

THE 1969

MASTER AGREEMENT ON APPORTIONMENT

AND

BY-LAWS, RULES AND PROCEDURES

JULY 2015

PREFACE

In 1948, Alberta Saskatchewan, Manitoba and Canada signed the Prairie Provinces Water Board Agreement. This Agreement established a Board to recommend the best use of interprovincial waters, and to recommend allocations between provinces. After some twenty years, changes in regional water management philosophies resulted in a need to modify the role of the Board, Consequently, the four governments entered into the Master Agreement on Apportionment on October 30, 1969. This Agreement provided an apportionment formula for eastward flowing interprovincial streams, gave recognition to the problem of water quality, and reconstituted the Prairie Provinces Water Board.

The Master Agreement on Apportionment has five schedules which form part of the Agreement. These Schedules are:

1. Schedule A. An apportionment agreement between Alberta and Saskatchewan.

2. Schedule B. An apportionment agreement between Saskatchewan and Manitoba.

3. Schedule C. the Prairie Provinces Water Board Agreement describing the composition, functions and duties of the Board.

4. Schedule D. A listing of Orders-in-Council for allocations of interprovincial waters made before 1969.

5. Schedule E. A Water Quality Agreement describing the role of the PPWB in interprovincial water quality management and establishing PPWB Water Quality Objectives for 12 interprovincial river reaches. This Schedule became part of the Master Agreement in 1992. Attachment "A" was updated in July 2015.

This document contains the Master Agreement on Apportionment along with Schedules to this Agreement. The document also includes the ByLaws and the Rules and Procedures under which the Board operates.

For Further information about the Prairie Provinces Water Board, please contact: Prairie Provinces Water Board Room 300, 2365 ALBERT STREET Regina SK Canada S4P 4K1 Tel: 306-780-7004 Fax: 306-780-6810

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and to Schedule C thereto (April 2, 1992)

and to Schedules A, B, and C thereto (October 1, 1999)

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MASTER AGREEMENT ON APPORTIONMENT

MASTER AGREEMENT ON APPORTIONMENT

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

Government of Canada, represented herein by the Minister of Energy, Mines and Resources

(Hereinafter called "Canada")

- and -

Government of Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

Government of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

- and -

Government of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan

would flow into the Province of Manitoba;

AND WHEREAS the Governor-in-Council has authorized Canada to enter into this agreement by Order-in-Council P.C. 1969-8/2051 dated October 29, 1969, and the Lieutenant Governors-in-Council for Alberta, Manitoba and Saskatchewan, respectively, have authorized them to enter into this agreement by the following Orders-in-Council:

Alberta	- O.C. 2053-69
Manitoba	- O.C. 1359/69
Saskatchewar	n- O.C. 1612/69

AND WHEREAS the parties hereto deem it to be in their mutual interest that an agreement be reached among the four parties as to the apportionment as described in the schedules attached hereto of such interprovincial waters among the three Provinces;

AND WHEREAS Alberta and Saskatchewan have entered into an agreement, which agreement is attached to this agreement as Schedule A, that permits the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and that permits the remaining one-half of the natural flow of each such watercourse to flow into the Province of Saskatchewan, subject to certain exceptions as are set forth in the said agreement;

AND WHEREAS Saskatchewan and Manitoba have entered into an agreement which agreement is attached to this agreement as Schedule B, that permits the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half of the water flowing into the Province of Saskatchewan, and that permits the remaining one-half of the flow of each such watercourse to flow into the Province of Manitoba, subject to such conditions and agreements as therein contained;

AND WHEREAS the parties are desirous that the Prairie Provinces Water Board (referred to herein as the Board), reconstituted by this agreement will be responsible for the administration of this agreement;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves with respect to the matters herein referred to so that the interests of all the parties are best served;

NOW THEREFORE, THIS AGREEMENT (hereinafter known as the Master Agreement) witnesseth that each party agrees as follows:

Interprovincial Agreements

1. Alberta and Saskatchewan agree that the agreement between them (hereinafter called the First Agreement), a copy of which is set out in Schedule A to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.

2. Saskatchewan and Manitoba agree that the agreement between them (Hereinafter called the Second Agreement), a copy of which is set out in Schedule B to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.

3. The parties agree to the apportionment of water between Alberta and Saskatchewan and Manitoba as provided in the First and Second Agreements and each party agrees to be bound by the said agreements as they relate to apportionment as if it were a party thereto. 4. The parties agree that the First or Second Agreement, or both, may be altered by an agreement in writing among the four parties to the Master Agreement, but not otherwise.

5. The parties agree that the First and Second Agreements will continue in force and effect until cancelled by an agreement in writing among the four parties to the Master Agreement.

Water Quality

6. The parties mutually agree to consider water quality problems; to refer such problems to the Board; and to consider recommendations of the Board thereon.

Groundwater

6.1 The parties mutually agree to consider groundwater matters that have implications affecting transboundary surface and groundwater, to refer such matters to the Board, and to consider recommendations of the Board thereon.

Monitoring

7. The parties agree that the monitoring of the quantity and quality of waters as specified in the First and Second Agreements, the collection, compilation and publication of water quantity and quality data required for the implementation and maintenance of the provisions of this agreement shall be conducted by Canada, subject to provision of funds being voted by the Parliament of Canada.

Administration

8. The parties agree, subject to Clause 9 of this agreement that it at any time, any dispute, difference or question arises between the parties with respect to this agreement or the construction, meaning and effect thereof, or anything therein, or the rights and liabilities of the parties thereunder or otherwise in respect thereto, then every such dispute, difference or question will be referred for determination to the Federal Court of Canada, Trial Division, under the provisions of the Federal Court Act of Canada and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Federal Court of Canada with jurisdiction to determine any such dispute, difference, or question in the manner provided under the Federal Court Act of Canada.

9. The parties also agree that the Board, with the consent of the parties in dispute, may cause to be prepared, a factual report of the dispute for consideration by the parties hereto prior to the referral of the dispute to the Federal Court of Canada.

10. The parties agree that the Prairie Provinces Water Board shall monitor and report on the apportionment of waters as set out in the provisions of the First and Second Agreements and ratified by this Master Agreement.

11. The parties agree to revoke the agreement dated July 28, 1948, establishing the Prairie Provinces Water Board and to reconstitute the Prairie Provinces Water Board in the form of Schedule C hereto and the said Schedule shall form and become part of this Master Agreement.

12. Because the Orders-in-Council referred to in Schedule D hereto will become redundant upon the execution of this Master Agreement, the parties agree to take steps to have them revoked.

13. The parties agree for the future application of the provisions of the Master Agreement (and the First and Second Agreements thereunder), to work together and to co-operate to the fullest extent each with the other for the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.

14. No Member of the Parliament of Canada or Member of the Legislative Assemblies of the Provinces party to this agreement shall hold, enjoy, or be admitted to any share or part of any contract, agreement, commission or benefit arising out of this agreement.

IN WITNESS HEREOF Canada has caused its presents to be executed by its Minister of Energy, Mines and Resources, and Alberta has caused its presents to be executed by its Minister in charge of Water Resources, and Saskatchewan has caused its presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused its presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act of the day and year first mentioned above.

"A. Davidson" Witness to the signature of the Minister (Energy, Mines and Resources) for Canada "J.J. Greene" Minister (Energy, Mines and Resources) for Canada

October 30, 1969 Date

"R.E. Bailey"

Witness to the signature of the Minister in charge of Water Resources for Alberta

"Henry A. Ruste"

Minister in charge of Water Resources for Alberta

October 30, 1969 Date

"Harold W. Pope"

Witness to the signature of the Minister in charge of The Water Resources Commission Act for Saskatchewan

"Allan R. Guy" Minister in charge of The Water Resources Commission Act for Saskatchewan

> October 30, 1969 Date

"Thomas E. Weber" Witness to the signature of the Minister in charge of The Water Control and Conservation Branch Act for Manitoba

"Leonard S. Evans" Minister in charge of The Water Control and Conservation Branch Act for Manitoba

October 30, 1969 Date

4th Recital Clause amended on July 5, 1984 Description of the parties amended April 2, 1992

Section 6.1 amended on April 2, 1992

SCHEDULE A TO THE MASTER AGREEMENT ON APPORTIONMENT

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SCHEDULE A

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Manitoba that an agreement in principle be reached among the said three Provinces as to the apportionment of such interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Alberta and Saskatchewan would be to permit the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and to permit the remaining one-half of the natural flow of water of each such watercourse to flow into the Province of Saskatchewan, subject to certain prior rights as are hereinafter set forth or may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the foregoing apportionment as between the Provinces of Alberta and Saskatchewan the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the remainder of the natural flow of the said watercourses that flow into the Province of Manitoba after permitting the Province of Alberta to make its depletion of one-half thereof would be to permit the Province of Saskatchewan to make a net depletion of one-half of the said remainder and to permit the other one-half thereof to flow into the Province of Manitoba; and that the natural flow of any tributaries to the said watercourses which tributaries join the said watercourses in the Province of Saskatchewan without arising in or first flowing through the Province of Alberta could be apportioned one-half to the Province of Saskatchewan and one-half to the Province of Manitoba in a manner similar to the apportionment of waters as between the Provinces of Alberta and Saskatchewan, in all cases subject to such mav be mutuallv prior riahts as acknowledged by the said Provinces of Manitoba and Saskatchewan:

AND WHEREAS the parties hereto recognize the continuing need for consultation and cooperation as between themselves and with Manitoba with respect to the matters herein referred to so that the best and most beneficial use of the said waters may be made and the interests of all said provinces best served:

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

(a) "Natural flow" means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention, excluding any water which is part of the natural flow in Alberta but is not available for the use of Alberta because of the provisions of any international treaty which is binding on Alberta.

"Watercourse" (b) means anv river, stream, creek, inter-provincial lake, or other natural channel which, from time to time, carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan, and includes all tributaries of each such river, stream, creek, interprovincial lake, or other natural channel which do not themselves cross the common boundary be-tween the Provinces of Alberta and Saskatchewan. Such tributaries as do themselves cross the common boundary between the Provinces of Alberta and Saskatchewan shall be deemed to be "watercourses" for the purpose of this agreement.

(c) "Inter-provincial lake" means any lake that is situated on or intersected by the common boundary between the Provinces of Alberta and Saskatchewan which either has no outlet or, if it does have an outlet, drains from time to time into a river, stream, creek, lake, or other natural channel situated in the Province of Saskatchewan, or into a river, stream, creek, lake, or other natural channel situated in Alberta and which carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan".

2. (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary. (b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.

(c) Notwithstanding subparagraph (b) the point of which the natural flow of the watercourses known as the South Saskatchewan and Red Deer Rivers is to be determined may be, at the option of Alberta, a point at or as near as reasonably may be below the confluence of the said two rivers.

3. Alberta shall permit a quantity of water equal to one-half the natural flow of each watercourse to flow into the Province of Saskatchewan, and the actual flow shall be adjusted from time to time on an equitable basis during each calendar year, but this shall not restrict or prohibit Alberta from diverting or consuming any quantity of water from any watercourse provided that Alberta diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Saskatchewan with respect to each watercourse.

4. Notwithstanding paragraph 3 hereof, the following special provisions shall apply as between the parties hereto with respect to the watercourse known as the South Saskatchewan River.

(a) Alberta shall be entitled in each year to consume, or to divert or store for its consumptive use a minimum of 2,100,000 acre-feet net depletion out of the flow of the watercourse known as the South Saskatchewan River even though its share for the said year, as calculated under paragraph 3 hereof, would be less than 2,100,000 acre-feet net depletion, provided however Alberta shall not be entitled to so consume or divert, or store for its consumptive use, more than one-half the flow natural of the said South Saskatchewan watercourse if the effect thereof at any time would be to reduce the actual flow of the said watercourse at the common boundary of the said Provinces of Saskatchewan and Alberta to less than 1,500 cubic feet per second.

(b) The consumption or diversion by Alberta provided for under the preceding sub-paragraph shall be made equitably during each year, depending on the actual flow of water in the said watercourse and the requirements of each Province, from time to time.

5. The parties hereto shall work together and co-operate to the fullest extent, each with the other, for the most effective, economical and beneficial use of waters flowing from the Province of Alberta into the Province of Saskatchewan, including the construction and operation of approved projects of mutual advantage to our Provinces on а cost-share basis proportionate to the benefits derived therefrom by each Province, (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.

6. Notwithstanding paragraph 3 hereof, with respect to each of the three watercourses known as Battle Creek, Lodge Creek, and Middle Creek, the annual flow shall be apportioned such that, in each of the said watercourses, Alberta permits a quantity of water equal to 75 percent of the natural flow to pass the interprovincial boundary from Alberta to Saskatchewan.

7. If at any time any dispute, difference or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities, of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Federal Court of Canada under the provisions of the Federal Court Act of Canada, and each of the parties hereto agrees to enact the necessary legislation to provide the Federal Court of Canada with jurisdiction to determine any such dispute, difference or question in the manner provided under the Federal Court Act of Canada.

8. This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba and Saskatchewan relative to the apportionment of waters referred to in this agreement.

IN WITNESS WHEREOF Alberta has caused these presents to be executed on its behalf by its Minister in charge of Water Resources, and Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, both on the day and year first above mentioned.

"R.E. Bailey"

Witness to the signature of the Minister in charge of Water Resources for Alberta

<u>"Henry A. Ruste"</u> Minister in charge of Water Resources for Alberta

"Harold W. Pope"

Witness to the signature of the Minister in charge of The Water Resources Commission Act

"Allan R. Guy"

Minister in charge of The Water Resources Commission Act

Section 6 amended on July 5, 1984. Section 1(b), 1(c) and 7 amended on October 1, 1999.

SCHEDULE B TO THE MASTER AGREEMENT ON APPORTIONMENT

SCHEDULE B

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of October, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan)

- and -

HER Majesty, the Queen, in right of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Alberta that an agreement in principle be reached among the said three Provinces as to the apportionment of interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Saskatchewan and Manitoba would be to permit the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half the flow of water flowing into, the Province of Saskatchewan, and to permit the remaining one-half of the flow of water of each such watercourse to flow into the Province of Manitoba, subject to certain rights as may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the forgoing apportionment as between the Provinces of Saskatchewan and Manitoba, the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the natural flow of the said watercourses arising in or flowing through the Province of Alberta would be to permit the Province of Alberta to make a net depletion of one-half thereof, subject to such prior rights as may be mutually acknowledged by the said Provinces of Alberta, Saskatchewan and Manitoba;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves and with Alberta with respect to the matters herein referred to so that the interests of all said Provinces are best served;

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

(a) "Natural flow' means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention.

(b) "Watercourse" means any river, stream, creek, inter-provincial lake, or other natural channel which, from time to time, carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba, and includes all tributaries of each such river, stream, creek, inter-provincial lake, or other natural channel which do not themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba. Such tributaries as do themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba shall be deemed to be "watercourses" for the purpose of this agreement".

"Inter-provincial lake" means (c) any lake that is situated on or intersected by the common boundarv between the Provinces of Saskatchewan and Manitoba which either has no outlet or, if it does have an outlet, drains from time to time into a river, stream, creek, lake, or other natural channel situated in the Province of Manitoba, or into a river, stream, creek, lake, or other natural channel situated in Saskatchewan and which carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba."

2. (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary.

(b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.

3. Saskatchewan shall permit in each watercourse the following quantity of water to flow into the Province of Manitoba during the period from January 1 of each year to the following December 31 of that year, a quantity of water equal to the natural flow for that period determined at the point referred to in paragraph 2(b) hereof, less:

(a) one-half the water flowing into the Province of Saskatchewan in that watercourse from the Province of Alberta; and

(b) any water which would form part of the natural flow in that watercourse but does not flow into the Province of Saskatchewan because of the implementation of any provision of any subsisting water apportionment agreement made between Alberta and Saskatchewan and approved by Manitoba; and

(c) one-half of the natural flow arising in the Province of Saskatchewan.

The actual flow shall be adjusted from time to time by mutual agreement on an equitable basis during such period but this shall not restrict or prohibit Saskatchewan from diverting, storing or consuming any quantity of water from any watercourse, provided that Saskatchewan diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Manitoba with respect to each watercourse."

Saskatchewan shall be entitled 4. during such period to consume or to divert or store for its consumptive use the water it is not required to permit to flow into Manitoba in each watercourse under paragraph 3 hereof, but such consumption or diversion shall be made equitably depending on the actual flow of water in each watercourse and the requirements of each Province from time to time, but Saskatchewan shall permit sufficient water to flow into Manitoba to meet its commitments during such period under paragraph 3 hereof.

The parties hereto shall work 5. together and co-operate to the fullest extent, each with the other, for the use of waters flowing from the Province of Saskatchewan into the Province of Manitoba, including the construction and operation of approved projects of mutual advantage to the said Provinces on а cost-share basis proportionate to the benefits derived therefrom by each Province (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and

with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.

If at any time any dispute, difference 6. or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Federal Court of Canada under the provisions of the Federal Court Act of Canada, and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Federal Court of Canada with jurisdiction to determine any such dispute, difference or question in the manner provided under the Federal Court Act of Canada.

7. This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba Saskatchewan relative and to the apportionment of waters referred to in this agreement.

IN WITNESS WHEREOF Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused these presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act on the day and year first above mentioned.

"Harold W. Pope"

Witness to the signature of the Minister in charge of The Water Resources Commission Act

"Allan R. Guy" Minister in charge of The Water Resources Commission Act

"Thomas E. Weber"

Witness to the signature of the Minister in charge of The Water Control and Conservation Branch Act

"Leonard S. Evans"

Minister in charge of The Water Control and Conservation Branch Act.

Sections 1(b), 1(c), 3 and 6 amended on October 1, 1999.

SCHEDULE C

(Prairie Provinces Water Board Agreement)

TO THE

MASTER AGREEMENT

ON

APPORTIONMENT

SCHEDULE C

PRAIRIE PROVINCES WATER BOARD AGREEMENT

THIS AGREEMENT made this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

THE GOVERNMENT OF CANADA, (hereinafter called "Canada")

- and -

THE GOVERNMENT OF MANITOBA, (hereinafter called "Manitoba")

- and -

THE GOVERNMENT OF SAS-KATCHEWAN,

(hereinafter called "Saskatchewan")

- and -

THE GOVERNMENT OF ALBERTA, (hereinafter called "Alberta")

1. Manitoba, Saskatchewan, Alberta and Canada agree to establish and there is hereby established a Board to be known as the Prairie Provinces Water Board to consist of five members to be appointed as follows:

(a) two members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board, on the recommendation of the Minister of Energy, Mines and Resources,

(b) one member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

2. Functions

The Board shall oversee and report on the Master Agreement (including the First and Second Agreements thereunder) executed bv Canada, Alberta, Manitoba and Saskatchewan for the apportionment of waters flowing from one province into province; shall take under another consideration, comprehensive planning, water quality management including the mandate in respect of interprovincial management of water quality described in paragraph 2 of Schedule "E" and other questions pertaining to water resource management referred to it by the parties hereto; shall recommend appropriate action to investigate such matters and shall submit recommendations for their resolution to the parties hereto.

3. <u>Composition of Board</u>

The members of the Board shall be chosen from those engaged in the administration of water resources or related duties for Manitoba, Saskatchewan, Alberta or Canada, as the case may be, and shall serve as members of the Board in addition to their other duties.

4. Duties of the Board

In accordance with its functions, the duties of the Board shall be as follows:

(a) to review, collate, and analyze streamflow data and prepare reports and recommendations on the apportionment of water,

(b) to review water quality problems, particularly such problems located at the interprovincial boundaries, and to recommend to the parties hereto, appropriate management approaches for their resolution including the establishment of new institutional arrangements,

(c) to develop recommendations on other water matters, in addition to problems on water quality, referred to the Board by any party hereto including the review and analysis of existing information and the requesting of additional studies and assistance by appropriate governmental agencies to provide information for formulating its recommendations,

(d) to promote through consultation and the exchange of information the integrated development of water resources of interprovincial streams,

(e) to cause to be prepared with the consent of the parties involved factual reports on disputes arising out of the water apportionment for consideration by the parties hereto,

(f) to ensure the co-ordination of such technical programs as water quantity and quality monitoring and streamflow forecasting required for the effective apportionment of water,

(g) to comply with the list of duties described in paragraph 8 of Schedule E concerning its water quality mandate.

5. <u>Confirmation of the Board's</u> <u>Recommendations</u>

A recommendation of the Board with respect to any matters referred to it under Section 2 shall, subject to the Master Agreement for the apportionment of water, become effective when adopted by Ordersin-Council passed by Canada and each of the Provinces.

6. <u>Authority of Board</u>

The Board shall have authority to correspond with all Governmental organizations and other sources of

information in Canada or abroad concerned with the administration of water resources, and such other authority as may be conferred on the Board from time to time by agreement between the parties hereto; all agencies of the four governments having to do with the water and associated resources in the area covered by the Agreement shall be required to supply the Board with all data in their possession requested by the Board.

7. <u>Records</u>

The records relating to the water resources of the three provinces collected and compiled by the P.F.R.A. organization at Regina shall be made available to the Board.

8. <u>Meetings of the Board</u>

The Board shall meet at the call of the Chairman and meetings shall be called at least twice annually; the expenses of the members shall be borne by their respective governments.

9. <u>Reports</u>

The Board shall submit an annual progress report outlining work done and work contemplated in the agreed program to each of the responsible Ministers of the parties hereto and such other reports as may be requested by any one of such Ministers.

10. Operation of the Board

The Executive Director for the Board and such other technical and clerical staff as may be required, shall be Federal or Provincial public servants with office headquarters located in a city within one of the prairie provinces as designated from time to time by the Board. The cost of administration, excluding the cost of monitoring as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties hereto on the basis of one-half by Canada and one-sixth by each of the Provinces. The Board shall prepare, for the approval of the parties hereto, work program, staff requirements, annual budgets and 5 year forecasts and such other reports as may be required for the operation of the Board. already constructed or to be constructed by any one of the parties shall be so operated as to maintain the apportionment of water as set out in the Master Agreement (and the First and Second Agreements thereunder) for the apportionment of waters of interprovincial streams.

Sections 2 and 4(g) amended April 2, 1992

11. Any water development project

Section 10 amended on October 1, 1999

SCHEDULE D TO THE MASTER AGREEMENT ON APPORTIONMENT

SCHEDULE D

PREVIOUS ALLOCATIONS OF INTERPROVINCIAL WATERS APPROVED BY ORDERS-IN-COUNCIL BY THE GOVERNMENTS OF CANADA, ALBERTA, MANITOBA, AND SASKATCHEWAN

	Order-in-Council				
ltem	<u>Canada</u>	<u>Alberta</u>	<u>Saskatchewan</u>	Manitoba	
Allocation of water for specific projects in Alberta	4030/49	857/49	1307/51	1121/49	
Allocation of water for specific projects in Saskatchewan	1874/51	1091/51	1310/51	1264/51	
Allocation of water for South Saskatchewan River Project in Saskatche 924/53	wan 973/5	3 991/5	3 1271/53		

SCHEDULE E

(AGREEMENT ON WATER QUALITY)

TO THE

MASTER AGREEMENT

ON

APPORTIONMENT
SCHEDULE E

AGREEMENT ON WATER QUALITY

THIS AGREEMENT made this SECOND day of APRIL, A.D. 1992.

BETWEEN:

The Government of Canada, as represented by the Minister of the Environment, (hereinafter called "Canada")

-and-

The Government of Alberta, as represented by the Minister of the Environment and by the Minister of Federal and Intergovernmental Affairs, (hereinafter called "Alberta")

-and-

The Government of Manitoba, as represented by the Minister of Natural Resources, (hereinafter called "Manitoba")

- and -

The Government of Saskatchewan, as represented by the Minister for the Saskatchewan Water Corporation, (hereinafter called "Saskatchewan").

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the water quality of the said watercourses is important to the social

and economic development as well as the environmental and public protection of all of the parties to this Agreement;

AND WHEREAS the parties entered into an agreement dated October 30, 1969, and an Amending Agreement on April 30, 1984, collectively referred to herein as the "Master Agreement", providing for the apportionment of water in watercourses arising in or flowing through the Provinces of Alberta, Saskatchewan, and Manitoba and providing for the reconstitution of the Prairie Provinces Water Board, hereinafter referred to as the "Board", which is responsible for the administration of the Master Agreement;

AND WHEREAS the parties have in paragraph 6 of the Master Agreement agreed to consider water quality problems, to refer such problems to the Board, and to consider recommendations of the Board thereon;

AND WHEREAS, in furtherance of the provisions of paragraph 6 of the Master Agreement, and on the recommendation of the Board, the parties consider it is in their mutual interest that an agreement be entered into on certain water quality objectives for the water in the said watercourses;

AND WHEREAS the parties intend to define the mandate of the Board in respect of interprovincial management of water quality of the said watercourses;

NOW THEREFORE THIS AGREEMENT witnesseth that the parties mutually agree as follows:

DEFINITIONS

1. IN THIS AGREEMENT:

(a) "aquatic environment" means water and the environment containing all living things upon or in water including all bottom substrates and physical, chemical and biological constituents;

(b) "ecosystem" means a system made up of a community of animals, plants and microbes and its interrelated physical and chemical environment;

(c) "interprovincial water quality management" means management of the water in accordance with the water quality objectives agreed to herein by the parties as set out in the Tables referred to in Attachment "A";

(d) "monitoring" means the process of developing plans for the collection of samples from the aquatic environment, conducting analyses and interpretation of data that is provided by Canada pursuant to paragraph 7 of the Master Agreement;

(e) "objective" means a numerical concentration or narrative statement of limit or limits, to a chemical, physical or biological variable within a river reach, that will support and protect uses of water, as such limit or limits are more particularly specified in each of the Tables referred to in Attachment A annexed hereto and forming a part hereof;

(f) "river reach" means each section of a river of a predetermined length that is identified in Attachment A;

(g) "watercourse" means any river, stream, creek, or other natural channel which from time to time carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan, or from the Province of Saskatchewan to the Province of Manitoba, and includes all tributaries of each such river, stream, creek or natural channel which do not themselves cross the common boundary between the Provinces of Alberta, Saskatchewan, and Manitoba. Such tributaries as do themselves cross the said common boundaries between the Provinces of Alberta, Saskatchewan, and Manitoba shall be deemed to be "watercourses" for the purpose of this Agreement.

WATER QUALITY MANDATE

2. The mandate of the Board with respect to water quality in the watercourses shall be to foster and facilitate interprovincial water quality management among the parties that encourages the protection and restoration of the aquatic environment.

WATER QUALITY OBJECTIVES

3. The objectives specified in the Tables that are referred to in Attachment A are considered by the parties to be appropriate and acceptable water quality objectives in each river reach.

4. If the concentration of a chemical, physical or biological variable in a river reach, as a result of human activities, is not within the acceptable limit or limits when compared to the agreed objective for that chemical, physical or biological variable, reasonable and practical measures will be taken by the party in whose jurisdiction the chemical, physical or biological variable originates so that the quality of the water in the river reach is within the acceptable limit or limits.

5. If the concentration of a chemical, physical or biological variable in a river reach is within the acceptable limit or limits when compared to the agreed objective for that chemical, physical or biological variable, and if trend analysis or an assessment of the impact of a proposed development indicates that water quality has been or may be significantly altered within the acceptable limit or limits, the parties shall agree as to the reasonable and practical measures that will be taken by the party in whose jurisdiction the chemical, physical or biological variable originates to endeavour to maintain the water quality in the river reach.

6. The objectives for each river reach should be reviewed on a periodic basis of at least every five (5) years.

7. Attachment "A" hereto and the numbered Tables may be amended, from time to time, by the written agreement of all the Ministers, which amendment shall be effective on the date and year of execution by the Minister last signing.

WATER QUALITY DUTIES OF THE BOARD

8. The duties of the Board with respect to its water quality mandate shall be as follows:

(a) monitoring the quality of the aquatic environment in the river reaches and making comparisons with the objectives established herein;

(b) providing a written report to the parties annually, and from time to time as the Board considers necessary, on the quality of the water in the river reaches, and providing such other reports or information as may be requested by any of the parties to this Agreement;

(c) reviewing the appropriateness of the objectives and making recommendations to the parties based on available water quality data and scientific information;

(d) promoting through consultation and the exchange of information the establishment by the parties of compatible water quality objectives in the Provinces of Alberta, Saskatchewan and Manitoba; (e) promoting through consultation and the exchange of information a preventive and proactive ecosystem approach to interprovincial water quality management; and

(f) promoting through consultation and the exchange of information the recognition of the interdependence of quality and quantity of water in the management of the watercourses.

9. This Agreement shall take effect on the date and year of execution by the party last signing, and shall continue in full force and effect until termination of the Master Agreement, or upon any of the parties giving one year's notice to the other parties of their intention to withdraw from this Agreement.

10. The headings used in this Agreement are for convenience only and are not to be considered a part of this Agreement and do not in any way limit or amplify the terms and provisions of this Agreement.

11. No member of the Parliament of Canada or Member of the Legislative Assemblies of the Provinces party to this Agreement shall hold, enjoy, or be admitted to any share or part of any contract, agreement, commission or benefit arising out of this Agreement.

IN WITNESS WHEREOF Alberta has caused these presents to be executed by the Minister of the Environment and the Minister of Federal and Intergovernmental Affairs, and Manitoba has caused these presents to be executed by the Minister of Natural Resources, and Saskatchewan has caused these presents to be executed by Minister responsible for the the Saskatchewan Water Corporation, and Canada has caused these presents to be Minister executed by the of the Environment, on the day and year first mentioned above.

Minister of Federal and Intergovernmental Affairs

THE GOVERNMENT OF CANADA

"T. Price"	per:	"Jean J. Charest"
Witness		Minister of the
		Environment

January 23, 1992 Date

THE GOVERNMENT OF ALBERTA

<u>"S. Burns"</u> per: Witness Environment <u>"Ralph Klein"</u> Minister of the

February 21, 1992 Date

Approved Pursuant to the Alberta Department of Federal and Intergovernmental Affairs Act

"James D. Horsman"

<u>March 11, 1992</u> Date

THE GOVERNMENT OF SASKATCHEWAN

<u>"J. Samuelson"</u> per: <u>"Darrel Cunningham"</u> Witness Minister responsible for the Saskatchewan Water Corporation

> March 25, 1992 Date

THE GOVERNMENT OF MANITOBA

"L.J. Whitney"	per: <u>"Harry Enns</u>		
Witness	Minister of		
	Natu	ral Resources	

April 2, 1992 Date

2015

MINISTERIAL SIGNATURES TO UPDATE ATTACHMENT "A" AND TABLES OF WATER QUALITY OBJECITVES

On June 22, 2015 and July 8, 2015, the Provinces Water Board Ministers approved and signed the updated 2015 Water Quality Objectives (Attachment "A"). Attachment "A" and Tables 1 to 12 come into effect on July 8, 2015 and replace the Tables 1 to 11 in Appendix 1.

In WITNESS WHEREOF Alberta has caused these presents to be executed by the Minister of Environment and Parks and Minster International the of and Intergovernmental Relations, and Manitoba has caused these presents to be executed by the Minister of Conservation and Water Stewardship and Minister of Infrastructure and Transportation, and Saskatchewan has caused these presents to be executed by responsible the Minister for the Saskatchewan Water Security Agency, and Canada has caused these presents to be executed by the Minister of the Environment, on the day and year first mentioned above.

THE GOVERNMENT OF CANADA

per: <u>"Leona Aglukkaq"</u> Minister of the Environment

June 22, 2015

Date

THE GOVERNMENT OF ALBERTA

per: <u>"Shannon Phillips"</u> Minister of Environment and Parks <u>June 22, 2015</u> Date

Approved Pursuant to the Government Organization Act:

per: <u>"Rachel Notley"</u> Minister of International and Intergovernmental Relations

> <u>July 8, 2015</u> Date

THE GOVERNMENT OF SASKATCHEWAN

per: <u>"Herb Cox"</u> Minister responsible for the Water Security Agency

> <u>June 22, 2015</u> Date

THE GOVERNMENT OF MANITOBA

per: <u>"Thomas Nevakshonoff"</u> Minister of Conservation and Water Stewardship

> <u>June 22, 2015</u> Date

per: <u>"Steve Ashton"</u> Minister of Infrastructure and Transportation

> <u>June 22, 2015</u> Date

ATTACHMENT "A"

To Schedule E (LISTING OF RIVER REACHES AND REFERENCES TO TABLES OF WATER QUALITY OBJECTIVES)

RIVER	REACH (predetermined length)	TABLE LISTING WATER QUALITY OBJECTIVES (for River Reach)
Beaver River	Beaver Crossing to the Border	1
North Saskatchewan River	Lea Park to Lloydminster Ferry	2
Red Deer River A/S	Bindloss to the Confluence with the South Saskatchewan River	3
South Saskatchewan River	Highway #41 to Confluence with Red Deer River	4
Battle River	Blackfoot Creek to Unwin	5
Churchill River	Islands Falls to Pukatawagan Lake	6
Saskatchewan River	Outlet of Cumberland Lake to Mouth of Carrot River	7
Carrot River	Turnberry to Mouth of Carrot River	8
Red Deer River S/M	Etomami River to Red Deer Lake	9
Assiniboine River	Whitesand River to Outlet of Shellmouth Reservoir	10
Qu'Appelle River	Kaposvar Creek to Assiniboine River	11
Cold River	Outlet of Cold Lake	12

Table 1

WATER QUALITY OBJECTIVES				
Beaver River Reac	n: Beaver Crossing to t	ne Border	imit or Limite	
Nutriente	Unit			
Total Phoenhorue	ma/l	0.171		
	IIIg/L	0.171	0.127	
Total Dissolved Phosphorus	mg/L	0.040	0.042	
Total Nitrogen	ma/l	1 140	1.862	
Nitrate as N	mg/L	1.140	3	
Ammonia Un-ionized	mg/L	0	<u>019</u> ª	
Major Jons			010	
Total Dissolved Solids	ma/l	!	500	
Sulphate Dissolved	mg/L	250		
Sodium Dissolved	mg/L	200		
Fluoride Dissolved	mg/L	() 19	
Chloride Dissolved	mg/L		100	
Physicals and Other	1119/E			
nH Lab	pH units	6	5-9.0	
pH Field	pH units	6	5-9.0	
Oxygen Dissolved			0 0.0	
Temperature $> 5^{\circ}$ C (Open Season)	ma/l		5	
Temperature $< 5^{\circ}$ C (Closed Season)	mg/L	Linder		
Sodium Adsorption Ratio	rel units	Onder	3	
Total Suspended Solids	ma/l	30	0-48.8	
Reactive Chlorine Species	mg/L	0	0.0005	
Cvanide (free)	mg/L	0.	005	
	111g, E		.000	
F Coli	No /100 ml		200	
Coliforms Fecal	No /100 ml	100		
Metals	140./ 100 HiL			
Arsenic Total	ug/l		5	
Arsenic Dissolved		No Objective		
Barium Total		1000		
Bervllium Total		100		
Boron Total	μg/L		500	
Cadmium Total		Calo	ulated ^b	
Chromium Total		Calo	50	
Cobalt Total		50		
Copper Total		Calo	ulated ^b	
Iron Dissolved			300	
Lead Total		Calo	ulated ^b	
Lithium Total		2500		
Manganese Dissolved				
Mercury Total		0	026	
Molybdenum Total			10	
Nickel Dissolved		Calc	ulated ^b	
Selenium Total			1	
Silver Total			0.1	
Thallium Total			0.8	
Uranium Total			10	
Vanadium Total			100	
Zinc Total			30	

Pesticides		
Acid Herbicides		
2,4-D	µg/L	4
Bromoxynil	µg/L	0.33
Dicamba	µg/L	0.006
МСРА	µg/L	0.025
Picloram	µg/L	29
Organochlorine Pesticides in Water		
Endosulfan	µg/L	0.003
Hexachlorocyclohexane (gamma-HCH)		
(Lindane)	µg/L	0.01
Hexachlorobenzene	µg/L	0.52
Pentachlorophenol (PCP)	µg/L	0.5
Neutral Herbicides in Water		
Atrazine	µg/L	1.8
Diclofopmethyl (Hoegrass)	µg/L	0.18
Metolachlor	µg/L	7.8
Metribuzin	μg/L	0.5
Simazine	µg/L	0.5
Triallate	μg/L	0.24
Trifluralin	μg/L	0.2
Other		
Glyphosate	µg/L	Report Detections
Fish Tissue		
Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Radioactive		
Cesium-137	Bq/L	10
lodine-131	Bq/L	6
Lead-210	Bq/L	0.2
Radium-226	Bq/L	0.5
Strontium-90	Bq/L	5
Tritium	Bq/L	7000

Superscripts

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)]-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)]-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 2

WATER QUALITY OBJECTIVES				
North Sask. River Rea	ch: Lea Park to Lloydminste	er Ferry		
Chemical, Physical or Biological Variable Unit Acceptable Limit or Lim			imit or Limits	
Nutrients		Open	Closed	
Total Phosphorus	ma/l	0.253	0.063	
	iiig/L	0.278	0.115	
Total Dissolved Phosphorus	ma/l	0.026	0.048	
	iiig/L	0.046	0.101	
Total Nitrogen	ma/l	1.169	1.175	
		1.230	1.225	
Nitrate as N	mg/L		3	
Ammonia Un-ionized	mg/L	0.	019°	
Major Ions				
I otal Dissolved Solids	mg/L	Ę	500	
Sulphate Dissolved	mg/L	2	250	
Sodium Dissolved	mg/L	2	200	
Fluoride Dissolved	mg/L	0	.18	
Chloride Dissolved	mg/L	1	00	
Physicals and Other	a blandte			
pH Lab	pH units	6.8	5-9.0	
PH Field	pH units	6.3	5-9.0	
Uxygen Dissolved			r	
Temperature > 5°C (Open Season)	mg/L		5	
Codium Advantion Datio	mg/L	3		
Sodium Adsorption Ratio		<u> </u>		
Posetive Chloring Species	mg/L	5.0-295.8		
Cuepide (free)	mg/L	0.0005		
	IIIg/L	0.	005	
E Coli	No /100 ml		200	
Coliforms Fecal	No /100 ml	1	00	
Metals				
Arsenic Total	ug/L		5	
Arsenic Dissolved		No O	biective	
Barium Total		1	000	
Bervllium Total		1	00	
Boron Total		5	500	
Cadmium Total		Calc	ulated ^b	
Chromium Total	ug/L	50		
Cobalt Total	μg/L	50		
Copper Total	µg/L			
Iron Dissolved	µg/L	3	800	
Lead Total	µg/L	Calc	ulated ^b	
Lithium Total	µg/L	2	500	
Manganese Dissolved	µg/L	50		
Mercury Total	µg/L	0.	026	
Molybdenum Total	µg/L		10	
Nickel Dissolved	µg/L	Calc	ulated ^b	
Selenium Total	µg/L		1	
Silver Total	μg/L	(0.1	
Thallium Total	µg/L	().8	
Uranium Total	μg/L		10	
Vanadium Total	μg/L	1	00	
Zinc Total	µg/L		30	

Acid Herbicides2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.0025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.003(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Glyphosate $\mu g/L$ 0.24Fish Tissue $\mu g/L$ 0.20Mercurv in fish (muscle tissue) $\mu g/L$ 0.200	Pesticides		
2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.2	Acid Herbicides		
Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH)(Lindane)(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Wercurv in fish Tissue $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/L$ 0.2	2,4-D	μg/L	4
Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.011Hexachlorobenzene $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Other $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/L$ 0.2	Bromoxynil	µg/L	0.33
MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2Other 0.2 0.24Trifluralin $\mu g/L$ 0.2Other $\mu g/L$ 0.2Metribuzin $\mu g/L$ 0.2Other $\mu g/L$ 0.2Other $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/ka$ 200	Dicamba	µg/L	0.006
Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other g/L 0.2Glyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.20	МСРА	µg/L	0.025
Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.48Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Metribuste $\mu g/L$ 0.2Metribuste $\mu g/L$ 0.2	Picloram	µg/L	29
Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4trazine1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5OtherGlyphosate $\mu g/L$ Glyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ 200	Organochlorine Pesticides in Water		
Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Fish TissueMercurv in fish (muscle tissue) $\mu g/kg$	Endosulfan	µg/L	0.003
(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.24OtherGlyphosate $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/kq$ 200	Hexachlorocyclohexane (gamma-HCH)		
Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 200	(Lindane)	μg/L	0.01
Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kg$ 200	Hexachlorobenzene	µg/L	0.52
Neutral Herbicides in Water Atrazine µg/L Diclofopmethyl (Hoegrass) µg/L Metolachlor µg/L Metribuzin µg/L Simazine µg/L Triallate µg/L Trifluralin µg/L Other 0.2 Glyphosate µg/L Fish Tissue µg/L Mercury in fish (muscle tissue) µg/kg	Pentachlorophenol (PCP)	μg/L	0.5
Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ 200	Neutral Herbicides in Water		
Diclofopmethyl (Hoegrass) µg/L 0.18 Metolachlor µg/L 7.8 Metribuzin µg/L 0.5 Simazine µg/L 0.5 Triallate µg/L 0.24 Trifluralin µg/L 0.2 Other Glyphosate µg/L Report Detections Fish Tissue µg/L 200	Atrazine	μg/L	1.8
Metolachlor μg/L 7.8 Metribuzin μg/L 0.5 Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue	Diclofopmethyl (Hoegrass)	µg/L	0.18
Metribuzin μg/L 0.5 Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue	Metolachlor	μg/L	7.8
Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue 200	Metribuzin	μg/L	0.5
Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue 200	Simazine	µg/L	0.5
Trifluralin μg/L 0.2 Other	Triallate	μg/L	0.24
Other ug/L Report Detections Glyphosate µg/L Report Detections Fish Tissue	Trifluralin	µg/L	0.2
Glyphosate µg/L Report Detections Fish Tissue	Other		
Fish Tissue ug/kg 200	Glyphosate	µg/L	Report Detections
Mercury in fish (muscle tissue)	Fish Tissue		
	Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption	Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian µg TEQ/kg diet wet weight 0.00079	PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian µg TEQ/kg diet wet weight 0.0024	PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	r eb in hen (maeere aeede) anan		
Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3	DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Radioactive	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue)	µg/kg diet wet weight µg/kg diet wet weight	<u>14</u> 6.3
Cesium-137 Bq/L 10	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive	µg/kg diet wet weight µg/kg diet wet weight	14 6.3
lodine-131 Bq/L 6	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137	µg/kg diet wet weight µg/kg diet wet weight Bq/L	14 6.3 10
Lead-210 Bq/L 0.2	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131	μg/kg diet wet weight μg/kg diet wet weight Bq/L Bq/L	14 6.3 10 6
Radium-226 Bq/L 0.5	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L	14 6.3 10 6 0.2
Strontium-90 Bq/L 5	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5
Tritium Bq/L 7000	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226 Strontium-90	μg/kg diet wet weight μg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5 5

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in µg/L is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{(0.86[log(hardness)]-3.2]}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2*e^{(0.8545[ln(hardness)]-1.465)}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{(1.273[ln(hardness)]-4.705)}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998*e^{(0.8460[ln(hardness)]+2.255)}$.

Table 3

WATER QUALITY OBJECTIVES			
Red Deer River A/S Reach: Bindloss to Confluence with the S. Sask. River			
Chemical, Physical or Biological Variable	Unit	Acceptable L	imit or Limits
Nutrients		Open	Closed
Total Phosphorus	ma/l	0.315	0.035
		0.563	0.069
Total Dissolved Phosphorus	mg/L	0.023	0.008
- Total Nitragon		0.035	0.024
Nitrate as N	mg/L	2.320	0.860
Ammonia Unionizad	mg/L	0.0	3 10 ⁸
Major Jona	IIIg/L	0.0	519
Total Dissolved Solida	ma/l	5	00
Sulphoto Dissolved Solids		500	
Sulphale Dissolved	mg/L		.50
Sodium Dissolved	mg/L		.00
Fluoride Dissolved	mg/L	(0.2
Chioride Dissolved	mg/L		00
Physicals and Other			
	pH units	6.5	<u>-9.0</u>
	pH units	6.5	9.0
Oxygen Dissolved	4		_
Temperature > 5°C (Open Season)	mg/L		5
I emperature < 5°C (Closed Season)	mg/L		3
Sodium Adsorption Ratio	rel units	3	
Total Suspended Solids	mg/L	30.0-832.6	
Reactive Chlorine Species	mg/L	0.0005	
Cyanide (free)	mg/L	0.	005
E. Coli	No./100 mL	2	00
Coliforms Fecal	No./100 mL	1	00
Metals	T		
Arsenic Total	µg/L		5
Arsenic Dissolved	µg/L	No O	ojective
Barium Total	µg/L	1000	
Beryllium Total	μg/L	1	00
Boron Total	μg/L	5	00
Cadmium Total	μg/L	Under	Review
Chromium Total	μg/L		50
Cobalt Total	μg/L		50
Copper Total	μg/L	Under	Review
Iron Dissolved	μg/L	3	00
Lead Total	μg/L		
Lithium Total	µg/L	2500	
Manganese Dissolved	µg/L		50
Mercury Total	µg/L	0.	026
Molybdenum Total	μg/L		10
Nickel Dissolved	µg/L	Calc	ulated ^b
Selenium Total	µg/L		1
Silver Total	µg/L	().1
Thallium Total	µg/L	().8
Uranium Total	µg/L		10
Vanadium Total	µg/L	1	00
Zinc Total	µg/L		30

Pesticides		
Acid Herbicides		
2,4-D	μg/L	4
Bromoxynil	µg/L	0.33
Dicamba	µg/L	0.006
МСРА	µg/L	0.025
Picloram	µg/L	29
Organochlorine Pesticides in Water	· · · · ·	
Endosulfan	µg/L	0.003
Hexachlorocyclohexane (gamma-HCH)		
(Lindane)	μg/L	0.01
Hexachlorobenzene	µg/L	0.52
Pentachlorophenol (PCP)	μg/L	0.5
Neutral Herbicides in Water		
Atrazine	μg/L	1.8
Diclofopmethyl (Hoegrass)	μg/L	0.18
Metolachlor	μg/L	7.8
Metribuzin	μg/L	0.5
Simazine	μg/L	0.5
Triallate	μg/L	0.24
Trifluralin	μg/L	0.2
Other		
Glyphosate	μg/L	Report Detections
Fish Tissue		
Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Radioactive		
Cesium-137	Bq/L	10
lodine-131	Bq/L	6
Lead-210	Bq/L	0.2
Radium-226	Bq/L	0.5
Strontium-90	Bq/L	5
Tritium	Bq/L	7000

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{(0.86[log(hardness)]\cdot3.2)}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[ln(hardness)]\cdot1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[ln(hardness)]\cdot4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[ln(hardness)]+2.255\}}$.

T	ab	le	4
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South Sask. River Reach: Highway #41 to Confluence with Red Deer RiverChemical, Physical or Biological VariableUnitAcceptable Limit or LimitsNutrientsOpenClosedTotal Phosphorusmg/L0.01590.064Total Dissolved Phosphorusmg/L0.0140.0014Total Nitrogenmg/L1.0731.638Nitrate as Nmg/L1.0731.638Ammonia Un-ionizedmg/L0.019"Magor IonsTotal Dissolved Solidsmg/L500Sulphate Dissolvedmg/L200Physicals and Othermg/L200Physicals and Othermg/L200Physicals and Othermg/L0.019Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.03Oxygen Dissolvedmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L0.005Cyaled Colormg/L56-6-339.8Reactive Choirne Speciesmg/L500Colid (rise)No.100 mL200Colid (rise)mg/L500Cyaled Disolvedµg/L500Colid (rise)µg/L500Colid (rise)µg/L500Colid (rise)µg/L500Col	WATER	QUALITY OBJECTIVES			
Chemical, Physical or Biological VariableUnitAcceptable Limit or LimitsTotal Phosphorusmg/L0.1590.054Total Phosphorusmg/L0.0140.010Total Dissolved Phosphorusmg/L1.0731.638Mitrate as Nmg/L1.0731.638Mitrate as Nmg/L1.1141.771Total Nitrate as Nmg/L33Ammonia Un-ionizedmg/L33Major Ionsmg/L250500Sulphate Dissolved Solidsmg/L200Sulphate Dissolvedmg/L0.019Major Ionsmg/L0.019Fluoride Dissolvedmg/L200Solium Dissolvedmg/L0.019Phice Dissolvedmg/L0.019Phice Dissolvedmg/L0.019Solium Dissolvedmg/L0.019Phice Dissolvedmg/L0.019Phice Dissolvedmg/L0.019Ovagen Dissolvedmg/L0.019Ovagen Dissolvedmg/L0.000Ovagen Dissolvedmg/L5Temperature < 5°C (Open Season)mg/L5Temperature < 5°C (Open Season)mg/L5Temperature < 5°C (Open Season)mg/L0.0005Cyalide (free)mg/L0.0005Cyalide (free)mg/L0.0005Cyalide (free)mg/L0.0005Cyalide (free)mg/L0.0005Cyalide (free)mg/L0.0005Coliforms Fecalµg/L	South Sask. River Reach: Highway #41 to Confluence with Red Deer River				
NutrientsOpenClosedTotal Phosphorusmg/L0.1590.054Total Dissolved Phosphorusmg/L0.0140.010Total Dissolved Phosphorusmg/L1.0731.638Marcina Burionizadmg/L1.1141.1711Nitrate as Nmg/L3Ammonia Un-ionizadmg/L0.019*Major Ionsmg/L0.019*Total Dissolved Solidsmg/L250Solum Dissolvedmg/L200Fluoride Dissolvedmg/L0.019Phosicals and Othermg/L0.019Physicals and Othermg/L0.019Physicals and Othermg/L0.019Total Dissolvedmg/L6.5-9.0pH FieldpH units6.5-9.0pH FieldpH units6.5-9.0pH Fieldmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L3Sodium Adsorption Ratiorel units3Collidrom Speciesmg/L0.0005Cyanide (tree)mg/L5Arsenic Disolvedµg/L50Collidrom FecalNo/100 mL000Metals1.0011001Metals1.0011001Beryllium Totalµg/L50Collidrom Speciesmg/L0.0005Cyanide (tree)µg/L50Collidrom Speciesµg/L100Beryllium Totalµg/L50Colidrom Speciedµg/L <td< th=""><th>Chemical, Physical or Biological Variable</th><th>Unit</th><th>Acceptable L</th><th>imit or Limits</th></td<>	Chemical, Physical or Biological Variable	Unit	Acceptable L	imit or Limits	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Nutrients		Open	Closed	
Total Dissolved PhosphorusIng/L 0.246 0.014 0.010 Total Dissolved Phosphorusmg/L 0.018 0.067 Total Nitrogenmg/L 1.073 1.638 Marconia Un-ionizedmg/L 0.018° 0.019° Major Ionsmg/L 0.019° 0.019° Major Ionsmg/L 0.019° 0.019° Sulphate Dissolvedmg/L 250° 0.019° Sulphate Dissolvedmg/L 250° 0.019° Sulphate Dissolvedmg/L 0.019° 0.019° Phorica Dissolvedmg/L 0.019° 0.019° Choride Dissolvedmg/L 0.019° 0.019° Physicals and OtherpH units $6.59.0^\circ$ 0.005° Oxygen Dissolvedmg/L 3 3 Total Susolved Solidsmg/L 3 3 Temperature $< 5^\circ$ C (Open Season)mg/L 3 Sodium Adsorption Ratiorel units 3 Total Suspended Solidsmg/L 0.0005° Cyanide (tree)mg/L 0.0005° Colidorms FecalNo./100 mL 200° Colidorms FecalNo./100 mL 000° Barium Totalµg/L 50° Barium Totalµg/L 50° Coper Totalµg/L 50°	Total Phoenhorus	ma/l	0.159	0.054	
Total Dissolved Phosphorusmg/L 0.014 0.010 Total Nitrogenmg/L 1.073 1.638 Nitrate as Nmg/L 3 Ammonia Un-ionizedmg/L 3 Ammonia Un-ionizedmg/L 3 Total Dissolved Solidsmg/L 50° Sulphate Dissolvedmg/L 250° Sulphate Dissolvedmg/L 250° Sulphate Dissolvedmg/L 200° Fluoride Dissolvedmg/L 100° Phore Dissolvedmg/L 100° Phore Dissolvedmg/L 100° Phore Dissolvedmg/L 100° Phore Dissolvedmg/L $6.5-9.0^{\circ}$ Phunits $6.5-9.0^{\circ}$ 9° Physicals and OtherpH units $6.5-9.0^{\circ}$ Ph FieldpH units $6.5-9.0^{\circ}$ Oxygen Dissolvedmg/L 3 Total Suspended Solidsmg/L 3° Sodium Adsorption Ratiorel units 3° Total Suspended Solidsmg/L 3° Total Suspended Solidsmg/L 0.0005° Cyanide (tree)mg/L 5° Colicroms FacalNo/100 mL 20° Colicroms Facalµg/L 5° Arsenic Dissolvedµg/L 5° Barium Totalµg/L 5° Cober Totalµg/L 5° Arsenic Dissolvedµg/L 5° Dissolvedµg/L 5° Dissolvedµg/L 5° <td></td> <td>ilig/L</td> <td>0.246</td> <td>0.110</td>		ilig/L	0.246	0.110	
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Total Nitrogenmg/L1.0731.638 1.114Nitrate as Nmg/L3Ammonia Un-ionizedmg/L3Ammonia Un-ionizedmg/L0.019"Total Dissolved Solidsmg/L250Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L200Fluoride Dissolvedmg/L100Physicals and Othermg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L3Sodium Adsorption Ratiorel units3Total Supended Solidsmg/L3Sodium Adsorption Ratiorel units3Total Supended Solidsmg/L0.0005Cyale (free)mg/L5Colide (free)mg/L5Arsenic Dissolvedµg/L5Arsenic Dissolvedµg/L5Colidorms FecalNo/100 mL100Metalsµg/L500Colidorms Fecalµg/L500Carlonin Totalµg/L500Copper Totalµg/L500Copper Totalµg/L60Copper Totalµg/L60Magranese Dissolvedµg/L60Margenese Dissolvedµg/L60Margenese Dissolvedµg/L60Copper Totalµg/L60Copper Totalµg/L60Margenese Dissolvedµg/L60		ing/ E	0.018	0.067	
NameNg/L11141.771Mirate as Nmg/L3Ammonia Un-ionizedmg/L0.019°Major Ions	Total Nitrogen	ma/l	1.073	1.638	
Nitrate as Nmg/L3Ammonia Un-ionizedmg/L0.019°Major Ionsmg/L500Sulphate Dissolved Solidsmg/L250Sodium Dissolvedmg/L0.19Chloride Dissolvedmg/L0.19Chloride Dissolvedmg/L0.19PH LabpH units6.5-9.0PH LabpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L3Sodium Adsorption Ratioref units3Total Suspended Solidsmg/L5.6-339.8Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L5.6-339.8Reactive Chlorine Speciesmg/L0.0005E. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metalsmg/L5Arsenic Dissolvedµg/L100Beryflium Totalµg/L100Beryflium Totalµg/L600Copper Totalµg/L600Codatt Totalµg/L600Codatt Totalµg/L600Cohoring Totalµg/L600Copper Totalµg/L600Copper Totalµg/L600Codeutard®µg/L600Codeutard®µg/L600Codeutard®µg/L600Codeutard®µg/L600Codeutard®µg/L600Codeutard®µg/L600Codeutard®µg/L <td></td> <td></td> <td>1.114</td> <td>1.771</td>			1.114	1.771	
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Chloride Dissolvedmg/L100Physicals and Other pH Lab pH units $6.5 \cdot 9.0$ pH Lab pH units $6.5 \cdot 9.0$ $Oxygen Dissolvedmg/L6.5 \cdot 9.0Temperature > 5°C (Open Season)mg/L3Temperature > 5°C (Olosed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L6.6 \cdot 33 \cdot 8Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L0.0005Variable (free)mg/L0.0005Metalsmg/L0.0005Arsenic Total\mug/L0.0005Barium Total\mug/L0.0000Berylitum Total\mug/L0.00000000000000000000000000000000000$	Fluoride Dissolved	mg/L	0	.19	
Physicals and Other $pH Lab$ $pH units$ $6.5-9.0$ $pH Field$ $pH units$ $6.5-9.0$ $Oxygen Dissolved$ mg/L 5 Temperature > 5°C (Open Season) mg/L 3 Temperature > 5°C (Closed Season) mg/L 3 Sodium Adsorption Ratiorel units 3 Total Suspended Solids mg/L $5.6-339.8$ Reactive Chlorine Species mg/L 0.0005 Cyanide (free) mg/L 0.0005 E. ColiNo./100 mL 200 Coliforms FecalNo./100 mL 200 Metals mg/L 5 Arsenic Total \mug/L 5 Arsenic Total \mug/L 5 Beryllium Total \mug/L 1000 Beryllium Total \mug/L 500 Cobalt Total \mug/L 500 Cobalt Total \mug/L 50 Coper Total \mug/L 500 Lead Total \mug/L 500 Manganese Dissolved \mug/L 50 Marganese Dissolved \mug/L 500 Marganese Dissolved \mug/L 500 Marganese Dissolved \mug/L 50 Marganese Dissolved \mug/L 100 Marganese Dissolved \mug/L 100 Marganese Dissolved \mug/L 0.026 Marganese Dissolved \mug/L 10 Marganese Dissolved \mug/L 10 Marganese Dissolved \mug/L 10 Marganese Dissolved \mug/L 1	Chloride Dissolved	mg/L	1	00	
pH LabpH units $6.5-9.0$ pH FieldpH units $6.5-9.0$ Oxygen Dissolvedmg/L 5 Temperature > 5°C (Open Season)mg/L 3 Total Suspended Solidsmg/L 3 Total Suspended Solidsmg/L 3 Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.0005 Coliforms FecalNo./100 mL 200 Coliforms FecalNo./100 mL 100 Metalsg/L 5 Arsenic Totalµg/L 5 Arsenic Totalµg/L 5 Barium Totalµg/L 1000 Beryllium Totalµg/L 500 Coper Totalµg/L 500 Coper Totalµg/L 500 Coper Totalµg/L 500 Iron Dissolvedµg/L 500 Coper Totalµg/L 300 Lead Totalµg/L 200 Iron Dissolvedµg/L 200 Iron Dissolvedµg/L 300 Lead Totalµg/L 200 Manganese Dissolvedµg/L 300 Lead Totalµg/L 100 Manganese Dissolvedµg/L 100 Manganese Dissolvedµg/L 100 Manganese Dissolvedµg/L 10 Manganese Dissolvedµg/L 10 Nolybdenum Totalµg/L 10 Nolybdenum Totalµg/L 10 Nolybdenum Totalµg/L 10 Nolybdenum Totalµg/L <td< td=""><td>Physicals and Other</td><td></td><td></td><td></td></td<>	Physicals and Other				
pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L5.6-339.8Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L0.0005Coliforms FecalNo./100 mL200Coliforms FecalNo./100 mL100Metalsmg/L5Arsenic Totalµg/L5Barlum Totalµg/L500Barlum Totalµg/L100Beryllium Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L500Cobalt Totalµg/L600Liead Totalµg/L600Liead Totalµg/L60No Objective9010Manganese Dissolvedµg/L60Manganese Dissolvedµg/L100Manganese Dissolvedµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.08Uranium Totalµg/L0.08Uranium Totalµg/L0.1Silver Totalµg/L0.8	pH Lab	pH units	6.8	5-9.0	
Oxygen Dissolvedmg/LTemperature 5° C (Open Season)mg/L3Temperature 5° C (Closed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L0.0005Cyanide (free)mg/L0.0005Cyanide (free)mg/L0.0005Coliforms FecalNo./100 mL200Coliforms FecalNo./100 mL100Metals100Arsenic Dissolvedµg/L5Barium Totalµg/L500Cadamim Totalµg/L500Cobel Totalµg/L500Cobel Totalµg/L500Cobel Totalµg/L500Cobel Totalµg/L500Cobel Totalµg/L50Cobel Totalµg/L50Cobel Totalµg/L60Linon Dissolvedµg/L60Linon Totalµg/L60Copper Totalµg/L60Manganese Dissolvedµg/L60Manganese Dissolvedµg/L10Nolybdenum Totalµg/L60Manganese Dissolvedµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.03Solver dµg/L0.026Molybdenum Totalµg/L0.026Molybdenum Totalµg/L0.03Solver dµg/L0	pH Field	pH units	6.8	5-9.0	
Temperature > 5°C (Open Season) mg/L 5Temperature > 5°C (Closed Season) mg/L 3Total Suspended Solids $rel units$ 3Total Suspended Solids mg/L 5.6-339.8Reactive Chlorine Species mg/L 0.0005Cyanide (free) mg/L 0.0005Coliforms FecalNo./100 mL200Coliforms FecalNo./100 mL100MetalsMetals100Metals mg/L 5Arsenic Total \mug/L 5Arsenic Dissolved \mug/L 1000Beryllium Total \mug/L 500Cadmium Total \mug/L 500Cobert Total \mug/L 50Cobert Total \mug/L 50Copper Total \mug/L 50Copper Total \mug/L 300Lead Total \mug/L 60Manganese Dissolved \mug/L 60Manganese Dissolved \mug/L 60Manganese Dissolved \mug/L 10No Noldel \mug/L 10No Dissolved \mug/L 60Manganese Dissolved \mug/L 60Manganese Dissolved \mug/L 60Manganese Dissolved \mug/L 10Nickel Dissolved \mug/L 0.026Molybelenum Total \mug/L 0.026Molybelenum Total \mug/L 0.1Nickel Dissolved \mug/L 0.1Nickel Dissolved \mug/L 0.1Nickel Dissolved \mug/L 0.1 <t< td=""><td>Oxygen Dissolved</td><td></td><td></td><td></td></t<>	Oxygen Dissolved				
Temperature < 5°C (Closed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L $5.6-339.8$ Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.0005 Cyanide (free)mg/L 0.0005 E. ColiNo./100 mL 200 Coliforms FecalNo./100 mL 100 Metals yg/L 5 Arsenic Dissolved $µg/L$ 5 Barium Total $µg/L$ 100 Beryllium Total $µg/L$ 100 Boron Total $µg/L$ 500 Cobalt Total $µg/L$ 500 Cobalt Total $µg/L$ 50 Coper Total $µg/L$ 50 Iron Dissolved $µg/L$ 300 Lead Total $µg/L$ 2500 Maganese Dissolved $µg/L$ 60 Iron Dissolved $µg/L$ 60 Iron Dissolved $µg/L$ 60 Iron Dissolved $µg/L$ 60 Maganese Dissolved $µg/L$ 60 Molydenum Total $µg/L$ 100 Nokcle Dissolved $µg/L$ 10 Nickel Dissolved $µg/L$ 0.026 Malaganese Dissolved $µg/L$ 0.1 Nickel Dissolved $µg/L$ 0.1 Nation Total $µg/L$ 0.1 Nordel Maganese Dissolved $µg/L$ 0.1 Nordel Maganese Dissolved $µg/L$ 0.1 Nordel Maganese Dissolved $µg/L$ 0.1 Norde	Temperature > 5°C (Open Season)	mg/L		5	
Sodium Adsorption Ratiorel units3Total Suspended Solids mg/L 5.6-339.8Reactive Chlorine Species mg/L 0.0005Cyanide (free) mg/L 0.0005E. ColiNo./100 mL200Coliforms FecalNo./100 mL200MetalsTermin Species mg/L 5Arsenic Total \mug/L 5Arsenic Total \mug/L No ObjectiveBarium Total \mug/L 1000Beryllium Total \mug/L 1000Beryllium Total \mug/L 500Calculated ⁶ Chromium Total \mug/L 50CoblectiveBarium Total \mug/L 50CoblectiveBarium Total \mug/L 50CoblectiveBarium Total \mug/L 50CoblectiveBarium Total \mug/L 50Coblective50CoblectiveBarium Total \mug/L 50Calculated ⁶ Chromium Total \mug/L 50Calculated ⁶ Coblective50Coblective50Coblective50Coblective50Coblective50Coblective <td>Temperature < 5°C (Closed Season)</td> <td>mg/L</td> <td></td> <td>3</td>	Temperature < 5°C (Closed Season)	mg/L		3	
Total Suspended Solids mg/L 5.6-339.8Reactive Chlorine Species mg/L 0.0005Cyanide (free) mg/L 0.0005E. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metals100Arsenic Total \mug/L 5Arsenic Total \mug/L 1000Berlum Total \mug/L 1000Boron Total \mug/L 1000Boron Total \mug/L 500Cadmium Total \mug/L 500Cobat Total \mug/L 600Cobat Total \mug/L 600Calculated ^b 100Iron Dissolved \mug/L 600Lead Total \mug/L 600Manganese Dissolved \mug/L 50Mercury Total \mug/L 10Nolybdenum Total \mug/L 10Nickel Dissolved \mug/L 0.026Molybdenum Total \mug/L 0.1Thread \mug/L 0.8Uranium Total \mug/L 0.8Uranium Total \mug/L 0.8Uranium Total \mug/L 0.1Vanadium T	Sodium Adsorption Ratio	rel units		3	
Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L0.005E. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metals100Arsenic Total $\mu g/L$ SArsenic Dissolved $\mu g/L$ No ObjectiveBarium Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 600Boron Total $\mu g/L$ 600Cobalt Total $\mu g/L$ 600Cobalt Total $\mu g/L$ 50Coper Total $\mu g/L$ 600Lithium Total $\mu g/L$ 600Cadmium Total $\mu g/L$ 50Coper Total $\mu g/L$ 600Lead Total $\mu g/L$ 600Lithium Total $\mu g/L$ 600Marganese Dissolved $\mu g/L$ 600Molybdenum Total $\mu g/L$ 600Nolybdenum Total $\mu g/L$ 600Nolybdenum Total $\mu g/L$ 600Nolybdenum Total $\mu g/L$ 600Selenium Total $\mu g/L$ 0.1Niker Total $\mu g/L$ 0.1Thanium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.1Total $\mu g/L$ 100Nandaum Total<	Total Suspended Solids	mg/L	5.6-	5.6-339.8	
Cyanide (free)mg/L0.005E. ColiNo./100 mL200Coliforms FecalNo./100 mL100MetalsArsenic Total $\mu g/L$ 5Arsenic Total $\mu g/L$ No ObjectiveBarium Total $\mu g/L$ 1000Born Total $\mu g/L$ 600Born Total $\mu g/L$ 500Cobat Total $\mu g/L$ 60Cobat Total $\mu g/L$ 60Calculated ^b 100100Iron Dissolved $\mu g/L$ 60Lithium Total $\mu g/L$ 60Marganese Dissolved $\mu g/L$ 60Mercury Total $\mu g/L$ 60Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 0.1Thralium Total $\mu g/L$ 0.1Variatium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Variatium Total $\mu g/L$ 0.1Thralium Total $\mu g/L$ 0.1Thranium Total $\mu g/L$ 0.1Thranium Total $\mu g/L$ 0.00Variatium Total $\mu g/L$ 0.3Uranium Total $\mu g/L$ 0.00	Reactive Chlorine Species	mg/L	0.0	0.0005	
E. ColiNo./100 mL200Coliforms FecalNo./100 mL100MetalsArsenic Total $\mu g/L$ 5Arsenic Dissolved $\mu g/L$ No ObjectiveBarium Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 1000Boron Total $\mu g/L$ 500Cadmium Total $\mu g/L$ 600Cadmium Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 60Cobalt Total $\mu g/L$ 50Copper Total $\mu g/L$ 500Copper Total $\mu g/L$ 500Lead Total $\mu g/L$ 60Lead Total $\mu g/L$ 60Lithium Total $\mu g/L$ 60Marganese Dissolved $\mu g/L$ 60Mickel Dissolved $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ 11Silver Total $\mu g/L$ 0.1Thallium Total $\mu g/L$ 0.1Vickel Dissolved $\mu g/L$ 0.38Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.7Silver Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Vanadium Total $\mu g/L$ 0.7Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.7Vanadium Total $\mu g/L$ 100Vanadium Total $\mu g/L$ 100	Cyanide (free)	mg/L	0.	0.005	
E. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metals100Arsenic Total $\mu g/L$ 5Arsenic Dissolved $\mu g/L$ No ObjectiveBarium Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 100Boron Total $\mu g/L$ 600Cadmium Total $\mu g/L$ 600Cadmium Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Copper Total $\mu g/L$ 600Lithium Total $\mu g/L$ 600Lithium Total $\mu g/L$ 60Copper Total $\mu g/L$ 60Lithium Total $\mu g/L$ 2500Marganese Dissolved $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ 1Selenium Total $\mu g/L$ 0.1Thalium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.1Thalium Total $\mu g/L$ 0.1Thalium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.1Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.1Total $\mu g/L$ 0.1Total $\mu g/L$ 0.0Uranium Total $\mu g/L$ 0.1Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100 <td colspan="4"></td>					
Coliforms Fecal No./100 mL 100 Metals	E. Coli	No./100 mL	2	200	
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Barium Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 100Boron Total $\mu g/L$ 500Cadmium Total $\mu g/L$ Calculated ^b Chromium Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Copper Total $\mu g/L$ Calculated ^b Iron Dissolved $\mu g/L$ Calculated ^b Lithium Total $\mu g/L$ Calculated ^b Lithium Total $\mu g/L$ Calculated ^b Manganese Dissolved $\mu g/L$ 50Mercury Total $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ 10Selenium Total $\mu g/L$ 0.1Thallium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Zinc Total $\mu g/L$ 100	Arsenic Dissolved	µg/L	No Objective		
Beryllium Total $\mu g/L$ 100Boron Total $\mu g/L$ 500Cadmium Total $\mu g/L$ Calculated ^b Chromium Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Cobalt Total $\mu g/L$ 50Copper Total $\mu g/L$ Calculated ^b Iron Dissolved $\mu g/L$ Calculated ^b Lead Total $\mu g/L$ Calculated ^b Lithium Total $\mu g/L$ Calculated ^b Manganese Dissolved $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ 1Selenium Total $\mu g/L$ 0.1Thallium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Vanadium Total $\mu g/L$ 100	Barium Total	µg/L	1	000	
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Cadmium Totalµg/LCalculatedbChromium Totalµg/L50Cobalt Totalµg/L50Copper Totalµg/LCalculatedbIron Dissolvedµg/L300Lead Totalµg/LCalculatedbLithium Totalµg/LCalculatedbManganese Dissolvedµg/L50Mercury Totalµg/L0.026Molybdenum Totalµg/L10Nickel Dissolvedµg/L11Selenium Totalµg/L0.1Thallium Totalµg/L0.1Varadium Totalµg/L0.3Uranium Totalµg/L0.3Uranium Totalµg/L0.3Uranium Totalµg/L10Vanadium Totalµg/L100Zinc Totalµg/L100	Boron Total	ug/L	5	00	
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Cobalt Totalµg/L50Copper Totalµg/LCalculatedbIron Dissolvedµg/L300Lead Totalµg/LCalculatedbLithium Totalµg/L2500Manganese Dissolvedµg/L50Mercury Totalµg/L0.026Molybdenum Totalµg/L10Nickel Dissolvedµg/L11Selenium Totalµg/L0.11Ithium Totalµg/L0.1Vanadium Totalµg/L0.38Uranium Totalµg/L30	Chromium Total	ug/L		50	
Copper Totalµg/LCalculatedbIron Dissolvedµg/L300Lead Totalµg/LCalculatedbLithium Totalµg/L2500Manganese Dissolvedµg/L50Mercury Totalµg/L0.026Molybdenum Totalµg/L10Nickel Dissolvedµg/L10Selenium Totalµg/L0.1Isilver Totalµg/L0.1Uranium Totalµg/L0.38Uranium Totalµg/L10Jiron Totalµg/L30	Cobalt Total	ug/L		50	
Iron Dissolved $\mu g/L$ 300Lead Total $\mu g/L$ Calculated ^b Lithium Total $\mu g/L$ 2500Manganese Dissolved $\mu g/L$ 50Mercury Total $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ Calculated ^b Selenium Total $\mu g/L$ 0.1Silver Total $\mu g/L$ 0.1Thallium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Zinc Total $\mu g/L$ 100Vanadium Total $\mu g/L$ 30	Copper Total	ug/L	Calc	ulated ^b	
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Manganese Dissolvedµg/L50Mercury Totalµg/L0.026Molybdenum Totalµg/L10Nickel Dissolvedµg/LCalculated ^b Selenium Totalµg/L1Silver Totalµg/L0.1Thallium Totalµg/L0.8Uranium Totalµg/L10Vanadium Totalµg/L10Zinc Totalµg/L30	Lithium Total		2	2500	
Marganeor Droom $\mu g/L$ 0.026Mercury Total $\mu g/L$ 0.026Molybdenum Total $\mu g/L$ 10Nickel Dissolved $\mu g/L$ Calculated ^b Selenium Total $\mu g/L$ 1Silver Total $\mu g/L$ 0.1Thallium Total $\mu g/L$ 0.8Uranium Total $\mu g/L$ 100Vanadium Total $\mu g/L$ 100Zinc Total $\mu g/L$ 100	Manganese Dissolved			50	
Molybdenum Totalµg/L10Nickel Dissolvedµg/LCalculatedbSelenium Totalµg/L1Silver Totalµg/L0.1Thallium Totalµg/L0.8Uranium Totalµg/L100Vanadium Totalµg/L100Zinc Totalµg/L30	Mercury Total		0.026		
Nickel Dissolvedµg/LCalculatedbSelenium Totalµg/L1Silver Totalµg/L0.1Thallium Totalµg/L0.8Uranium Totalµg/L100Vanadium Totalµg/L100Zinc Totalµg/L30	Molybdenum Total		0.	10	
Selenium Totalµg/L1Silver Totalµg/L0.1Thallium Totalµg/L0.8Uranium Totalµg/L100Vanadium Totalµg/L30	Nickel Dissolved		Calc		
Solution Fotalµg/L0.1Silver Totalµg/L0.8Uranium Totalµg/L10Vanadium Totalµg/L100Zinc Totalµg/L30	Selenium Total		Calc	1	
Differencepg/L0.1Thallium Totalµg/L0.8Uranium Totalµg/L10Vanadium Totalµg/L100Zinc Totalµg/L30	Silver Total) 1	
Uranium Total µg/L 10 Vanadium Total µg/L 100 Zinc Total µg/L 30	Thallium Total) 8	
Vanadium Total µg/L 10 Zinc Total µg/L 30	Uranium Total			10	
$\frac{100}{20}$	Vanadium Total		1	00	
	Zinc Total			30	

Acid Herbicides2,4-D $\mu g/L$ 42,4-D $\mu g/L$ 0.033Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH)(Lindane)(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.5Neutral Herbicides in Water0.01Atrazine $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.2OtherCher0.24Glyphosate $\mu g/L$ 0.20Other $\mu g/kg$ 5000Do T (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveCosting diet wet weight6.3Radium:226Bq/L62.2Radium:226Bq/L0.55Strontium=90Bq/L0.5Strontium-90 <th>Pesticides</th> <th></th> <th></th>	Pesticides		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Acid Herbicides		
Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfanEndosulfan $\mu g/L$ 0.01Hexachlorocyclohexane (gamma-HCH)(Lindane)(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.5Pentachlorobenzene $\mu g/L$ 0.5Neutral Herbicides in Water	2,4-D	μg/L	4
Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Pictoram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01 $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01 $\mu g/L$ 0.5Pentachlorobenzene $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 0.18MethodsMetolachlor $\mu g/L$ 7.8Neutral Herbicides in WaterAtrazine $\mu g/L$ 0.5SimazineDiclofopmethyl (Hoegrass) $\mu g/L$ 0.5SimazineMetolachlor $\mu g/L$ 0.5SimazineMetribuzin $\mu g/L$ 0.5SimazineGlyphosate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2OtherFish Tissue $\mu g/kg$ 3500Lead in fish (muscle tissue)DCI (otal) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveEdit6Lead-210Cesium-137Bq/L6Lead-210Lead-131Bq/L6Lead-210Radium-226Bq/L0.5Strontium-90Strontium-90Bq/L5Strontium-90Strontium-90Bq/L5<	Bromoxynil	µg/L	0.33
MCPA $\mu g/L$ 0.025 Picloram $\mu g/L$ 29 Organochlorine Pesticides in Water $\mu g/L$ 0.003 Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.003 (Lindane) $\mu g/L$ 0.01 Hexachlorobenzene $\mu g/L$ 0.52 Pentachlorophenol (PCP) $\mu g/L$ 0.5 Neutral Herbicides in Water $\mu g/L$ 1.8 Atrazine $\mu g/L$ 0.5 Metrial Herbicides in Water $\mu g/L$ 0.5 Atrazine $\mu g/L$ 0.5 Metolachlor $\mu g/L$ 0.5 Simazine $\mu g/L$ 0.5 Triallate $\mu g/L$ 0.5 Triallate $\mu g/L$ 0.24 Other 0.2 0.2 Other 0.2 0.2 Other 0.2 0.2 Dictorial in fish (muscle tissue) $\mu g/kg$ 3500 DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000 DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight 0.0024 DCB in fish (muscle tissue) $\mu g/kg$ diet wet weight 0.0024 DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight 6.3 Radioactive $Cesium-137$ Bq/L 6 Lead-210 Bq/L 6 6 Lead-210 Bq/L 6 6 Radium-226 Bq/L 0.2 Strontium-90 Bq/L 5 Strontium-90 Bq/L 7000	Dicamba	µg/L	0.006
Picloram $\mu g/L$ 29Organochlorine Pesticides in Water	MCPA	μg/L	0.025
Organochlorine Pesticides in Water $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorocbezene $\mu g/L$ 0.52Pentachlorophezene $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 0.5Metrial Herbicides in WaterAtrazine $\mu g/L$ 0.5Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.5Other0.240.7Other0.220.24Other0.20.2Other <td< td=""><td>Picloram</td><td>µg/L</td><td>29</td></td<>	Picloram	µg/L	29
Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorobenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triflural $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.24Other0.240.24Trifluralin $\mu g/L$ 0.2Other0.20.2Glyphosate $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveEq/L614Cesium-137Bq/L6Lead-210Bq/L6Lead-210Bq/L5Strontium-90Bq/L5TritumBq/L5	Organochlorine Pesticides in Water	· · · · ·	
Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.20.2Giyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian μg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3Radioactive $\mu g/kg$ diet wet weight6.3Cesium-137Bq/L10Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L5Strontium-90Bq/L5TritiumBq/L5	Endosulfan	µg/L	0.003
Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water0.5Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Other0.2Other0.2Glyphosate $\mu g/L$ 0.2Person in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3Radioactive $\mu g/L$ 610Cesium-137Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritumBq/L5	Hexachlorocyclohexane (gamma-HCH)		
Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/kg$ Glyphosate $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ 5000DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveLead in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveEcsium-137Bq/L6Lead-210Bq/L610Lodine-131Bq/L6Lead-210Bq/L0.5Strontium-90Bq/L5TritiumBq/L5TritiumBq/L5	(Lindane)	μg/L	0.01
Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.2Glyphosate $\mu g/L$ Report DetectionsFish Tissue10.2Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveCesium-137Bq/L6Lead-210Bq/L610Iodine-131Bq/L6Lead-210Bq/L0.5Strontium-90Bq/L5TritiumBq/L5	Hexachlorobenzene	µg/L	0.52
Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.20.2Glyphosate $\mu g/L$ Report DetectionsFish Tissue10.2Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveCesium-137Bq/L6Lead-210Bq/L610Lodine-131Bq/L6Lead-210Bq/L0.5Strontium-90Bq/L5TritiumBq/L5TritiumBq/L5	Pentachlorophenol (PCP)	μg/L	0.5
Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other $\mu g/L$ 0.2Metrury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian μg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3Radioactive Ha/L 610Cesium-137Bq/L610Iodine-131Bq/L610Lead-210Bq/L0.55 <t< td=""><td>Neutral Herbicides in Water</td><td></td><td></td></t<>	Neutral Herbicides in Water		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Atrazine	μg/L	1.8
Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other 0.2 0.1Glyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ 0.2Other $\mu g/L$ 0.20Fish Tissue $\mu g/L$ 0.200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) mammalian μg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3Radioactive $\mu g/L$ 1010Iodine-131 Bq/L 6Lead-210 Bq/L 0.5Radium-226 Bq/L 5Tritium Bq/L 5Tritium Bq/L 5	Diclofopmethyl (Hoegrass)	μg/L	0.18
Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2Trifluralin $\mu g/L$ 0.2Otherglyphosate $\mu g/L$ Report DetectionsFish TissueReport DetectionsMercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3RadioactiveEcsium-137Bq/L6Lead-210Bq/L0.28Radium-226Bq/L0.55TritiumBq/L55	Metolachlor	μg/L	7.8
Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.2Glyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) μg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avian μg TEQ/kg diet wet weight0.0024DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight14Toxaphene in fish (muscle tissue) $\mu g/kg$ diet wet weight6.3Radioactive6Cesium-137Bq/L6Lead-210Bq/L0.5Strontium-90Bq/L5TritiumBq/L5	Metribuzin	µg/L	0.5
Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other	Simazine	μg/L	0.5
Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue Mercury in fish (muscle tissue) μg/kg 200 Arsenic in fish (muscle tissue) μg/kg 3500 Lead in fish (muscle tissue) μg/kg 500 DDT (total) in fish (muscle tissue) μg/kg 5000 Aquatic Biota Consumption PCB in fish (muscle tissue) mammalian μg TEQ/kg diet wet weight 0.00079 PCB in fish (muscle tissue) avian μg TEQ/kg diet wet weight 0.0024 0.0024 DDT (total) in fish (muscle tissue) μg/kg diet wet weight 6.3 3 Radioactive E 6 2 Cesiun-137 Bq/L 6 2 Iodine-131 Bq/L 0.2 2 Radium-226 Bq/L 0.5 5 Strontium-90 Bq/L 5 5 Tritium Bq/L 7000 5	Triallate	μg/L	0.24
Other glyphosate µg/L Report Detections Fish Tissue Mercury in fish (muscle tissue) µg/kg 200 Arsenic in fish (muscle tissue) µg/kg 3500 Lead in fish (muscle tissue) µg/kg 500 DDT (total) in fish (muscle tissue) µg/kg 5000 Aquatic Biota Consumption PCB in fish (muscle tissue) mammalian µg TEQ/kg diet wet weight 0.00079 PCB in fish (muscle tissue) avian µg TEQ/kg diet wet weight 0.0024 0.0024 DDT (total) in fish (muscle tissue) µg/kg diet wet weight 6.3 8adioactive Cesium-137 Bq/L 10 6 10	Trifluralin	μg/L	0.2
Glyphosateμg/LReport DetectionsFish TissueMercury in fish (muscle tissue)μg/kg200Arsenic in fish (muscle tissue)μg/kg3500Lead in fish (muscle tissue)μg/kg500DDT (total) in fish (muscle tissue)μg/kg5000Aquatic Biota Consumption9PCB in fish (muscle tissue) avianμg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianμg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)μg/kg diet wet weight14Toxaphene in fish (muscle tissue)μg/kg diet wet weight6.3Radioactive10Cesium-137Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L5	Other		
Fish TissueMercury in fish (muscle tissue)µg/kg200Arsenic in fish (muscle tissue)µg/kg3500Lead in fish (muscle tissue)µg/kg500DDT (total) in fish (muscle tissue)µg/kg5000Aquatic Biota Consumption5000PCB in fish (muscle tissue) mammalianµg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianµg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)µg/kg diet wet weight14Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3Radioactive10Cesium-137Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L5	Glyphosate	μg/L	Report Detections
Mercury in fish (muscle tissue) μg/kg 200 Arsenic in fish (muscle tissue) μg/kg 3500 Lead in fish (muscle tissue) μg/kg 500 DDT (total) in fish (muscle tissue) μg/kg 5000 Aquatic Biota Consumption μg/kg diet wet weight 0.00079 PCB in fish (muscle tissue) mammalian μg TEQ/kg diet wet weight 0.00024 DDT (total) in fish (muscle tissue) avian μg TEQ/kg diet wet weight 0.0024 DDT (total) in fish (muscle tissue) μg/kg diet wet weight 14 Toxaphene in fish (muscle tissue) μg/kg diet wet weight 6.3 Radioactive E 0.2 6 Lead-210 Bq/L 6 6 Lead-210 Bq/L 0.5 5 Strontium-90 Bq/L 5 5 Tritium Bq/L 5 5	Fish Tissue		
Arsenic in fish (muscle tissue)µg/kg3500Lead in fish (muscle tissue)µg/kg500DDT (total) in fish (muscle tissue)µg/kg5000Aquatic Biota ConsumptionPCB in fish (muscle tissue) mammalianµg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianµg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue) avianµg/kg diet wet weight14Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3Radioactive10Cesium-137Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L5	Mercury in fish (muscle tissue)	µg/kg	200
Lead in fish (muscle tissue)µg/kg500DDT (total) in fish (muscle tissue)µg/kg5000Aquatic Biota ConsumptionPCB in fish (muscle tissue) mammalianµg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianµg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue) avianµg/kg diet wet weight14Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3RadioactiveCesium-137Bq/L6Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L7000	Arsenic in fish (muscle tissue)	µg/kg	3500
DDT (total) in fish (muscle tissue)µg/kg5000Aquatic Biota ConsumptionPCB in fish (muscle tissue) mammalianµg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianµg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)µg/kg diet wet weight14Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3RadioactiveCesium-137Bq/L10Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L7000	Lead in fish (muscle tissue)	µg/kg	500
Aquatic Biota ConsumptionPCB in fish (muscle tissue) mammalianµg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianµg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)µg/kg diet wet weight14Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3Radioactive10Cesium-137Bq/L10Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L7000	DDT (total) in fish (muscle tissue)	µg/kg	5000
PCB in fish (muscle tissue) mammalianμg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianμg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)μg/kg diet wet weight14Toxaphene in fish (muscle tissue)μg/kg diet wet weight6.3RadioactiveCesium-137Bq/L6Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L7000	Aquatic Biota Consumption		
PCB in fish (muscle tissue) avianμg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)μg/kg diet wet weight14Toxaphene in fish (muscle tissue)μg/kg diet wet weight6.3RadioactiveCesium-137Bq/L10Iodine-131Bq/L6Lead-210Bq/L0.2Radium-226Bq/L0.5Strontium-90Bq/L5TritiumBq/L7000	PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
DDT (total) in fish (muscle tissue) µg/kg diet wet weight 14 Toxaphene in fish (muscle tissue) µg/kg diet wet weight 6.3 Radioactive 10 6 Cesium-137 Bq/L 6 Iodine-131 Bq/L 6 Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
Toxaphene in fish (muscle tissue) μg/kg diet wet weight 6.3 Radioactive Cesium-137 Bq/L 10 lodine-131 Bq/L 6 Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Radioactive Cesium-137 Bq/L 10 lodine-131 Bq/L 6 Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Cesium-137 Bq/L 10 Iodine-131 Bq/L 6 Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	Radioactive		
Iodine-131 Bq/L 6 Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	Cesium-137	Bq/L	10
Lead-210 Bq/L 0.2 Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	lodine-131	Bq/L	6
Radium-226 Bq/L 0.5 Strontium-90 Bq/L 5 Tritium Bq/L 7000	Lead-210	Bq/L	0.2
Strontium-90 Bq/L 5 Tritium Bq/L 7000	Radium-226	Bq/L	0.5
Tritium Bq/L 7000	Strontium-90	Bq/L	5
	Tritium	Ba/l	7000

Superscripts

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)]-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)]-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 5

WATER QUALITY OBJECTIVES					
Battle River Reach: Blackfoot Creek to Unwin					
Chemical, Physical or Biological Variable	Unit	Acceptable L	imit or Limits		
Nutrients		Open	Closed		
Total Phosphorus	mg/L	0.267	0.075		
Tatal Disaster d Disaster mus		0.335	0.100		
Total Dissolved Phosphorus	mg/L	0.051	0.045		
I otal Nitrogen	mg/L	2.260	1.550		
Nitrate as N	mg/L		3		
Ammonia Un-ionized	mg/L	0.	019 [°]		
Major Ions					
Total Dissolved Solids	mg/L	ξ	372		
Sulphate Dissolved	mg/L	2	250		
Sodium Dissolved	mg/L	2	200		
Fluoride Dissolved	mg/L	C	.31		
Chloride Dissolved	mg/L	1	00		
Physicals and Other					
pH Lab	pH units	6.5	5-9.0		
pH Field	pH units	6.5	5-9.0		
Oxygen Dissolved					
Temperature > 5°C (Open Season)	mg/L		5		
Temperature < 5°C (Closed Season)	mg/L	Under Review			
Sodium Adsorption Ratio	rel units	Under Review			
Total Suspended Solids	mg/L	5.0 - 320.0			
Reactive Chlorine Species	mg/L	0.0005			
Cyanide (free)	mg/L	0.005			
Biota					
E. Coli	No./100 mL	200			
Coliforms Fecal	No./100 mL	100			
Metals	Metals				
Arsenic Total	μg/L		5		
Arsenic Dissolved	μg/L	No O	bjective		
Barium Total	μg/L	1000			
Beryllium Total	μg/L	1	00		
Boron Total	µg/L	5	500		
Cadmium Total	µg/L	Calc	ulated ^b		
Chromium Total	µg/L		50		
Cobalt Total	µg/L		50		
Copper Total	µg/L	Calc	ulated ^b		
Iron Dissolved	μg/L	3	300		
Lead Total	μg/L	Calc	ulated ^b		
Lithium Total	μg/L	2500			
Manganese Dissolved	ug/L	Under Review			
Mercury Total	ug/L	0.026			
Molybdenum Total	µg/L	10			
Nickel Dissolved	µg/L	Calc	ulated ^b		
Selenium Total	ug/L		1		
Silver Total			0.1		
Thallium Total			0.8		
Uranium Total			10		
Vanadium Total		1	00		
Zinc Total	µg/L		30		

Pesticides		
Acid Herbicides		
2,4-D	µg/L	4
Bromoxynil	µg/L	0.33
Dicamba	µg/L	0.006
МСРА	µg/L	0.025
Picloram	µg/L	29
Organochlorine Pesticides in Water		
Endosulfan	µg/L	0.003
Hexachlorocyclohexane (gamma-HCH)		
(Lindane)	µg/L	0.01
Hexachlorobenzene	µg/L	0.52
Pentachlorophenol (PCP)	µg/L	0.5
Neutral Herbicides in Water		
Atrazine	µg/L	1.8
Diclofopmethyl (Hoegrass)	µg/L	0.18
Metolachlor	µg/L	7.8
Metribuzin	μg/L	0.5
Simazine	µg/L	0.5
Triallate	μg/L	0.24
Trifluralin	μg/L	0.2
Other		
Glyphosate	µg/L	Report Detections
Fish Tissue		
Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Radioactive		
Cesium-137	Bq/L	10
lodine-131	Bq/L	6
Lead-210	Bq/L	0.2
Radium-226	Bq/L	0.5
Strontium-90	Bq/L	5
Tritium	Bq/L	7000

Superscripts

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)]-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)]-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 6

WATER Q	UALITY OBJECTIVES		
Churchill River Reach: Island Falls to Pukatawagan Lake			
Chemical, Physical or Biological Variable	Unit	Acceptable L	imit or Limits
Nutrients		Open	Closed
Total Phosphorus	mg/L	0.025	0.021
Total Dissolved Phosphorus	mg/L	0.010	0.010
Total Nitrogen	mg/L	0.484	0.411
Nitrate as N	mg/L		3
Ammonia Un-ionized	mg/L	0.	019 ^a
Major Ions			
Total Dissolved Solids	mg/L	5	500
Sulphate Dissolved	mg/L	2	250
Sodium Dissolved	mg/L	2	200
Fluoride Dissolved	mg/L	0	.12
Chloride Dissolved	mg/L	1	00
Physicals and Other			
pH Lab	pH units	6.8	5-9.0
pH Field	pH units	6.8	5-9.0
Oxygen Dissolved			
Temperature > 5°C (Open Season)	mg/L		5
Temperature < 5°C (Closed Season)	mg/L		3
Sodium Adsorption Ratio	rel units		3
Total Suspended Solids	mg/L	2.2	2-6.2
Reactive Chlorine Species	mg/L	0.0	0005
Cyanide (free)	mg/L	0.005	
Biota			
E. Coli	No./100 mL	200	
Coliforms Fecal	No./100 mL	100	
Metals	-		
Arsenic Total	µg/L		5
Arsenic Dissolved	µg/L	No O	bjective
Barium Total	μg/L	1000	
Beryllium Total	µg/L	1	00
Boron Total	μg/L	5	500
Cadmium Total	µg/L	Calc	ulated ^b
Chromium Total	µg/L	:	50
Cobalt Total	µg/L		50
Copper Total	µg/L	Calc	ulated ^b
Iron Dissolved	µg/L	300	
Lead Total	µg/L	Calc	ulated ^b
Lithium Total	µg/L	2500	
Manganese Dissolved	µg/L	50	
Mercury Total	µg/L	0.026	
Molybdenum Total	µg/L		10
Nickel Dissolved	µg/L	Calc	ulated ^b
Selenium Total	µg/L		1
Silver Total	ug/L	(0.1
Thallium Total	ug/L	().8
Uranium Total	µg/L		10
Vanadium Total	ug/L	1	00
Zinc Total	µg/L		30

Acid Herbicides 2,4-D µg/L 4 Bromoxynil µg/L 0.33 Dicamba µg/L 0.006 MCPA µg/L 0.025				
2,4-D µg/L 4 Bromoxynil µg/L 0.33 Dicamba µg/L 0.006 MCPA µg/L 0.025				
Bromoxynil µg/L 0.33 Dicamba µg/L 0.006 MCPA µg/L 0.025 Dicamp µg/L 0.025				
Dicamba μg/L 0.006 MCPA μg/L 0.025 Dicknow μg/L 0.025				
MCPA µg/L 0.025				
Biolorom ug/l company				
$\mu g/L$ 29				
Organochlorine Pesticides in Water				
Endosulfan µg/L 0.003				
Hexachlorocyclohexane (gamma-HCH)				
(Lindane) µg/L 0.01				
Hexachlorobenzene µg/L 0.52				
Pentachlorophenol (PCP) µg/L 0.5				
Neutral Herbicides in Water				
Atrazine µg/L 1.8				
Diclofopmethyl (Hoegrass)				
Metolachlor µg/L 7.8				
Metribuzin µg/L 0.5				
Simazine µg/L 0.5				
Triallate µg/L 0.24				
Trifluralin µg/L 0.2				
Other				
Glyphosate µg/L Report Detections	5			
Fish Tissue				
Mercury in fish (muscle tissue)				
Arsenic in fish (muscle tissue)				
Lead in fish (muscle tissue)				
DDT (total) in fish (muscle tissue)				
Aquatic Biota Consumption				
PCB in fish (muscle tissue) mammalian µg TEQ/kg diet wet weight 0.00079				
PCB in fish (muscle tissue) avian µg TEQ/kg diet wet weight 0.0024				
DDT (total) in fish (muscle tissue)				
Toxaphene in fish (muscle tissue) µg/kg diet wet weight 6.3				
Radioactive				
Cesium-137 Bq/L 10				
Iodine-131 Bq/L 6				
Lead-210 Bq/L 0.2				
Radium-226 Bq/L 0.5				
Strontium-90 Bq/L 5				
Tritium Bq/L 7000				

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)\}-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)\}-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 7

WATER QUALITY OBJECTIVES				
Saskatchewan River Reach: Outlet of Cumberland Lake to Mouth of Carrot River				
Chemical, Physical or Biological Variable Unit		Acceptable Limit or Limits		
Nutrients		Open	Closed	
Total Phosphorus	ma/L	0.088	0.028	
		0.124	0.034	
Total Dissolved Phosphorus	ma/L	0.014	0.011	
	<u> </u>	0.018	0.017	
I otal Nitrogen	mg/L	0.838	0.761	
	mg/L		<u>3</u>	
	mg/L	0.	019-	
Major Ions			.00	
Total Dissolved Solids	mg/L	5	500	
Suphate Dissolved	mg/L	2	250	
Sodium Dissolved	mg/L	2	200	
Fluoride Dissolved	mg/L	0	.18	
Chloride Dissolved	mg/L	1	00	
Physicals and Other				
pH Lab	pH units	6.8	5-9.0	
pH Field	pH units	6.8	5-9.0	
Oxygen Dissolved				
Temperature > 5°C (Open Season)	mg/L		5	
Temperature < 5°C (Closed Season)	mg/L		3	
Sodium Adsorption Ratio	rel units		3	
Total Suspended Solids	mg/L	27.0	- 125.0	
Reactive Chlorine Species	mg/L	0.0005		
Cyanide (free)	mg/L	0.005		
E. Coli	No./100 mL	2	200	
Coliforms Fecal	No./100 mL	100		
Metals				
Arsenic Total	μg/L		5	
Arsenic Dissolved	μg/L	No O	bjective	
Barium Total	μg/L	1	000	
Beryllium Total	μg/L	1	00	
Boron Total	μg/L	5	500	
Cadmium Total	μg/L	Calc	ulated ^b	
Chromium Total	μg/L		50	
Cobalt Total	μg/L		50	
Copper Total	μg/L	Calc	ulated ^b	
Iron Dissolved	μg/L	3	800	
Lead Total	μg/L	Calc	ulated ^b	
Lithium Total	μg/L	2	500	
Manganese Dissolved	μg/L	50		
Mercury Total	μg/L	0.026		
Molybdenum Total	μg/L	10		
Nickel Dissolved	μg/L	Calc	ulated ^b	
Selenium Total	µg/L		1	
Silver Total	µg/L	().1	
Thallium Total	µg/L	().8	
Uranium Total	µg/L		10	
Vanadium Total	µg/L	1	00	
Zinc Total	µg/L		30	

Pesticides				
Acid Herbicides				
2,4-D	µg/L	4		
Bromoxynil	µg/L	0.33		
Dicamba	µg/L	0.006		
MCPA	µg/L	0.025		
Picloram	µg/L	29		
Organochlorine Pesticides in Water				
Endosulfan	µg/L	0.003		
Hexachlorocyclohexane (gamma-HCH)				
(Lindane)	µg/L	0.01		
Hexachlorobenzene	µg/L	0.52		
Pentachlorophenol (PCP)	µg/L	0.5		
Neutral Herbicides in Water				
Atrazine	µg/L	1.8		
Diclofopmethyl (Hoegrass)	μg/L	0.18		
Metolachlor	µg/L	7.8		
Metribuzin	µg/L	0.5		
Simazine	µg/L	0.5		
Triallate	µg/L	0.24		
Trifluralin	µg/L	0.2		
Other				
Glyphosate	µg/L	Report Detections		
Fish Tissue				
Mercury in fish (muscle tissue)	µg/kg	200		
Arsenic in fish (muscle tissue)	µg/kg	3500		
Lead in fish (muscle tissue)	µg/kg	500		
DDT (total) in fish (muscle tissue)	µg/kg	5000		
Aquatic Biota Consumption				
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079		
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024		
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14		
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3		
Radioactive				
Cesium-137	Bq/L	10		
lodine-131	Bq/L	6		
Lead-210	Bq/L	0.2		
Radium-226	Bq/L	0.5		
Strontium-90	Bq/L	5		
Tritium	Bq/L	7000		

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{(0.86[log(hardness)]-3.2]}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2*e^{(0.8545[ln(hardness)]-1.465)}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is <60 or unknown, 7 when >180, and calculated using $e^{(1.273[ln(hardness)]-4.705)}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998*e^{(0.8460[ln(hardness)]+2.255)}$.

Та	ble	8
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WATER QUALITY OBJECTIVES				
Carrot River Reach: Turnberry to Mouth of Carrot River				
Chemical, Physical or Biological variable	Unit	Acceptable L		
Nutrients		Open		
Total Phosphorus	mg/L	0.099	0.170	
		0.140	0.200	
Total Dissolved Phosphorus	mg/L	0.027	0.050	
		1.097	1 81/	
Total Nitrogen	mg/L	1.007	2 052	
Nitrate as N	ma/l	1.417	3	
Ammonia Un-ionized	mg/L	0	<u>0</u> 019 ^a	
Major lons				
Total Dissolved Solids	ma/L	742	1672	
Sulphate Dissolved	mg/L	2	250	
Sodium Dissolved	mg/L	164	442	
Fluoride Dissolved	mg/L	0.2	0.29	
Chloride Dissolved	mg/L	267	728	
Physicals and Other				
pH Lab	pH units	6.5	5-9.0	
pH Field	pH units	6.5	5-9.0	
Oxygen Dissolved				
Temperature > 5°C (Open Season)	mg/L		5	
Temperature < 5°C (Closed Season)	mg/L	Under	Review	
Sodium Adsorption Ratio	rel units	Under Review		
Total Suspended Solids	mg/L	6.08 -98.2		
Reactive Chlorine Species	mg/L	0.0005		
Cyanide (free)	mg/L	0.005		
E. Coli	No./100 mL	200		
Coliforms Fecal	No./100 mL	100		
Metals				
Arsenic Total	μg/L	No Objective		
Arsenic Dissolved	μg/L		50	
Barium Total	μg/L	1	000	
Beryllium Total	µg/L	1	00	
Boron Total	μg/L	5	500	
Cadmium Total	μg/L	Calc	ulated ⁵	
Chromium Total	μg/L		50	
Cobalt Total	µg/L		50	
Copper Total	µg/L	Calc		
Iron Dissolved	µg/L	Under	Review	
	µg/L	Calculated ^b		
Lithium Iotal	µg/L	2500		
Manganese Dissolved	µg/L	Under Review		
Mercury Total	µg/L	0.	026	
Iviolybdenum I otal	µg/L			
NICKEI DISSOIVED	μg/L	Calc		
	µg/L			
SIIVER LOTAL	µg/L		J.T	
	µg/L		1.0	
	μg/L			
	µg/∟		20	
Zinc Total	μg/L		30	

Pesticides			
Acid Herbicides			
2,4-D	µg/L	4	
Bromoxynil	µg/L	0.33	
Dicamba	µg/L	0.006	
MCPA	µg/L	0.025	
Picloram	µg/L	29	
Organochlorine Pesticides in Water			
Endosulfan	µg/L	0.003	
Hexachlorocyclohexane (gamma-HCH)			
(Lindane)	µg/L	0.01	
Hexachlorobenzene	µg/L	0.52	
Pentachlorophenol (PCP)	µg/L	0.5	
Neutral Herbicides in Water			
Atrazine	μg/L	1.8	
Diclofopmethyl (Hoegrass)	μg/L	0.18	
Metolachlor	µg/L	7.8	
Metribuzin	µg/L	0.5	
Simazine	μg/L	0.5	
Triallate	μg/L	0.24	
Trifluralin	μg/L	0.2	
Other			
Glyphosate	μg/L	Report Detections	
Fish Tissue			
Mercury in fish (muscle tissue)	μg/kg	200	
Arsenic in fish (muscle tissue)	μg/kg	3500	
Lead in fish (muscle tissue)	μg/kg	500	
DDT (total) in fish (muscle tissue)	μg/kg	5000	
Aquatic Biota Consumption			
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079	
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024	
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14	
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3	
Radioactive			
Cesium-137	Bq/L	10	
lodine-131	Bq/L	6	
Lead-210	Bq/L	0.2	
Radium-226	Bq/L	0.5	
Strontium-90	Bq/L	5	
Tuitium			
Thuum	Bq/L	7000	

Superscripts

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)\}-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)\}-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 9

WATER QUALITY OBJECTIVES			
Red Deer River S/M Rea	Red Deer River S/M Reach: Etomami River to Red Deer Lake		
Chemical, Physical or Biological variable	Unit	Acceptable Limit or Limits	
Nutrients		Open	Closed
Total Phosphorus	mg/L	0.052	0.074
		0.066	0.161
Total Dissolved Phosphorus	mg/L	0.021	0.025
		0.029	0.055
I otal Nitrogen	mg/L	1.195	1.998
Nitrate as N	mg/L		<u>3</u>
Ammonia Un-ionized	mg/L	0.	019-
Major Ions			
Total Dissolved Solids	mg/L	5	500
Sulphate Dissolved	mg/L	2	250
Sodium Dissolved	mg/L	2	200
Fluoride Dissolved	mg/L	0	.18
Chloride Dissolved	mg/L	1	00
Physicals and Other			
pH Lab	pH units	6.5	5-9.0
pH Field	pH units	6.5	5-9.0
Oxygen Dissolved			
Temperature > 5°C (Open Season)	mg/L		5
Temperature < 5°C (Closed Season)	mg/L	3	
Sodium Adsorption Ratio	rel units	3	
Total Suspended Solids	mg/L	1.0 - 19.7	
Reactive Chlorine Species	mg/L	0.0005	
Cyanide (free)	mg/L	0.005	
E. Coli	No./100 mL	2	200
Coliforms Fecal	No./100 mL	1	00
Metals			
Arsenic Total	μg/L	5	
Arsenic Dissolved	μg/L	No Objective	
Barium Total	μg/L	1000	
Beryllium Total	μg/L	100	
Boron Total	µg/L	500	
Cadmium Total	µg/L	Calculated ^b	
Chromium Total	µg/L	50	
Cobalt Total	µg/L	50	
Copper Total	µg/L	Calculated ^b	
Iron Dissolved	µg/L	300	
Lead Total	µg/L		
Lithium Total	ug/L	2500	
Manganese Dissolved	ug/L	50	
Mercury Total	ug/L	0.026	
Molvbdenum Total	ug/L	10	
Nickel Dissolved			
Selenium Total		Calo	1
Silver Total		().1
Thallium Total).8
Uranium Total			10
Vanadium Total		1	00
Zinc Total	µg/L		30

Acid Herbicides2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.0025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.003(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Glyphosate $\mu g/L$ 0.24Fish Tissue $\mu g/L$ 0.20Mercurv in fish (muscle tissue) $\mu g/L$ 0.200	Pesticides		
2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.2	Acid Herbicides		
Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH)(Lindane)(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Wercurv in fish Tissue $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/L$ 0.2	2,4-D	μg/L	4
Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.011Hexachlorobenzene $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Other $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/L$ 0.2	Bromoxynil	µg/L	0.33
MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2Other 0.2 0.2 Metribuzin $\mu g/L$ 0.2Other 0.2 0.2 Merrow the first metric field (muscle tissue) $\mu g/L$ 0.2Other 0.2 0.2 Mercury in fish (muscle tissue) $\mu g/ka$ 200	Dicamba	µg/L	0.006
Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other g/L 0.2Glyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.20	МСРА	µg/L	0.025
Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.48Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ 0.2Metribuste $\mu g/L$ 0.2Metribuste $\mu g/L$ 0.2	Picloram	µg/L	29
Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4trazine1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5OtherGlyphosate $\mu g/L$ Glyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ 200	Organochlorine Pesticides in Water		
Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Fish TissueMercurv in fish (muscle tissue) $\mu g/kg$	Endosulfan	µg/L	0.003
(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.24OtherGlyphosate $\mu g/L$ 0.2Mercurv in fish (muscle tissue) $\mu g/kq$ 200	Hexachlorocyclohexane (gamma-HCH)		
Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kq$ 200	(Lindane)	μg/L	0.01
Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kg$ 200	Hexachlorobenzene	µg/L	0.52
Neutral Herbicides in Water Atrazine µg/L 1.8 Diclofopmethyl (Hoegrass) µg/L 0.18 Metolachlor µg/L 7.8 Metribuzin µg/L 0.5 Simazine µg/L 0.5 Triallate µg/L 0.24 Trifluralin µg/L 0.2 Other	Pentachlorophenol (PCP)	μg/L	0.5
Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/L$ 200	Neutral Herbicides in Water		
Diclofopmethyl (Hoegrass) µg/L 0.18 Metolachlor µg/L 7.8 Metribuzin µg/L 0.5 Simazine µg/L 0.5 Triallate µg/L 0.24 Trifluralin µg/L 0.2 Other Glyphosate µg/L Report Detections Fish Tissue µg/L 200	Atrazine	μg/L	1.8
Metolachlor μg/L 7.8 Metribuzin μg/L 0.5 Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue	Diclofopmethyl (Hoegrass)	µg/L	0.18
Metribuzin μg/L 0.5 Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue	Metolachlor	μg/L	7.8
Simazine μg/L 0.5 Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue 200	Metribuzin	μg/L	0.5
Triallate μg/L 0.24 Trifluralin μg/L 0.2 Other Glyphosate μg/L Report Detections Fish Tissue 200	Simazine	µg/L	0.5
Trifluralin μg/L 0.2 Other	Triallate	μg/L	0.24
Other ug/L Report Detections Glyphosate µg/L Report Detections Fish Tissue	Trifluralin	µg/L	0.2
Glyphosate µg/L Report Detections Fish Tissue	Other		
Fish Tissue ug/kg 200	Glyphosate	µg/L	Report Detections
Mercury in fish (muscle tissue)	Fish Tissue		
	Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption	Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian µg TEQ/kg diet wet weight 0.00079	PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian µg TEQ/kg diet wet weight 0.0024	PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	r eb in hen (maeere aeede) anan		
Toxaphene in fish (muscle tissue)µg/kg diet wet weight6.3	DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Radioactive	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue)	µg/kg diet wet weight µg/kg diet wet weight	<u>14</u> 6.3
Cesium-137 Bq/L 10	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive	µg/kg diet wet weight µg/kg diet wet weight	14 6.3
lodine-131 Bq/L 6	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137	µg/kg diet wet weight µg/kg diet wet weight Bq/L	14 6.3 10
Lead-210 Bq/L 0.2	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131	μg/kg diet wet weight μg/kg diet wet weight Bq/L Bq/L	14 6.3 10 6
Radium-226 Bq/L 0.5	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2
Strontium-90 Bq/L 5	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5
Tritium Bq/L 7000	DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226 Strontium-90	μg/kg diet wet weight μg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5 5

Superscripts

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)]-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)]-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 10

Assinibute River Reach: Whitesand River to Outlet of Selimotith ReservoirChemical, Physical or Biological VariableUnitAcceptable Limit or LimitsNutrientsOpenClosedTotal Phosphorusmg/L0.3110.180Total Dissolved Phosphorusmg/L1.8012.252Nitrate as Nmg/L3Ammonia Un-ionizedmg/L0.019 ^a Major IonsImage Construction1.8012.252Total Nitrate as Nmg/L834Sodium Dissolved Solidsmg/L834Sulphate Dissolved Solidsmg/L200Fluoride Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Choride Dissolvedmg/L0.26Choride Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)mg/L3Total Suspended Solidsmg/L3Total Suspended Solidsmg/L5Temperature < 5°C (Closed Season)mg/L5Temperature < 5°C (Closed Season)mg/L5.0-69.2Reactive Chlorine Speciesmg/L0.0005Cyaride (free)mg/L5BiotaE. ColiNo./100 mL200E. ColiNo./100 mL100Market & HoldMg/L5Arsenic Totalµg/L5Arsenic Totalµg/L100BiotaE. ColiNo./100 mL100Coliforms FecalNo./100 mL100<
Chemical Privator of Biological VariableOnlineAcceptable Lifth of ClosedTotal Phosphorus mg/L 0.3110.180Total Dissolved Phosphorus mg/L 1.8012.252Nitrate as N mg/L 1.8012.252Major lons mg/L 0.019 ³ Major lons mg/L 834Sulphate Dissolved Solids mg/L 834Sulphate Dissolved mg/L 299Sodium Dissolved mg/L 200Fluoride Dissolved mg/L 0.26Choride Dissolved mg/L 100Physicals and Other mg/L 100pH FieldpH units6.5-9.0pH FieldpH units6.5-9.0oxygen Dissolved mg/L 3Total Dissolved mg/L 3Temperature > 5°C (Open Season) mg/L 5Temperature < 5°C (Copen Season) mg/L 3Total Suspended Solids mg/L 3Total Suspended Solids mg/L 5Temperature < 5°C (Copen Season) mg/L 5Temperature < 5°C (Copen Season) mg/L 3Total Suspended Solids mg/L 3Total Suspended Solids mg/L 0.0005Cyanide (free) mg/L 5Reactive Chlorine Species mg/L 0.005Cyanide (free) mg/L 5Arsenic Total \mug/L 100Mater Mater Mate
NumericsOpenClosedTotal Phosphorusmg/L0.3110.180Total Dissolved Phosphorusmg/L0.1860.115Total Nitrogenmg/L1.8012.252Nitrate as Nmg/L3Ammonia Un-ionizedmg/L0.019°Major Ionsmg/L834Total Dissolved Solidsmg/L834Sulphate Dissolvedmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.266Chloride Dissolvedmg/L100Physicals and Othermg/L100PH LabpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units3Total Solyced Solidsmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L5Temperature > 5°C (Open Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L0.0005Cyaride (free)mg/L0.0005Reactive Chlorine Speciesmg/L0.0005Coliforms FecalNo./100 mL200Metals
Total Dissolved Phosphorusmg/L0.180Total Dissolved Phosphorusmg/L1.8012.252Nitrate as Nmg/L3Ammonia Un-ionizedmg/L0.019°Major Ions
Total Dissolved PriospholusIng/L0.118Total Nitrogenmg/L1.8012.252Nitrate as Nmg/L0.019³Major Ionsmg/L0.019³Total Dissolved Solidsmg/L834Sulphate Dissolvedmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.266Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0OXygen Dissolvedmg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L5Temperature < 5°C (Closed Season)
Total Nitrogen Ing/L I.801 2.252 Nitrate as N mg/L 3 Armmonia Un-ionized mg/L 0.019 ^a Major Ions
Initial as NIng/L3Ammonia Un-ionizedmg/L0.019°Major Ionsmg/L834Sulphate Dissolved Solidsmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Animonia UniformationInterfactMajor Ionsmg/L834Total Dissolved Solidsmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L5.0-69.2Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L200BiotaE. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metalsmg/L5Arsenic Total $\mu g/L$ 5Arsenic Total $\mu g/L$ 500Barium Total $\mu g/L$ 1000Boron Total $\mu g/L$ 500Cadmium Total $\mu g/L$ 500Charceula E-dbCalculatedbCharceula E-dbCalculatedbCharceula E-dbCalculatedbCharceula E-dbCalculatedb
Major torismg/L834Total Dissolved Solidsmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Initial Dissolved SolidsIng/L834Sulphate Dissolved Solidsmg/L299Sodium Dissolvedmg/L0.26Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen Dissolvedmg/L5Temperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Sulprate Dissolvedmg/L299Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen DissolvedTemperature > 5°C (Open Season)mg/L5Temperature > 5°C (Closed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L5.0-69.2Reactive Chlorine Speciesmg/L0.0005Cyanide (free)mg/L0.0005BiotaE. ColiNo./100 mL200Coliforms FecalNo./100 mL200Metals100MetalsArsenic Total $\mu g/L$ 5Arsenic Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 1000Boron Total $\mu g/L$ 500Calculated ^b 100Boron Total $\mu g/L$ 500Calculated ^b Churceirus Total $\mu g/L$ 500Calculated ^b Churceirus TotalChurceirus Total <t< td=""></t<>
Sodium Dissolvedmg/L200Fluoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen DissolvedTemperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Huoride Dissolvedmg/L0.26Chloride Dissolvedmg/L100Physicals and OtherpH units6.5-9.0pH LabpH units6.5-9.0pH FieldpH units6.5-9.0Oxygen DissolvedTemperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Chloride Dissolved mg/L 100 Physicals and Other pH units 6.5-9.0 pH Lab pH units 6.5-9.0 pH Field pH units 6.5-9.0 Oxygen Dissolved 0 0 Temperature > 5°C (Open Season) mg/L 5 Temperature < 5°C (Closed Season)
Physicals and OtherpH LabpH units $6.5-9.0$ pH FieldpH units $6.5-9.0$ Oxygen Dissolvednemperature > 5°C (Open Season)mg/LTemperature > 5°C (Closed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L $5.0-69.2$ Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.0005 BiotaE. ColiNo./100 mL 200 Coliforms FecalNo./100 mL 1000 MetalsArsenic Total $\mu g/L$ 5 Arsenic Dissolved $\mu g/L$ 1000 Berulium Total $\mu g/L$ 1000 Boron Total $\mu g/L$ 500 Cadmium Total $\mu g/L$ 500 Calculated ^b 000
pH LabpH units $6.5-9.0$ pH FieldpH units $6.5-9.0$ Oxygen DissolvediTemperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
pH FieldpH units6.5-9.0Oxygen Dissolved
Oxygen Dissolvedmg/LTemperature > 5°C (Open Season)mg/LTemperature < 5°C (Closed Season)
Temperature > 5°C (Open Season)mg/L5Temperature < 5°C (Closed Season)
Temperature < 5°C (Closed Season)mg/L3Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L $5.0-69.2$ Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.0005 BiotaE. ColiNo./100 mL200Coliforms FecalNo./100 mL100MetalsArsenic Total $\mu g/L$ 5 Arsenic Total $\mu g/L$ 100Barium Total $\mu g/L$ 1000Beryllium Total $\mu g/L$ 5000 Cadmium Total $\mu g/L$ 5000 Cadmium Total $\mu g/L$ 5000
Sodium Adsorption Ratiorel units3Total Suspended Solidsmg/L $5.0-69.2$ Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.005 BiotaE. ColiNo./100 mL200Coliforms FecalNo./100 mL100Metals4Arsenic Total $\mu g/L$ 5Arsenic Dissolved $\mu g/L$ 1000Beryllium Total $\mu g/L$ 1000Boron Total $\mu g/L$ 5000Cadmium Total $\mu g/L$ 5000Communication $\mu g/L$ 5000Communication $\mu g/L$ 5000Cadmium Total $\mu g/L$ 5000Cadmium Total $\mu g/L$ 5000Cadmium Total $\mu g/L$ 5000Chromium Total $\mu g/L$ 5000Chromium Total $\mu g/L$ 5000
Total Suspended Solidsmg/L $5.0-69.2$ Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.005 Biota E. ColiNo./100 mL 200 Coliforms FecalNo./100 mL 100 Metals 4 rsenic Total μ g/L 5 Arsenic Dissolved μ g/L 1000 Barium Total μ g/L 1000 Beryllium Total μ g/L 500 Cadmium Total μ g/L 500 Coheren Total μ g/L 500
Reactive Chlorine Speciesmg/L 0.0005 Cyanide (free)mg/L 0.005 BiotaE. ColiNo./100 mL200Coliforms FecalNo./100 mL100MetalsArsenic Totalµg/L5Arsenic Dissolvedµg/L1000Barium Totalµg/L1000Boron Totalµg/L500Cadmium Totalµg/L500Cadmium Totalµg/L500
Cyanide (free) mg/L 0.005 Biota E. Coli No./100 mL 200 Coliforms Fecal No./100 mL 100 Metals
Biota E. Coli No./100 mL 200 Coliforms Fecal No./100 mL 100 Metals 100 Arsenic Total µg/L 5 Arsenic Dissolved µg/L 1000 Barium Total µg/L 1000 Beryllium Total µg/L 1000 Boron Total µg/L 500 Cadmium Total µg/L 500
E. Coli No./100 mL 200 Coliforms Fecal No./100 mL 100 Metals μg/L 5 Arsenic Total μg/L No Objective Barium Total μg/L 1000 Beryllium Total μg/L 1000 Boron Total μg/L 500 Cadmium Total μg/L 500
Coliforms FecalNo./100 mL100MetalsArsenic Totalµg/L5Arsenic Dissolvedµg/LNo ObjectiveBarium Totalµg/L1000Beryllium Totalµg/L100Boron Totalµg/L500Cadmium Totalµg/L500Charanium Totalµg/L500
MetalsArsenic Totalµg/L5Arsenic Dissolvedµg/LNo ObjectiveBarium Totalµg/L1000Beryllium Totalµg/L100Boron Totalµg/L500Cadmium Totalµg/LCalculated ^b
Arsenic Totalμg/L5Arsenic Dissolvedμg/LNo ObjectiveBarium Totalμg/L1000Beryllium Totalμg/L100Boron Totalμg/L500Cadmium Totalμg/LCalculated ^b
Arsenic Dissolvedμg/LNo ObjectiveBarium Totalμg/L1000Beryllium Totalμg/L100Boron Totalμg/L500Cadmium Totalμg/LCalculated ^b
Barium Total μg/L 1000 Beryllium Total μg/L 100 Boron Total μg/L 500 Cadmium Total μg/L Calculated ^b
Beryllium Total μg/L 100 Boron Total μg/L 500 Cadmium Total μg/L Calculated ^b
Boron Total µg/L 500 Cadmium Total µg/L Calculated ^b
Cadmium Total µg/L Calculated ^b
μ Chromium rotar μ g/L 50
Cobalt Total µg/L 50
Copper Total ug/L Calculated ^b
Iron Dissolved ug/L 300
Lead Total ug/L Calculated ^b
Lithium Total ug/L 2500
Manganese Dissolved ug/L Under Review
Mercury Total ug/L 0.026
Molvbdenum Total
Selenjum Total
Silver Total
$\frac{\mu g}{L} = \frac{0.8}{10}$
Vanadium Total
$\frac{100}{20}$

Pesticides		
Acid Herbicides		
2,4-D	μg/L	4
Bromoxynil	µg/L	0.33
Dicamba	µg/L	0.006
МСРА	µg/L	0.025
Picloram	µg/L	29
Organochlorine Pesticides in Water		
Endosulfan	μg/L	0.003
Hexachlorocyclohexane (gamma-HCH)		
(Lindane)	μg/L	0.01
Hexachlorobenzene	µg/L	0.52
Pentachlorophenol (PCP)	µg/L	0.5
Neutral Herbicides in Water		
Atrazine	μg/L	1.8
Diclofopmethyl (Hoegrass)	µg/L	0.18
Metolachlor	μg/L	7.8
Metribuzin	μg/L	0.5
Simazine	μg/L	0.5
Triallate	µg/L	0.24
Trifluralin	μg/L	0.2
Other		
Glyphosate	μg/L	Report Detections
Fish Tissue		
Mercury in fish (muscle tissue)	μg/kg	200
Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	μg/kg	500
DDT (total) in fish (muscle tissue)	μg/kg	5000
Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Radioactive		
Cesium-137	Bq/L	10
lodine-131	Bq/L	6
Lead-210	Bq/L	0.2
Radium-226	Bq/L	0.5
Strontium-90	Bq/L	5
Tritium	Bq/L	7000

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{\{0.86[\log(hardness)\}-3.2\}}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[\ln(hardness)\}-1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[\ln(hardness)]+4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[\ln(hardness)]+2.255\}}$.

Table 11

WATER QUALITY OBJECTIVES			
Qu'Appelle River Reach: Kaposvar Creek to Assiniboine River			
Chemical, Physical or Biological Variable	Unit	Acceptable Limit or Limits	
Nutrients		Open	Closed
Total Phaenharus	ma/l	0.278	0.221
Total Phosphorus	mg/∟	0.304	0.290
Total Dissolved Phosphorus	mg/L	0.156	0.129
Total Nitragon		0.190	0.249
Nitrate as N	mg/L	1.822	1./0/
Ammonia Un-ionized	mg/L	0.0	<u>ວ</u> ງ10 ^a
	IIIg/L	0.0	
Total Dissolved Solids	ma/l	1	111
Sulphate Dissolved	mg/L		<u>86</u>
Sodjum Dissolved		4	00
Soulum Dissolved		2	.00
Chloride Dissolved	mg/L	0	.20
Chionde Dissolved	ling/∟		00
Physicals and Other		6.6	
	pH units	6.5	<u>-9.0</u>
	pH units	6.5	9.0
Oxygen Dissolved			
Temperature > 5°C (Open Season)	mg/L		5
Temperature < 5°C (Closed Season)	mg/L	3	
Sodium Adsorption Ratio	rel units	Under Review	
Total Suspended Solids	mg/L	22.6 -122.2	
Reactive Chlorine Species	mg/L	0.0005	
Cyanide (free)	mg/L	0.005	
	1		
E. Coli	No./100 mL	200	
Coliforms Fecal	No./100 mL	1	00
Metals			
Arsenic Total	µg/L	No Objective	
Arsenic Dissolved	μg/L	50	
Barium Total	μg/L	1000	
Beryllium Total	μg/L	100	
Boron Total	μg/L	500	
Cadmium Total	μg/L	Calculated ^b	
Chromium Total	µg/L	50	
Cobalt Total	µg/L	50	
Copper Total	µg/L		
Iron Dissolved	µg/L	300	
Lead Total	ug/L	Calculated ^b	
Lithium Total	ug/L	2500	
Manganese Dissolved		Under Review	
Mercury Total		0.026	
Molybdenum Total		10	
Nickel Dissolved			
Selenium Total		Calc	1
Silver Total) 1
Thallium Total) 8
Uranium Total			10
Vanadium Total			00
Zino Totol			20
LING I ULAI	Iµg/∟		00

Acid Herbicides2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfanEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water	Acid Herbicides		
2,4-D $\mu g/L$ 4Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorobenzene $\mu g/L$ 0.5Neutral Herbicides in Water			
Bromoxynil $\mu g/L$ 0.33Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Pictoram $\mu g/L$ 29Organochlorine Pesticides in Water1Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.001(Lindane) $\mu g/L$ 0.52Pentachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Glyphosate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/kg$ Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	2,4-D	µg/L	4
Dicamba $\mu g/L$ 0.006MCPA $\mu g/L$ 0.025Picloram $\mu g/L$ 0.025Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.052Pentachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Glyphosate $\mu g/L$ 0.2Metroucy in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Bromoxynil	µg/L	0.33
MCPA $\mu g/L$ 0.025Picforam $\mu g/L$ 29Organochlorine Pesticides in Water29Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2Other0.20.2Glyphosate $\mu g/L$ 8500Fish Tissue1.83500Lead in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Dicamba	µg/L	0.006
Picloram $\mu g/L$ 29Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Glyphosate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherMercury in fish (muscle tissue) $\mu g/kg$ Metola in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian μg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	МСРА	µg/L	0.025
Organochlorine Pesticides in WaterEndosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) $\mu g/L$ 0.01(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other00.2Glyphosate $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Picloram	µg/L	29
Endosulfan $\mu g/L$ 0.003Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachloroberzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water1.8Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.5Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.5Glyphosate $\mu g/L$ 0.2Other $\mu g/L$ 0.2DT (total) in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Organochlorine Pesticides in Water		
Hexachlorocyclohexane (gamma-HCH) (Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Triallate $\mu g/L$ 0.2Other0.20.2Glyphosate $\mu g/L$ 0.2Percury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Endosulfan	µg/L	0.003
(Lindane) $\mu g/L$ 0.01Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in Water4trazine0.5Atrazine $\mu g/L$ 0.18Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Other0.24Glyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 5000DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Hexachlorocyclohexane (gamma-HCH)		
Hexachlorobenzene $\mu g/L$ 0.52Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.2Other0.2Glyphosate $\mu g/L$ 0.2Phercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	(Lindane)	µg/L	0.01
Pentachlorophenol (PCP) $\mu g/L$ 0.5Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.5Trifluralin $\mu g/L$ 0.24OtherGlyphosate $\mu g/L$ Bercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Hexachlorobenzene	µg/L	0.52
Neutral Herbicides in WaterAtrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.2Glyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kg$ Mercury in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.024	Pentachlorophenol (PCP)	µg/L	0.5
Atrazine $\mu g/L$ 1.8Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other0.2Glyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) mammalian $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Neutral Herbicides in Water		
Diclofopmethyl (Hoegrass) $\mu g/L$ 0.18Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other 0.2 0.18Glyphosate $\mu g/L$ 0.2Fish Tissue $\mu g/L$ 0.2Mercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) mammalian $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024	Atrazine	µg/L	1.8
Metolachlor $\mu g/L$ 7.8Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2OtherGlyphosate $\mu g/L$ Report DetectionsFish TissueMercury in fish (muscle tissue) $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024	Diclofopmethyl (Hoegrass)	µg/L	0.18
Metribuzin $\mu g/L$ 0.5Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other 0.2 0.2Glyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g R TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Metolachlor	µg/L	7.8
Simazine $\mu g/L$ 0.5Triallate $\mu g/L$ 0.24Trifluralin $\mu g/L$ 0.2Other $\mu g/L$ 0.2Glyphosate $\mu g/L$ Report DetectionsFish Tissue $\mu g/kg$ 200Arsenic in fish (muscle tissue) $\mu g/kg$ 3500Lead in fish (muscle tissue) $\mu g/kg$ 500DDT (total) in fish (muscle tissue) $\mu g/kg$ 5000PCB in fish (muscle tissue) $\mu g TEQ/kg$ diet wet weight0.00079PCB in fish (muscle tissue) avian $\mu g TEQ/kg$ diet wet weight0.0024DDT (total) in fish (muscle tissue) $\mu g/kg$ diet wet weight0.0024	Metribuzin	µg/L	0.5
Triallateμg/L0.24Trifluralinμg/L0.2Other0.2Glyphosateμg/LReport DetectionsFish TissueMercury in fish (muscle tissue)μg/kg200Arsenic in fish (muscle tissue)μg/kg3500Lead in fish (muscle tissue)μg/kg500DDT (total) in fish (muscle tissue)μg/kg5000PCB in fish (muscle tissue)μg TEQ/kg diet wet weight0.00079PCB in fish (muscle tissue) avianμg TEQ/kg diet wet weight0.0024DDT (total) in fish (muscle tissue)μg/kg diet wet weight0.0024	Simazine	µg/L	0.5
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i oxapnene in iish (muscie tissue) µg/kg diet wet weight 6.3	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Radioactive	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue)	µg/kg diet wet weight µg/kg diet wet weight	<u> </u>
Cesium-137 Bq/L 10	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive	μg/kg diet wet weight μg/kg diet wet weight	14 6.3
lodine-131 Bq/L 6	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137	µg/kg diet wet weight µg/kg diet wet weight Bq/L	14 6.3 10
Lead-210 Bq/L 0.2	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131	µg/kg diet wet weight µg/kg diet wet weight Bq/L	14 6.3 10 6
Radium-226 Bq/L 0.5	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L	14 6.3 10 6 0.2
Strontium-90 Bq/L 5	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226	µg/kg diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5
Tritium Bq/L 7000	PCB in fish (muscle tissue) avian DDT (total) in fish (muscle tissue) Toxaphene in fish (muscle tissue) Radioactive Cesium-137 Iodine-131 Lead-210 Radium-226 Strontium-90	pg 12 ang diet wet weight µg/kg diet wet weight Bq/L Bq/L Bq/L Bq/L Bq/L Bq/L Bq/L Bq/L	14 6.3 10 6 0.2 0.5 5

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{(0.86[log(hardness)]-3.2]}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2*e^{(0.8545[ln(hardness)]-1.465)}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{(1.273[ln(hardness)]-4.705)}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998*e^{(0.8460[ln(hardness)]+2.255)}$.

Table 12

WATER QUALITY OBJECTIVES			
Cold River Reach: Outlet of Cold Lake			
Chemical, Physical or Biological Variable	Unit	Acceptable Limit or Limits	
Nutrients		Open	Closed
Total Phosphorus	mg/L	0.023	0.024
Total Dissolved Phosphorus	mg/L	0.010	0.017
Total Nitrogen	mg/L	0.453	0.452 0.467
Nitrate as N	mg/L		3
Ammonia Un-ionized	mg/L	0.019 ^a	
Major Ions			
Total Dissolved Solids	mg/L	5	500
Sulphate Dissolved	mg/L	2	250
Sodium Dissolved	mg/L	2	200
Fluoride Dissolved	mg/L	0	.12
Chloride Dissolved	mg/L	1	00
Physicals and Other			
pH Lab	pH units	6 5	5-9.0
pH Field	pH units	6.6	5-9.0
Oxygen Dissolved		0.0	0.0
Temperature $> 5^{\circ}$ C (Open Season)	mg/l		5
$\frac{1}{2} = \frac{1}{2} = \frac{1}$	mg/L		3
Sodium Adsorption Patio		<u>_</u>	
Total Suspended Solida		1 2-4 8	
Popetive Chloring Species		0.0005	
Cycepide (free)		0.0003	
Cyanide (free)	Ing/L	0.005	
E Coli	No /100 ml		200
Coliforms Fecal	No /100 ml	1	
Metals	NO./ 100 ME		
Arsonic Total			5
Arsenic Dissolved		5 No Objective	
Rarium Total			
Bandin Total	µg/L	1000	
Beron Total	µg/L	100	
Codmium Total	µg/L		
Cauliful Total	µg/L		
	µg/L	50	
	µg/L		
Copper Total	μg/L		
Iron Dissolved	µg/L		
	μg/L		
	μg/L	2500	
Manganese Dissolved	μg/L	50	
Mercury I otal	µg/L	0.026	
Molybdenum I otal	µg/L		10
Nickel Dissolved	μg/L	Calc	ulated
Selenium Total	μg/L		1
Silver Total	μg/L	(0.1
Thallium Total	μg/L	(0.8
Uranium Total	μg/L		10
Vanadium Total	μg/L	1	00
Zinc Total	μg/L	30	

Pesticides		
Acid Herbicides		
2,4-D	µg/L	4
Bromoxynil	µg/L	0.33
Dicamba	µg/L	0.006
МСРА	µg/L	0.025
Picloram	µg/L	29
Organochlorine Pesticides in Water		
Endosulfan	µg/L	0.003
Hexachlorocyclohexane (gamma-HCH)		
(Lindane)	µg/L	0.01
Hexachlorobenzene	µg/L	0.52
Pentachlorophenol (PCP)	µg/L	0.5
Neutral Herbicides in Water		
Atrazine	µg/L	1.8
Diclofopmethyl (Hoegrass)	μg/L	0.18
Metolachlor	µg/L	7.8
Metribuzin	μg/L	0.5
Simazine	µg/L	0.5
Triallate	μg/L	0.24
Trifluralin	µg/L	0.2
Other		
Glyphosate	µg/L	Report Detections
Fish Tissue		
Mercury in fish (muscle tissue)	µg/kg	200
Arsenic in fish (muscle tissue)	µg/kg	3500
Lead in fish (muscle tissue)	µg/kg	500
DDT (total) in fish (muscle tissue)	µg/kg	5000
Aquatic Biota Consumption		
PCB in fish (muscle tissue) mammalian	µg TEQ/kg diet wet weight	0.00079
PCB in fish (muscle tissue) avian	µg TEQ/kg diet wet weight	0.0024
DDT (total) in fish (muscle tissue)	µg/kg diet wet weight	14
Toxaphene in fish (muscle tissue)	µg/kg diet wet weight	6.3
Radioactive		
Cesium-137	Bq/L	10
lodine-131	Bq/L	6
Lead-210	Bq/L	0.2
Radium-226	Bq/L	0.5
Strontium-90	Bq/L	5
Tritium	Bq/L	7000

Protection of Aquatic Life
Ag-Livestock
Ag-Irrigation
Recreation
Treatability
Ag-Irrigation + Treatability
Ag- Irrigation and Livestock
Fish Consumption

a. Ammonia objective: Expressed as mg unionized ammonia/L. This would be equivalent to 0.0156 mg ammonia-nitrogen/L (0.019*14.0067/17.031).

b. The objective value in $\mu g/L$ is a function of total hardness (CaCO3 mg/L) in the water column: Cadmium Total is calculated using $10^{(0.86[log(hardness)]\cdot3.2)}$. Copper Total's objective is 2 when total hardness is <82 or unknown, 4 when >180, and calculated using $0.2^*e^{\{0.8545[ln(hardness)]\cdot1.465\}}$ when total hardness is ≥82 to ≤180. Lead Total's objective is 1 when total hardness is ≤60 or unknown, 7 when >180, and calculated using $e^{\{1.273[ln(hardness)]\cdot4.705\}}$ when total hardness is >60 to ≤180. Nickel Dissolved is calculated using $0.998^*e^{\{0.8460[ln(hardness)]+2.255\}}$.

AMENDING AGREEMENT TO THE **MASTER AGREEMENT** ON **APPORTIONMENT** AND TO SCHEDULE "C" THERETO

AMENDING AGREEMENT TO THE MASTER AGREEMENT ON APPORTIONMENT AND TO SCHEDULE "C" THERETO

This Amending Agreement made this SECOND day of APRIL, A.D. 1992.

BETWEEN:

The Government of Canada, as represented by the Minister of Environment, (hereinafter called "Canada")

-and-

The Government of Alberta, as represented by the Minister of the Environment and by the Minister of Federal and Intergovernmental Affairs, (hereinafter called "Alberta")

-and-

The Government of Manitoba, as represented by the Minister of Natural Resources, (hereinafter called "Manitoba")

-and-

The Government of Saskatchewan, as represented by the Minister responsible for the Saskatchewan Water Corporation, (hereinafter called "Saskatchewan")

WHEREAS the parties entered into an agreement dated October 30, 1969, and an Amending Agreement on April 30, 1984, collectively referred to herein as the "Master Agreement", providing for the apportionment of water in watercourses arising in or flowing through the Provinces of Alberta, Saskatchewan, and Manitoba and providing for the reconstitution of the Prairie Provinces Water Board, hereinafter referred to as the "Board", which is responsible for the administration of the Master Agreement;

AND WHEREAS the parties desire to further amend the Master Agreement with respect to water quality and groundwater matters;

AND WHEREAS the Governor-in-Council has authorized Canada to enter into this Amending Agreement by Order-in-Council P.C. 1991-2101 dated 31 October, 1991 and the Lieutenant Governors-in-Council for Alberta, Manitoba and Saskatchewan, respectively, have authorized the respective parties to enter into this Amending Agreement by the following Orders in Council:

DATED

Alberta - O.C. 525/91 Manitoba - O.C. 885/91 Saskatchewan - O.C. 91/843

NOW THEREFORE, in consideration of the mutual agreements and covenants hereinafter contained, the parties hereto agree as follows:

1. The Master Agreement is hereby amended as follows:

(a) The description of the parties is amended by substituting the words "Her Majesty, the Queen, in right of", with the words "Government of" wherever they appear; and

(b) by adding the heading "<u>Ground-water</u>" and paragraph 6.1 immediately after paragraph 6 as follows:

"Groundwater

6.1 The parties mutually agree to consider groundwater matters that have implications affecting transboundary surface and groundwater, to refer such matters to the Board, and to consider recommendations of the Board thereon."

2. Schedule "C" to the Master Agreement is amended as follows:

(a) by deleting therefrom paragraph 2 and substituting therefore the following:

"2. The Board shall oversee and report on the Master Agreement (including the First and Second Agreements thereunder) executed by Canada, Alberta, Manitoba and Saskatchewan for the apportionment of waters flowing from one province into another province; shall take under consideration. comprehensive planning, water quality management including the mandate in respect of interprovincial management of water quality described in paragraph 2 of Schedule "E" and other questions pertaining to water resource management referred to it by the parties hereto; shall recommend appropriate action to investigate such matters and shall submit recommendations for their resolution to the parties hereto."

(b) by adding to paragraph 4 subparagraph (g) as follows:

"4(g). to comply with the list of duties described in paragraph 8 of Schedule E concerning its water quality mandate."

3. Schedule "E" a copy of which is annexed hereto is added as a Schedule to the Master Agreement;

4. In all other respects the terms and provisions of the Master Agreement and the Schedules thereto shall continue in full force and effect.

5. No member of the Parliament of Canada or Member of the Legislative Assemblies of the Provinces party to this Agreement shall hold, enjoy, or be admitted to any share or part of any contract, agreement, commission or benefit arising out of this Agreement.

6. This Amending Agreement enures to the benefit of and is binding on the parties and their respective successors and assigns, and shall be effective as at the date and year of execution by the party last signing.

IN WITNESS WHEREOF Alberta has caused these presents to be executed by the Minister of the Environment and the Minister of Federal and Intergovernmental Affairs, and Manitoba has caused these presents to be executed by the Minister of Natural Resources, and Saskatchewan has caused these presents to be executed by Minister responsible the for the Saskatchewan Water Corporation, and Canada has caused these presents to be Minister executed by the of the Environment, on the day and year first mentioned above.

THE GOVERNMENT OF CANADA

"T. Price"	per: <u>"Jean J. Charest"</u>
Witness	Minister of the Environment

January 23, 1992 Date

THE GOVERNMENT OF ALBERTA

<u>"S. Burns"</u>	per: <u>"Ralph Klein"</u>		
Witness	Minister	of	the
Environment			
	<u>February 21, 1992</u>		992
	Date		

Approved Pursuant to the Alberta Department of Federal and Intergovernmental Affairs Act
<u>"James D. Horsman"</u> Minister of Federal and Intergovernmental Affairs

March 11, 1992 Date

THE GOVERNMENT OF SASKATCHEWAN

<u>"J. Samuelson"</u> per: <u>"Darrel Cunningham"</u> Witness Minister responsible for the Saskatchewan Water Corporation

March 25, 1992 Date

THE GOVERNMENT OF MANITOBA

<u>"L.J. Whitney"</u> per: <u>"Harry Enns"</u> Witness Minister of Natural Resources

> <u>April 2, 1992</u> Date

AMENDING AGREEMENT

to the MASTER

AGREEMENT on

APPORTIONMENT

and to SCHEDULES A, B,

and C thereto

(The Prairie Provinces Water Board Agreement)

AMENDING AGREEMENT to the MASTER AGREEMENT on APPORTIONMENT and to SCHEDULES A, B, and C thereto (the Prairie Provinces Water Board Agreement)

THIS AGREEMENT made as of the <u>1st</u> day of <u>October</u>, <u>1999</u>

B E T W E E N: HER MAJESTY THE QUEEN in right of CANADA, (hereinafter called **"Canada"**), as represented by the Minister of the Environment (hereinafter called "the Federal Minister"),

AND

HER MAJESTY THE QUEEN in right of ALBERTA, (hereinafter called "Alberta"), as represented by the Minister of Environmental Protection (hereinafter called "the Alberta Minister")

AND

HER MAJESTY THE QUEEN in right of MANITOBA, (hereinafter called "Manitoba"), as represented by the Minister of Natural Resources (hereinafter called "the Manitoba Minister")

AND

HER MAJESTY THE QUEEN in right of SASKATCHEWAN, (hereinafter called "Saskatchewan"), as represented by the Minister responsible for the Saskatchewan Water Corporation (hereinafter called "the Saskatchewan Minister")

WHEREAS the parties entered into an agreement dated October 30, 1969, and an Amending Agreement on April 30, 1984, and a second Amending Agreement on April 2, 1992, all of which are collectively described "the herein as Master Agreement", providing for the apportionment of water in watercourses arising in or flowing through the Provinces of Alberta, Saskatchewan, and Manitoba and providing for the reconstitution of the Prairie Provinces Water Board, hereinafter referred to as "the Board", which Board is responsible for the administration of the Master Agreement;

AND WHEREAS the parties desire to further amend the Master Agreement with respect to inter-provincial lakes, and as otherwise provided hereinafter;

AND WHEREAS the Governor-in-Council has authorized Canada to enter into this Amending Agreement by Order-in-Council P.C. 1998- 2252, dated <u>December 16,</u> 1998, and the Lieutenant Governors-in-Council for Manitoba and Saskatchewan, respectively, have authorized the respective Provinces to enter into this Amending Agreement by the following Orders-in-Council:

Order

Manitoba -	O.C. 369/98
Saskatchewan -	O.C. 478/99

and Alberta may enter into and be bound by this Amending Agreement without the need of a further Order-in-Council;

NOW THEREFORE, in consideration of the mutual covenants and agreements herein contained and subject to the terms and conditions hereinafter set out, the parties hereto agree as follows:

1. Schedule "A" to the Master Agreement is amended by deleting therefrom paragraph 1. (b) and substituting therefore the following:

"(b) "Watercourse" means any river, stream, creek, inter-provincial lake, or other natural channel which, from time to time, carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan, and includes all tributaries of each such river, stream, creek, interprovincial lake, or other natural channel which do not themselves cross the common boundary between the Provinces of Alberta and Saskatchewan. Such tributaries as do themselves cross the common boundary between the Provinces of Alberta and Saskatchewan shall be deemed to be "watercourses" for the purpose of this agreement."

2. Schedule "A" to the Master Agreement is further amended by adding after the amended paragraph 1. (b) the following:

"(c) "Inter-provincial lake" means any lake that is situated on or intersected by the common boundary between the Provinces of Alberta and Saskatchewan which either has no outlet or, if it does have an outlet, drains from time to time into a river, stream, creek, lake, or other natural channel situated in the Province of Saskatchewan, or into a river, stream, creek, lake, or other natural channel situated in Alberta and which carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan".

3. Schedule "B" to the Master Agreement is amended by deleting therefrom paragraph 1. (b) and substituting therefore the following:

"(b) "Watercourse" means any river, stream, creek, inter-provincial lake, or other natural channel which, from time to time, carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba, and includes all tributaries of each such river, stream, creek, inter-provincial lake, or other natural channel which do not themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba. Such tributaries as do themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba shall be deemed to be "watercourses" for the purpose of this agreement".

4. Schedule "B" to the Master Agreement is further amended by adding after the amended paragraph 1. (b) the following:

"(c) "Inter-provincial lake" means any lake that is situated on or intersected by the common boundary between the Provinces of Saskatchewan and Manitoba which either has no outlet or, if it does have an outlet, drains from time to time into a river, stream, creek, lake, or other natural channel situated in the Province of Manitoba, or into a river, stream, creek, lake, or other natural channel situated in Saskatchewan and which carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba."

5. Schedule "B" to the Master Agreement is further amended by deleting therefrom paragraph 3. and substituting therefore the following:

"3. Saskatchewan shall permit in each watercourse the following quantity of water to flow into the Province of Manitoba during the period from January 1 of each year to the following December 31 of that year, a quantity of water equal to the natural flow for that period determined at the point referred to in paragraph 2(b) hereof, less:

a) one-half the water flowing into the Province of Saskatchewan in that watercourse from the Province of Alberta; and

b) any water which would form part of the natural flow in that watercourse but does not flow into the Province of Saskatchewan because of the implementation of any provision of any subsisting water apportionment agreement made between Alberta and Saskatchewan and approved by Manitoba; and

c) one-half of the natural flow arising in the Province of Saskatchewan.

The actual flow shall be adjusted from time to time by mutual agreement on an equitable basis during such period but this shall not restrict or prohibit Saskatchewan from diverting, storing or consuming any quantity of water from any watercourse, provided that Saskatchewan diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Manitoba with respect to each watercourse."

6. Schedule "C" to the Master Agreement is amended by deleting therefrom the existing Clause 10 and substituting therefor the following:

"10. Operation of the Board

The Executive Director for the Board and such other technical and clerical staff as may be required, shall be Federal or Provincial public servants with office headquarters located in a city within one of the prairie provinces as designated from time to time by the Board. The cost of administration, excluding the cost of monitoring as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties hereto on the basis of one-half by Canada and one-sixth by each of the Provinces. The Board shall prepare, for the approval of the parties hereto, work requirements, program, staff annual budgets and 5 year forecasts and such other reports as may be required for the operation of the Board."

7. The Master Agreement and all Schedules thereto are amended by deleting the reference to "the Exchequer Court of Canada" and "the Exchequer Court Act" wherever they appear, and substituting therefore "the Federal Court of Canada, Trial Division" and "the Federal Court Act of Canada", respectively.

8. In all other respects the terms and provisions of the Master Agreement and the Schedules thereto shall continue in full force and effect.

9. No Member of the Parliament of Canada or Member of any of the Legislative

Assemblies of Alberta, Manitoba, or Saskatchewan shall hold, enjoy, or admitted to any share or part of any contract, agreement, commission or benefit arising out of this Agreement.

10. This Amending Agreement shall become and be effective as at the date and year of execution by the party last signing, and shall enure to the benefit of and be binding upon each of the parties and their respective successors and assigns.

IN WITNESS WHEREOF Canada, Alberta, Manitoba, and Saskatchewan have caused these presents to be executed by each of their duly-authorized and responsible Ministers, on the respective dates set out below.

HER MAJESTY THE QUEEN in right of CANADA

	Per:	Christine Stewart
Witness	Ministe	er of the Environment

Date: March 12, 1999

HER MAJESTY THE QUEEN in right of ALBERTA

	Per: <u>Ty Lund</u>
Witness	Minister of Environmental
	Protection

Date: May 4, 1999

HER MAJESTY THE QUEEN in right of MANITOBA

	Per:	J. Glen Cummings	
Witness	Ministe	r of Natural Resourc	es

Date: July 15, 1998

HER MAJESTY THE QUEEN in right of Saskatchewan

Witness	Per: <u>Maynard Sonntag</u> Minister responsible for the Saskatchewan Water Corporation
	Corporation

Date: October 1, 1999

APPENDIX 1

ATTACHMENT "A"

To Schedule E (LISTING OF RIVER REACHES AND REFERENCE TO TABLES OF WATER QUALITY OBJECTIVES, 1992)

ATTACHMENT "A"

To Schedule E (LISTING OF RIVER REACHES AND REFERENCE TO TABLES OF WATER QUALITY OBJECTIVES)

TABLE LISTING WATER QUALITY REACH **OBJECTIVES (FOR** RIVER (predetermined length) RIVER REACH) 1 Beaver River Beaver Crossing to the Border Lea Park to 2 North Saskatchewan River Lloydminster Ferry Red Deer River A/S **Bindloss to Confluence** 3 with the South Saskatchewan River South Saskatchewan Highway #41 to 4 Confluence with Red River Deer River Battle River Blackfoot Creek to 5 Unwin Churchill River Island Falls to 6 Pukatawagan Lake Saskatchewan River Outlet of Cumberland 7 Lake to Mouth of Carrot River Carrot River Turnberry to Mouth of 8 Carrot River Etomami River to Red Red Deer S/M 9 Deer Lake Assiniboine River Whitesand River to 10 Outlet of Shellmouth Reservoir Qu'Appelle River Kaposvar Creek to 11 Assiniboine River

WATER QUALITY OBJECTIVES	
BEAVER RIVER REACH: BEAVER	CROSSING TO THE BORDER
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT
BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	5.0
CADMIUM (total)	0.001
CHLORIDE (diss.)	100.
CHROMIUM (total)	0.011
COPPER (total)	0.004
FECAL COLIFORM	100/100ml
FLUORIDE (diss)	1.5
IRON (diss)	1.0
LEAD (total)	0.007
MANGANESE (diss)	0.2
NICKEL (total)	0.1
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.001
SODIUM (diss)	100.
SULPHATE (diss)	500.
URANIUM	0.02
ZINC (total)	0.03
AMMONIA (total)	TABLE BACK SIDE
OXYGEN (diss)	OW 6.0
pH (pH units)	6.5-9.0
LINDANE	0.0001
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CHLORINE	0.002
CYANIDE (free)	0.005
SILVER (total)	0.0001
PCP	0.0005
MERCURY IN FISH (ug/g)	0.5
PCB IN FISH (ug/g)	2.0

SYMBOLS: - all units are in mg/L unless otherwise noted. - OW - open water objective only.

WATER QUALITY OBJECTIVES	
NORTH SASK. R. REACH: LEA PAR	RK TO LLOYDMINSTER FERRY
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT
BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	5.0
CADMIUM (total)	0.001
CHLORIDE	100
CHROMIUM (total)	0.011
COPPER (total)	0.004
FECAL COLIFORM	100/100ml
FLUORIDE (diss)	1.5
IRON (diss)	0.3
LEAD (total)	0.007
MANGANESE (diss)	0.05
NICKEL (total)	0.1
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.001
SODIUM	100
SULPHATE (diss)	500.
URANIUM	0.02
ZINC (total)	0.03
ALUMINUM (total)	5.0
COBALT	0.05
TOTAL DISS. SOLIDS	500
VANADIUM (TOTAL)	0.1
AMMONIA (total)	TABLE BACK SIDE
OXYGEN	6.5
pH (pH UNITS)	6.5-9.0
LINDANE	0.0001
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CHLORINE	0.002
CYANIDE (free)	0.005
PCP	0.0005
MERCURY IN FISH (ug/g)	0.5
PCB IN FISH (ug/g)	2.0

WATER QUALITY OBJECTIVES	
RED DEER RIVER A/S REACH: BINDLOSS TO CONFLUENCE WITH THE S. SASK. R.	
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT
BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	5.0
CADMIUM (total)	0.001
CHROMIUM (total)	0.011
COPPER (total)	0.004
FECAL COLIFORM	100/100ml
FLUORIDE (diss)	1.5
IRON (diss)	0.3
LEAD (total)	0.007
MANGANESE (diss)	0.05
NICKEL (total)	0.025
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.001
SULPHATE (diss)	500.
ZINC (total)	0.03
COBALT	1.0
SAR	3.0
TOTAL DISS. SOLIDS	500
VANADIUM	0.1
AMMONIA (total)	TABLE BACK SIDE
LINDANE	0.0001
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CYANIDE (free)	0.005
MERCURY IN FISH (ug/g)	0.5
PCB IN FISH (ug/g)	2.0

WATER QUALITY OBJECTIVES	
SOUTH SASK. R. REACH: HIGHWAY #41 TO	CONFLUENCE WITH RED DEER RIVER
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT
BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	5.0
CADMIUM (total)	0.001
CHROMIUM (total)	0.011
COPPER (total)	0.01
FECAL COLIFORM	100/100ml
FLUORIDE (diss)	1.5
IRON (diss)	1.0
LEAD (total)	0.02
MANGANESE (diss)	0.05
NICKEL (total)	0.025
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.002
SULPHATE (diss)	500.
ZINC (total)	0.05
COBALT	1.0
SAR	3.0
TOTAL DISS. SOLIDS	500
VANADIUM (TOTAL)	0.1
AMMONIA (total)	TABLE BACK SIDE
LINDANE	0.0001
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CYANIDE (free)	0.005
MERCURY IN FISH (ug/g)	0.5
PCB IN FISH (ug/g)	2.0

WATER QUALITY OBJECTIVES	
BATTLE RIVER REACH: BLAC	KFOOT CREEK TO UNWIN
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT
BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	5.0
CADMIUM (total)	0.001
CHLORIDE	100
CHROMIUM (total)	0.011
COPPER (total)	0.004
FECAL COLIFORM	100/100ml
FLUORIDE (diss)	1.5
IRON (diss)	0.3
LEAD (total)	0.007
MANGANESE (diss)	0.05
NICKEL (total)	0.1
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.001
SODIUM	100
SULPHATE (diss)	500.
URANIUM	0.02
ZINC (total)	0.03
ALUMINUM (total)	5.0
COBALT	0.05
TOTAL DISS. SOLIDS	500
VANADIUM	0.1
AMMONIA (total)	TABLE BACK SIDE
OXYGEN	OW 6.0
pH (pH UNITS)	6.5-9.0
LINDANE	0.0001
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CHLORINE	0.002
CYANIDE (free)	0.005
PCP	0.0005
MERCURY IN FISH (ug/g)	0.5
PCB IN FISH (ug/g)	2.0

SYMBOLS: - all units are in mg/L unless otherwise noted. - OW - indicates open water period

WATER QUALITY OBJECTIVES		
CHURCHILL RIVER REACH: ISLAND FALLS TO PUKATAWAGAN LAKE		
CHEMCIAL, PHYSICAL OR	ACCEPTABLE LIMIT	
BIOLOGICAL VARIABLE	OR LIMITS	
ARSENIC (diss)	0.05	
BARIUM (total)	1.0	
BORON (diss)	5.0	
CADMIUM (total)	0.00058	
CHLORIDE (diss.)	250.	
CHROMIUM (total)	0.011	
COPPER (total)	0.0057	
FECAL COLIFORM	200/100ml	
FLUORIDE (diss)	1.5	
IRON (diss)	0.3	
LEAD (total)	0.011	
MANGANESE (diss)	0.05	
NICKEL (total)	0.025	
NO ₂ +NO ₃ (as N)	10.0	
SELENIUM (diss)	0.01	
SODIUM (diss)	300.	
SULPHATE (diss)	500.	
URANIUM	0.02	
ZINC (total)	0.047	
PHOSPHORUS (total)	0.05	
AMMONIA (total)	TABLE BACK SIDE	
OXYGEN (diss)	6.5	
pH (pH units)	6.5-9.0	
LINDANE	0.00008	
2,4-D	0.004	
2,4,5-TP	0.01	
CHLOROPHENOLS (total)	0.001	
CHLORINE	0.002	
CYANIDE (free)	0.005	
PCP	0.0005	
CESIUM-137 (Bq/L)	50.	
IODINE-131 (Bq/L)	10.	
RADIUM-226 (Bq/L)	1.0	
STRONTIUM-90 (Bq/L)	10.	
TRITIUM (Bq/L)	40000.	
MERCURY IN FISH (ug/g)	0.2	
PCB in Fish (ug/g)	2.0	

SASKATCHEWAN RIVER REACH: OUTLET OF CUMBERLAND LAKE TO MOUTH OF CARROT RIVER

BIOLOGICAL VARIABLE	OR LIMITS
ARSENIC (diss)	0.05
BARIUM (total)	1.0
BORON (diss)	0.5
CADMIUM (total)	0.001
CHLORIDE (diss.)	68.
CHROMIUM (total)	0.011
COPPER (total)	0.01
FECAL COLIFORM	200/100ml
FLUORIDE (diss)	1.0
IRON (diss)	0.3
LEAD (total)	0.0061
MANGANESE (diss)	0.05
NICKEL (total)	0.10
NO ₂ +NO ₃ (as N)	10.0
SELENIUM (diss)	0.01
SODIUM (diss)	100.
SULPHATE (diss)	250.
URANIUM	0.02
ZINC (total)	0.047
PHOSPHORUS (total)	0.05
AMMONIA (total)	TABLE BACK SIDE
OXYGEN (diss)	6.5
pH (pH units)	6.5-9.0
LINDANE	0.00008
2,4-D	0.004
2,4,5-TP	0.01
CHLOROPHENOLS (total)	0.001
CHLORINE	0.002
CYANIDE (free)	0.005
PCP	0.0005
CESIUM-137 (Bq/L)	50.
IODINE-131 (Bq/L)	10.
RADIUM-226 (Bq/L)	1.0
STRONTIUM-90 (Bq/L)	10.
TRITIUM (Bq/L)	40000.
MERCURY IN FISH (ug/g)	0.2
PCB in Fish (ug/g)	2.0

WATER QUALITY OBJECTIVES		
CARROT RIVER REACH: TURNBERRY TO MOUTH OF CARROT RIVER		
CHEMICAL, PHYSICAL OR BIOLOGICAL VARIABLE	ACCEPTABLE LIMIT OR LIMITS	
ARSENIC (diss)	0.05	
BARIUM (total)	1.0	
BORON (diss)	2.0	
CADMIUM (total)	0.001	
CHLORIDE (diss.)	100.	
CHROMIUM (total)	0.011	
COPPER (total)	0.01	
FECAL COLIFORM	200/100ml	
FLUORIDE (diss)	1.0	
IRON (diss)	0.3	
LEAD (total)	0.015	
MANGANESE (diss)	0.05	
NICKEL (total)	0.10	
NO ₂ +NO ₃ (as N)	10.0	
SELENIUM (diss)	0.01	
SODIUM (diss)	100.	
SULPHATE (diss)	500.	
URANIUM	0.02	
ZINC (total)	0.047	
PHOSPHORUS (total)	0.05	
AMMONIA (total)	TABLE BACK SIDE	
OXYGEN (diss)	OW 6.5	
pH (pH units)	6.5-9.0	
LINDANE	0.00008	
2,4-D	0.004	
2,4,5-TP	0.01	
CHLOROPHENOLS (total)	0.001	
CHLORINE	0.002	
CYANIDE (free)	0.005	
PCP	0.0005	
CESIUM-137 (Bq/L)	50.	
IODINE-131 (Bq/L)	10.	
RADIUM-226 (Bq/L)	1.0	
STRONTIUM-90 (Bq/L)	10.	
TRITIUM (Bq/L)	40000.	
MERCURY IN FISH (ug/g)	0.5	
PCB in Fish (ug/g)	2.0	

SYMBOLS: - all units are in mg/L unless otherwise noted. - OW - indicates open water period.

WATER QUALITY OBJECTIVES		
RED DEER RIVER S/M REACH: ETOMAMI RIVER TO RED DEER LAKE		
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT	
BIOLOGICAL VARIABLE	OR LIMITS	
ARSENIC (diss)	0.05	
BARIUM (total)	1.0	
BORON (diss)	5.0	
CADMIUM (total)	0.00058	
CHLORIDE (diss.)	100.	
CHROMIUM (total)	0.011	
COPPER (total)	0.01	
FECAL COLIFORM	200/100ml	
FLUORIDE (diss)	1.0	
IRON (diss)	0.3	
LEAD (total)	0.0118	
MANGANESE (diss)	0.05	
NICKEL (total)	0.10	
NO ₂ +NO ₃ (as N)	10.0	
SELENIUM (diss)	0.01	
SODIUM (diss)	100.	
SULPHATE (diss)	500.	
URANIUM	0.02	
ZINC (total)	0.047	
PHOSPHORUS (total)	0.05	
AMMONIA (total)	TABLE BACK SIDE	
OXYGEN (diss)	6.0	
pH (pH units)	6.5-9.0	
LINDANE	0.00008	
2,4-D	0.004	
2,4,5-TP	0.01	
CHLOROPHENOLS (total)	0.001	
CHLORINE	0.002	
CYANIDE (free)	0.005	
PCP	0.0005	
CESIUM-137 (Bq/L)	50.	
IODINE-131 (Bq/L)	10.	
RADIUM-226 (Bq/L)	1.0	
STRONTIUM-90 (Bq/L)	10.	
TRITIUM (Bq/L)	40000.	
MERCURY IN FISH (ug/g)	0.5	
PCB in Fish (ug/g)	2.0	

WATER QUALITY OBJECTIVES		
ASSINIBOINE RIVER REACH: WHITESAND RIVER TO OUTLET OF SHELLMOUTH RESERVOIR		
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT	
BIOLOGICAL VARIABLE	OR LIMITS	
ARSENIC (diss)	0.05	
BARIUM (total)	1.0	
BORON (diss)	2.0	
CADMIUM (total)	0.001	
CHLORIDE (diss.)	100.	
CHROMIUM (total)	0.011	
COPPER (total)	0.01	
FECAL COLIFORM	200/100ml	
FLUORIDE (diss)	1.0	
IRON (diss)	0.3	
LEAD (total)	0.02	
MANGANESE (diss)	0.05	
NICKEL (total)	0.10	
NO ₂ +NO ₃ (as N)	10.0	
SELENIUM (diss)	0.01	
SODIUM (diss)	100.	
SULPHATE (diss)	500.	
URANIUM	0.02	
ZINC (total)	0.047	
PHOSPHORUS (total)	0.05	
AMMONIA (total)	TABLE BACK SIDE	
OXYGEN (diss)	6.0	
pH (pH units)	6.5-9.0	
LINDANE	0.00008	
2,4-D	0.004	
2,4,5-TP	0.01	
CHLOROPHENOLS (total)	0.001	
CHLORINE	0.002	
CYANIDE (free)	0.005	
PCP	0.0005	
CESIUM-137 (Bq/L)	50.	
IODINE-131 (Bq/L)	10.	
RADIUM-226 (Bq/L)	1.0	
STRONTIUM-90 (Bq/L)	10.	
TRITIUM (Bq/L)	40000.	
MERCURY IN FISH (ug/g)	0.5	
PCB in Fish (ug/g)	2.0	

TABLE 11	
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WATER QUALITY OBJECTIVES		
QU'APPELLE RIVER REACH: KAPOSVAR CREEK TO ASSINIBOINE RIVER		
CHEMICAL, PHYSICAL OR	ACCEPTABLE LIMIT	
BIOLOGICAL VARIABLE	OR LIMITS	
ARSENIC (diss)	0.05	
BARIUM (total)	1.0	
BORON (diss)	2.	
CADMIUM (total)	0.001	
CHLORIDE (diss.)	100.	
CHROMIUM (total)	0.011	
COPPER (total)	0.01	
FECAL COLIFORM	100/100ml	
FLUORIDE (diss)	1.0	
IRON (diss)	0.3	
LEAD (total)	0.02	
MANGANESE (diss)	0.05	
MERCURY (total) (ug/L)	0.006	
NICKEL (total)	0.10	
NO ₂ +NO ₃ (as N)	10.0	
SELENIUM (diss)	0.01	
SODIUM (diss)	100.	
SULPHATE (diss)	500.	
URANIUM	0.02	
ZINC (total)	0.047	
PHOSPHORUS (total)	0.05	
AMMONIA (total)	TABLE BACK SIDE	
OXYGEN (diss)	6.0	
pH (pH units)	6.5-9.0	
LINDANE	0.00008	
2,4-D	0.004	
2,4,5-TP	0.01	
CHLOROPHENOLS (total)	0.001	
CHLORINE	0.002	
CYANIDE (free)	0.005	
PCP	0.0005	
CESIUM-137 (Bq/L)	50.	
IODINE-131 (Bq/L)	10.	
RADIUM-226 (Bq/L)	1.0	
STRONTIUM-90 (Bq/L)	10.	
TRITIUM (Bq/L)	40000.	
MERCURY IN FISH (ug/g)	0.5	
PCB in Fish (ug/g)	2.0	

PPWB BY-LAWS

BY-LAWS Revised and Approved At PPWB Meeting #79 October 11-12, 2006

BY-LAWS

<u>PART I</u>

- 1. In these By-Laws:
- "Agreement" means the 1969 Master Agreement on Apportionment, including all schedules to that Agreement, between Canada, Alberta, Saskatchewan and Manitoba.
- (b) "Alternate" means Alternate Member of the Prairie Provinces Water Board.
- (c) "Board" means the Prairie Provinces Water Board.
- (d) "By-Laws" means the ordinances adopted by the Board for the regulation of the Board's internal affairs.
- (e) "Chairman" means Chairman of the Prairie Provinces Water Board.
- (f) "Executive Director means the Environment Canada employee responsible for the technical and administrative duties of the Board. The appointment and actions of the Executive Director shall at all times be subject to the approval of the Board.
- (g) "Member" means Member of the Prairie Provinces Water Board.
- (h) "Ministers" means the responsible ministers of the governments which are party to the Agreement.

"Schedule C" means the Prairie (i) **Provinces Water Board Agreement** under the Master Agreement (1969)Canada. executed by Saskatchewan Alberta. and Manitoba establishing the Prairie Provinces Water Board.

<u>PART II</u>

The following shall be the By-Laws of the Prairie Provinces Water Board.

1. Objectives

The objectives of the Board shall be to promote the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities, and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.

In general, the Board will provide coordination and liaison between water resource agencies and will advise governments on the planning, development and management of interprovincial waters.

In particular, the Board will ensure the equitable apportionment of water flowing from one province into another province in accordance with the Agreement and will promote effective water quality management of interprovincial streams relative to standards and procedures adopted by the Board from time to time.

2. <u>Membership</u>

In accordance with Section 1 of Schedule "C", the Prairie Provinces Water Board shall consist of five Members to be appointed as follows:

- (a) two Members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board;
- (b) one Member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

3. Alternate Members

Each member, including the Chairman, shall designate in writing an Alternate Member to act on his behalf during his absence, in which case the Alternate shall enjoy all the rights and privileges conferred on the Member.

4. <u>Meetings and Notice</u>

The Board shall meet at least twice a year by the call of the Chairman. Any Member may request a meeting of the Board at any time, in which case the Chairman must call the meeting within one month (30 days).

Meetings of the Board shall be called with at least 14 days notice unless every Member agrees otherwise.

5. <u>Quorum</u>

Meetings of the Board shall be official when all Members or their appointed Alternates are present.

6. <u>Chairmanship</u>

In the absence of the Chairman, meetings shall be chaired by the other Federal Member. If both Federal Members are absent then the Alternate Member for the Chairman shall chair the meeting.

7. <u>Voting</u>

All recommendations to government, all By-Laws and budgets-in-total shall require unanimous approval. The majority of votes determines a question on any other matter. In the event of a tie, the Chairman shall cast the deciding vote.

8. <u>Powers</u>

In accordance with the duties, functions and operations of the Board, as contained in Schedule "C", the Board shall have the power to authorize within expenditures the limits of approved budgets for purposes necessary for administering the Agreement and furthering the objectives of the Board.

9. <u>Authority</u>

Within the general responsibilities given to it, the Board shall determine its technical and administrative functions from time to time and shall decide all matters regarding the authority of the Board and the delegation thereof.

10. Financial Year

The financial year shall end on the 31st day of March in each year.

11. Budgets

The Chairman shall submit fiscal year program and budget estimates to the Board and to the parties to the Agreement for their approval. Such estimates shall be submitted not later than the first day of January preceding the financial year to which they pertain.

12. Support Services

- Environment Canada shall provide (a) the required staff support to assist the Executive Director to meet the technical administrative and requirements of the Board including, but not limited to, the reporting of apportionment and water quality of interprovincial conducting approved streams. studies and furthering the policies and objectives of the PPWB.
- (b) The Board may arrange bv agreement for secondment to Environment Canada, the employees of the agencies of those party Agreement, the at cost. to whenever in the opinion of the party concerned the services of such employees are available. Such employees shall remain under the administrative control and public service regulations of the appropriate party.
- 13. <u>Assignments to Associated</u> <u>Agencies and Consultants</u>

- (a) The Board shall have the authority to engage agencies of those party to the Agreement, at cost, to undertake assignments from the Board, whenever in the opinion of the party concerned, the services of such agencies are available.
- (b) Agencies may enter into subcontracts with consultants for purposes of professional interpretation the subject to approval of the Executive Director. Sub-contracts for the collection of basic data shall not require the approval of the Executive Director.
- (c) The Board may engage consultants to undertake assignments from the Board where such services are deemed necessary.
- The services of consultants and of (d) agencies of those party to the Agreement shall be engaged under a contractual arrangement. Contracts shall be entered into by the Chairman and/or the Executive subject to delegated Director authorities under the federal government contract regulations. Contracts for services shall also be subject budgetary to appropriations and anv other controls imposed by the Board for the conduct of the work.
- 14. <u>Terms of Payment for Services</u> <u>Provided by Associated Agencies</u>
- (a) Canada, through the Board, shall reimburse the Provinces of Alberta, Saskatchewan and

Manitoba on a monthly basis, for expenditures made pursuant to the Agreement and approved by the Board. Payment for such expenditures will be made by Canada upon the submission of a claim in a mutually agreed manner and form.

- Canada, and the Provinces of (b) Alberta, Saskatchewan and Manitoba shall keep complete records of all expenditures made severally pursuant to the Agreement and shall support such expenditures with proper documentation. Canada and the Provinces of Alberta. Saskatchewan and Manitoba shall make these records and documents available to auditors appointed by the other.
- 15. <u>Cost of Administration of the</u> <u>Board</u>

In Accordance with Section 10 of Schedule "C", all budgeted expenditures, which shall not include the cost of monitoring, as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties to the Agreement on the basis of one-half by Canada and one-sixth by each of the Provinces.

16. <u>Financing the Operations of the</u> <u>Board</u>

(a) Canada shall assume responsibility for financing the operations of the Board.

- (b) Subject to the cost sharing provisions of the Agreement, the Provinces of Alberta, Saskatchewan and Manitoba shall pay to Canada their shares of approved expenditures made by Canada for the operations of the Board.
- (c) On or before July 1st of each year, Canada shall prepare and submit to each of the provinces party to the Agreement, statements of final claim respecting provincial shares monies due Canada of for financing the operations of the Board during the previous financial year. Statements of claim shall be certified by a senior official of Canada.
- (d) Within sixty (60) days after receipt of a claim by Canada, submitted as prescribed in Article 16(c), the Provinces of Alberta, Saskatchewan and Manitoba shall reimburse Canada for their shares of expenditures incurred during the previous financial year for the operations of the Board.

17. <u>Annual Report</u>

Within seven (7) months after the end of the financial year, the Chairman shall submit to the Ministers the Annual Report of the Board.

18. <u>Amendment of By-Laws</u>

By-Laws may be enacted, amended or repealed by unanimous approval of the Board. "Notice of Motion" to enact, amend or repeal By-Laws must be served on Members at least sixty (60) days prior to a vote on such issue.

19. Rules and Procedures

The Board may formulate and adopt "Rules and Procedures" governing the day-to-day affairs of the Board. These "Rules and Procedures" may be amended, adopted or repealed in accordance with Article 7 of these By-Laws.

PART III

EXECUTIVE DIRECTOR

- 1. Functions
- The Executive Director, subject to (a) the Board's direction, shall be responsible for the technical and administrative activities of the Board including, but not limited to, collating and analysing data and reporting apportionment and water quality of interprovincial streams; conducting approved studies, and furthering the policies and objectives of the Board. The actions of the Executive Director shall at all times be subject to the approval of the Board.

- (b) The Executive Director shall record, or cause to be recorded, all votes and minutes of all proceedings in books to be kept for that purpose.
- (c) The Executive Director shall give, or cause to be given, notice of all meetings of the Board.
- (d) The Executive Director shall keep the Board informed at all times of matters pertinent or relevant to the programs and operations of the Board.
- (e) The Executive Director shall have charge of all records of the Board, together with copies of all reports made by the Board, and such other books or papers as the Board may direct.
- (f) The Executive Director shall implement all orders and resolutions of the Board and perform any other duties that the Board may prescribe.

^{*} Item 17 revised and approved at Meeting No. 79, October 11-12, 2006.

PPWB

RULES AND PROCEDURES

Revised October 2003

PPWB RULES AND PROCEDURES

The Prairie Provinces Water Board hereby adopts the following Rules and Procedures governing the operations of the Prairie Provinces Water Board.

Financial Administration

- 1. The Executive Director is authorized to make disbursements of funds in conformity with the main items of expenditure allotted in the budget estimates approved by the Board, subject to those restrictions specified elsewhere in these Rules and Procedures.
- 2. The Executive Director shall prepare the annual program and preliminary budget estimates for the operations of the Prairie Provinces Water Board by the fall Board meeting each year. The final estimates shall be submitted to the Chairman not later than the first day of February of the fiscal year to which they pertain.
- Contracts with private consultant firms and individuals shall conform to accepted practices and procedures of the Federal Treasury Board.
- 4. A contract for services with a person or persons may be undertaken by the Executive Director providing that no such contract exceeding \$5,000 is made with a single person, a single firm of persons, or government agency without the approval of the Board.

- 5. Contracts not exceeding \$25,000 shall be executed on behalf of the Board under the signature of the Executive Director. Contracts exceeding \$25,000 shall be executed under the signature of the Chairman of the Board.
- 6. Payment of accounts will be made only after they have been approved by the Executive Director.

Establishment of Salaried Positions,

Appointments and Administration of Salaries

- 7. The appointment of the Executive Director shall be approved by the Board. Support for the PPWB is now provided by Environment Canada.
- 8. The Board shall approve the duties of the Executive Director.
- The classification and remuneration of the Executive Director shall be governed by the appropriate federal authority.
- 10. The financial and personnel administration of the PPWB activities shall be carried out in accordance with federal government practices.
- 11. To facilitate the operations of the PPWB, personnel and financial administrative support services shall be provided, at cost, by the Federal Department of the Environment.

Board Offices

12. The Executive Director is authorized to lease and maintain property within

which to conduct Board affairs providing that terms of such leasing shall be sanctioned by the Board.

- 13. Costs for the operation of the Board offices shall include, but shall not necessarily be limited to, expenditures for the following items:
 - (a) Salaries and wages and related benefits of Board employees personnel or seconded to the Board offices, including removal both expenses, at the commencement and termination of the appointment, where applicable, and living expenses for seconded personnel where approved by the Board.
 - (b) Field surveys and investigations including travel and living expenses when applicable, by personnel engaged in conducting studies or field investigations.
 - (c) Rentals for office space and equipment and charges for utilities and related services for the operation of Board offices.
 - (d) Purchases of furniture and equipment.
 - (e) Operating, maintenance and transportation expenses for equipment.
 - (f) Contracts awarded by the Board including, where applicable, arbitration. settlements, legal fees and matters, made other in accordance with the provisions of the contract.

- (g) Settlement and legal fees arising out of property damaged or public liability made or incurred by an employee of the federal government working on behalf of the Board or a party to the Agreement working for the Board and engaged in the activities of the Board offices.
- (h) Other items required for conducting the work and for operations of the Board offices which have been approved by the Board.

Payment for Services Provided by Participating Government Agencies

- 14. Costs of participating government agencies for services, field investigations, planning studies, etc., specifically requested by the Board shall include the following items:
 - (a) Salaries, wages, travel and living expenses for employees engaged in providing the service.
 - (b) Rental charges for equipment and operators.
 - (c) Normal operating maintenance and transportation expenses for equipment where such expenses are not included in the rental rate.
 - (d) All contracts as provided under the provisions of Article 13(b) of the By-Laws.
 - (e) Other items required for conducting the work of the Board and approved by the Executive Director.
Board Members, Alternates and Advisory Committees

- 15. (a) The Board may establish, as committees required, to advise the Board and/or the Executive Director. The Board will approve the terms of reference for all Unless committees. otherwise agreed to by the Board, each Board member will appoint a representative from his/her own jurisdiction to serve on the committee. The Board may also appoint committee members from non-member departments or agencies.
 - The costs incurred by Board (b) Members and their Alternates in representing their respective governments at Board functions shall be paid for by the appropriate government. The salaries and travelling expenses of government officials appointed to represent those party to the Agreement on Committees established to advise the Board and/or the Executive Director shall be paid by the appropriate party.

- * Approved PPWB #5 -Nov. 2, 1971
- * Revised and Approved PPWB #56 March 22, 1996.
- * Item 15 Revised and Approved PPWB #71 -March 6-7, 2003