Summary of Research on the Establishment, Administration and Oversight of the Giant Mine and its Impacts on the Yellowknives Dene First Nation

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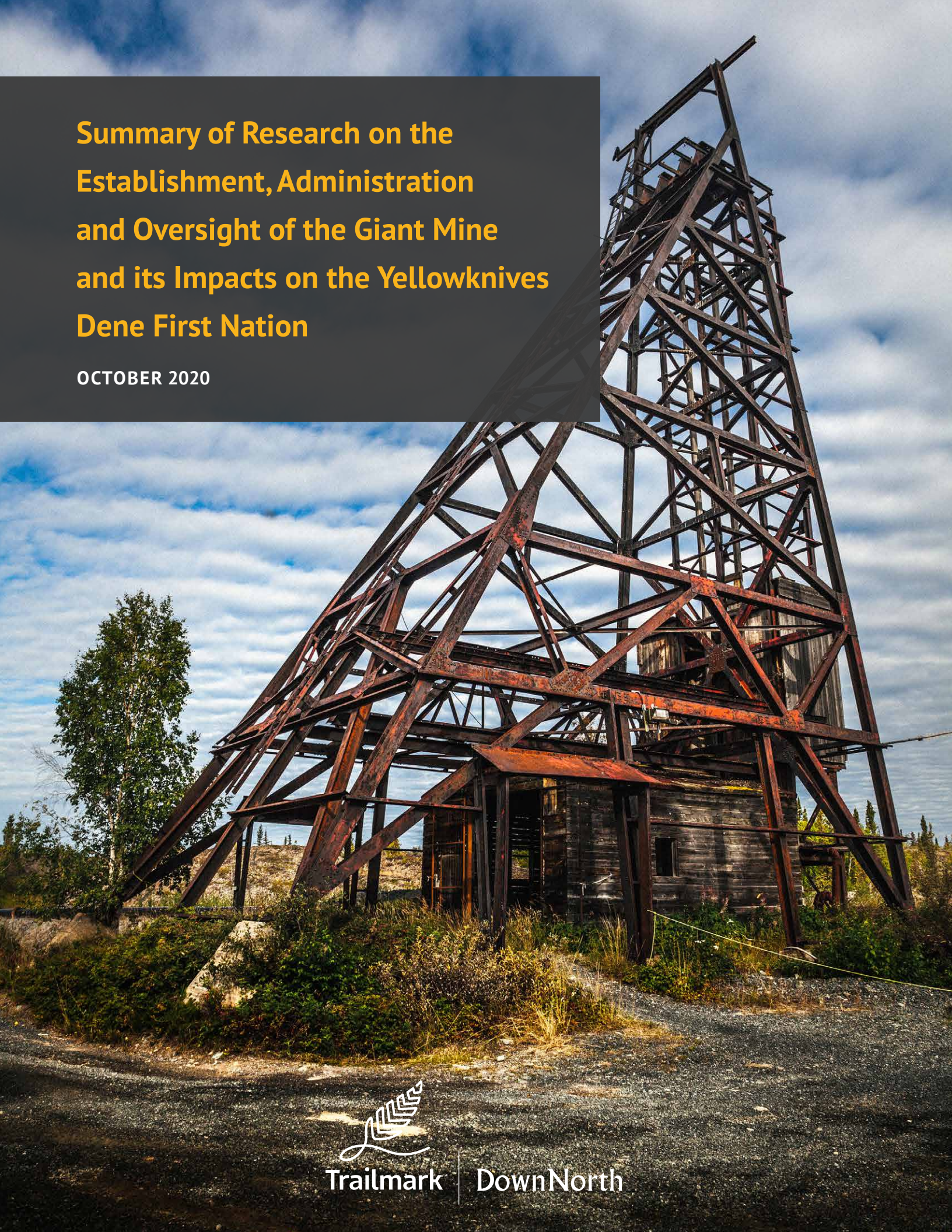

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Cover photo: Devin Tepleski

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Photo: Devin Tepleski

Introduction

The Yellowknives Dene First Nation (YKDFN)[1] are descendants of the *Tatsǫ̀t'ıné*[2] people who have occupied and used an extensive area around *Tı Ndeè*, or Great Slave Lake, in what is now Canada's Northwest Territories, since time immemorial. Yellowknives Dene Elders say that before contact and until the early 1800s, the resource-rich lands and waters of Wı̨ìlı̨ìcheh (Yellowknife Bay), from the Wı̨ìlı̨ìdeh (Yellowknife River) to the islands at the mouth of the bay, were critical for seasonal harvesting, settlement, and maintenance of culture. The west side of Yellowknife Bay, where the Giant Yellowknife Gold Mine (Giant) site and the City of Yellowknife are today, was particularly prized for traditional land-use and spiritual practices. The Yellowknives Dene protected this area by establishing their villages on the east side of the bay and only visiting "the store," as Elders still call it today, for hunting and gathering purposes. During the summer, the Yellowknives Dene caught, dried and bundled fish from the bay to fuel their annual winter journey north to harvest caribou.

By the end of the 19th Century, prospectors on their way to join the Klondike Gold Rush had begun arriving in the Northwest Territories, prompting Canada to consider its responsibilities to the Indigenous people of the area.[3] According to oral tradition, when the Yellowknives Dene signed Treaty 8 in 1900, they understood it to be a peace and friendship agreement that did not surrender ownership or control over their traditional territory, nor curtail their ability to harvest animals throughout it.[4] The subsequent imposition of new game laws by Canada led to a boycott of the Treaty in 1920, in which the Yellowknives Dene chief led others from around Great Slave Lake to refuse Treaty payments in protest against what they viewed as an infringement on their rights and way of life.

1 Referred to as "Yellowknife B Band" prior to 1991. See Dene Nation, Dene Nation Annual Report 1991/1992, Yellowknife.

2 Recorded as a number of variations over time, see Gillespie, Beryl C. (1982). *Yellowknife* in *Handbook of North American Indians, Vol. 6, Subarctic*, edited by June Helm. Washington, DC: Smithsonian Institution. p.288.

3 Fumoleau, R. (2004). As Long As This Land Shall Last: A History of Treaty 8 and Treaty 11, 1870-1939. University of Calgary Press, Calgary. p.37.

4 Pierre "Smallnose" Drygeese, (Followup) Interview by B. C. Gillespie, August 11, 1968, translated by Vital Thomas. Archives of the Indian Brotherhood of the Northwest Territories (copies held by the Yellowknives Dene First Nation).

According to oral history, the 1920 Treaty Boycott forced Canada to abide by the terms of Treaty 8 as understood by the Yellowknives Dene and to agree to protect the Yellowknives Dene's harvesting rights within an area drawn on a map by Chief "Susie" Drygeese.[5] In 1923, Canada established the Yellowknife Preserve, a 70,000-square-mile tract of land between the north shore of Great Slave Lake and Great Bear Lake, to be protected for the sole purpose of harvesting by Indigenous people.[6] Yellowknives Dene oral history records that the Preserve boundaries were based on the map drawn by Chief "Susie" Drygeese in 1920, and that its establishment was the result of the remaking of Treaty 8 following the Treaty Boycott.[7] The Yellowknives Dene saw the Preserve as Canada's fulfillment of the Treaty promise to protect Yellowknives Dene harvesting rights.[8]

Almost immediately, prospectors who wanted to trap and harvest within the new Preserve boundaries began lobbying to have its restrictions loosened, and its borders changed.[9] Canada made its first amendments to the Preserve just three years later, and by the 1930s, senior officials in Ottawa were advancing the opinion that the Yellowknife Preserve was incompatible with mining, which they saw as critical to Northern development.[10] At the same time, the Territory's prospecting boom became increasingly focused on the western shoreline of Yellowknife Bay.[11] In response to lobbying efforts from the mining interests driving Yellowknife's growth, Canada granted non-Indigenous residents special permission to hunt within a 210-square-mile area of the Preserve surrounding the settlement in the early 1940s.[12] By the end of the decade, Canada had removed these areas, which included the site of the newly operational Giant, from the Preserve entirely.[13] At the dawn of the 1950s, Canada transferred responsibility for the Preserve to the Northwest Territories Council, a body of federal bureaucrats and appointees overseeing the Territory's affairs from Ottawa. In 1955, the Council summarily abolished the Yellowknife Preserve without any available record of consultation or discussion with the Yellowknives Dene.[14]

Established at claims staked in 1935, the Giant mine site spans the west side of Yellowknife Bay, from the Yellowknife to the mouth of Back Bay. In the mid-1940s, Government of Canada scientists determined that roasting ore from the site at high temperatures would be the most effective method for extracting gold from the Giant mine.[15] Canadian officials understood from as early as 1946, three years before roasting began at Giant, the process would produce emissions and tailings contaminated with potentially harmful concentrations of arsenic trioxide.[16] But, satisfied that tailings impoundment and a suitably tall smokestack were sufficient protections,[17] Canada allowed Giant to

5 Evans, Peter; King, Dave and Freeman, Randy. (2020). Yellowknives Dene Oral History of Treaty 8 and the Yellowknive Preserve. Trailmark Systems Ltd, Victoria, and DownNorth Consulting, Yellowknife. p.42-54.

6 O. S. Finnie, Director, Northwest Territories and Yukon Branch, memo to Deputy Minister of the Interior, re. Lands we recommend should be withdrawn from hunting and trapping by the White Man, May 23, 1923. RG 85 Volume 1095 File 406 pt. 1, LAC.

7 Alfred Freddy Sangris, Land-use Interview, Tape #17, September 7, 2000. Ndilo.

8 Fumoleau 2004, p.150. Modeste Sangris, Oral History Interview, October 4, 2001. Freddy Alfred Sangris, Oral History Interview, September 7, 2000.

9 J. P. Richards, Department of the Interior, memo to, H. E. Hume, Chairman of the Dominion Lands Board, re. Yellowknife Preserve, September 23, 1932. RG 85 Volume 1095 File 406 pt. 1, LAC.

10 Ibid.

11 Edmonton Journal, "Taltson River Now Is Luring Gold Searchers", April 18, 1936.

12 Canada Gazette, September 13, 1941, p. 838.

13 J. P. Richards, memo re. Game Bird Hunting Privileges for White Persons at Yellowknife and Resolution, N.W.T., March 18, 1949. RG 85 Volume 1095 File 406 pt. 1, LAC.

14 Commissioner of the NWT v. Paul. 2014. NWTSC 68, CanLII.

15 Bureau of Mines, Department of Mines and Resources. (1946). Report of the Ore Dressing and Metallurgical Laboratories, Investigation No. 20178. July 17, 1946. p.5-6. RG 85, Volume 253, File 992-2, LAC.

16 R. A. Gibson, Director of Lands, Parks and Forests Branch, Department of Mines and Resources, note to Mr. Cumming, August 20, 1946, on memo from Parsons, C. S., Bureau of Mines Chief to R. A. Gibson, Director of Lands, Parks and Forests Branch, Department of Mines and Resources, re. Summary of Experimental Test Work on Ore Shipment "A" from Giant Yellowknife Gold Mines. August 14, 1946. RG 85, Volume 253, File 992-2, LAC.

17 C. S. Parsons, Bureau of Mines Chief, memo to R. A. Gibson, Director of Lands, Parks and Forests Branch, De-

roast gold from 1949 through 1951 without any additional arsenic controls in place.[18] Over the following years, even as the Government became aware that the controls eventually installed did not prevent toxic concentrations of arsenic throughout the surrounding environment, Canada continued to allow Giant to roast gold without interruption.[19]

Starting in the late 1940s, government documents show that Canada understood the impact arsenic from Giant had on the environment and the corresponding, albeit periodic, risks of acute arsenic poisoning to humans, in particular residents of the Yellowknives Dene communities near the mine.[20] Contemporaneous files show that arsenic emitted by Giant during its early years of roasting caused the death of a Yellowknives Dene boy, multiple episodes of arsenic poisoning, and the mass death of nearly an entire herd of cattle.[21] Archival records show that emissions from Giant led to dangerous levels of arsenic in the snowmelt Yellowknives Dene on Latham Island used for drinking water every spring from 1949 to 1952, and again in 1954, and that the Government's primary response was to run warnings in local newspapers even though most Yellowknives Dene at the time could not read.[22] Internal reports indicate that discharges and seepages from the mine's tailings ponds led to arsenic levels in Yellowknife Bay – the source of tap water for Yellowknife and Giant, and of hand-drawn drinking water for the Yellowknives Dene on Latham Island – that exceeded the limit for safe drinking water 15% of the time between 1951 and 1960.[23]

The risk of exposure to such environmental contamination emerged as a public issue in the 1970s after a Department of National Health and Welfare study concluded environmental arsenic contamination in Yellowknife did not lead to adverse health effects for local inhabitants, causing a media controversy. A public dispute ensued between the National Indian Brotherhood and the United Steelworkers Union, arguing that arsenic from Giant affected Yellowknives Dene and mill workers in particular, and the Government of

partment of Mines and Resources, re. Disposal of fumes and tailings from operating mines in the Northwest Territories. August 27, 1946. RG 85, Volume 253, File 992-2, LAC.

18 De Villiers, A. J. and P. M. Baker. (1971). An investigation of the health status of inhabitants of Yellowknife, Northwest Territories. Occupational Health Division, Environmental Health Directorate, Department of National Health and Welfare, Ottawa. p.3.

19 Eg. Dr. Kingsley Kay, Chief, Occupational Health Laboratory, memo to C. K. Le Capelain, Chief, Lands Branch, Department of Resources and Development, re. Funds for 1954 arsenic survey, September 29, 1953. RG 85 Volume 40 File 139-7 pt. 1, LAC; Dr. O. L. Stanton, Medical Health Officer, Yellowknife, memo to F. G. Cunningham, Deputy Commissioner, Northwest Territories, re. Account for printing and advertising re arsenic hazard, June 5, 1954. RG 85 Volume 40 File 139-7 pt. 1, LAC; O. Schaefer, Northern Medical Research Unit, memo to Regional Director re. Yellowknife Arsenic Survey, November 4, 1971, p.3. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC; Indian and Northern Health Services, Department of National Health and Welfare memo re. Arsenic Pollution at Yellowknife, December 10, 1965. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

20 Eg. Geddes Webster, Assistant Mining Inspector, Monthly Report on Mining Activity for May 1949. June 15, 1949. RG 85 D-1-A Volume 1509 File 990-9-2 pt. 1, LAC; R. A. Gibson, Director of Lands, Parks and Forests Branch, Department of Mines and Resources, memo to Dr. O. L. Stanton, Medical Health Officer, Yellowknife re. Reimbursement for payments made for advertising. July 28, 1950; Minutes from meeting held in room 101, Norlite Building, June 1, 1951, to discuss the recent death of an Indian child at Yellowknife as a result of arsenic poisoning; the general problem of arsenic disposal; and the precautions to be taken to protect public health in the Yellowknife area. June 6, 1951. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC; De Villiers & Baker, 1971. p.11.

21 Ibid. Also, K. J. Christie, Chief Mining Inspector, Mining Activity in the Northwest Territories – Season 1950, September 25, 1950, p. 5. RG 85 D-1-A Volume 1509 File 990-9-2 pt. 1, LAC; Kay 1968, p.655–657.

22 Webster, Monthly Report on Mining Activity for May 1949; Minutes from meeting June 1, 1951; Department of Mines and Resources, Lands and Development Services Branch, Administrative Division, Invoice to reimburse Dr. Stanton for expenditures in connection with public health measures for control or arsenic in water, June 22, 1951. RG 85 Volume 40 File 139-7 pt. 1, LAC; RG 85 Volume 40 File 139-7 pt. 1, LAC; Dr. O. L. Stanton, Medical Health Officer, Yellowknife, memo to F. G. Cunningham, Deputy Commissioner, Northwest Territories, re. Account incurred for arsenic advertising, June 6, 1952. RG 85 Volume 40 File 139-7 pt. 1, LAC. Also, Department of Mines and Resources, Lands and Development Services Branch, Administrative Division, Invoice to reimburse Dr. Stanton for out-of-pocket money used for advertising in "The News of the North" Re: Arsenic Poisoning, August 27, 1952. RG 85 Volume 40 File 139-7 pt. 1, LAC; Dr. O. L. Stanton, Medical Health Officer, Yellowknife, memo to F. G. Cunningham, Deputy Commissioner, Northwest Territories, re. Account for printing and advertising re arsenic hazard, June 5, 1954. RG 85 Volume 40 File 139-7 pt. 1, LAC.

23 Sandlos & Keeling, 2012. p.10; Schaefer, memo re. Yellowknife Arsenic Survey, 1971.

Canada, which claimed there was no significant health risk associated with arsenic from the mine.[24] Following a series of studies and counter-studies, Canada asked the Canadian Public Health Association to strike a Task Force on Arsenic to settle the debate.[25] The Task Force made 46 recommendations in its Final Report, and further research is recommended on how many of these were implemented and the details of their implementation.

Scholarship and community-based research on Giant Mine depict its legacy as one of environmental destruction, individual and collective Yellowknives Dene suffering, bad faith operations and interactions, and general mistrust. The mine has had direct effects on Yellowknives Dene members' physical and psychological health and wellbeing, their traditional land-use, the environment, and their relationships to the environment. Yellowknives Dene members maintain that, in the first place, the deposition of arsenic in the environment has directly affected their health and wellbeing. Secondly, they assert that the taking up and contamination of lands and resources by the mine has undermined the way of life they understood to be protected by Treaty 8, by causing loss of access to traditional land-use areas and subsistence foods and resources. They say these losses have had corresponding social, cultural, psychological, medical, and financial impacts on Yellowknives Dene members.[26] These impacts, and their experience by Yellowknives Dene members, inform the adaptations Yellowknives Dene members have been forced to make in response when pursuing traditional land-use in and/or around the mine site area.[27]

For the Yellowknives Dene, Giant is associated with painful memories of sickness and death and a profound feeling of alienation from the landscape. Yellowknives Dene oral histories and testimonies on the subject also repeatedly recount the devastating effects of the mine on the local environment and their traditional land-use practices. The work of Toxic Legacies[28] scholar, Amanda Degray,[29] examines how arsenic pollution from Giant affected and continues to shape Yellowknives Dene land-use. Her research highlights how environmental racism[30] and environmental inequality manifests in the everyday lives of Yellowknives Dene and their land-use practices. In particular, Degray shows how historic mining pollution on Yellowknives Dene traditional lands continues to perpetuate legacies of environmental racism and settler colonialism through forced land-use displacement and widespread cultural, health, and social impacts throughout the Yellowknives Dene community.

This report draws from ongoing research into the historical context and administrative history of the operation and oversight of Giant and its effects and impacts on the traditional use, exercise of Treaty and Aboriginal rights, and culture of the Yellowknives Dene. This research is being conducted at the request of Yellowknives Dene. It includes archival research at federal, territorial, provincial, and institutional archives, and incorporates earlier research by the Yellowknives Dene, the authors, and the scholarly work of the Toxic Legacies project, among others.

24 Canadian Public Health Association, Task Force on Arsenic. (1977). Final Report, Yellowknife Northwest Territories. p.24.

25 Ibid.

26 Degray 2020; Sandlos, J. and Arn Keeling. (2012). Giant Mine Historical Summary. Memorial University. August 8, 2012; Transcripts of *Canadian Environmental Protection Act Hearings*, May 1995.

27 Yellowknives Dene First Nation, Trailmark Systems and DownNorth Consulting. (2019). Yellowknives Dene History and Knowledge of the Giant Mine: Concerns, Recommendations and Closure. p.62

28 The Toxic Legacies Project was a partnership among researchers at Memorial University, Lakehead University, the YKDFN Goyatiko Language Society, and Alternatives North, examining the history and legacy of arsenic contamination at the Giant Mine: www.toxiclegacies.com.

29 Degray, Amanda. (2020). Indigenous Risk Perceptions and Land-use in Yellowknife, NWT. Master of Arts Thesis, Department of Geography/Faculty of Humanities and Social Sciences, Memorial University of Newfoundland.

30 Environmental racism refers to the "racial discrimination in environmental policy-making and enforcement of regulations and laws, the deliberate targeting of communities of color for toxic waste facilities, the official sanctioning of the presence of life threatening poisons and pollutants for communities of color, and the history of excluding people of color from leadership of the environmental movement." Chavis, Benjamin Jr and Charles Lee. (1987). United Church of Christ Commission on Racial Justice,
Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste Sites. New York, NY: United Church of Christ.

Treaty Time at the Yellowknife River, 1923. This photo depicts the cluster of dwellings and tents at the Yellowknives Dene village at the Yellowknife River mouth where they preferred to take Treaty and where they had proposed establishing a permanent village. (1960-125 NPC, Library and Archives Canada)

The Yellowknives Dene

Members of the YKDFN today dwell mostly in two settlements, Ndilo and Dettah, on Yellowknife Bay. Many also live in Yellowknife, throughout the Northwest Territories Territories, and in other parts of Canada. Yellowknife Bay was a crossroad for the pre-contact Indigenous subsistence economy and the fur trade economy, and some of the families who seasonally gathered there had Dogrib (Tłı̨chǫ) ancestry as well. Between the early 1940s and the late 1980s, the Department of Indian Affairs had grouped all these families under the administrative name Yellowknife B Band. In part to refute the misrepresentation of their ethnicity and genealogy by outsiders, in 1991, the Yellowknife B Band Council adopted the name Yellowknives Dene Band, "since the people are descended from the Yellowknives or 'Copper' people."[31]

The Yellowknives Dene are direct descendants of the *Tatsǫ́t'ıné*. For millennia the *Tatsǫ́t'ıné* and their descendants have occupied lands throughout an extensive area around Great Slave Lake. At the time of contact with Europeans and the earliest written records, their territory included a large tract of country between the southern shore of Great Slave Lake, Great Bear Lake, and the Arctic Coast. Europeans called them, variously, the *Tatsǫ́t'ıné*, Copper Indians, Yellow-knife Indians, Red-Knife Indians, and *Couteaux Jaunes*, among other terms.[32]

The rich resources of the Great Slave Lake region, and in particular the North Arm and Yellowknife Bay, supported a large population of *Tatsǫ́t'ıné* in pre-contact and early-contact times. Today's Yellowknives Dene Elders say that hunting, trapping, fishing, and plant gathering areas were all easily accessible from more than 30 villages located in many of the bays along the northern shore of Great Slave Lake by way of a complex trail system developed by their *Tatsǫ́t'ıné* ancestors over millennia. In areas where resources could be found reliably in all seasons, people stayed in these villages year-round. Common features of every village were good fishing places nearby, and trail access to areas where trapping, hunting, and plant gathering took place. In Yellowknife Bay, people lived in at least five villages along the east shore from the Yellowknife River south to the islands at the mouth of Yellowknife Bay. *Ts'i Naìkwi Dah Kò*, also known as Burwash, was one important village in Yellowknife Bay during the 1800s. Today Dettah, five kilometres south of *Ts'i Naìkwi Dah Kò*, is the only east shore village they still occupy.

Yellowknives Dene did not build villages on the west side of Yellowknife Bay, where the City of Yellowknife is now located. This was a prime *dendi* (moose) and *ek'wo* (caribou) hunting area, and it was understood that if people were to build their villages there, these valuable food resources would move elsewhere. Contemporary Yellowknives Dene Elder Fred Sangris, describes a traditional hunting

31 Dene Nation, Dene Nation Annual Report 1991/1992, Yellowknife. p. 11.

32 Gillespie 1982. p.288.

YKDFN members say that they are no longer able to safely harvest fish from areas adjacent to their main communities, and must travel considerable distances to practice their way of life. (Randy Freeman)

ground for moose and caribou called *Wag'we*,[33] which used to encompass Long Lake and the area now occupied by the City of Yellowknife and Yellowknife Airport:

> *So the Yellowknives leaders always told the young guys don't build homes here…Don't build anything…Just go across…go hunting and bring your food back…So the settlement for the Yellowknives were all the eastern side of the bay…the western side was all wildlife.*[34]

During the summer, fish, small game, moose, and berries were staple foods for *Tatsǫ*t'ıné villages. For villages on Yellowknife Bay and along the Yellowknife River, the annual cycle centred around harvesting the plentiful fish of Yellowknife Bay, which later in the year would power the harvesting of the then-plentiful caribou north of Great Slave Lake. By late summer, as fish began to spawn, the *Tatsǫ*t'ıné from the smaller nearby bays joined their relatives in Yellowknife Bay to prepare to travel north beyond the tree line to intercept southward migrating caribou. They netted vast quantities of fish. Trout and whitefish were plentiful. But the annual run of Wı̨lı̨ (Inconnu)[35] up *Wı̨*lı̨cheh (Yellowknife Bay) and *Wı̨*lı̨deh (Yellowknife River) to spawn in *Wı̨*lı̨ti (Prosperous Lake) was so central to the *Tatsǫ*t'ıné harvest that it provided the basis for these placenames in the *Wı̨*lı̨deh dialect. The names of the river, bay, and lake indicate its historical importance to the Yellowknives Dene.

Elders recall that these fish were once so numerous that they filled the river from bank to bank during their spawn. When dried and bundled, they fueled the long journey north to intercept caribou on their southward migration from the barrens to their winter quarters south of the tree line. In the spring, dried caribou was transported back to the villages of Yellowknife Bay and the smaller villages along the north shore of Great Slave Lake, and the cycle continued. These same rich fish resources positioned the *Tatsǫt'ıné* to meet the demands of the fur traders for caribou meat when the latter arrived on the south shore of Great Slave Lake in the late 1700s and became the source of the Yellowknives Dene's economic and political power.

33 Degray 2020 created a visual representation of *Wag'we* using information provided by five interview participants (see Figure 4). For some Elders, *Wag'we* used to extend north to Martin Lake. On the composite map, *Wag'we* is represented as the large polygon covering the majority of the City of Yellowknife, and the Martin Lake area is represented as the second polygon northwest of the city.

34 Fred Sangris interview, May 24, 2016; Degray 2020.

35 Inconnu (trans. *unknown* fish) or *Stenodus leucichthys*, is a large white fish also known in the Northwest Territories as Connie and sheefish.

Map of Treaty 8 showing Canada's understanding of the "Territory ceded under Treaty No. 8, and the Indian tribes therein." (Department of Indian Affairs, 1900)

Treaty 8

In 1900, Chief Emile "Old Man" Drygeese signed Treaty 8 on behalf of the *Tatsǫ́t'ıné* people of the North Arm of Great Slave Lake. For Canada, the Treaty had been provoked in part by the Klondike Gold Rush. Canada had not recognized any responsibility toward the Yellowknives Dene until the turn of the 20th Century when mineral discoveries provided the catalyst.[36] In the spring of 1897, the Klondike Gold Rush began, and within a year, 860 prospectors had reached Fort Smith en route to the Yukon. Many stayed in the Great Slave Lake area when rumours circulated that gold had been discovered in the area of eastern Great Slave Lake. In 1898, acting on advice from field staff and others, officials in the Department of Indian Affairs sought and won approval from the Privy Council to negotiate a treaty over the area north of Treaty 6. Privy Council Order (No. 1703) granted cabinet approval on 27 June 1898.[37]

The Yellowknives Dene have always asserted that Treaty 8 is a peace and friendship agreement, in which they and Canada agree to mutually co-exist, and have maintained across generations that they did not relinquish ownership or control of traditional Yellowknives Dene territory, nor consent to having their ability to harvest throughout it curtailed.[38] Several generations of Yellowknives Dene oral historians have preserved accounts of how – on these two points: the cessation of ownership of their territory and their freedom to hunt, fish, and trap over it – Yellowknives Dene

36 Madill, D. F. K. (1986). Treaty 8 Research Report. Treaties and Historical Research Centre, Indian and Northern Affairs Canada.

37 Ibid, n.p.

38 Pierre Drygeese, (Followup) Interview, 1968.

leaders renegotiated the Treaty terms in 1920.[39] Eyewitnesses to what has become known as the 1920 Treaty Boycott reported that Chief Joseph "Susie" Drygeese – younger brother of Chief Emile Drygeese, who had passed away in 1913 – and other Chiefs from around Great Slave Lake (the Slaveys and Chipewyans) refused to accept Treaty payments from Canada in protest against new game regulations that they regarded as constrictions on their way of life.[40]

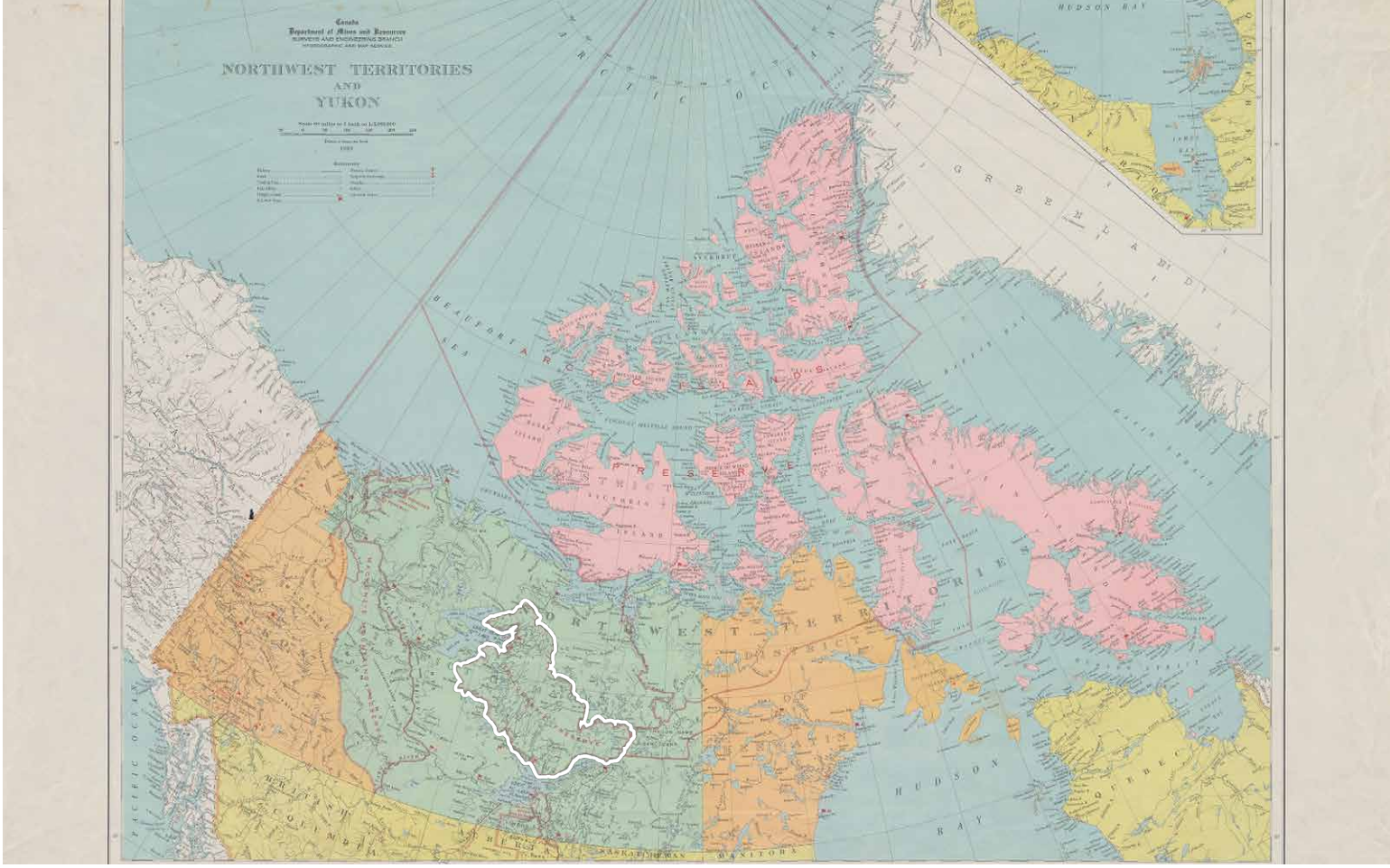
Yellowknives Dene oral history records that the objective of the 1920 Treaty Boycott was to force the Government to abide by the terms of Treaty 8 as understood by the Yellowknives Dene, and to agree to protect the Yellowknives Dene harvesting rights against rapidly increasing incursions from non-Indigenous mineral prospectors and trappers, and infringements by the Government's new hunting and game laws.[41] For the Yellowknives Dene, the 1920 Treaty Boycott was a historic event, which they understood as a re-commitment to the terms of Treaty 8. Yellowknives Dene's historical tradition holds that the Federal Treaty Party capitulated to their protest in the summer of 1920 and agreed to protect Indigenous harvesting rights within a territory sketched out by Chief Susie Drygeese and given to the Treaty party. They argue this territory informed the boundaries of what became the Yellowknife Preserve established by Canada just three years later in 1923.[42]

39 Evans, King and Freeman, 2020. p.42-54. Academic and historical literature describes multiple protest incidents related to Treaty 8 over the following years that align with the oral history of the Treaty. These events tended to occur during the summer at Treaty time, when signatory groups would gather to meet with the Crown's representatives and receive their annual treaty annuity payments.

40 Ibid.

41 Ibid.

42 Alfred Sangris, Interview, 2000.



Northwest Territories and Yukon, 1939. Showing Game Preserves in Northern Canada, including the Yellowknife Preserve (highlighted). (Department of Mines and Resources, Surveys and Engineering Branch)

The Yellowknife Preserve

By the time of the 1920 Treaty Boycott, Canadian officials were already raising concerns about the effects of non-Indigenous trappers' incursion into traditional harvesting areas in the N.W.T. could have on local Indigenous groups. Asserting the need to protect Indigenous harvesting practices in the territory, a March 1920 memorandum from the Treaty 8 Inspector to the Deputy Superintendent General of Indian Affairs states that:

> **The country in which they live is purely a fur-bearing one. They have no other means of making a living except by hunting and trapping. In order to maintain them as a self-supporting people, it is necessary to preserve their means of gaining a livelihood, and therefore the fur-bearing animals must be rigorously protected.**[43]

By the fall of 1922, resident clergymen and RCMP officers were explicitly calling upon Canada to establish large preserves, which they said were the only means of ensuring that Indigenous people could continue to provide for themselves. Summarizing this correspondence in a 1923 memo to the Director for the Northwest Territories and Yukon Branch, the Branch's Chief of Wildlife argued it had become "abundantly clear that there is need of hunting and trapping reserves for the exclusive use of natives."[44] He refers to the recommendation from the local RCMP inspector that the preserves include "the country along the North Shore of the Great Slave Lake as far north as Great Bear Lake, approximately 64,500 square miles," as well as the inspector's suggestion that:

> **[T]he whole of the North Shore of Great Slave Lake and all the country lying between this and the Great Bear Lake be reserved for Indians only. This country at present supports about 800 Indians, but a few white trappers are starting to go in.**[45]

43 H. A. Conroy, Treaty 8 Inspector, memo to Duncan Campbell Scott, Deputy Superintendent General of Indian Affairs, March 1, 1920. RG 85 Volume 1095 File 406 pt. 1, LAC.

44 Maxwell Graham, Chief of Wildlife, Northwest Territories and Yukon Branch, memo to O. S. Finnie, Director, Northwest Territories and Yukon Branch, re. Amendments to the North West Game Act, April 11, 1923. p.11. RG 85 Volume 1095 File 406 pt. 1, LAC.

45 Ibid. p.11.

The Yellowknife Preserve, one of several tracts of land set aside by the Government later that year for the exclusive use of Indigenous hunters and trappers, comprised a 70,000 sq. mile (181,300 km2) area between Great Slave and Great Bear lakes. The Orders in Council establishing the Yellowknife Preserve were unequivocal about its purpose, which the Northwest Territories and Yukon Branch Director described in a memo as being "to keep the White Man out, thereby conserving the game and assisting the Native."[46] The Orders in Council state:

> **Whereas the Minister of the Interior reports that unless further areas are reserved as hunting and trapping preserves for the sole use of the bona fide aboriginal native of the North West Territories there is grave danger of those natives being reduced to want and starvation.[47]**

More than two decades later, and just a few years before the Yellowknife Preserve was unilaterally cancelled, the Director of Canada's Northwest Territories and Yukon Branch reflected on its original purpose, stating: "It will be recalled that this preserve, like other preserves in the Northwest Territories, was set aside in order to conserve food supplies for the natives and in anticipation of the time when the game supply might be threatened by white settlers going into the country."[48]

The Yellowknife Preserve was somewhat unique in northern administration, being one of only a handful of preserves whose explicit goal was to protect Indigenous practices rather than game conservation as an end in itself.[49] As such, its creation was informed not by game management principles but interest in Indigenous communities' physical health and welfare, a responsibility that Canada had not recognized before the signing of Treaty 8.[50] The Yellowknives Dene regarded competition from non-Indigenous trappers and the imposition of game laws as Treaty-related matters.[51] In Yellowknives Dene oral tradition, the Yellowknife Preserve resulted from their protests and remaking of Treaty 8 in 1920, and represented a fulfillment of the Treaty promises to protect Yellowknives Dene hunting, fishing, and trapping.[52]

Although the Yellowknife Preserve was created expressly to protect an Indigenous hunting way of life within its boundaries by providing primary access to Indigenous hunters, amendments to the regulations establishing the Yellowknife Preserve began almost immediately. Archival correspondence reveals that loosening the Yellowknife Preserve's restrictions became the focus of intense lobbying pressure from the emerging mining sector just as opening up the region for prospecting and mining became a primary consideration in the minds of officials. The 1926 amendment appears to have been directed at the nascent prospecting and mining industry as it allowed prospectors to harvest within native preserves and for corporations to undertake work within a preserve on the Commissioner's authorization.[53]

In 1932, prospectors petitioned the Federal Government again, this time to remove areas of known mineralization from the Yellowknife Preserve entirely.[54] Some senior officials in Ottawa sympathized with these demands and regarded the Yellowknife Preserve as incompatible with mining, which they saw as critical to Northern development. A report prepared by a senior bureaucrat

46 Finnie, memo re. Lands we recommend should be withdrawn, 1923. RG 85 Volume 1095 File 406 pt. 1, LAC.

47 Canada Gazette, 6 October 1923. p.1127.

48 O. S. Finnie, Director, Northwest Territories and Yukon Branch, memo to Director of Lands and Development Services, re. Yellowknife Preserve, April 4, 1949. RG 85 Volume 1095 File 406 pt. 1, LAC.

49 Roberts, B. (1942). Game Conservation in Arctic Canada. Polar Record, 3(23), 499-509. p.504.

50 Fumoleau 2004, p.35. Fumoleau writes that in the decades leading up to the signing of Treaty 8 Canada's policy toward assisting Indigenous people in the Athabasca-Mackenzie District had been "no treaty no help."

51 C. Bourget, Indian Agent, Report on Treaty Trip of the Great Slave Agency, Sept. 9, 1929.

52 Fumoleau 2004, p.150. Modeste Sangris, Oral History Interview, October 4, 2001. Freddy Alfred Sangris, Oral History Interview, September 7, 2000.

53 The Canada Gazette, 31 July 1926. pp. 382-383. G. F. Fletcher, memo to Officer Commanding "G" Division re. the Yellowknife Preserve, June 4, 1932. RG 85 Volume 1095 File 406 pt. 1, LAC. Richards, memo re. Yellowknife Preserve, 1932. See also Kerry Abel. (2005). Drum Songs: Glimpses of Dene History. McGill-Queen's Press.

54 Richards, memo re. Yellowknife Preserve, 1932. p. 4.

in the Department of the Interior positioned the continuance of the Yellowknife Preserve as a direct threat to the developing mining industry.[55] In June the same year, the local RCMP Inspector opined to his colleagues: "I think it is most desirable that there should not be a Preserve where the mining developments are as if there is it will only lead to endless complications."[56]

By 1934, a gold prospecting rush was on in the Yellowknives Dene's territory on the northern shore of Great Slave Lake and conflicts between the Yellowknives Dene, Federal officials, and prospectors intensified. At Treaty time, the Yellowknives Dene requested compensation from the government for the mining companies' intrusion or some revenues from the mines in their territory.[57] The local Treaty Officer wrote to the Secretary of Indian Affairs in the Department of Mines and Resources in 1938, suggesting that the mining companies should be asked to "contribute to the welfare of the Indians in some form or another, even if only on a compassionate ground," and recommending that the lack of compensation is "a problem that should be examined closely by the Branch."[58]

> **[I]t would seem to me that some basis could be arrived at along the lines of selling or leasing "Preserve surface rights." These rights could be surrendered by the Indians and sold by the branch for the benefit of the Indians.**
>
> **[...] I do think that the mining operations in the Yellowknife Preserve have greatly curtailed the Indians hunting and trapping and it would seem only justice that the Indians be given some reward, that would put the matter in legal standing and as the same time give the Indian a considerable direct benefit that he could be readily made to understand.[59]**

In 1949, Canada transferred responsibility for wildlife regulation in the territory to the Northwest Territories Council, and the new NWT Game Ordinance replaced the Northwest Game Act. When the Yellowknife Preserve was administratively recreated under the Ordinance, its boundaries were revised to exclude an area around Yellowknife, including Giant's lease area. When the Northwest Territories Council amended the Ordinance again in 1955, the Yellowknife Preserve was "unilaterally extinguished."[60]

Legal scholars Peter Cumming and Kevin Aalto note that, in the transfer of authority from Canada to the Northwest Territories Council, there had been no consultation on the meaning of the Yellowknife Preserve or consideration of how it may have functioned as an arena for the expression of Aboriginal and Treaty rights of the Yellowknives Dene, and their understanding of Treaty 8.

> **There was no discussion of the native peoples' special rights to hunt as they existed under the Northwest Game Act and no stipulations were made in respect to the enlargement of the Commissioner in Council's powers as to how native peoples should be treated with regard to these rights. The Federal Government, in one quick action, had abdicated this area of responsibility thus giving effect to game legislation of the Council of the Northwest Territories. The special rights of native peoples, of particular importance because of the heavy dependence upon game supplies for food, were set aside without any apparent direction to the legislators of the Northwest Territories that such rights must be recognized and continued. The Federal Government had, in a very cavalier way, repealed the Northwest Game Act with no discussion of the reason and prime motivating force behind the passage of the Act in the first place – the preservation and protection of a limited game supply in the Northwest Territories so that the native peoples of the area would be able to pursue their livelihood as they had since time immemorial.[61]**

55 Ibid.

56 Fletcher, memo re. Yellowknife Preserve, 1932.

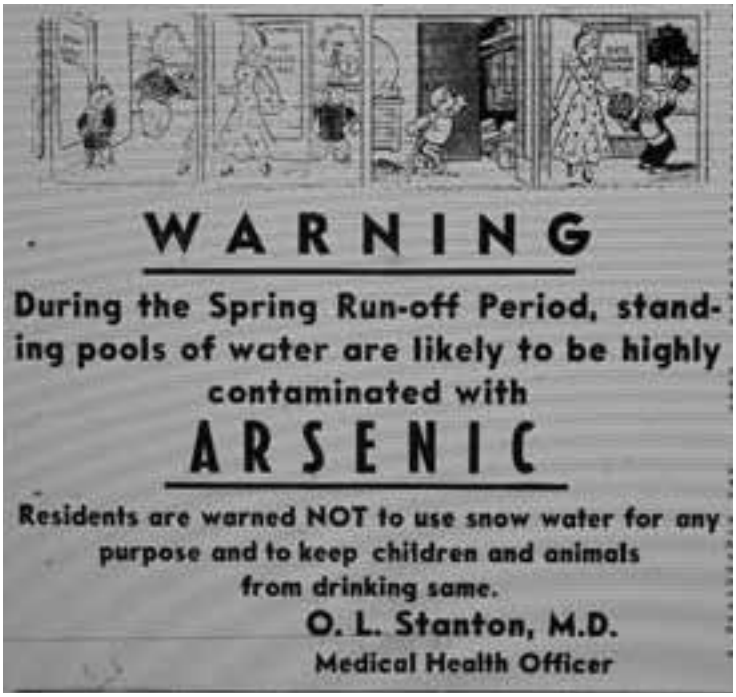
57 Abel, Kerry. Drum Songs: Glimpses of Dene History. McGill-Queen's Press. 2005.

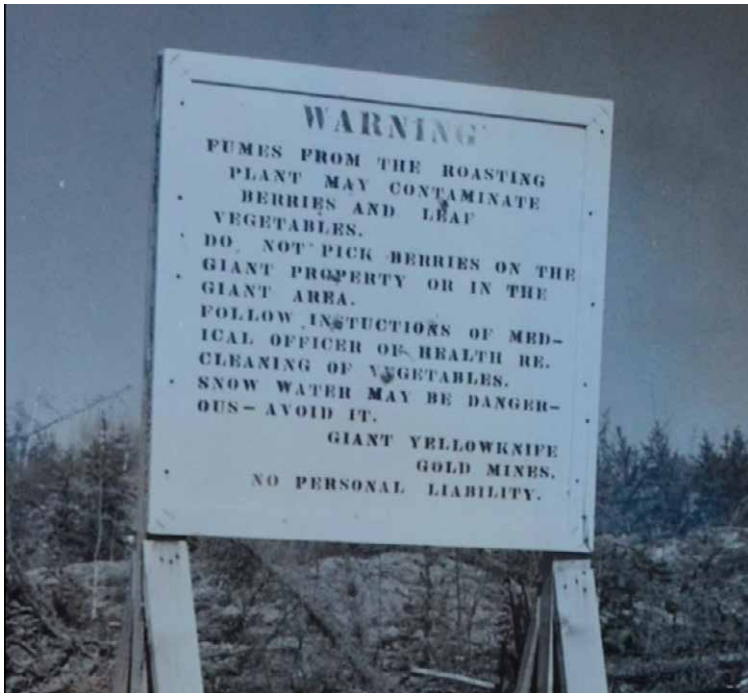
58 W. P. B. Pugh, N.W.T Treaty Officer, memo to Secretary of Indian Affairs, re. Yellowknife Preserve, September 15, 1938. RG 85 Volume 1095 File 406 pt. 1, LAC.

59 W. P. B. Pugh, N.W.T Treaty Officer, memo to Secretary of Indian Affairs re. Yellowknife Preserve, January 5, 1939. RG 85 Volume 1095 File 406 pt. 1, LAC.

60 Commissioner of the NWT v. Paul. 2014. NWTSC 68, CanLII.

61 Cumming, Peter A. & Kevin Aalto. 1974. "Inuit Hunting Rights in the Northwest Territories". Saskatchewan Law Review 38(2). 251-324.





Above Left: Ad that appeared over two days in News of the North, April, 1951; Above Right: Sign at the Giant Property in 1980s;
Below: Sign at N'Diloh that appeared in 1974.

Administration and Oversight of Giant

By the mid-1930s, prospecting activity in the N.W.T. was focused on the Yellowknife River and the shores of Great Slave Lake within the Yellowknife Preserve.[62] In 1935, Johnny Baker and Burwash Yellowknife Mines Ltd. staked the claims that would become Giant.[63] Giant Yellowknife Gold Mines was incorporated in 1937, and exploration in the eventual mine site continued until 1944.[64] With the help of the Government of Canada, it was determined that the gold contained in samples from the site could not be effectively removed using a cyanidation process.

Following lab tests at the Bureau of Mines in Ottawa during the mid-1940s – a branch of the Department of Mines, which also contained the Indian Affairs branch at the time – Canada recommended roasting as the most effective method for recovering gold from ore samples at Giant.[65] The Bureau's lab report indicates that the goal of roasting was to remove the maximum amount of arsenic possible and that through a variety of roasting methods, the Bureau was able to remove approximately 75 percent of the arsenic in samples from the mine site.[66] The report states that a primary objective of roasting was to produce tailings that could be discarded without further treatment.[67] It does not comment further on the quality or quantity of the tailings that would be created, nor does it provide any discussion of how the high percentage of arsenic removed via roasting might be handled.

> **Straight cyanidation of the ore, or any of its products, in the natural state yielded unsatisfactory results, extraction being very low. [...] Investigation, both microscopically and from test work, would indicate that the gold and arsenopyrite in the ore are very intimately associated and that in any line of test work fine grinding would be necessary. [...] From the results obtained in these earlier tests, roasting and cyaniding a flotation concentrate appeared to be the logical line of endeavour. Although it was realized that fine grinding might lower the efficiency of the roasting operations, it was realized that a high overall extraction must first come from a high floatation recovery, and special emphasis was placed on obtaining a high recovery in the preliminary operation with a tailing low enough to warrant discarding without further treatment. [...]**

62 Edmonton Journal, "Taltson River Now Is Luring Gold Searchers", April 18, 1936.

63 Sandlos and Keeling, 2012. p.4.; Indigenous and northern Affairs Canada. (2018). Giant Mine Historical Timeline.

64 YKDFN, 2019. p.39.

65 Bureau of Mines 1946. p.5-6.

66 Ibid.

67 Ibid.

Giant Mine "A" Shaft from a distance. (NWT Archives/Henry Busse fonds/N-1979-052:1950)

> **Roasting operations, conducted along the lines of the Beattie low-temperature method and the Forward high-temperature method, as well as certain modifications of these methods, failed to reduce the arsenic content of the calcine below 1.25 per cent from a percentage of 4.5 in the concentrate. [...] From the results of this test work on this Shipment "A" ore, roasting and cyaniding the roasted product might well prove to be the troublesome part of the operation and one on which considerable experimentation would be warranted.[68]**

Correspondence between Canadian bureaucrats in August 1946, concerning the Bureau of Mines' findings, indicates their awareness that "there will be quite a problem of disposing of the arsenic [from the roasting operation at Giant] and in this connection we will have to protect the situation."[69]

As Sandlos and Keeling point out, "even though arsenic was widely known as an industrial poison and the technology for stack emission abatement (the Cottrell Electrostatic Precipitator) had been invented in 1907,"[70] the officials resolved that:

> **[C]oncerning the disposal of fumes and tailings from operating mines in the Northwest Territories, it is felt, that owing to the topography and general nature of the country, that this problem should cause no great concern provided reasonable precautions are taken such as the impounding of tailings and the building of a stack sufficiently high to disperse fumes such as arsenic and sulphur.[71]**

Giant officially began operating in 1947. In 1948, Canada provided its first subsidy of $339,000 to Giant under the Emergency Gold Mining Assistance

68 Ibid.

69 Gibson, note on memo re. Summary of Experimental Test Work on Ore Shipment "A", 1946.

70 Sandlos & Keeling, 2012. p.6-7.

71 Parsons, memo re. Disposal of fumes and tailings, 1946.

Act (EGMAA), and in 1949, the mine began its roasting operations. From then on, roasting and Federal subsidies were continuous until 1999[72] and 1958,[73] respectively, and throughout gaseous and particulate arsenic emissions were released through the mine's stack into the surrounding environment. The 1961 Report on the Administration of the Emergency Gold Mining Assistance Act indicates that between 1948 and 1958, the Government of Canada provided a total of $4,911,000 in subsidies to Giant $1,975,000 in assistance to Con Mine between 1958 and 1959.[74] At the same time, the Department of National Health and Welfare estimates that during the early years of roasting, Giant and Con emitted 22,000 pounds per day of arsenic into the atmosphere and that Giant accounted for the vast majority (approximately 16,500 pounds per day) of these emissions.[75] Reporting on the "extent of contamination of [the] environment" in 1971, the Department states that "most of the arsenic entered the environment of Yellowknife as an effluent from the roaster stacks."[76]

Con Mine began roasting in earnest in 1948. For the first year it discharged arsenic-trioxide laden fumes directly into the atmosphere through a 100-foot stack.[77] Con officials had known since the start of their exploration activities in 1941 that concentrate from the mine site would produce roughly 15% arsenic, but elected not to treat emissions because of "the sparse population in the Yellowknife area, the prevalence of heavy winds and the difficulty of disposing of the arsenic, if collected."[78] The first spring after roasting began at Con, a herd of dairy cattle at smallhold farmer Charlie Bevan's farm died of arsenic poisoning and two watchmen on the north part of the Giant property were diagnosed with arsenic poisoning after consuming contaminated snow.[79] In response, Con installed its first atmospheric arsenic emissions controls, an impinger, in August 1949; that same year, Giant began roasting operations, discharging its untreated fumes via a 150-foot stack.[80]

The poisonings became the subject of correspondence among officials at the National Public Health and Welfare's Industrial Health Division in Ottawa beginning in the spring of 1949, following a visit of the Department's Edmonton-based engineer to Yellowknife in May of that year.[81] Canada's monthly report on mining activity in the Yellowknife area for the same month states that scrubbers were installed at Con Mine "for removal of poisons from the flue gasses before they are released to the atmosphere" after:

> **Arsenical gasses from roasting operations of Giant and Con-Rycon were found to be precipitating arsenic on the countryside surrounding Yellowknife. The quantities reached toxic proportions in spring runoff waters near the Bevan Farm where most of the cattle died from arsenic poisoning.[82]**

In June of 1949, Con's Manager of Mines briefed officials at the Department of National Public Health and Welfare's Industrial Health Division in Ottawa.[83] He stated that Con considered shutting

72 YKDFN, 2019. p.39.

73 Canada Department of Mines and Technical Surveys. (1961). Report on the Administration of the Emergency Gold Mining Assistance Act.

74 Ibid. p.79.

75 De Villiers and Baker, 1971. p.3.

76 Ibid.

77 Dr. K. Kay, Chief, Industrial Health Lab, National Health & Welfare, R. J. Traill, Chief, Metallurgy Division, Bureau of Mines, K. .J. Christie, Chief Mining Inspector, Report of Committee on Evaluation of Arsenic Problem at Yellowknife, Northwest Territories. Interdepartmental Circular. December 1, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

78 W. G. Jewitt, Manager of Mines, Consolidated Mining and Smelting Company of Canada, letter to R. A. Gibson, Deputy Commissioner, Administration of the Northwest Territories, Ottawa, re. Letter of June 2nd. June 7, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

79 MacDonald, Ian. (1949). "Farm Gardens Are Thriving 300 Miles South Of Arctic". August 20, 1949. Edmonton Journal, p.26. De Villiers and Baker, 1971. p.11.

80 Kay, Traill and Christie, Report of Committee on Evaluation of Arsenic Problem, 1949.

81 J. K. Menzies, Chief Public Health, Engineering Division, Department of National Health and Welfare, memo to H.A. Ansley, Director of Health Service, Department of National Health and Welfare, re. Arsenic Trioxide and Sulphur Dioxide in Roaster Smoke. September 16, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

82 Webster, Monthly Report on Mining Activity for May 1949.

83 Jewitt letter re. Letter of June 2nd, 1949.

down the roasting plant but the local public health officer,[84] who also worked directly for both Con and Giant, "advised that he did not consider the situation called for shutting down the plant."[85] Moreover, Con's manager wrote, "we have hesitated to shut down the plant since such action on our part would probably embarrass Giant, who depend on flotation and roasting to recover almost all of their gold."[86] He also warned the Government:

> **It appears, however, that because of the low precipitation in the Yellowknife area and the long winter, there will be a short period every spring when the run-off water in certain localities may carry a dangerous accumulation of arsenic. If this is so, you may be sure that we will make the necessary plant installations to eliminate it.**
>
> **In view of Dr. Stanton's opinion, we think there is no need for the people of Yellowknife to be concerned about the matter. We will, of course, make a settlement with the man whose cows appear to have died from arsenic poisoning.[87]**

Internal documents show that some Industrial Health Division staff worried about their capacity to manage the potential problem at Yellowknife. As one staff doctor stated in a memo to the Division Chief:

> **To assume the responsibility for advising in the matter at Yellowknife without the essential trained personnel, equipment etc., would, of course, place us in an extremely difficult position since this is a matter of much concern to mining firms possibly involving the spending of thousands of dollars in control measures.[88]**

Nevertheless, archival correspondence shows that staff were increasingly concerned about the mechanics of the poisonings – what pathway the arsenic had followed to kill the dairy herd and sicken the watchmen – and the public health implications of the newly installed impinger at Con and the pollution control measures proposed for Giant.[89] Staff expressed concern as early as the summer of 1949 that these methods of reducing atmospheric would eventually create serious sludge and effluent disposal problems.[90]

The Industrial Health Division established a fact-finding team to visit Yellowknife in November, 1949, to inspect both Giant and Con. In December, they issued a report to the head of the Industrial Health Division, which includes the following:

> **Local Medical Opinion: On December 1st, a meeting was held with Dr. O. L. Stanton, General Medical practitioner and Medical Health Officer of the district. He reviewed the two poisoning cases of 1949 which occurred north of Giant at the Àkaitcho property and involved two men who drank snow water over an extended period. Dr. Stanton added details to the recorded report of the poisoning of cows by fume deposition from the Con Stack. He indicated that many dogs in the town and surrounding area, showed symptoms of arsenic poisoning during the late winter and summer of 1949. Furthermore there was some loss of wild life in general attributed to arsenic poison.**

84 Dr. O. L. Stanton was the Chief Medical Health Officer for Yellowknife throughout the period.

85 Jewitt letter re. Letter of June 2nd, 1949.

86 Ibid.

87 Ibid. *The Edmonton Journal* article detailing the death of the Bevan cows in August 20, 1949, noted that "Charlie didn't want to talk about it. After all, mining, indirectly, is his bread and butter too." The parents of Frank Abel, a Yellowknives Dene boy who died of arsenic poisoning two years later, were eventually compensated $750 dollars by Giant. A. K. Muir, General Manager, Giant Yellowknife Gold Mines Limited, memo to G. E. B. Sinclair, Director, Northern Administration and Lands Branch, Department of Resources and Development, re. Settlement made to Abel family. n.d. RG 85 Volume 40 File 139-7 pt. 1, LAC.

88 Dr. E. A. Watkinson, Industrial Health Division, letter to Dr. K. C. Charron, Chief, Industrial Health Division, Department of National Health and Welfare, re. Air Pollution with Arsenic Trioxide Fumes at Yellokwnife. September 19, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

89 The Cottrell electro-static precipitator combined with a "baghouse" to provide additional filtration through fabric bags. It should be noted that although Giant eventually installed the Cottrell precipitator in the fall of 1951, the baghouse was not installed until 1958. Sandlos & Keeling, 2012. p.3.

90 G. W. Rogers memo to Dr. K. C. Charron, Chief, Industrial Health Division, Department of National Health and Welfare, re. Arsenic Trioxide Contamination in Roaster Smoke at Yellowknife, N.W.T. September 19, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

During the past summer in his capacity as Medical Health Officer Dr. Stanton had warnings inserted in local newspapers advising the washing of leafy vegetables and berries. This was also done by letter to mining camps using water from smaller lakes in the area. Based on water analysis and his clinical observations, Dr. Stanton expressed the opinion that the current danger to the general public is slight. He agreed to supply to Ottawa, clinical records of the two cases where humans had been poisoned and to undertake arsenic analysis on some proportion of future hospital admissions.

Conclusions: In view of the complexity of the problem, the committee is not in a position to record recommendations at the present time. It is evident that a proper understanding of the length of time current practices can be permitted to continue, is wholly dependent on evaluation of the seriousness of the hazard these current practices create. Such an evaluation will require a further survey consisting of snow analysis, examination of water conditions at spring break -up, determination of drainage patterns and early summer percolation test.[91]

Five days later, one of the report writers – the head of the Industrial Health Laboratory at the Industrial Health Division – sent a completely different report marked confidential to the Chief of the Industrial Health Division. Although the details and background in this report were similar to the first, it provides a completely different perspective and opinion on the situation in Yellowknife.

Dr. Stanton pointed out that six cows belonging to the Bevan farm […] unquestionably died from arsenic poisoning. Furthermore, others died during the summer. Cause of death was established by autopsy and analysis of organs. At the time of our visit, Consolidated Mining and Smelting Company were securing a clearance of responsibility for what the mine officials said would be about $20,000.00.

Dr. Stanton provided further information with regard to domestic animals of the area. A very large percentage of the dogs, with which the community abounds, showed full range of signs and symptoms including ulcers of the mouth, loss of hair, and gastro-intestinal disturbances. Furthermore, dogs were particularly prone to sore feet. Dr. Stanton stated that many dogs did not recover until well on in the summer. Two horses within the town limits were poisoned (whether death occurred is not clear). Fatal poisoning of wildlife was observed widely, squirrels, foxes, birds and other fauna being affected.[92]

The report concluded:

In my opinion the situation at Yellowknife should not be permitted to continue any longer. Roasting should be stopped and flotation concentrate stockpiled until these companies have installed the equipment necessary to prevent further environmental pollution. The impinger method should be experimented with in a laboratory, not in an organized community.

It is my further opinion that the Department should undertake, at the earliest possible date, environmental measurements in the area with a view to mapping present pollution distribution and the future disappearance of arsenic from the area.

Finally, it would seem that some form of regulation is required to prevent the spontaneous initiation of such events in the future.[93]

The propensity for atmospheric arsenic emissions to concentrate in snowmelt – particularly in the area around the Yellowknives Dene community on Latham Island – the potential for these concentrations to lead to arsenic poisoning, and the widespread reliance on snowmelt for drinking

91 Kay, Traill and Christie, Report of Committee on Evaluation of Arsenic Problem, 1949.

92 Dr. K. Kay, MA, PhD. Chief, Industrial Health Laboratory, memo to Dr. K. C. Charron, Chief, Industrial Health Division, re. Confidential report on Arsenic at Yellowknife. December 6, 1949. RG 29 Volume 2342 File 455-10-13 pt. 1, LAC.

93 Kay, memo re. Confidential report on Arsenic at Yellowknife, 1949.

water amongst Yellowknives Dene people were all facts known to Canada by at least 1950.[94] The minutes from a June 1951 meeting between senior mine executives and government officials in Ottawa state:

> **Analyses of snow samples and observations made by the inspection service of the Department of Resources and Development *last winter* indicated that heavy concentrations of arsenic existed in the snow in the Yellowknife area, particularly at the north end of Latham Island. A wireless message was, therefore, sent to the Local Medical Health Officer on April 14, 1951, advising him to warn the people in and around Yellowknife that certain precautions should be taken during the spring run-off period.[95]**

According to government documents, "it was decided in January of 1950 that the mining companies might continue roasting operations, if suitable precautions were taken to curb the emission of arsenic fumes."[96] Government correspondence also states that conditions for arsenic disposal methods were outlined in a letter from Canada to Giant in July 1950.[97] During the intervening months, Giant placed an order for arsenic collection equipment. But, in September 1950, the mine's General Manager advised the Director of the Department of Mines and Resources, Lands, Parks and Forests Branch – who in turn alerted the Chief of the Department of National Health and Welfare, Industrial Health Division, the Director of the Mines and Technical Surveys, Mines Branch, and the Local Medical Health Officer for Yellowknife – that the equipment would not be in operation before September 1951.[98]At the same time, archival records show that Canada was also aware by September 1950, that arsenic emissions from Giant would lead to poisonous concentrations of arsenic in the snowmelt that Latham Island residents would likely use for drinking water the following spring.[99] The Government's mining activity report for the Northwest Territories from September 1950, states that because emissions controls will not be installed at Giant until the fall of 1951:

> **[A]rsenic will be dispersed into the atmosphere for another winter, and all the necessary precautions that have been taken during the spring break-up season this past year, will have to be repeated in the spring of 1951.[100]**

Government documents indicate that for the spring of 1950, these precautions included placing print "warnings re arsenic in water" in two local newspapers.[101] For the spring of 1951, minutes from a meeting held after the fact report that the Government's precautions comprised informing the Indian Agent, who in turn "warned the local Indian Chief," of "the dangerous conditions prevailing," and the re-insertion of a print advertisement in two local newspapers.[102] The ad, appearing in the April 6, 1951, edition of the *News of the North* beneath a Bozo comic strip, was signed by O. L. Stanton, MD, the Chief Medical Health Officer for Yellowknife, and states: "WARNING: During the Spring Run Off Period, standing pools of water are likely to be contaminated with ARSENIC. Residents are warned not to use snow water for any purpose and to keep children and animals from drinking same."[103]

In the spring of 1951, as predicted by Canadian mining officials at least six months earlier, a pulse of snowmelt mobilized months' worth of arsenic deposition from Giant, carrying it into local surface

94 De Villiers & Baker, 1971. p.11; Minutes from meeting June 1, 1951.

95 Minutes from meeting, June 1, 1951. Emphasis added.

96 Ibid.

97 R. A. Gibson, Director of Lands, Parks and Forests Branch, Department of Mines and Resources, memo to Dr. K. C. Charron, Chief, Industrial Health Division, Department of National health and Welfare, re. Arsenic disposal, Yellowknife, N.W.T., September 25, 1950. RG 85 Volume 40 File 139-7 pt. 1, LAC.

98 Ibid.

99 Minutes from meeting, June 1, 1951. Also, Christie, Mining Activity in the Northwest Territories, 1950.

100 Christie, Mining Activity in the Northwest Territories, 1950.

101 Gibson, memo re. Reimbursement for payments made for advertising, 1950.

102 Minutes from meeting, June 1, 1951. Also, Department of Mines and Resources, Invoice to reimburse Dr. Stanton, 1951. RG 85 Volume 40 File 139-7 pt. 1, LAC.

103 *News of the North* April 6, 1951; in "The Giant Coverup," September 2014, Arn Keeling and John Sandlos, *Edge Magazine*.

waters.[104] This pollution resulted in at least one confirmed case of acute arsenic poisoning due to consuming contaminated water, which caused the death of a two-year-old Yellowknives Dene boy, Frank Abel, on Latham Island.[105] Correspondence in the wake of Abel's death states that Giant had recently received a "satisfactory inspection by the chief inspector from Ottawa,"[106] meaning that the mine was operating satisfactorily according to Canada's oversight and specifications when it enabled the deadly concentrations of arsenic in the snow surrounding Latham Island, which the Government knew the Yellowknives Dene used for drinking water.[107]

The minutes from the 1951 meeting in Ottawa, "to discuss the recent death of an Indian child at Yellowknife as a result of arsenic poisoning," acknowledge the insufficiency of the government's communication efforts to warn Latham Island residents about the dangers of arsenic in their drinking water.

> **In spite of these precautions certain Indians living on the north end of Latham Island used the water in the vicinity, with the result that a number of them had to be given hospital treatment and one died.[108]**

Over the decades, Yellowknives Dene members have pointed out many problems with Canada's methods of communication in the spring of 1951. For example, as was likely known to the network of Government field staff established in the Northwest Territories by 1950, few Yellowknives Dene read English or subscribed to newspapers at the time. After more than half a century of experience in nation-to-nation politics with the Yellowknives Dene and other Indigenous groups around Great Slave Lake with whom they shared a Treaty relationship, the Federal Government could also have been reasonably expected to understand the importance of formal, face-to-face diplomacy in important matters. Moreover, even had the Yellowknives Dene been able to receive the message inserted into the local paper in 1951, it failed to flag the broader issues of contamination of lands, animals, plants, berries, or advise on fish consumption from Yellowknife Bay.

Throughout all of this, the Government of Canada allowed Giant to continue roasting without any form of arsenic emissions control. There is no indication that roasting operations at Giant were diminished or discontinued at any point during the 20 months following the January 1950 decision to allow the mines to continue roasting if suitable precautions were in place,[109] or during the 13 months between September 1950, when Giant informed the Government that emissions controls would not be installed until the fall of 1950, and the eventual installation of the first Cottrell precipitator at Giant on October 29, 1951.[110] Neither is there any indication Canada suggested or required any reduction in roasting operations at Giant during this time when the Government's records show that it was fully aware these operations would lead to poisonous arsenic concentrations in the surrounding environment.[111]

In contrast, at the very same time, Canada was allowing Giant to continue roasting without any arsenic collection system in place, the Government used its authority to prevent the nearby Negus Mine from doing the same.[112] In an August 1951 letter to the manager of Negus Mines Limited, Canada's Deputy Minister of Resources Development states:

> **I feel it necessary to emphasize that under no circumstances shall roasting operations be commenced until an adequate system of collection and disposal has been installed.**

104 Kay, 1968, p.655–657.

105 YKDFN et al. 2019, p.54.

106 Dr. M. Matas memo to Dr. Falconer re. child died from arsenic poisoning, May 16, 1951. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

107 Minutes from meeting, June 1, 1951.

108 Ibid.

109 Minutes from meeting, June 1, 1951.

110 Callow, letter re Cottrell plan, 1951.

111 Christie, Mining Activity in the Northwest Territories, 1950.

112 H. A. Young, Deputy Minister of Resources Development, letter to J. O. McNiven, Manager, Negus Mines Limited, August 1, 1951. RG 85 Volume 40 File 139-7 pt. 1, LAC.

Archival documents also show that Government officials were aware almost immediately that the installation of the Cottrell precipitator at Giant in the fall of 1951 had not solved the mine's arsenic emissions problem. The Government's records indicate that the spring after the Cottrell was installed, the Medical Health Officer for Yellowknife was once again required to place "arsenic advertising" in a local newspaper to warn residents about possible arsenic poisoning.[113] In a memo to the Deputy Commissioner of the Northwest Territories in Ottawa, reporting these expenditures, the Medical Health Officer states that "it is hoped this will be the last year this expense will be necessary."[114] Although no similar records have yet been uncovered for 1953, in the fall of that year, Canada's Occupational Health Laboratory Chief advised the Chief of the Department of Resources and Development, Lands Division, that:

> **We are not yet satisfied that arsenic contamination at Yellowknife has reached a consistent low level and we consider it necessary to recommend that the situation be surveyed again in 1954.[115]**

The local Medical Health Officer's expenditures for "advertising re arsenic hazard" in the spring of 1954 were more than double the amount spent in the spring of 1950 before Giant's Cottrell was installed. In a memo to the Deputy Commissioner of the Northwest Territories, he explained this was because "the season was prolonged this year, and I felt it wise to advertise until I considered the danger past."[116] Canada's continued reliance on print advertisements as the primary means of warning residents about possible arsenic poisoning, despite officials' awareness and acknowledgement of their ineffectiveness since the spring of 1951,[117] should be noted. It should also be noted that the communications efforts described here constitute the only evidence found to date that Canada, the Government of the Northwest Territories, or Giant, consulted with or communicated to Yellowknives Dene members about the dangers of arsenic contamination before the mid-1970s.

Although Government documents from as early as 1946 acknowledge the need to control arsenic emissions from roasting operations at Giant,[118] it was not until 1954 that Canada began testing these emissions,[119] a monitoring procedure that Toxic Legacies scholars John Sandlos and Arn Keeling of Memorial University note, "one would think of as essential to the arsenic control program."[120] The same year a second Cottrell precipitator was installed at Giant, after which the Government's tests showed a significant reduction in overall arsenic emissions in the Yellowknife area from the estimated 22,000 lbs per day to 7250 lbs. per day.[121] There is "no doubt," according to Sandlos and Keeling, that Giant still accounted for the vast majority of these emissions, or that "in absolute terms, a large amount of toxic material was still being loaded into the local environment."[122]

In addition to the poisonous effects of Giant's roaster emissions, spills and discharges of arsenic-rich liquid effluent from the mine into Yellowknife Bay resulted in the contamination of this source of drinking water used by the Yellowknives Dene, the city, and the mine.[123] Sandlos and Keeling point out that, despite the rhetoric about arsenic controls and public health in Government documents following Frank Abel's death in 1951, a review conducted for Canada's department of National Health and Welfare in 1971[124] reported that between 1951 and 1960, "the Yellowknife water supply contained arsenic levels above the acceptable limit of 0.05 ppm approximately

113 Stanton, memo re. Account incurred for arsenic advertising, 1952; Department of Mines and Resources, Invoice to reimburse Dr. Stanton, 1952.

114 Stanton, memo re. arsenic advertising, 1952.

115 Kay, memo re. Funds for 1954 arsenic survey, 1953.

116 Stanton, memo re. Account for printing and advertising re arsenic hazard, 1954.

117 Minutes from meeting, June 1, 1951.

118 Gibson, note on memo re. Summary of Experimental Test Work on Ore Shipment "A", 1946.

119 De Villiers and Baker, 1971. p.3.

120 Sandlos & Keeling, 2012. p.9.

121 De Villiers and Baker, 1971. p.2-3. Sandlos & Keeling, 2012. p.9.

122 Sandlos & Keeling, 2012. p.9.

123 Ibid. p.10.

124 Schaefer, memo re. Yellowknife Arsenic Survey, 1971.

15% of the time."[125] Acknowledging the benefit of hindsight, they also note that Canada's acceptable limit of 0.05 ppm of arsenic in drinking water at the time was already five times higher than the Government's current allowable limits for safe drinking water.[126]

A separate report produced by Canada in 1971 states that when Giant Mine began roasting operations in 1949:

> **Liquid mine wastes containing arsenic were initially pumped into Bow Lake which emptied into Baker Creek and from there into Yellowknife Bay. It was estimated that approximately 83 pounds of arsenic per day entered the Bay in winter with an additional 61 pounds per day in summer. An undetermined amount of arsenic was and is washed into the Bay during the spring run-off period. Discharge of the Giant effluent was redirected to the upper end of Yellowknife Bay in 1963 in order to minimize the possibility of contaminating drinking water sources.[127]**

Sandlos and Keeling stress that this solution to the problem of dangerous arsenic concentrations in Yellowknife drinking water reflected a failure to control the arsenic flowing from the mine effectively and, importantly, "failed to help Native residents of Latham Island and Dettah," who Canada understood did not have access to municipal tap water and relied on other sources.[128] A 1965 memo from Canada's Regional Supervisor of Indian Agencies for the Mackenzie District indicates the Federal Government's awareness that Back Bay had been and continued to be a drinking water source for the Yellowknives Dene on Latham Island, that ongoing contamination of the waters there by the mines under the government's purview rendered them unsafe for drinking, and that as a result Yellowknives Dene members were being forced to rely on potable water deliveries from Yellowknife. The memo also outlines the government's remedy: hold Yellowknives Dene families financially responsible for the water delivery services required to replace their existing water source, which has been contaminated by the mines overseen by Canada.

> **[...] It seems to me that in the initial instance, the payment of water bills is the distinct responsibility of the householder. On the other hand, if there are any individual families who do not have the financial resources to meet this obligation then in line with the Branch's established policies, we would pay for destitute families as a welfare measure.**
>
> **I would not like to see water delivery discontinued to Latham Island for if this happens, the people will resort to using lake water which I understand is contaminated at times from by-products of nearby mines. I would be very much disturbed if the people went back to using lake water as there would be a distinct risk of disease breaking out among the Indian people.**
>
> **I would therefore suggest that you should now make a complete survey of all Indian homes on Lethem Island to determine their financial standing. You should also meet with the town officials to determine what the delivery costs are. Meetings should then be held with the Indian people to point out to them that it is their distinct responsibility to see that their water delivery services are paid for and council them, or at least those who are not destitute, to pay their bills as submitted. A report should then be submitted to me following your surveys and meetings, outlining those families who are considered destitute and this report should contain a recommendation that water delivery services be provided for the destitute families as a welfare measure. As regards the outstanding accumulated account, I am prepared to recommend to Ottawa that we pay it. You might also include in your report a statement regarding payment of water delivery services to destitute non-Indian families, informing on whether or not their accounts are paid by some Welfare Agency.[129]**

125 Sandlos & Keeling, 2012. p.10.

126 Ibid.

127 De Villiers and Baker, 1971. p.2.

128 Sandlos & Keeling, 2012. p.11.

129 N. K. Ogden, Regional Supervisor of Indian Agencies, District of Mackenzie, memo to Superintendent Yellowknife

Correspondence amongst senior bureaucrats also describes water sampling in and adjacent to Yellowknife Bay as "totally inadequate" from the spring of 1966 until at least December 1968, despite officials' clear knowledge of "a potentially dangerous arsenic pollution problem in Yellowknife Bay."[130] The same correspondence indicates that water sampling in and around the Bay remained flawed until at least August 1969.[131] Sandlos and Keeling point to studies conducted by Canada's Environmental Protection Service in the 1970s that found contaminated effluent from Giant tailings ponds remained "a key source of arsenic pollution in Back Bay."[132]

> **Several uncontrolled releases of effluent in 1974, as well as ongoing seepage from tailings ponds, spurred studies that showed continued elevated levels of arsenic, heavy metals, and in some cases cyanide in Baker Creek and Yellowknife Bay, especially in the vicinity of Latham Island.[133]**

Elders indicate that following the death of Frank Abel in 1951, there were multiple subsequent deaths within the community that were widely believed to be the result of arsenic contamination.[134] This is partly because, as Degray points out, government and mining company officials also failed to consult or effectively advise the Yellowknives Dene about the potential health risks associated with hunting, fishing, and gathering within their traditional territory affected by emissions from Giant.[135] In addition, during the 1940s and 1950s, when such consultation might reasonably have occurred, and despite earlier requests from the Yellowknives Dene for help settling at the mouth of the Weledeh River going back to the 1920s, Canada deliberately in-gathered the Yellowknives Dene to their current village locations at Ndilo and Dettah for more efficient delivery of government services such as schooling, treaty payments, housing, public health, social benefit payments, etc..[136]

Canada's public health programs targeted a notional link between living conditions, sanitation, and infectious diseases. With regard to the growth of settlement at Ndilo, Canada acted in pursuit of a double-edged settlement strategy that aimed to gather Indians at a location convenient to the state but removed from the white population. According to this strategy, the Yellowknives Dene could be out of the way of Yellowknife's growing settlement yet conveniently located for service delivery and for availability as a workforce for the mining industry or government-sponsored development projects to support the industry. At the time Canada promoted this resettlement and development strategy it also had full knowledge of the incipient arsenic problem from Giant and Con. The environment the Yellowknives Dene were encouraged to settle in was already impacted by arsenic contamination as indicated in the Government's own reporting on snowpack and other drinking water sources in the area, for example.[137]

A report from 1956-1957 notes:

> **The continued decline in fur prices and its effect on the hunting and trapping industry was to some extent compensated for by increased employment opportunities resulting from the quickening tempo of development in the region.**

Indian Agency re. Unpaid Water Accounts – Latham Island, N.W.T., July 6, 1964. RG 10, Volume 3296, File 139/8-2, LAC.

130 John A. MacDonald, Deputy Minister, Department of Indian Affairs and Northern Development, memo to Dr. J. N. Crawford, Deputy Minister, National Health and Welfare, re. Potentially dangerous arsenic pollution problem in Yellowknife Bay, N.W.T., December 4, 1968. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

131 J. W. Grainge, Regional Engineer, Department of National Health and Welfare, memo to the Medical Services Mackenzie Area Director re: Arsenic, August 12, 1969. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

132 Sandlos & Keeling, 2012. p.13

133 Ibid.

134 YKDFN, 2019, p.51,52.

135 Degray, 2020.

136 The Yellowknives Dene received Treaty payment at the mouth of the Yellowknife River until circa 1928, at which time the Department of Indian Affairs required them to attend Treaty Days at Resolution or elsewhere where they come under "the influence of White people, Missionaries, or even Traders." C. Bourget, Great Slave Lake and Resolution Agency, to the Assistant Deputy and Secretary, Department of Indian Affairs, Ottawa, 5 August 1924. RG 10 Volume 6879 File 191/28-3, LAC.

137 Webster, Monthly Report on Mining Activity for May 1949; Minutes from meeting, June 1, 1951.

Although Indians who remained away from settlements and lived in areas where game was in reasonably good supply were able to provide for themselves fairly well, the year's activities seemed to confirm the tendency for the younger people to find their way into other occupations.

During the past summer, construction projects at all settlements in the Fort Norman Indian agency except Forts Liard, Wrigley and Franklin, provided employment opportunities for most of the Indians in that area. The majority of the Fort Liard Indians worked for a geophysical survey party there, the Fort Wrigley Indians were employed all summer on river transportation, and some of the Fort Norman and Fort Franklin Indians obtained employment with transportation and airline companies at Norman Wells.

About 50 heads of families in the Yellowknife agency found employment in mining ventures at Snowdrift, Rayrock and Yellowknife, and a like number worked at construction and other jobs at Yellowknife and Hay River. Other small groups were employed on survey crews, road construction work and other seasonal ventures. Fire fighting attracted quite a few of these people, and an increasing number took part in summer commercial fishing enterprises on Great Slave Lake.

Generally speaking, employment opportunities were available throughout the summer season resulting in the temporary improvement of living standards.[138]

The departmental report for 1958-1959 also describes the acquisition of land (so-called Lot 500) on Latham Island for the construction of houses for the Yellowknives Dene, as part of a wider development project:

A number of young Indians took advantage of improved educational facilities. Ten girls took commercial and home economics' courses, and 18 boys took carpentry and mechanics' courses at the Sir John Franklin School in Yellowknife.

Six Indians attended the three-month carpentry course conducted at Inuvik and are expected to find work when construction resumes. Night classes for adults were conducted at Jean Marie River, Forts Simpson, Norman, McPherson and Good Hope. Indian women showed keen interest and increased attendance at sewing classes at a number of points in the western part of the District. […]

The provision of more adequate housing received attention. This not only improved living conditions in a number of settlements, but also furnished several jobs. [...]

Some progress was made in the acquisition of small parcels of land to provide Indian housing lots. A portion of Latham Island at Yellowknife was set aside for this purpose, while several parcels were obtained at Fort Smith, including a few lots in the new development area. A parcel was also bought at Fort Simpson and other requests were receiving consideration at the end of the year.[139]

Despite the government's focus on settling and administering the Yellowknives Dene in areas officials knew to be directly affected by arsenic contamination from Giant, few conventional public health measures were undertaken to target the Yellowknives Dene between 1948 and the early-to-mid 1970s. There were no door-to-door campaigns; no meetings; no circulars; there was no communication plan. Formal health advisories beyond limited-run newspaper ads only appeared following increasing demands from both settlers and Yellowknives Dene communities during the 1970s, and their effectiveness in reaching land-users and Elders remains questionable.[140]

138 Department of Citizenship and Immigration Report of Indian Affairs Branch for the Year Ended March 31, 1956. Queen's Printer, Ottawa.

139 Department of Citizenship and Immigration Report of Indian Affairs Branch for the Year Ended March 31, 1959. Queen's Printer, Ottawa.

140 Sandlos & Keeling, 2012; Sandlos, J., & Keeling, A. (2016). Toxic legacies, slow violence, and environmental

Instead, as Elder Louise Drygeese explains, Yellowknives Dene were forced to learn what they could about the widespread contamination and the danger of arsenic poisoning over time from direct experience, observation, and improvised strategies for risk management.

> **They didn't know nothing about it. Nobody knows because there's no advisories, no letters, no correspondence, no consultation. The way they found out is because of the fish that they were eating in the [Yellowknife] bay and as well as the sled dogs that were dying. They found out that it had to do with the Giant Mine tailings going into the water and the sulfur dioxide. And they understand that it was poison. So they were concerned and they made decisions on their own not to go near that area or use anything within that area 'cause it's destroying the land [...] Nobody advised them but they observe. Their own observation, and community talk, and that's how they know.[141]**

During the mid-1970s, the National Indian Brotherhood and the United Steelworkers Union began to raise and investigate concerns about exposure to high levels of arsenic from Giant on behalf of the Yellowknives Dene and mill workers. According to a report solicited by the Federal Government in answer to these group's findings:

> **The response from the Department of National Health and Welfare was that the best available data to date suggested there was not a significant health hazard to Yellowknife residents as a result of possible arsenic poisoning.[142]**

In an effort to resolve this dispute in 1977, the Minister of National Health and Welfare requested that the Canadian Public Health Association establish a Task Force on Arsenic to conduct an impartial study of possible arsenic poisoning in Yellowknife.[143] In its Report to Canada later the same year, the Task Force observed the continued need for specific recommendations, as well as explanations for them, on the importance of communicating clearly with community members about the risks of arsenic contamination in snow and ensuring Yellowknives Dene members had access to uncontaminated drinking water.

> **Since snow remains on the ground throughout the entire winter season, arsenic levels would be expected to build up as a result of continuing deposition. Since the greatest significance of snow, in terms of human exposure, would be as a source of drinking water, arsenic levels can be compared to the maximum permissible level of 0.05 milligrams per litre or ppm specified in the Canadian Drinking Water Standard for arsenic.**
>
> **A snow survey conducted in 1975 found that 96% of all scoop snow samples exceeded the Canadian standard. In the case of core samples of snow 85% of the samples exceeded the maximum standard. Average concentrations for each varied between 0.17 and 0.52 milligrams per litre. In addition, snow melt usually contains undissolved particles which have been shown to contain very high concentrations of arsenic which would increase the risk… The Task Force concludes that the use of snow as a source of drinking water could constitute a serious health hazard.[144] [...]**
>
> **It is probable some members of the Indian communities in Latham Island and Detah continue to make use of snow as a potable water source, in spite of the fact that water is routinely made available to the community by tank-truck. In order to deal with this potential problem steps should be taken to: a) ensure that every member of each community at risk is routinely advised and reminded of the hazard of using melted snow for drinking and cooking purposes and b) ensure that adequate quantities of potable water are made available to residents of unserviced communities.**

injustice at Giant Mine, Northwest Territories. Northern Review, (42), 7-21.; Degray 2020.

141 Mary Louise Drygeese interview, May 26, 2016. Interpreted by Fred Sangris; in Degray 2020.

142 Canadian Public Health Association, Task Force on Arsenic, 1977. p.24.

143 Ibid.

144 Ibid. p.49.

The provision of public water supplies is a function of local government. The Task Force considers that both Giant Yellowknife and Cominco have a responsibility to support such a program.[145]

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The Task Force recommends:

THAT every effort be made to ensure that melted snow is not used as a potable water source in the Yellowknife area, and

THAT every member of the community at risk be routinely advised and reminded of the hazard of using melted snow for drinking and cooking purposes, and

THAT adequate quantities of potable water be made available to residents of unserviced communities. While the provision of water supply is a function of local government, the Task Force considers that both Giant Yellowknife and Cominco Mine have a responsibility to financially support such a program.[146]

The Task Force was also profoundly critical of Canada's approach to monitoring the health impacts of arsenic emissions from Giant, noting that "Indian people and particularly Indian children are acquiring an increased arsenic load."[147]

The pattern in Yellowknife has been to have a survey and a review of the situation every ten to fifteen years. Each of these events seems to have produced an improvement in one or more aspects of the pollution problem. [...] Industrial practices have been modified and improved but the provision of public health and industrial medical monitoring and practice have lagged.

Medical surveys without exception have remarked on the prevalence of skin and respiratory infections. No ongoing follow-up of these facts is evident.

Arsenic compounds have been shown to have an anti-immune effect. The resulting lowering of resistance has been associated with increased skin disease and higher respiratory infection rates. No serious effort seems to have been made to compare morbidity rates in Yellowknife with other comparable northern communities.

There is no question that, under certain conditions, arsenic compounds are causally related to cancer. There has been little evident effort to follow trends over time in Yellowknife and other areas. Some valuable observations on cancer in northern peoples have been made by Dr. Schaefer in the course of his work; none of these relates to Yellowknife. [...]

The Task Force deplores the previous pattern of intermittent surveys followed by periods of relative inactivity.[148]

A December 1965 memo to Medical Services Director General, Dr. Procter, conveys shock on the part of the Indian and Northern Health Services representative who has "recently discovered that the problem of arsenic pollution at Yellowknife is far from solved."[149] The memo indicates that even when the arsenic collection technology installed by mines in the area works as intended, it allows large amounts of arsenic to escape and concentrate in the environment.

Recent sampling of stack effluent shows that about 300 to 400 pounds of arsenic is being distributed into the local atmosphere every day in spite of the fact that the scrubbers and precipitators are working at 60-90% efficiency. Recent samplings of vegetables grown in the area show that cabbage and lettuce leaves contain from 40-50 ppm of arsenic although the recommended maximum is 1 ppm. Water samplings also show that it is way above the recommended U.S.P.H.S. recommended level of 0.01 ppm.[150]

The memo reports that Canada's Environmental Health department had been "carrying out regular tests up to a few years ago but for no apparent

145 Ibid. p.52.

146 Ibid. p.14.

147 Ibid. p.113.

148 Ibid. p.113-114.

149 Indian and Northern Health Services, memo re. Arsenic Pollution at Yellowknife, 1965.

150 Ibid.

reason stopped the survey," adding that "Dr. Monkman of Environmental Health feels that something should be done."[151] At a meeting to discuss these newly identified issues a short time later, "it was agreed that a definite problem exists and that it was advisable to have a clinical study on the local population carried out during the year 1966".[152] The resulting study, conducted by the Occupational Health Division of the Department of National Health and Welfare, began with a survey during the summer of 1966, roughly fourteen years after the only previous such study was completed in 1952.[153]

> **Arsenic levels in the drinking water rose slightly during the last three to four years. These new values gave rise to concern about the efficiency of long-term control measures and prompted an extension of the environmental assessment programme, as well as another health survey. [...]**
>
> **The main study began on June 1, 1966 and was carried through July and August. This phase consisted of a house-to-house survey of the community involving regular household visits by a team of interviewers, the weekly recording of individual illnesses and the systematic completion of a series of questionnaires. [...]**
>
> **A survey of the prevalence of chronic respiratory disease among the inhabitants of two small neighboring Indian villages was also carried out. For this purpose, a seven-question questionnaire was used.[154]**

Government documents indicate that although this survey was completed in August of 1966, Canada failed to analyze the data collected for nearly four years,[155] and did not report findings until 1971.[156] After sustained pressure from medical officials in Yellowknife, a preliminary report on the study was issued in August of 1969. The report, characterized by officials in Yellowknife as "so 'preliminary' that it adds nothing,"[157] provided an introductory description of the health survey procedure and coverage, and some discussion of population characteristics and problems encountered.[158] The problems reported include "losses of information [...] under-reporting, errors in respect of coding morbidity information, and problems associated with cross-cultural research," the latter of which affected data related to First Nations participants in particular.[159]

> **Our interviewers encountered considerable difficulty with immigrant families and with the use of respiratory disease questionnaires, particularly for two small Indian Villages included in the survey. Although in the latter case, as much care as possible was taken to ensure uniform translation and interpretation of questions and responses, a review of the results revealed very early that responses to the question dealing with cough could not be relied upon. It appeared that cough more than any of the other symptoms dealing with,**

151 Ibid.

152 Indian and Northern Health Services, Department of National Health and Welfare memo re. Arsenic Pollution at Yellowknife, December 20, 1965. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

153 Department of National Health and Welfare, 1969. p.3.

154 Ibid. p.3-6.

155 J. H. Wiebe, Acting Director General, Medical Services, memo to Dr. G. Butler, Regional Director, Medical Services, Northern Region, re. Arsenic Study – Yellowknife, January 7, 1970. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

156 J. H. Wiebe, Acting Director General, Medical Services, memo to Dr. G. C. Butler, Regional Director, Medical Services, Northern Region, re. Environmental Health Survey, Yellowknife, May 14, 1971. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC. Dozens of memos between senior Medical Services personnel in Yellowknife to the study authors and other high-ranking bureaucrats in Ottawa found in RG 29, Volume 2977, File 851-5-2, pt. 1, LAC, detail increasingly urgent and frustrated demands for results of the 1966.

157 E. A. Watkinson, Director General, Health Services Branch, memo to Dr. H. A. Procter, Director General, Medical Services, re. Request for Dr. de Villiers' report on Arsenic Survey in Yellowknife, September 3, 1969. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

158 Dr. A. J. De Villiers, Biomedical Unit, memo to Dr. E. A. Watkinson, Director General, Health Services Branch, re. Arsenic Survey – Yellowknife, August 26, 1969. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

159 Department of National Health and Welfare, 1969. p.9.

for example, phlegm, etc., may have been influenced by attitudes to tuberculosis and the associated fear of removal from the family environment. Almost without exception responses concerning "cough" were in the negative in spite of numerous responses in the affirmative admitting to production of phlegm and a degree of chronic non-specific respiratory disease suggested by the various pulmonary function tests.[160]

There is no indication in the final 1971 report that these or any other problems with the survey identified in the 1969 preliminary report were addressed. A review of the final report conducted by Canada's Northern Medical Research Unit in November 1971 raised multiple questions about the author's assumptions and conclusions, noting, for example, that:

Dr. de Villiers is inclined to attribute the increase in skin lesions directly to exposure to elemental arsenic (dust) while more general or non-specific factors are suggested in his opinion such as cold climate and local stress conditions for increased incidence of non-specific respiratory, neurological and electrocardiographic pathology.[161]

The reviewer concludes by stating his assumption that "the report is not yet finalized as correlations of symptoms with physical findings and pulmonary function tests (and EKG findings – my remark) have not yet been made."[162] Nearly a year later, when Dr. de Villiers is "finally cornered" for his response to the reviewer's questions, he "stated that while he found the electrocardiograms interesting, in his opinion they had 'no health significance.'"[163]

Dr. de Villiers made it quite clear for the first time that he had no intention of even contemplating further action in this matter. Further, there is no person left in the Health Protection Branch who has any knowledge of the study or is willing to persure [sic] it further.[164]

Ultimately, after thoroughly describing the sources and extent of arsenic contamination in the environment around Yellowknife[165] and providing a summary of the chemical's toxic health effects,[166] de Villiers's report concludes that arsenic played little or no role in the health status of residents around Giant.[167] These findings would eventually lead to the emergence of exposure to arsenic from Giant as a public issue in the 1970s after the report concluded that environmental arsenic contamination was not connected to any adverse health effects for local inhabitants became a media controversy. The 1977 Task Force on Arsenic, which was established expressly to settle the public dispute on this subject, praised de Villiers's study but registered its dismay that it had not led to the development of any ongoing monitoring programs or corresponding interventions to address potential health impacts from Giant.

It is surprising that at the time of the excellent review by de Villiers and his associates, ongoing programs were not put into effect. These programs should have taken the form of regular public health and industrial hygiene practices. [...]

Future action must take the form of continuous surveillance and corrective action when and if necessary.

The evident absence of clinical arsenic toxicity in Yellowknife except among some industrial workers is encouraging. Ongoing monitoring of the human population is needed to determine if there are any subclinical or preclinical effects from the arsenic in the environmental reservoir.[168]

160 Ibid.

161 Schaefer, memo re. Yellowknife Arsenic Survey, 1971. p.3.

162 Ibid. p.8

163 M. L. Web, Assistant Deputy Minister, Medical Services, memo to Dr. H. B. Brett, Regional Director, Northern Region, re. Yellowknife Arsenic Survey, October 20, 1972. RG 29, Volume 2977, File 851-5-2, pt. 1, LAC.

164 Ibid.

165 De Villiers & Baker, 1971. p.3-8.

166 Ibid. p.7-11.

167 Ibid. p.48-54.

168 Canadian Public Health Association, 1977. p113-114.

The Task Force's Final Report notes that as early as 1951, a 2-year study of workers in a copper-ore smelting facility found that humans repeatedly exposed to arsenic developed a sensitivity to the chemical leading to adverse reactions.

> **Acquired sensitivity to arsenic was described in a lengthy report by Holmqvist in 1951. During a 2-year investigation of smelter employees he found that 80% of arsenic workers were sensitive, by patch testing, to weak solutions of sodium arsenate and arsenic pentoxide which caused reactions in only 35% of non-exposed employees and 30% of new employees.[169]**

Although it is well documented that the environment and Yellowknives Dene members, in particular, were exposed to arsenic from Giant via air, water and snow, the research team has not found any evidence Canada sought to understand the potential implications of acquired heightened sensitivity to arsenic through contact with arsenic emitted by Giant and/or found to have accumulated in snow and water samples. Indeed, an occupational health expert appointed to the Task Force at the request of representatives for the Yellowknives Dene and the unionized workers at Giant criticized the Task Force specifically for focussing "too narrowly on the threat from short term arsenic poisoning while ignoring the increasingly well-established lung and skin cancer threat from long term chronic exposure."[170]

Some of its criticisms and recommendations notwithstanding, the Task Force on Arsenic's Final Report broadly "reinforced the federal government's earlier claims that arsenic did not constitute a public health crisis."[171] The National Indian Brotherhood and the United Steelworkers Union rejected these claims and continued to voice concerns about arsenic contamination from Giant on behalf of the Yellowknives Dene and miners. The report made 46 detailed recommendations, and further archival research is recommended to determine how many were implemented and the circumstances of their implementation.

Sandlos and Keeling observe that with Canadian officials once again declaring arsenic levels escaping Giant to be safe, "the arsenic issue at Yellowknife faded from public prominence in the 1980s."

> **Improvements to the arsenic collection technology for water and air emissions produced further dramatic reductions in pollution. At Giant Mine, stack emission fell dramatically from 850 lbs. per day in 1973 to 29 lbs. per day in 1979. The result was a marked decline in arsenic in the local environment, with one study suggesting an 80% drop in arsenic trioxide in snow core samples from 1976 to 1986. This, combined with improvements to tailings storage and treatment (including the construction of an effluent treatment plant at Giant in 1981), suggest that after nearly three decades the federal government had finally mitigated the problem of acute arsenic pollution problems in Yellowknife.[172]**

Nevertheless, the Yellowknives Dene have worked continuously to have Giant's impact on the environment, and its members' health, traditional land-use and culture, acknowledged and understood.

169 Ibid. p.82.

170 Sandlos & Keeling, 2012. p.13.

171 Ibid.

172 Ibid.

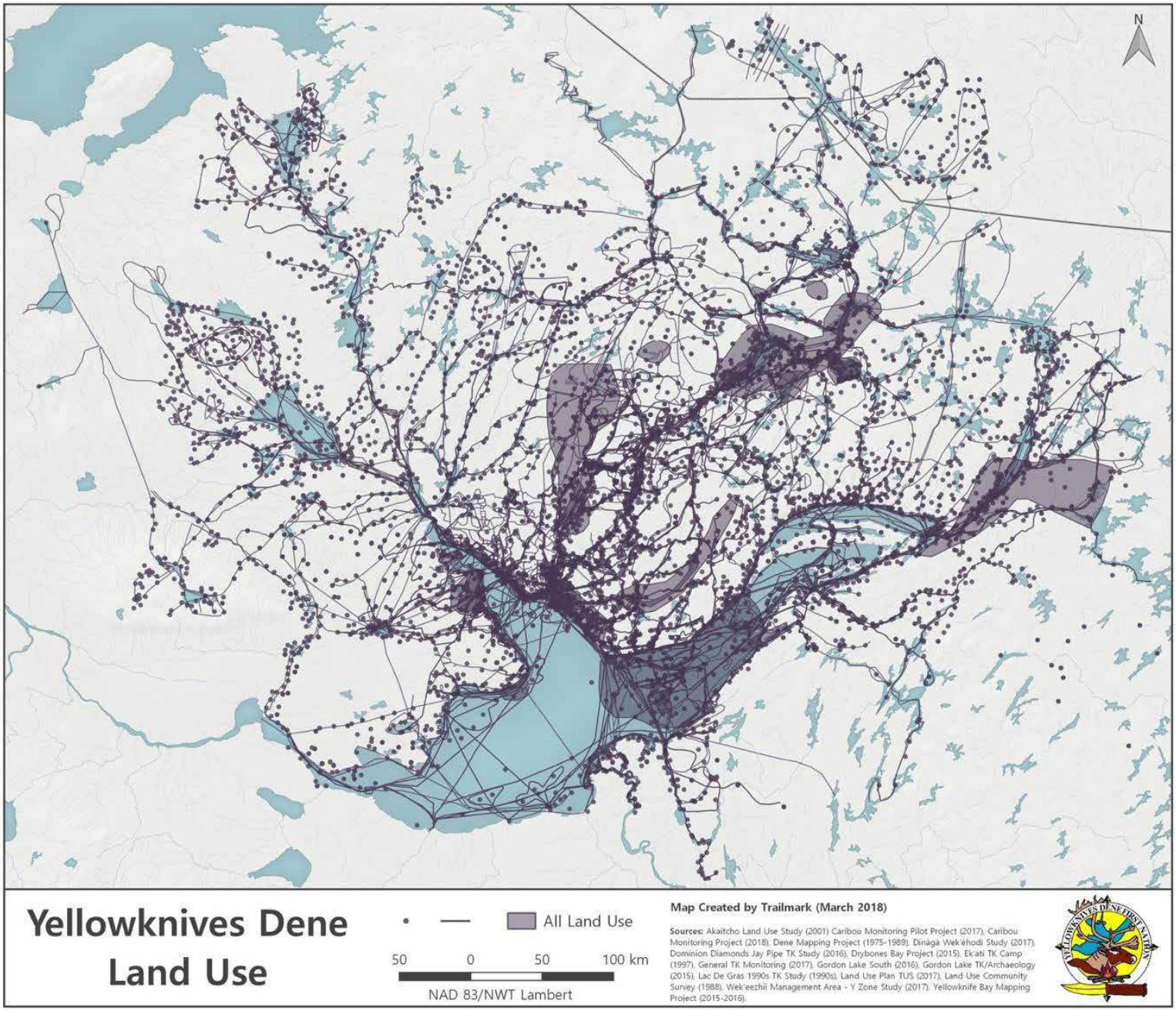


Fig 1: YKDFN Traditional Land Use. (YKDFN 2018)

Impacts on Yellowknives Dene Traditional Land-Use Practices

In addition to the acute impacts from arsenic poisoning that occurred in the late 1940s and early 1950s, and the chronic effects of widespread contamination that were unknown and largely unstudied by officials throughout the 1950s and 1960s, the Yellowknives Dene have experienced profound changes in traditional land-use – hunting, fishing, trapping, and plant and materials gathering – as a result of Giant. Historically, the Yellowknives Dene travelled, hunted, trapped, gathered berries and medicinal plants, and collected drinking water throughout the Yellowknife Bay area. As Elders recall, areas near Giant site and the city of Yellowknife used to be important for berry-picking and moose hunting; the mouth of *Enda'deh* (Baker Creek), which flows through the Giant lease area, used to be a productive fishing site.[173] In addition, Yellowknives Dene traditional travel routes were extensive on the west side of Yellowknife Bay, especially near the Giant and Con mine sites.[174]

173 Weledeh Yellowknives Dene. (1997). "Weledeh Yellowknives Dene: a history". Dettah: Yellowknives Dene First Nation Council. Also Yellowknives Dene First Nation Land and Environment Committee (YKDFN LEC). (2005). The Giant Gold Mine – Our Story: Impact of the Giant Mine on the Yellowknives Dene – A Traditional Knowledge Report. Dettah: Yellowknives Dene First Nation Council.

174 Yellowknives Dene LEC, 2005; Degray 2020.

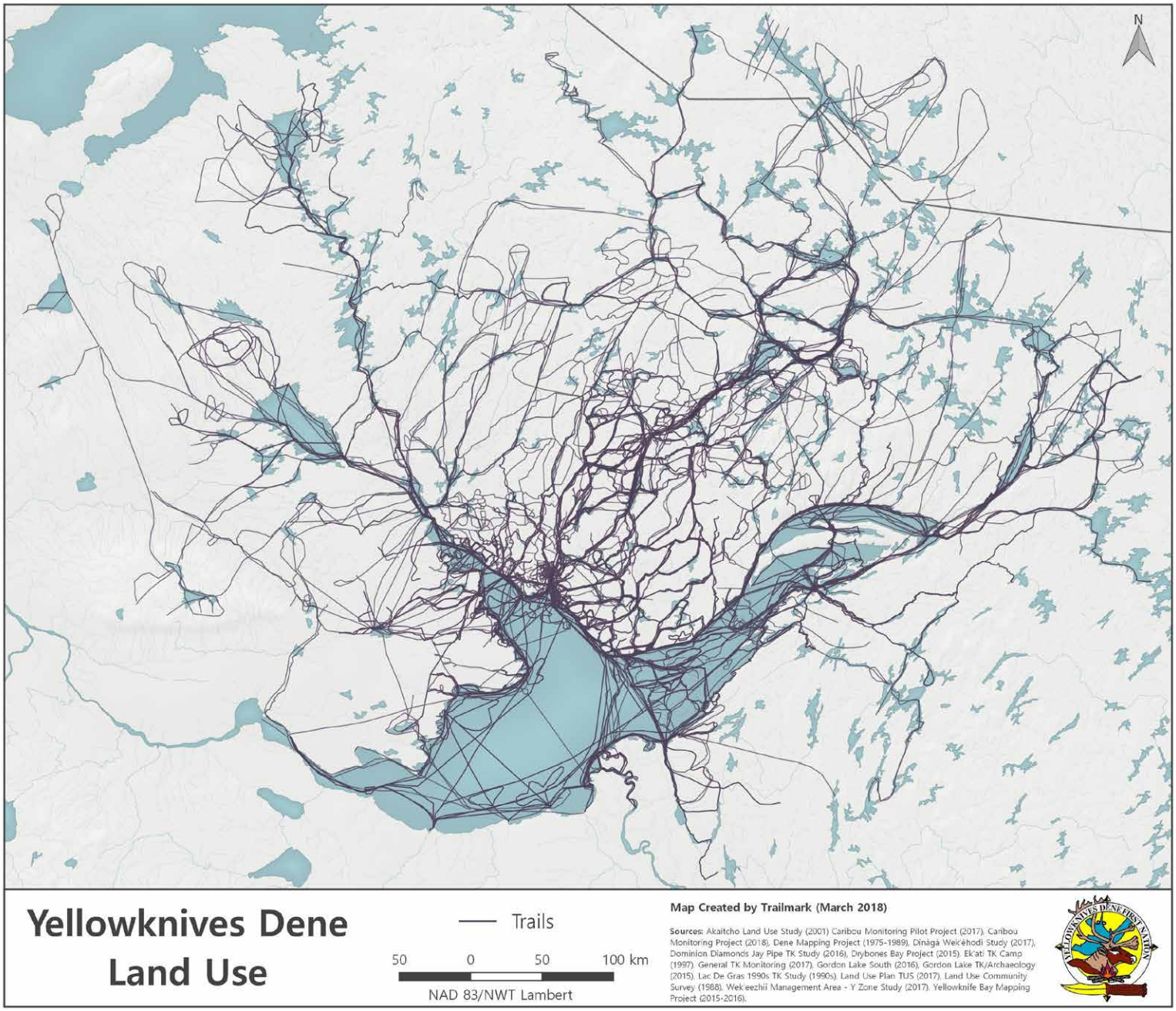


Fig 2: Traditional Travel Routes. (YKDFN 2018)

Community members encountered physical barriers to accessing the Giant mine area beginning with the advent of prospecting and development in the 1930s, but some traditional land-use in and around the mine site continued into at least the 1940s.[175] Yellowknives Dene Elders report that eventual impacts to their community members' health and wellbeing were compounded by continued land-use in the contaminated areas surrounding the mine. Contemporary Elders stress that land-users were unaware of the dangers associated with toxicity and contamination from Giant and that neither the mine nor the Government provided warnings or information to land-users at the time. Yellowknives Dene members employed at the site pursued traditional harvesting practices within the area, in order to gather food for meals while at work, for example.[176]

Yellowknives Dene Elders have often expressed resentment that the Government and Giant's operators did not make land-users aware of the risks posed to them by continuing to harvest in these areas, instead leaving them to identify and manage the risks largely on their own.[177] Over time, in the vacuum of information from officials and eventually out of fear of contamination, Yellowknives Dene members began to avoid their normal harvesting areas, expending additional effort and resources to travel to and secure access

175 Yellowknives Dene 2019. p. 50.

176 Ibid. p.50.

177 Ibid. p.50.

Photo: Devin Tepleski

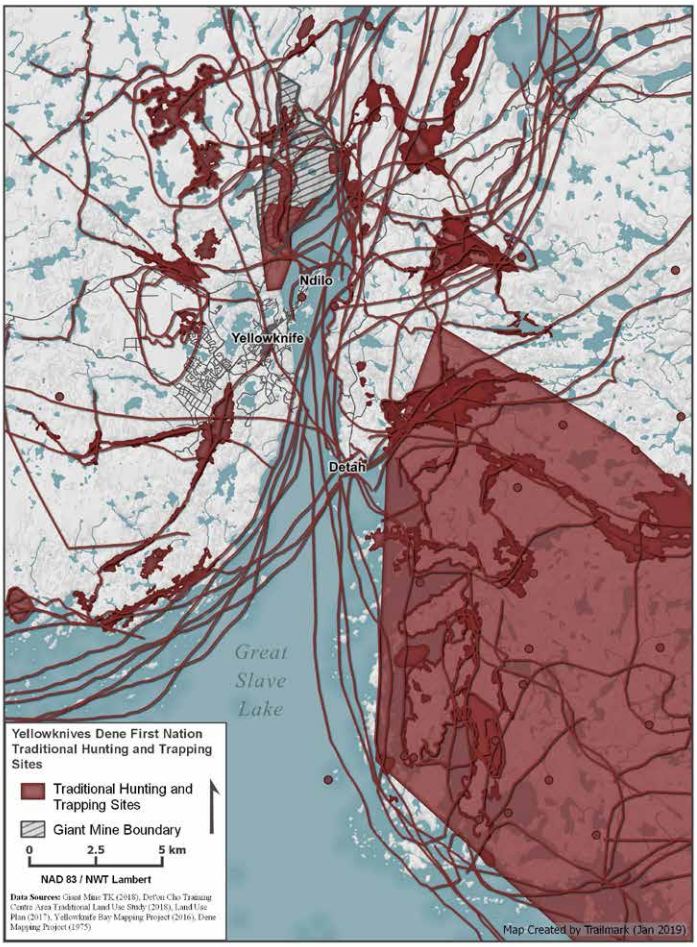
to traditional foods elsewhere. These impacts to traditional land-use areas represent changes in perception of preferred resources by Yellowknives Dene members and exist irrespective of science-based assessments.[178] Members who continued to harvest within the mine lease and in Yellowknife Bay are perceived to have suffered exposure to toxic chemicals from the mine.[179]

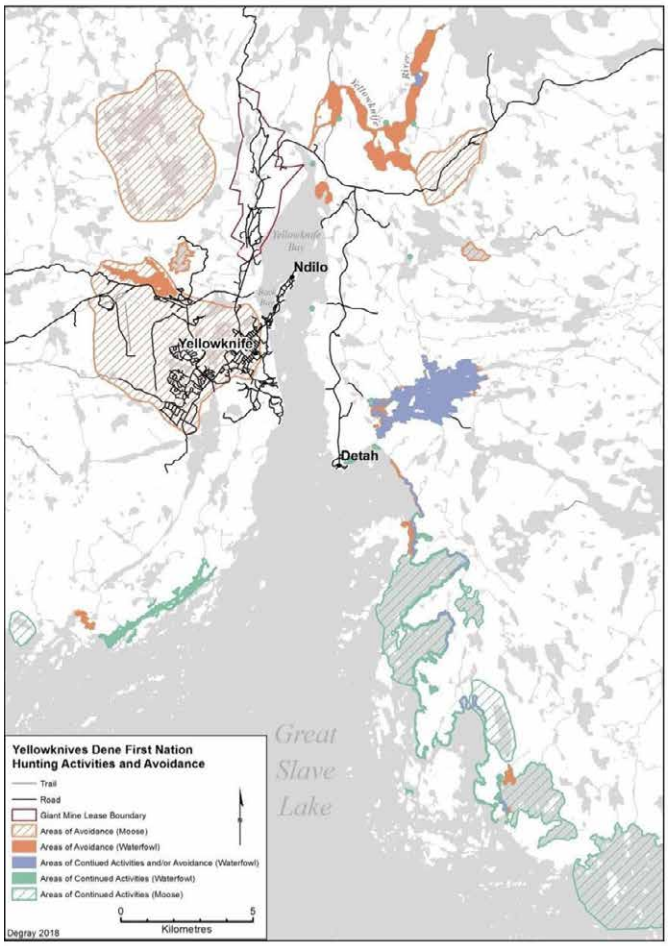
The changes in Yellowknives Dene traditional land-use in and around the Giant mine site, and the loss of access to preferred traditional land-use sites both there and to the northwest of the site, continue to have lasting impacts on the health and continuity of traditional Yellowknives Dene culture, lifestyle, and, by extension, the overall health and wellbeing of all Yellowknives Dene people. Increases in travel time and costs required to access food and medicine-harvesting areas considered safe present barriers to the transfer of land-use knowledge from one generation to the next.[180] In the sections that follow, we describe some effects of Giant on the traditional land-use practices of the Yellowknives Dene.

178 Ibid, p.64.

179 Ibid. p.58.

180 Ibid. p.65.





Left: *Fig 3.* Past Hunting & Trapping Areas Recorded Within or Adjacent to the Giant Mine. (YKDFN 2019)

Right: *Fig 4.* Current Hunting Areas of Avoidance. (Degray 2020)

Impacts on Hunting Practices

Historically, Yellowknives Dene hunting practices depended upon a combination of preferred, nutritious resources readily available to village sites and the ability to access more distant resources at critical times of the seasonal round via the well-worn network of Yellowknives Dene trails throughout their territory. Following the onset of mining operations and settlement in present-day Yellowknife, the Yellowknives Dene lost access to their traditional hunting ground on the west side of Yellowknife Bay,[181] in the area taken up by Giant, the City of Yellowknife, the area contaminated by Giant, and the area beyond Giant which was accessed via traditional trails through the Giant property. The operation of the mine also directly affected the presence of preferred species moose and caribou and the safety of staple small game species.

Traditionally, the Yellowknives Dene strictly prohibited establishing villages on the west shore of Yellowknife Bay. This was a revered hunting area protected by traditional protocols to preserve the habitat of the many plants and animals available there. Starting in 1923, Yellowknives Dene access and practices within this area were also protected by the Yellowknife Preserve. According to Yellowknives Dene Elder Fred Sangris:

> *It was like that until they discovered gold and they start putting up tents and tent frames… eventually the road…then this whole place here right up to the Tim Hortons today. That's what happened. So, we lost the ability to harvest and hunt in that area.*[182]

A web of trails leading inland from the east shore of Yellowknife Bay gave and continues to give, access to areas used for trapping, hunting small game, and gathering firewood, medicinal plants, and berries. Elders say this area is like a store where they can go for food and supplies.

For generations, hunting moose and caribou was essential to Yellowknives Dene survival on the land, and these large mammals remain an important part of their hunting culture, diet, and health.

181 Degray 2020.

182 Fred Sangris interview, May 24, 2016; Degray 2020.

Traditionally, the Yellowknives Dene hunted moose during the fall and caribou during the winter. For those families that stayed in Yellowknife Bay year-round, land-users would hunt caribou that migrated towards Great Slave Lake, especially near Frame Lake and Long Lake during the spring.

Moose used to travel on the extensive sandy plains west of Yellowknife Bay because they preferred to travel on soft bottomed shallow bays or lakes or sandy areas.[183] Those sandy plains, however, were eventually paved over to build the roads of downtown Yellowknife.

Avoidance behaviours for hunting are influenced by anthropogenic and non-anthropogenic factors such as hunting regulations, declining caribou herds, and changes in caribou migration. According to the Yellowknives Dene, caribou stopped travelling towards Great Slave Lake during the 1940s because of blasting and operations at the mines as well as the growing settler population on the west side of Yellowknife Bay.[184]

Moose, once plentiful on the west side of Yellowknife Bay and in particular in the Baker Creek valley, left the area, and Yellowknives Dene had to travel further to harvest this important source of meat. This impacted both the household and community economy: Yellowknives Dene harvesters had for years supplied meat to prospecting and logging camps in the surrounding area.[185]

Degray's *YKDFN Hunting Activities and Avoidance* map (Figure 4) illustrates Yellowknives Dene land-use displacement in relation to hunting in Yellowknife Bay and the area along the west shore traditionally known as *Wag'we*. Following the settlement of Yellowknife and mining operations on the west side of Yellowknife Bay, the Yellowknives Dene lost access to this traditional hunting ground, and in turn, land-users incurred the cost of travelling further to hunt.

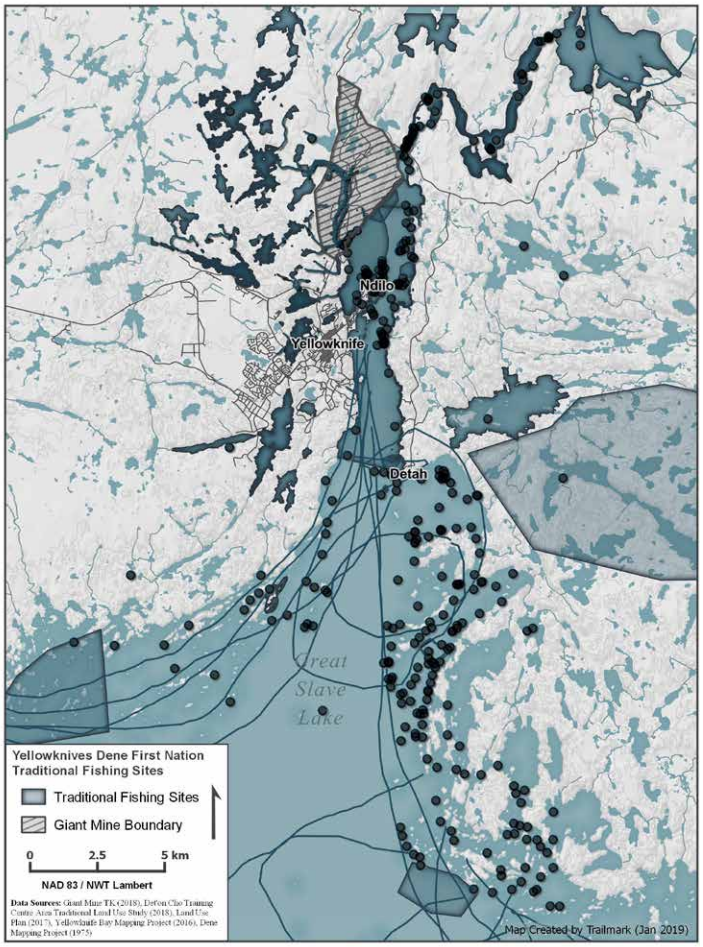
Yellowknives Dene faced the same challenges harvesting small game from the area taken up by Giant, and from the surrounding area. Moreover, from 1949 onwards, small game, plants, and birds in the Yellowknife vicinity or downwind of the prevailing winds received a daily dusting of arsenic from Giant's stacks. Both Yellowknife Bay and Long Lake were remembered as popular sites for hunting ducks in the past but are now avoided. To use the words of some Yellowknives Dene members, there is just "too much traffic" on Yellowknife Bay, and Long Lake now lies within Yellowknife city limits.[186]

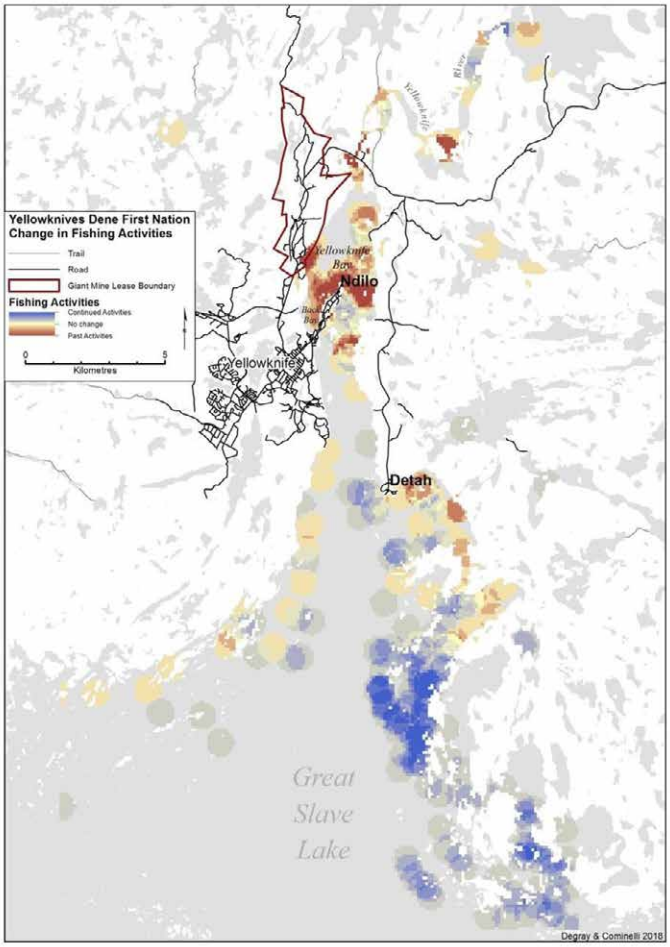
183 DownNorth Consulting, 2018.

184 Weledeh Yellowknives Dene, 1997; Degray 2020.

185 This economy had been most robust during the Yellowknife Preserve regime, before prospectors were permitted to harvest within the Yellowknife Preserve.

186 Degray 2020.





Left: *Fig 5*. Past Fishing Areas Recorded Within or Adjacent to the Giant Mine. (YKDFN 2019)

Right: *Fig 6*. Changes in Fishing Activities. (Degray 2020)

Impacts on Fishing Practices

Fish plays a critically important role in the cultural history of the Yellowknives Dene and remains, to this day, the most reliable source of protein and nourishment for their food security. Fish, in particular, Inconnu caught in Yellowknife Bay and in the lower Yellowknife River, played an important role in their travel north to meet the southward migrating caribou. The once predictable migration of Inconnu up the Yellowknife River went into decline, which Yellowknives Dene harvesters and Elders believe resulted first from blasting as Giant was under construction, and then through a combination of blasting and arsenic in the water.[187]

Historically, the Yellowknives Dene would return to Yellowknife Bay from the barrens in the spring and gather along the shores to set up their fish camps. According to the Elders, there were at least five villages along the eastern shore of Yellowknife Bay from the mouth of the Yellowknife River to the islands south of the bay. *Ts'i Naìkwi Dah Kò* (Burwash Point) was the largest and most important village in Yellowknife Bay during the 1800s. In these villages, *Tatsǫ́t'ıné* families would spend their days netting, drying and smoking fish. This resource, when dried and bundled, became a long-lasting food source that fueled both sled-dogs and the Yellowknives Dene alike for their travels back to the barrens south of the tree line.[188]

Elders Edward Sikyea and Rose Betsina described their memories of fishing in Yellowknife Bay:

> *From Burwash…all the eastern shore of… Yellowknife Bay…this is all fishing area…there is so much fish…so during the summer after the Treaty Days Yellowknives Dene would spend weeks there making dry fish, preparing for winter.*[189]
>
> ——
>
> *She remembers catching lake trout, coney, whitefish, and other fish…this was before the mine settlements…they couldn't leave nets overnight because there were too many fish being caught, and it would overflow.*[190]

187 Degray 2020; YKDFN 2019.

188 YKDFN 2019.

189 Edward Sikyea interview, May 26, 2016. Interpreted by Fred Sangris; in Degray 2020.

190 Rose Betsina interview, May 30, 2016. Interpreted by Lena Drygeese; in Degray 2020.

Elders spoke about fishing in *Enda'ti* (Martin lake) and *Enda'deh* (Baker Creek), which in English translate to "Jackfish Lake" and "Jackfish River," respectively. As Elder Alfred Baillargeon recounted:

> *It was a popular fishing area for the community at one time…a long time ago. It was a fish habitat and…uh…he said these two lakes [Martin Lake, Landing Lake] people used to fish when they come with sled dogs and if the caribou is not around then they would fish for pike in these two lakes (Martin Lake, Landing Lake) and get all the fish that they can get.*[191]

Industrial mining activities at Giant and Con and the settlement of non-Indigenous peoples had severe impacts on Yellowknives Dene traditional fishing practices. As evidenced by Degray's *YKDFN Change in Fishing Activities* map (Figure 6), fishing activities have shifted away from Yellowknife River, Yellowknife Bay and *Ekécho cheh* (Akaitcho Bay) (red hotspots) towards the southeastern islands near *Tadeh Cho* (blue hotspots).

Interviews with land-users and Elders indicate that fishing activities for human consumption shifted from Yellowknife Bay towards Great Slave Lake during the period between the late 1940s and 1970s when industrial mining activities at Giant and Con were releasing large quantities of untreated arsenic dust and tailings into nearby streams and lakes. Some land-users continued to fish in the bay until the 1980s but only as a means to feed their sled dogs.[192]

Elders described how the texture and taste of fish caught in Back Bay and Yellowknife Bay changed after Giant started operations, and as a precaution, land-users decided to avoid catching fish for consumption in the areas. Elder Madeline Beaulieu described her experience with contaminated fish, which ultimately led to her avoidance behaviours in Yellowknife Bay:

> *She was given a fish one time [from Yellowknife Bay], and she cooked it, and she was gonna eat it but when she had a little taste of it, it tasted like oil or something. It tasted funny just like fumes, gas and so she stopped eating fish from this area.*[193]

Elders recalled that their families used to set their nets at the mouth of the Yellowknife River near the present-day highway bridge and *Kwe Tàɹlı̨*. As the Weledeh Yellowknives Dene write, "the people set nets for smelt near the rapids, where the fish were so populous, they turned the water black. All summer, people ate fresh fish and fish soup."[194]

The construction of the Yellowknife River bridge, followed by the establishment of the Yellowknife River Territorial Park on the east side of the river during the 1950s and 1960s, led to increasing settler recreationalists at the mouth of the Yellowknife River. For some land-users, the increase in boat traffic along with increasing settler recreationalists ultimately drove them away from fishing in the area. [195]

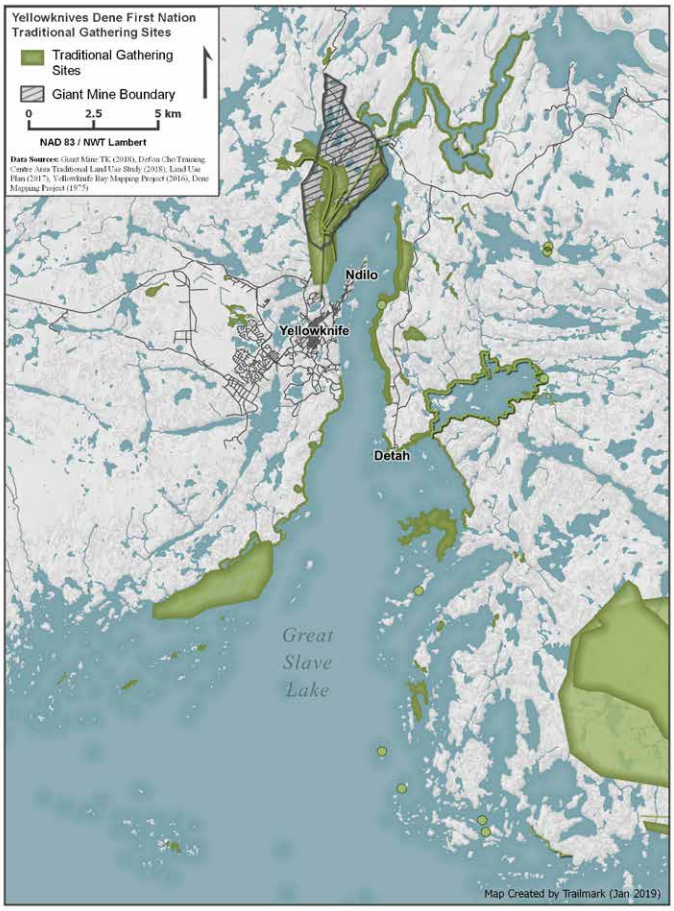
191 Alfred Baillargeon interview, June 9, 2016. Interpreted by Fred Sangris.

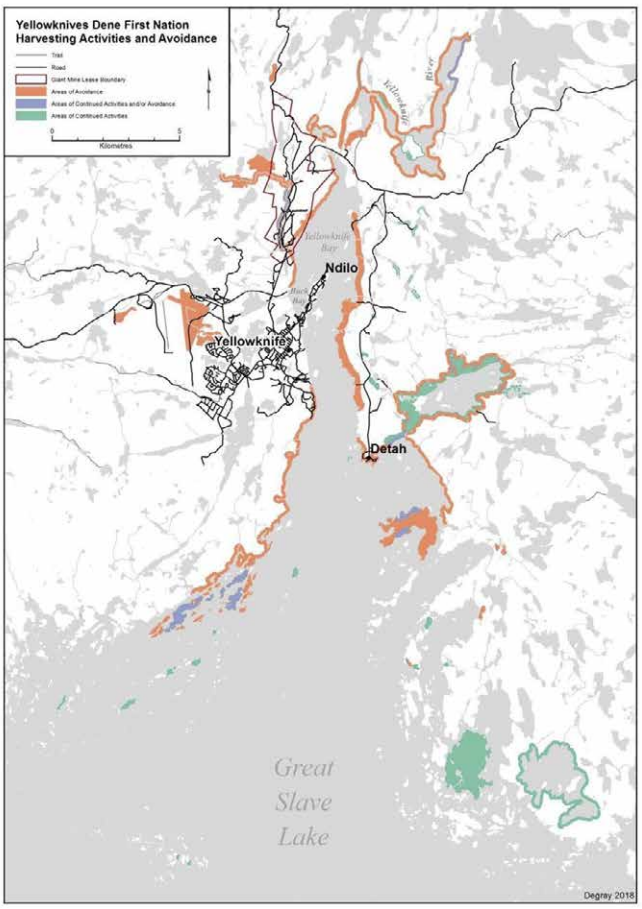
192 Weledeh Yellowknives Dene, 1997; YKDFN, 2019; Degray 2020.

193 Madeline Beaulieu interview, May 19, 2016. Interpreted by Lena Drygeese.

194 Weledeh Yellowknives Dene, 1997. p.43.

195 Weledeh Yellowknives Dene, 1997.





Left: *Fig 7*. Past Gathering Activities. (YKDFN 2019)

Right: *Fig 8*. Gathering Activities & Avoidance. (Degray 2020)

Impacts on Food, Medicinal Plant and Wood Gathering

Yellowknives Dene gathering activities include collecting berries, medicinal plants, and wood. Yellowknives Dene Elders report that in the past, Baker Creek and the shores of Yellowknife River and Yellowknife Bay were filled with raspberries, cranberries, cloudberries, gooseberries, and blueberries. They say that Baker Creek, which today is located within the Giant mine boundary, used to look like a blanket of blueberries and was an important site for berry picking. The annual blueberry harvest in the Baker Creek valley was not only a source of an important food but a social event, a coming together in the late summer of Yellowknives Dene from many surrounding villages.[196] As Elder Therèse Sangris recalled:

> *When there's no mine…nothing, all the trees used to be like really healthy…everything…and these people, our parents, they pick up berries…sometime they make like a jam or juice or something…sometime they do with the flour, they cook it with a bannock…in the fall time, they have lots at Giant…they used to be just huge and used to be lots of cranberries, really big ones, eh? Just huge and really big ones.*[197]

Spruce trees used to line the shores of Yellowknife River down to *Nècha Go Dò* (Gros Cap). Indeed, the traditional name for the campsite on Akaitcho Bay, before it was named Dettah, was "Spruce Point."[198] Yellowknives Dene used to harvest spruce trees around Yellowknife Bay for firewood, for medicine, and to make fish caches and tent flooring. Elder Mary Louise Sangris recalled collecting wood on the land when she was young:

> *She said when you go out on the land…you see all this spruce trees and that…she said those branches they break that up and they carry it… and they kinda make it into a carpet…they put it in like that…and row by row like this until they fill up the flooring of the tent or the tee-pee. Yeah, she said if you ever have a chance to sleep on the flooring like that she said you are going to like really love the smell of it.*[199]

Elders and land-users alike spoke about their experiences with arsenic contamination from the Giant and Con roaster stacks as reasons for avoiding berry-picking, gathering medicinal plants, and

196 YKDFN, 2019; Degray, 2020.

197 Therèse Sangris interview, May 17, 2017; in Degray 2020.

198 Weledeh Yellowknives Dene, 1997.

199 Mary Louise Sangris interview, May 31, 2016. Interpreted by Lena Drygeese; in Degray 2020.

collecting wood along the shores of Yellowknife River, Yellowknife Bay and Baker Creek.

The prevalence of avoidance areas along the shores of Yellowknife Bay, Yellowknife River, and Baker Creek highlights the devastating effects of industrial contamination on Yellowknives Dene harvesting activities. What was once a productive berry-picking site is now contaminated with toxic mining by-products, and out of fear, land-users now travel past Horseshoe Island to collect plants and berries.[200]

Today, most land-users today avoid the shores of Yellowknife River and Yellowknife Bay for collecting medicinal plants, berry picking, and gathering wood. The majority of land-users are travelling further towards the southern and southwestern islands, especially towards *Tadeh Cho* (Wool Bay) to collect berries, medicinal plants, and firewood.[201]

When asked why they avoided Yellowknife Bay in its entirety to collect berries, active land-user Julie Lynn said:

> *Because contaminated...the arsenic. That time they used to have a big pipes…smoke come out at time they were melting that mined…the gold…All the dust you can see like ashes and… um…outside anywhere you could see it.*[202]

Historic logging activities are also a factor contributing to the displacement of wood gathering. Logging activities began during the 1930s to fuel mining activities at the Burwash Mine, and later to supply the Negus, Con, and Giant mines. Consequently, most of the area that was traditionally used for collecting wood was logged. For the trees that did survive logging activities, they too experienced a similar destructive fate, as Yellowknives Dene saw arsenic dust from roaster stacks settledon their branches and leaves. Active land-user, James Sangris, explained why he avoids collecting firewood:

> *You can tell…you go to land…you see the dry wood eh…you can see some dust on it…all this area…that's why people don't hardly use too much now…you look at…you see these little white…and you know it's already contaminated…Yeah when you cook something on it, it tastes different, you don't like it. So you don't wanna eat, cook anything anymore… Yeah it looks like light blue like you can see the colour that smoke and everything…yeah we don't bother now.*[203]

Overall, the following exchange between Fred Sangris and Amanda Degray demonstrates the complex interplay between Yellowknives Dene perceptions of risk, informal and formal warnings, and land-use change in the Yellowknife Bay area:

> *So up to 24 kilometres from Giant Mine radius…we did a berry study. The berries in Yellowknife Bay is very high in contaminants... up to 24 kilometres uh arsenic traces in the berries…10 kilometres is danger. We were told not to pick berries 'cuz it's contaminated. It's not good for your health. Maybe eating a few won't harm you but I don't know. Like I wouldn't eat the berries here in Yellowknife Bay here.*
>
> *[AD]: So, when was the last time you did eat berries [in the area]?*
>
> *It was probably right off this point with my mother in 1975 [south of Ts'i Naìkwi Dah Kò commonly referred to as Burwash Point]. My mom liked to go pick berries there. We have raspberries, blueberries, all kinds of berries. All grows in that whole place there. And a lot of people go there in the past. They all picked berries especially in July eh. Everybody goes there even bears they go there too they like they like berries there. But anyways we went camping there we had some berries there and it was probably 1975 the last time, I never pick berries there. I pick berries way out… have to because its 24km they said it can still be traced.*[204]

200 Degray 2020.

201 Degray 2020.

202 Julia Lynn interview, May 18, 2017; in Degray 2020.

203 James Sangris interview, June 1, 2016; in Degray 2020.

204 Fred Sangris interview, May 24, 2016; in Degray 2020.

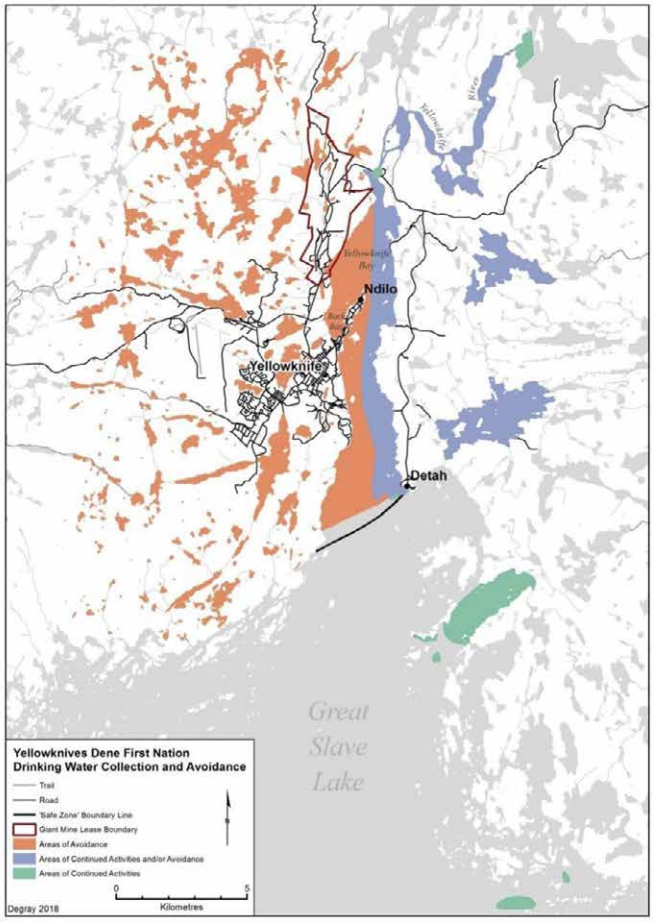


Fig 9: Water Collection & Avoidance. (Degray 2020)

Impacts on Use of and Access to Fresh Water

In addition to contaminating areas where Yellowknives Dene land-users continued to harvest unwittingly, arsenic from the mine reached dangerous concentrations in the principal sources of drinking water Yellowknives Dene members relied upon: water from the shores of Yellowknife Bay and snow gathered there during the winter. For millennia, the Yellowknives Dene also used local streams, lakes, rivers and snow throughout the Yellowknife Bay area for collecting drinking water. Yellowknives Dene oral histories and testimonies have repeatedly stated that, before settlement and mining activities, the water in Yellowknife Bay was fresh, and the Yellowknives Dene could drink the water from the shores without boiling it.[205] Elders report that Giant has had major impacts on these preferred drinking water sources, and corresponding traditional recreation (e.g. swimming) areas, used by Yellowknives Dene members for generations.[206]

Yellowknives Dene members report that impacts to traditional drinking water sources caused new and increased financial hardship for those Yellowknives Dene members required to pay for freshwater delivery services instead of drawing water from Yellowknife Bay as they did formerly.[207] Only those Latham Island residents on welfare could apply for free delivery.[208] For Yellowknives Dene members who were not destitute but could not afford the water delivery fee, there was no choice but to continue collecting drinking water from the local environment.[209] As a result, even after it was understood that arsenic from Giant had contaminated traditional water sources, some Yellowknives Dene members continued to rely on them for drinking water.[210] To this day, the Yellowknives Dene living in Ndilo on Latham Island are required to pay for trucked water delivery.[211] Despite being the primary cause of environmental contamination,[212] formal recommendations to Canada,[213] and repeated requests from the Yellowknives Dene,[214] no evidence has been found that Canada ever required Giant operators to pay for or offset the costs of water delivery to Latham Island.

205 YKDFN 2019. p.65

206 YKDFN 2019. p.60

207 Ibid. p.64.

208 Tataryn, L. (1978). "Arsenic and Red Tape." National Indian Brotherhood Report. Ogden, memo re. Unpaid Water Accounts – Latham Island, 1964.

209 Tataryn, 1978; Sandlos & Keeling, 2012.

210 Ogden, memo re. Unpaid Water Accounts – Latham Island, 1964.

211 YKDFN 2019.

212 De Villiers and Baker, 1971. p.2-3. Sandlos & Keeling, 2012. p.9.

213 Canadian Public Health Association, 1977. p.14,52.

214 Northwest Territories (NWT) Water Board. (1974.) Public Hearing, Giant Yellowknife Mines Limited. October 10, 1974. Maitland, A. and B Frome. (1975.) In As It Happens. Canadian Broadcasting Corporation (CBC), January 8, 1975.

Impacts on Trapping Practices

Trapping refers to setting traps and snares to catch smaller game such as (but not limited to) *dzo* (muskrat), *tsa* (beaver) *nodah* (lynx), *gah* (rabbit), *nogha* (wolverine), and *whah* (martin) for both subsistence household and commercial purposes.

Historically, trapping in Yellowknife Bay was integral to Yellowknives Dene subsistence activities and livelihoods. Yellowknives Dene relied on small game to feed and clothe their families, and during the fur trade, trading animal pelts for manufactured goods became a key component of Yellowknives Dene subsistence economies. According to the Weledeh Yellowknives Dene 1997 report, Yellowknives Dene trappers who would stay in Yellowknife Bay during the winters could make a reasonable living trapping muskrat, beave and martin in the area.

Throughout the first half of the 1900s, non-Aboriginal trappers, prospectors, and mining companies gradually forced the Yellowknives Dene off their traditional traplines and trapping territories. Mining activities followed by the settlement of non-Indigenous people in present-day Yellowknife ultimately resulted in the erosion of the people's Aboriginal rights and Treaty rights to trap in Yellowknife Bay.[215]

Degray describes how Yellowknives Dene land-users used to trap on the lakes along the present-day Ingraham Trail highway.[216] Four Elders and land-users pointed out on the base maps where old family traplines west of Yellowknife Bay used to be. Traplines, as Figure 3 shows, were set along Long Lake, Grace Lake, Kam Lake, and lakes near the Giant site. Most of these sites (old family traplines), however, can no longer be used because they are located within Yellowknife city limits and the Giant Mine Remediation Project site.

Trapping avoidance in the traditional harvesting area known as *Wag'we* is largely due to the fact that a city and two former mining sites sit on top of former trapping sites.

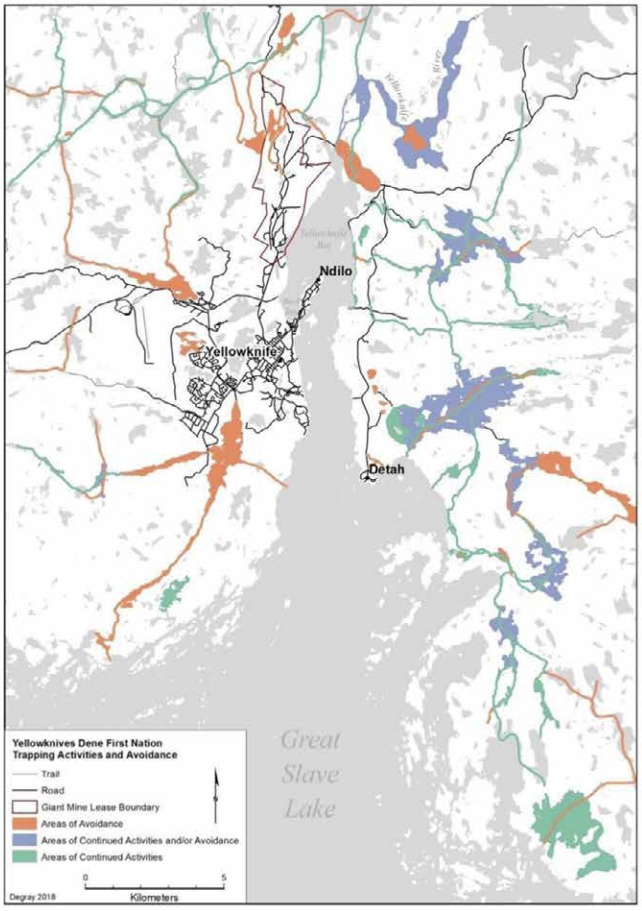


Fig 10: Trapping Areas of Avoidance. (Degray 2020)

While concerns of contamination in animals near the former mining sites are very real, especially with increasing scientific studies,[217] land-users reported no longer using this area because, by law, they cannot set snares within Yellowknife municipal boundaries. Trapping avoidance on the east side of Yellowknife Bay and on Yellowknife River is largely associated with increasing settler recreationalists.[218]

The Yellowknives Dene lost access to the area taken up by Giant, and to a wider area through restrictions on trapping and the loss of accessibility to traditional corridors through the Giant property leading to other trapping grounds. Moreover, arsenic contamination in small game and furbearers, and uncertainty about the extent of the contamination problem, further undermined Yellowknives Dene trapping practices.

215 Degray, 2020.

216 Weledeh Yellowknives Dene, 199.

217 See Amuno, S., Jamwal, A., Grahn, B., & Niyogi, S. (2017). Chronic arsenicosis and cadmium exposure in wild snowshoe hares (Lepus americanus) breeding near Yellowknife, Northwest Territories (Canada), part 1: Evaluation of oxidative stress, antioxidant activities and hepatic damage. Science of The Total Environment. 618, 916-926; and Koch, I., Mace, J. V., & Reimer, K. J. (2005). Arsenic speciation in terrestrial birds from Yellowknife, Northwest Territories, Canada: the unexpected finding of arsenobetaine. Environmental toxicology and chemistry, 24(6), 1468-1474.

218 Degray, 2020.

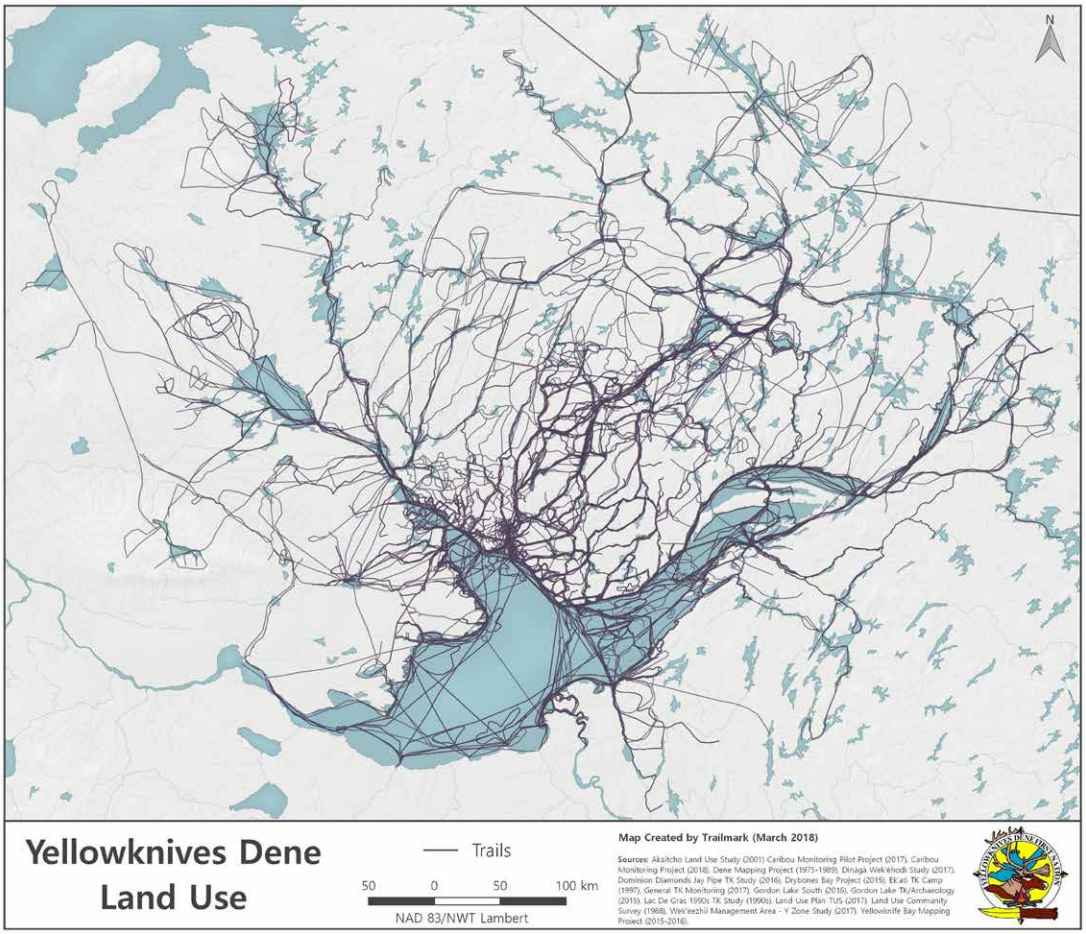


Fig 11. Traditional Travel Routes. (YKDFN 2018)

Impacts on Travel and Access for Hunting, Trapping, Fishing, and Gathering

While mining activities generally have irreversibly altered the movement of the Yellowknives Dene across their territory,[219] Giant, in particular, has significantly altered their traditional land-use patterns. For millennia, the Yellowknives Dene have been using the traditional trail system developed by their ancestors to access their hunting, trapping, fishing, and plant gathering grounds.[220] The trail system is well known and documented. From the ground-breaking Dene Mapping Project in the 1970s[221] to the ongoing land-use mapping projects by YKDFN consultants DownNorth and Trailmark Systems Ltd., the Yellowknives Dene have extensively documented their travels across their traditional lands.[222]

Four historical travel routes have been documented west of Yellowknife Bay area, which include:

- Long Lake where Yellowknife airport now stands;
- Present-day downtown Yellowknife towards Kam Lake ("southern" trail);
- Present-day downtown towards Grace Lake ("western" trail);
- Contemporary the Giant Mine Remediation Project site.

Mining activities, along with non-Indigenous settlement, led to the gradual dispossession of traditional trails west of Yellowknife Bay, which in turn limited access to those areas. Elders Alfred Baillargeon and Jonas Noel said that they used to travel northwest of the city by dog team to hunt caribou, but can no longer use the trail or hunt there because of increasing settler recreationalists and cabins in the area.[223]

219 Degray, 2020.

220 DownNorth Consulting, 2018; Degray 2020.

221 The Dene Mapping Project was an effort by the Dene Nation (formerly the Indian Brotherhood of the NWT) in the 1970s and 80s to record the traditional land-use and occupancy of the Mackenzie Valley area by mapping Dene Elders' knowledge.

222 Weledeh Yellowknives Dene, 1997; YKDFN 2019; in Degray 2920.

223 Degray 2020.

Elders recall that contamination from Giant also acutely affected travel and access. They claim that arsenic-contaminated snow, water, and fish poisoned dogs during Giant's productive years, contributing to a gradual move away from the use of dog teams by the Yellowknives Dene, which compounded disruptions in travel routes and land-use patterns.[224]

As a result of impacts to the local environment and corresponding perceptions of risks to human health, community members today have to travel farther to practice their traditional hunting, fishing, and gathering activities.[225] Resources traditionally ready-to-hand in areas adjacent to their villages – places to which they were deliberately in-gathered by federal agencies in the 1940s and 1950s – are now perceived as unsafe to eat, effectively rendering them unavailable. Ongoing uncertainty about the state of the environment and monitoring has resulted in Yellowknives Dene members expending greater and greater effort in order to avoid areas that they deem as possibly contaminated.[226]

The 1937 aerial photographs of Yellowknife Bay show Yellowknives Dene caribou skin lodges and fish drying racks along the east shore of Yellowknife Bay, a traditional annual activity that was hundreds if not thousands of years old. Over the following decades, fewer and fewer lodges and racks can be seen as the fish population declined and noise, dust, and a growing Yellowknife population forced Yellowknives Dene to largely abandon the northern half of Yellowknife Bay. The total disappearance of the once-thriving Yellowknives Dene village of *Ts'i Naìkwi Dah Kò*, on the east shore of Yellowknife Bay opposite downtown Yellowknife, is a good example of this erasure.

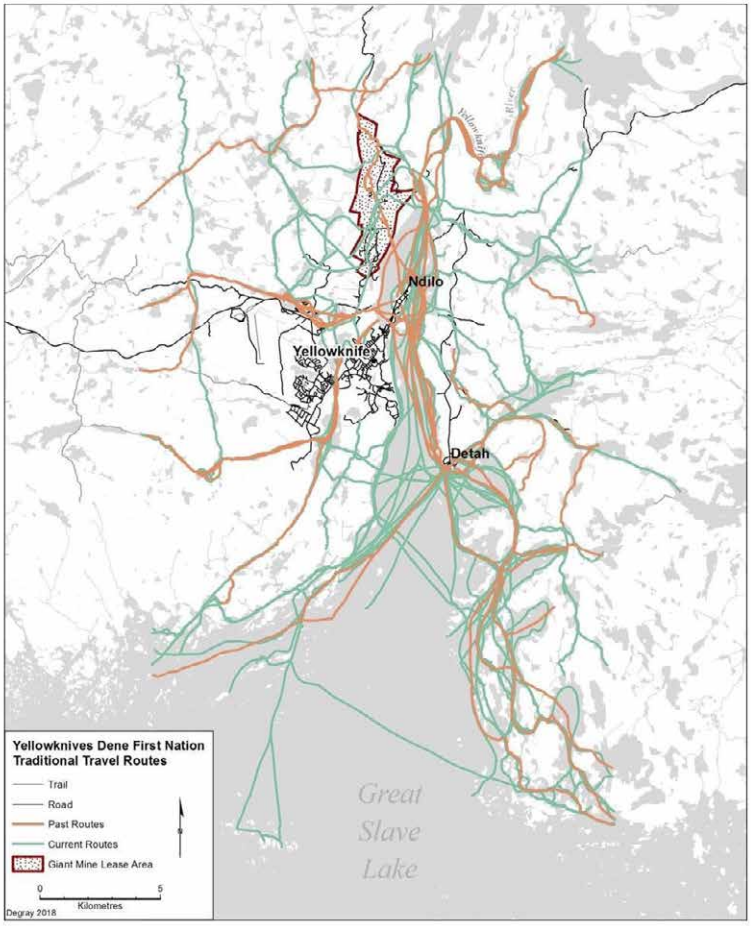


Fig 12. Past and Current Travel Routes. (Degray 2020)

Changes to the accessibility of high-value regions of their territory are felt in increased costs of harvesting, on the one hand, and the need for Yellowknives Dene harvesters to expend greater effort to harvest traditional foods. Where the pre-Giant Mine Yellowknives Dene world contained an abundant variety of nutritious foods and medicines ready-to-hand, today's Yellowknives Dene must make longer journeys to harvest far fewer fish or game. Impacts to traditional land-use are compounded by economic implications, such as the need for more gas and supplies to support longer-distance travel to "safe" hunting areas.[227]

224 YKDFN 2019. p.56.

225 Ibid. p.63.

226 Degray, 2020.

227 Ibid. p.64.

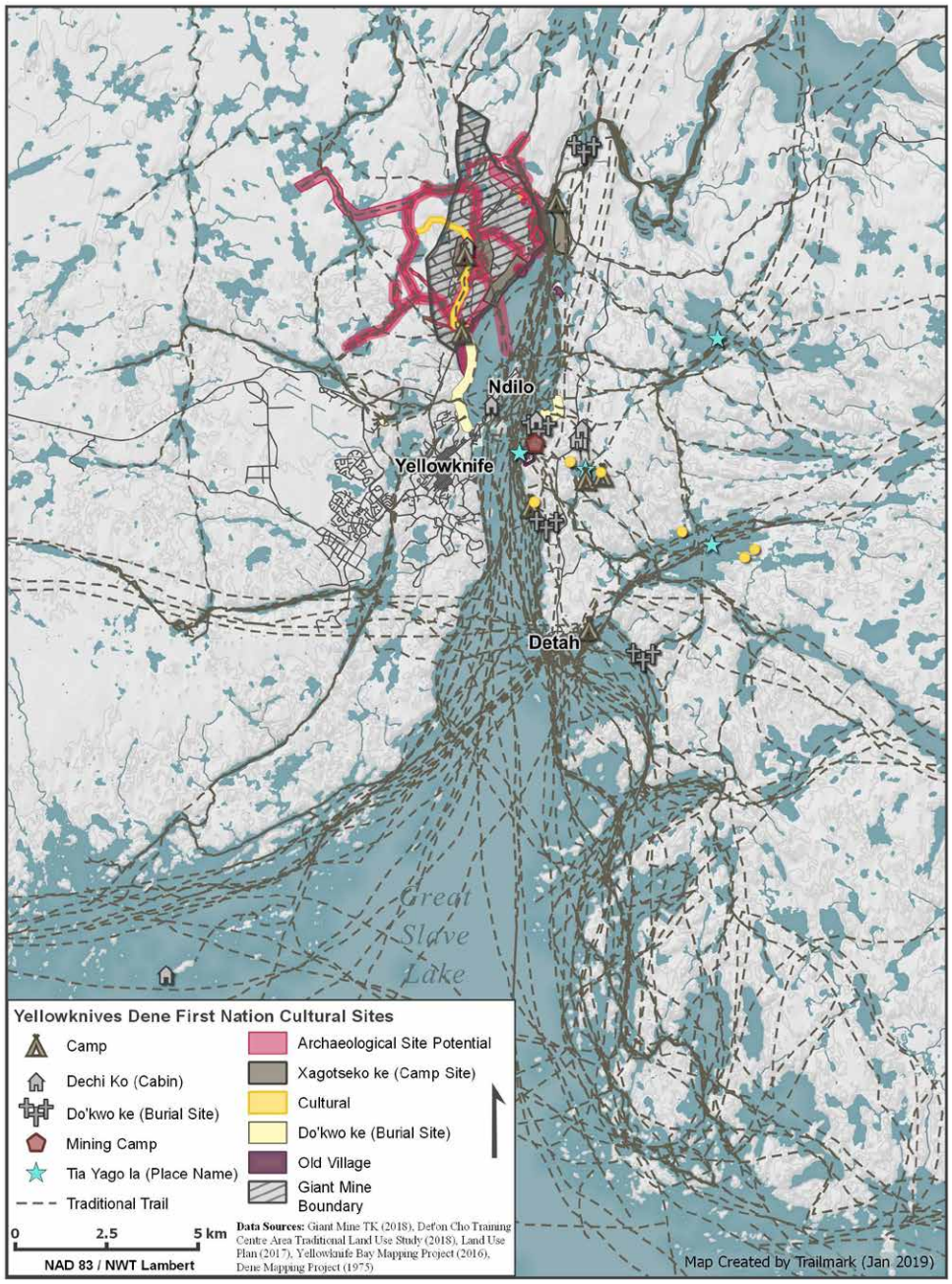


Fig 13. Burials and Other Culturally Significant Sites Contiguous with Giant. (YKDFN 2018)

Impacts on Heritage and Cultural Landscapes

Giant has deeply impacted the immediate landscape of Yellowknife Bay and Yellowknife River that the Yellowknives Dene regard as both sacred and critical to the exercise of their traditional land-use practices. The mine itself took up an area containing many cultural and heritage sites.[228] Degray notes that many Yellowknives Dene saw mining activities as a threat to their most sacred Yellowknife Bay site, the sacred tree at the mouth of the Yellowknife River known as *Tsi-wah cho* and the associated giant beaver lodge known as *Kweh ka tzso*.[229]

228 YKDFN, 2019.

229 Degray 2020.

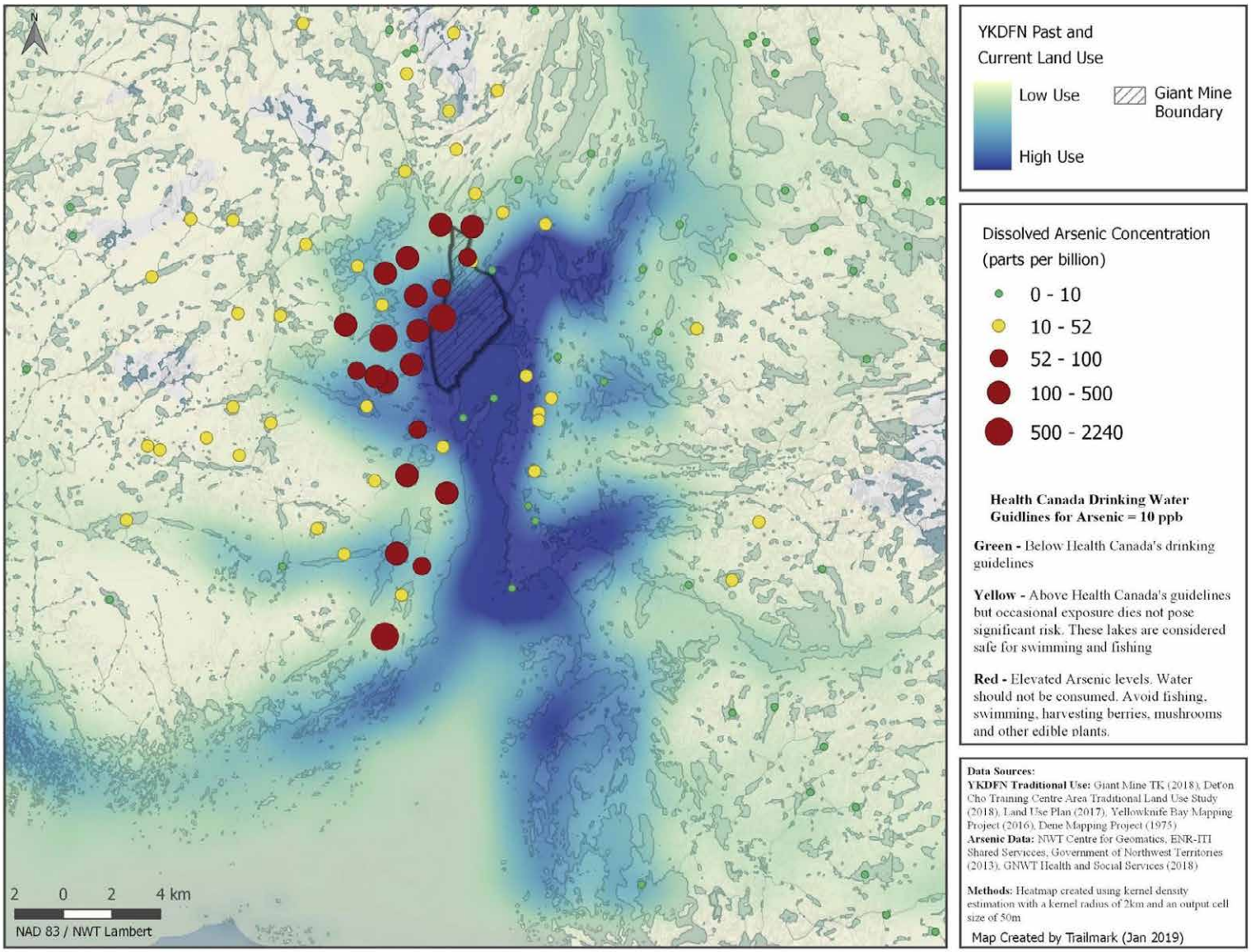


Fig 14. Traditional Land Use and Arsenic Concentrations. (YKDFN 2018)

Impacts on Social and Psychological Health and Wellbeing

Elders have articulated over many decades that Giant is associated with a legacy of harm connected to the social, cultural and psychological health and wellbeing of the Yellowknives Dene. It is evident in nearly every Elders' statement about Giant that its material impacts have caused corresponding social, cultural and psychological impacts on the Yellowknives Dene community. Elders indicate that official responses and non-responses to impacts from Giant have also caused additional, and exacerbated existing, impacts in the areas of social, cultural and psychological health and wellbeing.[230]

Elders describe concerns and negative perceptions regarding both past and current Giant Mine-related activities and generally indicate that these are based on their knowledge of inadequate consultation on mine activity and/or insufficient communication of environmental impacts and associated risks throughout the lifespan of the mine and since its closure. Elders trace these impacts back to the early days of the mine when they say no effort whatsoever was made to inform or involve the Yellowknives Dene, effectively placing the community at risk by allowing them to continue to pursue traditional land-use practices unaware of the potential health risks.[231] Even decades after the fact, Yellowknives Dene members convey a sense of incredulity as well as resentment, grief and

230 YKDFN, 2019. p.68.

231 Ibid. p.69.

anger, that when historic communication strategies did exist, they failed to address the risk posed to Yellowknives Dene community members pursuing traditional land and water use activities.[232]

After the Government's nominal communications efforts failed to prevent the death of Frank Abel due to arsenic poisoning from contaminated snowmelt in the spring of 1951, the memory of this incident became foundational in the Yellowknives Dene's collective experience and understanding of the mine and its impacts. Elders' comments suggest that the community views the mine's contamination of their water sources, and the government's failure to communicate about the associated dangers as emblematic of their experience with Giant, and a source of ongoing grief and resentment.[233] Although official records note only Abel's death as a result of arsenic poisoning, Yellowknives Dene members consistently refer to the death of two children due to contaminated drinking water around the same time.[234] Speaking to the Mackenzie Valley Environmental Review Board in 2012, Elder Fred Sangris identified these deaths as the beginning of the story of the Yellowknives Dene and Giant, underscoring their centrality and prominence in the community's narrative of the mine and its impacts.[235] Elders state that these deaths triggered general avoidance and disuse of the rich harvesting and important cultural sites within and around the Giant area that had sustained the Yellowknives Dene for generations. The impact of Abel's death, therefore, was and remains broader than the loss of one young life and the associated grief; it encompasses the effects on traditional land-use and culture caused by environmental impacts from Giant, as well as the social and psychological impacts caused by the mine and the Government's combined failure to protect or warn the Yellowknives Dene people.[236]

During map-based interviews in which Yellowknives Dene Elders and land-users indicated areas and sites associated with traditional land-use, not a single participant reported using the west side of Yellowknife Bay to collect drinking water. As Elder Fred Sangris shared, "if you drink water here [draws a circle around west of Yellowknife Bay]… do it at your own risk."[237] When asked why the west side of Yellowknife Bay was unsafe, Yellowknives Dene members described having seen arsenic dust spewing out of the historic roaster stacks in the past, knowledge of tailings spills and leaks into Yellowknife Bay from the Giant and Con, and personal experiences with illness and deaths, especially the tragic incident in 1951.[238] Such perceptions, combined with increasing knowledge of contaminants in the area, ultimately contributed to the gradual displacement and alienation of the Yellowknives Dene's local resources. To use the words of Elder Lawrence Goulet, "it's not safe because it's still contaminated in the [Yellowknife] Bay so we don't go there no more."

The collective memory of Giant's early impact on the environment and human health, and the Government's failure to communicate about these impacts effectively enough to protect the community from harm, seeded mistrust and bitterness towards both Canada and the mine operators that Elders articulate today.[239] Naturally, the social, cultural and psychological impacts of Giant also inform the relationship between contemporary Yellowknives Dene members and the Giant Mine Remediation Project. Analysis of transcripts from interviews with Yellowknives Dene members involved in the Project suggests the mistrust and perceptions of bad faith caused by historic mine activities and government (in)actions contribute to a lack of faith and related barriers in the Giant Mine Remediation Project's current process.[240]

232 Ibid. p.72.

233 Ibid. p.51.

234 Ibid. p51.

235 Ibid.

236 Ibid. p.52.

237 Fred Sangris interview, May 24, 2016; in Degray 2020.

238 O'Reilly, K. (2015). Liability, Legacy, and Perpetual Care: Government Ownership and Management of the Giant Mine,1999–2015. In Mining and communities in Northern Canada: History, politics, and memory. Calgary: University of Calgary Press.

239 Ibid. p.73.

240 Ibid. p.74.

Photo: Devin Tepleski

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