts-foreign-investment-above-colombia-s-right-to-protect-santurban There is now a call for Colombia to withdraw from International Investment Agreements that allow transnational mining companies like Canadian firms Eco Oro, Galway Gold and Red Eagle to sue Colombia in tribunals designed to favor their interests. https://sites.google.com/view/globalstatementcolombia/english?authuser=0

[46] https://www.kitco.com/news/2022-04-22/The-world-s-top-10-largest-gold-mines-in-2021-report.html

[47] https://www.agua.org.mx/wp-content/uploads/2012/03/Libro_Diagnostico_del_Agua_en_las_Americas.pdf

[48] https://www.youtube.com/watch?v=3YfXVT2dAn0

[49] https://bankwatch.org/project/kumtor-gold-mine-kyrgyzstan

tailings directly into nearby valleys and headwaters of the hundreds-of-kilometres-long Strickland River system. Operating without a tailings impoundment to contain its tailings was reason for the Norwegian Pension Fund to divest from Barrick in 2009.[50] Barrick's seeks to reopen the mine in 2023 after a dispute with the government of Papua New Guinea over its impacts saw the mine closed in 2019. Barrick sued the government in an investor-state supranational arbitration claim.[51] Barrick intends to continue dumping its tailings into the river system.

- Philippines – The small island province of Marinduque has suffered three major environmental disasters as a result of almost 30 years of mining by Canada's Placer Dome, which was acquired by Barrick Gold in 2006.[52] Both the Mogpog[53] and Boac Rivers became contaminated through mine waste containment failures. During the catastrophic failure of a waste dam in 1993, two children lost their lives in the deluge of waste. The Marcopper copper-gold mine also dumped its mine tailings into Calancan Bay for 16 years, covering two major coral reefs and 80 square kilometres of the bottom of the bay. Legal action against Barrick is ongoing in Marinduque.
- Indonesia – Residents of the small island of Sangihe have been fighting to protect the island from industrial gold mining proposed by Canada's Baru Gold Corp. In 2022, 56 women from villages in the mine lease site won a court case in which they argued that the company's Environmental Permit had been provided wrongly.[54] Although the permit was revoked, the company continued to bring heavy equipment to the site causing a local confrontation and putting local people at risk.[55] MiningWatch Canada wrote to the company[56] and copied the Canadian Embassy in Jakarta. The Embassy would not provide MiningWatch information on whether it is providing special services to Baru Gold or whether Baru Gold had signed an Integrity Declaration.[57]

Canada promotes and protects mining interests abroad

Under Canada's Global Markets Action Plan of 2013,[58] which makes "economic diplomacy" the "driving force behind the Government of Canada's trade promotion activities," Canadian civil

[50] https://miningwatch.ca/news/2009/2/2/norwegian-pension-fund-excludes-barrick-gold-ethical-grounds ; https://www.regjeringen.no/globalassets/upload/fin/etikk/recommendation_barrick.pdf
[51] https://miningwatch.ca/news/2021/4/6/barrick-forces-hand-papua-new-guinea-government-reopening-porgera-mine
[52] https://miningwatch.ca/blog/2020/3/24/still-no-justice-marinduque-s-mining-victims
[53] https://miningwatch.ca/sites/default/files/press_release_marinduque_legal_victory_june_21_2022.pdf
[54] https://miningwatch.ca/news/2022/6/10/indonesian-women-win-legal-victory-protect-small-island-home-canadian-baru-gold
[55] https://miningwatch.ca/news/2022/6/15/baru-gold-ignores-court-order-putting-lives-indonesians-risk
[56] https://miningwatch.ca/sites/default/files/letter_baru_gold_june_15_2022.pdf
[57] Personal Communication from embassy staff in Jakarta July 18, 2022: "For commercial confidentiality reasons, the TCS does not disclose which companies have or have not signed an integrity declaration for a particular market." And on August 2, 2022: "You had asked whether we can divulge whether Baru Gold is a client of the TCS or is receiving special services. I'm afraid client confidentiality does not allow us to disclose information about interactions with Canadian companies."
[58] Foreign Affairs, Trade and Development Canada, Global Markets Action Plan: The Blueprint for Creating Jobs and Opportunities for Canadians Through Trade, https://www.international.gc.ca/global-markets-marches-mondiaux/assets/pdfs/plan-eng.pdf

servants and the staff of Canada's missions abroad are mandated to promote and protect the interests of Canadian corporations operating overseas. There are numerous examples that illustrate that Canadian missions abroad prioritize this mandate over the state duty to protect human rights in the case of Canadian mining companies operating overseas.[59]

Important recent in-depth studies:

- In the case of Mariano Abarca detailed above (Mexico - human rights defender), access to information requests demonstrate that Canadian Embassy support was essential to putting the Blackfire barite mine into operation and later influencing officials to quell protests over environmental and social impacts in Chiapas, in which Abarca played a leading role. The embassy also did not act to protect Mr. Abarca when warned that his life and safety were in danger.[60]
- Access to information documents show Canadian government political support for Goldcorp's Marlin Mine in relation to proceedings initiated by Indigenous Peoples in Guatemala before an international human rights body leading to precautionary measures requesting that the Government of Guatemala suspend the Marlin Mine.[61]
- Canadian Jennifer Moore did not receive sufficient embassy support when she was arrested in Peru for screening a documentary film among original Quechua communities affected by the Constancia Mine, owned by Canadian company Hudbay Minerals Inc.[62]
- Canadian filmmaker Steven Schnoor filmed the forced evictions and house burnings at the Skye Resources mine in Guatemala discussed above (forced evictions). Canadian Ambassador to Guatemala Kenneth Cook was found in court to have slandered Schnoor by making false statements saying that the woman in the documentary was paid to act in the video.[63]

UN bodies tell Canada to protect human rights abroad

Numerous UN officials and treaty bodies have focussed specifically on harms caused by Canadian mining companies and have reminded Canada of its duty to protect human rights – including when these are harmed by Canadian mining companies operating overseas. See for example:

- 2016 - The International Committee on the Elimination of Discrimination Against Women (CERD) expressed concern about violations of the rights of women and girls by Canadian mining companies operating abroad.[64]

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[59] See for example -Backgrounder: MiningWatch Canada. A Dozen Examples of Canadian Mining Diplomacy (2013) https://miningwatch.ca/blog/2013/10/8/backgrounder-dozen-examples-canadian-mining-diplomacy; MiningWatch Canada. State Duty to Protect Human Rights: How Canada's Embassy Staff and Trade Commissioners Are Not Fulfilling Their Duty (2019). https://miningwatch.ca/sites/default/files/presentation_cnca_symposium_april_2019_final.pdf; Kamphuis, Charis and Connolly, Charlotte, The Two Faces of Canadian Diplomacy: Undermining International Institutions to Support Canadian Mining (February 4, 2022). Justice & Corporate Accountability Project, Available at SSRN: https://ssrn.com/abstract=4025474

[60] https://miningwatch.ca/sites/default/files/2psicpublicfinal.pdf

[61] https://justice-project.org/2022/03/19/the-two-faces-of-canadian-diplomacy-undermining-international-institutions-to-support-canadian-mining-2/

[62] https://justice-project.org/2022/12/10/the-two-faces-of-canadian-diplomacy-undermining-human-rights-and-environment-defenders-to-support-canadian-mining/

[63] https://www.business-humanrights.org/en/latest-news/judge-rules-that-canadian-ambassador-slandered-documentary-video-maker/

[64] https://documents-dds-ny.un.org/doc/UNDOC/GEN/N16/402/03/PDF/N1640203.pdf?OpenElement

- 2015 - The International Covenant on Civil and Political Rights noted that "The State party should (a) enhance the effectiveness of existing mechanisms to ensure that all Canadian corporations under its jurisdiction, **in particular mining corporations, respect human rights standards when operating abroad...develop a legal framework that affords legal remedies to people who have been victims of activities of such corporations operating abroad**" (highlight added).[65]
- In 2007 and 2012 the CERD highlighted concerns about the role of Canadian mining activities abroad and recommended that Canada "take appropriate legislative measures to prevent transnational corporations registered in Canada from carrying out activities that negatively impact on the enjoyment of rights of indigenous peoples outside Canada, and hold them accountable."[66]

Recommendations

1. Mandatory Human and Environmental Due Diligence - Implement mandatory human rights and environmental due diligence legislation. This legislation requires Canadian companies to respect all human rights and the environment in the overseas operations of their subsidiaries and contractors by: a) requiring them to prevent harm and regularly review and identifying actual and potential risks their operations pose to people and to the environment, b) report publicly on any risks identified, c) take steps to address any risks identified and ensure human rights and environments are not harmed. This legislation also ensures access to Canadian courts for people who allege human rights and environmental harm caused by the operations of a Canadian company. The Canadian Network on Corporate Accountability has provided draft legislation that has been incorporated and tabled in a private member's Bill C-262[67] in March of 2022.[68]
2. The Canadian Ombudsperson for Responsible Enterprise (CORE) – The CORE should be given the powers she needs to be an effective non-judicial option for people harmed by Canadian companies operating overseas who seek relief and remedy. In 2018, Canada committed to give the CORE investigatory powers to compel witness testimony and documents. Canada reneged on this commitment under forceful lobbying by, among others, the Mining Association of Canada. In June 2021, the FAAE committee issued a report on the CORE.[69] The majority of members agreed on two means by which the CORE could be granted the necessary powers without further delay. And in March of 2022, private member's bill C-263 was tabled that, if implemented, would also grant the CORE the necessary investigatory powers.

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[65] http://tbinternet.ohchr.org/_layouts/treatybodyexternal/Download.aspx?symbolno=CCPR%2FC%2FCAN%2FCO%2F6&Lang=en

[66] https://cnca-rcrce.ca/2022/06/11/united-nations-commentary-calls-on-canada-to-facilitate-access-to-remedy/

[67] https://www.parl.ca/DocumentViewer/en/44-1/bill/C-262/first-reading#:~:text=An%20Act%20respecting%20the%20corporate,to%20business%20activities%20conducted%20abroad

[68] NOTE – Unlike Bill S-211, Bill C-262 encompasses all human rights, thereby ensuring all abuses by mining companies are covered. Also, unlike Bill S-211, in Bill C-262 a company cannot say it has taken no steps to address a harm and still be in compliance with the regulations and a company cannot say it has taken steps, but not actually eliminated the harm, and still be in compliance with the regulation.

[69] https://www.ourcommons.ca/DocumentViewer/en/43-2/FAAE/report-8

From: [redacted]
Sent: December 1, 2025 5:41 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I am concerned about this project and am asking the government to take heed of the Clean Environment Commission's ask for more information from the company on this project. Our drinking water table is too important to experiment with and the Sio Silica Corp hasn't seemed to have done their due diligence.

Mining this sand will cause irreversible cross contamination of water between two different aquifers.

The CEC asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet.

CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them.

CEC asked for a worst-case scenario plan and the company has not provided it.

For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

These are all very concerning to me as a Manitoban and I expect the government to get some answers from Sio Silica before this project goes through.

[redacted]

From: Troy Warkentin <twarkentin@steinbach.ca>
Sent: December 1, 2025 4:07 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Cc: Troy Warkentin <twarkentin@steinbach.ca>; Aaron Rach <aaron.rach@steinbach.ca>
Subject: Additional Public Comments re: Project: Sio Silica - Simba Sand Extraction Project

Dear Sir/Madam
The City of Steinbach provides additional comments with respect to the above proposed project (File 6275.00).
Please advise if you have any questions or require any clarification of the City's submission.
Thank you.
Best regards,

Troy Warkentin, CPA, CMA, CMMA
City Manager

City of Steinbach
T: 204-346-6529 | **E:** twarkentin@steinbach.ca

City Hall | 225 Reimer Ave | Steinbach, MB R5G 2J1

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SiMbA Project Environment Act Proposal Technical Review Notes

File 6275.00

Re: City of Steinbach Submission

December 1, 2025

Environmental Assessment

- While the sand was being extracted with compressed air:
    - Did AECOM's environmental team participate during any of the extraction testing? The proposal does not indicate if participation occurred or what extent of participation is reasonable given the potential risks resulting from the proposal.
    - What effects were seen within the carbonate and sandstone aquifers at various distances away from the test well locations?
    - Was groundwater quality monitored during the testing at any locations? What were the effects on groundwater quality?
    - Was the proposed method for re-injecting the groundwater back into the formation also tested? What could the effects on groundwater quality or chemistry be as a result of this proposal?

Hydrogeological & Geotechnical Report

- Considering the amount of engineering work needed to construct and operate the extraction program described in the proposal, it could be reasonably expected that professional engineers or other similar professionals be an integral part of its preparation. It is concerning to read that none of the proposal's signatories are professional engineers or have similar qualifications.
- For the pump testing:
    - Did the proponent or the evidence provided in the proposal indicate a test of the re-injection of groundwater during the extraction testing? If not, why wasn't this completed, since this is a fundamental component of the proponent's proposed methodology?
    - Given the large variability in the makeup of the carbonate aquifer, why were only a few monitoring wells used? Is the number of test wells reasonable given the current scope and future expansion of the proposed extraction area?
- For the numerical modeling:
    - What data was used for calibration of the model? It appears the model was calibrated using the data that was collected during the pumping test. If that is the case, it would be unusual for the model not to closely reproduce the data it was calibrated with. It appears that the model provided is not aligned with the proposed method of extraction

and re-injection noted in the proposal. This raises questions of whether the model has been validated for the conditions and methodology being proposed. A more appropriate approach would appear to be the calibration or validation of the model against independent observations such as drawdown effects, aquifer responses, or regional hydrogeologic behaviour—to ensure it can meaningfully simulate the extraction scenario being assessed.
    - Is the model described in the proposal actually testing the method that is being proposed to be used for the operational activities?
- There is mention of completing well inventories but no details have been provided.
    - What was found during the completion of the well inventories?
    - Were private water wells in the area affected by the proposed extraction method?
    - Were there any complaints or noted effects received from private well owners/users during any testing?
    - If the effects on private wells haven't been assessed ahead of time, could this project result in issues or complaints from well owners/users?
- The proponent has documented in its proposal that the shale layer collapsed during the extraction testing. This admission would appear to indicate that the proposed method of extraction will create interconnections between the sandstone and carbonate aquifers, which is contrary to provincial regulations.
- What approach does the proponent propose to prevent or address aquifer interconnection? The proponent has not presented a plan to prevent or address the observed interconnection.
- How does the proponent propose to seal all the extraction wells in the caverns after the voids are created by the extraction process? What effect will this proposed sealing method have on the downgradient hydrogeology of the Winnipeg Formation? Has this downgradient hydrogeology been simulated? If this wasn't simulated, why not?

From: [redacted]
Sent: December 1, 2025 3:54 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Sio Silica's proposal is all washed up

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I am concerned about the environmental impacts of Sil Silica's proposed mining project. Some of my concerns are as follows.

1. Impact on the Winnipeg Sandstone and Red River Carbonate aquifers. This concern includes the long-term cumulative impacts of the intended duration of the project (i.e. 25 years, not just incremental 4-year periods), as well as the increasing demands being placed on the pristine water contained within the aquifers, such as piping water to the Morden area.

2. There are questions regarding the integrity of Sio Silica's and its partners' executives, leaving me to wonder who's going to ensure honest reporting, and that they are holding to their claims of "green" mining. Who will be monitoring their activities?

3. What will happen in the event that western silvery aster (or either species of Agalinus) are present in the area? Who will be checking? It's not enough to say that there's a "low/moderate" possibility of them being there. What will be done if they are?

4. Sio Silica states that sand piles will be kept wet to prevent/minimize wind erosion but there is no mention of water use for this purpose. How large are these sand piles proposed to be? Depending on their size and climate conditions, this could require a lot of water.

5. At the open house on November 24, 2025, an AECOM representative explained that once the sand is extracted, the shale layer between the two aquifers will collapse. How will that not result in irreversible mixing of the two aquifers?

6. There is no worst-case scenario plan.

7. Sio Silica has completed only 3 of the 9 detailed plans requested by the CEC.

I believe that if this project is allowed to continue through the impact assessment and licencing process under *The Environment Act*, the Minister/Director should take the following actions:

1. Designate the Simba Silca Sand Project as a Class 3 development.

2. Require Sio Silica to produce and publicly publish a cumulative effects assessment report.

3. Require Sio Silica to produce and publicly publish their plans for post-approval processes (monitoring, follow-up and adaptive management) and emergencies in the public registry so they can be idependently reviewed prior to the licencing decision.

4. Request the CEC to hold a public hearing to review Project Simba, with full participant funding.

Thank you for considering my comments on Sio Silica's proposed Simba extraction project.

[redacted]

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From: [redacted]
Sent: December 1, 2025 1:19 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Additional Public Comments re: Project: Sio Silica - Simba Sand Extraction Project

With regard to the Sio Silica sand revised proposal "SIMbA project (Manitoba Public Registry file number 6275) I have the following comments:

- There are two main aquifers in the project area and model domain, the Red River Carbonate (limestone) and the Winnipeg sandstone formation separated by a shale aquitard layer. Historically some wells have penetrated both formations interconnecting the two aquifers. There was not any well logs for any domestic wells for the area encompassing the first 5 years of the sand extraction. During the pump test one domestic well in the sandstone was used as an observation point. It is unclear if this well was interconnected to both formations or whether it was sealed properly with no interconnection. In either case, it is unclear how the drawdown in an interconnected well and one that is not interconnected would differ and how model would interpret/differentiate the drawdown impact in either of two aquifers.

- Appendix C of the IR Round 2 Response to CEC Appendix indicates that between June 28/2019 and July 17/2019 three excavation wells located in SE 32-10-8E (Bru 95-1, Bru 95-2 and Bru 95-3) extracted a total combined tonnage of 2079 tonnes of sand. No further details were provided then or now, as to depth of excavation or extent of cavity(s) created or if collapse of the shale had occurred over the 1.5 year period from original excavation and actual pump test occurring on November 28/20. It is unclear what impact these now underground voids would have had on the pump test results as it appears from the site description from Appendix C "Silica extraction well history" that these 3 excavations were located adjacent to the 2nd nest of observation wells approximately 400 meters from the pump well. Nor was there any discussion provided with regard to the presence of these excavations and pump test results and analysis.

- As per the same table in Appendix C sand extraction from Bru 92-2 (3000 tonnes) and Bru 92-3 (2357 tonnes) occurred on April 20/21 in NW 29-10-8E. (Note: Although some sonar scans are provided in the geotechnical assessment more complete information can be found in "Appendix C of the IR Round 2 Response to CEC Appendix" which I am referencing). One side sonar scan of the Bru 92-2 excavation was also completed on May 10/21, 29 days after excavation. Although excavation was completed to the bottom of the sandstone only the top 25 feet of the scan was visible due to disturbed sand collapse and suspended fines infilling bottom of the cavity. Table 9 outlines the dimensions for cavity size as determined per competent limestone thickness and overburden thickness. The side slope of these cavities was also calculated to stabilize at a 65 side slope and act as a boundary line for undisturbed sand vs disturbed sand with the undisturbed sand acting as a stabilizing pillar. It is unclear as to the time frame for this stabilization of the side slope to occur after excavation and also appears to potentially still occur into the allowable long term span. It is also unclear how effective the side scan sonar can be because fines in suspension and sloughing of disturbed sand over time prevent full penetration of the scan with depth and likely to continue until the side slope stabilizes. It is unclear how the proponent intends to delineate the entire

excavation cavity and demonstrate conformity to the design specifications outlined in table 9. Nor have any other better/functional options been provided.

- There are also several side scan sonar scans of Bru 92-8 completed over a four and half month period. In all cases, the scans do not go to the bottom of the cavity even though it was excavated to the bottom of the Winnipeg formation. Bru 92-2 and Bru 92-8 are vastly different in shape when viewing comparable maximum extension graphs. In simple terms Bru 92-2 is circular in dimension with a radius of approximately 40 feet centered around the excavation well. In contrast Bru 92-8 is more elliptical in shape and is skewed to the southwest from the central well location. Yet the initial yields are the same for both excavations at 3000 tonnes. It is unclear what and why there is a drastic difference between the two excavation sites or what the implications for sand retrieval are particularly when both sites are only located 100 meters apart. It is also unclear if either of these configurations resulting from sand evacuation are stable or ultimately acceptable with respect to table 9 design specifications as suspended fines and sloughing disturbed sand is still preventing sonar scans at depth.

- Between August 15/2021 and August 25/2021 Bru92-8 was excavated with 4200 tonnes of sand removed. Water levels from the sandstone were obtained from Bru 92-2 and Bru 95-7 (pump test well) while Bru 92-8 was excavated. It is unclear what the impact the earlier excavation(Bru 92-2) now an underground void would have on the water levels in the drawdown cone from pumping Bru 92-8 at the Bru 92-2 excavation site versus in undisturbed sandstone where the porosity was 25% from a similar 100 meter distance.

- Maximum diameter of the excavation is at the top adjacent to the Winnipeg shale formation and according to Table 9 can vary from 25 meters to 40 meters. As outlined on page 5 CEC February 28,23 transcript, Stantec characterized several properties of the Winnipeg shale – “Rock mass rating only 50% of the limestone; point load testing of shale only 20 to 30% of the strength of competent limestone; and Winnipeg shale is friable susceptible to disturbance during the sand extraction.” The time sequence of sonar scans for Bru 92-8 demonstrates that over time the shale and the limestone collapsed into the sandstone cavity possibly due to the above properties. It is not clear what the minimum/ maximum non supported span length the shale and limestone need to meet in order to prevent/cause collapse. It is also not clear how quickly collapse of the shale and potentially limestone may occur particularly when extraction occurs in larger diameter cavities or ones with circular radius rather than elliptical. Nor is it clear if there would be a negative impact on air lift pumping and sand extraction should the collapse begin during pumping and excavation operation. It is also not clear as the duration of pumping increases and/or the rate of pumping increases with the larger diameter cavity if the potential for collapse also increases. This is important to recognize as the Bru 92-8 pumping rates for the sand slurry generally ranged between 80 and 160 gallons per minute versus the maximum 550 US gallons per minute proposed in Schedule H.

- Figure 1 (Round 2 Response to CEC Appendix) showing pumping levels and groundwater levels during extraction of excavation cavity for BRU 92-8, includes rates of extraction for the sand and water slurry, sand, water, and reinjection of pumped water. It is unclear how these measurements were undertaken, how any instrumentation was calibrated, and how accurate these rates were. In addition, in the proposal there will be a centralized dewatering/sand removal station but it is unclear how sand and water inputs from two adjacent wells/clusters will be measured entering as a sand slurry and leaving the removal structure as water and sand. Nor is it apparent how appropriate water injection water volumes will be determined to individual wells in separate or same clusters.

- Water is used as the transport medium for the sand. It is unclear why water outside the designed cavity area but within the drawdown cone enters the cavity sand free (i.e. undisturbed) but yet sand only is sourced from within the same designated cavity and transported with the water to the surface. Nor is it clear how this is modeled.

- It is also unclear how the ratio of sand to water can vary in composition from 90% sand 10% water to 50% sand 50% water and what drives or influences this relationship particularly as the water to sand ratio within the cavity increases over time as the sand extraction progresses .

- The protection of potable water aquifers is one of the key priorities in maintaining and ensuring continued use and access for present and future generations. To date it is unclear how the proponent has proposed any appropriate/functioning methods of water retrieval or identified safe zones within any areas acting as pillars. The aquifer medium will no longer be the same in the mined areas as the voids are sensitive to persistent suspended fines and may now contain a mixture of disturbed sandstone of various size, fines, shale and limestone far removed from the original orderly structure of sandstone prior to excavation. It is unclear if access to pumping rates up to 550 gallons /minute of sand free potable water as defined by the proponent will still be available to present and future landowners/users in the mined areas as it was prior to any sand mining occurring. It is unclear if an access issue has even been considered in the proposal or if current methods of pumping have been tested/developed to mitigate any potential problems.

From: [redacted]
Sent: December 1, 2025 11:35 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Tell Sio Silica NO as many times as it takes

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

Dear Environmental Approvals Branch Director,

Water is the most valuable resource we have. We cannot risk life sustaining drinking water for resource development.

It is clear that Sio Silica has not done the environmental due diligence that the Clean Environment Commission has asked for. Given that, there is no way we can trust them with a resource as precious as drinking water.

Tell Sio Silicia "no" as many times as it takes before they move on from this project. The economic gains would never be worth the cost to the humans, animals, and plant life that rely on this aquifer.

[redacted]

From: [redacted]
Sent: December 1, 2025 11:32 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Stop SIO Silica - why are we even considering this project?

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I ask you to please, please, reject this project.

Sio Silica is still planning on using the same novel and untested extraction method that was shown in the CEC hearings to risk destroying important barriers between separate aquifers, potentially creating sinkholes at the surface, and increasing the risk of contaminants entering the ground water.
Although Sio Silicas updated application indicates they will be proceeding with a step-wise phased approach that involves drilling less wells and extracting less sand in the first-five years, ultimately the risks to ground water still remain, and longer term the company still plans to develop the original project in its entirety over the anticipated 24 year life span of the project. CEC asked for a cumulative impacts assessment of the 24-year life of the project, but the company said no.
If the company says no to the CEC then we will say no to the company.

This is our drinking water at risk here, our source of life. Mining this sand will cause irreversible cross contamination of water between two different aquifers. How is that a risk worth taking?

The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet.
CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them.
CEC asked for a worst-case scenario plan and the company has not provided it.
This is just a short list of things that the company has NOT done. They are hiding information and hoping, just hoping, that we let it slide. They have already been rejected once before, and they will not give up until their project is approved. but we manitobans will not give up until this project is rejected again and again . We can not lose our water.

For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

[redacted]

December 1, 2025

Attention:

Agnes Wittman
Director, Environmental Approvals Branch
Manitoba Environment and Climate Change

Honourable Mike Moyes
Minister, Manitoba Environment and Climate Change

Re: Environmental Registry File 6275 Sio Silica Corporation

As per Section 11(11)(b) of the Manitoba Environment Act, I ask that you refuse to issue an environmental license to Sio Silica Corporation to construct and operate the Simba Sand Extraction Project in southeastern Manitoba.

My reasons are as follows:

1. The Government of Manitoba had determined that Sio Silica Corporation's previous proposal, even if to be done in a step-wise basis, cannot protect drinking water now and for future generations.[1] This current proposal utilizes the same technologies and processes to extract silica sand from the Winnipeg Formation aquifer.

2. It was further determined by the Government of Manitoba that the aquifers under impact, provide drinking water to 100,000 people and that the risks posed by the proposal outweigh any potential benefits.[2]

3. The proponent, in this current application, refuses to conduct a cumulative effects assessment. In the previous application and Hearing, the Manitoba Clean Environment Commission (CEC), called for a cumulative effects assessment.[3] None was provided.

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[1] License Decision Letter to Sio Silica from Minister of Environment and Climate Change, posted Feb 16, 2024, Public Registry File 6119 https://www.gov.mb.ca/sd/eal/registries/6119/licence-decision.pdf
[2] Manitoba Government Announces Vivian Sand Proposal Will Not Move Forward, News Release: Manitoba, February 16, 2024. https://news.gov.mb.ca/news/index.html?item=62000&posted=2024-02-16
[3] Manitoba Clean Environment Commission, Hearing Directive for the Vivian Silica Sand Extraction Project, February 2022. https://www.cecmanitoba.ca/hearings/silica-sand-extraction-project/doc/BackgroundInformation/HearingDirectiveFebruary18Final.pdf

4. Outstanding issues not resolved,
    i) An interpretation and legal opinion of Section 2 e) of the Wells Standards Regulation (MR 215/2015) has not been provided.

    ii) Full impacts to groundwater quality and potential acid generation (PAG) have not been identified. This current proposal has not addressed questions posed by the Manitoba CEC.[4]

    Will creating hundreds of cavities in the sandstone aquifer, which propagate upwards into the shale and fractured limestone until competent limestone is reached, change the properties of the aquifer? p. 55

    What will be the effects of shale collapsing into potentially hundreds of extraction cavities? p. 55

    What will be the effects of dissolved oxygen reinjected into the aquifer? p. 55

    In the event that the limestone layer above one or more cavities fails, will this enhance pathways for contamination of the aquifer as a result of ponding due to surface subsidence? p. 55

In closing, I implore that a precautionary approach be taken on this proposal and that an environmental license is not granted. Given the extreme importance of this aquifer the health and safety of Manitobans must ensure communities have safe, clean drinking water.

Sincerely, [redacted]

[redacted]

[4] Clean Environment Commission Report on the Vivian Sand Extraction Project, June 22, 2023. Manitoba Clean Environment Commission. https://www.gov.mb.ca/sd/eal/registries/6119/2023cecreport.pdf

From: [redacted]
Sent: December 1, 2025 10:27 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

No should mean NO! Sio Silica Corporation was turned down before and for many of the same reasons this project must be rejected again. Clean potable water for drinking and irrigation is vital to the people who live and farm in the area. It is too valuable to experiment with for the short term gain of Sio Silica Corporation. The company has public stated they plan to flip this project, looking for the profits, ignoring the risks. If this mine goes through it will cause irreversible cross contamination of the waters between the two different aquifers and long tem loses for Manitoba.

The Clean Environment Commission has asked for more information.

There are numerous requests for detailed plans that have not been provided.

There are no detailed plans regarding the physical structure of the underground sand area
There is no detailed plans regarding erosion.
There is no detailed plans regarding water.

There is no detailed plans regarding revegetation.
There's been no worse case scenerio provided.

There is no cumulative impacts assessment of the 24-year life span of the project.

There are promises for more than 18,000 jobs....more than the whole workforce at the UofM. That certainly appears disingenuous! 18,000 jobs doing what?

The precautionary principle has been recognized around the world as the standard for environmental care. Sio Silica has not proved that this project will not cause serious harm to the environment. Therefore the project should not go forward.

As a long time resident of Manitoba I ask that you say no to Sio Silica Sand.

[redacted]

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From: [redacted]
Sent: November 30, 2025 11:27 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Say no to Sio Silica

To Whom it May Concern,

I am writing to express my deepest opposition to the latest attempt by Sio Silica Corporation to try and push through (again) their plans to mine sand in southern Manitoba. I do not understand how a company with as sketchy a past as Sio Silica is allowed to once more put forward a proposal to mine a public resource which has as much risk as this project does. We know the dangers of this type of operation, we know of Sio Silica's attempts to buy off Brokenhead First Nation and yet here they are again trying to push through a project over the expressed will of Manitobans. This is beyond outrageous!

Sio Silica is not putting forward this project to benefit Manitoba. They are in it to make millions from a public resource and once they have made their money and are gone, Manitobans will be left to manage and pay for the environmental liabilities of their operations in perpetuity. We can not allow our most precious resource, clean water, to be endangered by a group of private individuals motivated solely by the profit motive. Despite Sio Silica's propaganda that this project will generate thousands of jobs (without providing supporting evidence) Manitoba's decision makers must uphold the public interest and reject, yet again, Sio Silica's crass attempt to profit from our resources.

Sincerely,

[redacted]

[redacted]
Winnipeg, Mb.

Simba Project EAP Aug 18 2025 Comments

[redacted]

November 30, 2025

1. Part I Report Limitations for Accuracy

Limitations on accuracy of report are severe such that the conclusions cannot be relied upon. For example the Statement of Qualifications and Limitations reports,

"*The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):*
• represents AECOM's professional judgment in light of the Limitations and industry standards for the preparation of similar reports;
• may be based on information provided to AECOM which has not been independently verified;
• in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time."

Thus the report findings are based on professional judgment only with limited or insufficient data with no independent verification.

The authors are hired to represent the interests of the proponent and are not independent. Thus their professional judgment that most of the report is based on is necessarily biased.

2. Executive Summary

Sio Silica states;

"*The proposed Project is being developed for the purpose of supplying high purity quartz sand for use in a variety of markets such as the renewable energy industry (e.g. solar panel production), quartz powders (fillers, medical, dental), silicon metals, high purity quartz process equipment, crucibles, telecommunications (e.g. fibre optics), smart glass, silicon carbides (e.g. electronics, cellphones, computer chips), silicon enhanced alloys (e.g. aluminum components for aerospace and automobile), low iron glass (architectural envelopes) and ceramics. No sand will be utilized in fracking2 of any kind.*"

The main stated use for the silica sand was stated in a MOU with the Manitoba government in 2023 and in a Sio Silica presentation to investors and the American Security Exchange Commission of 2023 was for the production of silicon metal for solar panels and other high purity silicon applications. (ref: https://news.gov.mb.ca/news/?archive=&item=60084 https://www.sec.gov/Archives/edgar/data/1848756/000121390023085565/ea186711ex99-2_pyrophyte.htm, https://www.siosilica.com/news/critical-materials-added-us-department)

A review paper in Australian Journal of Earth Sciences, by A. Jennings et al. July, 2024 states;

"*Silica sand is currently unsuitable for the production of silicon, as the particle size is too small for the silicon smelting process*."

An article I wrote in Water Today, Aug, 8, 2024 gives another literature source and evidence that confirms silica sand cannot be used in the developed carbothermic process for the production of silicon metal. https://watertoday.ca/viewarticle.asp?article=419

Very pure quartz rock crushed to the optimal particle size for the carbothermic process is used for the production of silicon metal. Sio Silica conflates the crushed quartz sand used to make silicon metal with the silica sand from their deposit. Sio Silica sand does not come from quartz. This deception is one of many in the new Sio Silica EAP. There is no basis for the main stated purpose of this project that requires the production of silicon metal.

Several unfounded claims are made in the Executive Summary such as:

That Sio Silica's phased approach, with reduced sand volumes extracted with concurrent monitoring, would address CEC recommendations and aspects of environmental concerns previously raised concerns is not founded. Smaller extraction volumes introduced gradually by the same methods as determined faulty would have no effect on addressing the concerns. Information on monitoring methods and personnel required are not provided thus the effectiveness cannot be established. Monitoring in itself does not address or change faulty methods. Methods must be demonstrated, monitored and evaluated by independent experts prior to licensing to determine if the project is viable and merits a license. A phased approach after receipt of a license is like trying to control livestock after the barn door has been opened. Thus this phased approach is a fatal flaw designed to circumvent adequate evaluation. The phased will not prevent environmental harm during this approach. The license must not be granted until all previous concerns have been adequately addressed and assessed by independent experts. This is essential. Thus the license must be denied based on these grounds alone.

For example the CEC recommended;

"*The proponent demonstrate the full-scale performance of water treatment processes for the re-injection of the water that has been separated from the extracted sand*."

The CEC recommended that such tests be done at full scale, not at a reduced, phased-in scale. The re-injection process requires that fine sand be filtered by a proposed untested chitosan process prior to UV irradiation. Fine suspended sand would be difficult and time consuming to filter. It is very doubtful that the large quantities of fine sand suspended in the extraction stream could be filtered fast enough from up to multiple extraction wells operating simultaneously to keep up with the rate of slurry extraction. Storage of the unfiltered slurry during extraction operation is simply not viable or planned. The rate of water return to the aquifer by proposed gravity feed required to keep up with the large rate of slurry extraction has not been demonstrated and is likely not viable. Even gravity feed would introduce pressure to the aquifer. To return water to the aquifer a well injection permit is required. Injection pressure must be measured to ensure that the limestone layer is not compromised resulting in subsidence. Storage of water to be returned to the aquifer at a later time is not planned or feasible. A small scale test that would not

scale up to full production rates is not acceptable. This is a show stopper that must be demonstrated at full production scale to be viable before any license is granted. This is an example of one of many unworkable processes with no data that Sio Silica has not adequately described and demonstrated.

3. Air Quality

Sio Silica sates; *"Project activities are expected to have a minor to negligible effect on air quality due to dust generated by movement of drill rigs and other mobile equipment, and due to exhaust emissions including nitrogen dioxide (NO2), carbon monoxide (CO) and sulfur dioxide (SO2)."*

The evidence from slide three in my oral presentation to the CEC Hearing that, based on air quality measurements of the processing facility and a comparison of the GHG projected to be emitted at the processing facility and during sand extraction, the air quality at the extraction site would be above allowed limits for NO2. The concentration and injection of contaminated air and airborne microbes into the sandstone aquifer from the compressed air used in airlift has been ignored. Significant airborne contaminants including very toxic benzene and harmful microbes could be introduced into the aquifer by the air compressors without adequate pretreatment of the intake air as illustrated in slides 4 and 5 of my CEC oral presentation. Sio Silica has no plans for intake air treatment or measurement of intake and compressed air quality. Avoidance of measurement is a hallmark of the Sio Silica project. Injection of contaminants into the aquifer from airlift is a major project risk that has been summarily dismissed by Sio Silica. Even more concerning is the Manitoba approvals process has ignored evidence of this risk at all levels including the TAC review, dismissal of public comments by the proponent, and at the CEC Hearing.

Sio Silica states;

"*At no time will dry sand be left exposed at the Project site. Sand will be wet and will either be contained within the extraction well lines or the slurry lines, or material that is too large ('overs'), such as concretions (calcified sand), will be stored in appropriate containment prior to removal from site or for use in annual progressive closure and decommissioning (i.e. sealing) of extraction wells. Therefore, the risk of silica sand dust dispersal is eliminated.*"

Appendix H Section 7.5, Stabilization of Stockpiles, states;

"*In the event of delays during start-up (e.g., slurry line operation) or suspended operations, any sand piled on a drilling site will not be immediately removed. It is assumed that in this scenario, sand could be piled for up to six months and would need to be secured. Measures would include one or more of the following: Stockpiles would be wet sand that will be covered as soon as possible, and the covering secured.*"

The source of water for wetting sand is not given. Process water cannot be used as it would be subject to contamination from heavy metals released by oxidation or acid generation on the surface as documented below. Evidence presented at the CEC hearing demonstrated that Sio

Silica sand piles were left dry and uncovered exposing both workers and nearby public to silica dust during advanced exploration operations.

Whenever or not silica sand stockpiles are present, measurement of airborne particulate is essential for worker and public protection. A consistent deficit throughout the project proposal is lack of planned measurement. Sio Silica has not measured airborne particulate when stockpiles were present in past operations and has no intention of doing so in the future. The health consequences for silica dust exposure including silicosis and lung cancer would be manifest years after the project terminates. Without measurement Sio Silica cannot be held liable for detriment. A deliberate pervasive strategy of Sio Silica is to avoid measurement in all areas of potential project detriment. The Manitoba approvals process has failed to require the measurement of PM 2.5 and PM 10 airborne particulate and Sio Silica has no plans for measurement.

4. Noise and Light

The revised EAP documents many un-demonstrated and unproved noise and light abatement measures. The EAP describes an absurd noise complaint procedure but has no plans to measure. It's absolutely essential for the CEC required full scale extraction test that noise levels be comprehensively measured by independent experts and the data publicly reported online. Sio Silica has successfully avoided measuring and reporting extraction noise and excess light throughout their many year development phase Sio Silica is continuing to avoid measurement. This once again demonstrates their intentionally deceptive process that deliberately avoids essential data collection and measurement. At the CEC Hearings, the OLS participant group provided evidence of citizen recordings on high noise levels from Sio extraction that was never followed up upon. This demonstrates systematic flaws in the CEC review process. No independent noise and light experts were engaged by the CEC and Sio Silica was not required to have their extraction process independently measured. No participant funding was provided for independent noise and light experts. Noise and light contamination was never properly investigated by the CEC. Failure to measure will persist with this revision process and demonstrates the continued inadequate provincial project review process.

5. Surface Water

Sio Silica claims the effect on surface water would be negligible stating;

"*Project operations do not involve the use of, or discharge of, any surface water of any kind*."

Yet Sio Silica states that sand stockpiles would be continually wetted. Would not water be discharged from some source to wet stockpiles, drain and affect surface water? As stated above, the discharge of process water to wet sand piles would introduce contamination to surface water. Clean water pumped from wells for stockpile wetting would be contaminated from inter-bedded shale, concretions and other waste material in the sand piles. Rain would also leach contamination from sand piles. Covers would trap moisture that could lead to acid drainage and leaching. Sio Silica has no plans to trap and measure contamination in sand pile run off or in thje piles themselves.

Water in slurry lines used to transport sand to the processing facility is continually recycled such that contamination such as selenium and other heavy metals and the extremely toxic acrylamide monomer would accumulate. The soluble acrylamide monomer from the manufacturing residual of polyacrylamide used in the processing plant clarifier tank would be introduced to the slurry lines. Any spillage of slurry line water from regular feeder line emptying and from leaks would contaminate surface water.

Sio Silica has not given any information if the sand slurry from airlifting would be discharged into surface tanks as occurred in advanced exploration operations or be retained in a closed system. Tanks and surface systems for contaminated process water must be emptied at year end. Sio Silica does not give any information on the fate of this year end process water. Would it not be discharged to the surface?

During advanced exploration operations using airlift to withdraw sand, the water recovered with the sand was discharged to the surface under temporary authorization letters from Manitoba Drainage and Water Rights Licensing Branch**.** The amount of allowed withdrawal water was very large. For instance, between June 18, and Oct.30, 2020 the allowed withdrawal was 25,000 cubic meters from SE32-10-8E which is just south of Vivian. The full extent of allowed withdrawals is documented in my written CEC Hearing submission.

During the airlift operations the sand, and collapsed carbonate and shale would be exposed to oxygen that shake flask tests determined would cause leaching of heavy metals such as selenium, uranium and arsenic. Thus Sio Silica has already set a precedence of releasing large amounts of contaminated surface water. Sio Silica has never measured these copious discharges for water quality and contamination. This is consistent with the Sio Silica practice of avoiding meaningful measurement.

6. Section 2.2 Sand Extraction Process

No engineering drawings and diagrams of surface layouts of the extraction process are given including dimensions of all the facilities. In the advanced exploration operations Sio Silica collected the sand-water mixture extracted by airlift in large open tanks as shown in figure 2. The sand was removed by a track hoe and stockpiled. There is no information if this procedure will be used in production operations or if the extracted sand slurry will remain in a closed system of pipes and enclosed tanks. Much surface complex equipment and installation is required for screening of sand to remove “overs”, removal of excess water, transfer to slurry lines, transfer of excess water to the chitosan filtration process and the UV radiation, handling of removed fine grain material from the chitosan filtration and return of water the aquifer. The water acidity (pH) would have to be optimized for effective chitosan filtration. This may require addition of chemicals that could affect water quality. There is no information on such required chemical treatment. This lack of information is a major project deficit that must be provided in detail before a license is granted.

7. Section 2.2.4 Sand Slurry Conveyance to Processing Facility

Sio Silica states;

"*There has been some concern from some members of the public that there could be residual polyacrylamides in the water used for slurry transport. It is important to note that polyacrylamides have been used for industrial water clarification, potable water purification, and solids thickening for decades. It is one of the most studied family of chemicals because of its place in people's lives. Residual acrylamide monomer is not present in finished polyacrylamide product at levels to be considered toxic and have not been shown to accumulate to toxic levels in the Project slurry line system*"

Sio Silica has not conducted any full scale extraction tests that include slurry lines where process water is continually recycled. Thus no measurement of the water quality in project slurry lines has been done. Sio Silica uses deliberately deceptive wording stating,

"*Residual acrylamide monomer is not present in finished polyacrylamide product at levels to be considered toxic"*

This may be true, but the acrylamide monomer is present as a manufacturing residual in the polyacrylamide used in the processing facility clarifier tank. The acrylamide monomer is very soluble and would accumulate in the recycled water of the slurry lines to a toxic level as demonstrated in a modeling study I documented in my written submission to the CEC Hearing. Both the CEC and Sio Silica ignored this study. Not only acrylamide but also selenium and heavy metals mobilized from shale, carbonate and concretion fragments in the slurry line water by the oxidizing conditions would accumulate in slurry line water. Sio Silica has never refuted the results of my analysis or conducted their own analysis or measurement of slurry line water.

Sio Silica further uses further deceptive wording stating;

(Residual acrylamide monomer), "have *not been shown to accumulate to toxic levels in the Project slurry line system.*"

The monomer has not been shown to accumulate simply because no measurements under production conditions have been done. How can we trust a proponent that issues deliberately deceptive information of this nature?

Yes members of the public should be concerned that the acrylamide monomer would accumulate to toxic levels in slurry line water. The acrylamide monomer is a carcinogen and causes birth defects. It is toxic at parts per billion in water. Slurry lines cannot be guaranteed never to spill. Sio Silica, by way of this unwarranted dismissal of the risk of acrylamide, will not take necessary measures to mitigate risk such as double walled slurry lines with leak detection systems. Sio Silica also demonstrates disregard for legitimate public input concern by dismissing this issue in a deliberately deceptive manner.

8. Inadequate Geochemical Sampling Hydrogeological Assessment Report Appendix B

The number of samples taken for acid base accounting and geochemical analysis was far too small based on Canadian MEND (Mine Environmental Neutral Drainage) guidelines. Sio Silica

based the number of samples on the small amount of drill cuttings that would be obtained from the extraction wells. The number of samples required should be based on the number of tonnes of geological material to be extracted not on volume of drill cuttings. Sio Silica, by year three, plans to extract 500,000 tonnes of sand per year. At least 26 samples would be required according to MEND guidelines.

It is essential that the sampling include all the material in the extraction zone including concretions, inter-bedded shale, shale and carbonate collapsed from above the extraction cavity and other geological material separate from sand. According to a scientific peer reviewed paper by Schieber and Riciputi (2005) concretions in the sandstone of the Winnipeg aquifer contain significant quantities of acid generation pyrite and marcasite. (ref:Journal of Sedimentary Research, 2005, v. 75, 907–920, https://www.semanticscholar.org/paper/Pyrite-and-Marcasite-Coated-Grains-in-the-Winnipeg-SchieberRiciputi/c7260c14eefc435745019d169ed8f741ed4da6df). All of this material including the sand must be geochemically tested according to MEND guidelines. (*Manual for Drainage Chemistry from Sulphidic Geological Materials MEND Report 1.20.1, Dec. 2009 https://mend-nedem.org/wp-content/uploads/1.20.1_PredictionManual.pdf).*

Sio Silica tested only three samples and two were outside the planned year project area. The one sample of sand in the project area was taken from a stockpile that had experienced weathering for more than one year. No independent geochemical expertise was engaged by Manitoba Approvals fro the CEC Hearing. No funding was provided to participants for hiring of such geochemical experts. Despite inadequate geochemical expertise, according to the CEC experts that were hired to review the project, the sand sampling was deemed unacceptable. Despite information at the CEC Hearing that the geochemical sampling was inadequate and unacceptable, Sio Silica has not done any further required comprehensive sampling and analysis of representative samples of all geological material throughout the project area. Refusal to do adequate measurement is once again manifest.

9. Section 4.3.3 Impact of Shale Collapse on Water Quality in Winnipeg Sandstone Aquifer

In section 4.3.3 Sio Silica acknowledges the entire shale layer would collapse into the extraction cavity resulting in mixing of aquifer waters that violates Manitoba groundwater regulations. Sio attempts to justify this violation with a modeling study that shows the water quality will be largely unaffected resulting in precipitation of iron and manganese and harmless dissolution of selenium and heavy metals. The precipitation of iron and manganese would result in discoloured water. Such discolouration already occurred in the Vivian area during Sio Silica operations in 2018 to 2020. February 5, of 2021, a formal complaint on the well water quality following Sio Silica operations was filed with the Manitoba Water Branch. The complaint was dismissed as reported in my CEC Hearing submission. The residents do not accept changes in their water quality such as discolouration despite Sio Silica's and the Water Branch dismissal of this issue. Sio Silica must not be allowed to violate Manitoba groundwater regulations and adversely affect water quality such as discolouration of the water.

A much more serious effect of dissolution of selenium, arsenic, uranium and other heavy metals would occur due to the introduction of oxidizing conditions into the extraction cavities.

10. Aquifer contamination from oxidation of selenium, arsenic and uranium

Sio Silica has finally acknowledged in a new modeling study, the return of water extracted with the silica sand resulting in oxidizing conditions, could lead to selenium concentrations above guidelines in aquifer extraction cavities. Sio Silica previously dismissed concerns about selenium, arsenic and uranium contamination even though according to section 4.1.5.4, shake flask tests of samples from the shale and carbonate under oxidizing conditions, showed exceedances of guidelines for selenium. One sample from shale showed exceedances of guidelines for uranium and arsenic.

The new modeling study for the current EAP was conducted using the one dimensional "X1t" 1D reactive transport model. A domain with the length of 1.4 km comprising of twenty-five 50 m cells (EAP Figure 4-9) was considered for the model. The height and width of the cells were considered as 25 and 50 m, respectively. The height of the cells includes the combined height of the shale and carbonate collapsed into the cavity. The width and length of the cells reflect an estimated diameter of the extraction cone of 50 m.

11. Selenium in an extraction cavity

The selenium concentration from a new X1t modeling was calculated for one extraction cavity. Figure 4-11 of the EAP shows selenium can be above allowed limits in the extraction cavity following return of oxygen bearing waters to the aquifer. In the new modeling study the initial concentration of 0.017 mg/L of selenium in the extraction cavity gradually diminishes to below the allowed guideline of 0.010 mg/L within 10 years due to movement of selenium into the surrounding sandstone aquifer. The process of advection and dispersion from the slow regional groundwater flow gradually spreads the selenium diminishing the concentration. Thus even though the modeling gives evidence that selenium concentrations can rise initially above guidelines in the extraction cavity the model predicts concentrations would remain below guidelines in the surrounding aquifer where domestic wells may occur.

The X1t model only considers an initial dissolution of selenium from collapsed shale and carbonate and does not consider on going leaching. Only a very small fraction of the selenium available in the shale and carbonate that collapse into the extraction cavity is modeled to dissolve initially. No evidence is given that the leaching of selenium will stop following the initial dissolution.

The Sio Silica Hydrogeological Analysis Report states;

"Simulated mixing of the Winnipeg Sandstone, Red River Carbonate, and Winnipeg Shale porewater indicated a mixing ratio in the collapsed cavity of 97%, 2% and 1%, respectively, which was developed as described in Section 4.3.3.1. The results of the conservative reactive transport model suggest that only selenium may marginally exceed the MWQSOG in the cavity for a short period of time after the collapse"

Thus it would appear that in the X1t model only 2% pore water concentration of the selenium in the shale from the shake flask test was mixed with 97% fresh water in the sandstone extraction cavity. This would result in a dilution factor of about 50 of the selenium leached. However when the approximately 3 meter thick layer of shale collapse into the cavity the resulting shale to water ratio is about 1 to 1 by weight (see below). Higher concentrations of selenium would be expected in the cavity than in the shake flask test which had 3 to 1 water to shale by weight. Thus the pore water concentration from the shake flask test must not be diluted but applied to the entire cavity.

Table 4-3 of the EAP gives the maximum measured selenium concentration in the Winnipeg shale for Sio Silica well Bru 121-1 as 13.1 ppm. The average concentration of selenium from three samples in the Red River Carbonate was 0.533 ppm.

The entire three meter thick shale layer and a two meter thick layer of carbonate has been measured by side scan sonar to collapse into the extraction cavity. For the specified top cavity diameter of 50 meters, the volume of shale and carbonate collapsed would be 5890 and 3926 cubic meters respectively. For shale density and limestone density of 2500 kg/m^3 the mass of shale and limestone collapsed would be $1.47x10^7$ kg and $9.8x10^6$ kg respectively. At 13.1 ppm by weight the mass of selenium in the collapsed shale would be 193 kg. At 0.533 ppm the mass of selenium in the collapsed carbonate would be 5.2 kg for a total of 198 kg.

The maximum initial concentration of selenium in the extraction cavity was 0.017 mg/L. The model used a cell height for the extraction cavity of 25 meters and a length of 50 meters corresponding to the radius of the cavity. For a cylindrical cavity with a height of 25 meters and a radius of 25 meters, the extraction volume would be $4.9x10^4$ cubic meters. At an example porosity of 30% in the cavity at the time of assumed initial selenium dissolution, the volume of water would be $1.47x10^4$ cubic meters with a mass of $1.47x10^7$ kg (the same as the shale). Thus the initial mass of selenium dissolved was 0.25 kg whereas the total mass of selenium in the shale and carbonate collapsed into the cavity was 198 kg. Thus only 0.126% of the available selenium was assumed to have dissolved into the cavity initially. No ongoing dissolution of selenium from the shale was modeled. There is no evidence given that the remaining selenium in the collapsed shale would not continue to dissolve with time. An ongoing dissolution rate based on the amount of the total selenium dissolved in the shake flask test and the time of the test would have been a more defensible and reasonable model input.

The well information reports for Sio Silica wells as reported in my submission to the CEC show substantial deposits of shale within the Winnipeg formation that would be exposed to oxygen from the extraction cavities. The X1t model did not take into account the dissolution of selenium, arsenic and uranium from inter-bedded shale in the Winnipeg formation. This is verified by the Bru 121 sample in the sandstone that showed 0.2 ppm selenium and a concentration of 0.0023 mg/L in the shake flask tests as reported in Tables 4-5 and 4-3 of the original EAP. The failure to model the continuing dissolution of available selenium in the collapsed shale and inter-bedded shale is an unsupportable modeling assumption that grossly underestimates the selenium concentration in the extraction cavity and the surrounding aquifer.

Table 4-5 of the original EAP shows the selenium concentration in the shake flask tests for BRU 121 in the shale as 1.64 mg/L. The liquid to solid ratio in the shake flask test was 3 to 1 by

weight. At 13.1 ppm selenium in the BRU 121 shale sample for a shale density of 2500 g/L the weight of shale and water per liter would be 0.294 kg and 0.882 kg respectively. The weight of selenium per liter in the shake flask at 13.1 ppm would be 3.85 mg. Thus 42.6% of the selenium dissolved in the shake flask test for BRU 121 shale yet only 0.126% of the selenium was dissolved in the X1t model. This demonstrates that the X1t model results are a gross underestimate by a factor of at least 333.0.

At a cavity volume of $4.9x10^4$ cubic meters and a sand fraction of 0.7 with a density of 2000 g/L for the BRU 121 value of 0.2 ppm selenium in the sand there would be 13.72 kg of selenium in the cavity. If all dissolved in $1.47x10^4$ cubic meters of water the concentration would be 0.933 mg/L selenium from the sand which is 93 times above the guidelines. Thus even the selenium in the sand presumably from inter-bedded shale could cause exceedances.

Admittedly the BRU 121.1 values of selenium are higher than in the other sand samples however may be representative of many of the extraction wells considering such a small sample size was taken.

We must question if the gross underestimate of selenium dissolved into the extraction cavity in the X1t model is a deliberate deception by Sio Silica and the hired experts to continue to dismiss evidence of project ending contamination of aquifer waters. The evidence given below demonstrates that selenium, uranium, and arsenic will be expected to rise to above allowed limits both in the sandstone and carbonate aquifers throughout the project area following silica sand extraction due to ongoing leaching.

12. Selenium aquifer concentrations in the entire project area

From figure 2-B and figure 2-1 of the EAP each well cluster in a cluster array would be surrounded by an area of about 10000 m^2 of sandstone aquifer. Figure 2-1 is reproduced below as figure 1. The "X1t" model for selenium concentration used an extraction cavity height of 25 m. Following collapse of the shale layer above an extraction cavity the water in both the sandstone and carbonate aquifer would be available for mixing. Contamination in the sandstone would also spread into the carbonate aquifer. The rectangular parallelepiped volume of both aquifers around and including each cluster would be $4.5x10^5$ cubic meters. For an average porosity of 20% for both aquifers, the water volume would be $9.0x10^4$ cubic meters. The average concentration over both aquifers if all of the 198 kg selenium in the collapsed shale and limestone dissolved throughout the entire project area would be 2.2 mg/L which is 220 times the Manitoba drinking water quality standard for selenium of 0.01 mg/L. Thus wholesale contamination of selenium throughout the entire project area would be expected to occur.

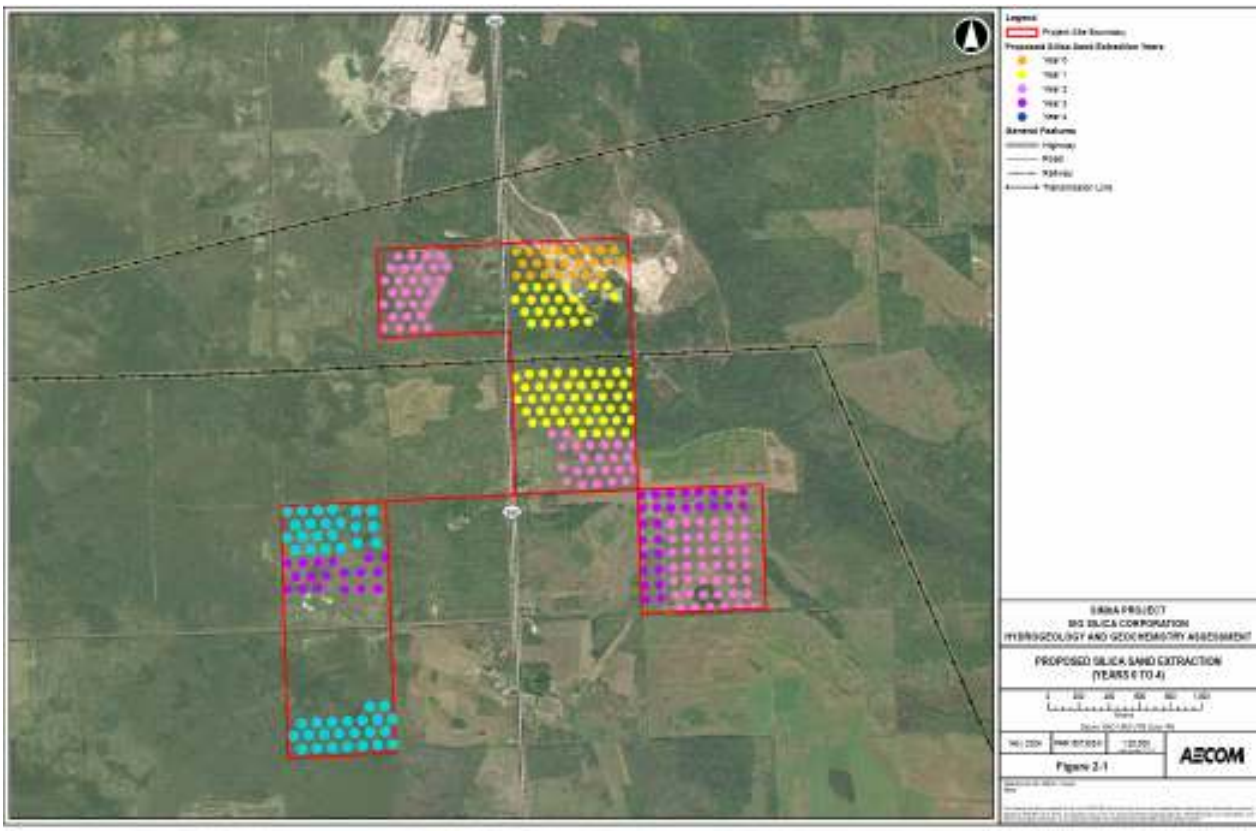


Figure 1. Sio Slica 0-4 year proposed project layount reproduced from EAP 2025 figure 2-1

13. Arsenic and Uranium from c collapsed shale and carbonate

From EAP table 4-3, the average concentration of arsenic in the carbonate is 1.07 ppm and in the shale, 22.6 ppm. The average concentration of uranium is 0.657 ppm in the carbonate and 15.2 ppm in the shale. As per the selenium calculations, the total arsenic and uranium from collapsed shale and carbonate in an extraction cavity would be 343 kg arsenic and 229 kg uranium. The average concentration of arsenic and selenium in both aquifers over the entire project area should all the uranium and arsenic in the carbonate and shale collapsed into the excavation cavities dissolve and migrate would be 3.81 mg/L arsenic and 2.54 mg/L uranium. The Manitoba drinking water quality standards for arsenic and uranium are 0.01 and 0.02 mg/L respectively. Thus the water quality over the entire project area would be acceptable only if less than 0.262% of the available selenium and 0.787% of the available uranium that had collapsed into extraction cavities dissolved and spread throughout the aquifer groundwater. Clearly such small dissolution fractions are not credible. Wholesale arsenic and uranium contamination of groundwater in both aquifers would occur throughout the entire project area from the collapsed shale and carbonate

Table 4-5 of the original EAP of 2022 reported a concentration of 0.0014 mg/L arsenic from the sandstone in the shake flask test for well Bru 95-3. The arsenic likely came from inter-bedded shale in the sandstone aquifer further demonstrating contamination from many heavy metals can occur in the sandstone aquifer. The average of there samples in the Winnipeg formation for arsenic from Table 4-3 in the original 2020 EAP was 0.807 ppm. Since 0.2 ppm selenium in the sandstone gave an estimated extraction cavity concentration of 0.933 mg/L, 0.807 ppm of arsenic

would give a concentration of 3.76 mg/L or 376 times the guideline concentration. Thus wholesale contamination of arsenic in aquifer waters can be expected to occur from sources in the sandstone alone.

14. Oxygen Content in the Aquifers following Silica Sand Extraction

No doubt Sio Silica will dismiss the results of wholesale contamination of selenium, arsenic and uranium in the aquifers. One argument might be that the oxygen content of 4 to 12 mg/L dissolved oxygen used in the PHREEQC and X1t model calculations would not occur or not persist limiting ongoing dissolution. In my submission to the CEC Hearing I documented entrained air from turbulent surface mixing operations was ignored.

15. Entrained air

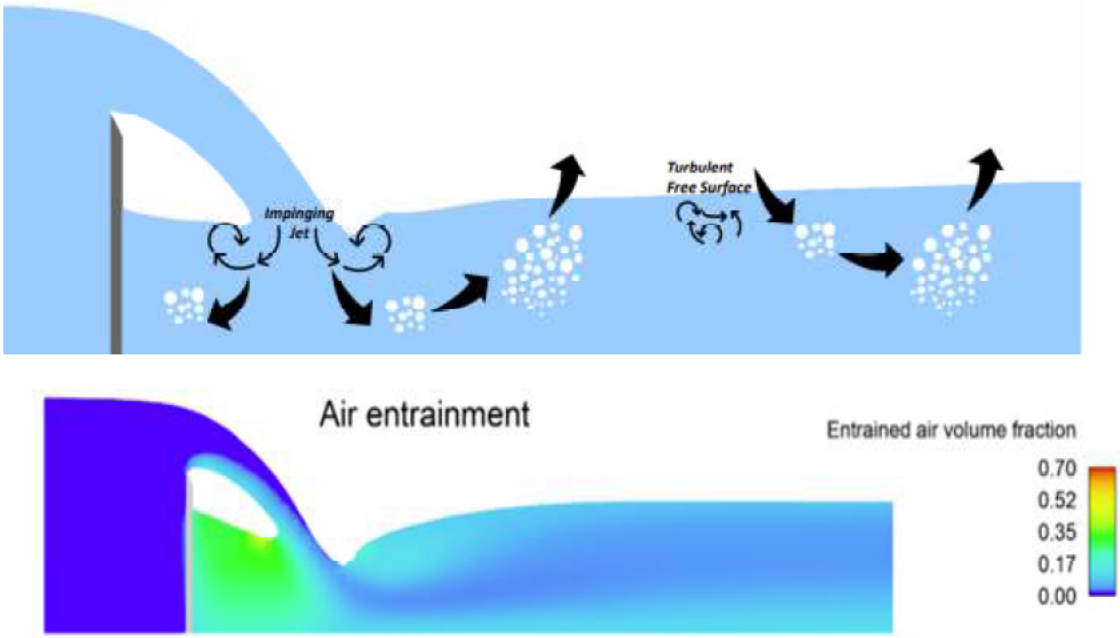
In the production tube of the airlift well air and water would be mixed such that large amounts of entrained gaseous are far above the amount of dissolved air would occur. The frothy air sand water mixture from the airlift process is illustrated in the photograph of Sio Silica extraction operations shown in figure 2. Sio Silica has stated that surface operations would be enclosed. It is not clear in any surface water tanks such as shown in figure 2 would be used to capture the airlift output. In an enclosed system without any designed air venting all of the air in the airlift process at a rate of on average 450 cubic feet per minute, according to the Sio Silica pending patent, would be transferred to the aquifer with the return water. Figure 3 shows in surface tanks with water jets upwards of 20% air by volume are common.

The density of air at the surface is about 1.225 kg/m^3. The density of air bubbles (gaseous air) increases with the depth of water due to the water pressure. At a minimum 20% air by volume at 1.225 kg per cubic meter would result in 0.245 kg of air in a cubic meter of water or about 0.245 grams of air per liter. Air is 21% oxygen thus the weight of oxygen would be 0.05145 grams per liter or 51.45 mg per liter of oxygen so the entrained air can be 10 times or more, greater than dissolved air by weight than Sio used. At 20 C the solubility of oxygen is about 9 mg/L so 20% air entrainment would result in about 6 times more oxygen dissolved in water at the surface.

Sio Silica has ignored the issue of oxygen transferred to the aquifer by entrained air in the returned water. A dedicated measurement of entrained air in returned water to the aquifer is necessary in a full scale extraction well test before any license is granted. Sio Silica has no plans to measure air entrainment in the gradual production process described in the EAP. This lack of specified measurement is a major deficit in the Sio Silica planned project that must be addressed.

Figure 2. Photograph of frothy air/water mixture from the airlift production tube entering a collection tank from Sio Silica advanced exploration sand extraction operations (photograph reproduced with the permission of the photographer)

Volume fraction of Entrained Water



CFD Methods for Evaluating Air Entrainment in Drop Structures Karthik Ramaswamy, MS CFD Engineer, Flow Science, Inc. https://www.ohiowea.org/docs/7_Wed_Modeling_3330PM_Karthik.pdf

Figure 3. Example of typical volume fraction of entrained air from a plunging jet in a turbulent surface tank

A large amount of oxygen could enter the extraction cavities from leakage of air injected into the production tube in the air lift sand operations. Sio Silica claimed in response to my original EAP public comments about air leakage from the air lift operation;

"*Although a small amount of dissolved oxygen may occasionally enter the aquifer, it will not adversely impact the quality of the groundwater.*"

Sio Silica gave no measured evidence for this statement. Sio Silica has not attempted to measure the air leakage in the vicinity of production tubes during about ten years of experimental sand extraction. Sio Silica refused to comply with my CEC Hearing information request for measurement of air leakage and data on the air lift pressure. The CEC panel denied my motion for resolution of Sio Silica refusals to comply with my information requests despite CEC Hearing regulations that require resolution. Sio Silica has no stated plans for independent measurement and reporting of air leakage and operational air pressure during air lift operations in the proposed phased in project.

According to the Sio Silica patent pending for the air lift procedure, the air lift tube can be extended beyond the base of the production tube to loosen sand during extraction operations.

This extension would inject air directly into the sandstone aquifer. Even short duration sand loosening operations would inject large amounts of unaccounted for oxygen into the extraction cavities.

The air flow rate in the air-lift operations is given in the pending patent as 300 to 600 cubic feet of air per minute. The air pressure was not given. At STP the flow rate would be, on average, 2.15 kg oxygen/minute. At this rate a leakage from one extraction well per cluster would saturate all the water in the entire project area based on $9.0x10^4$ cubic meters water per cluster to 4 mg/L, in 167 minutes In the "X1t" model, 4mg/L oxygen was sufficient to cause initial dissolution of selenium above guidelines in the extraction cavity water. Up to seven extraction wells would be operating simultaneously. Assuming an average of 4 wells operating simultaneously all the water in both aquifers in the entire project area could be eventually up to the level of 4 mg/L oxygen in 42 minutes of air leakage on average per cluster. The oxygen would spread from the clusters throughout the entire aquifer volume relatively quickly under the large hydraulic gradients caused by ongoing extraction activities. Each extraction rig would operate for about three to five days. Only 1.0% or more leakage of air into the extraction cavity from four rigs over this period would be sufficient to produce an average of greater than 4 mg/L oxygen over the entire well extraction project area.

16. Norlica Sand Extraction Experience

In Economic Geology Report ER84·2 (1988), Watson writes:[2]

"In 1966, the deposit was drilled in the area east of Steinbach (Fig. 13) by Norlica Minerals Limited (Underwood McLellan and Associates Limited, 1967). The drill holes intersected silica sand intermixed with shale, with high quality sand beneath the upper sand-shale layer. The sand ranged from loose to well cemented. Various methods were tried to loosen the sand, including water jets, suction and a mechanical cutter, in order to pump it from drill holes These methods were unsuccessful largely due to the presence of hard sandstone and shale layers within the section."

In the Norlica process, 2 to 4 MPa water pressure was used to loosen sand. It is clear from the Norlica experience that high pressure air injection directly into the aquifer is necessary to extract silica sand that is not loose as illustrated in figure 4. The Geotechnical analysis of the EAP reported,

"*The deposition environment of Carman Members in a shallow marine sea can create weak cementation. In addition, Standard Penetration Testing (SPT) in the sand deposit was not successful due to its very high strength. All of these indicate cementation of some form in the sand deposit.*"

With cementation in the Sio Silica deposit high pressure air extraction directly into the sand similar to used by Norlica would be required.

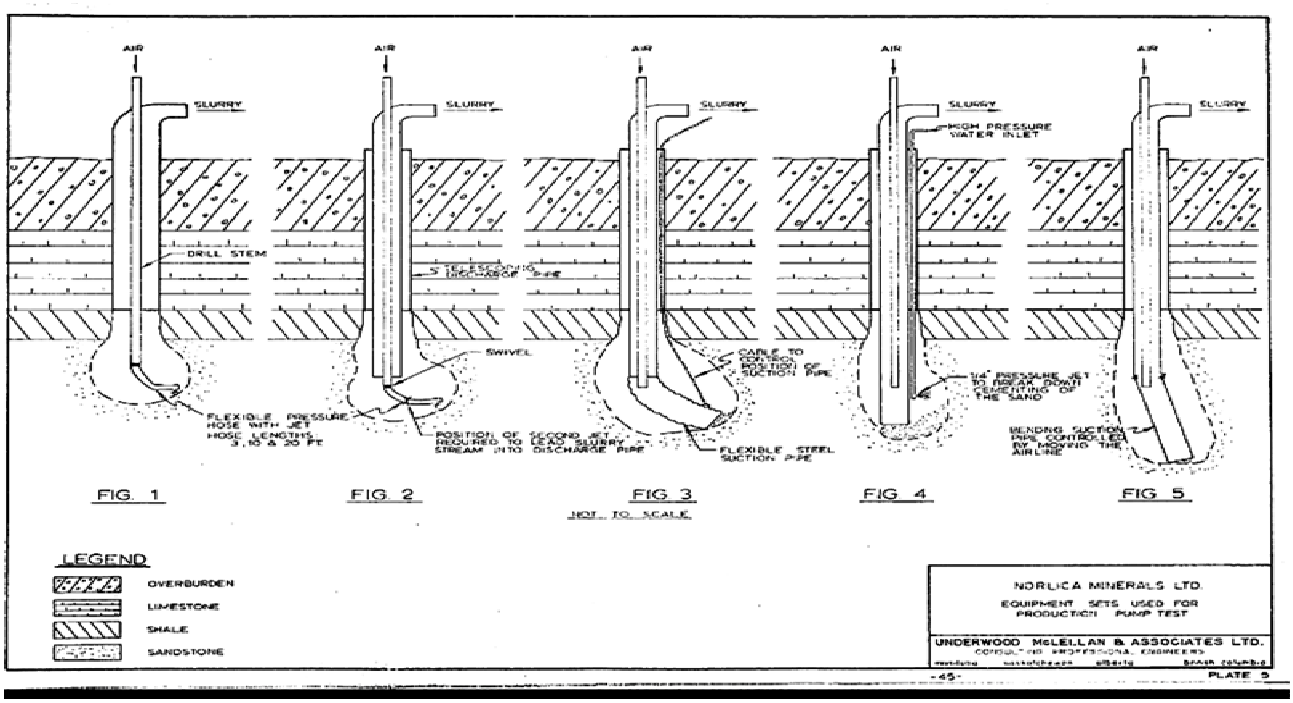


Figure 4. Norlica high pressure air extraction of silica sand near St. Anne Manitoba circa 1970

Sio Silica, to determine the potential of mobilizing selenium, arsenic and uranium into the sandstone aquifer water as measured in shake flask tests, should have, during the past ten years of extraction tests, measured air leakage and aquifer contamination. Sio Silica's continued dismissal of the potential for contamination due to introduction of oxygen into the extraction cavities and lack of previous and planned measurement for air leakage and contaminants demonstrates that they cannot be allowed to operate.

17. Wholesale Aquifer Contamination

It must be emphasized; the X1t model did not include adjacent clusters. The gradients determining rate of water flow in the aquifers would be dominated by the large rate of water extraction and water return in extraction clusters. Contamination from nearby clusters that had already undergone extraction would be drawn throughout both aquifers by the extraction induced gradients in active clusters. Thus the movement of contamination throughout the project area would be much greater than in the X1t model that used only very small regional gradients.

The total contamination would tend to average out relatively quickly over the entire project area but spread and dissipate much more slowly outside the project area where the small regional gradients would apply. Thus unacceptably high levels of selenium, arsenic and uranium concentrations would persist in throughout the project area for long times. The gradual spread on contamination outside the project area would be expected to exceed allowed guidelines as leaching continued within the project area and gradually spread outside. This wholesale contamination migration would be an unstoppable, irreversible process that would continue to spread contamination in both aquifers in the direction of the regional gradient toward the Red

River slowly contaminating more of the aquifer and more domestic and industrial wells. This onslaught of pervasive expanding contamination would be unstoppable and irreversible.

According to the PHREEQC and X1t calculations an oxygen concentration of 4mg/L is sufficient to produce oxidizing conditions to leach selenium, uranium and arsenic from not only the collapsed shale and carbonate in the extraction cavities but all the shale and carbonate in both aquifers over the entire project area. Thus catastrophic contamination of the entire aquifer with selenium, arsenic and uranium above allowed limits is virtually guaranteed.

In my submission to the CEC Hearing I performed a modeling study that demonstrates selenium and other contaminants would build up to above allowed guidelines in the slurry lines where recycled water would be continuously exposed to freshly extracted particulate containing selenium and other contaminants. Spills from the slurry lines during routine operation of emptying and moving feeder and main slurry lines and from leakage would result in surface water contamination. This analysis was ignored. Thus not only wholesale contamination of aquifer water but also surface water would be expected to occur from Sio Silica extraction operations.

Aquifer contamination from extraction activities is illustrated in figure 5.

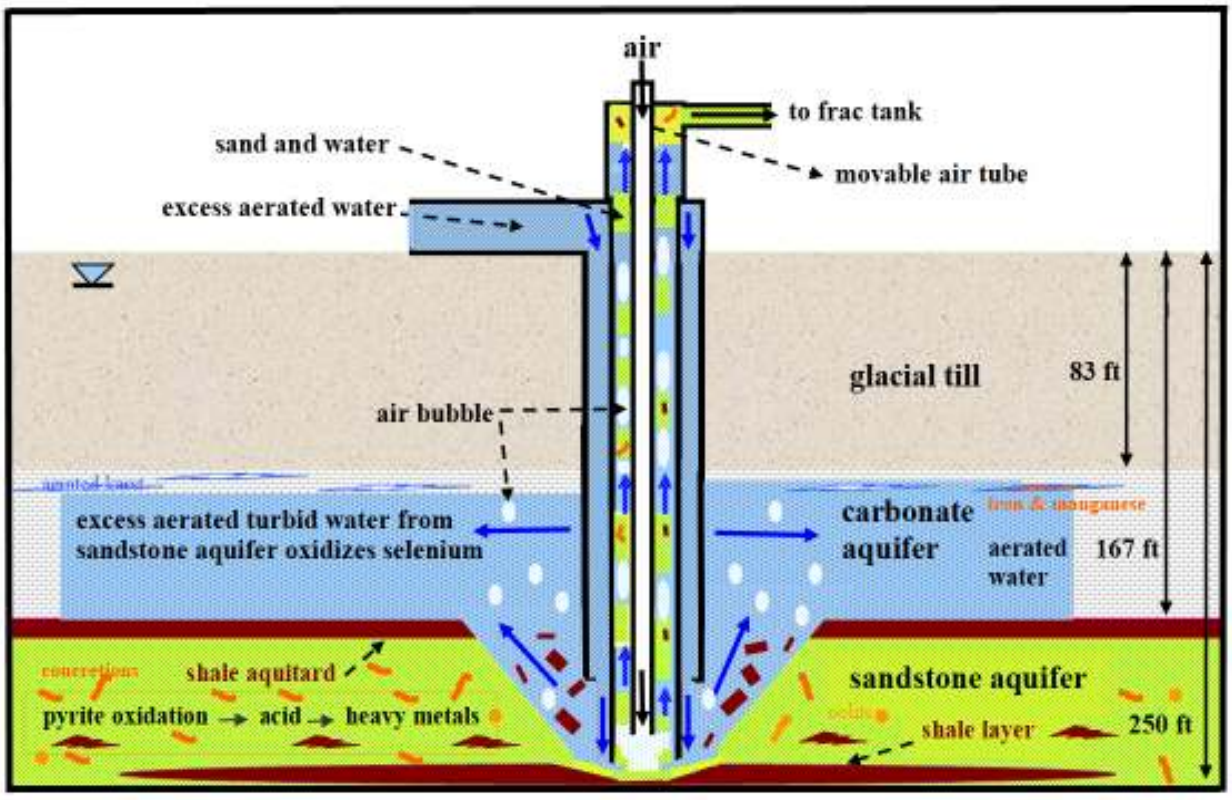


Figure 5. Contamination of sandstone and carbonate aquifers from Sio Silica extraction operations

The analysis done here of the potential for selenium, arsenic, and uranium irreversible wholesale contamination of both the carbonate and sandstone aquifers over the entire project area and beyond should result in the immediate termination of this project and a ban on any other such proposed sand extraction activities in these vulnerable, valuable, irreplaceable aquifers.

18. Meaningless Pump Tests for Water Quality

Section 4.2.3 describes the measured water quality before and after pump tests at locations across the Project area. Temperature, conductivity, specific conductivity, pH, DO, oxidation-reduction potential (ORP), salinity and turbidity were measured. However no field measurements were made following sand extraction when air could have been introduced into the sandstone aquifer from air lift operations or following return of water extracted with the sand to the aquifer. It is already well known from the numerous domestic and commercial wells in the area that simple pumping does not significantly change water quality. The failure of Sio Silica to measure the water quality and especially the dissolved and entrained oxygen concentrations following the critically important processes of sand extraction and return of water to the aquifer is a major project detriment. The measurement of water quality after only simple pump tests is a ruse designed to give confidence that water quality will not be affected by project extraction operations.

In the current proposed phased approach including project monitoring there is no described process for independent measurement and reporting of water quality, aquifer water pressure and air lift pressure during and following CEC recommended full scale sand extraction tests including return of water to the aquifer. This is consistent with the avoidance of critical measurements during sand extraction operations that Sio Silica has practiced in all of the numerous extraction tests carried out over the past about ten years of development. Sio Silica should have and could have made such critical measurements in the past. There is every reason to expect that this measurement avoidance for obtaining critical data would continue in the proposed phased approach.

Sio Slica performed many pump tests and a complex hydrogelogical modeling study to demonstrate that extraction well water and sand withdrawal would not adversely affect nearby private wells. The modeling and tests did not evaluate the potential of returning aquifer water on nearby wells. In a bizarre modeling strategy return of aquifer water was determined simply by reducing model pumping rates. No new water was actually entered into the aquifer in the model. It is already well known from numerous previous pump tests in the area that water heads recover quickly after pumping and head drawdown has a limited spatial extent. What is different about this project is the return of large amounts of water to the aquifer and the collapse of the shale layer between the carbonate and sandstone aquifer occurring during sand extraction. These effects could have major detrimental effects that was not considered in the modeling and was not experimentally tested on a production scale. With the collapse of the protective shale layer during extraction returned aerated water and extraction cavity water could enter the carbonate aquifer. Movement of aerated water in then carbonate would be much more rapid than in the sandstone and could affect irreversible water quality of wells at a much greater distance than expected. During Sio Silica sand withdrawal near Vivian a well more than one kilometer away experience d

discoloured turbid water consistent with what would be expected from sand extraction operations.

Sio Silica has done some geochemical modeling of the effect on water quality from oxygen in the extraction cavity. Remarkably the modeling demonstrates among other effects, iron and manganese would precipitate. Sio Silica construes this effect as beneficial since the dissolved concentrations are reduced. Iron and manganese precipitates discolour water. Residents have experienced water discolouration during Sio Silica sand extraction operations as documented in my written CEC submission. Residents do not regard water discolouration as beneficial but their complaints were dismissed by Manitoba Water Rights Branch.

19. Geotechnical Analysis Cluster Diameter

The glossary of terms states;

"*Well Cluster For this Project, an area 50 m to 60 m in diameter where a cluster of five sand extraction wells are located approximately 18 m apart. The distance between each well cluster is a minimum of 60 m.*"

Table 1 -1: Key Changes: Original vs. New Project reduces the number of wells per cluster to one to five from the original seven with only 25 wells in the first year. One well per cluster would substantially reduce the cluster diameter but not necessarily five. Table 1-1 gives no information on cluster diameter, the critical parameter to reduce the risk of subsidence.

However Section 1.7.2 specifies,

"*Construction stage includes clearing for and establishment of: Well cluster (sized based on the allowable span as determined by the latest geotechnical analyses data; see Table 9 in Appendix C) which includes equipment laydown areas within each annual mineral leased extraction area block*"

There is no information on how the data in Table 9 would be used to determine allowable span or how the cluster span would be monitored and determined in the field operations. Exceedance of a long term stable cluster span during extraction is irreversible.

Appendic C of the Geotechnical analysis states;

"Based upon the geotechnical analysis, the following recommendations are provided:
• Design the borehole arrangement and depth to limit the extraction disturbance geometry to the design extraction geometry presented in Table 9 in this document.
• Limit extraction to areas with competent limestone thicker than 15 m.
• Locate extraction group wells with at least 60 m edge to edge distance between their expected long-term cavity disturbance zone (approximately 70 m for short-term cavity disturbance zones)
• Complete a full-scale extraction test to confirm conditions with pre-extraction measurement and monitoring requirements listed in this report.

• Update the FLAC model as more data becomes available for the extraction boreholes and surface settlement data.

• Measure the overburden, caprock, competent limestone, and sand thickness at each extraction location before the start of extraction. Apply the relevant extraction design based on the recommendations in Section 3.9 or the refined design as needed based upon full-scale extraction testing results."

The overall design parameters for well cluster diameter (cavity span) of 50 to 60 m specified in the glossary of terms does not correspond to the recommendation that Table 9 be used to determine cavity span. For the CEC Hearing I performed a liner interpolation of the data from table 9 to obtain an equation given in figure 5 that determines the maximum allowed long term cavity span as a function of competent limestone and overburden thickness. Using data Manitoba Groundwater Section well information reports on the limestone and overburden thickness from Sio Silica historical wells I used the derived equation given in figure 6 to determine the long term cavity spans over the project area. The initial cavity span at time of extraction is given by the Stantec analysis as ten meters less than the allowable long term cavity span. According to information at the CEC Hearing the reliable competent limestone thickness is six meters less than the overall thickness given in the well information reports. The allowed initial and long term cavity span for wells completed by Sio Silica over the project area is illustrated in figure 7.

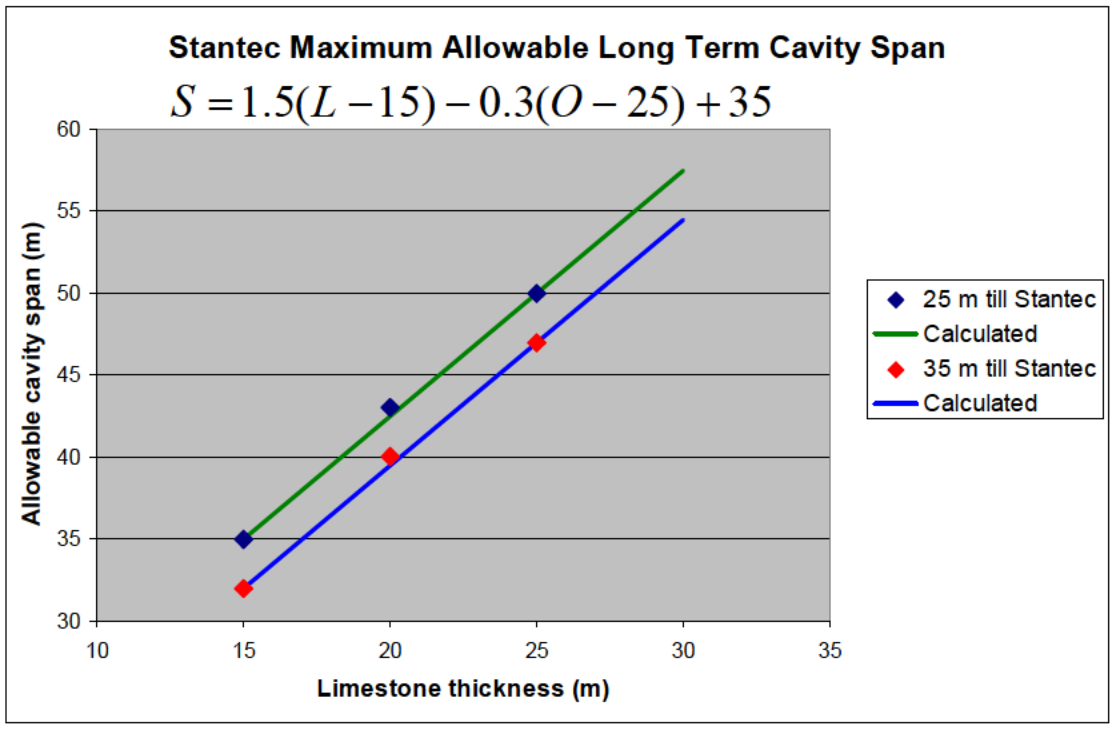


Figure 6. Straight line interpolation of Stantec data from Table 9 on maximum allowable long term cavity span presented in a motion for the CEC Hearing on the Sio Silica sand extraction project. The allowed initial cavity span is 10 m less according to the Stantec analysis.

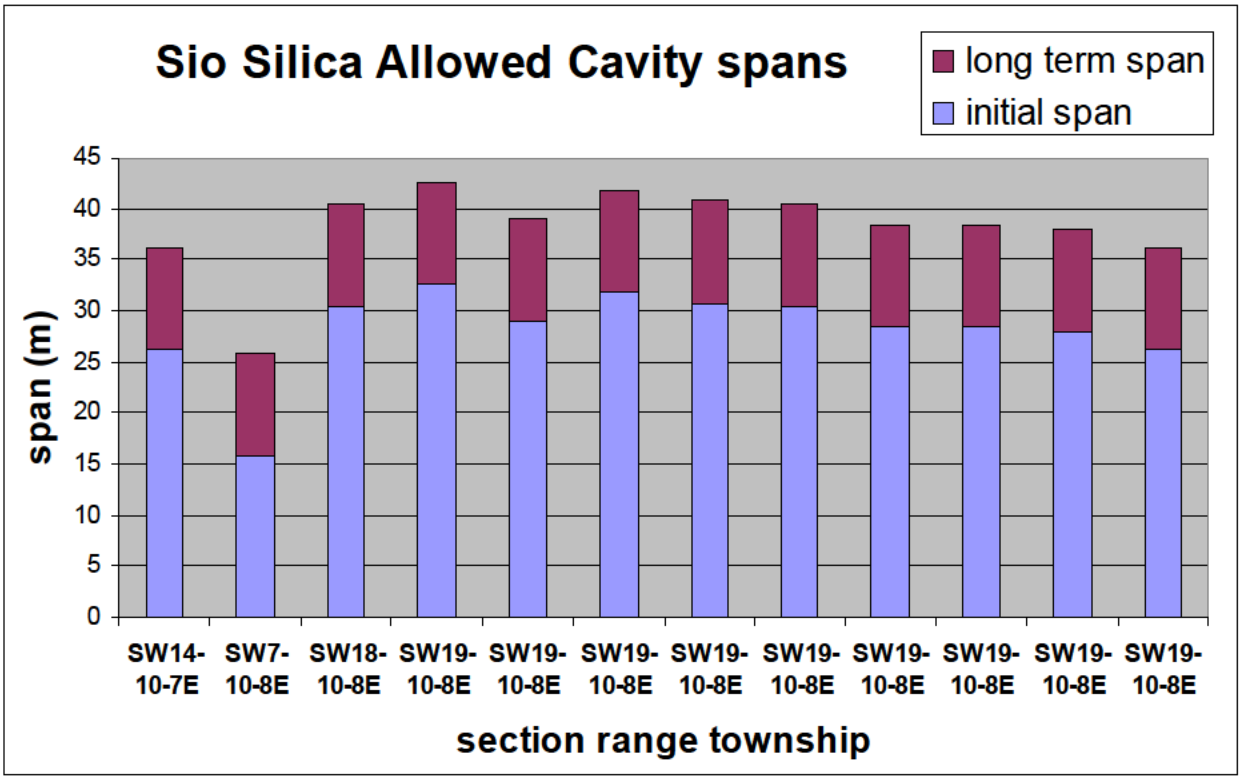


Figure 7. Allowed Cavity Span for wells completed by Sio Silica

Table 1 gives the till thickness, limestone thickness, competent limestone thickness and the resulting maximum allowable long term and initial cavity spans for the completed Sio Silica wells over the project area. An excerpt from EAP figure 5-2 shown if figure 8 gives the limestone thickness over the regional area. The competent limestone as shown at the CEC Hearing is considered to be six meters less due to incompetent limestone above at the top and bottom of the layer. Thus all contours less than the 20-25 light yellow contour of EAP figure 5-2 would not be suitable for extraction. Figure 8 shows east of highway 302 all competent limestone thickness, obtained by subtracting six meters incompetent limestone from the total thickness for documented Sio Silica wells, are less than 15 meters. Competent limestone thickness less than 15 meters occurs in many areas west of highway 302 as shown in an excerpt of EAP figure 5-2 shown below. The violation of the Stantec guidelines of extraction limited to competent limestone thickness greater than 15 m was documented in my presentations at the CEC Hearing, in my Hearing information requests, in my hearing written submission, and in my public comments submitted prior to the Hearing all to no avail. Why does the Manitoba project review process ignore public comments and Hearing evidence of such potential environmental abuse?

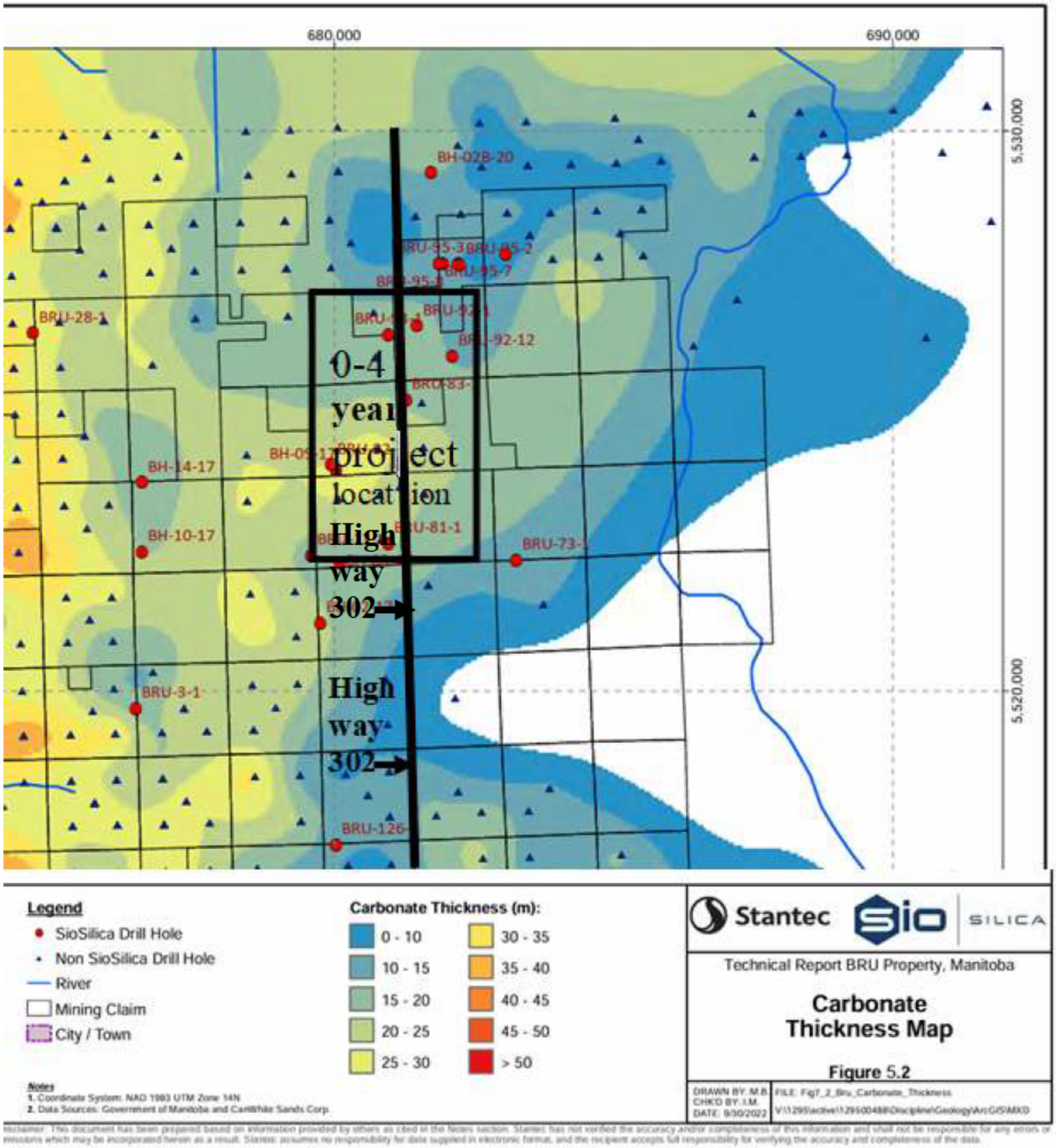


Figure 8. Contour map of carbonate thickness in the Sio Silica project area from Sio Silica EAP 2025

At the CEC Hearing, Sio Silica appeared to recognize that clusters must be much smaller than 50 to 60 meters in diameter. Sio Silica issued a revised cluster design plan shown in figure 9 with variable cluster cavity spans. Even this revised plan did not give the cluster span or spacing although a variation in span and number of wells per cluster was apparent. This revised design with variable cluster diameters does not appear in the new EAP. The proposed extraction layout for operational years 0 to 4 in figure 2-1 of appendix B shows all clusters with the same diameter presumably 50 m or more. Table 1-1 states that one to five wells per cluster would be used in the new phased in project. Figure 2-1 does not indicate how many wells per cluster would be implemented in the 0 to 4 year project or the cluster diameters.

Section 1.7.1 Phased Approach states;

"*Sio will initiate the first year of operations (Phase 1) at a location that allows for a reduced number of wells in a cluster, with no more than one or two wells per cluster… The number of well clusters and wells will gradually be increased if monitoring data and associated reporting results verify that this can be done without risk of significant adverse effects during the initial*"

This demonstrates that the full five wells per cluster and the 50 to60 meter cavity span would be eventually implemented.

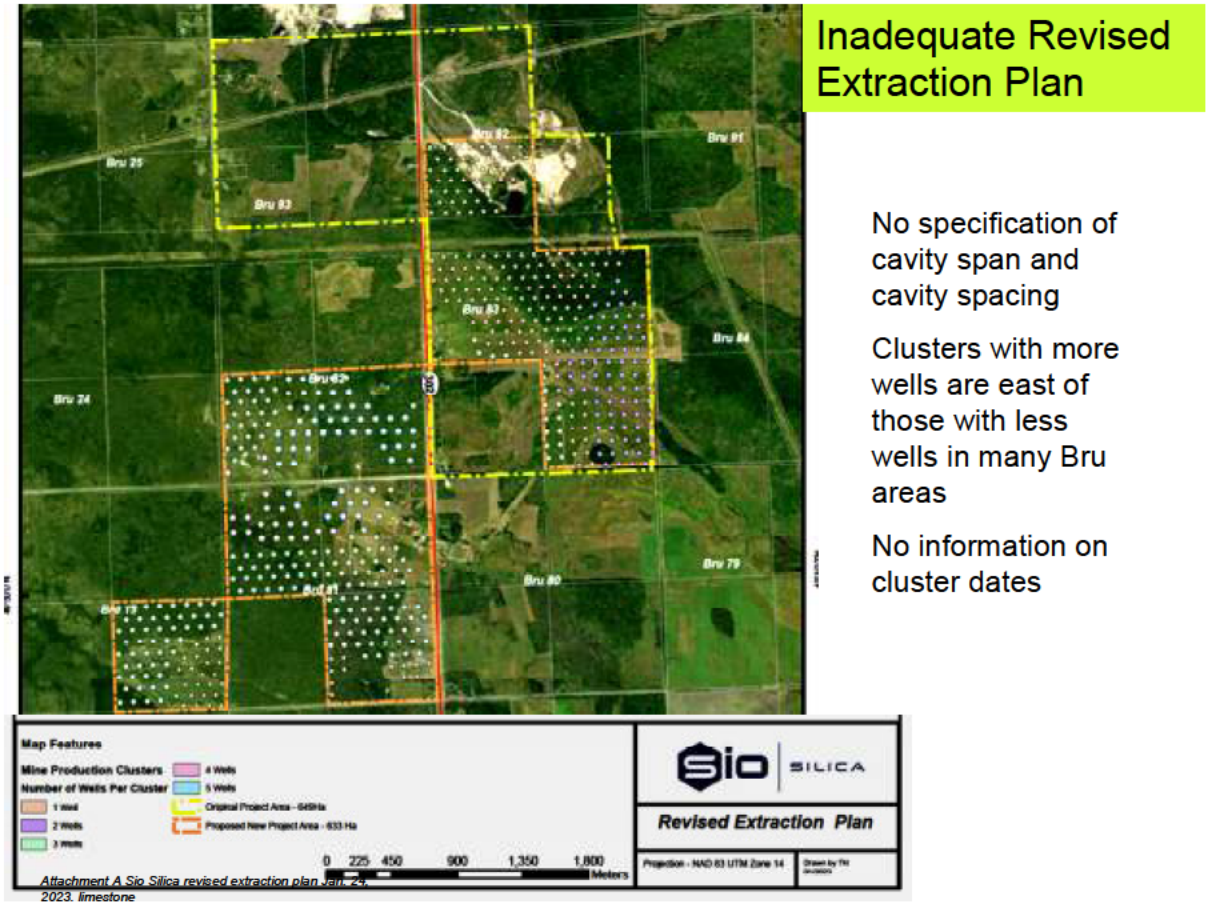


Figure 9. Revised Sio Silica extraction plan from the CEC Hearing

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The data in table 1 shows that the initial allowed cavity spans range from 15 meters to 45 meters with none more than the design specified minimum span length of 50 meters over the entire project area. The average initial allowed extraction cavity span for competent limestone thickness greater than 15 m over the project area is 29 m. The average is far below the smallest stated 50 m for the cluster design. Sio Silica has not done the proper project due diligence to analyze available well data and take proper measures to minimize the risk of subsidence.

Table 1. Well Information for Sio Silica Historical Wells

	PID	Well name	Township	Total limestone m	Competent Limestone m	till m	Long term span m	Initial cavity span m
1	197860	BH 10-17	SW14-10-7E	19.8	13.8	34.1	30.47	20.47
2	197858	BH 14-17	NE15-10-7E	17.4	11.4	30.8		
3	203674	BRU-154-2	NW29-8-8E	17.1	11.1	37.8		
4	197923	BH2-17	SW7-10-8E	22.9	16.9	30.5	36.2	26.2
5	197862	BH3-17	SW18-10-8E	16.8	10.8	34.7		
6	200818	SITE 1 82-9	SW19-10-8E	25	19	26.8	40.46	30.46
7	204173	BH 9B-17	SW19-10-8E	26.2	20.2	25.6	42.62	32.62
8	203688	BRU 82-11	SW19-10-8E	24.1	18.1	27.1	39.02	29.02
9	199982	BRU 82-5	SW19-10-8E	25.6	19.6	25.3	41.81	31.81
10	197859	BRU9	SW19-10-8E	25	19	25.6	40.82	30.82
11	197863	BH9-17	SW19-10-8E	24.7	18.7	25.3	40.46	30.46
12	203678	BRU 82-14	SW19-10-8E	23.5	17.5	25.9	38.48	28.48
13	203699	BRU 82-10	NW19-11-8E	23.5	17.5	25.9	38.48	28.48
14	199984	BRU 28-1	NE28-10-7E	32.9	26.9	19.2	54.59	44.59
15	199965	BRU 117-1	NW18-9-8E	22.6	16.6	27.7	36.59	26.59
16	200861	BRU 121-1	NW22-9-8E	12.8	6.8	21.6		
17	199972	BRU 126-1	NW30-9-8E	11.3	5.3	42.7		
18	199980	BRU 73-1	NW9-10-8E	12.8	6.8	26.5		
19	203682	BRU 82-8	SW19-10-8E	23.2	17.2	25.9	38.03	28.03
20	203691	BRU 82-6	SW32-10-8E	22.2	16.2	26.8	36.26	26.26
21	201401	BRU 95-3	SW32-10-8E	8.8	2.8	37.2		
22	201400	BRU 95-2	SW32-10-8E	9.4	3.4	35.7		
23	201399	BRU 95-1	SW32-10-8E	9.1	3.1	36		
24	201159	BRU 95-4	SW32-10-8E	6.1	0.1	39		
25	201398	BRU 95-5	SW32-10-8E	5.8	0	22.9		
26	205003	BRU 95-7	SW32-10-8E	13.1	7.1	36		
27	205011	Monitoring	SE32-10-8E	9.8	3.8	36.9		
28	205013	BRU 96-1	SW33-10-8E	8.2	2.2	35.1		
29	205016	BRU/MW20-01	SE32-10-8E	8.8	2.8	33.5		
30	HR*	BRU95-6	SE32-10-8E	9.8	3.8	36.9		
31	HR	BRU95-8	SE32-10-8E	15.9	9.9	32.3		
32	HR	BRU95-9	SE32-10-8E	11.6	5.6	36		
33	HR	BRU96-1	SE33-10-8E	8.3	2.3	36		

34	205641		SW5-11-8E	14.9	8.9	35.4		
35	205588	BRU2020	SW5-11-8E	13.9	7.9	34.1		
36	205642	BH2C-20	SW5-11-8E	15.5	9.5	36		
37	206788	BRU92-2	NW29-10-8E	14	8	34.1		
38	207211	BRU92-3	NW29-10-8E	14.3	8.3	33.2		
39	206786	BRU92-4	NW29-10-8E	12.2	6.2	34.1		
40	207218	BRU92-6	NW29-10-8E	13.1	7.1	33.8		
41	207219	BRU92-7	NW29-10-8E	13.4	7.4	33.5		
42	208473	BRU92-8	SW29-10-8E	14.6	8.6	32.9		
43		BRU73-1	NW09-10-8E	13.1	7.1	26.5		
44		BRU146-1	SE21-08-8E	14.3	8.3	34.4		
						Ave.	38.67	28.67

*HR Sio Silica Appendix A –Hydrogeological Assessment Report 2021

Sio Silica has already violated the recommendation to limit the extraction to areas with competent limestone thickness greater than 15 m by planning extraction east of highway 302. The geotechnical report recommendations to obtain data on stability and cavity dimensions following each extraction from each borehole are essential. Should the cavity dimensions exceed the guidelines from Table 9, no further boreholes and extraction must be carried out in a given cluster. Sio Silica has given no information as to how they would determine the excavation cavity span during extraction based on gathered information on the till and limestone thickness and properties. For instance using data from test wells the linear interpolation equation given in figure 5 could be used to determine allowed cavity span. Sio Silica has no such procedure. Sio Silica does not describe a method to limit cavity span during extraction. Continuous side scan sonar giving real time results on cavity span would be unfeasible. Exceedance of allowed limits on cavity span during extraction operations would be irreversible.

Sio Silica has ignored the effect of flowing wells in the project area as shown in slide 31 of my presentation at the CEC Hearing. Sio Silica at the Hearing claimed that they would avoid extraction in areas with flowing wells. The areas where competent aquifer thickness is less than 15 meters combined with areas with flowing wells, leaves an extremely diminished allowed 25 year project area as shown in figure 10. Only small areas in the south and northwest of the planned project area should be allowed. Thus just based on allowed extraction area, the project is not viable.

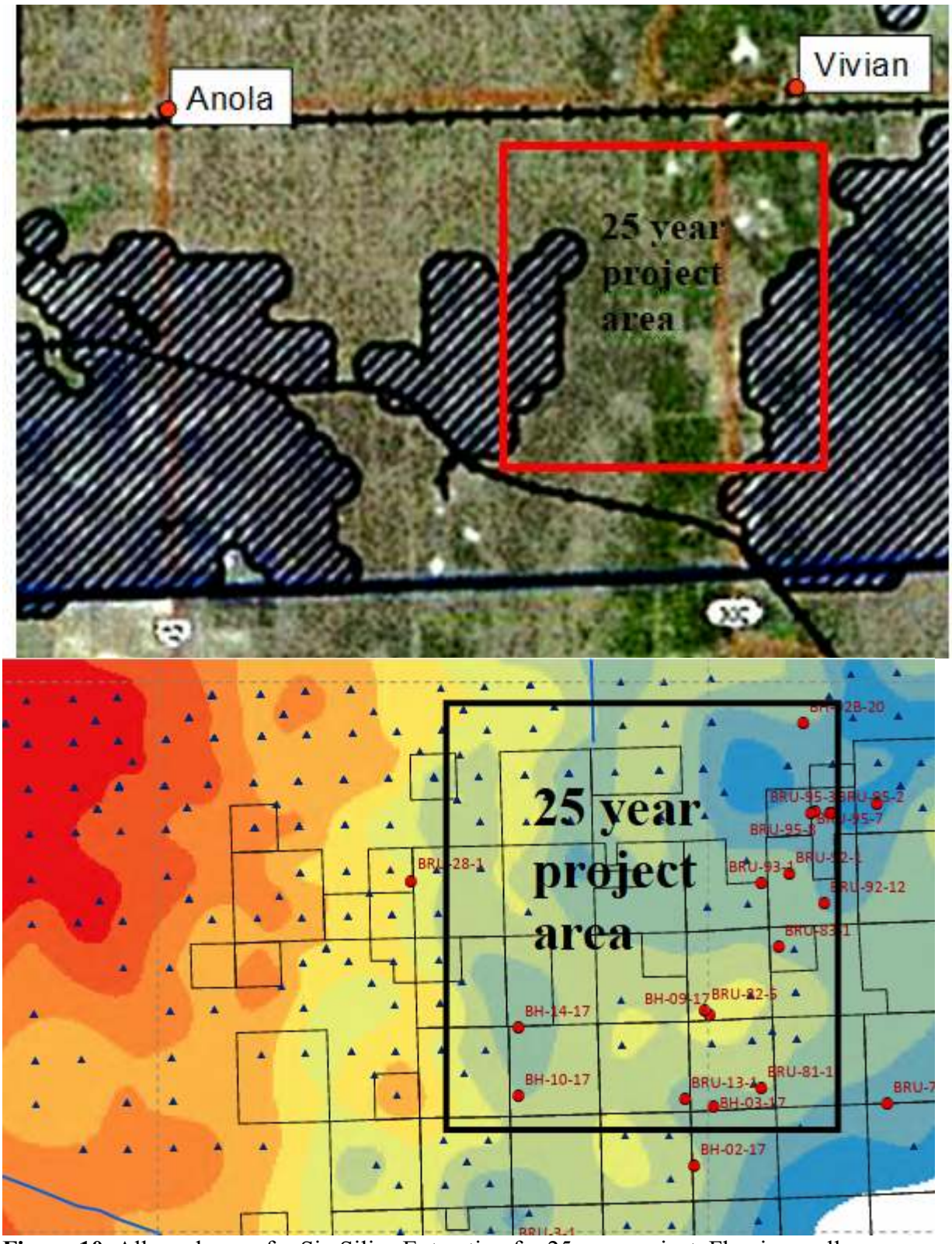

Figure 10. Allowed areas for Sio Silica Extraction for 25 year project. Flowing wells are indicated by black slanted lines. Allowed extraction areas with competent limestone over 15 meters thick are for contours yellow, orange and red only

The geotechnical report provides guidelines on post extraction measurements;

"• Continue surface monument deformation monitoring with monthly data analysis for the first 3 months after extraction. Reduce data analysis to quarterly after 3 months from the extraction with annual data review to detect possible long-term surface settlement/subsidence.
• Continue caprock settlement (extensometer) monitoring and review with the same frequency as the surface settlement monitoring. Compare extensometer data against the surface settlement data to detect any differential settlement in the caprock surface.
• Continue daily piezometric monitoring and monthly data review for 3 months after completion of extraction."

Such post extraction measurements would be futile if remediation is not possible. Once the finished cluster span is too large for long tem stability it is hard to imagine what remediation could be taken. Pour cement onto the limestone span above the excavation? Without prescribed remediation the ongoing stability measurements after completion of extraction would be an expensive deception to demonstrate due diligence. Real time determination of cavity span during extraction must be implemented to prevent future subsidence. No such real time measurements have been demonstrated or documented by Sio Silica.

The Trigger Action Response Plan in the Executive Summary and elsewhere to monitor groundwater and ground surface settlement includes surface, caprock and piezometric monitoring and review during and after extraction. Post extraction monitoring would be fruitless without any possible remediation. The details of what would constitute an unfavourable piezometric reading or what actions would be taken are not given. No mention is made of Manitoba Groundwater Brach requirement for an injection permit that requires aquifer pressure measurement for return of mined water to the aquifer.

The Stantec analysis states that subsidence due to cavity expansion could take up to 100 years or more to occur. There would be an operational incentive for Sio Silica to avoid varying cluster diameters and simply invoke the plan with standard cluster diameters of 50 to 60 m. If subsidence occurred long after operations ceased Sio Silica could not be held accountable. The evidence presented here establishes that Sio Silica has no effective plans to avoid future detrimental land subsidence as a result of project excavations. Sio Silica plans violate the Stantec recommendation to limit extraction to areas with a competent limestone thickness greater than 15m demonstrating that Sio Silica is blatantly ignoring methods to prevent subsidence.

20. Appendix H Closure Plan

Section 5.4 of Appendix H states, "*Once the production piping is removed from the extraction well, the well will be sealed (abandoned) as per The Groundwater and Water Well Act and The Mines and Minerals Act requirements to prevent movement of water vertically between the aquifers."*

Similar statements are made in section 7.3 of the EAP. The sealing is illustrated in figure 5.12 of the EAP shown below in figure 11. A grout seal is shown around the well casing in the shale

layer that would isolate the limestone and aquifer waters preventing mixing as per the Manitoba regulations. However the shale layer has collapsed into the cavity thus the grout seal cannot be emplaced. Mixing of aquifer water would occur, violating Manitoba regulations. This blatant disregard of regulations is excused in the executive summary by claiming that:

"*The results of geochemical modelling show that the overall quality of groundwater within the maximum footprint of the project is largely preserved. The activities associated with project operations and post-closure phases were determined to have only a minor impact on groundwater quality, and in many cases the impact was simulated to be positive due to reduction of concentrations of iron and manganese when oxygen is introduced into the aquifer. 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. Should project operations result in a more interconnection between the Red River Carbonate aquifer and the Winnipeg Sandstone aquifer, groundwater quality would tend to reflect conservative mixing of the two water types (i.e. limited geochemical reactions) resulting in water quality that is similar or slightly better*."

I have given evidence above that the modeling is deficient. Significant contamination is likely to occur from dissolution of selenium arsenic and uranium under the oxidizing conditions from return of mined water to the extraction cavity and from leakage of air from airlift operations. Precipitation of iron and manganese would discolour well water reducing water quality not improving it as claimed.

The interconnection of aquifer waters disallowed by Manitoba groundwater regulations would be orders of magnitude greater than occurs from wells screened across both aquifers. The interconnection caused by the collapse of the shale layer in an extraction cavity would have diameter of up to 60 meters whereas the interconnection from wells screened across both aquifers would be of the order of a few centimeters. During well pumping the aquifer waters would be largely confined within the well and not mixed.

The regulations prohibiting interconnections of aquifer waters are in place to prevent lowering of water quality primarily in the sandstone aquifer which normally has higher water quality that the carbonate. Sio Silica is in no position to disregard provincial regulations on the basis of their own faulty rational. This is extreme hubris.

The CEC recommended that the Manitoba government seek a legal opinion to confirm whether existing legal protections prohibit activities, such as the proposed sand extraction, that create a connection between the two affected aquifers. To date no opinion has been revealed by government authorities. Will the government approvals process for this new Sio Silica application simply ignore the CEC recommendation and not enforce Manitoba water well and groundwater regulations?

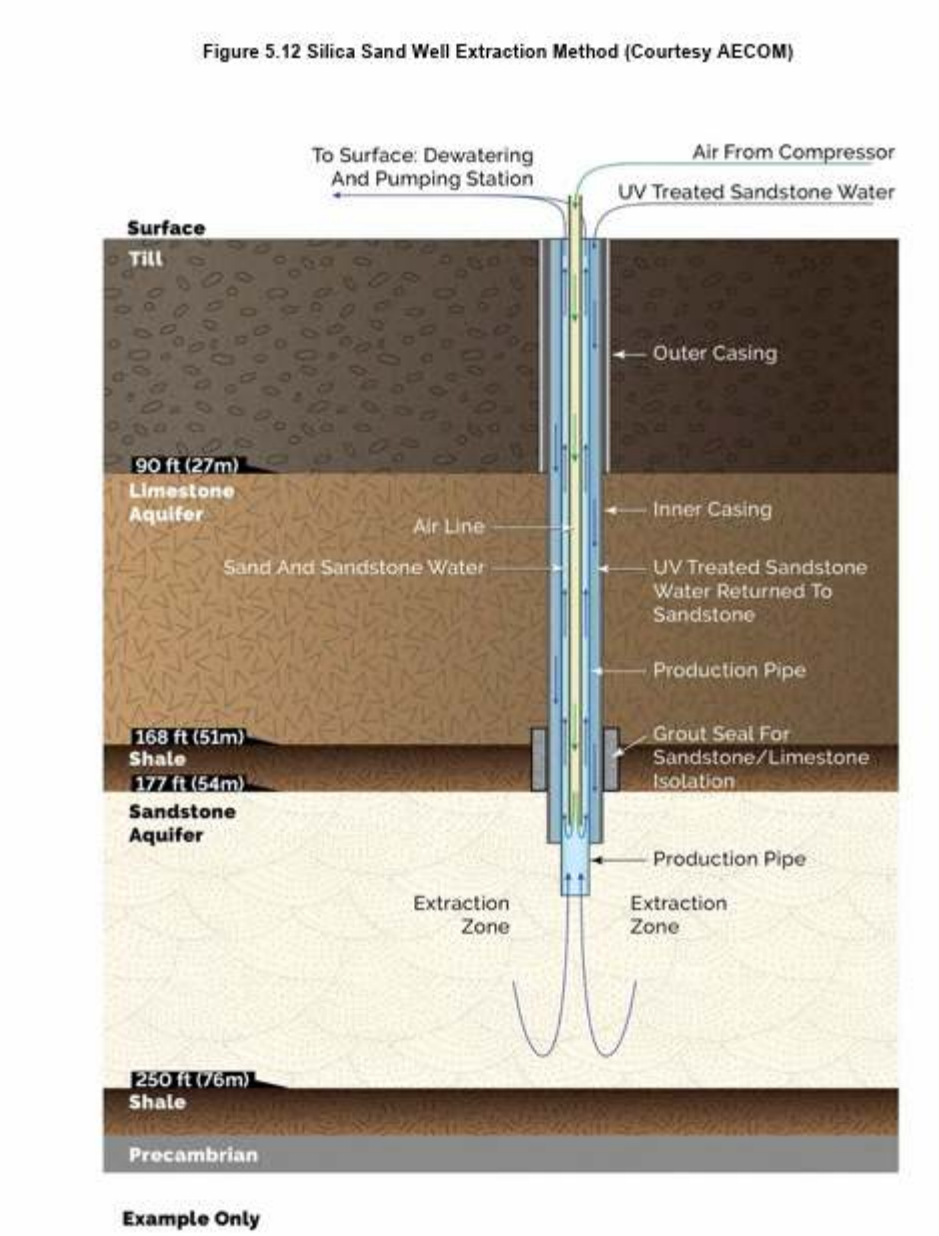

Figure 11. Sio Silica extraction well with grout casing seal through the shale layer. The shale layer has been shown to collapse during extraction. How can a seal be placed in a shale layer that no longer exists? Figure 11 is reproduced from 2025 EAP.

Section 5.9 states;

"*In accordance with applicable federal, provincial and municipal regulations and requirements. Sand slurry brought to surface at the extraction wells will be pre-screened to remove 'overs' such as concretions (calcified sand) which will be temporarily stockpiled in a containment tank on site before being removed off site for disposal at a licensed facility*."

The licensed facility is not named. There is no plan to characterize this waste. A peer reviewed scientific paper by by Schieber and Riciputi (2005) gives evidence that the concretions from the sandstone aquifer of the Winnipeg formation contain pyrite and marcasite that would cause acid rock drainage. (ref:Journal of Sedimentary Research, 2005, v. 75, 907–920, https://www.semanticscholar.org/paper/Pyrite-and-Marcasite-Coated-Grains-in-the-Winnipeg-SchieberRiciputi/c7260c14eefc435745019d169ed8f741ed4da6df),

Sio Silica has ignored this evidence that was presented in public comments and at the CEC Hearing. The avoidance of measurement and characterization of the "overs" waste is another example of Sio Silica negligence in refusing to adequately measure for potential project detriment.

21. Section 8.7 Tailings Management and Section 5.8 Management of Waste Rock, Ore, and Overburden Appendix H

In Section 8.7 Sio Silica states,

"*Tailings Management Not applicable. No tailings will be generated or stored on site. It is the intention of Sio Silica to keep drill cuttings separate. The Red River Carbonate and Winnipeg Shale will be stored in covered bins or mobile tanks for hauling to a licensed offsite landfill or waste facility for disposal.* ***No tailings*** *will arise from the proposed operations*."

In Section 5.8 Management of Waste Rock, Ore, and Overburden, Sio Silica states;

"*No waste rock piles will be generated or will require management as a result of operations. Drilling will occur directly through overburden. When the extraction wells are drilled, they generate drill cuttings from the Quaternary Sediments, (till), Red River Carbonate (limestone), Red River Shale and Winnipeg Sandstone. These cuttings will be captured separately, contained and stored in covered bins or mobile tanks during drilling. As containment fills up, these cuttings will be disposed of in accordance with applicable regulations at a licensed landfill or waste facility*."

Sio Silica has ignored the large volume of carbonate and shale collapsed into the extraction cavity that is proven to contain contaminants such as selenium, uranium and arsenic. The shale has been found to be potentially acid generating. Much of the collapsed shale and carbonate fragments would be extracted with the sand, screened out, and require disposal. When exposed to air at the surface, the carbonate and shale wastes would be subject to release of heavy metals and acid drainage. The amount of this waste would be far greater than the small amount of waste from drill cuttings. For example, for an extraction cluster 50 meters in diameter that was applied in the X1t modeling. Three meters of shale and two meters of carbonate at 2500 kg per cubic meter would result in 9817 cubic meters and 24.5 thousand tonnes of collapse into the extraction cavity. A significant fraction of collapsed shale and carbonate would be extracted with the sand. For instance 10% extraction of collapsed shale and carbonate would result in 2.45 thousand tonnes of tailings for each cluster. Yet Sio Silica claims, no tailings will arise from the proposed operations

How is it that Sio Silica has ignored this enormous waste problem? Sio Silica has been grossly negligent in ignoring the waste generated from extraction of collapsed shale and carbonate and has no plans for proper handling of this waste.

22. Conclusions

The last slide of my oral presentation at the CEC Hearing lists most of the project issues unaddressed by Sio Silica. None of the outstanding issues have been addressed. An updated list of unaddressed issues is given below.

- Silica sand is too, fine grained for the established carbothermic process used for production of silicon metal required for solar panels and other high purity applications which invalidates the stated project purpose.
- Large amounts of airborne contamination from project exhaust fumes and microbes form the compressed air used for airlifting would enter the aquifer.
- No compressed air scrubbing and microbial filtration
- Inadequate number of geochemical samples and characterization according to MEND guidelines
- Omission of pyritic concretions, and inter-bedded sandstone in geochemical analysis
- Inadequate sand sampling and sand acid base accounting tests
- Dismissal of massive aquifer contamination of by acids, heavy metals, benzene, oil vapours, selenium with no measured evidence
- Uncertain sand slope stability analysis and parameter values leads to limestone collapse and aquifer failure
- No independent review of new geotechnical stability equations and information
- Inadequate consideration of cover collapse through enhanced fractures in limestone
- Not respecting Stantec guidelines - No extraction east of 302 due to competent limestone less than 15 meters thick
- Ignoring documented measurement data on limestone thickness that shows violation of Stantec guidelines throughout the entire 25 year project area
- No real time measurement of cavity span
- Ignoring flowing well areas in extraction plans
- No plans, drawings and dimensions for surface extraction facilities
- Inadequate trigger action plan to address exceedance of allowed cavity span – monitoring cavity stability after extraction is futile
- No evaluation of potential rapid migration of oxygenated water, gaseous air, heavy metals in limestone of the carbonate aquifer
- Inadequate determination and measurement of dissolved oxygen and entrained air from air lift leakage and return of aquifer water
- Unwarranted dismissal of regulations against mixing of carbonate and sandstone waters that would occur in cavities due to collapsed
- Portraying precipitation of manganese and iron due to oxidizing conditions from returned aquifer water as beneficial whereas unwanted discolouration of aquifer water would occur
- Chitosan filtration undemonstrated and potentially unfeasible due to necessary acid and neutralization chemicals to control the pH required for effective filtration

- Inadequate information and specification of UV filtration, filter press, and filter press coagulation chemicals
- No measurement of PM2.5 and PM10 worker or public exposure to silica dust from sand piles
- Contaminated process water used to wet sand stockpiles
- Ignoring of collapse of shale aquitard in sealing of extraction wells
- No measurement of noise and light pollution in past operations
- Inadequate specification and measured effectiveness of excess noise and light abatement
- No measurement of process water quality to date
- Avoidance of characterization rock waste such as concretions in the Winnipeg formation violating MEND guidelines
- Meaningless hydrogeological tests and modelling applied only to withdrawal of well water which has already been well characterized.
- Modelling of re-injection of aquifer water by reducing water withdrawal rates with no actual re-injection of water
- No adequate testing of re-injection of water and measurement of subsequent water quality
- No planed measurement of slurry line contamination with acrylamide, acid, heavy metals, selenium, and acrylamide
- No permission to encroach and cross with slurry lines on Hydro transmission lines
- No permission for slurry line crossing of highway 302 and local RM roads
- No future plans for measurement of project noise and light levels
- No past measurement of project noise and light levels
- No past measurement and data on air pressure in airlift operations and no future plans for measurement
- No past or future plans for measurement of cavity oxygen levels during and following extraction and return of aquifer water
- No past or future plans for measurement of compressed air quality used for airlifting sand extraction operations
- Meaningless measurement of water quality following pump tests that do not include re-injection of aquifer water or sand extraction
- Inadequate misleading X1t modeling of selenium, uranium, and arsenic contamination modelling in an extraction cavity that grossly under predicted dissolution
- Failure to consider leaching of selenium and heavy metals from sources in sandstone aquifer such as inter-bedded shale and concretions
- Omission of tailings management for the large amount of collapsed shale and carbonate fragments that would be withdrawn with sand and no measurement of contaminants in these tailings
- Inadequate local consultation with area residents for new EAP submission

Avoidance of meaningful measurement has been a hallmark of this project. The very few measurements of only three geological samples demonstrated exceedances in selenium, arsenic and uranium permitted levels and potential acid generation. The list of inadequate measurement is long and mostly listed above.

The only new information introduced by Sio Silica was a faulty misleading model study on selenium, arsenic and uranium dissolution in an extraction cavity under oxidizing conditions

from oxygen dissolved in water returned to the aquifer. The model allowed only a tiny fraction of the available contaminants in collapsed shale and carbonate to dissolve contrary to the much larger fraction dissolved in shake flask test. Some new equations and information was given in the geotechnical analysis. There has been no adequate qualified independent review of this new geotechnical information.

In the review process, public comments are not posted until after the comments by the Technical Advisory Committee (TAC). Thus the TAC does no evaluate and respond to the comments. Only the proponent responds to public comments. No doubt Sio Silica will dismiss these public comments without evidence as they have done in past project proposals. The inadequate project review process has no mechanism to ensure that meaningful independent review of public comments such as this submission will ever occur. Only a massive public outcry against potential wholesale aquifer contamination, toxic tailings accumulation, unacceptable project light and noise, unmeasured silica dust exposure, widespread land subsidence, and acrylamide, selenium and heavy metal surface groundwater contamination, could result in termination of this inherently dangerous and potentially disastrous project.

A new CEC Hearing with adequate participant funding is required to evaluate the new information presented, to consider omitted issues as described above, and to consider the adequacy of the progressive implementation plan proposed by Sio Silica.

From: [redacted]
Sent: November 30, 2025 8:14 PM
To: +WPG569 - Public Registry <publicregistry@gov.mb.ca>; +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Sio Silica SIMBA Extraction Project (#6275)

Agnes Wittmann
Director, Environmental Approvals Branch
MB Environment and Climate Change

Dear Ms. Wittmann,

I am a resident of the Rural Municipality of Springfield and currently have a well on rural land to supply drinking water to my family's home. I am very concerned about the Sio Silica SIMBA Extraction Project's impact to my family's health and wellbeing and respectfully request that you deny this application.

Sio Silica (SIMBA)'s mining method is high risk mining. The mining is proposed to occur through 2 aquifers (the Carbonate and Sandstone Aquifers) and the shale aquitard (which separates these aquifers and must not be breached). On June 24, 2023 the Manitoba Clean Environment Commission ruled "after this lengthy review, members of the panel are unable to state with confidence that all potential environmental effects of this project have been fully considered and that adequate detailed plans have been prepared for preventing or mitigating these effects." This 2nd application from Sio Silica reduces the scope of the mining in the first 5 years however, their extraction method is virtually unchanged. They are using the same high risk and novel method that causes irreparable damage to our aquifers.
This is thousands of southeastern Manitobans' drinking water! This is my family's drinking water.

As a resident of Manitoba, I should be assured as to the safety and health of my drinking water. We rely on government officials to ensure the safety of our drinking water. However, the MB government allowed splitting the project into multiple files. The extraction and processing components should have been scrutinized as one project, but the EAP allowed Sio Silica to divide them into separate environmental approvals. This reduced transparency and prevented the public from understanding the full environmental impact. It also lowered the regulatory threshold by avoiding a Class 3 designation. The extraction and processing facilities should be considered as one project.

Sio Silica has shown that they are irresponsible when it comes to capping test wells. And these are only test wells! Wells have been found to be uncovered, risking water contamination. Silica sand piles have also been found inadequately covered, risking health concerns of nearby residents. Since the number of proposed wells are 10,000 or more over the project's lifetime, how can you assure Manitobans that the company will cap their abandoned wells properly and cover their sand piles adequately?

The fact that former Premier Heather Stefanson, former Economic Development Minister Jeff Wharton and former Deputy Premier and Finance Minister Cliff Cullen were found in breach of Manitoba's Conflict of Interest Act for their actions during the transition of power to the new NDP government, further diminishes confidence in the approval process of this project. The fact that Manitoban's do not

know WHY these three politicians acted in this manner, calls for a Public Inquiry of the Sio Silica file. Manitobans deserve to know the truth, especially when the safety of their drinking water, and the drinking water of future generations, is on the line.

There is currently a global water shortage, we are experiencing greater environmental threats from the effects of climate change. Clean, healthy drinking water should be protected and not be put at risk due to an experimental mining method. There are too many untested components to this project.

When drinking water is contaminated, what assurances do Springfield residents (and other southeastern Manitoba residents) have with regards to where our drinking water will come from? Who is going to pay for my new drinking water? Where will it come from? Are the costs going to be borne by the taxpayers of Manitoba? Previously it has been revealed that Sio Silica was only required to have a $10M insurance policy with an ability to give a six-week cancellation notice of the insurance. This is highly insufficient and irresponsible. An audit by an independent insurance broker must be allowed to determine the appropriate value of liability insurance that Sio Silica would be mandated to carry.

Southeastern Manitoba has some of the most pristine water in the world. Our community's health is being put as risk with this project.

I respectfully ask that:

- you DENY this new Sio Silica (SIMBA) environmental application (#6275)
- the project must be reclassified as a Class 3 development
- the project must undergo a Public Hearing
- the project must undergo a Clean Environment Commission Hearing
- the CEC hearing must allow full public participation and participant funding

Sincerely,

[redacted]

Springfield Resident

From: [redacted]
Sent: November 30, 2025 6:31 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I am frustrated by Sio Silica submitting a new application for extraction with nothing new in terms of their methods of extraction. These methods have a very strong likelihood of potentially permanently damaging a vital aquifer which is relied upon for drinking water.

Other reasons for denying their new submission are:

- A drinking water table is simply too important to experiment with.
- Mining this sand will cause irreversible cross contamination of water between two different aquifers.
- The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet.
- CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them.
- CEC asked for a worst-case scenario plan and the company has not provided it.
- CEC asked for a cumulative impacts assessment of the 24-year life of the project, but the company said no.
- If the company says no to the CEC then we will say no to the company.
- The lack of cumulative assessment for projects in Manitoba is an indication that we should modernize our Environment Act and approvals process.
- For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

I anticipate that you will do the right thing and deny this company their application. It is far too great of a risk.

Thank you.

[redacted]

From: [redacted]
Sent: November 30, 2025 4:29 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Sand mining in drinking water sucks

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

- This is our future, the water. Not everything is about money, and greed.
- This needs to stop now, and leave our precious areas alone.
- A drinking water table is simply too important to experiment with.
- Mining this sand will cause irreversible cross contamination of water between two different aquifers.
- The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet.
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- For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

[redacted]

From: [redacted]
Sent: November 30, 2025 4:15 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Say no to Sio Silica

Dear Environmental Approvals Branch Director,

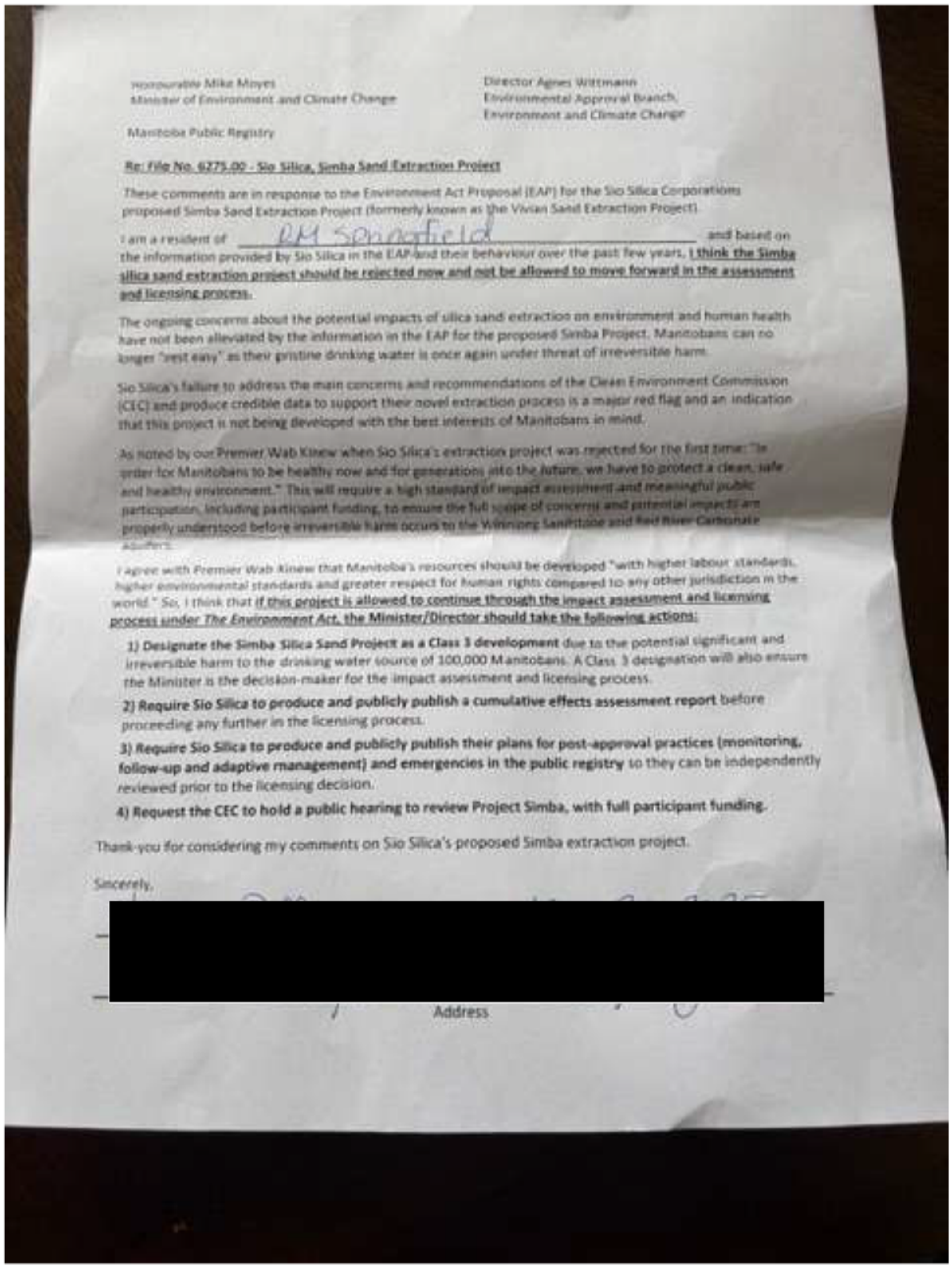
This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

We cannot reverse damage done after the fact!!!
None of the CEC stated requirements have been met. This was attempted to be pushed through before without complete assessments/requirements DO NOT let it happen again. We owe it to ourselves and future generations to value and respect the environment. Projects that will result in serious environmental harm should not proceed.

[redacted]

From: [redacted]
Sent: November 30, 2025 1:07 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Additional Public Comments re: Project: Silica Sand

Please see attached apposing letters for Silica sand.



Honourable Mike Moyes
Minister of Environment and Climate Change

Director Agnes Wittmann
Environmental Approval Branch,
Environment and Climate Change

Manitoba Public Registry

Re: File No. 6275.00 - Sio Silica, Simba Sand Extraction Project

These comments are in response to the Environment Act Proposal (EAP) for the Sio Silica Corporations proposed Simba Sand Extraction Project (formerly known as the Vivian Sand Extraction Project).

I am a resident of RM Springfield and based on the information provided by Sio Silica in the EAP and their behaviour over the past few years, **I think the Simba silica sand extraction project should be rejected now and not be allowed to move forward in the assessment and licensing process.**

The ongoing concerns about the potential impacts of silica sand extraction on environment and human health have not been alleviated by the information in the EAP for the proposed Simba Project. Manitobans can no longer "rest easy" as their pristine drinking water is once again under threat of irreversible harm.

Sio Silica's failure to address the main concerns and recommendations of the Clean Environment Commission (CEC) and produce credible data to support their novel extraction process is a major red flag and an indication that this project is not being developed with the best interests of Manitobans in mind.

As noted by our Premier Wab Kinew when Sio Silica's extraction project was rejected for the first time: "In order for Manitobans to be healthy now and for generations into the future, we have to protect a clean, safe and healthy environment." This will require a high standard of impact assessment and meaningful public participation, including participant funding, to ensure the full scope of concerns and potential impacts are properly understood before irreversible harm occurs to the Winnipeg Sandstone and Red River Carbonate Aquifers.

I agree with Premier Wab Kinew that Manitoba's resources should be developed "with higher labour standards, higher environmental standards and greater respect for human rights compared to any other jurisdiction in the world." So, I think that **if this project is allowed to continue through the impact assessment and licensing process under *The Environment Act*, the Minister/Director should take the following actions:**

1) **Designate the Simba Silica Sand Project as a Class 3 development** due to the potential significant and irreversible harm to the drinking water source of 100,000 Manitobans. A Class 3 designation will also ensure the Minister is the decision-maker for the impact assessment and licensing process.

2) **Require Sio Silica to produce and publicly publish a cumulative effects assessment report** before proceeding any further in the licensing process.

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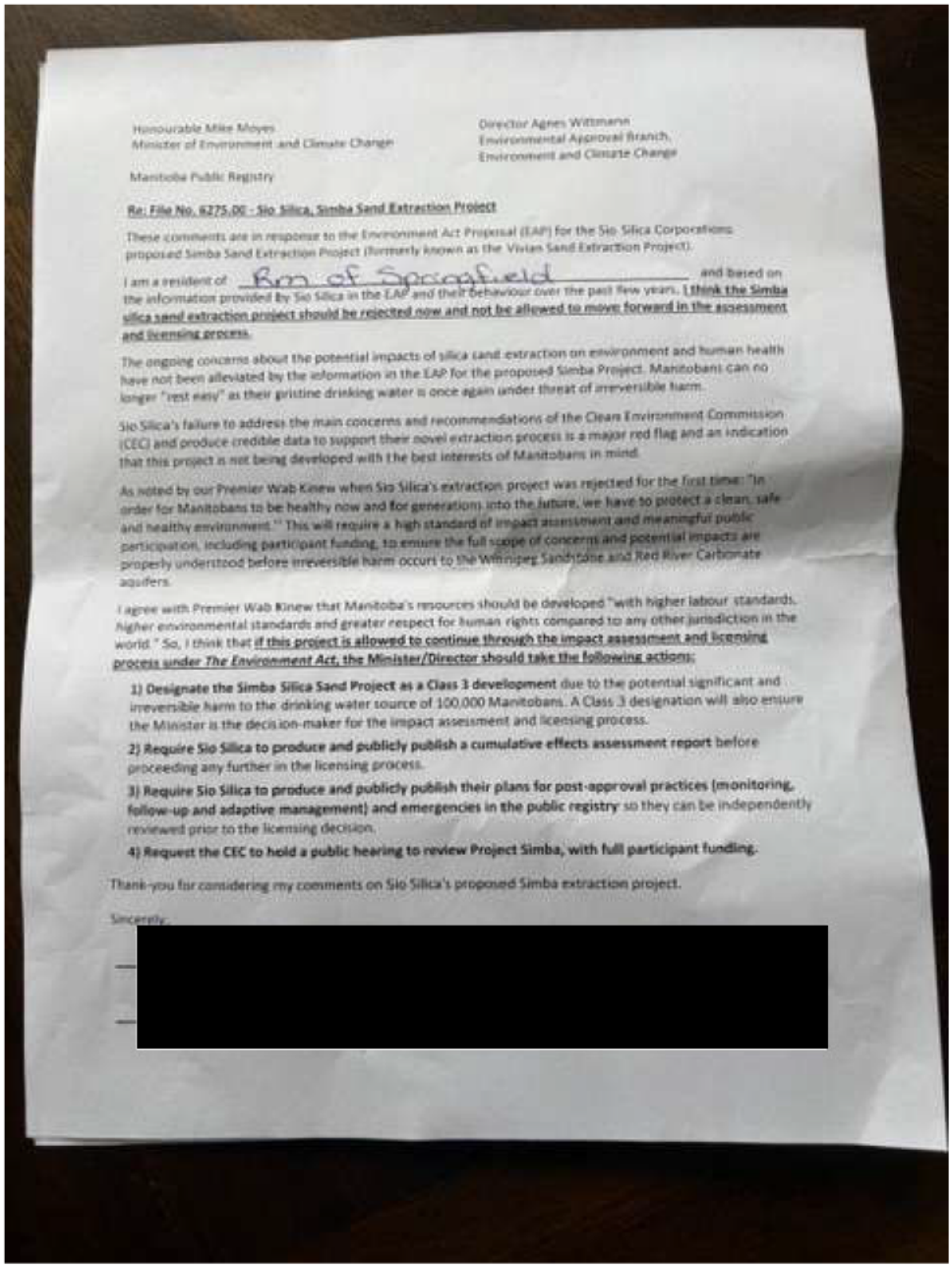
4) **Request the CEC to hold a public hearing to review Project Simba, with full participant funding.**

Thank-you for considering my comments on Sio Silica's proposed Simba extraction project.

Sincerely,

[redacted]

Address



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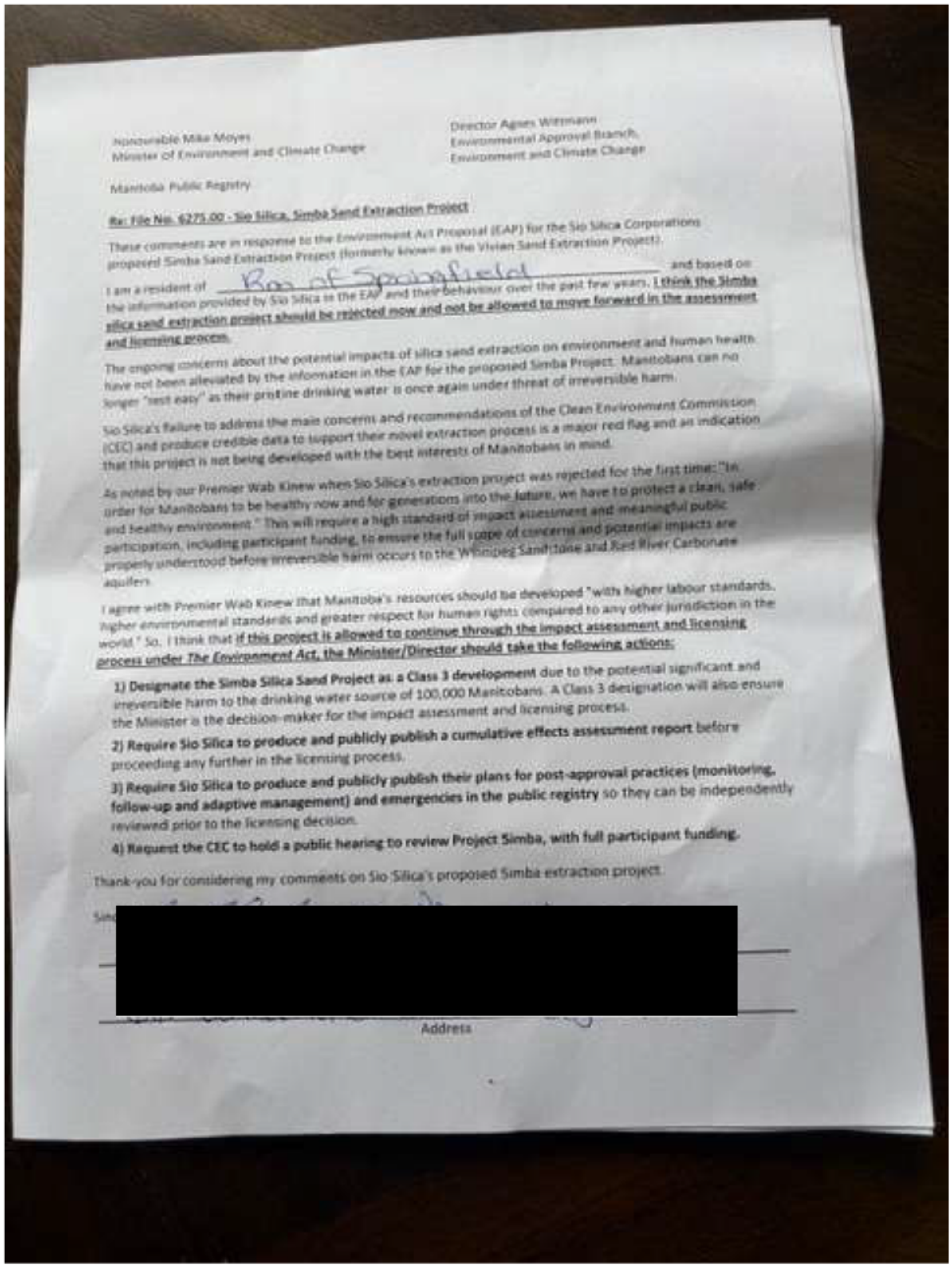

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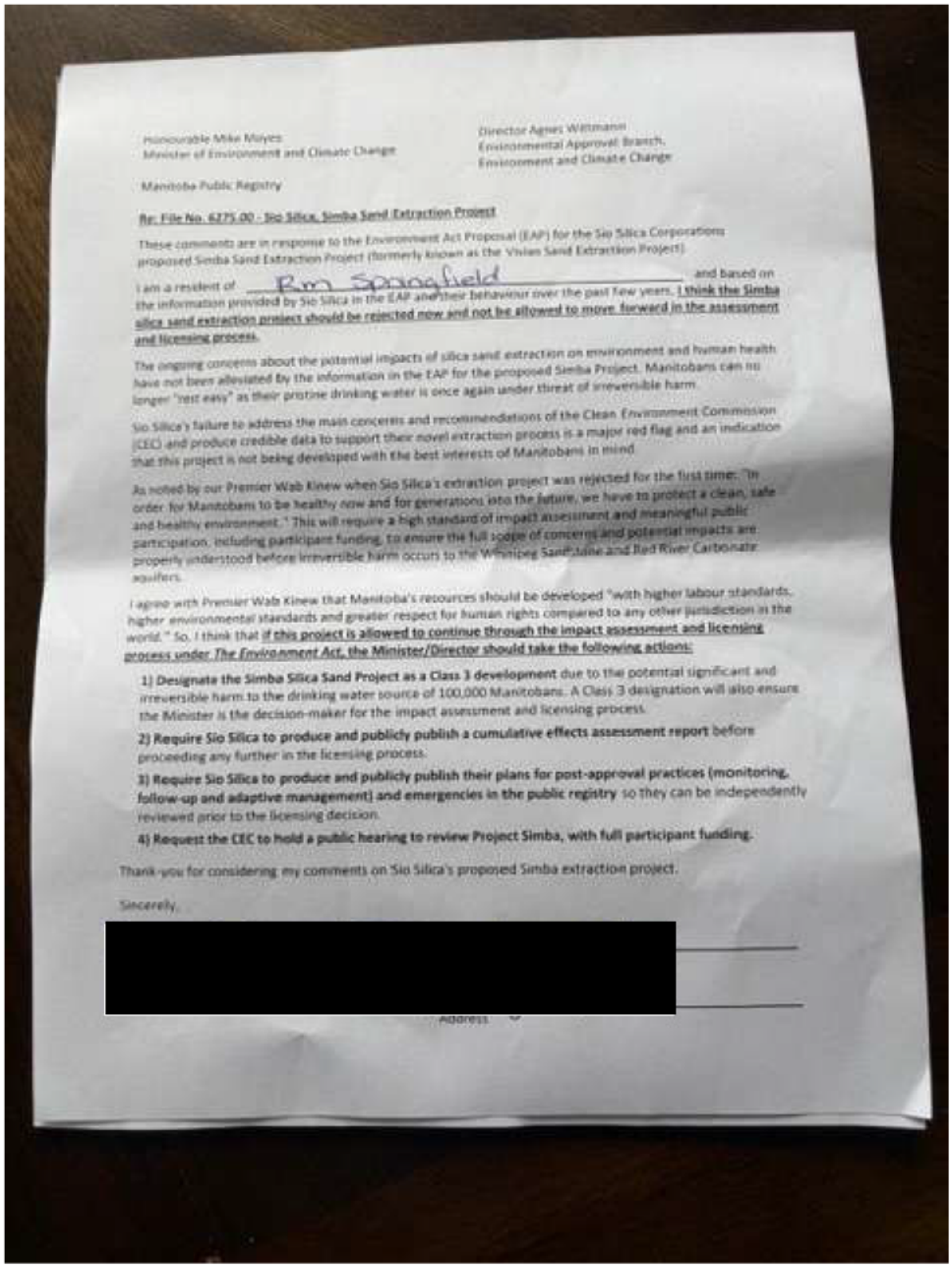

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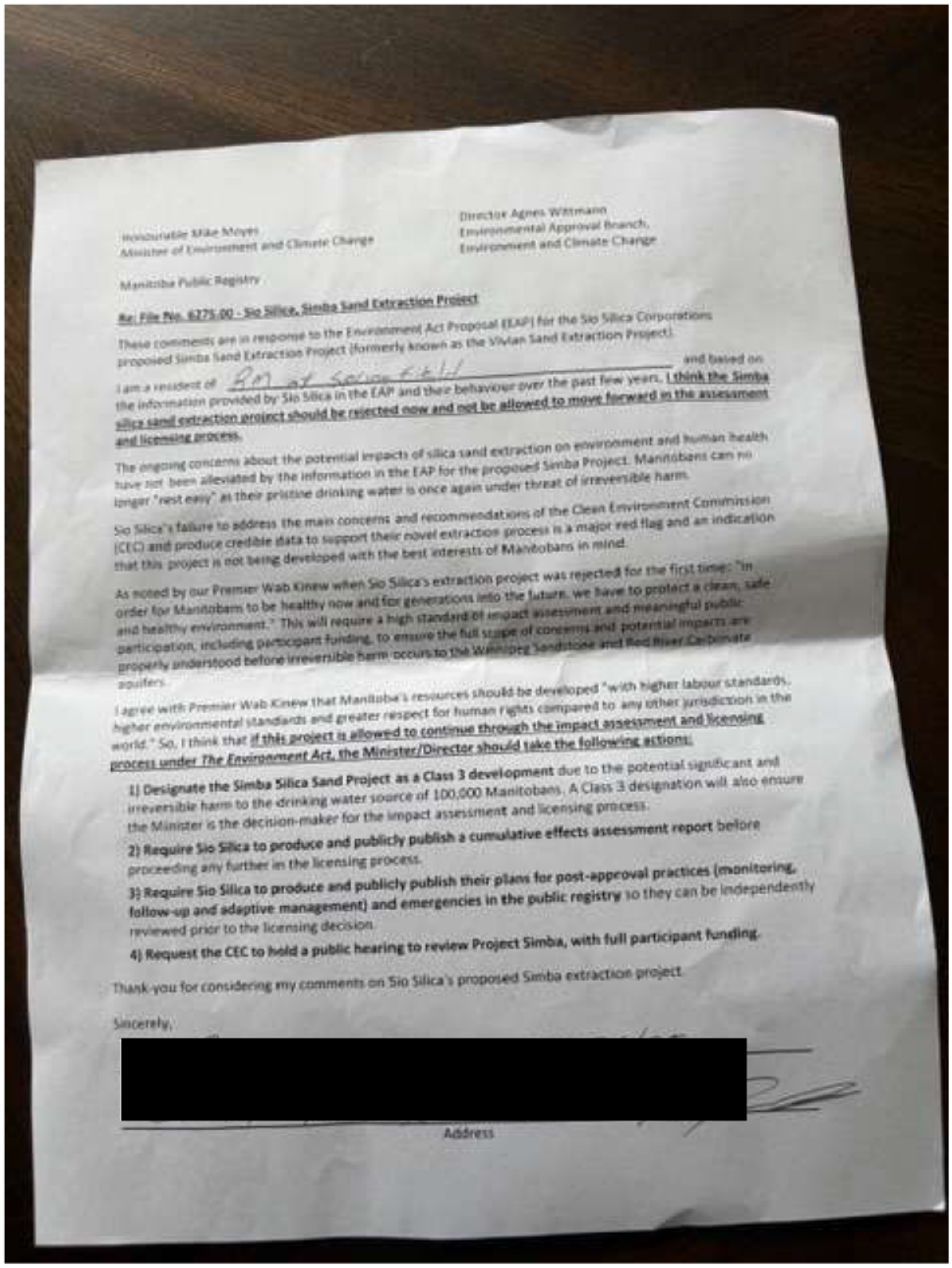

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I am a resident of RM of Springfield and based on the information provided by Sio Silica in the EAP and their behaviour over the past few years, **I think the Simba silica sand extraction project should be rejected now and not be allowed to move forward in the assessment and licensing process.**

The ongoing concerns about the potential impacts of silica sand extraction on environment and human health have not been alleviated by the information in the EAP for the proposed Simba Project. Manitobans can no longer "rest easy" as their pristine drinking water is once again under threat of irreversible harm.

Sio Silica's failure to address the main concerns and recommendations of the Clean Environment Commission (CEC) and produce credible data to support their novel extraction process is a major red flag and an indication that this project is not being developed with the best interests of Manitobans in mind.

As noted by our Premier Wab Kinew when Sio Silica's extraction project was rejected for the first time: "In order for Manitobans to be healthy now and for generations into the future, we have to protect a clean, safe and healthy environment." This will require a high standard of impact assessment and meaningful public participation, including participant funding, to ensure the full scope of concerns and potential impacts are properly understood before irreversible harm occurs to the Winnipeg Sandstone and Red River Carbonate aquifers.

I agree with Premier Wab Kinew that Manitoba's resources should be developed "with higher labour standards, higher environmental standards and greater respect for human rights compared to any other jurisdiction in the world." So, I think that **if this project is allowed to continue through the impact assessment and licensing process under *The Environment Act*, the Minister/Director should take the following actions:**

1) **Designate the Simba Silica Sand Project as a Class 3 development** due to the potential significant and irreversible harm to the drinking water source of 100,000 Manitobans. A Class 3 designation will also ensure the Minister is the decision-maker for the impact assessment and licensing process.

2) **Require Sio Silica to produce and publicly publish a cumulative effects assessment report** before proceeding any further in the licensing process.

3) **Require Sio Silica to produce and publicly publish their plans for post-approval practices (monitoring, follow-up and adaptive management) and emergencies in the public registry** so they can be independently reviewed prior to the licensing decision.

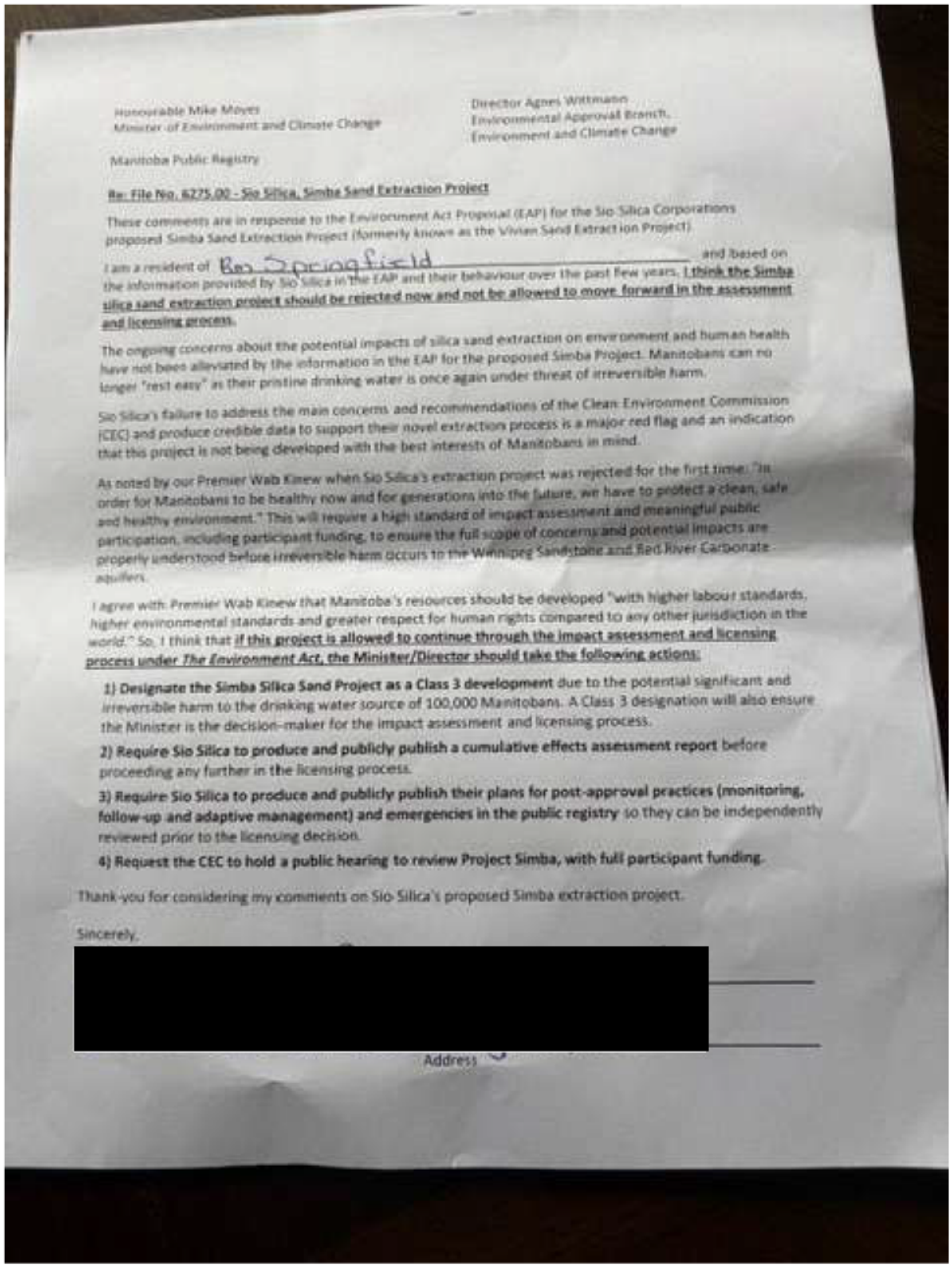
4) **Request the CEC to hold a public hearing to review Project Simba, with full participant funding.**

Thank-you for considering my comments on Sio Silica's proposed Simba extraction project.

Sincerely,

[redacted]

Address



Honourable Mike Moyes
Minister of Environment and Climate Change

Director Agnes Wittmann
Environmental Approvals Branch,
Environment and Climate Change

Manitoba Public Registry

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Thank-you for considering my comments on Sio Silica's proposed Simba extraction project.

Sincerely,

[redacted]

Address

Sent from my iPhone

From: [redacted]
Sent: November 30, 2025 12:10 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Say no to Sio Silica

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

[redacted]

Protecting the environment for future generations MUST be our most important priority. Please do not permit Sio Silica to proceed with the raping of our land for their benefit and contamination of the adjacent aquifer. Think first about how you could possibly justify to your children and grandchildren why you would permit such destruction when it was within your control to stop it.

From: [redacted]
Sent: November 30, 2025 11:27 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: kirknsw@gmail.com

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

Please consider the idea that long term effects are not known or sought for this project. Clean healthy water is something that is becoming less common and must be protected. Any person, any company that does not consider the long term effects of any projects to an area cannot be allowed exploit then leave the mess behind. If Sio Silca cannot determine the long term effects they cannot determine the long term costs to the area in fact to the lives in the area.

Time to make get reasonable answers to reasonable questions to make reasonable decisions.

[redacted]

From: [redacted]
Sent: November 30, 2025 10:40 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Say no to Sio Silica

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

I am writing to add my voice to the public comment period for the new Sio Silica Proposal.

In this second proposal, Sio Silica has not addressed any of the very important citical concerns raised by the Clean Environment Commisions review of it's first propsal. I am shocked that a company would submit a new proposal without addressing the serious flaws and gaps flagged in their first proposal. This is especially important since the project affects our drinking water table, which contains the most prescious resource on our planet on which all life relies (ie: clean water). The below points highlight some of the 'scary' gaps in the proposal. In addition to these points, I also want to highlight the extreme opposotion due to unaddressed concerns of local communites and Indigenous goups to this project.

- A drinking water table is simply too important to experiment with.
- Mining this sand will cause irreversible cross contamination of water between two different aquifers.
- The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet.
- CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them.
- CEC asked for a worst-case scenario plan and the company has not provided it.
- CEC asked for a cumulative impacts assessment of the 24-year life of the project, but the company said no.
- If the company says no to the CEC then we will say no to the company.
- The lack of cumulative assessment for projects in Manitoba is an indication that we should modernize our Environment Act and approvals process.
- For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

Frankly, I am alarmed that a company would re-submit a project proposal without addressing both the concerns of the regulatory process (Clean Environment Commission), local communities, and Indigenous goups. The potential for serious harm to the environment from this project has been well estabished, and I believe the public trust in the project regulatory approval process will be deeply harmed if this second submission by Sio Silica is approved.

Regards,

From: [redacted]
Sent: November 30, 2025 10:38 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

Manitoba has totally lost its way and is taking a step backward in its relationship to the environment. What we do to her (Nature), we do to ourselves. The precautionary principle must be applied here - the gold standard around the globe that was adopted in 1992's Rio Declaration on Environment and Development. It is explained as "if an activity raises threats of serious harm to the environment, precautionary measures should be taken even if it has not been fully established scientifically that the activity is harmful." Therefore the proponent of the activity must bear the burden of proof.

The province must not consider proposals to contaminate water quifers for private companies for profit.

- A drinking water table is simply too important to experiment with.
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- For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

Sio Silica's plan to drill into aquifers and then suck sand out is terribly risky. Consideration of this request rejects acknowledgment of the precautionary principle as there is a serious threat to our water.

We are in a biodiversity and climate crisis, and I do not support the threat to our water aquifers with this project and am saying no to Sio Silica's project and to mining of this area. Further, I am lending my support for an Environmental Rights Act that protects nature, and in turn all Manitobans from harms way and catastrophic harm to our environment.

Absolutely NO, to Sio Silica.

[redacted]

[redacted]

[redacted]

From: [redacted]
Sent: November 30, 2025 10:09 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

As a member of the Winnipeg Raging Grannies for Social Justice, I am once again raging that Sio Silica is relaunching a proposal that endangers the aquifer for much of Southern Manitoba. Four years ago we posted this video of our protest to an earlier proposal by this company: https://www.youtube.com/watch?v=p3ML1cAJrUM&list=LL

The ongoing saga of this repeated effort by Sio Silica corporation reveals that we need to modernize our Environment Act and approvals process.

Please register this as a resounding "no" to this proposed application for a sand extraction project.

Sincerely,

[redacted]

From: [redacted]
Sent: November 30, 2025 9:15 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Environmental Approvals Branch Director,

*97.2% of this planet's water is in the oceans, 2.15% in glaciers and polar ice caps, less than 1% is in surface and groundwater of which groundwater is 0.31%. Much of that groundwater is not usable because it has been ruined by fracking, mining, or irremediable spills. Water is too precious and the risk too great, this project must NOT receive an Environment Act License.

*Given the need to protect local and regional groundwater sources, it is distressing that this project is being considered again.

*The further reduction of the mining area for environmental assessment and only a 5 year period out of a "multi-generational" mine life, prevents full assessment of all environmental, economic, and social risks and impacts from the project. This conflicts with best practice standards for Impact Assessment.

*It is unacceptable that Sio Silica failed to undertake the cumulative impact assessment as recommended by the CEC. In order for environmental assessments "to be done well, they must include an assessment of cumulative effects." (CEC 2014, 2018)

*The Sio Silica extraction project is experimental and remains unproven. If this experiment is licensed, the previously approved sand processing facility will be built for the experiment. This must not be allowed.

*Operations will have direct impacts on the land. Trees/brush will be cleared and loss of habitat will impact known species at risk. Many properties contain old growth, these are irreplaceable.

*Access roads will be required for the heavy machinery and truck traffic, impacting farm land and livestock and wildlife. Operations will create continual distress and worry, negatively impact our livelihoods and communities and will impinge on the enjoyment of our property.

*The disinfection method for the return of mined water back to the aquifer remains unproven. This is a major component of the project that should have been thoroughly proven prior to the licensing process. This gives 100,000+ Manitobans no assurance that the Water will remain safe and dependable nor that their best interests are being protected.

*Sio now admits their return of mined, oxygenated water, to the aquifer results in oxidizing conditions that will cause dissolution of selenium, arsenic, and uranium contained in material that collapses into the mined sand cavity. Figure 4-10, shows selenium above drinking water guideline levels for 7 years until it slowly disperses.

*The X1t model is 1Dimensional and did not consider how the contaminate plume interacts with other mined cavities or how ongoing mining that increases gradients and flow, impacts movement. With collapse of the Winnipeg Shale Aquitard, the oxygen and contaminants can potentially move into the overlying Carbonate Aquifer.

*A thorough assessment of all potential oxygen sources introduced into the aquifer system by operations (i.e. from airlift method, type (entrained) have not been undertaken. Until this is addressed the modelling grossly underestimates oxidation potential.

*Borehole mining causes the irreversible collapse of the Winnipeg Shale Aquitard which separates the two aquifers - Carbonate and Sandstone Aquifers. Fractured limestone in the Carbonate aquifer also collapses. Collapse of this geological material prevents proper sealing/abandonment of the boreholes. This increases the aquifers vulnerability to contamination from surface sources.

*Over the life-time of the mine, thousands of industrial sized boreholes, monitoring and vertical boreholes will be drilled all up to 100 meters of homes. These boreholes will be perpetual sources for contamination from surface sources. It takes ONE failed or soiled well to cause damage. Certain land uses will be prohibited to prevent contamination to the groundwater i.e. chemical agriculture, livestock, manure spreading, housing, septic systems,...

*To grant this project a license would be an agreement to the destruction of two irreplaceable aquifers. This is not stewardship. We do not get a second chance.

*We all rely on our environment and must care for it. We need to know the truth about impacts from development to avoid mistakes that will be costly to our children. Particularly when it comes to Water, there is no room for error.

*With its potential to cause significant and irreversible harm to Manitoba's drinking water, the Sio Silica project must be rejected now. If it should be allowed to continue, it must be designated a Class 3 development and the Manitoba Clean Environment Commission be convened to hold a public hearing to review the project with full participant funding.

*The Sio Silica project illustrates the need to strengthen Manitoba's dangerously flawed assessment and licensing process under The Environment Act and The Mines and Minerals Act.

[redacted]

From: [redacted]
Sent: November 29, 2025 11:23 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: comments No. 6275.00 Sio/Simba

I wish to object to proposal No. 6275.00. I have the following comments at this time:

1. For a proposal of this magnitude, the time allowed for evaluation of the technical data and to provide an appropriate response is unreasonably, impossibly short. The magnitude and staggering scope of the entire project, its expected long and indeterminate subsequent lifespan, and its irreversible consequences, demand at the very least another CEC inquiry.
2. The extracted sand volumes are proposed to be reduced from the previous proposal, *for the first 5 years*, with subsequent expansion and Notices of Alteration. The extraction and operational methodology remain the same as the previous proposal, with the same attendant risks. The proposal is a foot-in-the-door bid, where the door can never be closed again.
3. Crucial components of the operation such as water treatment, filtration, monitoring, emergency response, rehabilitation, and many other aspects are missing or suppressed in terms of methodology, validity, and logistics/legitimacy of application. It appears that some key components of the project have not yet been designed.
4. The new proposal does not address the previous CEC concerns: the proponent purports some of the comments "will" be addressed at a future time, by undertaking the activities that are of concern, despite the concern and the significant risk of irreparable harm. There are no protections or remedies in the event of harm, nor is there a mechanism to order cessation of the project.
5. The new proposal *has not corrected errors, wrong assumptions and illegitimate methodology* identified in the previous one; accordingly models utilizing them are flawed, e.g. unrealistic domestic well pump depths, invalid water samples from water softeners, minimized radii of influence, variability of limestone competency across the project area, and many others.
6. Due to paucity of hard data, the project itself will provide guidance for the project as it proceeds. Mistakes, failures, accidents and surprises will inform subsequent operational "refinements". There is no plan regarding remediation for unfelicitous occurrences, nor is one possible.
7. The great majority of existing domestic wells within the Regional Project area are completed in the Carbonate aquifer and do not penetrate the shale aquitard. However the year-round well drilling will involve an enormous number of penetrations of the shale layer and both aquifers, exposing the latter to a vastly increased permanent and irreversible risk of surface contamination and the certainty of intermixing between the aquifers.
8. The boreholes will be 20.3 - 40.6 cm in diameter, much larger than the typical 15 cm (or less) bores used for domestic wells. The large bores of the punctures will further promote contamination.
9. Besides drill holes for production wells, an unknown large number of additional boreholes will be drilled to assess limestone thickness, production prospects, etc. All of these will provide further conduits for contamination, and altered pathways of hydraulic flow.

10. Setbacks from homes, domestic wells, and hamlets, will be only 100 m, or somehow determined "on a case-by-case basis, for which criteria are not known. However effects such as drawdowns and shale compromise are expected to much exceed this setback distance.
11. Extraction will occur 24/7 during April to November, with multiple wells extracted at the same time. Each well will operate 3-7 days and nights (there are several different estimates, 4 days seems to be a general target). Not all wells in a cluster may operate at the same time, extending the total duration of operation of single and adjacent clusters. There will be many clusters on a land parcel, materially extending its occupation time. Landowners will be excluded from occupied areas of their land.
12. Drawdown of domestic wells surrounding the extraction sites may/will occur during and after operation activities. Several extraction wells operating in mutual proximity will result in complex superposition of drawdown cones, increasing the amount, impacted radius, and unpredictability of drawdown. The 30 m domestic well pump fallacy is again repeated in the new modelling, disqualifying the result.
13. Perched aquifers in the sand and gravel overburden in the area have not been considered in the models, yet are likely to be encountered during the longterm vision for the project. If their aquicludes are punctured, this may introduce another source of intermixing, and may compromise associated domestic wells that rely on these reservoirs.
14. As seen from well drilling data thus far, multiple shale layers are present in the Sandstone aquifer at many locations. Water chemistry within these subunits has not been investigated, nor have any potential impacts of their intermixing. Water chemistry also differs between upper and lower portions within the Carbonate aquifer. These conditions have not been addressed in the models.
15. Artesian conditions are present in the region, are expected to be encountered during the extended lifespan of the project, and require special management and sealing techniques. Wells that are not flowing at the time of decommissioning may erupt at a later time. The proponents have previously indicated they expect to extract such wells when they are not flowing. These circumstances have not been addressed in the models.
16. Water and sand brought to the surface by some form of air lifting (not yet patented in Canada) will be subjected onsite to vibrating screens to remove larger materials, a mobile dewatering station including a centrifuge (cyclone) and a screen, some sort of dubious attempt at filtration and water disinfection, and proposed reintroduction of recovered water into the aquifer. Detail, specifics and metrics are lacking. Not all of the water will be recovered.
17. Air lifting and return of water will occur at the same time, presenting the likelihood that some of the returned water will be re-exposed to the surface and manipulated multiple times.
18. Ultraviolet treatment is unfortunately yet again proposed, but will be unsuitable because of the high turbidity requiring intensive filtration, high iron and manganese levels, no ancillary treatments, and because it will not address chemical contamination. Lamp sleeve fouling, variable flow rates, constant relocation of the unit requiring recalibration, and potential UV lamp breakage which could release mercury into the aquifer constitute other logistical problems. *The treatment/disinfection system has not yet been designed*.
19. Filtration is mentioned, but zero information is provided regarding how this will be continuously accomplished, nor what will be done with the vast amounts of solids that will be generated. The previous proposal postulated several speculative methods, none of which are feasible and/or appropriate.
20. The processed sand/water slurry will be pumped into plastic slurry lines and travel along cleared pathways to the processing facility, where the sand will be removed and the water will be endlessly recirculated via return lines to the extraction sites. The 2m width of the pathways is not realistic in view of the machinery and traffic that will be necessary for installation, maintenance,

monitoring and decommissioning. In addition, pumping stations of undisclosed design and configuration along the trails will maintain pressure at intervals along the slurry lines.

21. Plastic slurry lines, i.e. HDPE pipes, will be placed on the ground, will be moved to different locations, and impinge on public property or hydro transmission corridors. Sections will be permanently fused into undetermined lengths, and also joined with flanges which can be disassembled. It is not known how the fused lengths between the flanges will be repeatedly relocated.
22. Use of HDPE tubing for this application raises concerns: it is not optimal for high pressure applications, becomes brittle at cold temperatures, withstands less pressure at warm temperatures, is prone to various modes of cracking, will be continually abraded by silica sand, and requires gentle handling and protection from scratches. It will be exposed to the rigors of the environment, fluctuating pressures, impact, uneven heating in sunlight, photodegradation, repeated assembling/disassembling, relocation and handling, and potential human/animal interference. Risks of leakage or rupture are significant.
23. The volume and mechanical support of the removed sand and some of the water will not be replaced. Removal will create cavities (voids) of irregular and inconsistent configurations underneath the extraction wells, which will permanently alter the physical structure and characteristics of the Sandstone aquifer within the project area. The large volume of water in the many voids will alter water levels and hydraulic flow, as well as pathways of chemical contaminant and pathogen travel within the aquifer.
24. Shale degradation is certain and irreversible, with a previously estimated propagation radius of 200 m, the cumulative area of which will expand as the project advances and enlarges.
25. Damage and destruction of the brittle and fractured shale (or the pliable clay) aquitard, combined with the circular perforation placements of the boreholes (+ 1 in the center), could lead to its weakening and collapse across the well cluster, resulting in a large hole between the two aquifers that cannot be sealed or remediated. Furthermore practice wells have demonstrated fall of the limestone above the shale. This constitutes a fundamental and insuperable flaw in the project.
26. Communication between the aquifers due to destruction of the shale aquitard (or sub-aquitards where multiple shale layers are present) will result in mixing of waters of different quality and oxidation/reduction conditions, contributing to unavoidable changes in both aquifers.
27. Cavities will enlarge over time due to increased hydraulic conductivity, spalling, erosion, vertical seepage with dissolution of the limestone over time, and other processes. Intermittent hydraulic blast from falling limestone blocks will forcefully displace water against the sides and ceiling, enlarging the void. Cavities may coalesce into larger voids as cascading failure of successive adjacent wells and clusters may be triggered by the force of hydraulic blasts.
28. Collapse of the cavities may eventually manifest at the surface as land subsidence and sinkholes. This could happen unpredictably at any future time, and could affect future land use and safety concerns.
29. Potential subsidence monitoring during and shortly after extraction is insufficient, as stresses and failure leading to ultimate collapse must first propagate upwards over a period of time. In any case, by the time problems are detected, nothing can be done to prevent failure.
30. The critical minimum limestone thickness model, whose aim is to guide operation decisions, requires basis on a robust database rather than on limited samples and many assumptions, and better alignment with proposed operating conditions. Thickness *per se* is not an adequate criterion of subsidence/collapse prediction. A multiplicity of other factors govern porosity and hydraulic conductivity; fractures, discontinuities, inclusions, fossil beds, stylolites, heterogeneous lamination, natural voids (vugs) and other features of secondary porosity in the limestone must be considered.

31. While a threshold of 15 m minimum thickness of competent limestone is suggested as a criterion for extraction, subsequent thinning of the caprock as the ceiling layers fail, overlooked flaws in adjacent limestone, future construction and changes in overburden load due to human activity will increase the risk of collapse over time.
32. The longest supporting beam in the center will be completely pierced by a borehole, affecting its integrity, which has apparently not been considered in the predictive stability model.
33. The limestone thickness model disregards the shale aquitard, as it is taken for granted that it will disintegrate. Failure of the shale has been deemed by the proponent as *acceptable*, and its vital function regarding aquifer mixing is dismissed.
34. The 100 year time frame of the models is insufficient, as the region is expected to be inhabited and developed, indeed more densely so, well beyond that time cut-off, unless some global catastrophe causes the human race to perish. However realistically, we have no guarantee for how all of these cavities will behave, other than that some of them will fail.
35. Contradictory information is provided regarding whether the PVC casings for the thousands of abandoned wells will be fully removed, or (in previous proposal documents) severed below ground and capped, then camouflaged at the surface. Although a proposed hydraulic seal between the aquifers in the borehole must be robust, the surrounding shale will have been already compromised and is impossible to seal.
36. Since the decommissioned wells will remain in perpetuity, the seals, as well as casings (if remaining) will fail over time on at least some of them, likely many, as there will eventually be thousands of them. This will provide direct conduits for contaminants to the aquifers below.
37. Both steel and plastic casings (if remaining), as well as sealing grouts and cements leach toxic substances into groundwater as they age. This will be aggravated by the larger surface area of the casings, and the vast numbers of them.
38. The proponent's previous attraction to setting up operations in gravel pits raises multiple additional concerns, for example the lack of overburden protection as a buffer against surface contamination, seepage, and exceptional noise. After decommissioning, when gravel pits resume normal operation, the vibration and compaction from heavy machinery may compromise the abandoned wells, and promote caprock failure and sinkhole formation. Blasting activities must be forever banned in such tainted pits.
39. The municipality must keep complete and accurate records of all decommissioned wells, and consider carefully the future uses, building permits and construction allowed at these sites. Permanent warning markers should be installed, and land titles noted. On agricultural land, spreading of manure, or pesticide and chemical fertilizer application overtop these wells could provide significant risks of groundwater contamination.
40. Groundwater contaminant plumes will be drawn to active pumping wells.
41. Oxygen will be introduced into the Sandstone aquifer with the reinjected groundwater. The separate patent application also describes potential direct injection of pressurized air pulses into the aquifer to loosen the sand, and potential horizontal reach beyond the borehole axis. Air pockets may lodge against the shale ceiling, and become enriched with radon and hydrogen sulphide gases.
42. Aeration and agitation of the water will displace dissolved radon gas and hydrogen sulphide; the latter gas may generate increased nuisance odor complaints in neighboring wells during and after operation. Radon will be silent and cannot be detected by smell or taste.
43. Water quality will be inevitably affected due to the number and variety of manipulations at the surface, and the scale of the project, aside from the vast numbers of interconnections and compromised shale. The risks remain the same as with the previous proposal. If we truly want to

protect water quality, then we should not engage in intrusions and assaults that will irreversibly endanger it.

44. Oxygen will oxidize soluble iron and manganese to form insoluble precipitates, which may discolor untreated tapwater and further increase turbidity. The proponent deems this brown tapwater to be a "positive" effect.
45. Oxygen will create favorable conditions for proliferation of iron and manganese bacteria and fungi, should they be introduced into the aquifer with infected tools and equipment, or be already present in nearby infected domestic wells.
46. Water quality monitoring will be conducted by the same company that has reported fictitious **negative** turbidity for turbid water, utilized water softener samples as representative of raw groundwater, and applied sewage effluent microbial standards to drinking water.
47. The 24/7 operation will generate continuous noise from all of the numerous pieces of equipment operating simultaneously, only some of which will be powered by mainline electricity (although these will also emit noise). The 100 m setback limit from somebody's house is colossally inadequate and cruel. Noise has been indubitably demonstrated to affect health and wellbeing of people, and will disturb farm animals, birds and other wildlife. Additional noise will occur during clearing, site setup, drilling, pipe manipulation, powerline installation and removal, and decommissioning. The slurry pumping stations will generate noise. Relevant noise assessment studies have not been conducted.
48. It will not be possible for the extraction sites to meet the 83 dBA mandated Workplace Safety and Health maximum for the 12-hour work shifts. Workers will require the most robust hearing protection. Noise fatigue may affect worker performance and safety. A 100 m setback from residences will be intolerable.
49. Highly annoying low sound frequencies which propagate for greater distances will be produced by compressors, generators, pumps, cyclones, vibrating screens, and other equipment, particularly diesel powered. Proposed outdoor noise measurement with a dBA meter will not be adequate to reflect true exposures, which penetrate construction materials, and which are <u>amplified indoors</u> due to resonance. Exposures are also greater at night because the light plants will be operating in addition, and sound propagation is higher at this time. Indoor measurements with a dBC or dBZ meter will be required. Surrounding exposures will be further amplified by sound reflection, refraction, curvature, and lift. Simple sound barriers will not remedy the problem.
50. Infants and children will be most affected by the noise, since they can hear higher operating frequencies that are inaudible to adults and elders. Animals will also be differentially affected for this reason.
51. Since operations will be 24/7, industrial lighting will be required. There is no information regarding details of the intensity, type and disposition of lighting at the sites, other than that 8 industrial light arrays are planned. Light pollution affects the health of people and behavior of nocturnal wildlife. Birds especially are disturbed by light, and extraction operations will overlap with the breeding season of all bird species. Disturbance from light will be combined with that from noise.
52. Air quality will be a particular nuisance on days when the site is upwind. Diesel exhaust can exacerbate respiratory conditions, create stress, and affect neurocognitive function. Diesel particulates are carcinogenic. Dust and mold exposure is possible. No air dispersion studies for extraction activities have been provided, and data for the processing facility are not transferable or appropriate. Workers will be continuously exposed during their 12-hour shifts.
53. Greenhouse gas emissions are underestimated due to omissions, gaps, and fundamental calculation errors.
54. Extraction sites for well clusters, monitoring and test well sites, access trails for large equipment, and smaller trails for slurry lines (the proposed 2 m width for slurry line trails is unrealistic) will be

bulldozed in winter, unless unrestricted access is already available. Since clusters will be 60 m apart, multiple clusters will require interconnecting access. Drainage ditches are also planned.

55. Impacts on vegetation and ecology, all on private lands, have received little attention. All effects are dismissed by the proponent as “minor” and “negligible”, without supporting data. Baseline vegetation surveys were generic “desktop reviews”. On site preliminary field reconnaissance of areas to be destroyed is not planned.
56. While the onsite dewatering station and the undescribed slurry pumping stations will run on mainline power, no mention is made of where hydro power lines will be routed and the additional clearing required.
57. Clearing of sites and trails, and equipment and vehicle transfer may promote spread of plant diseases and pests, as well as invasive plant species.
58. The revegetation and restoration plans are deemed inadequate in multiple ways. Much of the restoration appears to be based on allowing areas to “revegetate naturally”, i.e. walk away. There is noncommittal nebulous mention of possible reseeding with “native seed mixtures” in some cases. Property owners will apparently obtain and replant new tree saplings themselves. Restoration of wooded land will require decades for trees to regrow; however plant community composition will not duplicate the original, and the trees comprising the stands will all be of the same age and possibly same species.
59. The patchwork and network clearing will create dysfunctional ecological edge effects for vegetation and wildlife. Continued subsequent damage may occur due to windthrow, and death of trees injured by equipment.
60. The proposal ignores or minimizes the role and rights of the property owner. It is not clear what the rights are of adjacent landowners who are not directly involved in landowner agreements with the company.
61. Complaints of residents are to be directed to the company, which is intimidating, confrontational, and insulting. Previous complaints were reportedly disposed of without satisfactory resolutions for complainants. There will be no independent agency for appeals, investigations, and compliance enforcement.
62. As admitted by the proponents themselves, the procedures and technology to be used in this project are untried and undocumented elsewhere. The first phase (at least) is expected to be experimental learning.
63. Post-closure, long-term accountability is absent. There is no provision for compensating/addressing permanent damage to property or water supply, or injury to people and livestock, as a subsequent consequence of operations.
64. Numerous Plans, Programs and Reports referenced in the EAP are inadequate/missing and not available for evaluation, including:

Waste Characterization and Management Plan
Water Management Plan
Groundwater Monitoring and Impact Mitigation Plan
Trigger Action Response Plan
Limestone Competency Testing Plan
Noise Mitigation Plan
Progressive Well Abandonment Plan
Water Sampling Program Plan
Environmental Emergency Response Plan
Air Quality Plan
Wildlife Assessment Report

Vegetation Survey Report
Revegetation and Monitoring Plan
Stakeholder and Indigenous Engagement Plan
Closure Plan
Drafts of three late previously submitted Plans are rudimentary, with fundamental gaps and omissions.
The proponent indicates that missing Plans will be drawn up after licensing. Internal "living documents" for staff and contractors will be altered and amended at will. Documents and reports deemed 'proprietary' will be viewed only by provincial regulators and consultants, and regulatory approvals and decisions may rest on these suppressed materials.

65. Endless 'Notices of Alteration' are expected over the later extended lifespan of the project, bringing into question how much of the original proposal and the current decisions based on it will remain relevant. Possibilities of longer 'multi-generational' timelines (e.g. 200 years) have previously been mentioned by the proponent.

74. Current mining regulations and guidelines are inadequate to address this type of mining. Similarly a number of pieces of legislation relating to groundwater, wells, and drilling regulations require updating. What we do here with this project will set some serious precedents. Appropriate legislation must be in place *before* the project can be licensed.
75. Regulations are irrelevant if monitoring and enforcement are lacking. A proactive, preventative, as well as deterrent, approach is required, rather than the current *laissez-faire*, largely complaint-driven system. As we have already seen, but not learned, hundreds of times in Manitoba, it is difficult or impossible to remediate a situation after it has already arisen, and harm has been done. Industrial self-policing is not perceived to be a trusted or transparent policy and is subject to bias and abuse.
76. In the end, the new proposal fails to provide substantive information on multiple key aspects of the project, many very basic assumptions are flawed, and many data are severely lacking. The proposed project will impose invasive and permanent changes on the aquifers, facilitate groundwater contamination, inflict environmental and ecological damage, mar and scar people's properties, subject residents to unconscionable inconvenience, intrusion, nuisance, and stress, and create future liabilities and risks for landowners.

[redacted]
29 November 2025

From: [redacted]
Sent: November 29, 2025 9:11 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

It is my understanding that you are considering SIO Silica's extraction project at this time yet many if the Clean Environment Commission's requests have not been provided. This should immediately raise concern, especially refusal to provide a cumulative impact assessment.

While developing resources helps to grow the present economy, messing with our fresh water is not worth the temporary gains. Good water is life giving and one of the most valuable resources anyone can ever have. It won't be an easy fix if it's even possible to regain safe water status should the anticipated project fail in any way, especially if cross contamination results.

Please abide by the precautionary principle and stand against risking the future of the water that is not yours but belongs to all and needs to be protected for the future generations as well.

You have been chosen to lead,now is the time to do so to take the long view of what's best for the environment and not just corporate profits.

Thank you for seriously considering this and doing the right thing.

[redacted]

From: [redacted]
Sent: November 28, 2025 11:05 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Cc: Paul Ingrid de Oude <maplemouse@tbaytel.net>
Subject: Silica project - in opposition

Good evening.

Please register my strong opposition to this project.

This project serves only the profits of the operator, while costing residents their environment, water quality, quiet residences and lifestyle.

Previous attempts to steal resources from under our land were rejected based on solid reasoning; I trust and expect those will prevail again.

[redacted]

From: [redacted]
Sent: November 28, 2025 5:53 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Mining an Aquifer is Too Risky!

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

Please Reject Sio Silica's plans to threaten Southeastern Manitoba's water supply!

A drinking water supply is simply too important to experiment with. Mining this sand will risk irreversible poisoning to our fresh water. For nearly four decades the precautionary principle has been recognized around the world as the standard for environmental care. Projects which can result in serious environmental harm should not go forward.

The Clean Environment Commission (CEC) asked for more information regarding the physical structure of the underground sand area, but the company has not done this work yet. CEC asked for 10 separate and detailed plans regarding things like erosion, water and revegetation be finalized and available for comment, but Sio Silica has not completed them. CEC asked for a worst-case scenario plan and the company has not provided it. CEC asked for a cumulative impacts assessment of the 24-year life of the project, but the company said no.

Please Reject Sio Silica's plans to threaten Southeastern Manitoba's water supply!

[redacted]

From: [redacted]
Sent: November 28, 2025 3:26 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Say no to Sio Silica

Dear Environmental Approvals Branch Director,

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

- A drinking water table is simply too important to experiment with.
- Mining this sand will cause irreversible cross contamination of water between two different aquifers.

[redacted]

From: [redacted]
Sent: November 28, 2025 9:59 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Sand mines don’t mix with drinking water

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

Dear Environmental Approvals Branch Director,

Don't you get the hint!
We said NO to your mining before and our answer to you is the same, NO! Why don't you go mining in your neighbourhood and leave our resources alone. Our water is sacred to us, maybe not to you, but it definitely has great meaning to me and my family and I won't let you experiment with it. Projects which can result in serious environmental harm should not go forward. I don't know what more to say, like the corporations (Sio Silica) NOT providing details to the CEC. That says it all, this company cannot be trusted. The last thing I want to say is, the lack of cumulative assessment for projects in Manitoba is an indication that we should modernized our Environmental Act and approvals process. Just one man's voice.

[redacted]

From: [redacted]
Sent: November 28, 2025 9:50 AM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: No profiteering in our drinking water

Dear Environmental Approvals Branch Director,

I say no to the mining of silica from around the aquifer. There is significant environmental risk and this project needs to be stopped for the safety fo the environment and all of us that it supports.This mining project is risky to our safe water supply and water is life for humans, the animals and the earth. We are one connected eco-system and we need to act wisely and say no to SIO SILICA Corporation SIMBA SAND EXTRACTION PROJECT.

This is a public comment on SIO SILICA CORPORATION - SIMBA SAND EXTRACTION PROJECT - FILE: 6275.00

[redacted]

From: [redacted]
Sent: November 27, 2025 10:22 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Additional Public Comments re: Project: Sio Silica - Simba Sand Extraction Project

Very much against this procedure happening in our community. We rely on safe water. we need our potable water and we need to know what kind of effect this is gonna have on our environment and everything else in our area wildlife pollution

From: [redacted]
Sent: November 27, 2025 10:20 PM
To: +WPG569 - Environmental Approvals Branch Director <EABDirector@gov.mb.ca>
Subject: Additional Public Comments re: Project: Sio Silica - Simba Sand Extraction Project

Reject any proposal for silica mining u can't guarantee our drinking water wont be adversely affected
Sent from my iPhone