



Mark Cliffe-Phillips
Executive Director
Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre – 5102 – 50th Ave
YELLOWKNIFE, NT X1A 2N7

MAR 22 2017

Dear Mr. Cliffe-Phillips:

**RE: EA1415-01 CanZinc Prairie Creek All-Season Access Road Technical Report
Supplement from Fisheries and Oceans Canada**

The Canadian Northern Economic Development Agency's Northern Projects Management Office is pleased to provide the attached technical report supplement (TRS) from Fisheries and Oceans Canada (DFO) for the above noted environmental assessment (EA). The TRS is based on the March 9, 2017 memorandum from Hatfield Consultants to the Canadian Zinc Corporation on the topic of impacts to aquatic habitats in relation to the proposed Prairie Creek All-Season Road.

Sincerely,

Matthew Spence
Director General
Northern Projects Management Office
Canadian Northern Economic Development Agency

Attachment (1): 1. DFO's TRS



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Central and Arctic Region
520 Exmouth Street
Sarnia, Ontario
N7T 8B1

Région du centre et de l'arctique
520 rue Exmouth
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Your file *Votre référence*
EA1415-01

Our file *Notre référence*
15-HCAA-01626

Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
Box 938, 5102-50th Ave.
Yellowknife, NT X1A 2N7
Attention: Marc Cliffe-Phillips, Executive Director

Email: mcliffephillips@reviewboard.ca

Subject: Fisheries and Oceans Canada's Technical Report Supplement - EA1451-01

The Fisheries Protection Program (FPP) of Fisheries and Oceans Canada (DFO) has conducted a supplemental technical review of "Hatfield Consultants; Prairie Creek Mine, all season road habitat loss and offset memo, dated March 9, 2017 (HCP Ref. No. CZN7932)" submitted by Canadian Zinc Corporation to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) on March 9, 2017.

DFO-FPP's attached comments are based on our departmental mandate under the *Fisheries Act*, specifically the management and protection of fish and their habitat.

DFO-FPP will be attending the Public Hearing scheduled in Fort Simpson April 26-28, 2017, and will be available to answer questions regarding our technical reports at this time.

Thank you for the opportunity to comment to allow the process to move to the public hearing phase. If there are questions regarding DFO-FPP's intervention report, please contact Jessica Taylor by mail at Jessica.Taylor@dfo-mpo.gc.ca or by phone at 867-669-4926.

Sincerely,

Dale Nicholson
A/Regional Director General
Central & Arctic Region
Fisheries and Oceans Canada

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Fisheries and Oceans
Canada

Pêches et Océans
Canada



FISHERIES AND OCEANS CANADA

Technical Report Supplement

EA1415-01

Prairie Creek All Season Road
Canadian Zinc

Submitted to:

Mackenzie Valley Environmental Impact Review Board (MVEIRB)

March 22, 2017

DFO-FPP File No.: 15-HCAA-01626

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Executive Summary

Fisheries and Oceans Canada (DFO) has reviewed “Hatfield Consultants; Prairie Creek Mine, all season road habitat loss and offset memo, dated March 9, 2017 (HCP Ref. No. CZN7932)”, pursuant to the *Fisheries Act*. DFO’s Fisheries Protection Program (FPP or the Program) will determine what aspects of the Project could impact fish and fish habitat and work with the Proponent to avoid, mitigate and offset impacts.

DFO’s comments are based on our departmental mandate under the *Fisheries Act*, specifically the management and protection of fish, marine mammals and their habitat. DFO’s primary focus in reviewing proposed developments in and around fisheries waters is to ensure that works, undertakings and activities are conducted in such a way that the proponents are in compliance with the applicable provisions of the *Fisheries Act*.

The fisheries protection provisions of the *Fisheries Act (2013)*, specifically subsection 35(1), state that “No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery or to fish that support such a fishery.” However, under paragraph 35(2)(b) of the *Fisheries Act*, the Minister of Fisheries, Oceans and the Canadian Coast Guard may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in *serious harm to fish*.

DFO-FPP is providing the following technical report supplement to the Mackenzie Valley Environmental Impact Review Board (MVEIRB). The technical review comments in this submission are categorized under the following general topics:

- Side channel between KP 37.55 and 37.77;
- Littoral habitat;
- Summary of losses, alterations, and gains;
- Offsetting options;
- Habitat delineation for water crossings;
- Partial dewatering; and
- Improvements to existing road between KP 0 and 17

1.0 Introduction

The technical report supplement summarizes Fisheries and Oceans Canada, Fisheries Protection Program (DFO-FPP or the Program) assessment and recommendations concerning “Hatfield Consultants; Prairie Creek Mine, all season road habitat loss and offset memo, dated March 9, 2017 (HCP Ref. No. CZN7932)”. The purpose of this report is to provide expert advice based on DFO-FPP’s mandate to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) to assist in their assessment of potential environmental impacts associated with this proposed project.

As directed by MVEIRB, in a Notice of Proceeding dated March 14, 2017, this submission focuses on detailed analysis of “Hatfield Consultants; Prairie Creek Mine, all season road habitat loss and offset memo, dated March 9, 2017 (HCP Ref. No. CZN7932)”, with the objective of assessing the quality of the supplemental and/or revised information presented by the Developer in support of the Project proposal, and reflects DFO’s mandate.

2.0 Mandate, Relevant Legislation and Policy

The *Constitution Act* (1982) provides the federal government with exclusive authority for coastal and inland fisheries within Canada’s territorial boundaries. DFO’s guiding legislation includes the *Oceans Act*, which charges the Minister with leading oceans management and providing coast guard and hydrographic services on behalf of the Government of Canada. DFO also exercises power through the administration of the *Fisheries Act* and some aspects of the *Species at Risk Act*.

Under the *Fisheries Act*, DFO is responsible for the management, protection and conservation of fish (which include marine mammals as defined by the *Fisheries Act*) and their habitats. The Minister of Fisheries, Oceans and the Canadian Coast Guard is one of the competent ministers under the *Species at Risk Act*.

In general, the Fisheries Protection Program of DFO undertakes the review of proposed developments in and around fisheries waters to ensure that works, undertakings and activities are conducted in such a way that the proponents are in compliance with the applicable provisions of the *Fisheries Act*.

The mandate of the Fisheries Protection Program is to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. Subsection 35 (1) of the fisheries protection provisions of the *Fisheries Act* states that “No person shall carry on any work, undertaking or activity that results in *serious harm to fish* that are part of a commercial, recreational, or Aboriginal fishery or to fish that support such a fishery”.

Fisheries and Oceans Canada interprets *serious harm to fish* as:

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- the **death of fish**;
 - a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
 - the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of these life processes.

However, under paragraph 35(2)(b) of the *Fisheries Act*, the Minister of Fisheries, Oceans and the Canadian Coast Guard may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in *serious harm to fish*, subject to the consideration of the four factors in Section 6 of the *Fisheries Act*:

1. The contribution of the relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries;
2. Fisheries management objectives;
3. Whether there are measures and standards to avoid, mitigate or offset *serious harm to fish* that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery; and
4. The public interest.

The Fisheries Protection Program is guided by the “Fisheries Protection Policy Statement (2013),” the intent of which is to provide guidance to Canadians to ensure that they are complying with the *Fisheries Act*. It strengthens the Government’s ability to address key threats to the productivity and sustainability of our fisheries, through standards and guidelines to avoid, mitigate and offset impacts to fisheries and to ensure compliance with these requirements.

The “Fisheries Productivity Investment Policy: A Proponent’s Guide to Offsetting (2013)” provides guidance on undertaking effective measures to offset *serious harm to fish* that are part of or that support a commercial, recreational or Aboriginal fishery, consistent with the fisheries protection provisions of the *Fisheries Act*. The objective of offsetting is to counterbalance unavoidable *serious harm to fish* and the loss of fisheries productivity resulting from a project. For more information, see: <http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>

The *Species at Risk Act* is intended to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from being extirpated or becoming extinct; to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity; and to manage species of special concern to prevent them from becoming endangered or threatened. The Minister of Fisheries, Oceans and the Canadian Coast Guard is the competent minister for listed aquatic species that are fish (as defined in section 2 of the *Fisheries Act*) or marine plants (as defined in section 47 of the *Fisheries Act*).

Environment and Climate Change Canada (ECCC) is responsible for the administration and enforcement of the pollution prevention provisions of the *Fisheries Act* on behalf of DFO (section 34 and sections (36-42)).

3.0 Supplemental Technical Review Comments

3.1 Side channel between KP 37.55 and 37.77

Subject / Topic	Side channel between KP 37.55 and 37.77
Issue	"Habitat mitigated"
Developer's Conclusion	<p>Under the heading "habitat mitigated", the Developer states, "the road prism will cover a side channel at km 37.5, known to provide habitat to Arctic grayling (<i>Thymallus arcticus</i>) and slimy sculpin (<i>Cottus cognatus</i>). As mitigation, this side channel will be re-created adjacent to the road and outside of the road prism".¹</p> <p>In Table A1.2, the Developer writes "a portion of the road prism within the 1:2 year return will cover a low gradient normally wetted secondary channel. Fish were found in this secondary channel in July 2014, it is likely important for rearing, possibly important for spawning. Uncommon habitat. Planned mitigation here (by recreating channel further from shore)".¹</p>
Fisheries and Oceans Canada's Conclusion	<p>Conclusion and Rationale: It is expected and intended that fish will no longer access habitat in the side channel due to the alignment of the road. A similar principle is discussed in Fisheries and Ocean Canada's Technical Report² regarding the Sundog Creek main channel. As per the technical report², since this habitat will no longer be available, by definition, <i>serious harm to fish</i> may result.</p> <p>In the absence of detailed information, it is unclear at this time what the full suite of measures is that CZN intends to implement to avoid, mitigate or offset <i>serious harm to fish</i> as defined in the <i>Fisheries Act</i> as a result of activities, undertakings, or works proposed for the Sundog Creek realignment. During the regulatory phase, DFO-FPP will determine the extent of <i>serious harm to fish</i> that may result from the project.</p>

¹ Public Registry #426: Hatfield Consultants; Prairie Creek Mine, all season road habitat loss and offset memo, dated March 9, 2017 (HCP Ref. No. CZN7932)

² Public Registry #449: Fisheries and Oceans Canada's Final Submission/Technical Report, March 10, 2017

Fisheries and Oceans Canada's Recommendations	<p>3.1.1 Recommendation: DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization for their Project.</p> <p>Impact if not implemented: If appropriate avoidance and mitigation measures are not implemented during design, construction, maintenance and closure of the Project, <i>serious harm to fish</i> may result.</p>
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3.2 Littoral habitat

Subject / Topic	Littoral habitat
Issue	Impacts to littoral habitat
Developer's Conclusion	<p>A.) The following information regarding water withdrawal requirements for dust suppression is provided in a letter addressed to MVEIRB³:</p> <p>1% for Mosquito and Km 70 lakes 2% for Km 139 and Km 141 lakes 5% for Km 115 and Km 121 lakes</p> <p>B.) In a November 19, 2012 memo, the Developer describes a requirement for winter water withdrawal for "road construction and maintenance seasonally".⁴ In this document, the Developer references DFO's <i>Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut</i> (2010).</p> <p>C.) In the March 9, 2017 memo, the proponent stipulates that "Lakes used for water withdrawal during the summer months will experience a small drop in water level, and the littoral zone may be temporarily reduced incrementally. The littoral zone is the most productive zone of lakes and therefore loss of this habitat can have an effect on the ecological functioning of lakes."</p> <p>D.) In Table A1.9 of the March 9, 2017 memo, the Developer has</p>

³ Public Registry #282: Canadian Zinc Corporation's letter to the Mackenzie Valley Environmental Impact Review Board dated August 11, 2016 regarding Environmental Assessment EA1415-001, Prairie Creek Mine All-Season Road, undertakings from technical session

⁴ Public Registry #156: Hatfield Consultants; Prairie Creek Mine – Bathymetry of lakes possibly suitable for winter water withdrawal memo, November 19, 2012 (HCP Ref No: CZN1856)

	<p>placed anticipated littoral habitat losses in the category "Other", which is defined as "temporary loss or loss of riparian vegetation having little value to adjacent aquatic habitat. Therefore we feel that this category of loss does not need to be offset".¹</p>
<p>Fisheries and Oceans Canada's Conclusion</p>	<p>Conclusion and Rationale: The proponent has highlighted that they will not directly offset potential losses associated with the littoral zone, since the effect are temporary and may only affect a small portion of the existing littoral zone. It is unclear to DFO-FPP at this time, in the absence of detailed information on cumulative water withdrawal information, species presence, and littoral habitat characteristic, what the full suite of measures is that the Developer intends to implement to avoid, mitigate or offset <i>serious harm to fish</i> as defined in the Fisheries Act as a result of water withdrawal activities.</p> <p>It is unclear to DFO-FPP if water withdrawal will occur only during the summer and only for dust control management.</p> <p>It is also unclear for DFO-FPP what the proponent defines as temporary. For example, DFO defines a permanent alteration to fish habitat as: "a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes" (Fisheries Protection Policy Statement, October 2013). Therefore, since the littoral impacts are to occur throughout the project (i.e. construction, operation, maintenance and decommissioning) DFO-FPP considers the littoral impacts as permanent and not temporary.</p>
<p>Fisheries and Oceans Canada's Recommendations</p>	<p>3.2.1 Recommendation: DFO-FPP recommends that the Developer confirm that the water withdrawal calculations in Table A1.7 "Littoral habitat lost as a result of water withdrawal"¹ reflect the rates proposed (1% at Mosquito and Km 70 lakes; 2% at Km 139 and 141 lakes; and 5% at Km 115 and 121 lakes) in the letter to MVEIRB submitted on August 11, 2016³.</p> <p>3.2.2 Recommendation: DFO-FPP recommends that the Developer clarify if water withdrawal, including winter withdrawal, is proposed to occur throughout the construction, operation, maintenance and decommissioning of the road. If so, DFO-FPP requests that the Developer quantify cumulative anticipated water withdrawal and</p>

	<p>littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that lake discharge and recharge rates may vary from year to year.</p> <p>3.2.3 Recommendation: DFO-FPP recommends that the Developer install water level gauges at Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121, and any other lake to be withdrawn from in order to monitor baseline conditions, and discharge and recharge rates.</p> <p>3.2.4 Recommendation: DFO-FPP recommends that the Developer provide information on littoral habitat (e.g. suitable nursery, rearing, spawning, foraging habitat) for any fish species that might use the area at any point during their life cycle. This information is to be provided for Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121. DFO-FPP also recommends that the Developer provides information on the risk of the formation of barriers to fish passage between lakes, if applicable. This information may be provided during the regulatory phase.</p> <p>3.2.5 Recommendation: DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization for the Project.</p> <p>Impact if not implemented: Providing this information will aid in Fisheries and Oceans Canada's determination of <i>serious harm to fish</i>. If appropriate avoidance and mitigation measures are not implemented for water withdrawal, <i>serious harm to fish</i> may result.</p>
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3.3 Summary of losses, alterations, and gains

Subject / Topic	Summary of losses, alterations, and gains ¹
Issue	Water crossings
Developer's Conclusion	The Developer provided a summary table of losses, alterations, and gains (Table A1.9). The table provides calculations associated with losses on fish habitat, riparian vegetation and littoral habitat loss; Sundog diversion channel and gains from the creation of a deep pool downstream of the Sundog Creek diversion and the creation of a new channel as a result of the diversion. ¹ In this table the proponent

	<p>provides information on what they think should be offset or not.</p> <p>The Developer provided a water crossings table (Table A1.1) which includes information on crossings that are over fish-bearing watercourses that are expected to cause <i>serious harm</i> to fish. The Developer has incorporated crossing #39 under the heading “habitat loss” and crossings #44, 49, 53, and the Liard River Crossing (#124) under the heading “habitat modification”.¹</p>
Fisheries and Oceans Canada’s Conclusion	<p>Conclusion and Rationale: DFO-FPP notes that the Developer only provided crossing #39 in the summary table, and that the Developer did not include crossings #44, 49 and 53 and the Liard River Crossing (#124). Water crossings have the potential to cause <i>serious harm</i> via the alteration of substrate, by limiting or blocking fish passage or by making habitat unusable to fish. Additional information on losses, alteration and gains from the project will be required from the Developer.¹</p>
Fisheries and Oceans Canada’s Recommendations	<p>3.3.1 Recommendation: DFO-FPP recommends that the Developer include in Table A1.9 all impacts to fish and fish habitat that may cause <i>serious harm to fish</i>, including but not limited to water crossings.</p> <p>Impact if not implemented: If project components are omitted in Table A1.9, reviewers may misinterpret the calculations that the Developer has provided on the quantification of impacts to fish and fish habitat that may result from the Project.</p>

3.4 Offsetting Options

Subject / Topic	Offsetting options
Issue	Option #3 side channel
Developer’s Conclusion	<p>The Developer discusses three possible approaches to offsetting <i>serious harm to fish</i> that may result from the Project: the construction of the Sundog Creek diversion channel, an overwintering pool, and a side channel. The Developer states, “a third habitat offsetting</p>

	<p>opportunity is the construction of a low-gradient side-channel off of Sundog Creek either upstream or downstream of the diversion" which would provide "rearing and possibly spawning habitat".¹</p> <p>The Developer provides justification for not selecting the side channel option, citing the difficulty in constructing the channel in such a way to "avoid stranding as waters recede after freshet or major precipitation events", and that "the channel would be 20m long by 3m wide, for a total of 60m², which is a relatively small amount of habitat gained".</p>
Fisheries and Oceans Canada's Conclusion	<p>Conclusion and Rationale: DFO-FPP notes that rearing and potentially spawning habitat of a similar nature to the initially proposed offsetting side channel will be replaced by the road prism, therefore <i>serious harm to fish and fish habitat</i> may result.</p> <p>Additional information will be required from the Developer regarding the preliminary offsetting propositions if ever a <i>Fisheries Act</i> authorization is required. At this time, DFO-FPP doesn't have enough information to determine if the proposal satisfies the requirements of the <i>Fisheries Act</i>. Furthermore, the Developer didn't provide any information regarding monitoring of the preliminary offsetting propositions. A monitoring plan would be required to assess if the created habitat is successfully functional and sustainable.</p>
Fisheries and Oceans Canada's Recommendations	<p>3.4.1 Recommendation: DFO-FPP recommends that the Developer continue working with the Program and Aboriginal groups to identify suitable offsetting opportunities.</p> <p>3.4.2 Recommendation: The Program recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization.</p> <p>3.4.3 Recommendation: If a <i>Fisheries Act</i> authorization is required, DFO-FPP recommends that the proponent submits an offsetting plan, and a monitoring plan, which are requirements under the <i>Fisheries Act</i>.</p> <p>Impact if not implemented: If appropriate measures to avoid, mitigate or offset are not implemented, <i>serious harm to fish</i> may result.</p>

3.5 Habitat delineation for water crossings

Subject / Topic	Habitat delineation for water crossings
Issue	Terminology
Developer's Conclusion	Bankfull width is used to describe impacts to aquatic habitat that may result from the crossings: "for road crossings, the bankfull width was considered the define aquatic habitat". ¹ The term High Water Mark is also used: "in nearly all cases, the abutments of the bridges will be created outside the channel width (i.e. outside the high water mark (HWM)), therefore will not result in any habitat loss". ¹
Fisheries and Oceans Canada's Conclusion	Conclusion and Rationale: Although occasionally used interchangeably, bankfull width and High Water Mark (HWM) are two different things and could refer to different elevations, which may affect calculations of <i>serious harm to fish and fish habitat</i> .
Fisheries and Oceans Canada's Recommendations	<p>3.5.1 Recommendation: DFO-FPP recommends that the Developer clarify which return year was used to calculate anticipated <i>serious harm to fish</i> that may result from the construction, operation, maintenance and decommissioning of all water crossings.</p> <p>Impact if not implemented: Consistent terminology and understanding of habitat use is vital in DFO's Regulatory Review to fully comprehend potential impacts. Providing this information now will aid DFO in a timely review. If not implemented, DFO is concerned there will be inconsistent comprehension of all potential <i>serious harm to fish and fish habitat</i>.</p>

3.6 Partial dewatering

Subject / Topic	Partial dewatering
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Issue	Terminology
Developer's Conclusion	<p>In a response to Undertakings letter addressed to MVEIRB³ submitted on August 11, 2017, the Developer states that "construction of the Sundog re-alignment will occur in summer or fall/early winter when the creek has no surface water".³ In a response to DFO-FPP during the first round of Information Requests (IR), the Developer indicates that subsurface water may be encountered during the construction of the proposed channel, "excavation of the re-aligned channel into the existing alluvial deposits may encounter subsurface water"⁵.</p> <p>"Partial dewatering" is used as an example to explain the Developer's definition of "alteration", which the Developer defines as "the removal of habitat function, via the creation of habitat that is less desirable. An example of alteration is the partial dewatering of the existing channel downstream of the planned diversion".¹ The Developer also writes, "the partially dewatered channel (the original channel) is considered to be a residual habitat alteration".</p>
Fisheries and Oceans Canada's Conclusion	<p>Conclusion and Rationale: DFO-FPP notes that dewatering (pumping) for the construction of the Sundog Creek diversion channel has yet to be mentioned, since construction of the Sundog realignment will occur when the creek has no surface water. Consequently, DFO-FPP is unsure if the Developer is referring to the subsurface water that may remain in Sundog Creek post-diversion.</p>
Fisheries and Oceans Canada's Recommendations	<p>3.6.1 Recommendation: DFO-FPP recommends that the Developer utilizes terminology provided in the Fisheries Protection Policy Statement for example, <i>serious harm, permanent alteration, and destruction</i>.</p> <p>3.6.2 Recommendation: If the Developer intends to dewater (pump) while constructing the Sundog Creek diversion channel, DFO-FPP recommends that the Developer submit a dewatering plan to the Program. DFO-FPP recommends that all best management practices be incorporated in the dewatering plan, including but not limited to the use of appropriately-sized fish screens as per DFO's <i>Freshwater Intake End-of-Pipe Fish Screen Guideline</i> (1995).</p> <p>3.6.3 Recommendation: DFO-FPP recommends that the Developer</p>

⁵ Public Registry #200: Developer's response to DFO IR#7, dated May 17, 2016

	<p>submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization to DFO-FPP.</p> <p>Impact if not implemented: Consistent terminology and understanding of habitat use is vital during DFO's Regulatory Review to fully comprehend potential impacts. Providing this information now will aid DFO in a timely review. If not implemented, DFO is concerned there will be inconsistent comprehension of all potential <i>serious harm to fish</i>.</p>
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3.7 Improvements to existing road between KP 0 and 17

Subject / Topic	Improvements to existing road between KP 0 and 17
Issue	Confirmation of no <i>fish habitat</i>
Developer's Conclusion	The Developer writes, "between km 0 and km 17, the all season road pre-exists and is permitted. However, in this area, it is anticipated that an additional 2.5m of riparian area may have to be removed on average to make improvements to the existing road prism. In our opinion, the loss of riparian vegetation will result in negligible loss of ecological function, therefore results in no serious harm to fish". ¹
Fisheries and Oceans Canada's Conclusion	Conclusion and Rationale: DFO-FPP notes that road improvements or widening, if at or below the High Water Mark, may cause <i>serious harm to fish</i> .
Fisheries and Oceans Canada's Recommendations	<p>3.71 Recommendation: DFO-FPP recommends that the Developer confirm that the riparian vegetation to be removed between km 0 and km 17 is above the High Water Mark.</p> <p>3.7.2 Recommendation: The Program recommends that the Developer incorporate standard best management practices for the removal of riparian vegetation, including but not limited to: minimize the removal of riparian vegetation where practical; install and maintain sediment and erosion controls, and re-stabilize the site immediately.</p>

Impact if not implemented: If appropriate avoidance and mitigation measures are not implemented for the removal of riparian vegetation, *serious harm to fish* may result.

4.0 Summary of Recommendations

Aquatic Environment

1. Side channel between KP 35.5 and 37.77

1	Ref. 3.1.1	DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization for their Project.
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2. Littoral habitat

2	Ref. 3.2.1	DFO-FPP recommends that the Developer confirm that the water withdrawal calculations in Table A1.7 "Littoral habitat lost as a result of water withdrawal" ¹ reflect the rates proposed (1% at Mosquito and Km 70 lakes; 2% at Km 139 and 141 lakes; and 5% at Km 115 and 121 lakes) in the letter to MVEIRB submitted on August 11, 2016.
3	Ref. 3.2.2	DFO-FPP recommends that the Developer clarify if water withdrawal, including winter withdrawal, is proposed to occur throughout the construction, operation, maintenance and decommissioning of the road. If so, DFO-FPP requests that the Developer quantify cumulative anticipated water withdrawal and littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that lake discharge and recharge rates may vary from year to year.
4	Ref. 3.2.3	DFO-FPP recommends that the Developer install water level gauges at Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121, and any other lake to be withdrawn from in order to monitor baseline conditions, and discharge and recharge rates.
5	Ref. 3.2.4	DFO-FPP recommends that the Developer provide information on littoral habitat (e.g. suitable nursery, rearing, spawning, foraging habitat) for any fish species that might use the area at any point during their life cycle. This information is to be provided for Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121. DFO-FPP also recommends that the Developer provides information on the risk of the formation of barriers to fish passage between lakes, if applicable. This information may be provided during the regulatory phase.
6	Ref. 3.2.5	DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization for the Project.

3. Summary of losses, alterations, and gains

7	Ref. 3.3.1	DFO-FPP recommends that the Developer include in Table A1.9 all impacts to fish and fish habitat that may cause <i>serious harm to fish</i> , including but not limited to water crossings.
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4. Offsetting options

8	Ref.	DFO-FPP recommends that the Developer continue working with the Program and
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	3.4.1	Aboriginal groups to identify suitable offsetting opportunities.
9	Ref. 3.4.2	The Program recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization.
10	Ref. 3.4.3	If a <i>Fisheries Act</i> authorization is required, DFO-FPP recommends that the proponent submits an offsetting plan, and a monitoring plan, which are requirements under the <i>Fisheries Act</i> .
5. Habitat delineation for water crossings		
11	Ref. 3.5.1	DFO-FPP recommends that the Developer clarify which return year was used to calculate anticipated <i>serious harm to fish</i> that may result from the construction, operation, maintenance and decommissioning of all water crossings.
6. Partial dewatering		
12	Ref. 3.6.1	DFO-FPP recommends that the Developer utilizes terminology provided in the Fisheries Protection Policy Statement for example, <i>serious harm</i> , <i>permanent alteration</i> , and <i>destruction</i> .
13	Ref. 3.6.2	If the Developer intends to dewater (pump) while constructing the Sundog Creek diversion channel, DFO-FPP recommends that the Developer submit a dewatering plan to the Program. DFO-FPP recommends that all best management practices be incorporated in the dewatering plan, including but not limited to the use of appropriately-sized fish screens as per DFO's <i>Freshwater Intake End-of-Pipe Fish Screen Guideline</i> (1995).
14	Ref. 3.6.3	DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a <i>Fisheries Act</i> Authorization to DFO-FPP.
6. Improvements to existing road between KP 0 and 17		
15	Ref. 3.7.1	DFO-FPP recommends that the Developer confirm that the riparian vegetation to be removed between km 0 and km 17 is above the High Water Mark.
16	Ref. 3.7.2	The Program recommends that the Developer incorporate standard best management practices for the removal of riparian vegetation, including but not limited to: minimize the removal of riparian vegetation where practical; install and maintain sediment and erosion controls, and re-stabilize the site immediately.