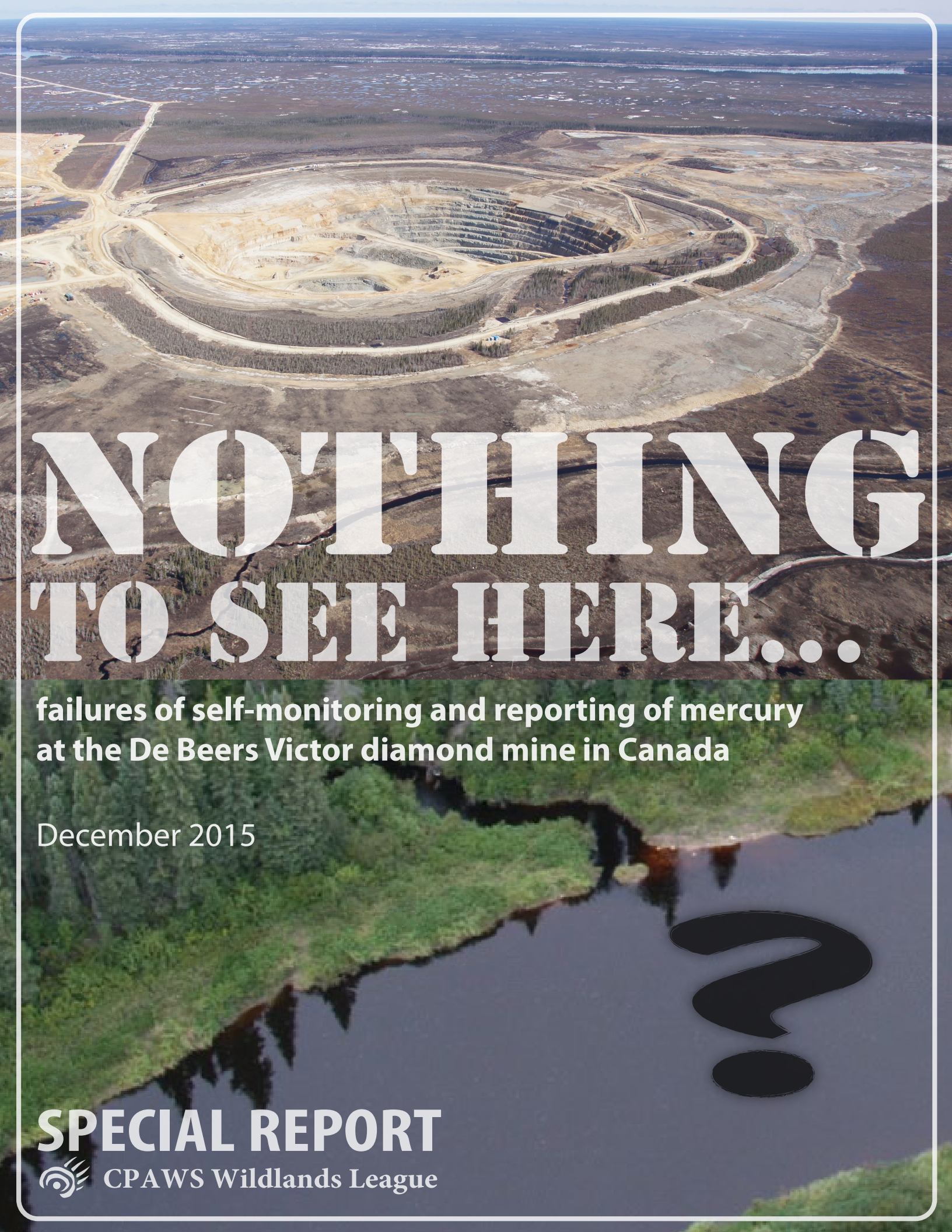


NOTHING TO SEE HERE...

failures of self-monitoring and reporting of mercury at the De Beers Victor diamond mine in Canada

December 2015

SPECIAL REPORT

CPAWS Wildlands League

Terms and Acronyms Used:

Bioamplification - an increase in the concentration of a substance as you move up the food chain. This often occurs because the pollutant is persistent, meaning that it cannot be, or is very slowly, broken down by natural processes. These persistent pollutants are transferred up the food chain faster than they are broken down or excreted.[1]

Bioaccumulation - In contrast, bioaccumulation occurs within an organism, where a concentration of a substance builds up in the tissues and is absorbed faster than it is removed. Bioaccumulation often occurs in two ways, simultaneously: by eating contaminated food, and by absorption directly from water. This second case is specifically referred to as bioconcentration. Bioconcentration and bioaccumulation happen within an organism, but biomagnification occurs across levels of the food chain.[1]

EA:	Environmental Assessment
EBR:	Environmental Bill of Rights
NGC:	North Granny Creek
SGC:	South Granny Creek
Hg:	Inorganic Mercury
THg:	Total Mercury: includes all forms of Mercury together.
MeHg:	Methymercury, a highly toxic, bioaccumulating form of mercury.
PTTW:	Permit to Take Water (from the Ministry)
Ministry:	Ministry of the Environment and Climate Change (MOECC)
Company:	De Beers Canada Inc, and/or its agents
CPUE:	Catch Per Unit of Effort
FOI:	Freedom of Information
FIPPA:	Freedom of Information and Protection of Privacy Act

Wildlands League

CPAWS Wildlands League is a not-for-profit charity that has been working in the public interest to protect public lands and resources in Ontario since 1968, beginning with a campaign to protect Algonquin Park from development. We have extensive knowledge of land use in Ontario and a history of working with governments (provincial, federal, Aboriginal and municipal), communities, scientists, the public and resource industries on progressive conservation initiatives.

We have specific experience with impacts of industrial development on boreal forests and wildlife that depend on them, as well as dedicated protected areas establishment and management expertise.

Our work is dynamic. We don't just talk about an area or an issue. We get to know it inside and out. We understand the players, the pressure points and make sure our contributions add value. We are a small yet highly effective charity that brings scientific rigor, credibility and creative solutions forward.

CPAWS Wildlands League is one of thirteen chapters of the Canadian Parks and Wilderness Society, working across Canada to protect our wilderness.

wildlandsleague.org

CPAWS Wildlands League (2015). **Nothing to See Here - Failures of self-monitoring and reporting at De Beers Victor diamond mine in Canada**. Special Report, Toronto (wildlandsleague.org).

NOTHING TO SEE HERE...

failures of self-monitoring and reporting for mercury at De Beers Victor diamond mine, Canada

Back in 2007, mining giant De Beers itself predicted that operations at its Victor Mine in Ontario's Far North, to open the following year, might increase levels of toxic methylmercury in the downstream river by up to 1100 per cent.

We obtained that disturbing information only through a Freedom of Information request, submitted by our colleagues at Ecojustice. It wasn't discussed in the federal environmental assessment, during public consultation for the mine's environmental permits, nor anywhere else on the public record. Yet it appears to have been accepted by Ontario's Environment Ministry (the Ministry) at the time of the permitting.

More importantly, this prediction might also be playing-out: samples taken by De Beers from 2010 to 2013 showed average methylmercury levels far higher downstream from the mine. As with the predictions, this information too was not on the public record - even though the company is actually specifically required to include it in its annual reports. Instead, a concerned source sent it to us. De Beers did not report it to the MInistry.

These failures to report important downstream results to the Ministry as required, have shocked us.

These revelations, and others from an 18-month investigation by CPAWS Wildlands League, tell us two important things about the Victor Mine, as De Beers contemplates further expansion.

First, the mine activities are triggering adverse impacts on the environment, by stimulating mercury conversion to methylmercury. Methylmercury is a more dangerous threat to aquatic life as it biomagnifies up the food chain into the top predator fish. FIsh in the river downstream of the mine have had a history of consumption warnings for people eating them even before the mine was built.

Second, the program for monitoring the mine's mercury impacts - described as the best ever by officials in the Ministry who wrote them into the permit - is not working. The company's required reporting and analysis is riddled with many gaps, and the Ministry has missed or ignored them.

This also means that all related permit extensions and expansion plans are being considered by the Ministry without the benefit of a complete picture of impacts from the mine.

These failures to report to the Ministry are described inside this special report. To us, they show that entrusting this self-monitoring to the company is inadequate to protect the environment in which the mine operates.

They also raise questions about the government's commitment to safeguard the pristine northern half of the province and the people who live there. If it can't get monitoring right with this one project, how can it take care of an entire pristine watershed with dozens of new mines on the horizon?

To restore confidence, the province needs to now take emergency action:

(1) Engage an independent third party to take over the monitoring program to completion.

(2) Require all monitoring data to be immediately provided to the Ministry and transparently available to the interested public.

(3) Review the adequacy of the monitoring program in place currently

(4) Remove barriers to public access to required reporting

Victor Diamond Mine Facts

Ontario's only diamond mine. First and largest of 16 diamond-bearing zones on De Beers Canada's Attawapiskat River claims.

Location:
About 90 kilometres west of James Bay and Attawapiskat First Nation along the Attawapiskat River

Mine site area:	5,000 hectares
Mine surface area:	15 hectares
Current mine depth:	120 metres
Final mine depth (planned):	233 metres
Number of employees:	About 600
Aboriginal employees:	About 200
Annual processing capacity:	2.7 million tonnes
Avg Annual Production:	600,000 carats
Capital cost:	$1,022 million
Value of production (2014):	$ 432 million
To-date value (2008-2014):	$2,500 million
Royalties paid (2008-2014):	$ 20 million

Mine History:

Start of exploration:	About 1960
Discovery of diamonds:	Winter 1987-88
Start of construction:	February 2006
Official mine opening:	July 26, 2008
Estimated mine life:	10 + yrs (2018)

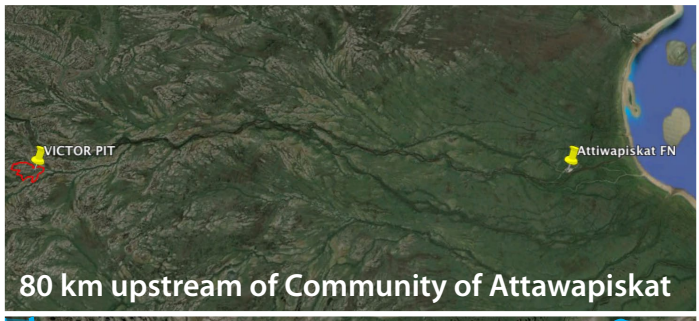
Benefits:
Construction contracts with First Nations businesses: $167 million

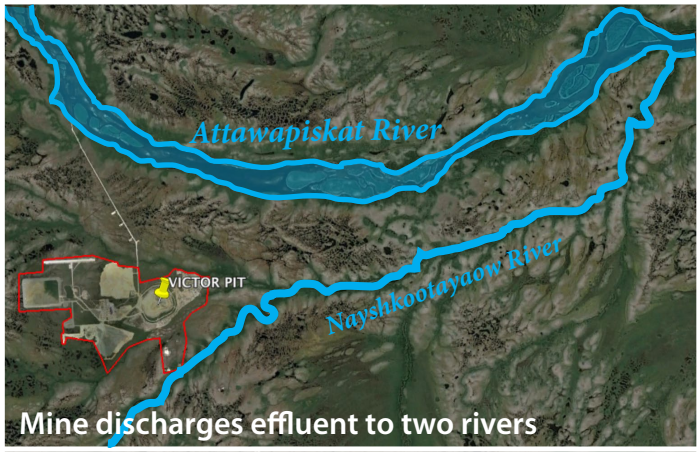
First Nation benefit payments: About $3 m/yr

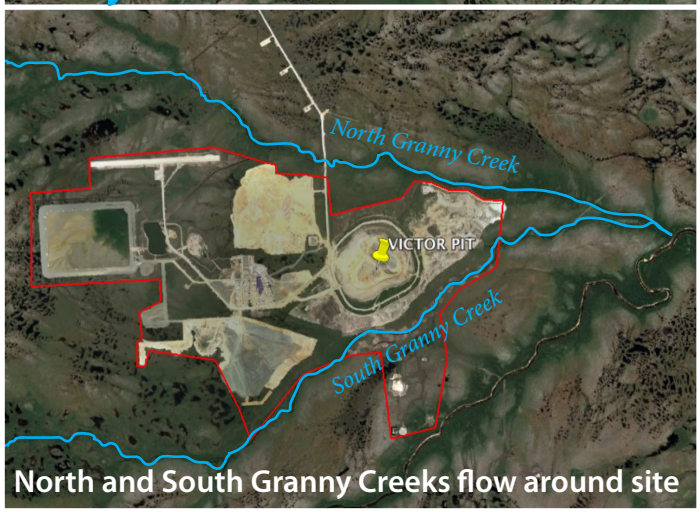
Estimated mine-life contribution to Ontario economy: $6.7 billion

Next planned development:
Apparent interest in digging deeper into the Victor pit and/or expand to second location, the Tango pit, seven kilometres away, and truck ore back to Victor.

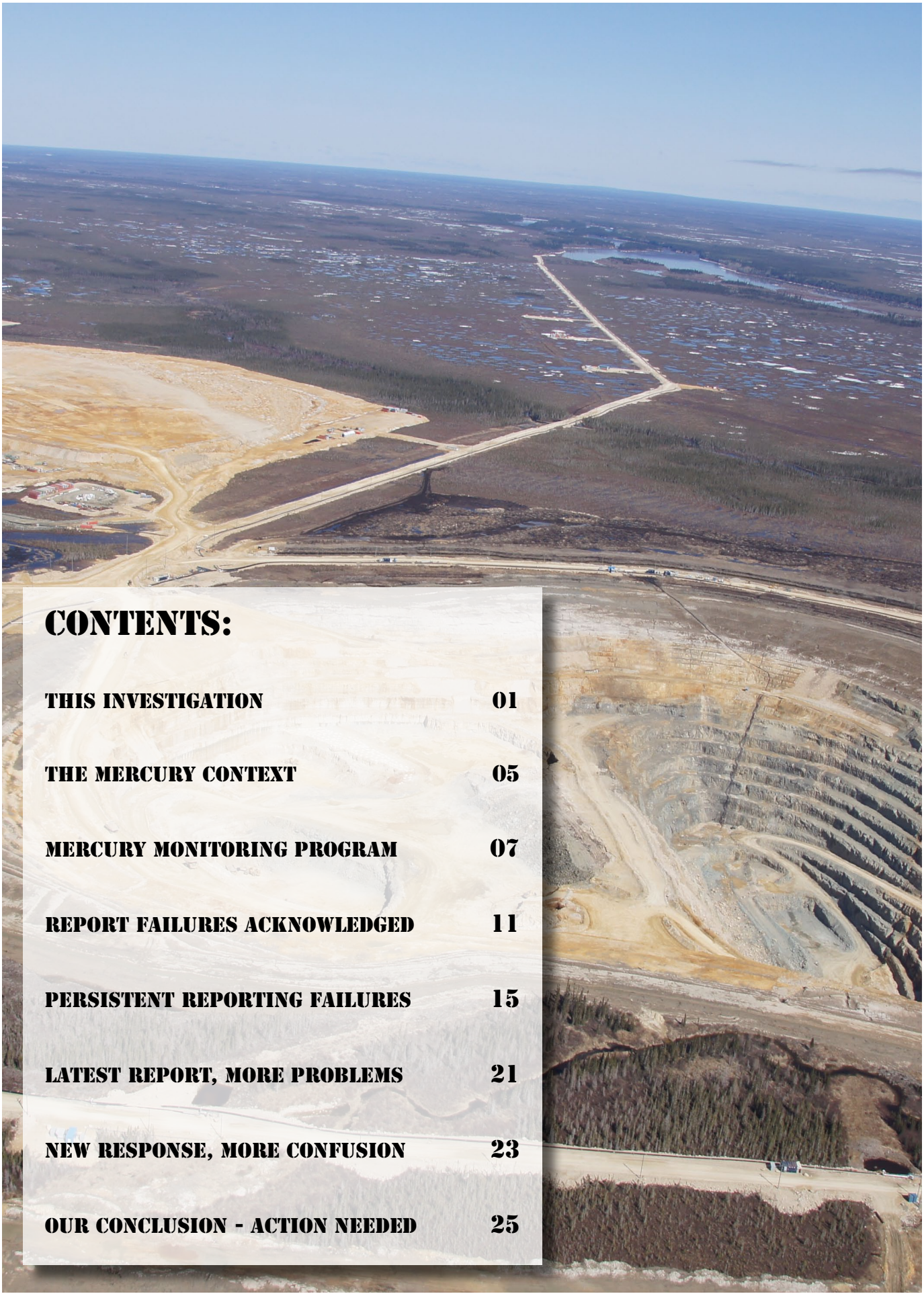
sources: [2, 3, 4, 5, 6, 7, 8]







Images: Landsat, (c) 2015 Digital Globe



CONTENTS:

THIS INVESTIGATION

Note from the lead author

This report is focused primarily on examining the effectiveness and utility of the required Mercury Monitoring Program for the De Beers Victor diamond mine, centred on its annual Mercury Performance Reports.

This work is from the perspective of an interested and concerned not for profit conservation organization, engaged on this project for over a decade. My own past experience as a civil servant who worked over 8 years in Ontario's Environment Ministry and Conservation Authorities is also relevant. This investigation and engagement has involved working collaboratively with the parties involved wherever possible, as well as in the constructively critical role of an ongoing public interest commentator.

Without listing all of those that have contributed so much to this work, I would like to sincerely thank the subject matter experts, research volunteers, Ministry staff, employees of De Beers Canada, and Attawapiskat community members who have all provided various important support to this work. This help was invaluable to sifting through the materials relating to this case study of industrial self-monitoring.

I am particularly grateful for writing support from Peter Gorrie, Anna Baggio, and Mel Duhamel.

Any errors or omissions herein remain my own.

Trevor Hesselink
Director, Policy and Research
CPAWS Wildlands League
December, 2015

Origins
A routine check-up led to investigation

This special report stemmed from an initial desire to simply examine the monitoring results for this mine - an industrial intrusion into this unique ecosystem: the Hudson Bay Lowland, with many potential risks possible, including mercury mobilization. This was why the regulator required a specific mercury monitoring program from De Beers in the first place, as it dewatered and dug its pit in this vast wetland.

After reviewing several annual reports, CPAWS Wildlands League quickly identified serious concerns about how well this program was being reported back to the Ministry.

Those worries were further heightened when we learned that De Beers, facing the end of production of the Victor mine in 2018, appeared to have two possible plans in mind to extend the mine's life. It has signaled an interest in digging the original ore body deeper than the original 233 metres outlined in the approved Environmental Assessment.[9] It also began planning to dig another large open pit mine at the second of 15 other discoveries on its nearby mining claims, bringing the ore back onto the Victor site for processing.[10] In either case, additional pressures would be placed upon the receiving lands and waters around the minesite, and further reliance upon this monitoring program would be warranted, beyond that originally envisioned.

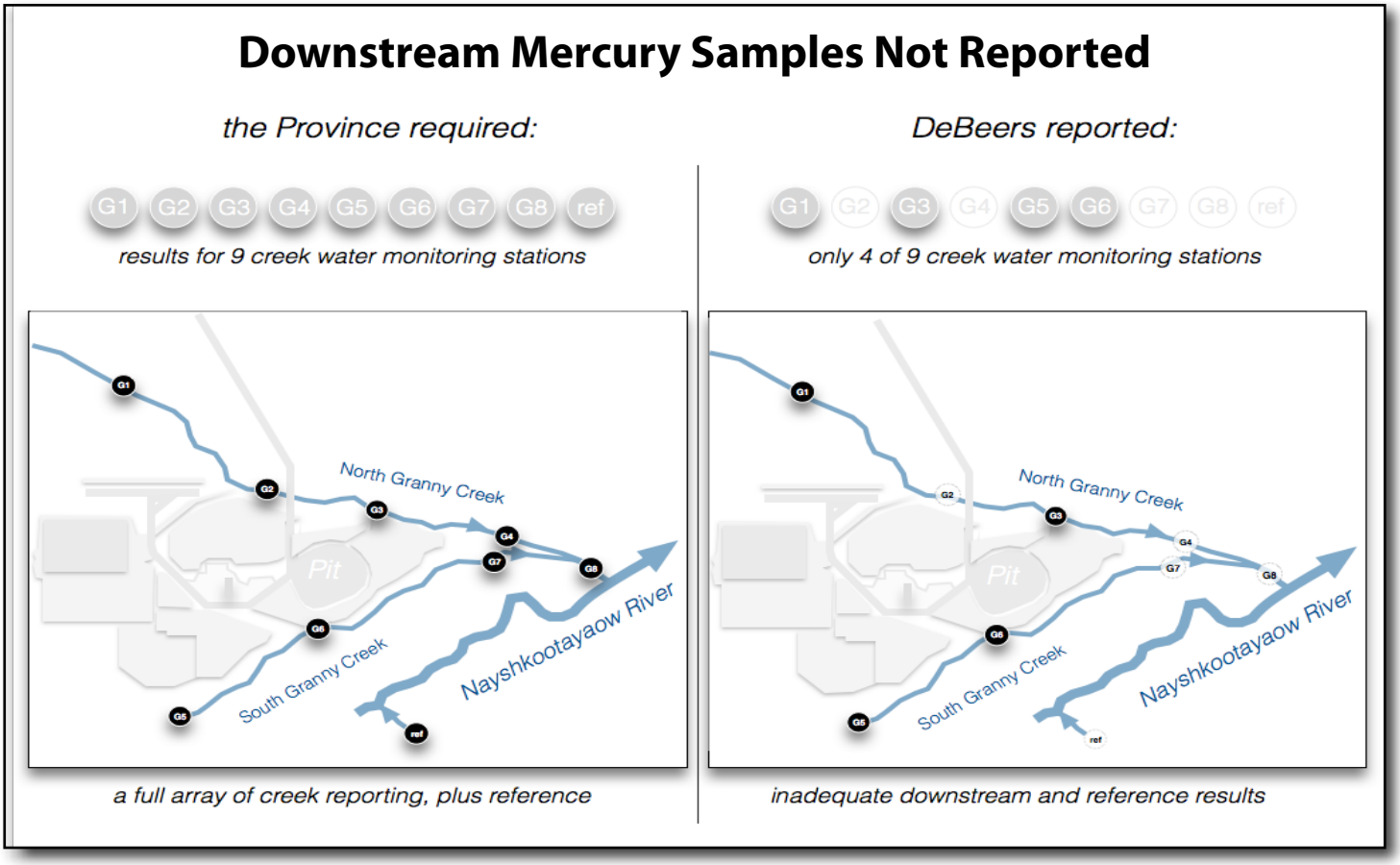
As a result, we started to investigate further. The work has been challenging: to date, 18 months of analysing and comparing reports crammed with complex technical data. To make matters more difficult, the actions of both government and De Beers frequently led to barriers and delays to our access to information, often ignoring or selectively answering our questions. This runs contrary to the promise by this government to "Open Government" and Ontario's Environmental Bill of Rights, which together enshrine the values of transparency and informed public engagement.

Our findings
Substantial reporting failures

After navigating difficult access to the documentation, the results of our investigation have also been disturbing. We have found a murky picture, marred by selective reporting and analysis, errors, inconsistencies and glaring omissions.

Our findings of substantial reporting failures have been shared with both De Beers and the Ministry. The company has selectively acknowledged and fixed several of them. But many remain unresolved, with the most recent monitoring report perpetuating them, and introducing **further** reporting discrepancies.

To understand the initial motivation for this investigation, you do not have to go beyond our first experience with the quality of De Beers' obligatory annual Mercury Performance Reports to the Ministry.



[Figure 1] *The 9 separate creek reporting stations required by condition of De Beers' dewatering works permit, alongside the 4 stations that the company actually reported in the annual Reports (2008 to 2014). The missing stations include the 3 downstream, as well as the selected reference creek, and the tailings isolating station.*

Downstream Data Unreported

One of our early reasons for embarking on this investigation of the De Beers project was that we were shocked that downstream results were not shown in annual mercury monitoring reports (see **Figure 1**).

Without these important data, there was no way to independently observe and verify what changes might be occurring in these waterways running past the mine. Increased body burdens of mercury in creek minnows reported in these same annual reports emphasized to us the importance of these missing monitoring results.

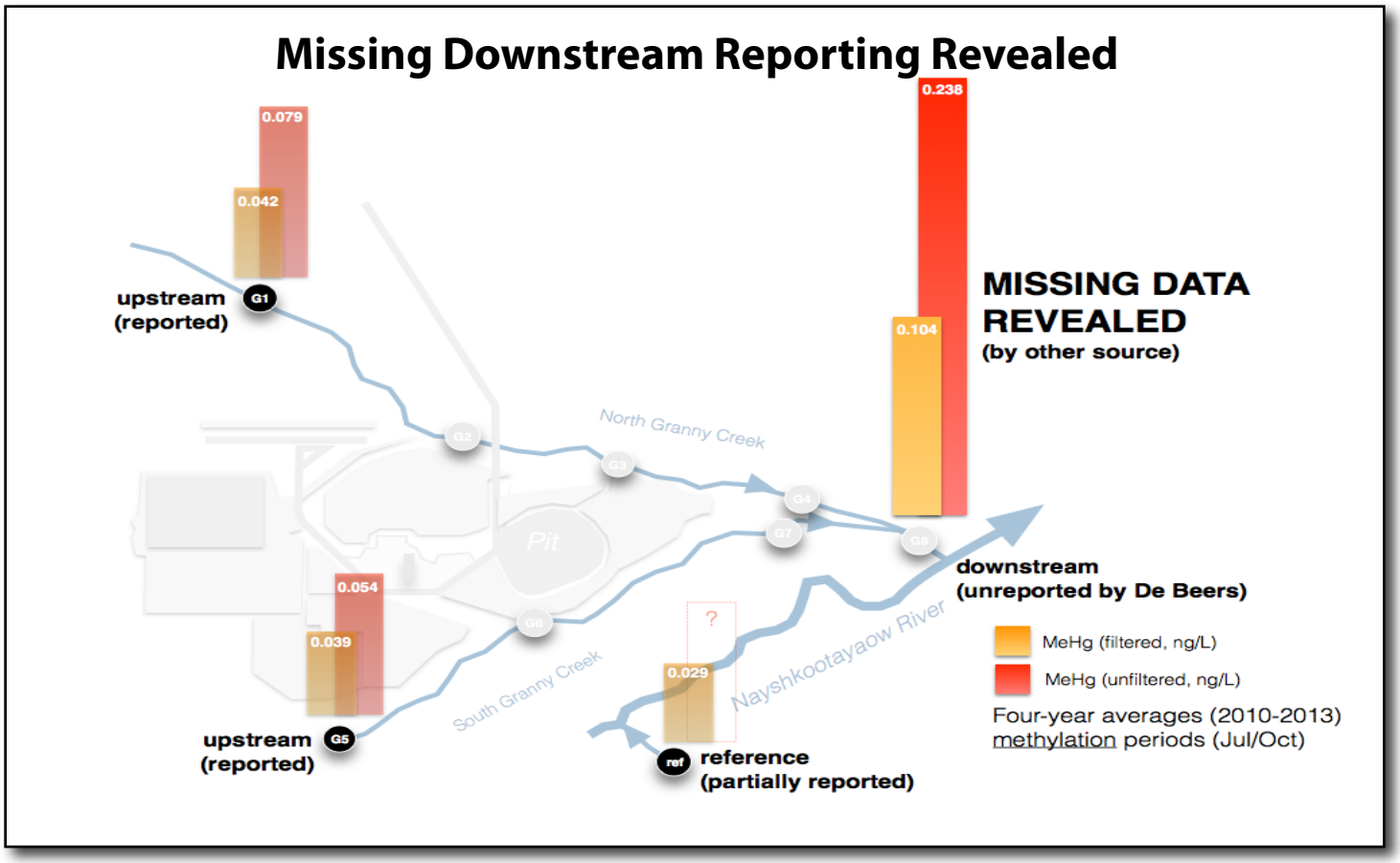
When we flagged this gap for the Ministry, they then shared our comments with the Company, who assured the Ministry [11] that they were in full compliance:

"The Annual Mercury Performance Monitoring Report is submitted to address Conditions 7(5) and 7(6) of Certificate of Approval (C. of A.) #3960-7Q4K2G, and summarizes monitoring data relating to peat pore water, surface water systems, groundwater (well field) discharge and fish for the regulated locations ***in accordance with the approval.****" (bold added)*

The Ministry remained silent on these questions, though we had raised the concerns with them.

Curious and unsatisfied, we also asked for all of the data from this aspect of the monitoring. Repeatedly. The answers we received from De Beers further surprised us:

> *"... we're still unsure what spreadsheets you're asking for.* ***The Mercury Reports have all the data we've collected as required by the permit.*** *We have voluntary sampling data and raw data/field notes that was used to compile the reports but I'm not inclined, nor obligated, to send that material to you."*
>
> *Environmental Manager,*
> *De Beers Canada*
> *(April 2015)* [12]



[Figure 2] *Downstream methymercury compared to upstream and reference creek stations. These data were collected by the company, but not reported to the Ministry as required. They were provided to us by another source. They show approximately double the filtered, and triple the unfiltered average methylmercury levels at this G8 location, relative to upstream stations.*

Missing data shows a tripling of methylmercury

Meanwhile, we obtained a separate record of one of the unreported downstream stations, provided to us by a concerned party.[13] The record included reporting for four years from 2010 to 2013, and provided only one of the missing 3 downstream monitoring stations, "G8" (see **Figure 2**).

It revealed that average downstream methylmercury concentrations across those years were substantially elevated compared to the upstream conditions. Methylmercury approximately doubled in the "filtered" fraction of the samples, and tripled for the "unfiltered" portion (representing the more relevant mercury exposure risk to aquatic life in this system - see page 17 for more discussion on filtered/unfiltered samples).

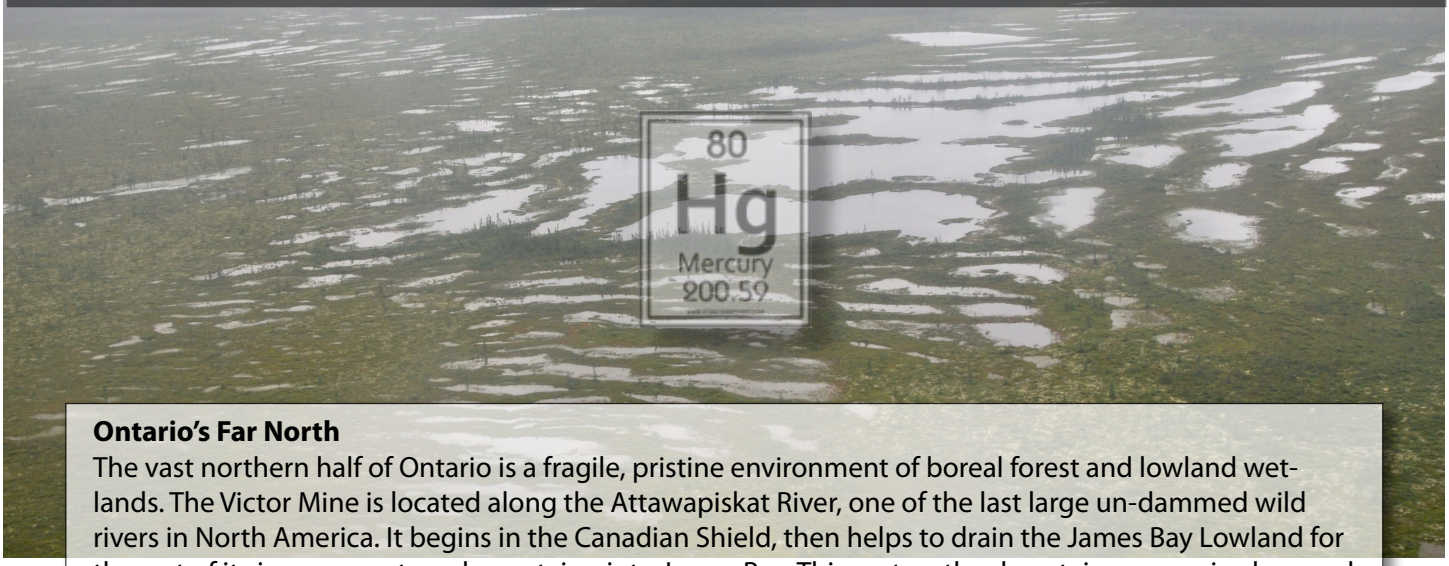
Methylmercury is a neurotoxin. From our perspective, these are alarming increases. Particularly in the context of a river system in which fish already exceed safe guidelines for eating.

It did not seem reasonable to us that the company omitted reporting these essential downstream sites. We then asked the Ministry if they received any data separately. Both the Ministry and De Beers separately confirmed with us that the Ministry does not receive any supplementary mercury reporting to the Annual Mercury Performance Reports. [14, 15]

The reporting failures observed go beyond the problem of simply not meeting the requirements of the permit (which we would encounter more often on this file). Here, the responsible Ministry is not being provided information that would inform them of the full extent of the impacts of this mine.

Together, these unsettling early experiences with the monitoring results triggered the rest of our work reported next.

THE MERCURY CONTEXT



Ontario's Far North
The vast northern half of Ontario is a fragile, pristine environment of boreal forest and lowland wetlands. The Victor Mine is located along the Attawapiskat River, one of the last large un-dammed wild rivers in North America. It begins in the Canadian Shield, then helps to drain the James Bay Lowland for the rest of its journey eastward, emptying into James Bay. This vast wetland contains expansive bog and fen complexes which contain globally significant carbon stores, held in their layers of peat. This peat has also trapped millenia of deposition of atmospheric mercury, from both natural and industrial sources.

Any potential increase in contamination by mercury is problematic, as it accumulates up the food chain and destroys the nervous system of wildlife and humans. This toxic metal has had devastating impacts elsewhere, including the northern Ontario community of Grassy Narrows,[16] and it's on the priority lists of governments for contaminants that must be carefully managed.[17]

Substantial amounts of mercury are already present here - bound in these soils and susceptible to mobilization into the waterways of the region. Fluctuations of temperature, water levels, precipitation, acidity, and availability of organic matter and sulphate are all known potential triggers for mobilizing this naturally stored mercury.

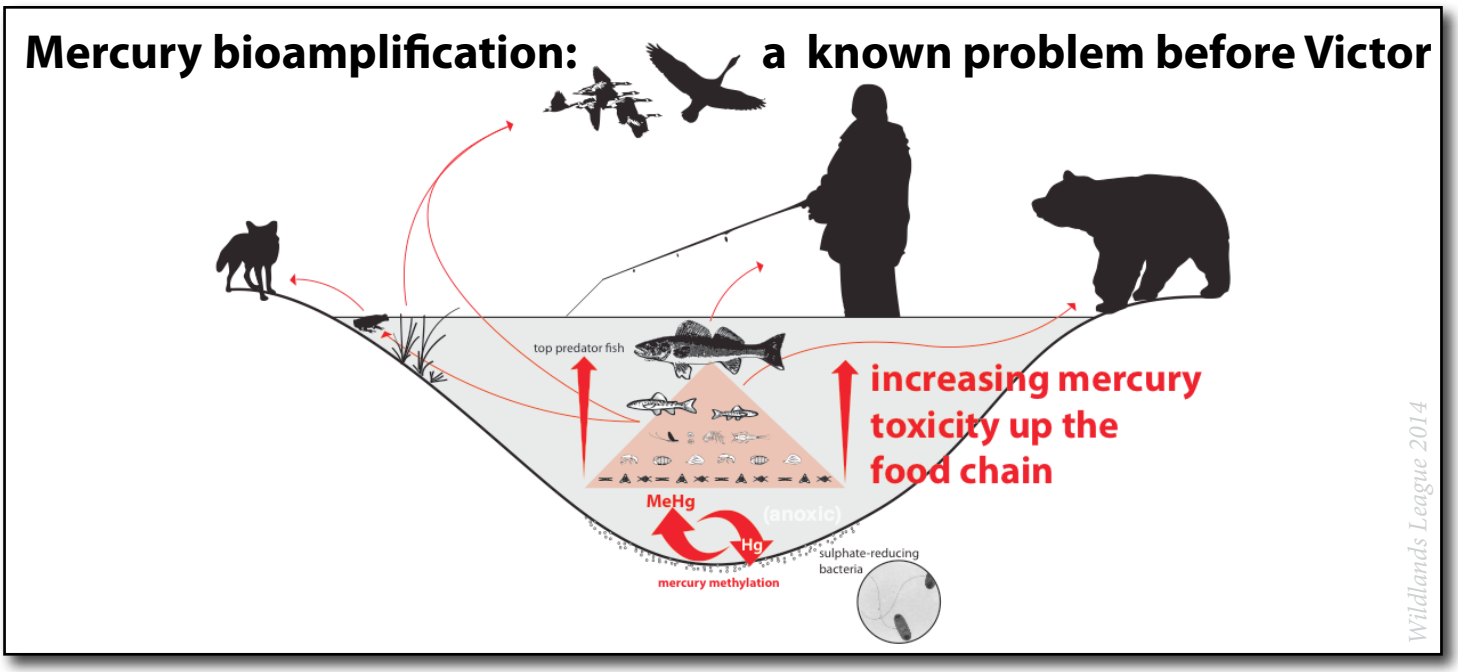
Once in the water column and bottom sediments, this mercury can also be converted to methymercury (see **Figure 3**), a more toxic form of mercury. Methylmercury quickly travels up the food web, accumulating in organisms who are progressively consumed by higher predators, at a pace exceeding their ability to expel it. This process is known as **bioamplification**, and results in predators carrying ever-more dangerous body burdens of mercury, the higher up the food chain they are, the larger, and the longer-lived.

The top predator fish in the region such as Walleye and Northern Pike have been sampled by the Ministry for many years, they contain high enough levels of mercury to cause them to issue advisories against consuming fish of these (and other) species, of certain lengths, and for so many meals per month. These advisories are particularly limiting for women of child-bearing age, and children under 15 years.

Local fish are a major food source for the 2,000 residents of Attawapiskat First Nation, 90 kilometres downstream from the mine. The rivers that receive the runoff and discharge from the mine are important sources of these fish. Additional contamination would risk making a bad situation even worse.

In 2008, the government announced it would ban industrial development in half of Ontario's 450,000-square-kilometre Far North, and require community land-use plans before development happened. That scheme was enshrined in the 2010 Far North Act, and promised enhanced science, investments in baseline science, and a regional framework to provide strategic advice to local plans on key issues. Presumably, the delicate balance of mercury in the Hudson Bay Lowland region and its sensitivities to water manipulation and sulphate loading should qualify for enhanced science and adaptive environmental management to ensure human and ecosystem health is properly protected.

Unfortunately, by the time the Far North Act was passed, De Beers had built the mine and was extracting diamonds. No plan has been started, and no mercury criteria to inform planning had been established.



[Figure 3] *A simplified illustration of basic bacteria-induced methylation and the biological pathways of mercury bioamplification upwards in the food web. The Ministry, through their Guide to Eating Ontario Sport Fish, advised the public against eating the most contaminated Attawapiskat River fish for many years before the Victor mine was proposed.*

In 2004, a streamlined Federal Environmental Assessment (EA) was undertaken.[18] No comparable Provincial EA was undertaken, as for mining projects like Victor are surprisingly only voluntary in Ontario. Instead, provincial regulators relied heavily upon assessments in the Federal EA.

During this EA however, no indirect effects of the operation on resident mercury, such as sulphate loading to local waters were considered. Mercury received more attention as by-products of fossil fuel use than it did in water fluctuation and runoff-mediated effects. Instead, the De Beers EA simply concluded that:

"Metals that have the potential to bio-accumulate (i.e., cadmium, lead and mercury) are expected to be present in concentrations that are below standard detection limits in site drainages (before dilution) and that these elements therefore do not pose a risk."

Considering the pre-existing high levels of resident mercury in the area wetlands, and the resultant mercury body burdens in predator fish, the question of exacerbating the problem was not well-explored in the EA. This is more surprising given a fairly robust literature describing such effects as the sulphate-loading encountered later. For example, Ullrich et al. (2001)[19] described the optimal sulphate ranges that promote mercury methylation. These were later cited by the Company during their reactive investigation of MeHg increases in the Northeast fen, draining to North Granny Creek from the minesite.

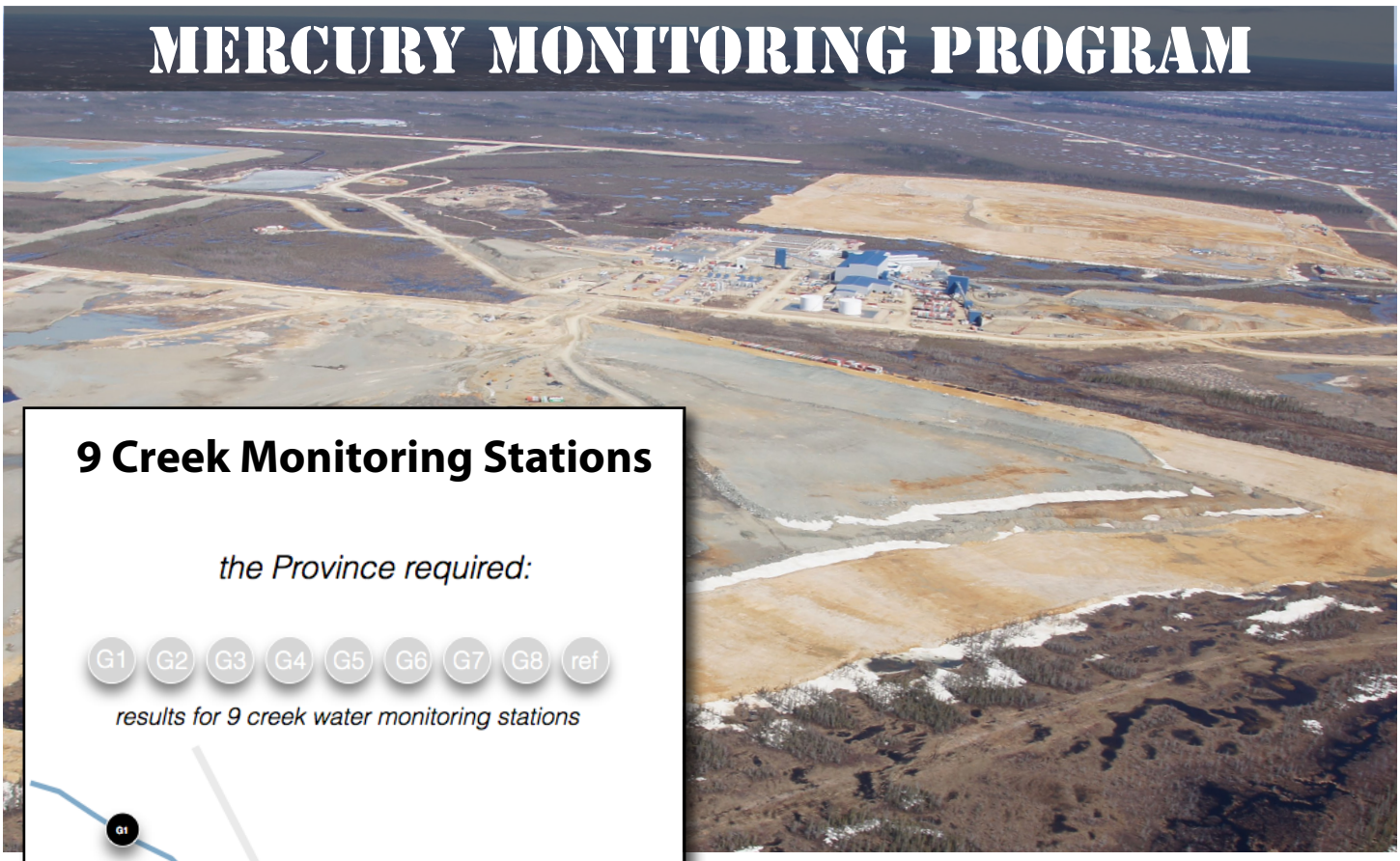
Further, in the EA, all of the considerable mercury concerns identified by involved agencies and stakeholders were directed towards the monitoring stage:

"Monitor contaminants of potential concern in fish tissues harvested by the AttFN (Attawapiskat First Nation). A contaminant of potential concern (COPC) is a contaminant which could be released due to project activities and which has a feasible pathway into country food consumed by the local human population. COPCs are a concern from the viewpoint of human health. For fish tissues, monitoring of methyl mercury will be required, especially for those species of fish harvested where the Granny Creek system flows into the Nayshkootayaow River."

Similarly, to protect against mercury contamination, the Ontario government's permits for the Victor Mine included a requirement for monitoring to detect any adverse impacts. It was added as a response to the concerns of various commenting agencies and stakeholders, including Wildlands League, who participated in the permit process.

This reliance upon back-end monitoring to protect against unassessed risks seems to be the go-to option for both the Federal environmental assessment, as well as the Provincial environmental permitting.

MERCURY MONITORING PROGRAM

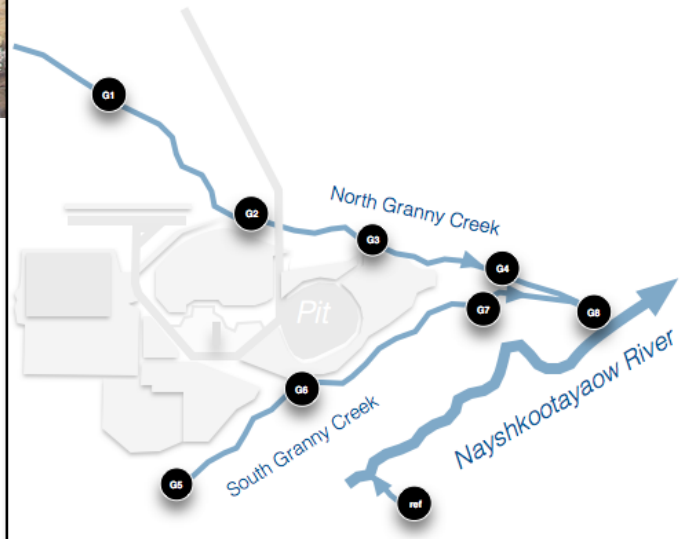


9 Creek Monitoring Stations

the Province required:

G1 G2 G3 G4 G5 G6 G7 G8 ref

results for 9 creek water monitoring stations



a full array of creek reporting, plus reference

The Mercury Monitoring Program was developed during the original water-taking permit discussions in 2007-2008, as a result of agency and stakeholder concerns with the potential of mine operations to mobilize the mercury from the surrounding wetlands. It was later required for the permit that authorizes the discharge of the effluent from the mine pumping to the Attawapiskat River as well.

Described on the government's Environmental Bill of Rights registry as "stringent," [20] this monitoring program requires, among other things, regular sampling and analysis of fish and surface water at a number of key sites around the mine. Full results are to be reported annually.

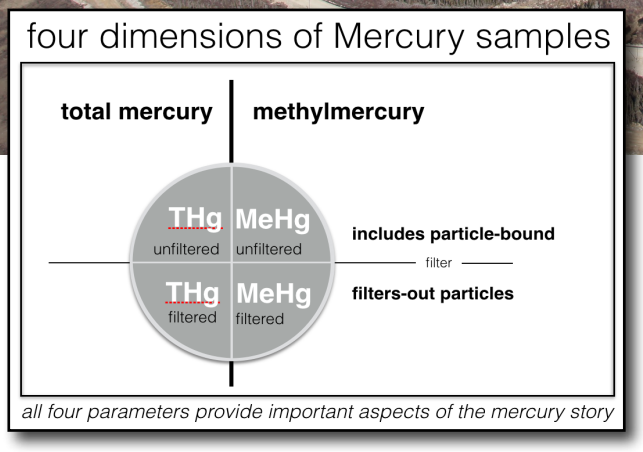
As part of a Canada-wide trend toward self-monitoring by all types of industries, the province entrusted this work to De Beers.

Though the Program has several other aspects, the focus of our investigation has specifically centred around a core case study of nine surface water sampling stations on the two creeks that flow along the north and south sides of the mine. The creeks meet east of the site, then, enter the Nayshkootayaow River and flows on to the Attawapiskat, the main source of fish and drinking water for Attawapiskat First Nation.

The Granny Creeks monitoring design

The Mercury Monitoring Program requires creek water samples to be taken both upstream and downstream from the open-pit operation, its tailings ponds, and its stockpiles. An undisturbed "reference" creek of a similar baseline character was also selected to be sampled, out of the mine's area of impact, for comparisons. To us, these creeks provide an important "early-warning" role, with the capacity to focus follow-up investigations - when all results are available.

Both creeks, South Granny and North Granny, receive drainage and outfalls from the minesite. Sampling sites are located on each creek, one upstream from mine



all four parameters provide important aspects of the mercury story

impacts and the others downstream. The ninth site, on another creek that drains into the Nayshkootayaow River, isn't affected by the mine and serves as a reference.

For each site, De Beers is required to sample each parameter at least once every three months and then report the results annually. Each site should ideally include four separate mercury samples, though only generic total mercury and methylmercury are specified on the permit. This means that, by default, unfiltered results for these two mercury parameters must be reported at a minimum.

The monitoring program mandated for the Victor Mine was, on paper, reasonable. Had it been fully followed, and transparently reported, as required by its permits, we would now have a reasonably clear picture of the impacts to make better decisions. Unfortunately, this has not happened.

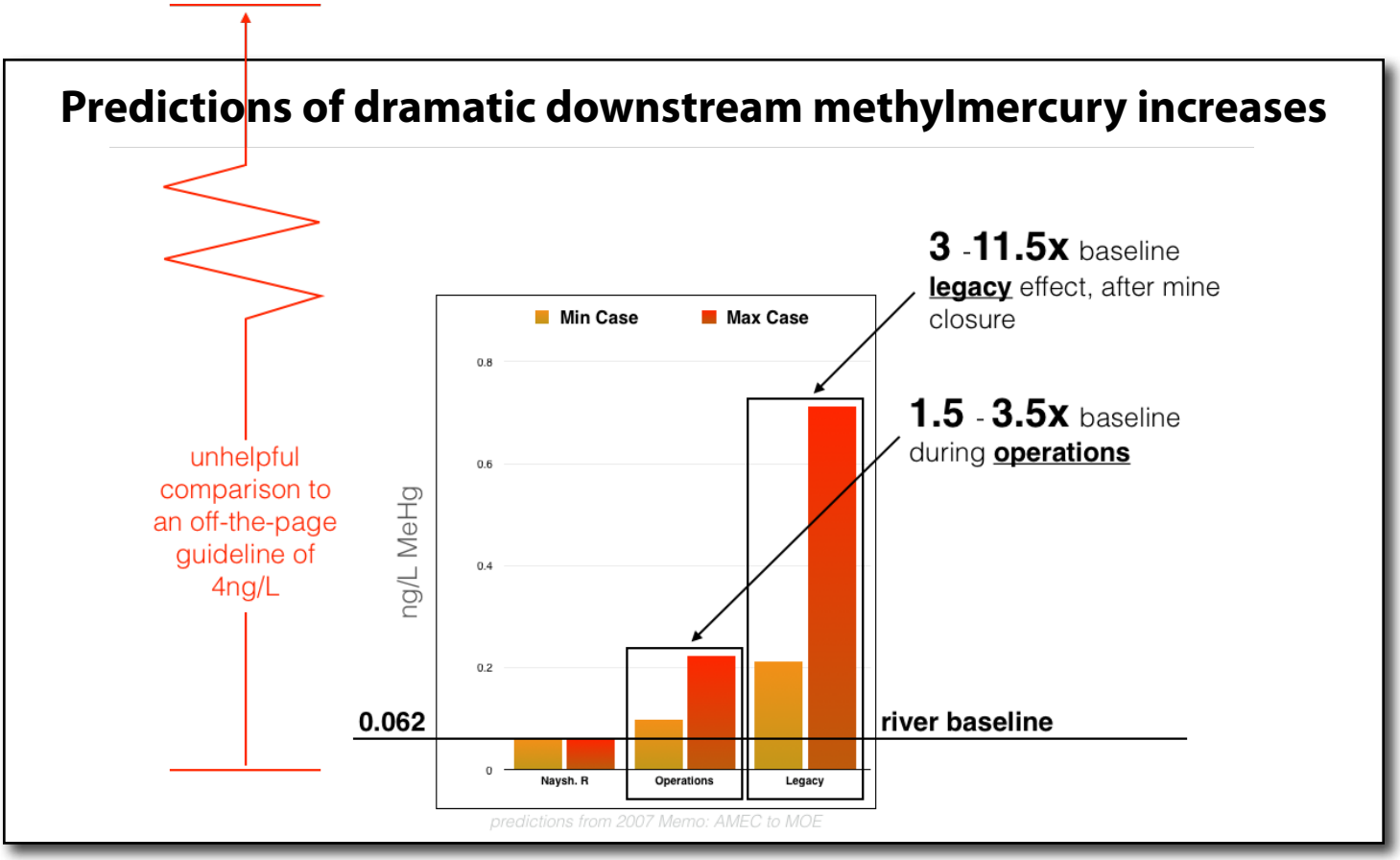
Anticipated effects and reference standards

Additionally, around the same time as the Mercury Monitoring Program was being developed, closed-door discussions between the Ministry and the company were also ongoing, as the company's environmental permits were being developed. We have glimpsed some of this discussion through various Freedom of Information requests.[21]

Two important threads revealed were:

(a) possible dramatic effects - estimates of possibly dramatic downstream methylmercury increases were communicated to the Ministry outside of the Environmental Assessment, and outside of the public dialogue during the Provincial permitting process; and

(b) inappropriate management guidelines - those dramatic increases in methylmercury were communicated in the context of guidelines not intended to manage against mercury bioamplification. This is surprising, given the decades of Ministry knowledge of the results of this effect, through its history of fish consumption advisories in this region.



[Figure 4] *The company predicted potential increases of methylmercury in the receiving water of the Nayshkootayouw River by over 1000% after mine closure. Submitted to the Ministry in 2007 during its dewatering permit application, it also compared the predictions to 4ng/L as a reference (CCME 2003), a level that ignores the existing mercury problem in area fish.*

Behind-Scenes Predictions: More Methylmercury

De Beers and the government knew mercury was a real concern around the Victor Mine. A technical memo from the company's consultant [22] — written in 2007, the year before the mine opened —predicted methylmercury (MeHg) levels in downstream river water might increase by up to 3.5 times during the project's operation and soar as much as 11.5 times higher as a legacy after it closed (see **Figure 4**).

But that warning wasn't openly discussed in the federal environmental assessment, nor at the time of the Ministry permit consultations, and it was not made public at the time of the permit approval either. We only learned of it recently, through a Freedom of Information request [23] submitted with the help of our colleagues at Ecojustice.

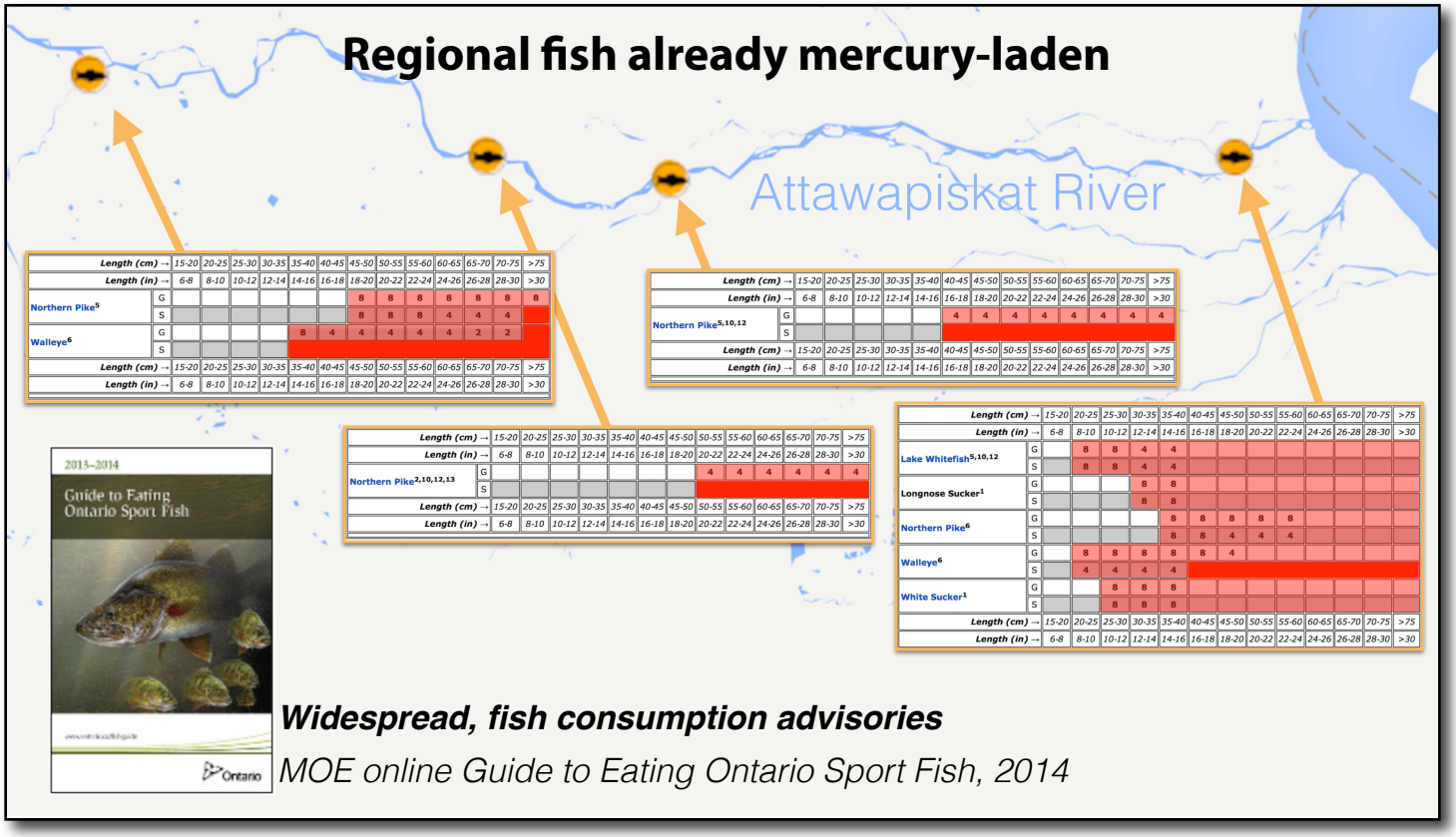
It is important to note that we have not been privy to the context surrounding these predictions and can only take the document at face value. What we do know is that the memo is attached to the Certificate of Approval that governs the pit dewatering and discharge, it apparently contemplates these significant increases of MeHg from the mine, at highly significant levels, and into the context of a legacy timeframe. If nothing else, it underlines the importance of careful reporting of all monitoring results as early warning for any such effects.

While it appears that the mercury increases being experienced may also be coming from different mining influences than what these predictions originally looked at, we wonder why this important discussion has been kept from the public eye, and why the Ministry would consider such a dramatic increase in this toxic material in these rivers as acceptable. That the predictions, and the guideline referenced appear to have been generally accepted by the Ministry during these internal dialogues is alarming.

Misuse of Federal Guideline

The problem of these predictions was also compounded by the misuse of a federal reference guideline: the 2003 Canadian Council of Minister's of the Environment, Mercury Guideline for the Protection of Aquatic Life (the Guideline)[24] by the Company .

In this same memo, the company arrayed the above predictions against this "direct exposure" guideline - one that was explicitly not intended to protect against the bioamplification of mercury up the aquatic food web. This was surprising to us, given the long and documented history



[Figure 5] *Guide to Eating Ontario Sport Fish consumption advisory program advice, showing the results from four proximate Attawapiskat River monitoring points. All caution against eating many species of fish in this river, particularly larger ones, and especially for sensitive populations such as women of child-bearing age and children under 15 years.*

of regional fish consumption advisories due to a history of atmospheric mercury pollution to these wetlands, and a resulting accumulation in the tissue of larger fish.

These fish consumption advisories are produced by Ministry, and include four nearby monitoring points on the Attawapiskat River, all of which demonstrate excessive mercury body burdens in many species of fish sampled (see **Figure 5**). For comparison, baseline studies reported an average concentration of 0.045 ng/L MeHg in the River.[25] So, levels almost 100x less than the guideline being referenced were already resulting in these advisories.

It is impossible to read the Guideline without encountering explicit warnings against using it in this context: where management of bioamplification risks are needed. For example:

*"This guideline is recommended for the protection of low trophic level freshwater life (i.e., generally trophic levels 1-2) against the adverse affects of **direct** exposure to methylmercury through water. This guideline may not protect high trophic level aquatic life (i.e., generally trophic levels 3 and 4) which are exposed to methylmercury primarily through food. Nor may it prevent the accumulation of methylmercury in aquatic life which could cause the tissue residue guideline (33µg·kg-1 diet ww) for the protection of wildlife consumers of aquatic biota to be exceeded (Environment Canada 2002)."*[26]

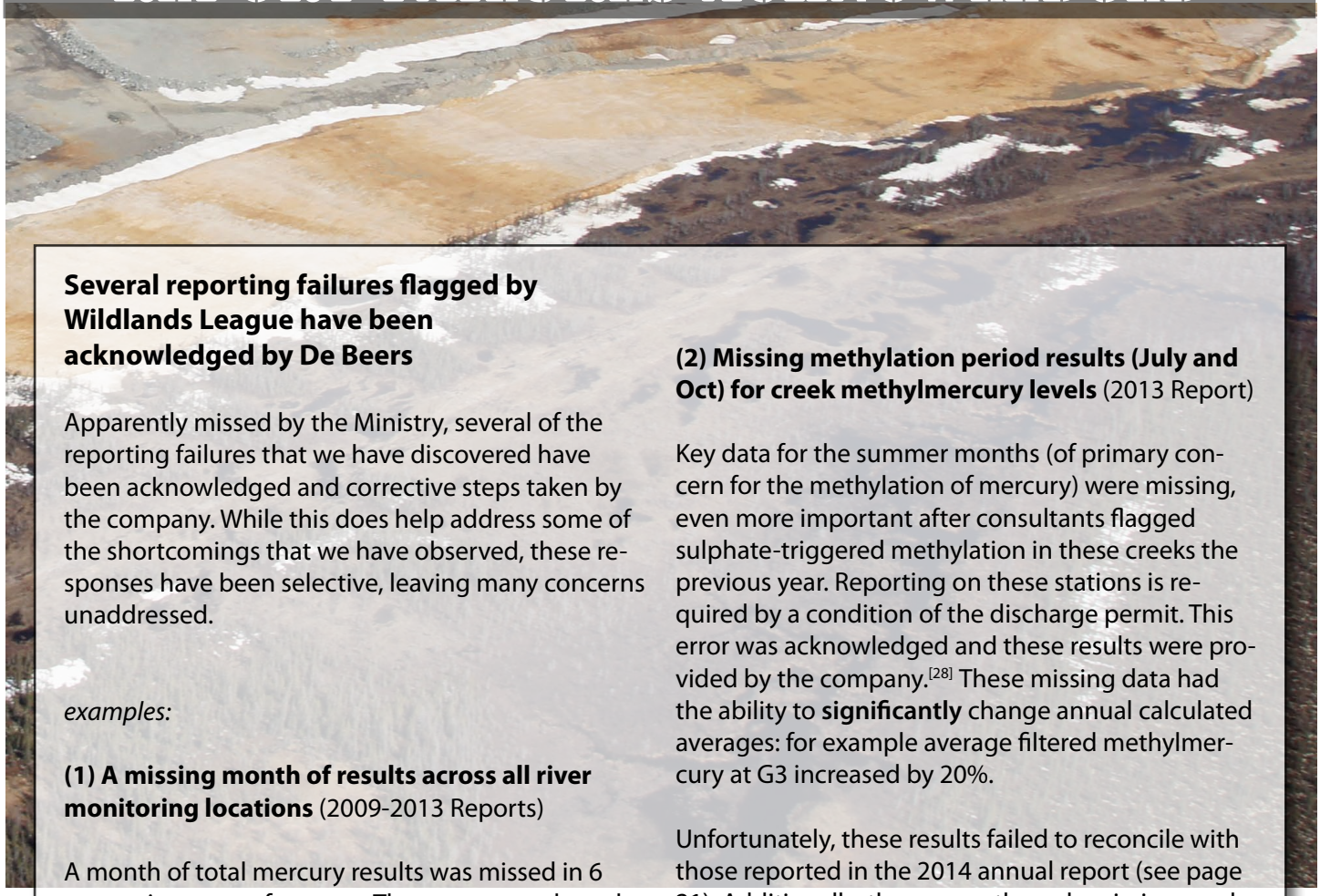
Amongst these many provisos it also points to other, far more conservative, concentration guidelines that would be better suited to managing such risks.

After we raised these concerns, the company acknowledged this limitation (in their 2013 Mercury Peformance Report), but then went on to continue referencing the more permissive guidelines throughout. The Ministry remained silent on this subject during this exchange.

Our expectation

We would have expected a more comprehensive and transparent discussion of the fate of such substantial methylmercury loading, the most appropriate management guidelines to use to evaluate these risks, and the potential for harm to the top predators of the receiving food web. If such things are not openly addressed in an environmental assessment, nor during industrial permit issuance, then when?

REPORT FAILURES ACKNOWLEDGED



Several reporting failures flagged by Wildlands League have been acknowledged by De Beers

Apparently missed by the Ministry, several of the reporting failures that we have discovered have been acknowledged and corrective steps taken by the company. While this does help address some of the shortcomings that we have observed, these responses have been selective, leaving many concerns unaddressed.

examples:

(1) A missing month of results across all river monitoring locations (2009-2013 Reports)

A month of total mercury results was missed in 6 successive years of reports. The error was acknowledged and these results were provided by the company.[27]

(2) Missing methylation period results (July and Oct) for creek methylmercury levels (2013 Report)

Key data for the summer months (of primary concern for the methylation of mercury) were missing, even more important after consultants flagged sulphate-triggered methylation in these creeks the previous year. Reporting on these stations is required by a condition of the discharge permit. This error was acknowledged and these results were provided by the company.[28] These missing data had the ability to **significantly** change annual calculated averages: for example average filtered methylmercury at G3 increased by 20%.

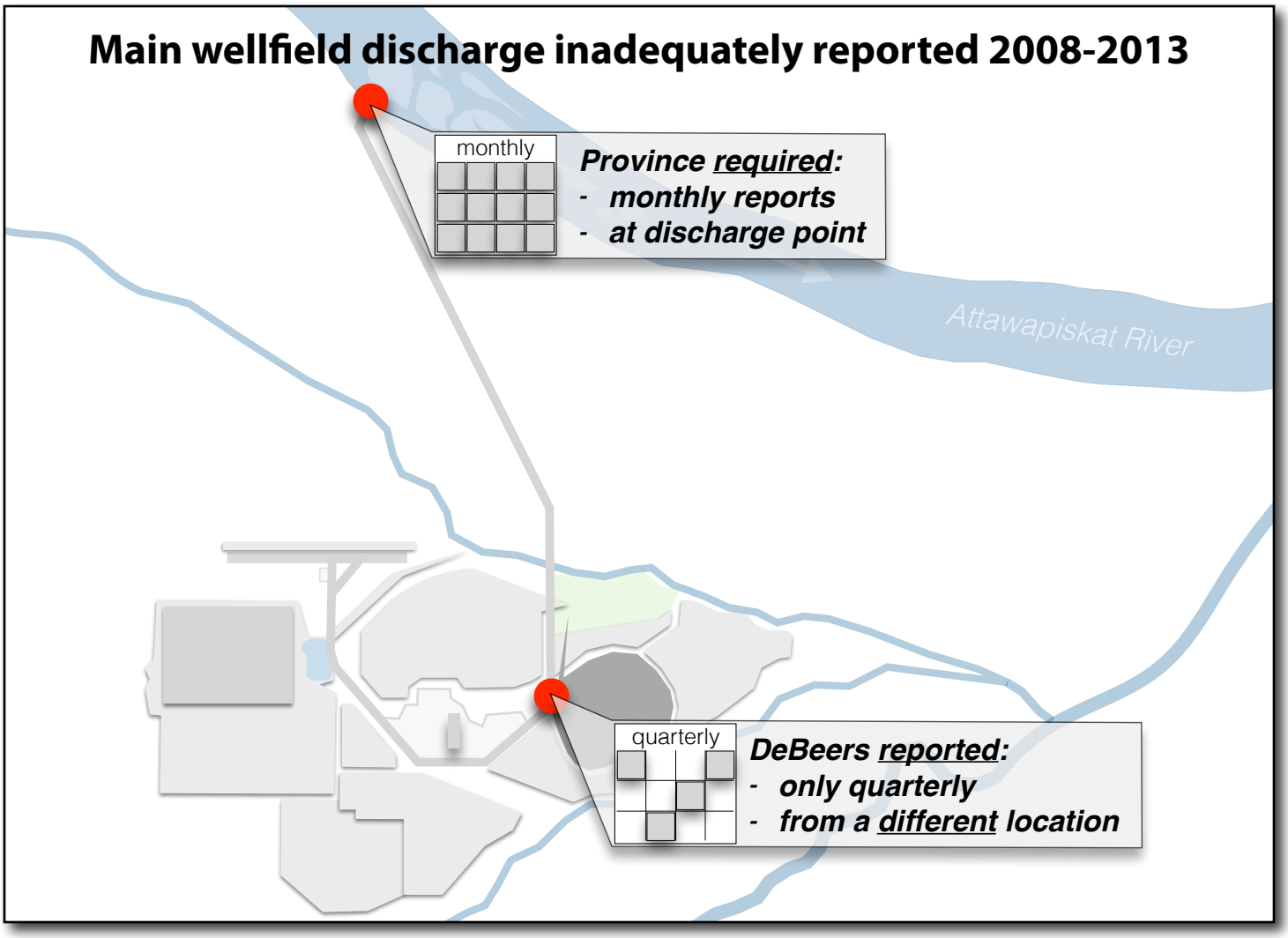
Unfortunately, these results failed to reconcile with those reported in the 2014 annual report (see page 21). Additionally, these were the only missing creek sampling results acknowledged by the company, of the extensive gaps that we had identified.

Pit depth: why the number games... ?

In a related public consultation, we also reviewed the Victor Mine Closure Plan, a requirement of the Ministry of Northern Development and Mines, under the Mining Act.

Among our comments from our review,[29] we noted that the company was claiming a pit depth of 280m, despite a **233 m** depth originally described and approved in the Federal Environmental Assessment. We received a reply from De Beers acknowledging the problem, stating that this was a typographical error, and that it should have read **254 m**.[30] No additional rationale or explanation has been provided relative to the **233 m** baseline that we had raised.

Since then, a De Beers' spokesman has said publicly pit depth would be, variously, **280 m** [31] and **300 m.**[32] This is an important issue because problematic sulphate and chloride levels in the drainage water increase dramatically with depth.



[Figure 6] *The reported "discharge" was sampled from another location, at far less frequency, than what was required by the Permit. This amounted to the discharge not being reported to the Ministry as required from 2008 to 2013, when we brought attention to this issue. It is also shows the misrepresentation of sampling results that were obtained from elsewhere.*

(3) The main wellfield discharge to Attawapiskat River not reported / misrepresented (2008-2013 Reports)

This is the primary effluent from the mine dewatering - the millions of litres per day being pumped from the wells around the pit to access the ore. This effluent is specifically regulated for chloride levels, which increase dramatically by depth. Other parameters including sulphate behave the same way, while other obvious concerns might be elevated mercury levels.

The dewatering permit required monthly sampling from the pumphouse, before discharge into the river. Instead, the company was reporting results from a location upstream in the system, on only a quarterly basis. This misrepresentation went undetected for 7 years of reporting until Wildlands League flagged it [33] (See **Figure 6**).

The error was investigated by Ministry staff and then quickly acknowledged by the company, who promised prompt replacement data.[34] But, instead of being provided promptly, 6 more months elapsed until these data were provided in the next annual report.

(4) Missing well results for 2 wells (2013 Report)

Wildlands League also noted that a key well production table was not kept up to date with wells introduced in-year (VM-23, VM-25).[35] As discharge effluent from the wellfield is mixed, it is useful to know when various wells were online, as their drawdown zones interact with the site variously, by location. The error was acknowledged and these results were provided by the company.[36]

Misrepresentation of fish sampling effort 2011-2012

TABLE 19
SPECIES-SPECIFIC CPUE IN MINNOW TRAPS
BY LOCATION DURING 2011

Waterbody	North Granny Cr.	South Granny Cr.	Tributary 5A	Catch (n)
Sample Area	NGC*	SGC*	ST-5A	
Date (mm/dd/yy)	9/1/2011**	31-Aug-11	01-Sep-11	
Total Trap Hours (# traps*hours)	1080	731	287	
Pearl Dace	0.251	0.007	0.912	538
Finescale Dace	0.060	0.000	0.254	138
Northern Redbelly Dace	0.015	0.000	0.031	25
White Sucker	0.004	0.001	0.132	43
Longnose Sucker	0.001	0.000	0.000	1
Johnny Darter	0.006	0.000	0.000	7
BrookStickleback	0.000	0.000	0.014	4
CPUE Total	0.337	0.008	1.343	756

Note
* - Comprised of multiple capture events
** - Also included samples collected from July 15 to 17, 2011

TABLE 19
SPECIES-SPECIFIC CPUE IN MINNOW TRAPS
BY LOCATION DURING 2012

Waterbody	North Granny Cr.	South Granny Cr.	Tributary 5A	Catch (n)
Sample Area	NGC*	SGC*	ST-5A	
Date (mm/dd/yy)	30/06/2012**	02/09/2012**	02/09/12	
Total Trap Hours (# traps*hours)	1080	731	287	
Pearl Dace	0.25	0.01	0.91	538
Finescale Dace	0.06	0.00	0.25	138
Northern Redbelly Dace	0.01	0.00	0.03	25
White Sucker	0.00	0.00	0.13	43
Longnose Sucker	0.00	0.00	0.00	1
Johnny Darter	0.01	0.00	0.00	7
BrookStickleback	0.00	0.00	0.01	4
CPUE Total	0.34	0.01	1.34	756

Note
* - Comprised of multiple capture events
** - Comprised of multiple capture dates

same exact number of each species caught between two years?

title amended

dates updated / format changed

blanket rounding added

addition errors introduced by "blanket" rounding

notations amended

[Figure 7] *Tables from two consecutive annual Mercury Performance Reports (2011, 2012), showing that the same values were reported for both years, and also highlighting a number of intentional changes to the 2012 version.*

(5) Creek minnow sampling effort misrepresented between years (2011 - 2012 Reports)
Some fish monitoring data was misrepresented between years (see **Figure 7**). We were puzzled by the fact that both the 2011 and the 2012 annual mercury monitoring reports, which each contain data from seven species caught in three sampling traps, showed identical numbers of each species sampled for each site — a highly improbable occurrence.

Aside from the identical species distribution and total catches reported we noted one decimal of additional rounding to Catch Per Unit of Effort (CPUE) per species between years, which slightly changed the appearance (and contributed another example of inconsistency in format for presented level of accuracy) and also caused the values provided to not add up. We also note that the title, capture dates and notation were all intentionally altered.

After we flagged this problem for the Ministry in June 2015 [37] and it was relayed to the company, De Beers provided new 2012 numbers. Brian Steinback (Senior Environmental Engineer, De Beers Canada) noted:

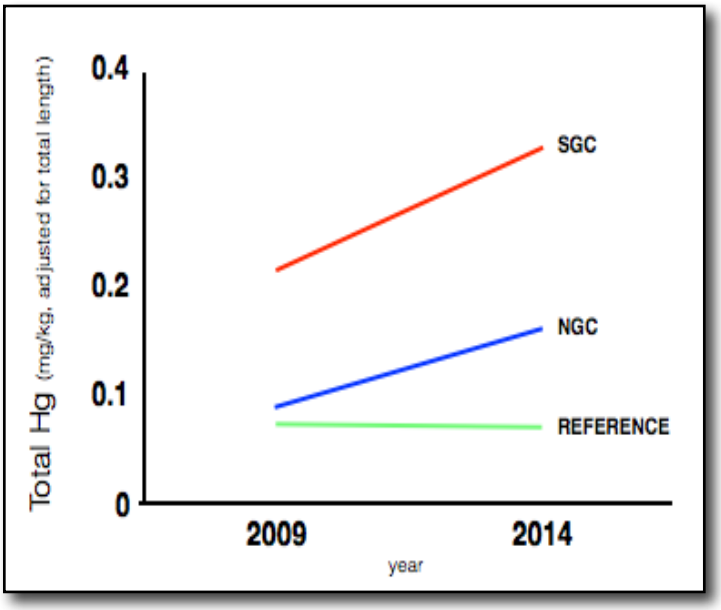
"It was recently brought to our attention that this table was unfortunately not updated in that report; instead it reproduced the data from the previous 2011 report." [38]

Ministry of Environment officials apparently either didn't notice the discrepancies or ignored them originally. Perhaps they are satisfied with the company's remedial response, or perhaps not. As with all of these reporting failures that we brought to them, the Ministry has provided us with no direct response - even after specific requests for one.[39, 40]

In any case, the CPUE as provided across all reports is inconsistent at best, and is inadequate for the purpose

of clearly explaining effort across years. In our opinion, it requires much more care in detailing. This, atop the challenging circumstance that 2008 was the first year of small fish sampling on the creeks [41] - a poor baseline, given that construction on the site began in 2006.

The inadequacies of the sampling effort are made more troubling in that the minnow body burdens in the two creeks framing the minesite are much higher than the reference creek (see **Figure 8**). The mercury levels reported in these creek minnows are hovering within the onset range that might produce sub-lethal effects.[42, 43, 44] These increased body burdens can also be expected to amplify up the food chain as these prey fish are consumed, causing increased effect at each level of predation.



[Figure 8] *Simplified illustration of reported differences between the 2009 and 2014 Pearl Dace (minnow) average body burdens (corrected for length-year). Adapted from Fig. 9 of De Beers' 2014 annual Mercury Performance Report.*

(6) Acknowledgement of EPA guideline (2013 Report)
In another example, De Beers included in their 2013 Mercury Performance Report an acknowledgement of our concerns around the company's misuse of the 2003 CCME Aquatic Toxicity Guideline ("direct" exposure):

"De Beers acknowledges that the federal guideline values for the protection of aquatic life, may not be fully protective of bird and mammal species which depend on fish for the major part of their diet, and that the 0.05 ng/L methyl mercury value is more appropriate to such circumstances. The 0.05 ng/L methyl mercury value is met or approximately met in the Attawapiskat and Nayshkootayaow Rivers in both the background and present day conditions." [45]

We appreciated their acknowledgement of the appropriateness of a bioamplification "indirect" exposure threshold such as this US EPA management level [46] of 0.05 ng/L (which is referenced within the companion CCME guideline for the protection of wildlife consumers of fish [47]). However, we continue to be surprised that a discussion and application of a bioamplification reference such as this to the interpretation of the reporting at hand is missing. Despite this admission, the CCME "direct exposure" standard of 4 ng/L continues to be referenced extensively throughout the 2013 Annual Report (and again in the 2014 edition). [58]

Highlighting that the two receiving rivers consistently remain below this guideline is a start. However doing so makes more conspicuous the unanswered question of how the more proximate receiving waters of the Granny Creek system are faring.

This gap can be filled by simply comparing the Granny Creek reported filtered methylmercury numbers to the 0.05 ng/L reference. While the reference creek (Trib 5a) only occasionally approaches this concentration, all downstream North and South Granny creek stations reported regularly exceed it by a substantial amount. Further, as methylmercury generally increases from upstream of the minesite to below it for both creeks, exceedances of this bioamplification management threshold are more frequent, and greater at downstream stations.

Relying extensively on the much higher CCME guideline of 4 ng/L is misleading to the reader, as concentrations far below these levels in the receiving waters of the mine clearly risk harm to the organisms in this food web. The Attawapiskat River, the river that was (and still is) the subject of fish consumption advisories had MeHg concentrations that averaged only 0.045 ng/L before the mine was built.[48] Bioamplification in this ecosystem is a very real vector for mercury in this region that requires careful management. Using appropriate thresholds to compare the monitoring results against is clearly an important part of this.

The 2003 Guideline contains many provisos that are to go with its use. These include the stipulation that it be used in conjunction with all of the other available guidance.

PERSISTENT REPORTING FAILURES

Several of the failures we have identified have yet to be acknowledged by DeBeers or the Ministry.

These examples here focus only on the creek monitoring stations, as they represent a particularly important area of concern for us. These stations form an important "early-warning" role in the monitoring program, and one that De Beers has only selectively reported on since 2008. A more comprehensive review of all reporting obligations and reporting performance would be a reasonable follow-up to these observations.

Our observations have demonstrated that De Beers is reporting as required for only four of the nine stations on these creeks.

We were surprised that these reporting failures went unnoticed across 6 annual reports. But it surprised us even more to read, 6 months **after** we raised these issues, that they continued into a 7th annual report: the 2014 Mercury Performance Report.

(refer to **Figure 9** to relate stations and parameters)

These failures have included:

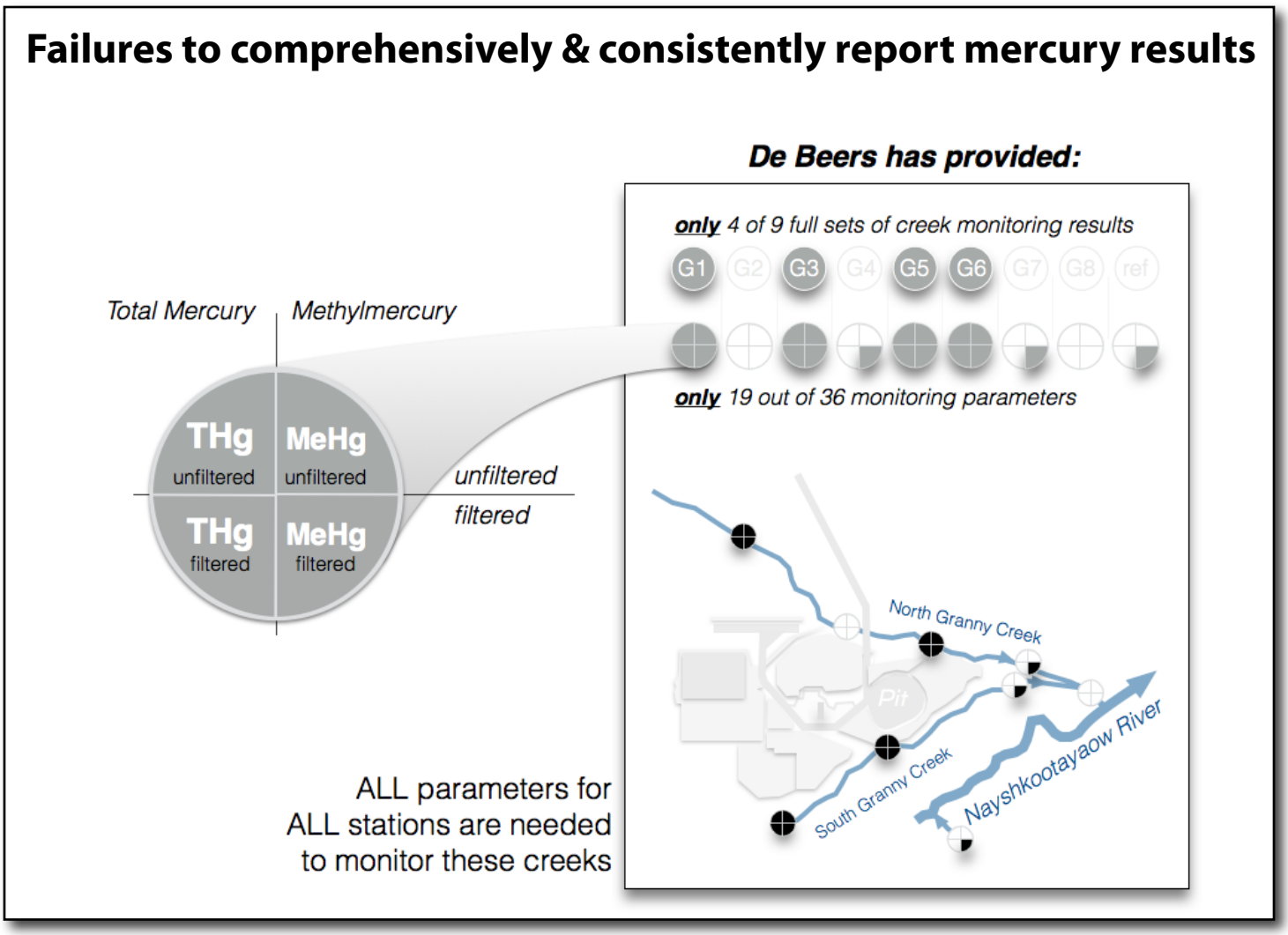
(1) No mercury results reported at all for two of the required creek water monitoring locations
(2008-2013, stations G2, G8)

No results are reported at all for these two locations. G2 is located downstream of the tailings pond drainage, and G8 is the ultimate downstream site of the Granny Creek system, before it flows into the Nayshkootayaow River.

After we flagged to the Ministry that these stations were not being reported,[49] De Beers provided the following unclear, and unsatisfying response to us:

"The Annual Mercury Performance Monitoring Report is submitted to address Conditions 7(5) and 7(6) of Certificate of Approval (C. of A.) #3960-7Q4K2G, and summarizes monitoring data relating to peat pore water, surface water systems, groundwater (well field) discharge and fish for the regulated locations ***in accordance with the approval****."* [50]

This does not reflect our understanding of this Certificate of Approval, which provides a clear list of nine creek stations, complete with location coordinates, to be monitored and reported upon. It is also notable that the Approval does not require filtering to be performed on the results. Thus, reporting filtered results without unfiltered does not meet the requirements (see next examples).



[Figure 9] *Showing the limited extent of mercury reporting for the required monitoring stations, by specific parameter. While "filtered" is included as being a useful and appropriate ancillary dimension, it is "unfiltered" that is the implied default fraction required by the permit. Thus, the majority of stations (5 of 9) are not being reported adequately.*

(2) No unfiltered methylmercury (MeHg) results reported for 5 of the 9 creek monitoring locations (2008-2013, stations G2, G4, G7, G8, and reference site)

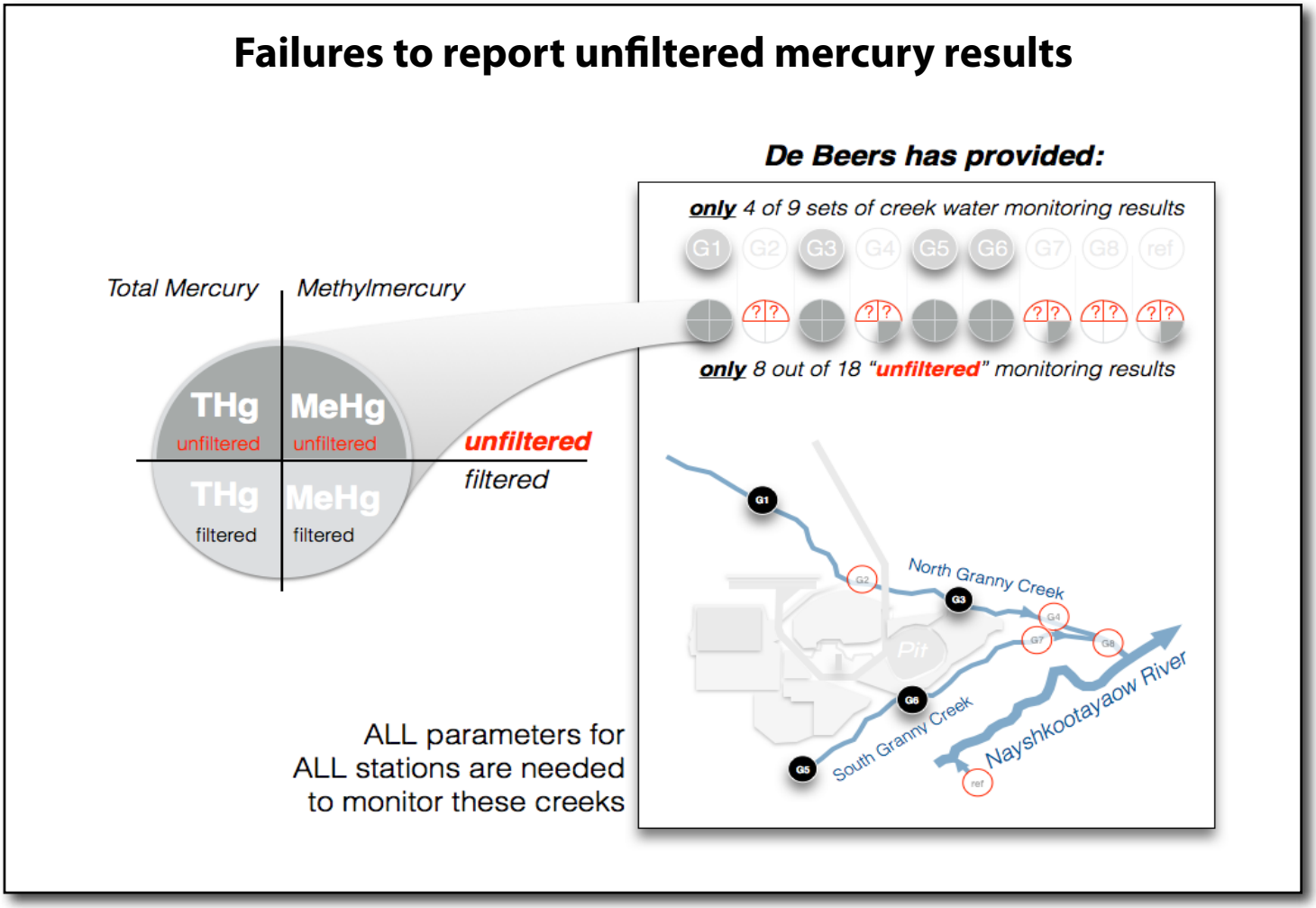
We also identified to the Ministry that unfiltered **methylmercury** results are not reported for these stations [51] (see page 17 for more on the important role of the particulate fraction ("unfiltered") of the water column). De Beers replied that our concerns were somehow "unclear," as they did report "unfiltered" results, and then went on to list what was (selectively) reported, leaving the same gaps we had identified with our initial concern.[52]

(3) No unfiltered total mercury (THg) results reported for 5 of the 9 creek monitoring locations (2008-2013, stations G2, G4, G7, G8, and reference site)

Unfiltered **total mercury** results are also not reported for these same stations. This is listed distinctly here, because this is a separately required parameter of the Monitoring Program. In effect, by failing to report both of the two unfiltered results required, the proponent has simply not met the reporting requirements of the Permit for these stations. Together, this means that only 4 of the 9 locations have been adequately reported.

(4) No filtered total mercury (THg) results reported for 5 of the 9 creek water monitoring locations (2008-2013, stations G2, G4, G7, G8, and reference site).

While "filtered" results are not actually specifically required by the Permit, reporting filtered total mercury results for these same stations would complete these sets of mercury results (particularly as the proponent has reported somewhat better on filtered MeHg, and it is useful additional information for interpreting site effects).



[Figure 10] *Map of the required reporting stations noting the lack of "unfiltered" results being reported in the annual reports. Important to note that "filtered" results are actually not specified in the Permit, that "unfiltered" would be the default, and that both are actually important to understand the fate and transport of this challenging hazardous substance.*

Filtered vs Unfiltered Mercury

In the creek examples above (see **Figure 10**), only 8 of the 18 required "unfiltered" results (considering both THg and MeHg together) are being reported. Also, more "filtered" MeHg samples are being reported than the required default "unfiltered" fractions: "filtered" MeHg is reported for 7/9 stations, while "unfiltered" MeHg is only reported for 4/9 stations.

Aside from the basic concern that all parameters should be comprehensively reported, and the permit monitoring requirement does not specify filtering, this pattern also contributes a misleading bias. This focus also extends to the analysis provided by the consultants in the Annual Reports (see example next pages).

Why does this matter? Unfiltered values are higher than filtered values, and more accurately reflect exposure risks in this ecosystem.

Direct toxicity of metals to a cellular target is often strongly associated to its dissolved form - i.e. the "filtered" fraction. For most metals, this can represent the dominant source of its toxicity. However, in the specific case of **mercury** (see **Figure 11**), it is **not** its direct dissolved toxicity in the water that is the primary exposure risk. The more concerning exposure risk is indirect - its amplifying **pathway up the food web.** [53, 54, 55]

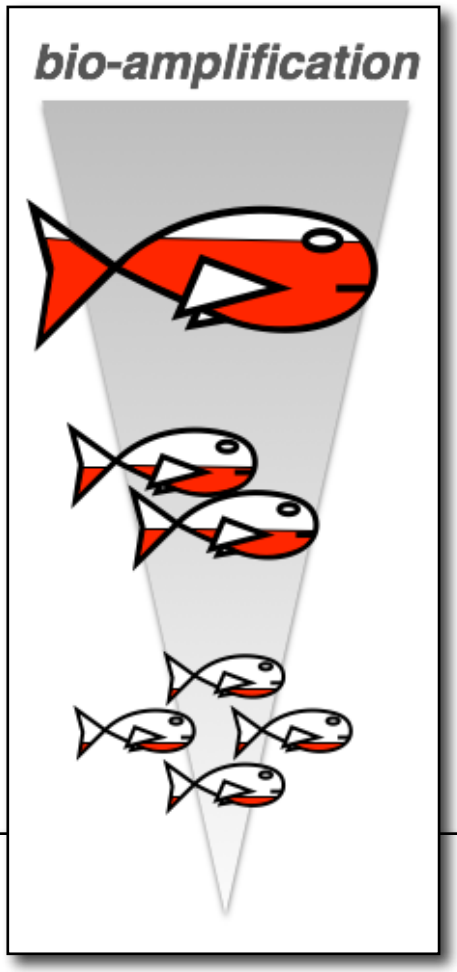
For this pathway, particles (or the "unfiltered" fraction) matter greatly. Particles include all manner of food that lower trophic level creatures will forage upon, ingest and bio-accumulate. These creatures will then fall prey to higher level organisms in the food web, and the mercury will "bio-amplify" up the food chain, collecting at highest levels in the longer lived, and sizable top predators, such as the Walleye and Northern Pike fish species in this region.

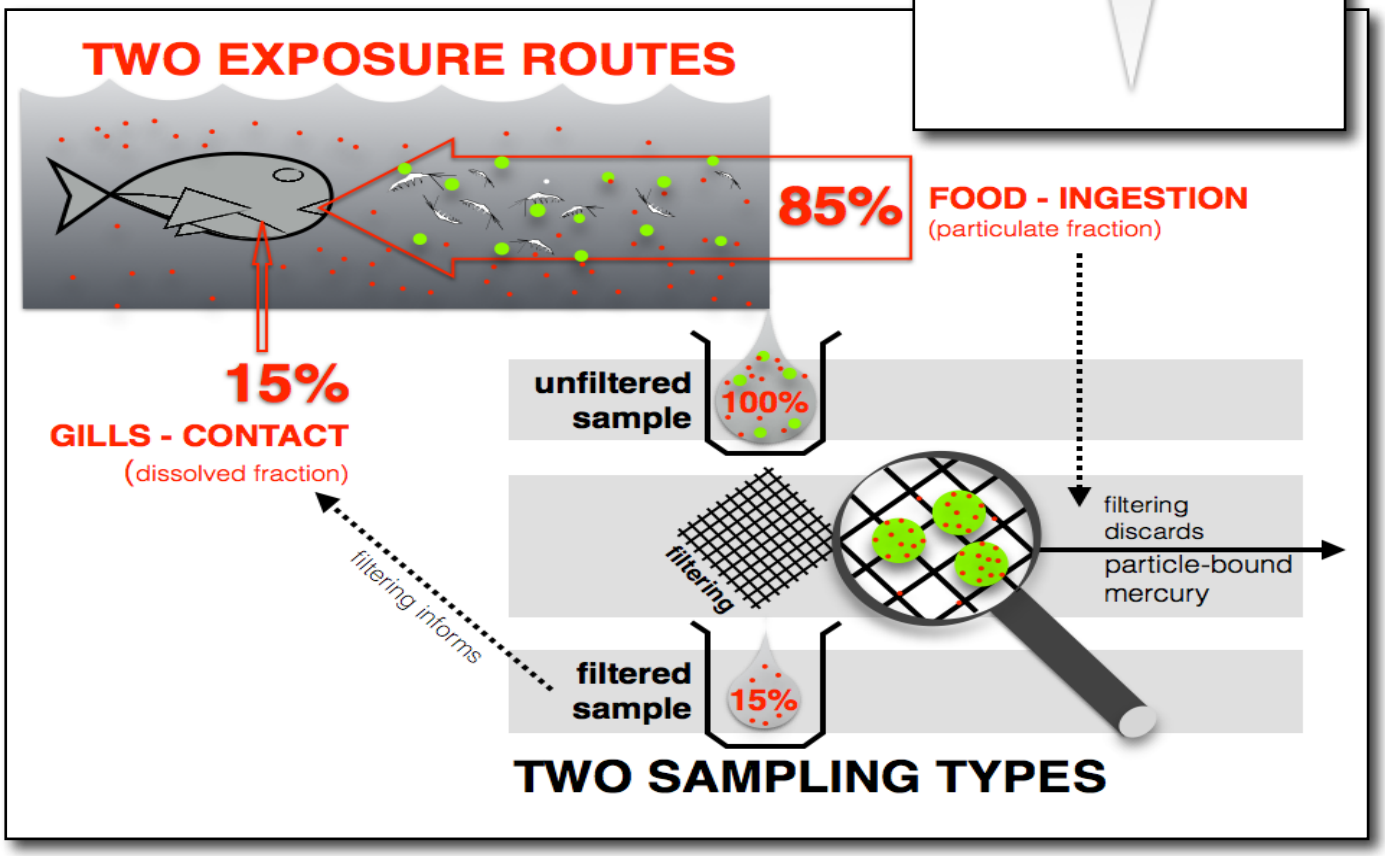
This is why, when the Ministry fish consumption advisory program notes pervasively dangerous body burdens in the fish of the region,[56] there is no room to contribute additional methylmercury concentrations without exacerbating the situation.

Reporting only "filtered" results for methylmercury may represent less than 15% of the exposure risk present, therefore underestimating those risks by 85%.[55]

This means that both water column contact for all biota, as well as the ingestion of particles by organisms at the bottom of the food web are both vectors of mercury exposure. Therefore, unfiltered methylmercury sample results present a particularly important perspective.

Unfiltered methylmercury samples observed in these data (of those reported) typically have concentrations that are 1-2 times higher than filtered samples, with ratios up to10x. Reporting only on filtered portions of the sampling therefore substantially underreports the relative methylmercury exposures faced.





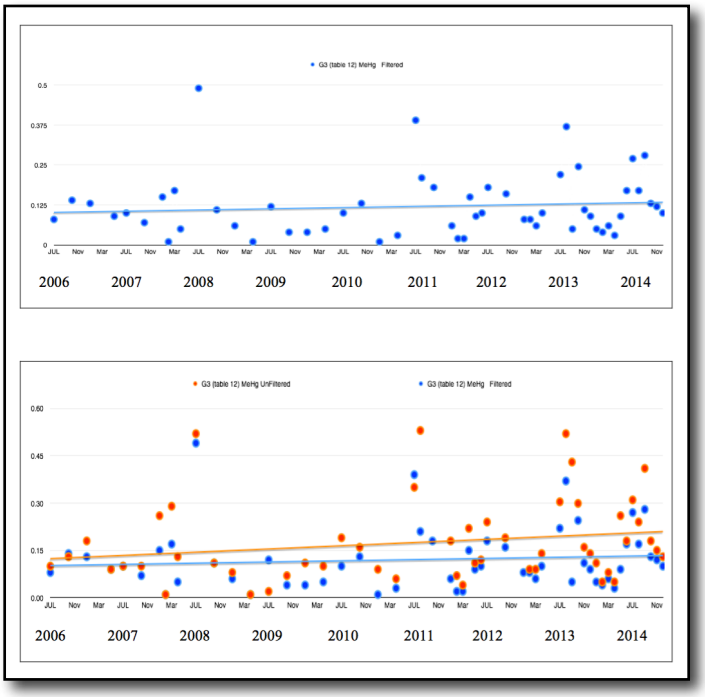
[Figure 11] *Simplified schematic highlighting the importance of unfiltered sampling in order to comprehensively monitor for full biological exposure of the food web to mercury.*

quality of analysis

A disappointing depth of conclusions

Our encounters with the critical omissions described so far have only been a part of the story. Missing metadata, poor and selective analysis, inconsistent and selective year to year reporting, and poor support for conclusions provided are all additional problems that we have regularly encountered. We have raised these in our various submissions to the Ministry.

Instead of detailing these more comprehensively in this report, we will illustrate with one relevant example of an important conclusion that has, in our opinion, failed the task of this monitoring program.



[Figure 12] *Top: Filtered MeHg results reported from G3, mid-stream location on NGC - suggest a slight increase over time (from Table 12, updated using 2014 Report results - signal essentially the same as 2013). Bottom: Adding unfiltered MeHg results from same station and period (orange). The signal is* ***stronger using the unfiltered results*** *- an important finding missing from the analysis of this creek.*

(one example)

Downplaying MeHg trends in creeks

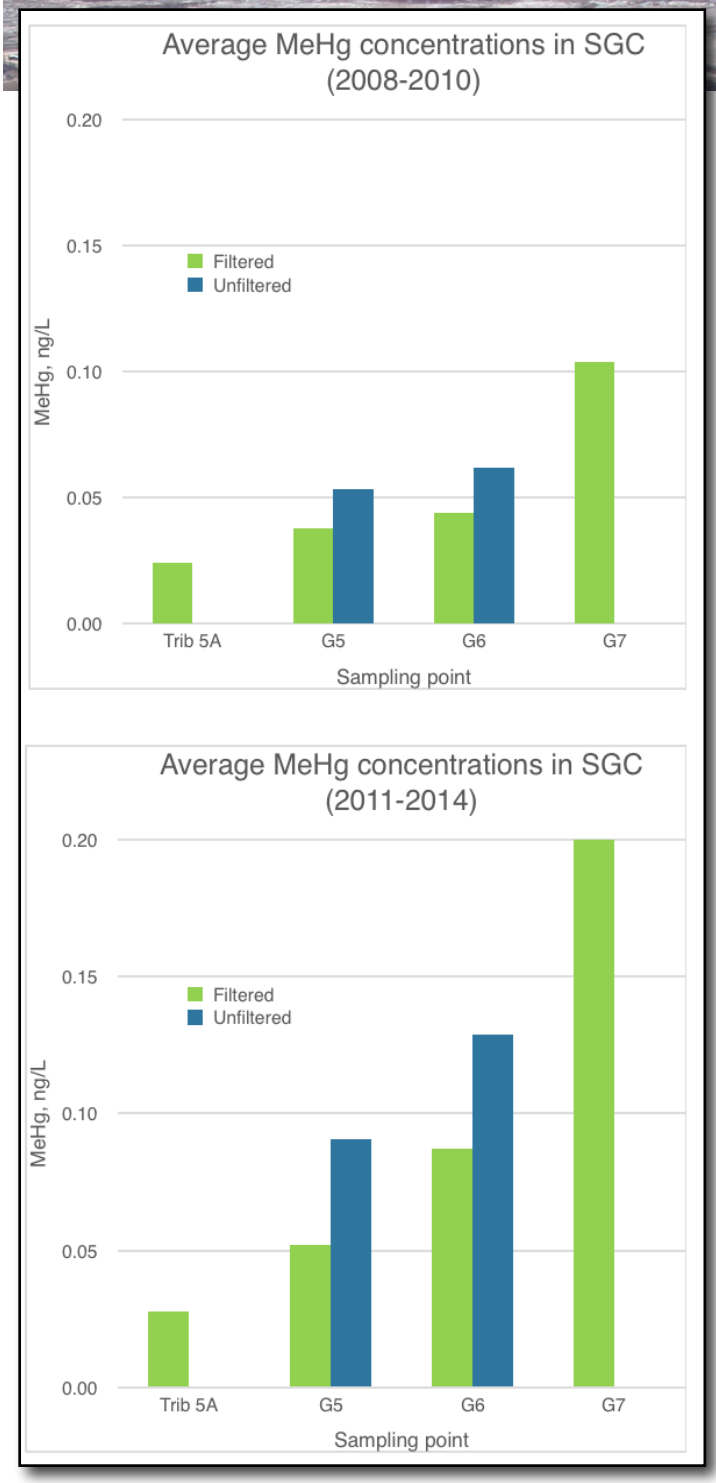
Take for example, the Company's 2013 conclusion that : *"while statistically significant differences in methyl mercury have been noted for North Granny Creek compared with South Granny Creek and Tributary 5A, there are no strong temporal trends to the data, as evidenced by Table 12 of the Mercury Performance Monitoring 2012 Annual Report."* [57]

To this, we note several inter-related concerns:

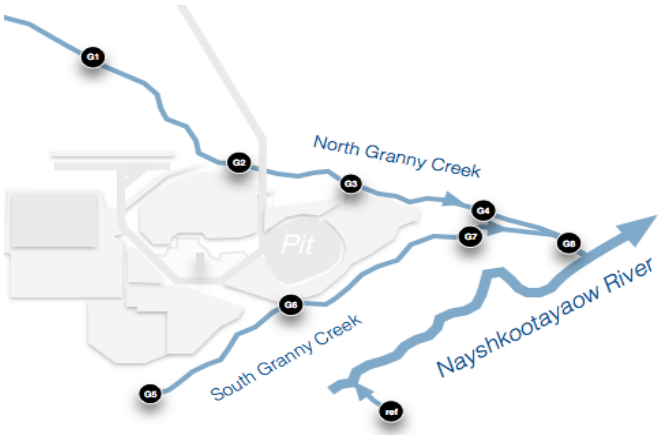
(1) Focuses on filtered data only
The referenced table reports only "filtered" MeHg. As previously discussed, this is not as biologically relevant as unfiltered MeHg to this particular food web. See **Figure 12** for graphical comparison of filtered and unfiltered results for station G3.

(2) Downplays presence of an increasing trend
By emphasizing only a low magnitude of change over time, this response downplays the fact that there IS a discernable signal, and that concentrations of this bio-accumulating nuerotoxin are increasing. Concluding further that these elevated values are still well below 4 ng/L further downplays these findings: *"While elevated methyl mercury concentrations are noted in downstream Granny Creek waters, these elevated values are still well below the CEQG value of 4 ng/L.",* [58] by apparently restricting the analysis to only direct exposure risks, and not the additional bioamplification risks these increases are likely to pose.

(3) Misrepresents "downstream" in creeks
We have a substantial concern with the way that the proponent has been framing upstream and downstream on the Granny Creek system. The table referenced here relies upon sampling points (G3 and G6) that are actually located only mid-way down the minesite on NGC and SGC respectively, and **not truly downstream**.
If the company had more appropriately included the G4 and G7 "downstream" sampling points from the Report (even with their limited filtered-only results, as reported),



[Figure 13] *Comparing SGC results reported for first 3 years of mine life (top), with those from last 4 years (bottom). We find it misleading that G6 is considered the "downstream" station, given the clear further increase of MeHg farther downstream at the G7 station. We note also the unfortunate gaps in the "unfiltered" reporting, and the absence of results for the G8 station farthest downstream.*



it would demonstrate an even stronger upstream to downstream trend for both creeks (see **Figure 13**).

More appropriately including a unfiltered MeHg across the whole site would demonstrate the true exposure of this particular food web to bioaccumulation risks from these mining activities, in keeping with the original monitoring design. But failure to report these results precludes this.

For example, the South Granny Creek downstream location G7 reported significantly higher (p=0.05) filtered methylmercury concentrations than G6 (mid-way along the creek), and this difference may be increasing with time [59] (see **Figure 13**, which summarizes SGC results for each of 2008-2010 and 2011-2014 for comparison). By comparison, the reference creek, Tributary 5A, has had consistently low filtered methylmercury concentrations from 2008 onwards, often below the detection limit of 0.02 ng/L.

(4) G8 reporting gap a missing early warning

Concluding that no adverse impacts have been observed to the Nayshkootayaow River, when the first downstream water quality station is kilometers downstream in a volumuous river, further emphasizes the G8 reporting gap. Not providing the key supporting evidence from the Granny Creeks downstream G8 monitoring station means that a key part of this monitoring is absent in the discussion. G8 provides an early indication of any pressures exerted on this river.

LATEST REPORT - MORE PROBLEMS


DE BEERS CANADA INC.
VICTOR MINE
MERCURY PERFORMANCE MONITORING
2014 ANNUAL REPORT
AS PER CONDITIONS 7(9) AND 7(6) OF
CERTIFICATE OF APPROVAL #3960-7Q4K2G
Submitted to:
Ministry of the Environment and Climate Change
Timmins District Office
Ontario Government Complex, Highway 101E
P.O. Bag 3080, South Porcupine, Ontario, P0N 1H0
Submitted by:
Amec Foster Wheeler & Infrastructure
a Division of Amec Foster Wheeler Americas Limited
160 Traders Blvd., E., Suite 110
Mississauga, Ontario, L4Z 3K7
June 2014
TC140504

The 2014 Mercury Performance Report

This latest Report [60] continues to perpetuate many of the same failures found in the previous years. We found this surprising given that both the Ministry and De Beers were alerted to the failures at east 6 months in advance of the 2014 reporting deadline to the Ministry. We were also surprised to detect even more problems, such as those listed below.

Provided 22 days into a 30 day consultation

The timing chosen for the Water-Taking Permit consultation in 2015 [61] was an unfortunate one, as this important 2014 Mercury Performance Report was to be submitted to the Ministry halfway through the consultation. Knowing that we were unlikely to receive this key document in a timely fashion through the Ministry default FOI process, we were pleased that the proponent responded to our request to provide this report.[62]

Despite this, we were disappointed (a) in the timing of this consultation relative to this known reporting cycle, (b) that as a historically interested party we had to request the documentation at all, and (c) that the Ministry failed to respond at all to our request for this material during the water taking permit consultation.

Perpetuates same failures identified previously

More than 6 months before this new report was submitted, we had alerted the Ministry to failures to meet the conditions of the dewatering permit. Several of these failures have unfortunately persisted in this latest 2014 Mercury Performance Report.

Contributes extensive new data discrepancies

On quick examination, we also note significant differences between filtered MeHg values reported in Table 36, 12, and 11 that include different values reported between tables for the same sampling months and location.

Table 36 compares the mid-stream North Granny Creek (location G3) and South Granny Creek (location G6) filtered methylmercury concentrations with those in Tributary 5A, the reference sampling location (beyond the influence of the mine). These data are important because they indicate whether the proponent's operations may have increased methylmercury concentrations in these creeks beyond normal seasonal variation.

Tables 11 and 12 compare upstream to mid-stream methylmercury in South Granny Creek and North Granny Creek, respectively.

The problems we encountered include:

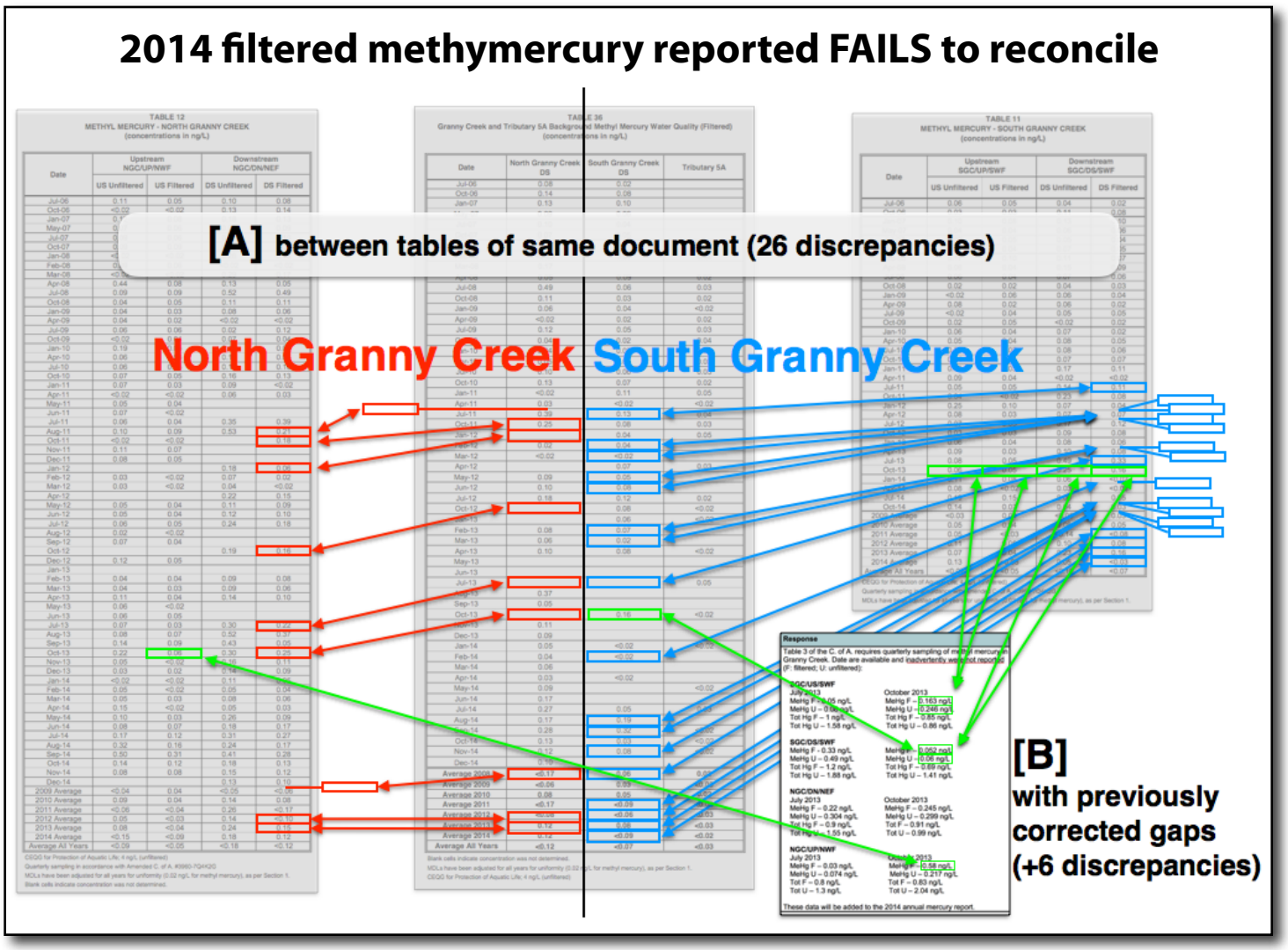
(1) Downstream labeling inconsistent / misleading

Careful cross-checking was initially required to ascertain which "downstream" location was in fact being illustrated on Table 36, as the sampling locations were labeled differently between tables. However, by comparing the table to the G3 and G6 data reported in Table 11 and 12, and also to the various tables reported in all annual reports for G4 and G7, it was determined that the proponent was apparently reporting here the G3 and G6 monitoring stations as "downstream".

We take exception to this representation, as G3 and G6 are only located mid-stream of the minesite, and there are 3 separate monitoring stations that are actually located farther downstream of the site (G4, G7, and G8), all of which have not been adequately reported per the reporting conditions of the dewatering discharge permit (see above for details).

(2) Serious discrepancies exist between separate reporting of the same monitoring point in time

Stations G3 and G6 are reported in two separate places in the report. While the reported data in Table 36 should be identical to the data presented in the rightmost columns in Tables 11 and 12, over 20 discrepancies were noted (see depiction [A] on **Figure 14).**



[Figure 14] *The monitoring results reported, both [A] between charts in the same 2014 Annual Mecury Monitoring Report document, and also[B]with remedial results DeBeers previously provided to our concerns, demonstrate extensive discrepancies. (Note: higher resolution image available on our website)*

For example, a significant number of data were missing in Table 36 for these monitoring stations, though reported in Tables 11 and 12, including some data recording particularly high MeHg levels (e.g. July 2013). These also affect calculated averages.

Additionally, and perhaps more concerning, there are **differences** in the values reported for the same locations and months between Tables (for example: July 2011 for SGC-G6, and October 2011 for NGC-G3). How can the reader know which value is correct?

(3) Doesn't reconcile with previous remedial results

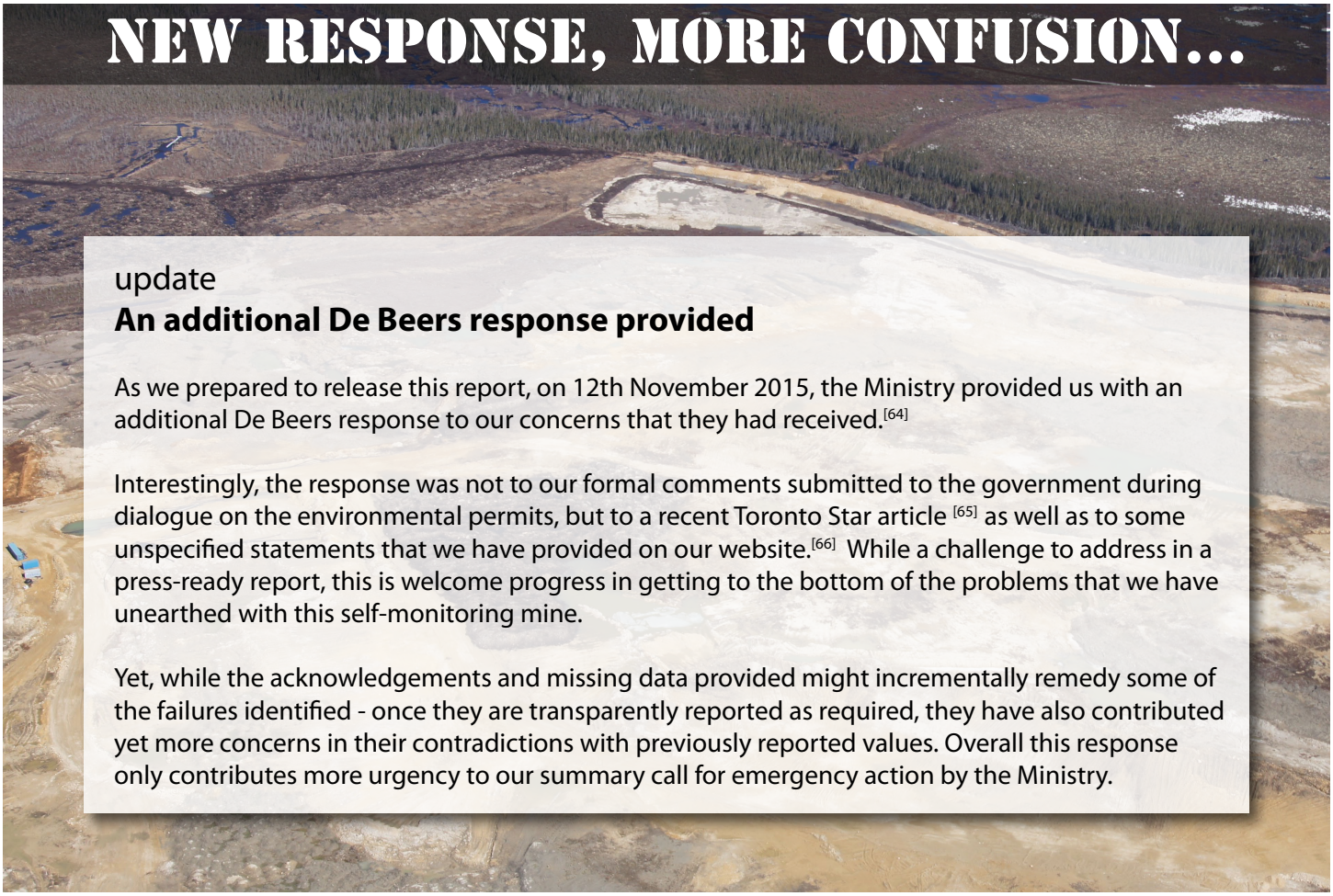
Incredibly, the discrepancies in the reporting on these creek monitoring stations do not end there. In partial response to concerns that we had raised about the 2013 Report over 6 months previously, De Beers had provided us with several key summer results for these creeks that were missed.[63] It shocked us to find that these remedial results were then reported differently in the 2014 Report. These results contributed another 6 discrepancies to our confidence in this latest reporting (see [B] on **Figure 13**).

This pattern of layered problems undermines the credibility of this self-monitoring

These many discrepancies significantly challenge the credibility of the reporting, particularly given: (a) the context of a history of concerns being raised to the company on this exact subject, and (b) with De Beers own acknowledgement of some of the previous failures.

They also cast any subsequently derived averages and other analyses provided in the Reports into question. For example: confounding assessments of whether there are significant trends in methylmercury concentrations in these locations over time - the precise purpose of this facet of the monitoring program.

NEW RESPONSE, MORE CONFUSION...



update

An additional De Beers response provided

As we prepared to release this report, on 12th November 2015, the Ministry provided us with an additional De Beers response to our concerns that they had received.[64]

Interestingly, the response was not to our formal comments submitted to the government during dialogue on the environmental permits, but to a recent Toronto Star article [65] as well as to some unspecified statements that we have provided on our website.[66] While a challenge to address in a press-ready report, this is welcome progress in getting to the bottom of the problems that we have unearthed with this self-monitoring mine.

Yet, while the acknowledgements and missing data provided might incrementally remedy some of the failures identified - once they are transparently reported as required, they have also contributed yet more concerns in their contradictions with previously reported values. Overall this response only contributes more urgency to our summary call for emergency action by the Ministry.

De Beers support of academic research

Wildlands League finds the support of Far North science researchers by De Beers to be a boon towards better understanding this complex ecosystem. The Victor facility offers a host complex unmatched in the region for such research, and by all accounts is famous for its hospitality. For this the company deserves commendation.

We are however, disturbed by the manner in which De Beers references this support when convenient. It is often referenced in their own monitoring program in Annual Reports - interesting, given the quote opposite about making decisions about what is "most meaningful" for inclusion in these reports. It is also raised in dialogue around the self-reporting failures that we have flagged, such as in this latest letter by the company.

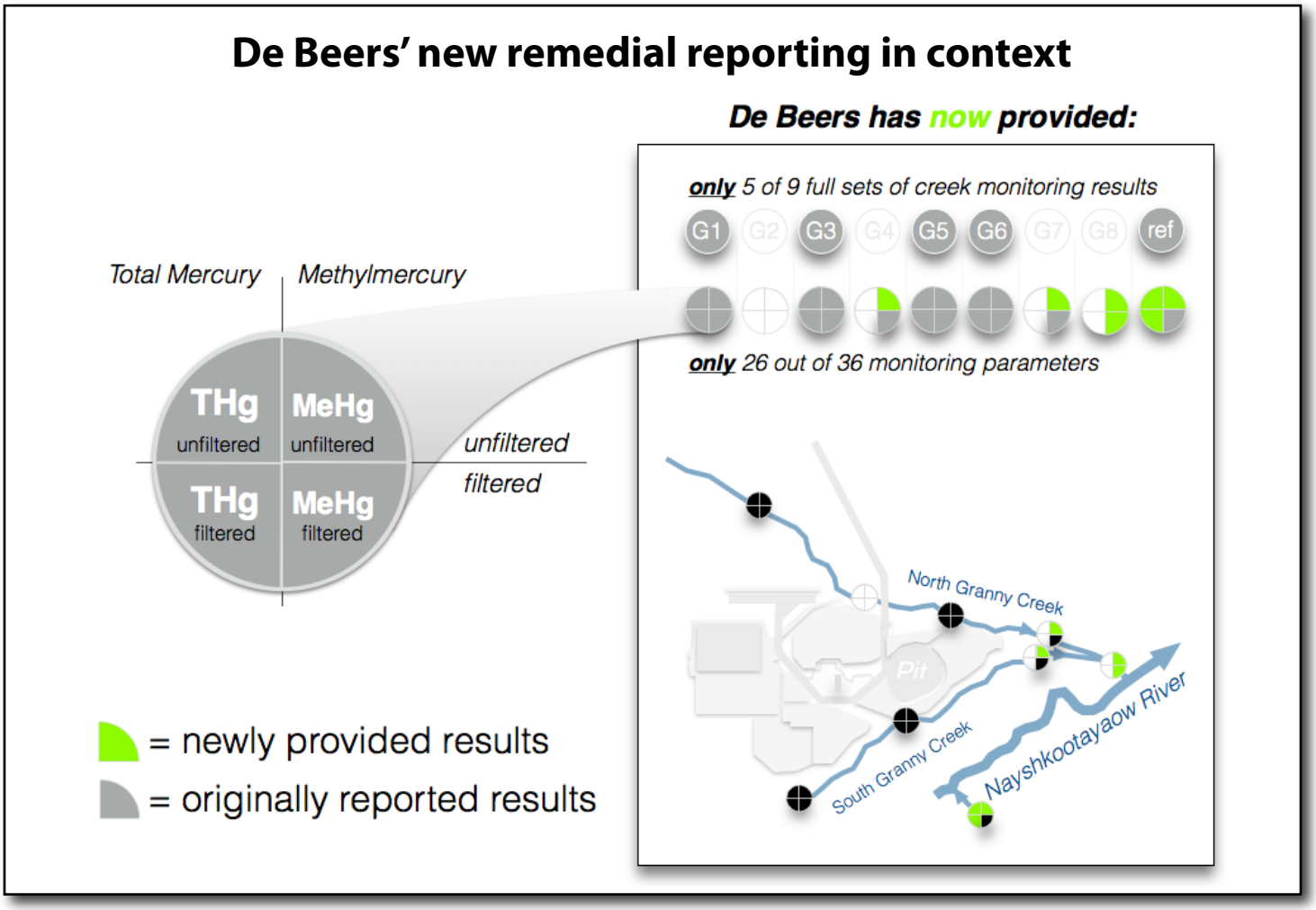
The scientific work by the experts listed during these exchanges is various and exciting, but this work cannot fill in the voids left by their own reporting failures and would be properly showcased elsewhere.

Further acknowledgement of missing reporting
In this letter written to the Ministry responding to our concerns, De Beers reversed its earlier position that it had fully met its reporting requirements, while further acknowledging the failures that we have been flagging:

"... they are correct that not all data has been reported in the annual mercury summary reports."

"Through an oversight, the G8 station mercury data does not appear to have been reported until now."

Providing more results provides more problems, failing again to reconcile with previous reports
Similar to the discrepancies we noted in the 2014 Annual Report, these newly provided results also contradict some of the data previously reported (we noted about 10 more discrepancies in the appended monitoring results, relative to previously reported values). Together, these findings contribute additional layers of concern that affect our ability to trust this program.



[Figure 15] *Indicating progress towards full reporting made by this latest increment of data provision provided by De Beers (to the extent that it represents reporting). Four of the nine required monitoring stations have still not been fully reported to the Ministry as required by the company's dewatering permit, despite all of the attention brought to the situation over the period of at least half a year.*

It is unclear from the letter if De Beers fully understands the identified compliance gaps

"In preparing the extensive annual reports on these monitoring programs, decisions must necessarily be made as to which data are most meaningful to summarize, analyse and discuss." This apparent editorial license - to choose which of their reporting requirements to report - contradicts the explicit requirements of their operating permit.

This is underlined by the remedial provision of **more** of the missing results required, but still **not all**, attached to the letter (see **Figure 15**).

We are of course pleased to hear assurances that future reports will include these results going forward, but remain concerned about the remaining unacknowledged gaps (even focused simply on our case study of the 9 creek monitoring stations):

"For completeness, De Beers will revise future annual mercury summary reports to include data from station G2"

"A new Table 37 has been compiled and will be updated in future annual mercury reports. This provides data from the Tributary 5A reference site for all forms of mercury monitored"

This correspondence further underlines the failures of this self-monitoring program to meet its obligations, as well as the reliance placed upon it by the regulator. On balance it does little to diminish our concerns. Instead, it adds another layer of selective reporting and problematic representation of these creek case-study results.

OUR CONCLUSION - ACTION NEEDED

CONCLUSIONS

This investigation has proven to us that critical problems exist in this case of industry self-monitoring. While De Beers reporting failures have shocked us, Ministry oversight and cooperation with interested parties have also demonstrated systemic problems.

(1) De Beers Reporting Failures

Missing reporting is extensive and persistent - weak conclusions, piecemeal and contradictory corrections substantially diminish credibility

We have shared our findings of substantial reporting failures to both De Beers and the Ministry. The company has selectively acknowledged and fixed several of them. But many still remain unresolved, with the most recent monitoring report perpetuating them, and introducing **further** reporting discrepancies. The latest correspondence to the Ministry fills in a few more of the gaps, but also piles **more** discrepancies to the collective set of data reported, despite the significant attention brought to these monitoring results over the past year. Two patterns are apparent: (a) a persistent failure to report on **all** of the required monitoring, and (b) ever-compounding irregularities across missing results as they are incrementally reported.

These errors have been found in the context of a low overall quality of annual mercury reporting. In these reports we have found only a murky picture, marred by selective reporting and analysis, errors and inconsistencies in results provided, and weak conclusions. In our opinion, these reports have not only failed to meet the obligations of the company's permit, but also the intrinsic standards of quality assurance, transparency, and responsiveness necessary for credible self-monitoring.

(2) Lack of Transparency

There are barriers to transparency of reporting and access to information

Though Wildlands League has been an involved and interested party to this project for over a decade (since before its environmental permitting began), the materials that we have examined have only been obtained through a dogged effort of multiple and various appeals for release from the Ministry and De Beers.

In a circular finger-pointing exercise, the company has alternatively declined to provide materials, referred our requests to the Ministry, and on other occasions (for example, 2 of the 7 available Mercury Performance Reports), provided them.

But these reports are all required as conditions of their operating permits, which are subject to public consultation from time to time. Lack of access to such performance information (a) diminishes Ontarians' rights to engagement, and (b) sacrifices a more robust depth of dialogue to the process.

For its part, the Ministry has alternatively referred us back to the company for the release of the materials, or required that we submit Freedom of Information (FOI) requests to them: ***"if you are unable to obtain the documents sought directly from De Beers, you should submit a request to the ministry under FIPPA."***[67]

It is our position that:

Any performance documentation required by an EBR-responsible Ministry as a condition of an instrument, must be recognized as belonging to the public domain and made readily available to any interested party.

We would welcome Ministry initiative to remedy to these barriers. Linking documents to EBR Registry postings seems a start - we find it surprising that even approved permits are not consistently linked to decision notices on the registry (the most recent Victor water-taking permit decision is another example of this).

(3) Opaque Mercury Assessment

Risk assessment of mercury remains shrouded in secrecy for reasons unknown

Beginning with the federal EA, the potential indirect effects of mining activities on mercury was provided no substantive assessment. The Ministry then appears to have had further dialogue with De Beers, whose consultants produced the downstream MeHg predictions discussed earlier. Limited discussion is presented in the annual Mercury Performance Reports - but these have suffered the reporting limits previously outlined, and the public access barriers that we have also described. We are not aware of any reasonable and transparent risk assessment of the indirect mercury effects at hand.

For example, sulphate loading from the minesite reportedly increased MeHg in the nearby wetlands and creeks, and was attributed in part to stockpile sources. While these effects have been known since 2006 site dewatering impacts associated with construction,[68] there are millions of litres per day of groundwater being expelled to the Attawapiskat River, at ever-increasing concentrations of sulphate. To date we have not been able to locate any risk assessment of these effects upon the River system, where sulphate might predictably reach the sediment gathered in slow-water reaches, eddies and wetland areas - those same areas where methylation risks would be highest.

(4) Poor Ministry Oversight

The Ministry struggles to properly oversee this monitoring program - missing compliance failures, and failing public transparency and quality service

On the available evidence, the ability of the Ministry to adequately oversee De Beers' environmental permits seems questionable to us. Follow-up with Ministry staff in the period since this proposal was first posted in 2013 has demonstrated that Ministry reviewers (a) appear to be provided with inadequate time to undertake timely and comprehensive review of these significant reporting documents, and (b) are missing significant findings such as those identified by Wildlands in 2013 and 2014. Materials that we have obtained by FOI requests indicate that Ministry reviews of previous Annual Mercury Performance Reports do not flag the substantive and persistent issues that we have brought to the Ministry's attention. Nor did staff appear to have adequate time to review our concerns, follow-up or respond.

If the Ministry deems conditions worth including in an authorization, then we expect that it would demonstrate a strong interest in their performance, commit sufficient resources to necessary review, and engage interested parties to ensure that concerns around these are effectively and expediently resolved.The quality of service relating to the responsiveness to, and engagement of interested parties in this environmental decision-making per Ontario's Environmental Bill of Rights is deficient in our opinion. This may also be associated with Ministry capacity to adequately administer and oversee these permits.

To date we are not aware of any enforcement action that has been taken by the Ministry with respect to any of these documented failures of De Beers to meet the conditions of its dewatering permit.

If the Ministry is struggling to oversee this one project, what can the public expect if expansion plans, Ring of Fire, and other development interests in this region all begin to require authorizations? The Ministry needs to consider this project carefully from this perspective, and quickly learn any lessons before such additional pressures are brought to bear.

Our Summary Conclusion

Self-monitoring by De Beers at the Victor Mine has failed its requirements

It remains clear to us that this is a case where self-monitoring has not served Ontario well, as evidenced by the failure to produce annual mercury reports that meet the conditions of the permit since 2008, the inordinate lack of transparency around these monitoring results and related documentation, and the inconsistent responses of De Beers to the concerns that we have raised.

Our concerns above describe persistent project-scale failures within the systemic context of inadequate Ministry oversight. In our opinion, a series of strong corrective actions at both scales is required to address the gaps that we have observed here - from this self-monitoring, but also those contributed by the current permitting system that is supposed to be overseeing it. The public needs assurances the Victor Mine and future projects are properly assessed and monitored, and the government will provide proper oversight. Our investigation shows that we don't have them.

ACTION NEEDED

To restore the integrity and credibility of this permitting regime, the province must now take emergency actions:

(1) Stop Relying on this Self-Monitoring

Independent monitoring and reporting needs to be established

We recommend that the Ministry require a complete hand-over of monitoring and reporting to an independent party. The current arrangement is clearly not working, and enough evidence of potential problems in the environment exist to emphasize the need to implement the monitoring program responsibly.

(2) Recovery of Monitoring Data

Require immediate full and transparent provision of all available monitoring data

Monitoring and reporting need to be comprehensively and transparently available to all parties. We recommend that the Ministry immediately require full and transparent provision of all monitoring data in spreadsheet form to ensure (a) that this monitoring has in fact occurred, and (b) that this required reporting has been comprehensively met, remedying the significant reporting failures identified to date. Once these remedial actions have been met, then an annual reporting program can be used to consistently and transparently populate it.

(3) Review Monitoring Program

Revisit monitoring design - additional monitoring intensity for Granny Creeks

The facts above also point to a need for an enhanced monitoring of the receiving waters closest to the mine. These proximate creeks are (a) the most sensitive receivers, (b) a sentinel for potential impacts to the Nayshkootayouw, (c) experiencing site loadings that are enhancing methylation conditions, and (d) they are seeing MeHg levels that are increasing mercury body burdens in local minnows. Together these facts point to more careful scrutiny, and not waiting for effects to be realized in the much larger-volume receiving rivers.

(4) Remove Barriers to Information

Ensure public access to required performance monitoring

We recommend that, for this subject project specifically, and also more generally wherever Ministry permits are issued with conditional performance monitoring and reporting, that:

(a) Such monitoring and reporting be intrinsically understood as belonging to the public domain,

(b) The Ministry transitionally use their discretion to release any such information provided to the Ministry, to any interested parties upon request, without relying on the FOI process, and

(c) The Ministry expediently review this current practice, and develop clear protocols to make routine such information rights and transfers, per the previous Privacy Commissioner recommendations,[69] and the current government policy priority of "Open Government." [70]

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[58] AMEC (2009-2015). **The Company demonstrating a long chain of reliance on CCME 2003 Guideline**, through 7 Annual report cycles in the annual Mercury Performance Reports for 2008-2014 reporting years. Found extensively throughout all reports. *[posted-wildlandsleague.org]*

[59] *The significance of the difference between concentrations in G7 and G6 was determined using a Wilcoxon rank- sum approach (a nonparametric statistical test), averaging data collected from 2008-2010 at both locations, and again with data averaged over 2011-2014.*

[60] AMEC (2015). De Beers Canada Inc. Victor Mine, **Mercury Performance Monitoring 2014 Annual Report**, as per Conditions 7(5) and 7(6) of Certifiifcate of Approval #3960-7Q4K2G. *[posted-wildlandsleague.org]*

[61] The Ministry (June 12 2015). **Victor Mine - proposal to combine two existing Permits To Take Water Victor Diamond Mine and to modify some of the existing conditions.** (Victor Open Pit Well Field PTTW No. 5521-8CZSNK and Pit Perimeter Well Field PTTW No. 2824-8D2HVW issued by the Ministry to De Beers Canada Inc.). Environmental Bill of Rights Registry #011- 9596.

[62] De Beers (July 3 2015). **De Beers provided Wildlands League with 2014 Mercury Performance Annual Report**. Email correspondence: Stephen Monninger to Trevor Hesselink, Wildlands League. *[posted-wildlandsleague.org]*

[63] De Beers (April 2 2015) **De Beers acknowledges and provides missing summer creek reporting for 2013**. Correspondence to Ministry. *[posted-wildlandsleague.org]*

[64] De Beers (Nov 3 2015). **De Beers response to a Toronto Star article that Wildlands League concerns were repeated in**, as well as unspecified materials on our website. Correspondence to Ministry. Provided to Wildlands League by Ministry on 12th November 2015. *[posted-wildlandsleague.org]*

[65] Talaga, T. (Oct 10 2015) Toronto Star article: **Cree Community Looks on Warily as De Beers Eyes New Diamond Mine**. *http://www.thestar.com/news/insight/2015/10/10/cree-community-looks-on-warily-as-de- beers-eyes-new-diamond-mine.html*

[66] wildlandsleague.org

[67] Ministry (June 24 2014). ***"If you are unable to obtain the documents sought directly from De Beers, you should submit a request to the ministry under FIPPA."*** Email correspondence: Permit to Take Water Coordinator to Trevor Hesselink, Wildlands League. *[posted-wildlandsleague.org]*

[68] AMEC (2014). **Sulphate loading effects have been known since 2006 site dewatering impacts associated with construction**. De Beers Canada Inc. Victor Mine, Mercury Performance Monitoring 2013 Annual Report, as per Conditions 7(5) and 7(6) of Certificate of Approval #3960-7Q4K2G. Page 8. *[posted-wildlandsleague.org]*

[69] Privacy Commissioner of Ontaro (2010). **"Access by Design" Privacy Commissioner recommendations.** 2009 Annual Report.

[70] Ontario Government (2013). **Ontario's Open Government Initiative is about creating a more open and transparent government for the people of Ontario**. It is the ongoing initiative that responds to the government promise for Open Government.