Canada Aberta Northwest Territories Northern River Basins Study























A REVIEW AND ANALYSIS OF
EXISTING ALBERTA DATA ON
DRINKING WATER QUALITY
AND TREATMENT FACILITIES
FOR THE NORTHERN RIVER BASINS STUDY













TD 387 .A87 P954 1995

TD/387/.A87/P954/1995 A review and analysis of Prince, Dennis Scott

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Prepared for the Northern River Basins Study under Project 4401-C1

by

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Published by the Northern River Basins Study Edmonton, Alberta June, 1995 ATHABASCA UNIVERSITY

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A review and analysis of existing Alberta data on drinking water quality and treatment facilities for the Northern River Basins Study

(Northern River Basins Study project report, ISSN 1192-3571; no. 55) ISBN 0-662-23558-4 Cat. no. R71-49/3-55E

- Drinking water -- Alberta -- Athabasca River -- Contamination
- 2. Drinking water -- Peace River (B.C. and Alta.) -- Contamination.
- 3. Drinking water -- Slave River (Alta.' And N.W.T.) -- Contamination
- I. Smith, D.W. (Daniel Walter) 1944-
- II. Stanley, Stephen J. (Stephen John), 1962-
- III. Northern River Basins Study (Canada)
- IV. Title.
- V. Series.

TD387.A83P74 1995 553.7'8'0971231 C95-980179-0

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PREFACE:

The Northern River Basins Study was initiated through the "Canada-Alberta-Northwest Territories Agreement Respecting the Peace-Athabasca-Slave River Basin Study, Phase II - Technical Studies" which was signed September 27, 1991. The purpose of the Study is to understand and characterize the cumulative effects of development on the water and aquatic environment of the Study Area by coordinating with existing programs and undertaking appropriate new technical studies.

This publication reports the method and findings of particular work conducted as part of the Northern River Basins Study. As such, the work was governed by a specific terms of reference and is expected to contribute information about the Study Area within the context of the overall study as described by the Study Final Report. This report has been reviewed by the Study Science Advisory Committee in regards to scientific content and has been approved by the Study Board of Directors for public release.

It is explicit in the objectives of the Study to report the results of technical work regularly to the public. This objective is served by distributing project reports to an extensive network of libraries, agencies, organizations and interested individuals and by granting universal permission to reproduce the material.

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This publication may be cited as:

Prince, D. S., Smith, D. W. and Stanley, S. J. 1995. Northern River Basins Study Project Report No. 55, A Review and Analysis of Existing Alberta Data on Drinking Water Quality and Treatment Facilities for the Northern River Basins Study. Northern River Basins Study, Edmonton, Alberta.

Whereas the above publication is the result of a project conducted under the Northern River Basins Study and the terms of reference for that project are deemed to be fulfilled,

IT IS THEREFORE REQUESTED BY THE STUDY OFFICE THAT:

this publication be subjected to proper and responsible review and be considered for release to the public.

F. A bloom	7 June 95
(Dr. F. J. Wrona, Ph.D., Science Director)	(Date)

Whereas it is an explicit term of reference of the Science Advisory Committee "to review, for scientific content, material for publication by the Board",

IT IS HERE ADVISED BY THE SCIENCE ADVISORY COMMITTEE THAT:

this publication has been reviewed for scientific content and that the scientific practices represented in the report are acceptable given the specific purposes of the project and subject to the field conditions encountered.

SUPPLEMENTAL COMMENTARY HAS BEEN ADDED TO THIS PUBLICATION: [] Yes [] No

Palantin	Thue 43
(Dr. P. A. Larkin, Ph.D., Chair)	(Date)./

Whereas the Study Board is satisfied that this publication has been reviewed for scientific content and for immediate health implications,

IT IS HERE APPROVED BY THE BOARD OF DIRECTORS THAT;

this publication be released to the public, and that this publication be designated for: [] STANDARD AVAILABILITY [] EXPANDED AVAILABILITY

Luille Partington	June 3/95
(Lucille Partington, Co-chair)	(Date)
Kehest Millery-	June 12/9,
(Rebert McLeod, Co-chair)	(Date)



A REVIEW AND ANALYSIS OF EXISTING ALBERTA DATA ON DRINKING WATER QUALITY AND TREATMENT FACILITIES FOR THE NORTHERN RIVER BASINS STUDY

STUDY PERSPECTIVE

Prior to and during the Northern River Basins Study, residents have raised concerns about their drinking water. The purpose of this project was to review the existing drinking water data bases and document the drinking water treatment facilities present in the study area and the processes used. In addition to providing the study with an inventory of facilities and processes, it also provides a comparison of treatment performance to the Canada Drinking Water Quality Guidelines.

The review was unable to substantiate any association between drinking water quality and type of treatment process, or between the population of localities and water use trends. The project also revealed that drinking water quality was more closely related with the operational management of the treatment facility

Related Study Questions

- 2) What is the current state of water quality in the Peace, Athabasca and Slave river basins, including the Peace-Athabasca Delta?
- 8) Recognizing that people drink water and eat fish from these river systems, what is the current concentration of contaminants in water and edible fish tissue and how are these levels changing through time and by location?

than the actual treatment process used. Examination of water use trends revealed them to be very site specific and largely depended on economic conditions within that community.

Drinking water quality records for communities in the Northwest Territories will be reviewed in a subsequent report.

This project is a first step to further studies into drinking water quality. Other projects will build on this project and examine odour problems in drinking water, water treatment practices and their effectiveness, and the incidence of waterborne diseases noted from a review of existing health records. Collectively, these projects will give the study a picture of the drinking water quality in the Peace, Athabasca and Slave river basins and assist in the preparation of recommendations for management of drinking water and future studies.

REPORT SUMMARY

The primary purpose of this report is to gather existing data that will give direction to later studies of drinking water quality in the NRBS area. The information gathered is in the areas of existing water quality, facility inventories and standards and regulations. Analysis of existing data has indicated that generally drinking water quality meets all applicable guidelines and regulations. However a number of samples did exceed standards set out in "Guidelines for Canadian Drinking Water Quality" (GCDWQ). The parameter most often exceeded which may be of some health concern was turbidity. Turbidity on its own does not necessarily result in health concerns however it has been shown to be related to the effectiveness of the treatment facility in the removal of microbial contaminants and can also limit disinfection effectiveness. Of the roughly 420 samples analyzed 64 samples had values of turbidity greater than 1 NTU. The standards state that turbidity could exceed 1 NTU if it is demonstrated that disinfection is not compromised. It is not clear if these sites with turbidity greater than 1 NTU have confirmed that disinfection is not compromised. Two other parameters of concern which were exceeded in a few instances were chloroform and 1,2 dichlorobenzene. By far most of the samples which exceeded the GCDWQ were for parameters which have aesthetic objectives and most of these were due to the high dissolved solids associated with ground water sources.

The facilities that had a ground water source produced water that was generally higher in TDS, lower in chloroform and less corrosive than facilities using surface water. The comparison of treatment processes used to water quality produced did not provide many correlation's because of uncertainty in the processes being used at facilities and the sensitivity of facility performance to operational factors.

Further study of drinking water quality in the NRBS area should include:

- Sampling of drinking water for physical, chemical and microbial quality to verify existing data and maintain the independence of the study,
- Verification of the information collected on the inventory of facilities,
- Investigation of taste and odour problems, and
- A clarification of the standard being use for turbidity.

TABLE OF CONTENTS

REPORT SUMMARYi
TABLE OF CONTENTS ii
LIST OF TABLES
LIST OF FIGURES iii
1.0 INTRODUCTION1
2.0 INFORMATION SOURCES
2.1 Drinking Water Standards
2.2 Drinking Water Quality Information
2.3 Facility Information
3.0 SUMMARY OF INFORMATION
3.1 Discussion of Appendix B
3.1.1 Corrosion Indices
3.2 Discussion of Appendix C
3.3 Discussion of Appendix D
3.4 Discussion of Appendix E 6
3.5 Discussion of Appendix F
4.0 DISCUSSION
References
APPENDIX A: TERMS OF REFERENCE
APPENDIX B: SUMMARY OF SITES IN THE TREATED WATER SURVEY
APPENDIX C: SUMMARY OF PARAMETERS IN THE TREATED WATER SURVEY
APPENDIX D: SUMMARY OF SAMPLES NOT MEETING GUIDELINES
APPENDIX E: SUMMARY OF FACILITY INVENTORY
APPENDIX F: SUMMARY OF RAW VS TREATED WATER COMPARISONS

LIST OF TABLES

Table 1: Listing of NRBS Area Drinking Water Facilities	9
LIST OF FIGURES	
Figure 1: Example of Parameter Distribution, pH	11
Figure 2: Summary of Drinking Water Populations	12
Figure 3: Treatment Processes used in the Northern River Basin	13
Figure 4: Map of Licensed Drinking Water Facilities in NRBS Area	14
Figure 5: Map of Licensed Drinking Water Facilities of Pop > 500 in NRBS Area	15
Figure 6: Example of Raw vs Treated Water Quality for turbidity and Chloroform	16

1.0 INTRODUCTION

The quality of drinking water is primarily depended on three factors which are the raw water quality, the treatment process used, and the distribution system. The first step in assessing drinking water quality in the Northern River Basin Study (NRBS) area is to obtain as much existing information as possible. This information then needs to be compiled, synthesized, and summarized in a useful format in order to provide direction and background to other drinking water studies in the NRBS.

The information gathered is in three areas; drinking water quality information; drinking water facility inventory; and treatment effectiveness by comparison of raw and treated water quality. The primary source of information has been the government agencies that have jurisdiction over drinking water quality.

This report summaries the results of the gathering of existing information.

2.0 INFORMATION SOURCES

2.1 Drinking Water Standards

The public has demanded that special care be taken concerning drinking water and as such considerable effort has been expended and continues to be expended to determine water quality characteristics that are suitable for human consumption. This information is then used by governing bodies to establish drinking water standards. The jurisdiction over drinking water lies with the provinces and in Alberta the standards are outlined in "Standards and Guidelines for Municipal Water Supply, Wastewater, and Storm Drainage Facilities" (Alberta Environmental Protection (AEP) 1988). A discussion of the position taken by AEP on drinking water quality is in section 4.4 and 4.4.1 of the document and it is as follows:

"4.4 Minimum Requirements

The availability and quality of drinking water can have a significant impact on both the public health and the overall quality of life within a community. A major objective of Alberta Environment is to ensure that drinking water supplies and treatment systems provide a high level of public health protection while being able to meet the water supply needs of the community.

In developing a drinking water supply system the following three requirements must be satisfied:

- 1) The water delivered to consumers shall meet the health related quality standards as outlined in the Health and Welfare Canada Guidelines for Canadian Drinking Water Quality. For those standards based on aesthetic considerations, less stringent requirements may be adopted by Alberta Environment.;
- 2) The water treatment system shall provide a basic level of protection against all possible sources and types of raw and treated water contamination; and,
- 3) Sufficient water must be available to meet the needs of the consumers, which may include fire protection."

"4.4.1 Drinking Water Quality

Pursuant to Section 23 of the Alberta Clean Water (Municipal Plants) Regulations, the drinking water quality criteria developed by the Federal-Provincial Working Group on Drinking Water Quality and published by Health and Welfare Canada have been adopted as the general quality standards for all provincial drinking waters. On a provincial or local basis, parameters can be changed by the Director of Standards and Approvals to reflect either new scientific information or site specific problems.

Drinking water quality standards are based on the best available and most current aesthetic and health effect information. The methods of generating or obtaining health effect information vary depending on the nature of the substance or compound being evaluated, and establishing numerical limits for potentially toxic or carcinogenic substances in drinking water is often extremely difficult. In general, conservative models and large factors of safety are used to develop drinking water quality standards; this approach ensures a high level of public health protection.

Standards, however, cannot be considered as representing a clean demarcation between safe and unsafe drinking water. Every effort should therefore be made to protect water supplies from contamination and to produce the best possible quality drinking water. While occasionally exceeding the drinking water quality standards may not be cause for public health concern, the reasons for exceeding the standards should be immediately determined and the appropriate remedial actions initiated."

A summary of the parameters given in "Guidelines for Canadian Drinking Water Quality" (GCDWQ) are in Appendix C. The guideline uses three levels of standards which are denoted by the terms maximum acceptable concentration (MAC), interim maximum acceptable concentration (IMAC), and aesthetic objective (AO). Substances which have a MAC listed indicates that there is a known or suspected health risk associated with a

lifelong consumption of drinking water equal to or greater than the given concentration of the substance. The IMAC are for substances where there is insufficient toxicological data to establish a MAC. The AO are for substances or characteristic of water that affect its acceptance by consumers. A detailed explanation of the terms use by GCDWQ are available in the document (Federal-Provincial Subcommittee on Drinking Water of the Federal-Provincial Advisory Committee on Environmental and Occupational Health. 1993).

The following excerpt from GCDWQ explains how the MAC standards should be interpreted:

"Drinking water that continually contains a substance at a level greater than its maximum acceptable concentration will contribute significantly to consumers' exposure to the substance and may, in some instances, induce deleterious effects on health. However, short-term excursions above the maximum acceptable concentration do not necessarily mean that the water constitutes an undue risk to health. The amount by which, and the period for which, the maximum acceptable concentration can be exceeded without posing a health risk must be assessed by taking into account the toxicity of the substance involved. When the maximum acceptable concentration for a substance is exceeded, however, the minimum action required is immediate resampling. If the maximum acceptable concentration continues to be exceeded, the local authority responsible for drinking water supplies should be consulted concerning appropriate corrective action."

2.2 Drinking Water Quality Information

The main source of information on drinking water quality was Alberta Environmental Protection's treated water survey. This is a program of sampling drinking water facilities in an effort to assess the quality of drinking water. Several databases containing the results of the treated water survey were down loaded from the AEP mainframe to PC database format. There was a total of 1600 samples taken province wide and 460 taken in the northern river basins. The majority of the samples were analyzed for 46 heavy metal and routine parameters, 58 volatile compounds, 65 semivolatile compounds, and 77 herbicides and pesticides. The samples were taken by AEP staff and analysis was done at the Alberta Environment Center in Vegreville.

2.3 Facility Information

Information on the water treatment facility in the northern river basins was also obtained from Alberta Environmental Protection. The majority of the information was part of a summary of water and wastewater facilities and included the population served, facility status, raw water source, treatment processes used, raw and treated water storage volumes. Other information was obtained that provided the locations of the facilities.

3.0 SUMMARY OF INFORMATION

The summary of the existing information is presented in the appendices at the back of the report. The following sections provide a listing of the contents of the appendices and a brief explanation of the methods used in manipulating the data.

3.1 Discussion of Appendix B

The data was down loaded from AEP mainframe computers to a personal computer database format. The software packages used to transform the data, generate summary statistics, and link the data to other information were Clipper® and dBase IV®; while spreadsheet work like table and chart generation was accomplished with Microsoft Excel ®. Lotus Freelance® was also use in graphical applications.

The data analysis involved the grouping of the treatment sites and the calculation of statistics (means and standard deviations) for the comparison of effluent quality. Data for environmental parameters is log-normally distributed and therefore a log-normal transformation was used and the calculations of the means and standard deviations was performed on the natural logarithm of the data (Prince, 1993).

There were several files of databases containing the data from the treated water survey. Each record was identified as to its location, date sampled, and the laboratory analysis sample number. Each substance had two fields or columns. One, a numeric field containing the analysis result, and the other, a character field that would identify whether the result was below the detection limit or if there were other problems in the analysis. If the symbols "<" or "U" appear in the character field it means that the parameter was not detected and the value given is the MDL (method detection limit). The symbol "B" indicates that the parameter was found in the blank and the result is questionable. The symbol "X" appears if the value is an estimate below the MDL.

Site-average parameters were established by grouping the samples common sites and averaging the values of the various parameters which were above the detection limit. It is recognized that these averages are biased high because their calculation ignores any values below the detection limit. There are techniques available to better estimate the average when censored data is involved, but for these summaries it is sufficient to use the biased high averages and acknowledge the number of values below the detection limit. These site-average parameters are summarized in Appendix B for all the NRBS sites in the treated water survey. The summaries identify the site, the raw water source and type, whether it is ground or surface water, the population served, the compound names, the mean and standard deviation, the number of samples above the detection limit and the

total number of samples taken.

3.1.1 Corrosion Indices

Corrosion is a common problem that affects the distribution lines and equipment of most water utilities and plumbing in homes. Indices have been developed to help predict the corrosive characteristics of the water. The Langelier Saturation Index (LSI) and the Aggressive Index (AI) are used to predict a water's tendency to precipitate or dissolve CaCO_{3(S)}. These indices do not predict the amounts of CaCO_{3(S)} that will be precipitated. Another index that provides information on the corrosive tendencies of water is the Larson's Ratio (LR). The LR is based on the corrosive behavior of chloride and sulfate ions and the protective properties of bicarbonate. More information on these indices can be found in any water treatment text book. The values of these indices and their indication of the corrosive tendencies is as follows:

CO_3
O_3

Based on the data in the treated water survey the three indices described above were calculated and add to the list of parameters for the sites in the treated water survey.

3.2 Discussion of Appendix C

Appendix C contains the overall summary of the treated water survey and the Guidelines for Canadian Drinking Water Quality (GCDWQ) that apply. For each parameter the summary identifies the GCDWQ value, if any, the method detection limit (MDL), the number of samples taken in the NRBS study area, the number of sites sampled in the NRBS area, the number of those samples that were greater than MDL and the number of sites whose average was greater than MDL. An overall NRBS area average for each parameter was established based on the site-average parameters that were greater than MDL. The upper and lower 95% confidence limit for each parameter is also included. Again, the average and the 95% confidence limits for these parameters are biased high if there are samples and sites below the detection limit. It is noted that the method detection limit varies for some parameters as some analysis techniques have changed over time. At the end of Appendix C there is a list of parameters from GCDWQ that were not included in the parameters analyzed in the treated water survey.

The figures following the overall summary of the treated water survey contain frequency distributions for the parameters regulated by GCDWQ. The figures illustrate the distribution of the parameter versus the GCDWQ. There are some parameters that were not plotted because they did not have enough sites above the MDL. An example of these figures is shown in Figure 1 which is the distribution of the pH for the NRBS sites in the treated water survey.

3.3 Discussion of Appendix D

Appendix D is a listing of all the samples that have exceeded GCDWQ. Included in the listing are the sample location, the type of source, be it surface or ground water, and the parameters that were outside of GCDWQ. The appendix shows that the guideline for turbidity (1 NTU) is often exceeded and it should be recognized that GCDWQ has stated that turbidity can exceed 1 NTU if it does not compromise disinfection. It is not clear if these sites with turbidity greater than 1 NTU have confirmed that disinfection is not compromised.

3.4 Discussion of Appendix E

Appendix E is a summary of the water treatment facilities in the NRBS. The information included in this summary is the facility name, the status, be it city, town, etc., population and percent change in population, the raw water source and type, be it ground or surface water, the volume of treated storage, the treatment processes used, facility location (latitude & longitude), whether the facility had been sampled in the treated water survey, whether the raw water was sampled in the treated water survey and whether the facility has been selected for a site visit in later projects. The information under the treatment processes used and the status of the facility are in codes that are listed at the back of the appendix.

Figures have been generated to summarize the water facilities in the NRBS area based on the collected information. Table 1 gives a listing of the names of the drinking water facilities in the NRBS area. There are 214 licensed drinking water facilities in the study area. Figure 2 illustrates the population served by surface versus ground water and how they are split up in the towns and villages. This figure illustrates that the majority of people in the NRBS area are in the larger centers and most get their drinking water from a surface water source. Figure 3 is a summary of the treatment methods used for ground and surface water sources. The figure demonstrates the variety of treatment processes used. Figure 4 illustrates the locations of the licensed drinking water facilities in the NRBS area while Figure 5 illustrates only those populations greater than 500. These figures show that the facilities are fairly well split between the Peace and Athabasca River basins. The percent change in population is derived from the difference between 1986 and 1991 census data and the historical drinking water demand will reflect this change. The

future population growth and drinking water demand is very site specific depending largely on the economic conditions in the communities.

The information from Appendix C and Appendix E has been use to investigate relationships between water quality and processes used. The most obvious contrast occurs when comparing ground water facilities to surface water facilities. The histogram figures in Appendix C for the parameters TDS, chloroform, and the corrosion indices indicate that ground water facilities produce water that is generally higher in TDS, lower in chloroform and less corrosive than surface water facilities. Further investigation into the effects of other treatment processes had two complicating factors and did not provide significant correlation. First, the performance of processes involved in water treatment are very sensitive to how they are operated. Second, the information on facility processes may not be accurate for samples taken from a facility years ago because facilities change over time due to upgrading and replacing equipment.

3.5 Discussion of Appendix F

Appendix F is a summary of the raw versus treated water data. At certain instances in the treated water survey, raw water samples were collected along with treated water samples. This provides a good opportunity to assess the effects of the treatment processes based on a raw versus treated water comparison. Only those parameters that had samples greater than MDL are included in this summary. The summary consists of a treated water sample followed by the raw water sample and a line showing the difference between raw versus treated. The difference was calculated such that a positive number indicates a decrease in the value of the parameter during treatment. Figure 6 gives an example of the raw water verses treated water concentrations for the parameters turbidity and chloroform. The figure shows that the treatment processes remove turbidity well but that chloroform actually increases (chloroform is a by product of some disinfection processes). This demonstrates that the treatment processes not only removes or lowers parameters but other parameters can be increased as a result of treatment.

4.0 DISCUSSION

As stated previously, the primary purpose of this report is to gather existing data that will give direction to later studies of drinking water quality in the NRBS area. Analysis of existing data has indicated that generally drinking water quality meets all applicable guidelines and regulations. However a number of samples did exceed GCDWQ. The parameter most often exceeded which may be of some health concern was turbidity. Turbidity on its own does not necessarily result in health concerns however it has been shown to be related to the effectiveness of the treatment facility in the removal of microbial contaminants and can also limit disinfection effectiveness. Of the roughly 420 samples analyzed 64 samples had values of turbidity greater than 1 NTU. As mentioned earlier the standards state that turbidity could exceed 1 NTU if it is demonstrated that disinfection is not compromised. Two other parameters of concern which were exceeded

in a few instances were chloroform and 1,2dichlorobenzene. By far most of the samples which exceeded the GCDWQ were for parameters which have aesthetic objectives and most of these were due to the high dissolved solids associated with ground water sources.

The facilities that had a ground water source produced water that was generally higher in TDS lower in chloroform and less corrosive than facilities using surface water. The comparison of treatment processes used to water quality produced did not provide many correlations because of uncertainty in the processes being used at facilities and the sensitivity of facility performance to operational factors.

The compilation of information in this report has identified the following possible directions of further studies on drinking water quality in the NRBS:

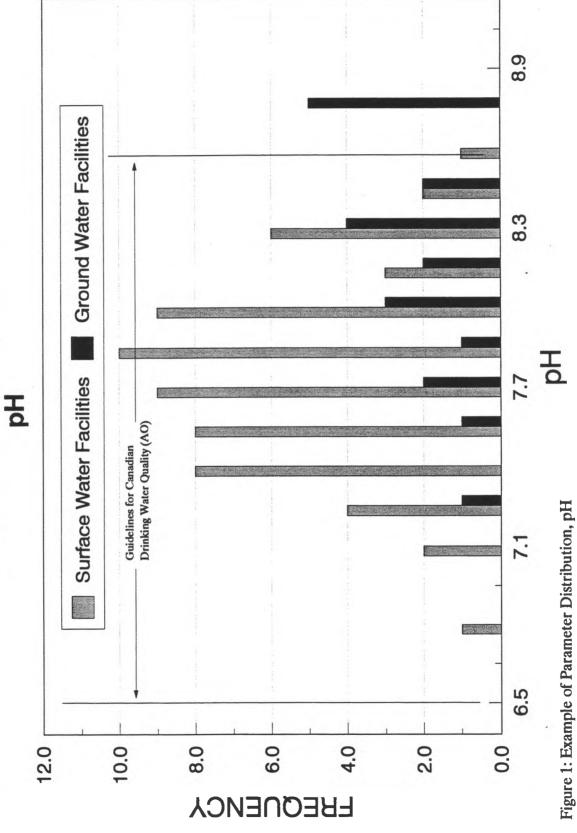
- 1) From the list of GCDWQ parameters that were not included in the treated water survey, taste and odour could be further investigated by asking operators about complaints received.
- 2) While treatment facilities are required to sample for total and fecal coliforms, independent microbial analysis on raw, treated, and distributed water would provide important insights into the drinking water quality.
- 3) There is a need to verify the information on the facility inventory and to confirm that the licensed protocol of operation is reflected in the actual operation of the drinking water facilities. An audit of selected sites would confirm the information in the facility inventory and evaluate the operation of the facility.
- 4) The data on drinking water quality collected by AEP needs to be confirmed by an independent sampling program to reinforce the validity of this data.
- 5) The selection of sites to be visited will take into account population, historical drinking water quality, and facility characteristics in order that a representative group of facilities is used in the in-depth assessment. While traveling to the sites for in-depth study, smaller sites and watering points should be sampled along the way.
- 6) In the cases of turbidities greater than 1 NTU, there is need for an evaluation of what was done to determine if disinfection was compromised.
- 7) Though a thorough and complete evaluation of distribution systems is an unreasonable goal, a much smaller sampling program may be worthwhile.

FACILITY ANZAC ANTAMASCA ATHABASCA ATHABASA ATHABASCA ATHABASCA ATHABASA ATHABASCA ATHABASA ATHABASA ATHABASCA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASCA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASCA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASCA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASA ATHABASCA ATHABASA A	Table 1: Listing of NRBS Drinking	Water Facilities
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		1
SHELL-PEACE R. INSITU		1
	ELMWORTH	SHELL-PEACE R. INSITU

Table 1: Listing of NRBS Drinking Water Faciliti	es
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FACILITY	FACILITY
ENILDA	SIR WINSTON CHURCHILL PP
EUREKA RIVER	SMITH
EVANSBURG	SPIRIT RIVER
EVERGREEN PARK, AGR. SOC.	ST. ISIDORE
FAIRVIEW	STRONG CREEK
FAIRVIEW REGIONAL WATER CO-OP	STURGEON HEIGHT COM.
FALHER	SUNSET HOUSE
FAUST	SUNSET HOUSE
FAWCETT	SWAN HILLS
FOOTNER LAKE	SWEATHOUSE
FORT ASSINIBOINE	T&E TRAILER PARK
FORT CHIPEWYAN	TANGENT
FORT MACKAY	TEEPEE CREEK
FORT MCMURRAY	THREE CREEKS
FORT VERMILION	THUNDER LAKE PROV.PK.
FOX CREEK	TOMKINS LANDING
GIFT LAKE	TOMPKINS LANDING SCHOOL
GIROUXVILLE	TRIPLE L T.P.
GOODWIN	TROUT LAKE
GRANDE CACHE	TROUT LAKE (KATERI)
GRANDE CACHE GRANDE PRAIRIE	1
GRANDE PRAIRIE GRANDE PRAIRIE	VALHALLA VALLEYVIEW
	1
GRASSLAND GREEN COLUMN	VALLEYVIEW
GREEN COURT	WABASCA
GRIFFIN CREEK	WAGNER
GRIMSHAW	WANDERING RIVER
GROUARD	WANHAM
GUY	WARRENSVILLE
HARMON VALLEY	WATINO
HAWK HILLS	WEBERVILLE (#1)
HIGH LEVEL	WEBERVILLE (#2)
HIGH PRAIRIE	WEMBLEY
HIGH PRAIRIE AIRPORT	WESTLOCK
HIGH PRAIRIE NW CO-OP	WEYERHAEUSER GRANDE CACHE OP.
HILLIARD BAY PROV. PK	WEYERHAEUSER GRANDE PRAIRIE OP.
HILLTOP ESTATES	WHITE GULL
HINES CREEK	WHITECOURT
HINTON	WHITELAW
HOTCHKISS	WHITELAW SPRING
HYTHE OFF/LIB	WIDEWATER
JANVIER	WILDWOOD
JARVIE	WILLIAMSON PROV.PK.
JASPER NATIONAL PARK	WILLOW GROVE T.P.(HYTHE)
JEAN COTE	WINAGAMI LAKE P.P.
JOUSSARD	WOKING
KEG RIVER	WORSLEY
KINUSO	YOUNG'S POINT PROV.PK.
LA CRETE	ZAMA
LA GLACE	ZAMA
LAC LA BICHE	
LITTLE BUFFALO	

FREQUENCY DISTRIBUTION



SUMMARY OF TREATED WATER FACILITIES IN THE NORTHERN RIVERS

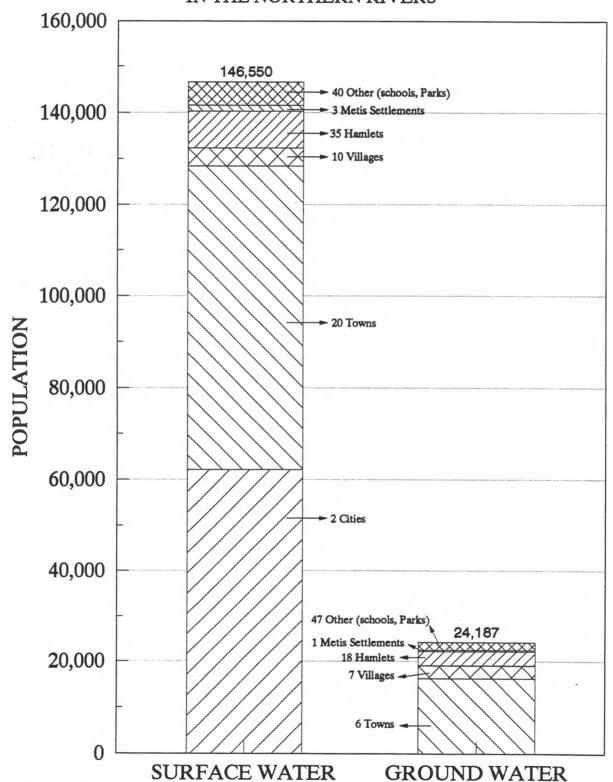


Figure 2: Summary of Drinking Water Populations

TREATMENT METHODS

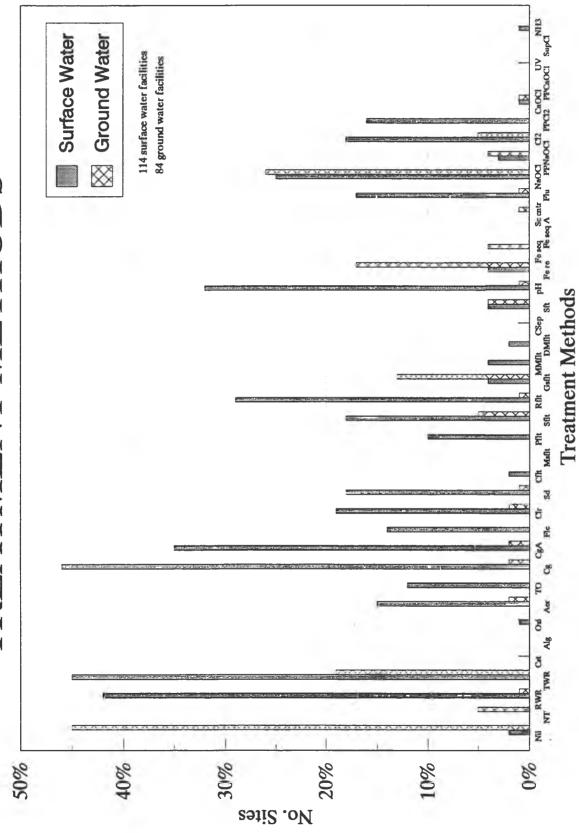


Figure 3: Treatment Processes Used in the Northern River Basin

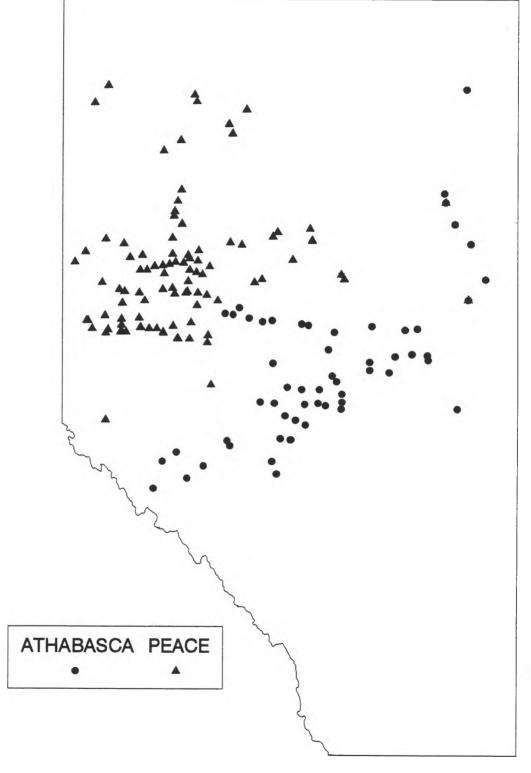


Figure 4: Map Indicating Alberta's Licensed Drinking Water Facilities in NRB

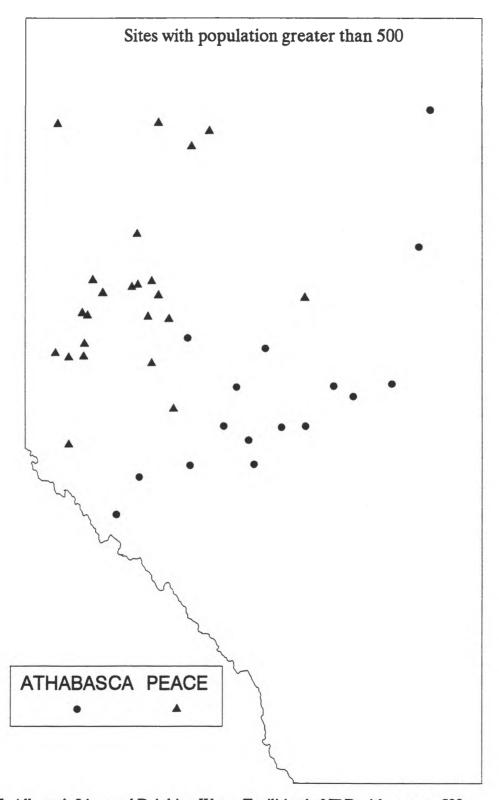


Figure 5: Alberta's Licensed Drinking Water Facilities in NRB with pop. > 500

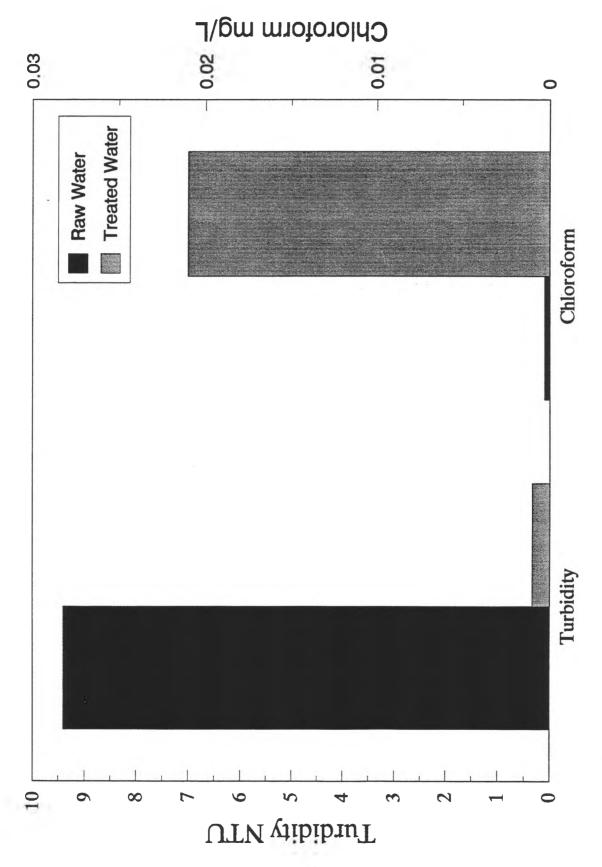


Figure 6: Example of Raw Vs Treated Water Quality for Turbidity and Chloroform

REFERENCES

- Alberta Environment. 1988. <u>Standards and Guidelines For Municipal Water Supply, Wastewater and Storm Drainage Facilities.</u> Edmonton Alberta.
- Federal-Provincial Subcommittee on Drinking Water of the Federal-Provincial Advisory Committee on Environmental and Occupational Health. 1993. <u>Guidelines for Canadian Drinking Water Quality</u>. Ottawa, Ontario.
- Prince D.S. 1993 Evaluation of Lagoon Treatment in Alberta. M.Sc. thesis, Univ. of Alberta, Edmonton.

APPENDIX A: TERMS OF REFERENCE

REVIEW AND SYNTHESIS OF EXISTING INFORMATION ON CONSUMPTIVE USE OF DRINKING WATER AND AVAILABLE DRINKING WATER QUALITY DATA

Terms of Reference

The quality of drinking water is primarily dependent on two factors which are the raw water quality and the treatment processes used in during treatment. The first step required to try to assess drinking water quality in the Northern River Basins is the documentation of treatment facilities located in the basins and the processes they use, as well as obtaining a preliminary overview of raw water used by these facilities and drinking water quality produced by them. This can be accomplished by review and synthesis of existing data. Alberta Environment has a large information base on drinking water use, raw and treated water quality and treatment facilities with in the basins. This information base includes an inventory of facility processes and capabilities as well as performance data. In addition various groups have completed a number of special drinking water studies relevant to the NRBS. The Municipal Branch of Alberta Environment has agreed to make all of this information available for the NRBS.

Specific tasks are outlined below.

- 1. Collection of all pertinent data on water treatment facilities, water use and drinking water quality within the Northern Rivers Basins.
- 2. Based on the form of available information, methods of synthesis and analysis will be developed that ensure the data will analyzed in a sound scientific and statistical manner. In doing this all available data will be critically assessed to determine its scientific merit.
- 3. Development of an inventory of treatment facilities in the Northern River Basins. This will include size of facilities and all processes used.
- 4. Analysis of drinking water use within the basins. The analysis will include evaluation of water use trends and population trends such that future drinking water consumption can be determined.
- 5. Analysis of raw and drinking water quality for each facility. Trends in this data will be evaluated to determine future water quality.
- 6. Based on the results of the analysis of water quality and the inventory of processes at each facility, relations will be developed between drinking water quality and treatment processes used.
- 7. Based on result of analysis of available data, a number of typical water treatment facilities will be selected that can be used for more in-depth studies for other proposed projects. Typical facilities will be selected based on location, facility size, treatment processes used and raw water quality.
- 8. In all portions of this study any deficiency in available data or information will be determined to define additional needs for future studies.
- 9. Synthesis of results a concise and usable manner.

APPENDIX B: SUMMARY OF SITES IN THE TREATED WATER SURVEY

This Appendix is provided on the disk bound as the last page of this report because a printed copy of the data would be prohibitively large.

The disk comprising this Appendix contains three files, using 190,604 bytes.

- 1. INSTALL.BAT; being 80 bytes in size.
- 2. TWSSITES.EXE; being 190,028 bytes in size.
- 3. DISCLAIM.TXT; being 496 bytes in size.

To install the database copy the three files on this disk to a directory on your hard drive and type install.bat. The result will be 11 files totalling 3,381,676 bytes. To use these files requires familiarity with dBASE IV and MS-DOS.

The data in these files cover the entire province of Alberta; sites in the NRBS area are identified in Table 1 (page 10) of this report as well as in Appendix E. The data in these files was compiled from the Treated Water Survey, which was available to the public from Alberta Environmental Protection.

There is no warranty expressed or implied for the use of this database; the Northern River Basins Study does not guarantee the accuracy of the data. The NRBS does not assume any liability for actions or consequences resulting from the use of the data; individuals using this database do so entirely at their own risk. The NRBS will not update the data except as deemed necessary for its own purposes.

APPENDIX C: SUMMARY OF PARAMETERS IN THE TREATED WATER SURVEY

PARAMETER		hines for Car king Water C		Units	MDL	# Samples Taken	# Sites Sampled	# Samples > MDL	# Sites >MDL	Average Values	Upper 95% Limit	Lower 95% Limit
	MAC	IMAC	AO				<u> </u>			> MDL	> MDL	> MDL
ROUTINE PARAMETERS & HEA	VY METALS											
рН			6.5-8.5	pH units	NA	424	85	424	85	7.79	8.67	7.00
lron			0.3	mg/L	0.01 - 0.05	425	85	358	83	0.06	0.38	0.01
Calcium	1			mg/L	1.0	424	85	423	85	35.73	168.40	7.58
Hardness Total				mg/L	5.0	424	85	423	85	137.25	691.90	27.23
Potassium				mg/L	0.2	424	85	424	85	2.95	17.91	0.49
NO, +NO,	10			mg/L	0.005 - 0.02	424	85	335	82	0.05	0.53	0.005
Floride	1.5			mg/L	0.01 - 0.05	424	85	421	85	0.20	1.62	0.02
Sulfate			500	mg/L	3-5	424	85	413	83	53.88	439.46	6.61
Alkalinity				mg/L	5.0	424	85	423	85	157.61	645.76	38.47
TC (partic)	ļ			Partic	0.01 - 0.02	331	83	280	75	0,23	1.37	0.04
Turbidity	1		5	NTU	0.04 - 0.1	389	81	359	79	0.63	4.70	0.08
Conductivity	1			mg/L		424	85	424	85	507.04	1488.89	172.67
Total Dissolved Solids			500	mg/L		424	85	424	85	293.20	951.00	90.40
Manganese			0.05	mg/L	0.001 - 0.008	425	85	346	81	0.02	0.19	0.00
Sodium			200	mg/L	1.0	424	85	418	85	27.39	307.90	2.44
Silica				mg/L	0.1 - 0.5	424	85	424	85	3.61	21.92	0.59
Nitrite	3.2			mg/L	0.001 - 0.005	424	85	224	72	0.00	0.02	0.00
Cloride	ł		250	mg/L	0.5 - 1.0	424	85	415	82	7.47	36.50	1.53
Bicarbonate				mg/L		424	85	424	85	191.00	773.75	47.15
ooc				mg/L	0.2 - 0.4	420	84	411	84	6.79	32.98	1.40
DIC				mg/L		420	84	420	84	37,01	150.95	9.08
Arsenic		0.025		mg/L	0.0001	425	85	20	20	0.00046	0.018	0.00001
Boron		5		mg/L	0.001 - 0.002	411	84	383	84	0.05	0.51	0.01
Copper	ĺ		1	mg/L	0.001	425	85	417	85	0.02	0.19	0.0028
Cadmium	0.005			mg/L	0.001	425	85	194	68	0.0017	0.0041	0.0007
Zinc			5	mg/L	0.001	425	85	366	85	0.008	0.064	0.0010
Chromium	0.05			mg/L	0.001	425	85	355	80	0.0029	0.0069	0.0012
Vanadium				mg/L	0.002	425	85	246	74	0.0034	0.0072	0.0016
Aluminum				mg/L	0.002 - 0.02	425	85	373	71	0.10	1.37	0.007
TN (partic)				Partic	0.020	329	82	133	60	0.04	0.14	0.012
Mercury	0.001			mg/L	0.00010	419	85	27	18	0.00016	0.00039	0.00007
Selenium	0.01			mg/L	0.00010	425	85	90	40	0.00012	0.00022	0.00006
Cobalt				mg/L	0.001	425	85	99	54	0.0015	0.0037	0.0006
Nickel				mg/L	0.001	425	85	367	82	0.0036	0.0095	0.0013
Lead	0.01			mg/L	0.002	425	85	71	43	0.0030	0.0062	0.0015
Magnesium				mg/L	1.0	424	85	417	81	12.86	50.60	3.27
Beryllium				mg/L	0.001	425	85	1	1	0.0010		
Molybdenum				mg/L	0.001	425	85	249	76	0.0024	0.0060	0.0010
Barium	1			mg/L	0.001	425	85	425	85	0.050	0.18	0.014
Total Colour			15	TCU	1.0	19	16	15	13	4.58	22.38	0.94
Carbonate				mg/L	1.0	14	11	13	10	6.9	65	0.72
TKN				mg/L	0.01	60	42	60	42	0.36	2.4	0.06
NH3_N				mg/L	0.001	59	41	58	41	0.040	0.92	0.0017
T_PHOS				mg/L	0.001	52	36	47	33	0.008	0.08	0.0007
COD				mg/L	4	8	6	6	5	11	37	3.2
Cyanide	0.2			mg/L	0.001	43	30	18	15	0.0023	0.0053	0.0010

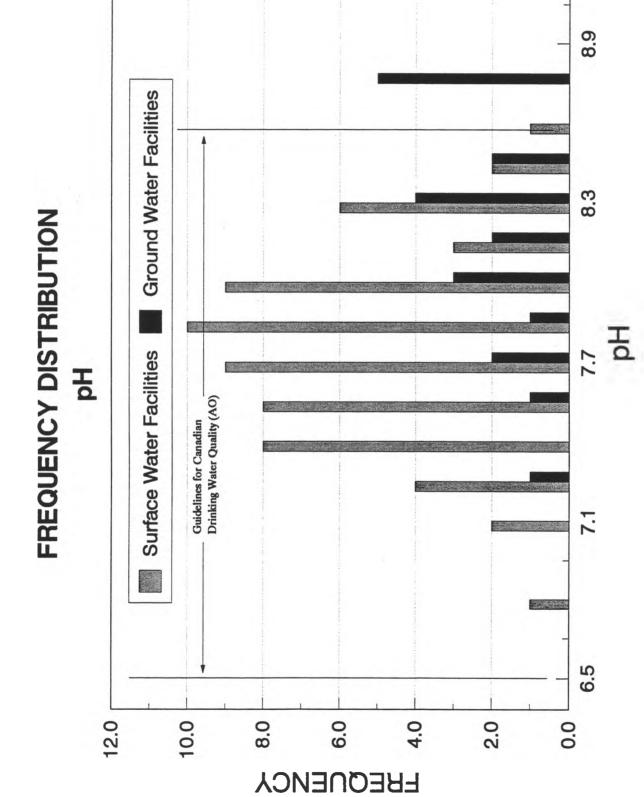
PARAMETER		lines for Car ting Water (Units	MDL	# Samples Taken	# Sites Sampled	# Samples > MDL	# Sites >MDL	Average Values	Upper 95% Limit	Lower 95% Limit
	MAC	IMAC	AO			, -	-			> MDL	> MDL	> MDL
CORROSION INDICES												
Langelier Saturation Index					NA	423	85	423	85	-0.39	0.73	-1.52
Aggressive Index					NA	423	85	423	85	11.9	13.1	10.8
Larson's Ratio					NA	411	83	411	83	0.11	0.32	-0.10
VOLITILE COMPOUNDS												
BENZENE	0.005			mg/L	0.001	456	84	6	5	0.0020	0.0044	0.0009
BROMOCHLOROMETHANE				mg/L	0.001	456	84	1	1	0.0030	1	
BROMODICHLOROMETHANE				mg/L	0.001	456	84	257	67	0.0034	0.015	0.0008
BROMOFORM	0.35 (THMs)			mg/L	0.005	456	84	5	4	0.0067	0.044	0.0010
BROMOMETHANE				mg/L	0.001	456	84	1	1	0.0060		
CARBONTETRACHLORIDE	0.005		}	mg/L	0.001	456	84	0	0			
CHLOROBENZENE	0.08			mg/L	0.001	456	84	0	0			
CHLOROETHANE				mg/L	0.001	456	84	2	2	0.0024	0.0043	0.0014
2-CHLOROETHOXYETHYLENE				mg/L	0.004	456	84	0	0			
CHLOROFORM	0.35 (THMs)			mg/L	0.001	456	84	409	77	0.035	0.530	0.0024
DIBROMOCHLOROMETHANE			1 1	mg/L	0.001	456	84	25	13	0.0027	0.020	0.0004
DIBROMOMETHANE				mg/L	0.001	456	84	0	0			
1,2-DICHLOROBENZENE	0.2		0.003	mg/L	0.001	456	84	1 1	1	0.0010		
1,3-DICHLOROBENZENE				mg/L	0.001	456	84	1	1	0.0010		
1,4-DICHLOROBENZENE	0.005		0.001	mg/L	0.001	456	84	13	5	0.0019	0.0041	0.0009
1,1-DICHLOROETHANE				mg/L	0.001	456	84	0	0			
1,2-DICHLOROETHANE		0.005		mg/L	0.001	456	84	0	0			
1,1-DICHLOROETHYLENE				mg/L	0.001	456	84	0	0			
trans-1,2-DICHLOROETHYLENE				mg/L	0.001	456	84	0	0			
1,2-DICHLOROPROPANE				mg/L	0.001	456	84	0	0			
cis-1,3-DICHLOROPROPYLENE				mg/L	0.003	456	84	0	0			
trans-1,3-DICHLOROPROPYLENE				mg/L	0.003	456	84	0	0			
ETHYLBENZENE			0.0024	mg/L	0.001	456	84	0	0			
METHYLENE CHLORIDE				mg/L	0.02	456	84	4	4	0,0066	0.47	0.0001
STYRENE				mg/L	0.001	456	84	0	0		"	
1,1,2,2-TETRACHLOROETHANE				mg/L	0.001	456	84	0	0			
TETRACHLOROETHYLENE				mg/L	0.003	456	84	0	0			
TOLUENE			0.024	mg/L	0.001	456	84	4	4	0.0017	0.0062	0.0005
1,1,1-TRICHLOROETHANE				mg/L	0.001	456	84	1	1	0.0090	5.5502	5.5003
1,1,2-TRICHLOROETHANE				mg/L	0.001	456	84	0	0			
TRICHLOROFLUOROMETHANE				mg/L	0.001	456	84	0	0			
TRICHLOROETHYLENE	0.05			mg/L	0.001	456	84	2	2	0.078	0.115	0.053
VINYL CHLORIDE				mg/L	0.03	456	84	0	0	3.078		2.933
o-XYLENE			0.3 (all xylene)	mg/L	0.001	456	84	1	1	0.0010		
m,p-XYLENÉ			0.3 (all xylene)	mg/L	0.001	456	84	6	6	0.0016	0.0032	0.0008
1,1,1,2-TETRACHLOROETHANE			1	mg/L	0.001	456	84	ů	0	2.0010	1.0032	5.0000
1,1-DICHLOROPROPYLENE				mg/L	0.001	456	84	0	0			
1,2,3-TRICHLOROPROPANE				mg/L	0.001	456	84	0	0			
1,2,3-TRICHLOROBENZENE				mg/L	0.001	456	84	0	0			
1,2,4-TRICHLOROBENZENE					0.001	456	84	0	0			
1,2,4-TRIMETHYLBENZENE				mg/L				- 1	_			
] [mg/L	0.001	456	84	0	0			
1,2-DIBROMOETHANE				mg/L	0.001	456	84	0	0			
1,2-DIBROMO-3-CHLOROPROPANE				mg/L mg/L	0.001	456 456	84 84	0	0			

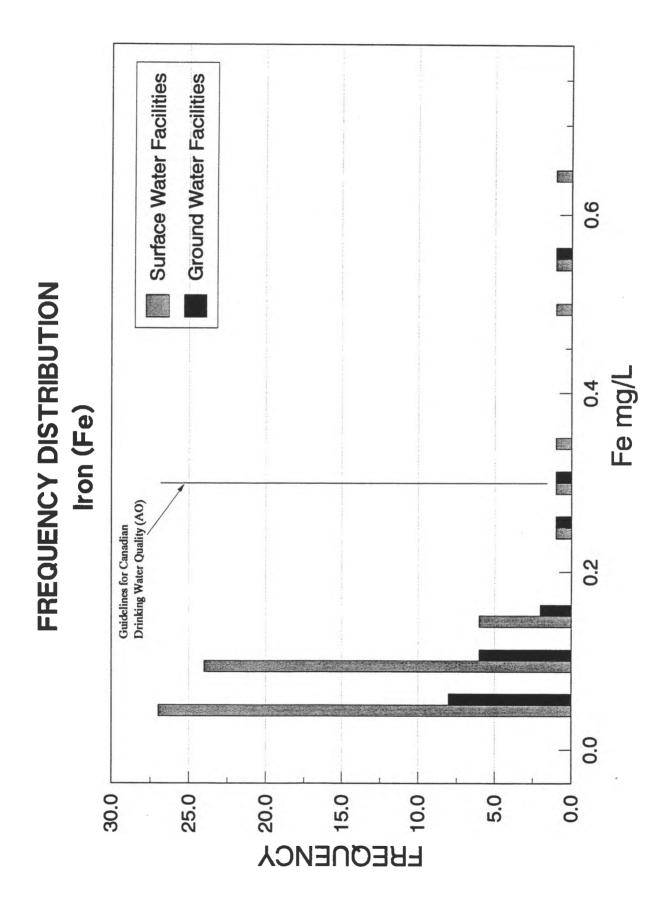
PARAMETER		lines for Can king Water Q		Units	MDL	# Samples Taken	# Sites Sampled	# Samples > MDL	# Sites >MDL	Average Values	Upper 95% Limit	Lower 95% Limit
	MAC	IMAC	AO		,					> MDL	> MDL	> MDL
1,3-DICHLOROPROPANE				mg/L	0.001	456	84	0	0			
2,2-DICHLOROPROPANE				mg/L	0.001	456	84	0	0			
2-CHLOROTOLUENE				mg/L	0.001	456	84	0	0			
4-CHLOROTOLUENE				mg/L	0.001	456	84	0	0	-		
BROMOBENZENE				mg/L	0.001	456	84	0	0			
cis-1,2-DICHLOROETHYLENE				mg/L	0.001	456	84	0	0			
HEXACHLOROBUTADIENE				mg/L	0.003	456	84	0	0			
ISOPROPYLBENZENE				mg/L	0.001	456	84	0	0	ļ		
n-BUTYLBENZENE				mg/L	0.001	456	84	0	0			
n-PROPYLBENZENE				mg/L	0.001	456	84	0	0			
NAPHTHANLENE				mg/L	0.001	456	84	0	0			
p-ISOPROPYLTOLUENE				mg/L	0.001	456	84	0	0			
sec-BUTYLBENZENE				mg/L	0.001	456	84	0	0			
tert-BUTYLBENZENE				mg/L	0.001	456	84	0	0			
SEMIVOLITILE COMPOUNDS												
BENZOIC ACID				mg/L	0.002	461	84	0	0			
4-CHLORO-3-METHYLPHENOL				mg/L	0.001	461	84	0	0			
2-CHLOROPHENOL				mg/L	0.002	461	84	0	0			
2,4-DICHLOROPHENOL	0.9		0.0003	mg/L	0.001	461	84	0	0			i
2,4-DIMETHYL PHENOL				mg/L	0.002	461	84	0	0			
2-METHYL-4,6-DINITROPHENOL				mg/L	0.001	461	84	0	0			
2,4-DINITROPHENOL				mg/L	0.001	461	84	0	0			
HEXADECANOIC ACID				mg/L	0.003	461	84	25	19	0.0046	0.0101	0.0021
2-NITROPHENOL				mg/L	0.001	461	84	0	0			
4-NITROPHENOL				mg/L	0.001	461	84	0	0	ļ		
PENTACHLOROPHENOL	0.06		0.03	mg/L	0.001	461	84	0	0			
PHENOL				mg/L	0.001	461	84	0	0			
2,4,5-TRICHLOROPHENOL				mg/L	0.001	461	84	0	0		1	
2,4,6-TRICHLOROPHENOL	0.005		0.002	mg/L	0.001	461	84	0	0			
ACENAPHTHENE				mg/L	0.001	461	84	0	0			
ACENAPHTHYLENE		1		mg/L	0.001	461	84	0	0			
ANTHRACENE				mg/L	0.001	461	84	0	0			
BENZO(a)ANTHRACENE				mg/L	0.001	461	84	0	0			
BENZO(k)FLUORANTHENE				mg/L	0.001	461	84	0	0			
BENZO(ghi)PERYLENE				mg/L	0.002	461	84	0	0			
BENZO(a)PYRENE	0.00001			mg/L	0.001	461	84	0	0			
CHRYSENE				mg/L	0.001	461	84	0	0			
DIBENZO(ab)ANTHRACENE				mg/L	0.005	461	84	0	0]]	
FLUORANTHENE				mg/L	0.001	461	84	0	0			
FLUORENE		1		mg/L	0.001	461	84	0	0			
INDENO(1,2,3-cd)PYRENE				mg/L	0.001	461	84	0	0			
NAPHTHALENE				mg/L	0.001	461	84	0	0			
PERYLENE				mg/L	0.001	461	84	0	0			
PHENANTHRENE				mg/L	0.001	461	84	0	0			
PYRENE				mg/L	0.001	461	84	0	0			
BENZO(b)FLUORANTHENE				mg/L	0.001	461	84	0	0			
2-CHLORONAPHTHALENE			i	mg/L	0.001	461	84	0	0			
HEXACHLOROBENZENE (Lindane)	0.004			mg/L	0.001	461	84	0	0			
HEXACHLOROBUTADIENE		-		mg/L	0.005	461	84	0	0			
HEXACHLOROCYCLOPENTADIENE				mg/L	0.001	461	84	0	0			

		lines for Can				# Samples	# Sites	# Samples	# Sites	Average	Upper 95%	Lower 95%
PARAMETER	Drinl MAC	king Water Q IMAC	uality AO	Units	MDL	Taken	Sampled	> MDL	>MDL	Values > MDL	Limit > MDL	Limit > MDL
HEXACHLOROETHANE	WINC	INIAC	AU	mg/L	0.005	461	84	0	0	- MDL	> MDL	> MDL
ISOPHORONE				mg/L	0.003	461	84		0			
1,2,4-TRICHLOROBENZENE				mg/L	0.001	461	84		0			
BENZIDINE				mg/L	0.002	461	84	0	0	ļ		
2,4-DINITROTOLUENE				mg/L mg/L	0.001	461	84		0	}		
2,6-DINITROTOLUENE				mg/L	0.001	461	84	0	0			
1,2-DIPHENYLHYDRAZINE					0.001	461	84	0	0			
NITROBENZENE				mg/L	0.001	461	84	1	1	0.0010		
N-NITROSODIPHENYLAMINE				mg/L mg/L	0.001	461	84	0	0	0.0010		
N-NITROSO-DI-D-PROPYLAMINE				mg/L mg/L	0.002	461	84		0			
4-BROMOPHENYL PHENYL ETHER				mg/L mg/L	0.002	461	84		0			
BIS(2-CHLOROETHOXY)METHANE				mg/L	0.001	461	84	0	0			
				-	0.001	461			0			
BIS(2-CHLOROETHYL)ETHER		l		mg/L	1	1 1	84					
BIS(2-CHLOROISOPROPYL)ETHER				mg/L	0.001	461	84	0	0			
4-CHLOROPHENYL PHENYL ETHER				mg/L	0.001	461 461	84 84	0	0			
BUTYLBENZYLPHTHALATE				mg/L	1	1 1		i 1	0	<u>.</u>		
DIBUTYLPHTHALATE	1			mg/L	0.001	461	84	28	18	0.0017	0.0040	0.0007
DIETHYLPHTHALATE				mg/L	0.001	461	84	1	1	0.0030	1	
DIMETHYLPHTHALATE				mg/L	0.001	461	84	0	0			
DI-n-OCTYLPHTHALATE				mg/L	0.001	461	84	4	2	0.0015	0.0045	0.0005
BIS(2-ETHYLHEXYL)PHTHALATE		ľ		mg/L	0.001	461	84	88	26	0.0023	0.0097	0.0006
AROCLOR 1016				mg/L	0.0001	461	84	0	0			
AROCLOR 1221				mg/L	0.0002	461	84	0	0			
AROCLOR 1232				mg/L	0.0001	461	84	0	0 .			
AROCLOR 1242				mg/L	0.00005	461	84	0	0			
AROCLOR 1248				mg/L	0.00005	461	84	0	0			
AROCLOR 1254				mg/L	0.00005	461	84	0	0			
AROCLOR 1260				mg/L	0.0001	461	84	0	0			
AROCLOR 1262				mg/L	0.0001	461	84	0	0			
AROCLOR 1268				mg/L	0.00005	461	84	0	0			
HERBICIDES & PESTICIDES												
Alachlor				mg/L	0.00004	448	83	0	0			
alpha-Chlordane				mg/L	0.00002	448	83	0	0			
gamma-Chlordane				mg/L	0.000005	448	83	0	0			
Captan				mg/L	0.00015	448	83	0	0			
Dacthal (Chlorthal Methyl)				mg/L	0.00001	448	83	0	0			
o,p'-DDD				mg/L	0.00001	448	83	0	0			
p,p'-DDD				mg/L	0.00001	448	83	0	0			
o,p'-DDE				mg/L	0.00001	448	83	0	0			
p,p'-DDE				mg/L	0.00001	448	83	0	0			
o,p'-DDT).03 (all DDT)			mg/L	0.00002	448	83	0	0			
p,p'-DDT	7.03 (all DOT			mg/L	0.00002	448	83	0	0			
Dialiate (Avadex)	- 11			mg/L	0.0008	448	83	0	0			
Dieldrin .	0007 (aldrin+e	lieldma)		mg/L	0.00001	448	83	0	0			
Dursban(Lorsban,Chlorpyrifos)				mg/L	0.000012	448	83	0	0			
alpha-Endosulfan				mg/L	0.00001	448	83	0	0			
beta-Endosulfan				mg/L	0.00001	448	83	0	0			
Endrin				mg/L	0.00001	448	83	0	0			
Heptachlor ().003 (all hopu	achlor)		mg/L	0.00001	448	83	0	0			
1	0.003 (all hopt:	- 1		mg/L	0.00001	448	83	0	0			

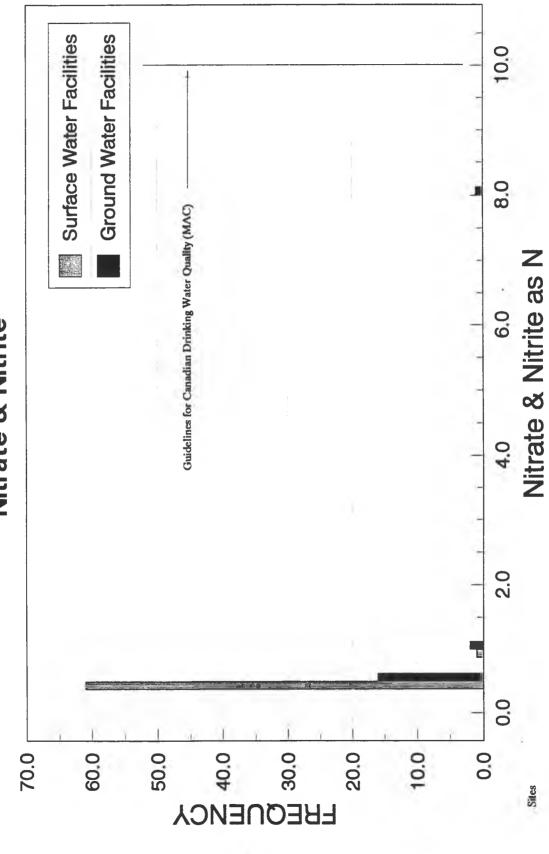
D. D. A. A. (1999)		lines for Car				# Samples	# Sites	# Samples	# Sites		Upper 95%	
PARAMETER	Drin MAC	king Water (IMAC	Quality AO	Units	MDL	Taken	Sampled	> MDL	>MDL	Values > MDL	Limit > MDL	Limit > MDL
Hexachlorobenzene (HCB)	T		1.0	mg/L	0.000005	448	83	0	0			
alpha-Hexachlorocyclohexane		į		mg/L	0.00001	448	83	0	0			
beta -Hexachlorocyclohexane		1		mg/L	0.00001	448	83	0	0			
gamma-Hexachlorocyclohexane	1			mg/L	0.00001	448	83	0	0			
delta-Hexachlorocyclohexane	İ			mg/L	0.00001	448	83	0	0			
Methoxychlor	0.9	ĺ		mg/L	0.00003	448	83	0	0			
Mirex				mg/L	0.00002	448	83	0	0			
Perthane				mg/L	0.00025	448	83	0	0			
Ramrod (Propachlor)				mg/L	0.0001	448	83	0	0			
Triallate (Avadex BW)	0.23			mg/L	0.00004	448	83	Ö	0			
Aspon	0.23	ļ		mg/L	0.0001	448	83	0	0			
Crufomate (Ruelene)				mg/L	0.0002	448	83	0	0			
Fensulfothion (Dasanit)		ĺ		_	0.0002	448	83	0	0			
Dichlorovos (Vapona,DDVP)				mg/L	0.00015	448	83	0	0	1		
DEF				mg/L	0.00015	448	83	0	0			
				mg/L	0.00023			1				
Demeton (Systox)		0.02		mg/L	0.0003	448	83	0	0			
Dimethoate (Cygon)	1	0.02		mg/L	1	448	83	0	0	1		
Disulfoton (Di-Syston)				mg/L	0.00015	448	83	0	0			
Ethion				mg/L	0.0001	448	83	0	0			
Fenthion				mg/L	0.00015	448	83	0	0			
Fenitrothion				mg/L	0.00015	448	83	0	0			
Fonofos (Dyfonete)				mg/L	0.00005	448	83	0	0			
Guthion (Azinphos-methyl)	0.02			mg/L	0.0002	448	83	0	0			
Malathion	0.19			mg/L	0.0001	448	83	0	0			
Methyl Parathion		į	ŀ	mg/L	0.00015	448	83	0	0			
Methyl Trithion				mg/L	0.0003	448	83	0	0			
Mevinphos (Phosdrin)				mg/L	0.00015	448	83	0	0			
Мосар				mg/L	0.00015	448	83	0	0			
Paraoxon				mg/L	0.00015	448	83	0	0			
Parathion	0.05		!	mg/L	0.00015	448	83	0	0			
Phorate (Thimet)		0.002		mg/L	0.0001	448	83	0	0			
Fenchlorphos (Ronnel)				mg/L	0.00015	448	83	0	0			
Tetrachlorvinphos (Gardona)				mg/L	0.00015	448	83	0	0			
Atrazine		0.06		mg/L	0.0006	448	83	0	0			
Matacil (Aminocarb)				mg/L	0.0025	448	83	0	0			
Cyanazine		0.01		mg/L	0.0006	448	83	0	0			
Diazinon	0.02			mg/L	0.00005	448	83	0	0			
Prometryne				mg/L	0.0012	448	83	0	0]		
Propazine			:	mg/L	0.0005	448	83	0	0			
Simazine		0.01		mg/L	0.003	448	83	0	0			
Bromacil (Isocil)				mg/L	0.00015	448	83	0	0			
Terbacil				mg/L	0.00025	448	83	0	0			
Trifluralin (Treflan)		0.045	l	mg/L	0.0001	448	83	0	0			
Dinitramine (Cobex)				mg/L	0.00125	448	83	0	0			
Dinoseb	0.01			mg/L	0.00125	448	83	0	0			
Metribuzin	0.08			mg/L	0.00007	448	83	0	0			
Propanil				mg/L	0.0005	448	83	0	0			
2,4-D		0.1		mg/L	0.0002	448	83	0	0			
2,4,5-T	0.28		0.02	mg/L	0.0002	448	83	0	0			
Picloram (Tordon)		0.19]	mg/L	0.0003	448	83	0	0		-	
Diclofop-methyl (Hoe Grass)	0.009			mg/L	0.0002	448	83	0	0			

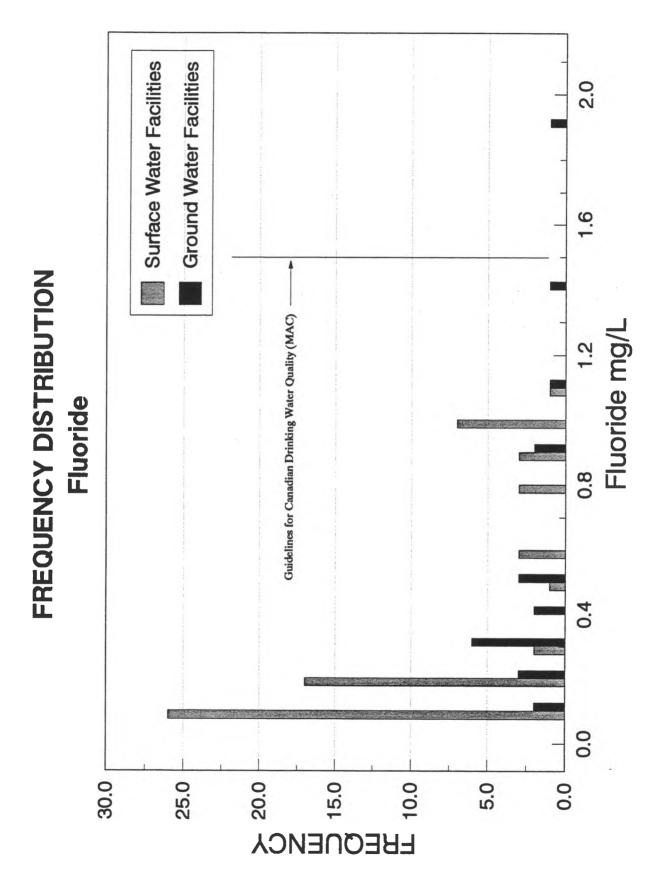
		lines for Car				# Samples	# Sites	# Samples	# Sites	Average	Upper 95%	Lower 95%
PARAMETER		king Water (Units	MDL	Taken	Sampled	> MDL	>MDL	Values	Limit	Limit
	MAC	IMAC	AO	-						> MDL	> MDL	> MDL
Dicamba (Banvel)	0.12			mg/L	0.0002	448	83	0	0			
Silvex		1	İ	mg/L	0.0003	448	83	0	0			
2,4-DB			ŀ	mg/L	0.0003	448	83	0	0]	
2,4-DP		ŀ		mg/L	0.0002	448	83	0	0	ĺ		
МСРА	i			mg/L	0.002	448	83	0	0			
ALDRIN	.0007 (aldris-	dieldrin)		mg/L	0.00001	448	83	0	0			
KELTHANE_D				mg/L		448	83	0	0			
}	i											
GCDWQ REGULATED PARAMETERS	NOT ANAL	YSED FOR	:									
Aldicarb	0.009			mg/L								
Bendiocarb	0.04			mg/L								
Bromoxynil		0.005		mg/L								
Carbary!	0.09			mg/L								
Carbofuran	0.09			mg/L								
Chlordane	0.007			mg/L							ļi	
Chlorpyrifos	0.09			mg/L								
Diquat	0.07			mg/L								
Diuron	0.15			mg/L								
Glyphosate		0.28		mg/L								
Metolachlor		0.05		mg/L								
Nitrilotriacetic acid (NTA)	0.4			mg/L							i	
odour			Inoffensive				;					
Paraquat		0.01		mg/L								
Sulphide (as H ₂ S)			0.05	mg/L				i				
Taste			Inoffensive									
Temephos		0.28		mg/L								
Temperature			< 15 deg C	deg C								
Terbufos		0.001		mg/L								
2,3,4,6 - tetrachlorophenol	0.1		0.001	mg/L								
Uranium	0.1			mg/L								

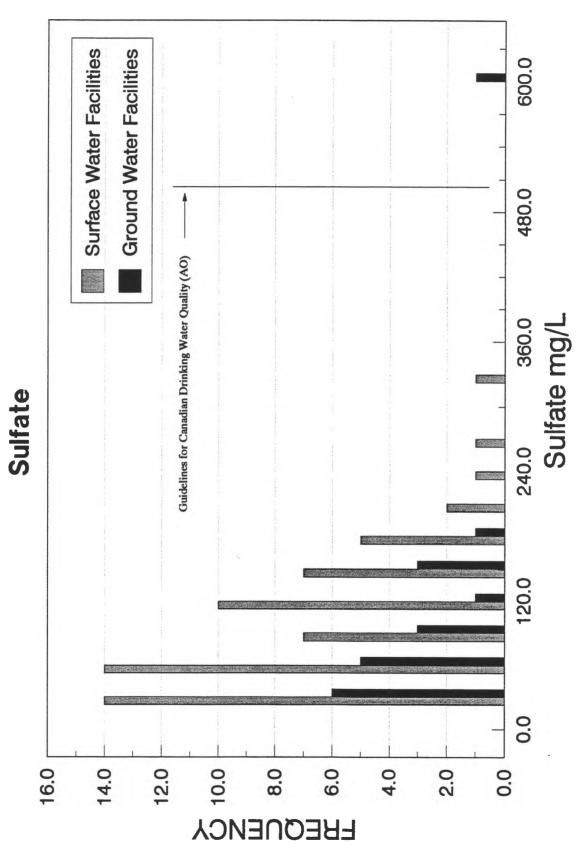




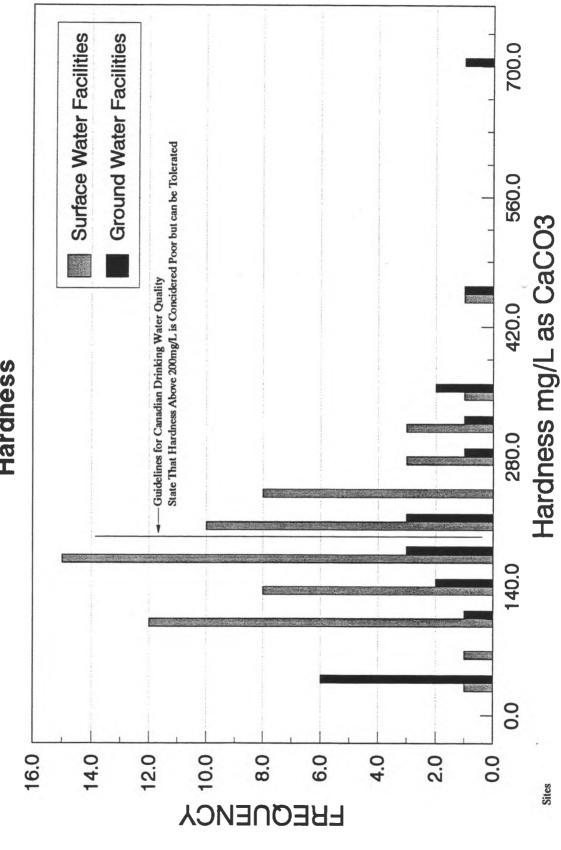
FREQUENCY DISTRIBUTION Nitrate & Nitrite

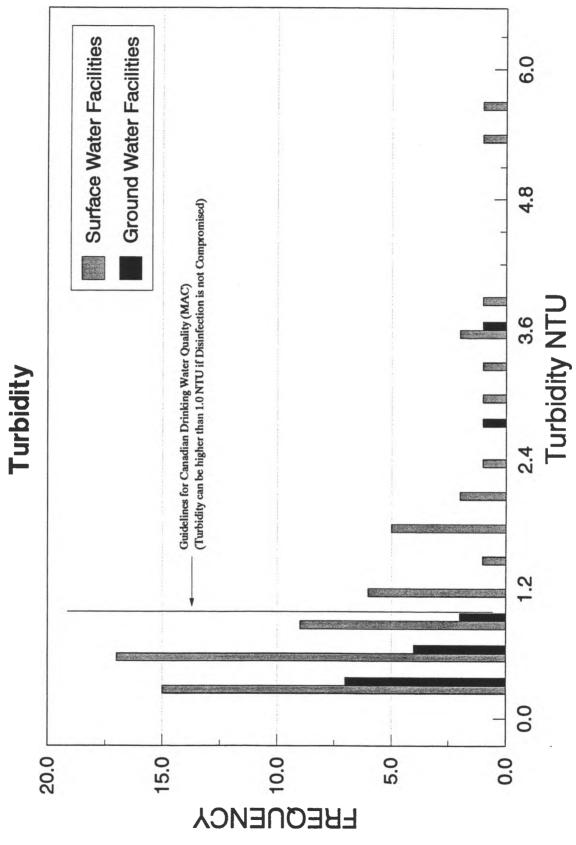






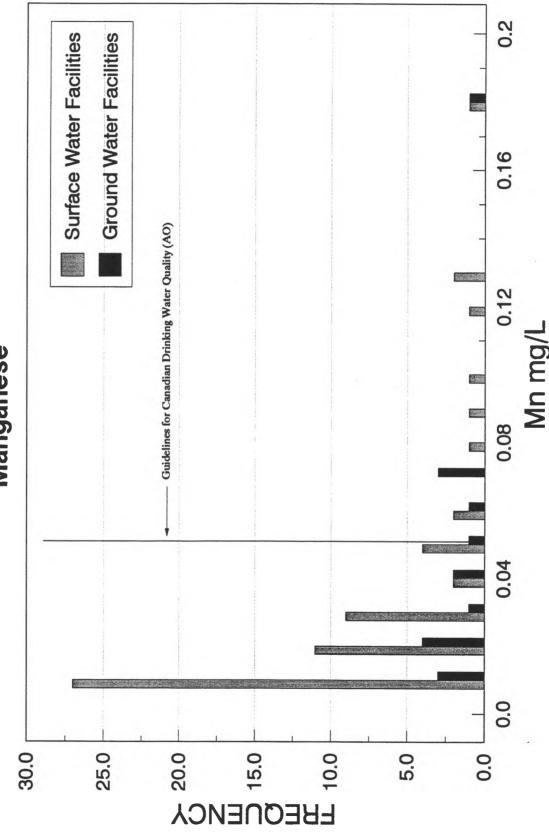
FREQUENCY DISTRIBUTION Hardness

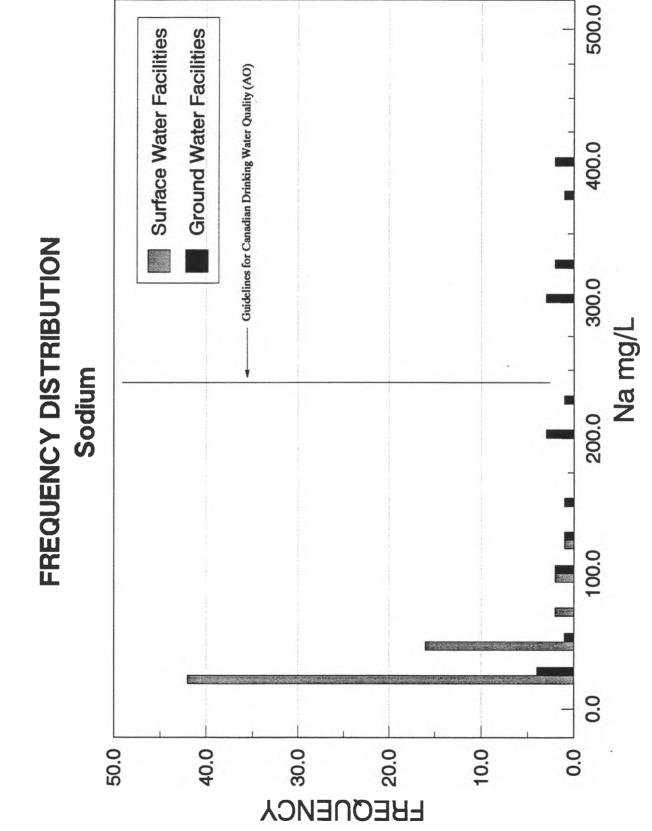


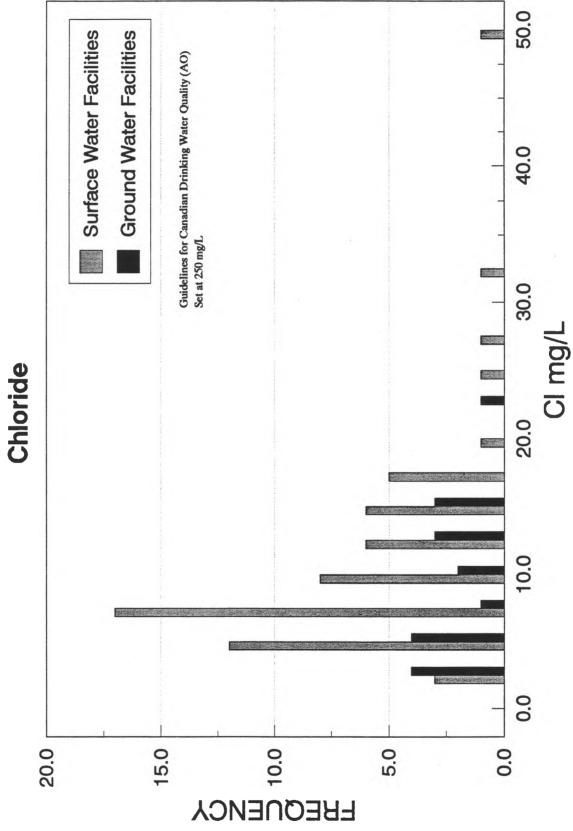


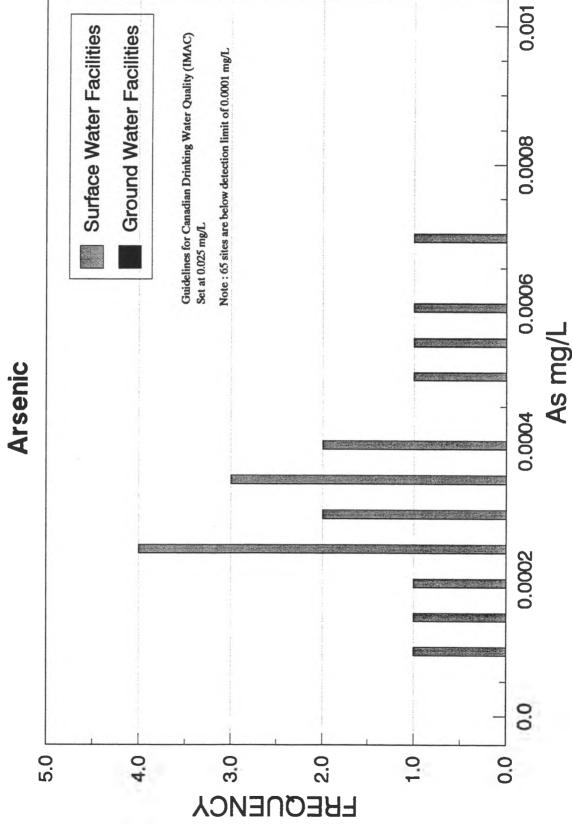
1000.0 Surface Water Facilities **Ground Water Facilities** Guidelines for Canadian Drinking Water Quality (AO) 800.0 FREQUENCY DISTRIBUTION Total Dissolved Solids (TSS) 0.009 TDS mg/L 200.0 0.0 14.0 10.0 12.0 8.0 0.9 00 2.0 **LEEGUENCY**

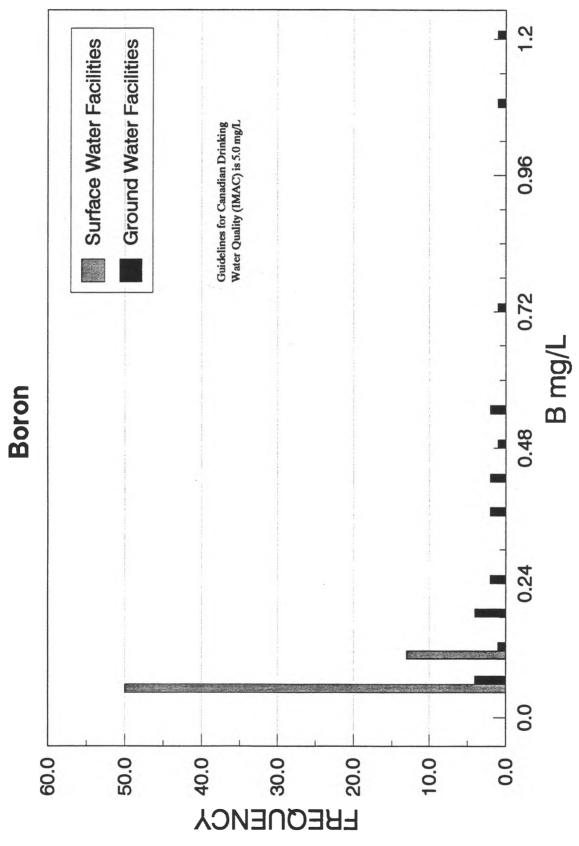
FREQUENCY DISTRIBUTION Manganese

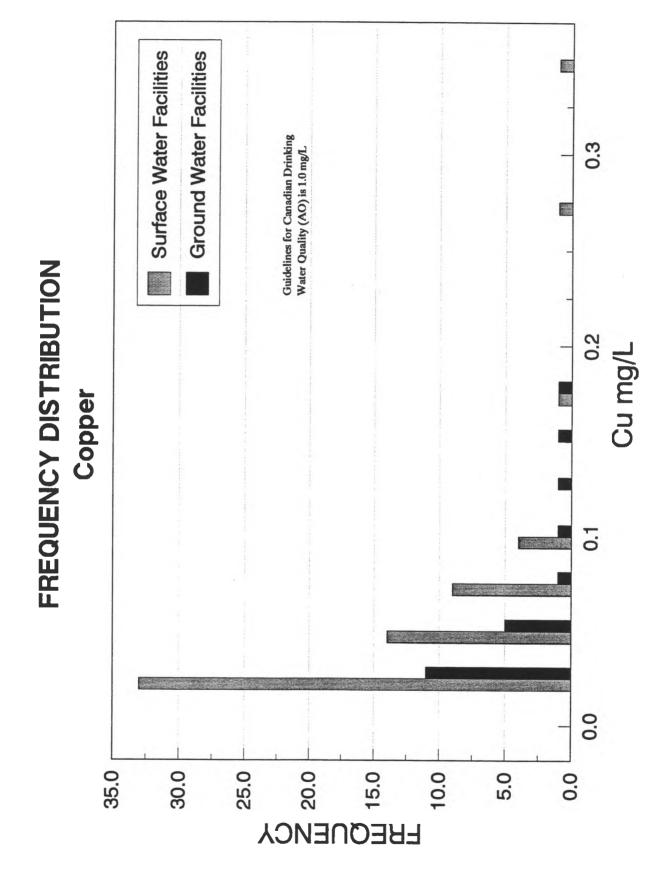


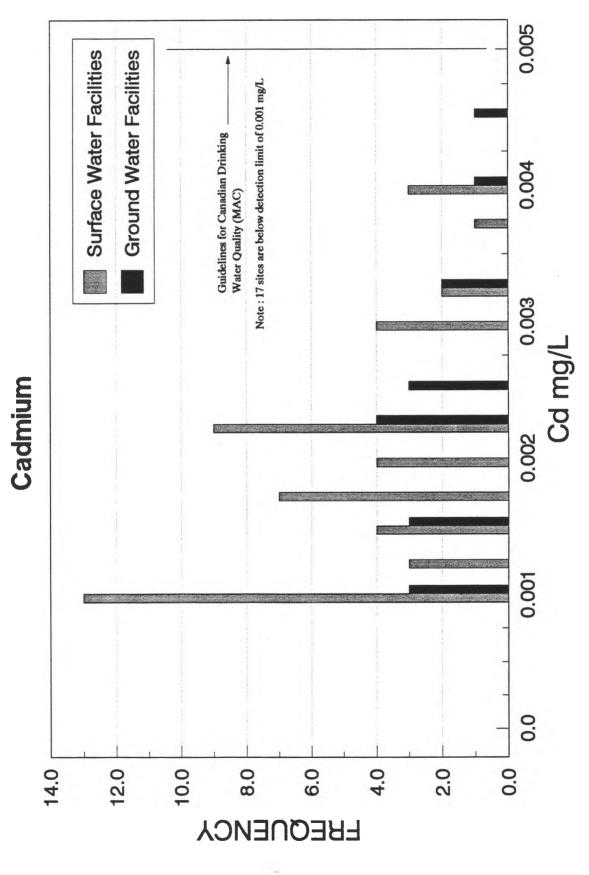




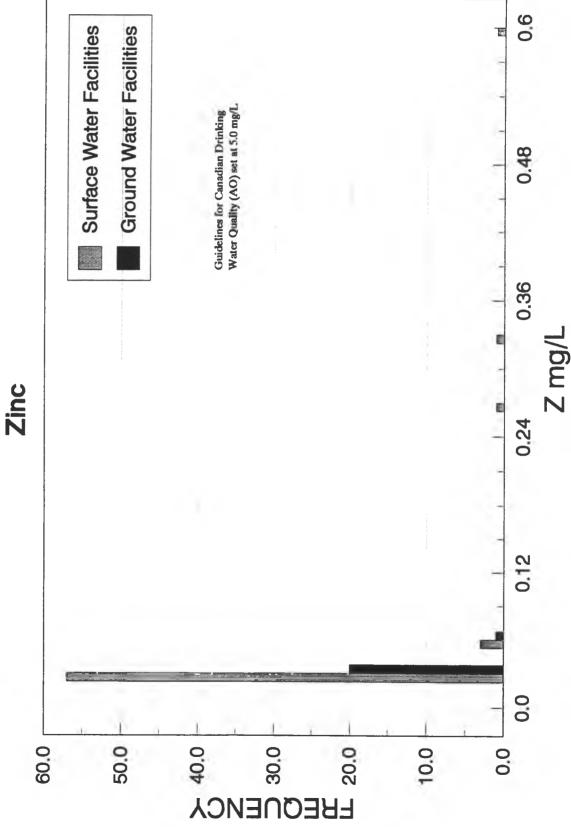


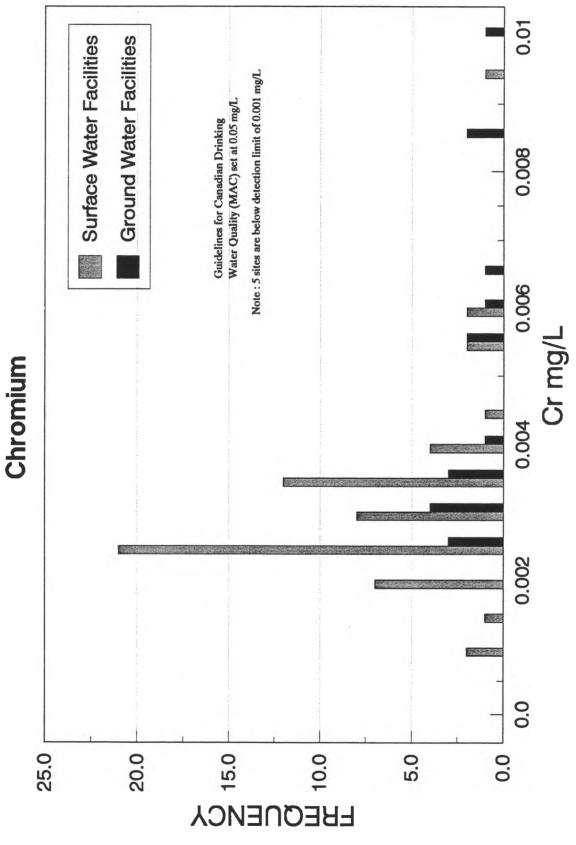


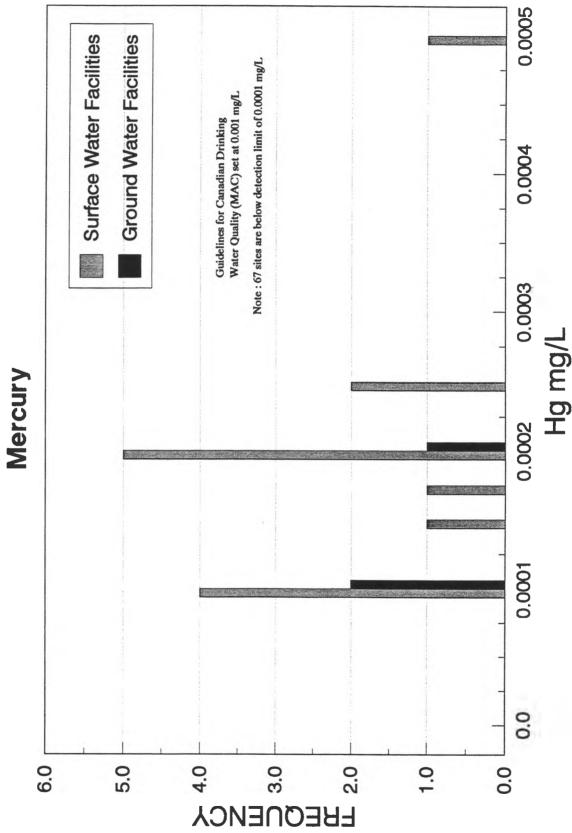




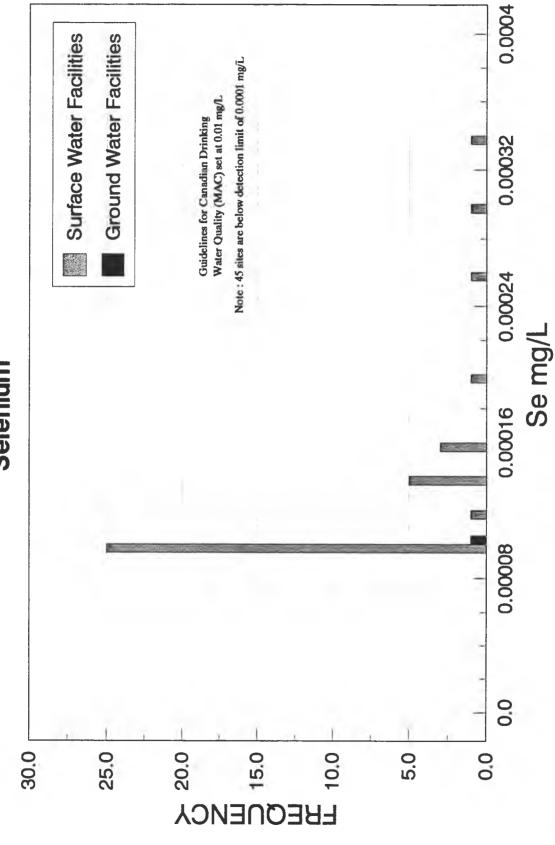


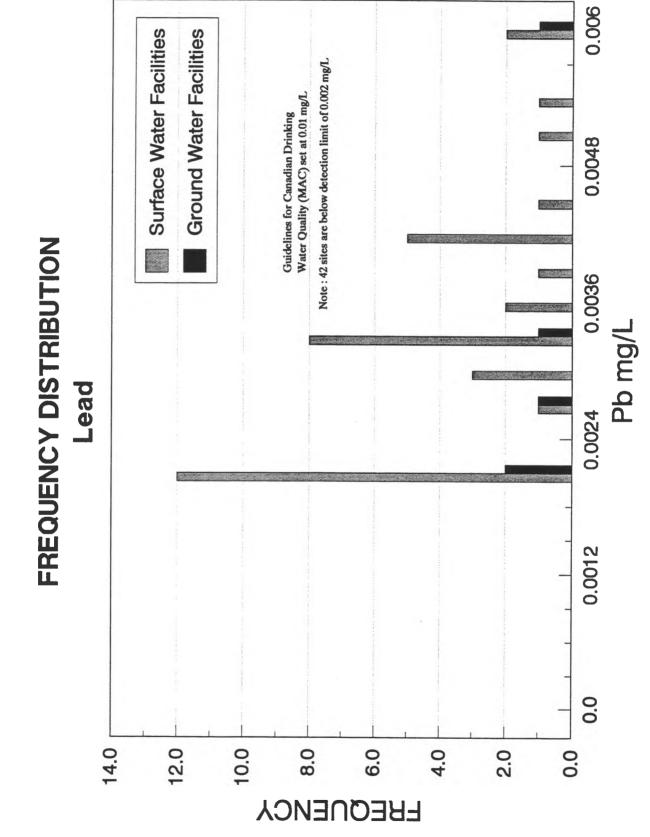


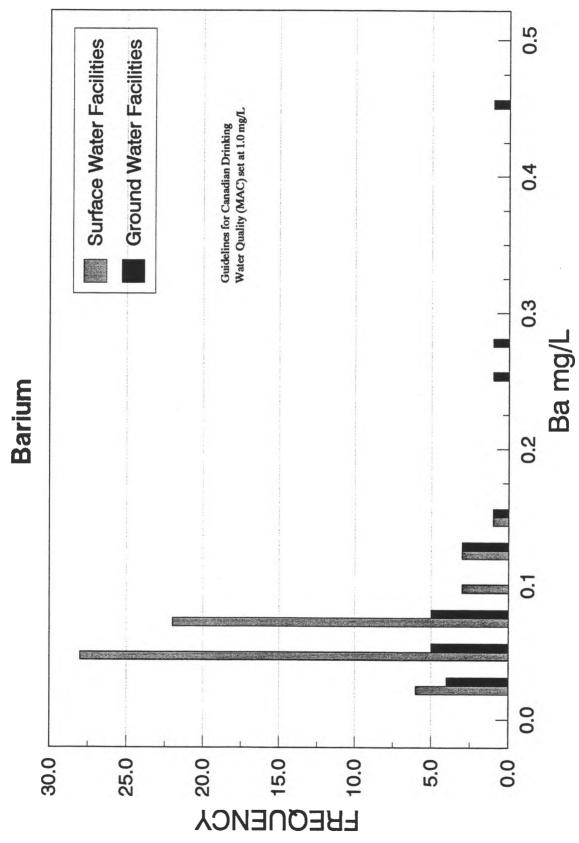


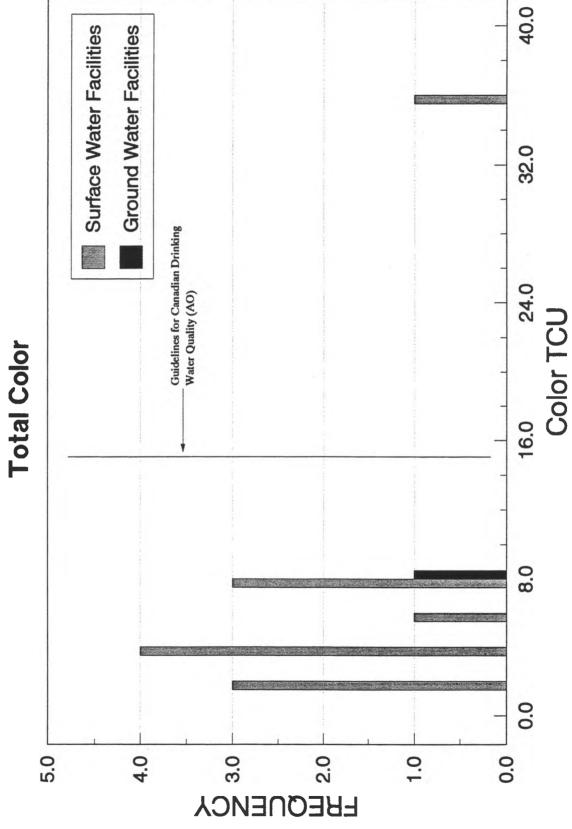






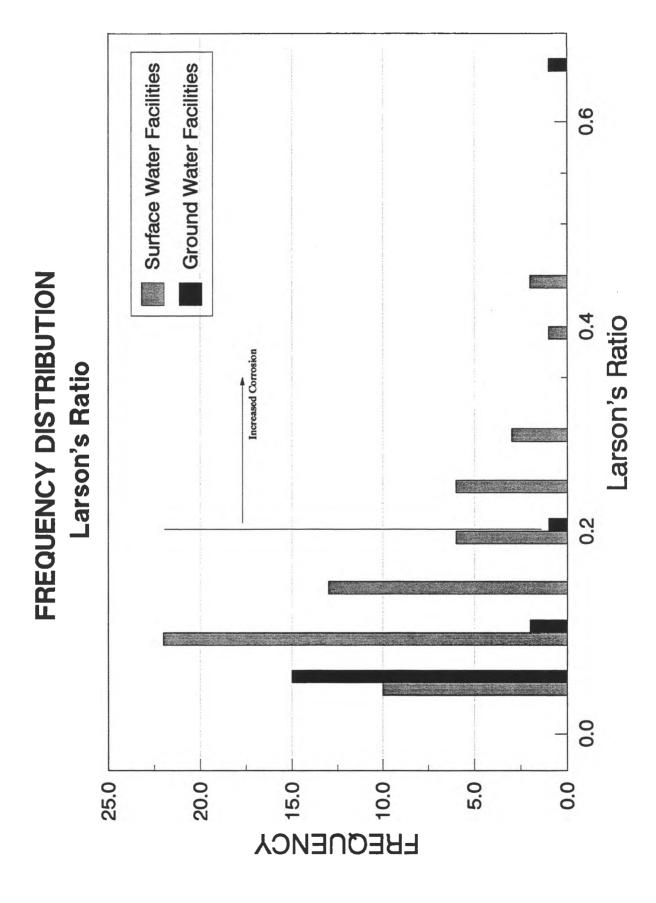




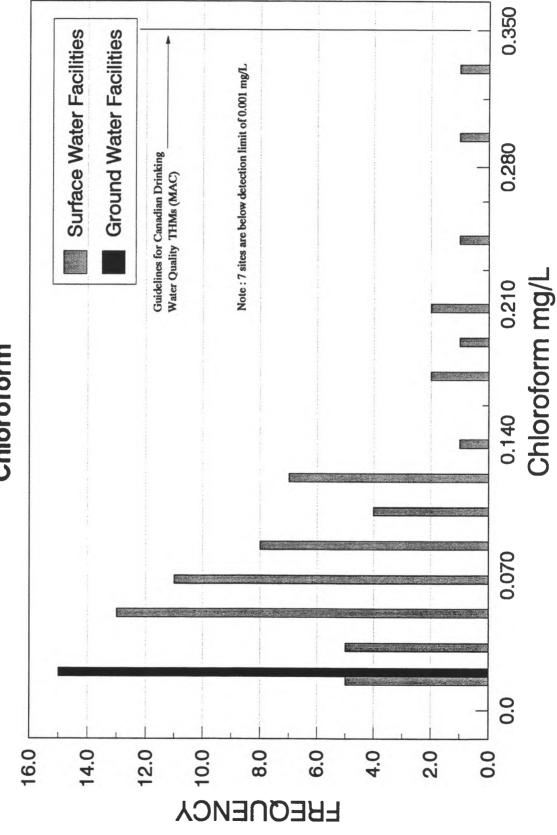


1.0 Surface Water Facilities Ground Water Facilities Precipitates Calcium Carbonate 0.4 FREQUENCY DISTRIBUTION Langelier Saturation Index (LSI) -0.2 Dissolves Calcium Carbonate -2.0 0.0 12.0 10.0 8.0 0.9 4.0 2.0 **LBEGNENCY**

13.0 Surface Water Facilities **Ground Water Facilities** Non-aggressive 12.4 FREQUENCY DISTRIBUTION Aggressive Index (AI) 11.8 ₹ 11.2 Moderately Aggressive 10.6 10.0 10.0 12.0 8.0 0.9 2.0 0.0 4.0 **LEEGUENCY**



FREQUENCY DISTRIBUTION Chloroform



APPENDIX D: SUMMARY OF SAMPLES NOT MEETING GUIDELINES

SAMPLE	WATER	DATE	l .	PARAMETERS	OUTSIDE COL	DWQ GUIDELINES
LOCATION		SAMPLED	I	I ARAWETERS	OUTSIDE GCI	ow Q GOIDELINES
BARRHEAD	Surface		TDS= 512	·		
BARRHEAD	Surface		TDS= 509			
BARRHEAD	Surface		TURB= 1.0	TDS= 509	MN= 0.125	
BLUE RIDGE	Ground	06/11/91	PH= 8.74	TDS= 670	NA= 283	
BLUESKY	Surface		PH= 8.58	FE = 0.516	TURB= 8.6	MN= 0.086
BLUESKY	Surface		FE= 0.509	TURB= 2.1	MN= 0.097	
BLUESKY	Surface	08/18/92	FE= 0.365	TURB= 5.4	MN = 0.052	Chloroform= 0.51
BOYLE	Surface	08/14/90	PH= 9.00	TURB= 1.7		
BOTEE	Burrace	00/1-4/20	7.00	10100 1.7		
CLAIRMONT	Ground	06/08/87	PH= 8.80	F= 1.8	TDS= 902	NA= 375
CLAIRMONT	Ground		PH= 8.60	F= 1.9	TDS= 932	NA= 400
COLINTON	Ground		TDS= 926	MN = 0.053	NA= 310	
COLINTON	Ground	05/27/92	TDS= 914	NA= 301		
CYDETHIA	C .	10/15/00	DII_ 0.54	TDG COS	NIA - 000	
CYNTHIA	Ground	10/15/92	PH= 8.74	TDS= 682	NA= 282	
DEBOLT	Ground	03/17/87	PH= 8.70	TDS= 658	NA= 270	
DEBOLT	Ground		PH= 8.65	TDS= 666	NA= 285	
DEBOLI	Ground	11/02/00	111 0.05	120 000	1471 205	
DESMARAIS	Surface	07/21/92	MN= 0.071			
EAGLESHAM	Surface	12/08/89	MN= 0.107			
EDSON	Ground		TDS= 532	NA= 201		
EDSON	Ground		MN= 0.197			
EDSON	Ground		TDS= 532	274 204		
EDSON	Ground		TDS= 539	NA= 204		
EDSON	Ground		TDS= 550	MN = 0.092		
EDSON	Ground	10/24/89	TDS= 532			
ENTWISTLE	Ground	05/07/91	MN= 0.698			
LATIVIOIEE	Ground	03/0//31	14T1 = 0.030			
EVANSBURG	Ground	05/07/91	TDS= 513			
EVANSBURG	Ground		TDS= 514			
FAIRVIEW	Surface	07/17/90	MN= 0.086			
		00/-0/0-				
FALHER	Surface		TURB= 3.1			
FALHER	Surface	12/08/89	TDS= 502			
FAUST	Surface	06/18/90	TURB= 1.4			
FAUST	Surface		TURB= 1.3			
FAUST	Surface		TURB= 1.7			
FAUST	Surface		TURB= 1.6			
FAUST	Surface		TURB= 2.6			
FAWCETT	Ground	09/09/92	TDS= 644	NA= 212		

CAROTT	44. v	D A MD	ı	DAD AN (EMPL) OF TRAIN
SAMPLE LOCATION	WATER	DATE SAMPLED		PARAMETERS OUTSIDE GCDWQ GUIDELINES
FORT CHIPEWYAN	Surface			benzene = 0.002
TORT CHILD TAN	Bullace	00/10/93	2,4,DIGHOIO	benzene – 0.002
FORT MCMURRAY	Surface	02/14/90	TURB= 1.3	
FORT MCMURRAY	Surface		TURB= 1.2	
FORT MCMURRAY	Surface		FE= 1.400	TURB= 19.4
FORT MCMURRAY	Surface		TURB= 1.8	
FORT MCMURRAY	Surface	10/19/88	FE= 0.494	TURB= 7.9
FORT MCMURRAY	Surface	08/22/89	FE= 0.362	
FORT VERMILION	Surface	10/24/91	FE= 0.458	TURB= 12.5
FORT VERMILION	Surface	01/22/92	TURB= 1.9	
FOX CREEK	Ground		FE= 0.325	MN = 0.070
FOX CREEK	Ground		TDS= 508	MN= 0.064
FOX CREEK	Ground	01/17/89	MN = 0.073	
CIET LAKE	C 1	04/04/00	NOT- 0 070	
GIFT LAKE	Ground		MN = 0.079	
GIFT LAKE	Ground	08/12/91	MN= 0.056	
GIROUXVILLE	Surface	12/05/00	TURB= 1.9	
GIROUAVILLE	Surface	12/03/90	10KB-1.9	
GRANDE CACHE	Surface	10/13/87	TURB= 1.1	
GRANDE CACHE	Surface		TURB= 1.3	
GIGENDE CHEME	Buildee	03/13/07	10Kb-1.5	
GRANDE PRAIRIE	Surface	08/13/90	TURB= 1.5	
GRANDE PRAIRIE	Surface		TURB= 1.3	
			10100 110	
GRASSLAND	Surface	08/13/90	TURB= 4.0	MN= 0.236
GRASSLAND	Surface	09/09/91	TURB= 2.0	Chloroform=0.37
GROUARD	Surface		TURB= 4.2	
GROUARD	Surface		TURB= 3.2	MN= 0.609
GROUARD	Surface	11/16/92	TURB= 1.3	
CVT/				181
GUY	Surface		TURB= 4.4	MN= 0.083
GUY	Surface	04/29/92	TURB= 2.9	MN= 0.080
HIGH LEVEL	Surface	10/22/01	TDS= 580	
HIGH LEVEL	Surface		TDS = 585 $TDS = 585$	MN= 0.162
HIGH LEVEL	Surface		TURB= 1.2	TDS= 633
		10,20,00	1010 1.2	
HIGH PRAIRIE	Surface	04/23/90	TURB= 1.1	
HIGH PRAIRIE	Surface		TURB= 1.1	
HIGH PRAIRIE	Surface		TURB= 1.2	
HINES CREEK	Surface	02/13/90	TURB= 1.8	
HINES CREEK	Surface	07/17/90	TURB= 1.8	
HINES CREEK	Surface	05/19/93	TURB= 1.9	
HINTON	Surface		TURB= 3.9	2,4,Dichlorobenzene = 0.003
HINTON	Surface		TURB= 1.3	
HINTON	Surface	12/07/89		0.000
HINTON	Surface	05/22/90	2,4,Dichlorob	penzene = 0.003

CAMPLE	WATED	DATE	,	DADAMETERS	OUTTSIDE COP	WO CITIDET B	TEC
SAMPLE	WATER	DATE SAMPLED		PARAMETERS	OUTSIDE GCL	WQ GUIDELIN	NES
LOCATION HINTON	Surface			enzene = 0.005			
HINTON	Surface		l ' '	enzene = 0.003			
HINTON	Surface			enzene = 0.002			
TIMATORA	Surface	10/24/07	2,4,5101110100	CIRCIE 0.002			
JANVIER	Surface	09/11/91	MN= 0.071				
JARVIE	Ground Ground	09/09/92	TDS= 651	MN= 0.171			
JEAN COTE	Surface	07/16/91	TURB= 5.3				
JEAN COTE	Surface	12/05/91	TURB= 3.9	MN = 0.066			
JEAN COTE	Surface	04/29/92	TURB= 2.5				
LA CRETE	Ground	10/24/91	MN= 0.283				
LA CRETE	Ground	02/04/93	MN= 0.157				
LAC LA BICHE	Surface	08/14/90	TURB= 2.1	MN = 0.104	0.104		
LAC LA BICHE	Surface		PH= 8.60				
LAC LA BICHE	Surface		PH= 8.72				
LAC LA BICHE	Surface	10/13/88	TURB= 1.2				
LAC LA BICHE	Surface	08/16/89	MN= 0.086				
LOON LAKE	Surface		TURB= 4.2	MN = 0.107			
LOON LAKE	Surface	05/25/92	TURB= 2.4				
MANNING	Surface	10/22/90	TURB= 2.8				
MARIE REINE	Ground	04/11/91	TURB= 3.0	MN= 0.129	0.129		
MAYERTHORPE	Ground		TDS= 846	NA= 305			
MAYERTHORPE	Ground	02/25/92	TDS= 839	NA=310			
N COL ENDIANA	0.6	0.5/0.0/0.0	TT TD 2 0	101 0106			
MCLENNAN	Surface		TURB= 3.0	MN= 0.126			
MCLENNAN	Surface	01/18/89	TURB= 4.4	MN = 0.105			
NAMPA	Surface	04/10/01	TURB= 1.4				
NAMIA	Surface	04/10/31	10Kb-1.4				
NEERLANDIA	Surface	07/20/90	FE= 0.426	TURB= 1.1	MN= 0.054		
NEERLANDIA	Surface		T_COLOR=	36	1111 0.054		
	D = 1.1.00						
PADDLE PRAIRIE	Ground	10/22/91	TURB= 5.2	MN= 0.146			
PADDLE PRAIRIE	Ground	01/21/92	MN= 0.331				
PEACE RIVER	Surface	08/15/90	MN= 0.053				
PEACE RIVER	Surface	06/21/88	TURB= 1.1	2,4,Dichlorob	enzene = 0.003		
PEERLESS LAKE	Surface		FE= 0.328				
PEERLESS LAKE	Surface	05/26/92	FE= 0.491	TURB= 1.7			
PEERLESS LAKE	Surface	11/17/92	FE= 0.839	TURB= 4.0			
PEORIA	Surface	03/11/91	TDS= 575				
				mp.c			
PIBROCH	Ground	09/09/92	PH= 8.61	TDS= 922	MN= 0.066	NA= 393	
1			l				

CANADIE	MATER	DATE	T	DADALATTER	OTHERDS OF	DWO CURDEN TOTAL
SAMPLE LOCATION	WATER	DATE	,	PAKAMETERS	OUTSIDE GCI	DWQ GUIDELINES
PLAMONDON		SAMPLED	MN= 0.053	·		
I PUMONDON	Surface	06/14/90	נכטים – אוואו			
RAINBOW LAKE	Surface	05/20/00	TURB= 1.8			
RAINBOW LAKE	Surface		TURB= 1.3			
I I I I I I I I I I I I I I I I I I I	Surface	10/23/71	1000-1.5			
RYCROFT	Surface	03/10/00	TURB= 2.6	MN= 0.097		
RYCROFT	Surface		MN= 0.201	14114- 0.037		
RYCROFT	Surface		TURB= 1.4	MN= 0.103		
RYCROFT	Surface		MN= 0.151	14114 0.103		
RYCROFT	Surface		TURB= 2.3	MN= 0.072		
RYCROFT	Surface		TURB= 2.7	MN = 0.091		
	04.1100	0 1.71702	1010 2.7	1011 0.051		
SANDY LAKE	Surface	05/16/91	FE= 0.732	TURB= 5.1	MN= 0.292	
SANDY LAKE	Surface		FE= 0.527	TURB= 5.4	MN= 0.099	Chloroform= 0.44
				1010 0	1.11	0.74
SANGUDO	Ground	06/11/91	FE= 0.301	TDS= 896	NA= 356	
SANGUDO	Ground		TDS= 913	NA= 360		
						
SLAVE LAKE	Surface	12/08/92	TURB= 1.1			
SLAVE LAKE	Surface		TURB= 1.5	MN = 0.059		
SLAVE LAKE	Surface	06/19/89	TURB= 12.6			
SMITH	Surface	01/17/91	FE= 3.830	TURB= 33.0		
SPIRIT RIVER	Surface	06/18/91	MN= 0.107			
SPIRIT RIVER	Surface	02/13/89	MN= 0.090			
ST. ISIDORE	Surface	04/11/91	FE= 0.319	TURB= 5.6	MN = 0.125	
TANGENT	Surface	06/18/91	TURB= 1.4			
TROUT LAKE	Ground	08/13/91	TURB= 2.5			
3/41173/3/7037	0.0	*****				
VALLEYVIEW	Surface		MN= 0.063			
VALLEYVIEW	Surface		MN = 0.150	TIPD		
VALLEYVIEW	Surface		FE= 0.690	TURB= 16.2		
VALLEYVIEW	Surface		TURB= 2.9			
VALLEYVIEW	Surface		MN= 0.057			
VALLEYVIEW VALLEYVIEW	Surface		MN= 0.060			
VALLEYVIEW	Surface		MN= 0.553			
*ALLETYIEW	Surface	12/08/89	PB= 0.012			
WABASCA	Surface	03/16/02	TURB= 1.3			
	PHITACE	03/10/73	1.5			
WANDERING RIVER	Surface	09/09/91	TURB= 2.0			
WANDERING RIVER	Surface			enzene = 0.002		
	- W. 1400	00117173		- U.UUZ		
WANHAM	Surface	06/24/92	MN= 0.051			
WANHAM	Surface		TURB= 1.9	MN= 0.166		
WANHAM	Surface		TURB= 2.0	MN = 0.082		
WHITECOURT	Surface	11/08/88	TURB= 1.6			
•			•			

SAMPLE	WATER	DATE		PARAMETERS	OUTSIDE GCI	OWQ GUIDELI	NES
LOCATION	SOURCE	SAMPLED		<u> </u>			
WILDWOOD	Ground	05/07/91	FE= 0.509	TDS= 699			
WOKING	Surface	03/18/92	TURB= 1.9				
WOKING	Surface	01/16/91	TURB= 1.2				
WORSLEY	Surface	02/13/90	MN = 0.115				
WORSLEY	Surface	09/17/91	TURB= 1.1				
WORSLEY	Surface	05/18/93	MN= 0.061				
ZAMA	Ground	10/23/91	SO4= 536	TURB= 3.9	TDS= 1044	MN = 0.499	
ZAMA	Ground	02/03/93	FE= 0.552	SO4= 622	TURB= 3.1	TDS= 115	MN = 0.339

APPENDIX E: SUMMARY OF FACILITY INVENTORY

٠	4
2000	rage

MACKACANONICALINA 1 15 15 15 15 15 15 15	H 165	VTP vine WTP vine WTP refe WTP refe WTP	36 45454 50 336 45454 50 3405 50 337 64 5 64 66 60 818	Cg/CgA/FIC/S4/RS/IU/Na/CC/TWR Cg/CgA/PH/S4/RS/IU/Na/CC/TWR Prov for chlorTWR Prov for chlorTWR Iton Removal, P. Filt RWR/Aer/Cg/Ch/RIU/Ch/R/IU/Cl/ RWR/Ch/RUPPNa/CC/ RWR/Aer/R/IU/Na/CC/TWR Nii Nii Nii Nii Nii Nii Nii Nii Nii Ni	56 450000 55 413333 56 183333 56 183333 56 183333 55 233333 56 25 25 25 25 25 25 25 25 25 25 25 25 25			SAMPLES PLANNED X X X X
1 15 15 15 15 15 15 15	H 1855 S 1975 O 378, S 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	w pt. 1992) refe WTP refe WTP		Cg/CgA/Fic/SdRSfit/Na/CL/TWR Cg/CgA/Fic/SdRSfit/Na/CL/TWR Flow for chlor/TWR Flow for chlor/TWR Flow for chlor/TWR Flow for chlor/TWR Flow Removal, P. Filt RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PPNa/CCI RWR/Caffu/PRNA/CCI RWR/Cg/CgA/Fit/Cb/RSfit/PPNa/CCI Fit Nil AeriPAC/Cg/CgA/Fit/Cb/RSfit/PPNa/CCI Fit Nil RWR/Cg/CgA/Rfit/Cl/PRSfit/PRR Fit Nil RWR/Cg/CgA/Rfit/Cl/PRR Fit RWR/CG/CgA/Rfit/Cl/PRR Fit RWR/CGA/CGA/Rfit/Cl/PRR Fit RWR/CGA/CGA/Rfit/Cl/PRR Fit RWR/CGA/CGA/Rfit/Cl/PRR Fit RWR/CGA/CGA/Rfit/Cl/PRR Fit RWR/CGA/CGA/Rfit/Cl/PR	\$6.450000 \$5.91313 \$6.13133 \$6.18133 \$5.216667 \$6.130000 \$5.23133 \$5.23133 \$6.06667 \$6.06667 \$6.06667 \$6.06667 \$6.06667 \$6.06667 \$6.06667 \$6.00000 \$1.03133 \$6.00000 \$1.000000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.000000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.000000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.000000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.000000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.0000000 \$1.000000 \$1.000000 \$1.000000 \$1.000000 \$1.000000 \$1.000000 \$1.000000000 \$1.0000000000	and a late of the contract to		× × ×
Stationary Sta	T 1975 -0.3% S T 7 1975 -0.3% S T 8 1014 -1.6% S T 9 1014 S T 9 1014 S T	w pt.1992) vine WTP vine WTP refe WTP		Cg/CgA/pH/SARS/ft/AC/Ft/WCL2/TWR Prov for chlor/TWR Prov for chlor/TWR Iron Removal, P. Ftl. RWR/Gs/ft/PPNaCCI RWR/Gs/ft/PPNaCCI RWR/Gs/ft/PPNaCCI RWR/Gs/ft/PPNaCCI RWR/Gs/ft/PPNaCCI Stor Nil Nil Nil Nil RWR/Ast/Rfi/NaCCI/TWR Nil Nil Ast/PRC/ScA/pH/CL/RSft/PPNaCCI/TWR Nil Ast/PRC/CgA/pH/CL/RSft/PPNaCCI/TWR Nil Ast/PRC/CgA/pH/CL/RSft/PPNaCCI/TWR Nil Ast/PRC/CgA/pH/CL/RSft/PPNaCCI/TWR Nil Ast/PRC/CgA/pH/CL/RSft/PPNaCCI/TWR Nil Nil Ast/PRC/CgA/pH/CL/RSft/PPNaCCI/TWR Nil Ast/PRC/CgA/Rft/TO/pH/CI2/TWR RWR/Cg/CgA/Rft/TO/pH/CI2/TWR RWR/Cg/CgA/Rft/TO/pH/CI2/TWR RWR/Cg/CgA/Rft/TO/pH/CI2/TWR	54,73333 54,13333 54,12000 55,23333 56,12000 55,23333 56,06667 54,1333 56,06667 56,06667 56,06667 57,20333 56,06667 57,20333 58,050000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 5			× × ×
150001 1	N	w pt.1992) V 1992) refe WTP		Prov for chlorTWR RWRAzer/Cg/CITRIU/RWR ION Removal, P. Filt. Ion Removal, P. Filt. Ion Removal, P. Filt. Ion Removal, P. Filt. In RWR/Christophacci RWR/TWR/Aer/Cg/Cg/Cg/Ch/Cl/Rft/Cl/Cl/Cl/Rft/Cl/Cl/Rft/Cl/Rft/Cl/Cl/Rft/Cl/Rft/Cl/Rft/Cl/Cl/Rft/Cl/Cl/Cl/Rft/Cl/Cl/Cl/Rft/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/Cl/	55.91333 56.13333 56.13000 55.21333 56.13000 56.13133 56.06667 56.13133 56.06667 56.13133 56.1313 56	115.550000 119.81.667 119.81.667 119.81.6667 118.366667 118.366667 118.366667 118.366667 118.366667 118.366667 118.366667 118.366667 118.366667 118.31333 118.313333 118.316667 118.313333 118.316667 118.313333 118.316667 118.313333 118.316667 118.313333 118.316667 118.313333 118.316667 118.313333 118.316667 118.313333 118.316687 118.313333 118.316687 118.313333 118.316837 118.313333 118.31683333	* ** ** * * * *	* *
10 10 11 12 12 13 14 14 15 14 15 14 15 14 15 14 15 14 15 15	WP NA 4.2% S WP NA 4.2% S V 606 4.1.1% S O 0 0 S 0 0 0 H 606 8 0 0 WP NA 114 O WP NA 1350 WP NA 4.0% S WP NA 4.0% S V 704 C O 0 0	rete WTP rete WTP rete WTP		RWR/Aer/Cg/CL/Rfl/UFINPCI2/TWR Iron Removal, P. Filt RWR/Gsfl/UPPNaOCI NT NT NII NII NII NII NII NII NII NII	54.131333 55.181333 56.150000 55.213433 56.131333 56.066667 56.131333 56.131333 56.131333 56.1313 56.131	119,413133 117,733333 117,733333 118,16667 118,16667 118,16667 117,88333 117,88333 117,88333 117,88333 117,88333 117,88333 117,88333 117,88333 117,100000 113,1000000 113,1000000 113,1000000 113,1000000	* ** ** * * * *	* *
	WP NA NA NA NA NA NA NA NA NA NA NA NA NA	rate WTP vine WTP vine WTP refe WTP refe WTP		Icon Removal P. Filt. RWR/TWR/Aer/Cg/pH/Clr/Rfl/Cl2 RWR/TWR/Aer/Cg/pH/Clr/Rfl/Cl2 NT Nil Nil Nil RWR/Aer/Rfl/NaOCL/TWR Calligan Filters Nil RWR/Aer/Rfl/NaOCL/TWR Nil Pfl/NaOCL/TWR Nil Aer/PAC/Cg/CgA/pH/Clr/RSfl/VPPNaOCL/TWR Nil Nil Nil Aer/PAC/Cg/CgA/pH/Clr/RSfl/VPNaOCL/TWR Nil Nil Nil Nil Nil Nil Nil Nil Nil Nil	55.181313 55.131313 55.131313 55.131313 56.13131 56.1313	H19 81 6667 H19 431333 H17 733333 H18 366667 H18 366667 H18 36667 H18 33133 H17 88133 H17 88133 H16 31 6667 H17 31333 H16 31 6667 H17 31333 H17 31333	** ** * * * *	×
1	1	w pt. 1992) V 1992) rete WTP		RWR/Gafu/PPNaOCI RWRTWR/Aeer/Cg/pH/CL/Rft/VCI2 Stor NII NII NII NII RWR/Aer/Rft/NaOCI/TWR Calligan Filera NII FROCG/CG/CgA/PE/Sed/pH/RSft/vPPCI2,CaOCI/NaOCI/TWR NII Pft/NaOCI/TWR P. Filt NII Aer/PAC/Cg/CgA/pH/CL/RSft/vPPNaOCI/TWR Filc/Sd/Pt/NnOCI I Graf. RWR/Cg/CgA/Rft/TO/pH/CI2/TWR RWR/Cg/CgA/Rft/TO/pH/CI2/TWR	55.216667 56.130000 55.23333 55.23333 56.06667 56.06667 56.06667 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.000000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.000000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.28333 56.00000 57.2833 57.2	119,43333 117,73333 118,36667 118,36667 118,36667 118,36667 117,88333 117,88333 117,88333 116,31667 117,31333 116,31667 117,31333 116,31667 117,31333 116,31667 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333 117,31333	** ** * * * *	*
1	T 1808 -1686 S V 606 -12196 G S 7 0 0 0 0 H 82 0 0 0 0 N 704 -1996 S S 8 0 0 0 0 H 114 87 0 WP 114 00 0 H 82 0 0 NA 1996 G S 8 0 0 0 WP 114 00 0 H 130 0 WP 115 0 WP 115 0 WP 115 0 WP 116 0 WP 117 0 WP 117 0 WP 1180 0 WP 11	r w pt. 1992) V 1992) refe WTP		RWRTWRAer/Ce/pH/ChrRth/Cl2 Stor NT NIII NIII NIII NIII NIII NIII NIII	55.216667 56.15000 55.21313 55.21313 56.06667 54.13335 56.006667 56.13333 56.1333 56	119,43333 118,36667 118,36667 118,36667 117,88333 117,88333 117,88333 117,88333 117,88333 116,31667 117,33333 116,31667 117,33333 116,31667 117,33333 116,31667 117,33333 116,31667 117,33333 118,3163333	** ** * * * *	*
V Color	V 606 -171% O N S 0 0 N S 0 0 H F 166 S WP NA NA NA NA NA NA NA NA NA NA NA NA NA	w pt.1992) V 1992) refe WTP		Stor NII NII NII NII NII RWRAerRaftnaacciytwr Calligan Filters NII T&O/CS/CS/CB/CB/CB/CB/CB/CB/CB/CB/CB/CB/CB/CB/CB/	56.130000 55.33333 55.23333 56.06667 56.08667 56.13333 56.13333 56.13333 56.13333 56.13333 56.136667 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000 57.20000	118.36667 118.36667 118.36667 118.36667 118.36667 117.883333 117.883333 117.883333 116.316667 117.33333 116.316667 117.33333 116.316667 117.33333 116.316667 117.33333 118.316637 118.316637 118.316637 118.316637 118.316637 118.316637 118.316637 118.316633	* ** * * * * *	×
10 25 25 25 25 25 25 25 2	H S S O O C C C C C C C C C C C C C C C C	w pt. 1992) V 1992) rete WTP		NT NII NII NII NII RWR/AerRith/NaOCJ/TWR Culligan Filters NII FILTACIC/B/CgA/FIC/Sed/pH/RSfilt/PPCI2,CaOCJ/NaOCJ/TWR NII PILTACIC/B/CgA/PH/CLI/RSfilt/PPNaOCJ/TWR NII NII NII NII NII NII NII NII NII NI	55.213333 55.213333 56.06667 56.06667 56.13333 56.13333 58.050000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05000 58.05	118.16667 118.16667 118.16667 118.1618 118.1818 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333 117.181333	** * * * * *	×
	S S O O O O O O O O O O O O O O O O O O	w pt. 1992) vine WTP rete WTP		NII NII NII RWRAetrfilmaocytwr Calligan Filera NII T&OCG/CG/CgAPE/Sed/pH/RSflupPc12,CsOCLNaOCytwr NII Pflunaocytwr P File NII NII AerPAC/CgA/pH/ClurSfluPPNaOCytwr File NII NII NII NII NII NII NII NII NII NI	55.23333 56.06667 56.06667 56.13333 56.13333 58.05000 58.0500	118.36667 118.36667 118.36667 118.21333 117.88333 116.31667 116.31667 116.31667 116.31667 117.33333 116.31667 117.300000 113.000000	** * * * *	×
	N S O O O O O O O O O	w pt. 1992) V 1992) rete WTP		NIII RWR/AerRfinnsocytywr RWR/AerRfinnsocytywr NIII T&O/Cy/Cy/Arc/Sed/ph/RSfin/PPC12,Cs/OCL/Na/Cy/Twr NIII Pfin/Accytywr NIII NIII NIII NIII NIII NIII NIII NIII RE/SA/Ph/N**OCytywr Fis/Sa/Ph/N**OCytywr I Gal. RWR/Cs/Cs/AyRfin/To/ph/C12/TWR	55,23333 56,06667 56,13333 56,13333 58,13333 58,13333 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,050000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000 58,05000	H8.36667 H8.36667 H8.3333 H7.88333 H7.88333 H6.316667 H8.31333 H8.36667 H7.33333 H8.36667 H7.300000 H1.300000 H1.3000000 H1.3000000 H1.3000000	** * * * *	×
Thirtie Thir	N S S O S S S O S S S O S S S O S S O S S O S O S S O	w pt.1992) V 1992) refe WTP		Nil RWRAetrRfinnaocytywr RWRAetrRfinnaocytywr Nil Teologycgavble/SedipHrsthuppctz, Caocy, Naocytywr Nil Pithnaocytywr Pithnaocytywr Nil Nil Nil Nil Nil Nil Nil Rosarrennaocyt I od. RWR/Ca/Cgaarrinoph/ciz/Twr RWR/Ca/Cgaarrinoph/ciz/Twr	54.[3333] 56.066667 54.28[333] 55.28[333] 55.28[333] 55.466667 55.28[300] 55.28[66667]	115.36667 112.81667 117.88133 117.88133 117.88133 116.316667 116.316667 116.316667 116.316667 117.200000 113.2000000	** * * * * *	×
Image	H 165 S S S WP NA 1944 S S S S O O O O O O O O O O O O O O O	v 1992) rete WTP raded 1992)		NGI RWRAFERRINNBOCKTWR Culligan Filters Culligan Filters T&OCG/CgA/FicSed/pH/RSfilt/PPCI2,CaOCLNBOCKTWR NG FILT NGI AerPAC/Cg/CgA/pH/CLr/RSfilt/PPNBOCKTWR NGI NGI AerPAC/Cg/CgA/pH/CLr/RSfilt/PPNBOCKTWR FicSel/PH/NBOCKTWR FicSel/CgA/Rfilt/O/pH/CI2/TWR RWR/Cg/CgA/Rfilt/O/pH/CI2/TWR	54.13333 56.06667 54.38333 56.13333 58.05000 58.05000 53.03333 56.46667 57.25000 57.25000 57.25000 57.25000 57.25000 57.25000	113.36667 112.81.667 117.83333 117.88333 117.88333 117.83333 116.316667 117.33333 116.316667 117.33333 116.316667 117.33333 117.33333 118.38333	** * * * * *	×
11 165 25 Supplemental 65000 31 Supplemental	NA NA NA NA NA NA NA NA NA NA NA NA NA N	w pt 1992) V 1992) refe WTP		RWR/Aer/Rfl/NaOCI/TWR Cultigan Filters Nii Pfl/NaC/G/Cg/A/Fic/Sed/pfl/RSfl/vPPCI2,CaOCI/NaOCI/TWR Nii Pfl/NaOCI/TWR P. Filt Nii Nii Aer/PAC/Cg/CgA/pfl/Cfs/RSfl/vPPNaOCI/TWR Fic/Sd/Pil/NaOCI Todal. RWR/Cg/CgA/Rfl/TO/pfl/CI2/TWR	56.066667 54.281333 51.281333 58.050000 53.01333 55.466667 55.216667 54.166667	112.81667 117.88333 116.31667 116.31667 116.31667 116.31667 117.33333 116.883333 114.883333	× × × × ×	×
The color Color	S	w pt 1992) v 1992) refe WTP		Culigan Filters Nii T&O/Cy/CgA/Fic/Sed/pH/RSfilt/PPCI2,Ca/OCLNa/OCI/TW/R Nii Pfilt/a/OCI/TW/R Nii Nii Nii Aer/PAC/Cg/CgA/PH/CLI/RSfilt/PPNa/OCI/TW/R Fic/SZFilt/Na/OCI/TW/R Fic/SZFILT/	54.381313 56.13333 58.181313 58.05000 58.05000 58.05000 55.250000 55.250000 55.216667	11,281,667 117,881333 117,881333 116,31667 116,31667 117,31333 116,31667 117,200000 113,000333 114,683333	. × × × ×	×
THE NAME No.	WP NA -1946 S H H 872 I WP NA -1946 S WP NA -1946 S WP 114 WP 241 H 1330 S WP NA -1946 S S WP	w pt. 1992) V 1992) rete WTB		NBI T&O/CB/CB/NFc/Sed/pH/RSft/vPPC12,CB/OCL/NB/CLTWR NBI Pfl/MacCL/TWR NBI NBI NBI NBI NBI NBI NBI NBI NBI NBI	54.581313 54.131313 58.010000 58.010000 58.010000 55.210000 55.210000 55.210000	112,81667 117,88333 117,88333 116,31667 116,31667 116,31667 117,31333 116,31667 117,200000 113,000000 115,0003333	* * * *	×
Fig. 19 70 114 134 135 3 3 4 4 134 13 3 3 4 4 4 134 3 3 3 4 4 4 4 4 4	V 704 -19% S H 82 -19% S I WP NA NA C WP NA NA C WP NA	w pt. 1992) V 1992) rete WTP		T&O/Cy/Cy/UPic/Sedipt/RSfit/PPCI2,CwOCJ/NaOCITWR Nii Pith/NaOCITWR Nii Nii AeriPAC/Cy/CyA/pt/Ct/RSfit/PPNaOCITWR Pic/Suffit/Na/CCI Todal. RWR/Cy/CyA/Rfit/TO/pt/Ci2/TWR	54.581313 54.281313 58.05000 58.05000 55.05000 55.250000 55.216667 54.16667	112,813,33 117,813,33 117,813,33 116,31667 116,31667 117,313,33 116,31667 117,200000 113,000000 113,000000 113,000000 114,0000000 115,000000	* * * *	×
E	H	rete WTP-raded 1992)		NII PRIMINGCUTWR P. FBIT NII NII NII I. GAL RWR/CB/CB/A/RIVTO/pH/CI2/TWR RWR/CB/CB/A/RIVTO/pH/CI2/TWR	56 133333 53.283333 58 050000 58 050000 53.03333 56 466667 55.280000 55.2806667 54.366667	117,883333 116,31667 116,31667 117,33333 117,30000 117,200000 115,000333 114,683333	× × ×	×
RAD DRAMIN H RAT S. Supply Check(OW 1992) 27.7 PhinhachTVPR 37.33131 17.33131 X 13.10813	H NA NA NA NA NA NA NA NA NA NA NA NA NA	rete WTP raded 1992)		Pfilmeocutwr Nii Nii AefPacicg/cga/ph/cursinvpneocutwr Fic/Supinneoci I Gril RWR/cg/cga/Rrinto/ph/ci2/twr	\$3.283333 \$8.050000 \$8.050000 \$3.03333 \$6.46667 \$5.250000 \$5.216667	117,883333 116,316667 116,316667 117,33333 117,300000 117,200000 117,200000 118,083333	* * *	*
CAD PALAIR VA NA S antiface amonth P. Filt STRATE STRATE NA STRATE NA STRATE NA STRATE NA STRATE NA NA STRATE NA	WP	rete WTP		P. FRI. NII NII NII NII HESZURINAGOCI TONII ROSZURINAGOCI ROSZURINAGOCI RWRIOZIOZIVAR	58 050000 53.03333 56.46667 55.250000 55.216667 54.366667	116.316667 116.316667 117.33333 116.36667 113.200000 113.083333 114.683333	× ×	×
No. No.	S O O O O O O O O O	reded 1992)		NII NII AEPPACICACAAPHICIURSRIUPPNeOCITWR FILOSZIFIUNEOCI I OBI. RWRICZECZAARRIUTO/PHICIZITWR	58.050000 53.033333 56.46667 55.250000 55.216667 54.366667	H6.316667 H7.33333 H6.36667 H3.200000 H3.083333 H4.683333	× ×	×
AKE WP 114 O Average and Average an	WP 241 WP 241 H 330 S C C C C C C C C C C C C C C C C C C C	raded 1992)		Nä AerPACICG/CgA/pH/Clu/RSflu/PPN«OC/TWR Flu/Su/Flu/N«OC! I Gal. RWR/Cg/CgA/Rflu/TO/pH/Cl2/TWR	55.03333 56.46667 55.250000 55.216667 54.366667	116.36667 111.200000 112.200000 113.083333	× ×	×
KKE NP 244 Act ALTICAL PROCESSOR	WP 241 H 367 S MP NA NA O O O O O O O O O O O O O O O O O	raded 1992)		AerPAC/Cg/CgA/pH/Cb/RSfluPPN#OC/TWR Fle/Sd/PluN#OC! I On! RWR/Cg/CgA/RfluTO/pH/Cl2/TWR	56.46667 55.250000 55.216667 54.366667	116.36667 113.200000 113.200000 115.083333	× ×	×
KKE P 350 S. Culling Lake 400 818 RWINCAGCACTUVRR 55,2300 11,20000 X KERF P 367 5 Laker Slave Lake 4000 818 RWINCAGCACACTURR 53,24660 11,20000 X KERF P 79 A Colling Lake 4000 818 RWINCAGCACACTURR 51,81660 11,20000 X KIAN P 79 A Colling Lake 400 A 44,46451 14,46461 11,41000 X KIAN P 125 Coljanym Lake 150 A 14,46451 14,46461 14,4451 X KIAN P 126 Coljanym Lake 150 A 14,46451 14,46461 14,445131 X KIAN P 126 A A 150 A A 14,46461 X A A A A A A A A A A A A A	H 367 S S S S S S S S S S S S S S S S S S S	raded 1992)		FIc/SJFIUN#OCI I Gal. RWR/Cg/CgA/RfIUTO/pH/C12/TWR	55.250000 55.216667 54.366667	113.200000 113.200000 115.083333 114.683333	× ×	
KKE P. P. P. S. Ching Lake C Ching Lake 4000 818 NOALING CALLY R. A.	PP NA NA NA NA NA NA NA NA NA NA NA NA NA			i.oal Rwr/cg/cga/rriuto/ph/c12/twr	55.216667	113.200000 115.083333 114.683333	×	
No. No. No. No. No. No. No. No. No. No.	H 367 S S 0 0 S H 157 S H 157 S H 157 S H 158 C C C C C C C C C C C C C C C C C C C			RWR/Cg/CgA/Rfluto/ph/c12/TWR	54.366667	115.083333	×	
W	WP NA NA NA NA NA NA NA NA NA NA NA NA NA					114.683333		
No. of the control	H H 137 S S WP L135 WP L126 C C C C C C C C C C C C C C C C C C C					14.683333		
Name	S				53.816667			
H	H 1137 S WP 243 O O H 443 O O H 126 O O WP NA NA O O WP NA O							
T H 410 O NALW P ANALY SASSAGE 118.781333 X F H 410 O O NA H 53.386675 118.781333 X F H 126 O O O COmp SA53133 111.2813333 X F H 126 O O O COmp SA53133 111.2813333 X F H 126 O O O O A146667 X A146671 X <t< td=""><td>H 1100 C C C C C C C C C C C C C C C C C</td><td></td><td>45</td><td>The W.P.</td><td></td><td></td><td></td><td></td></t<>	H 1100 C C C C C C C C C C C C C C C C C		45	The W.P.				
REM WP 25 S Surface Runoff 35500 Find Find SA 33333 LI 1583333 X REM H 126 G Interest Runoff 45 P.P.R. KAMOJ, W.P. 56 48667 111 1393333 X REM WP NA G Private 45 P.P.R. KAMOJ, W.P. 56 33333 111 1080333 X SCHOOL S G G P.P.R. KAMOJ, W.P. 51 31333 111 11080333 X SVHOOL S G G C NB A NB A NB A NB A A NB NB A NB NB A NB NB A NB A NB A NB NB A NB A NB NB A NB A	WP 255 S S S S S S S S S S S S S S S S S S			NI, W.P.	24.916667	114.166667		
H 126 C C C C C C C C C	H 126 G G G G G G G G G				25.200007	18.783333		
H H H H H H H H H H	WP NA O O O O O O O O O			Se military and a second secon	64 616667	119.283333		>
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WP WA S Spring 45 IDA WP WA O A NMCOT A5219533 113146667 118 019	WP NA S C C C C C C C C C C C C C C C C C C	maing or Loc. WTP			56.733333	117,450000		
H 106 G 45 NaGCI 45 NaGCI 45 NaGCI 11311313131313131313131313131313131313	WP NA O O O O O O O O O O O O O O O O O O			I Chal	56.733333	117.450000		
WP NA Q NB NB SG-13333 118.33333 118.33333 118.33333 118.33333 118.333333 118.333333 118.333333 118.333333 118.333333 118.333333 118.333333 118.333333 117.666667 113.66667 NB	WP NA GO GO GO WP NA 421 4,0% S CO GO		45	N ₈ OCI	55.216667	118.016667	×	
H 350 South Wabara Lake 227000 1137 RWRCGyCgACGL/RSftrTOlpH/PPC12 55,533333 113,816,667 E	H 350 S H 90 G WP NA (2) (10% S S 0 0 G O 0 0 G			P.N.	56.283333	118,333333		
F F F F F F F F F F	WP NA CO CO CO CO CO CO CO CO CO CO CO CO CO			RWR/Cg/CgA/Clr/RSflvTO/pH/PPCf2	55.93333	113.816667	×	×
E 2 WP	WP NA 421 4,0% S S 0 0 0 0		45	Na.	56.533333	117.666667		
ACKSON V 421 4,0% 5 3 Winsgami Lake via cutal 82500 530 RWRCg/FRRSflipHNaCCI 35733333 117,100000 PROV.REC. 0 0 0 0 Nil Nil 17,100000 55783333 117,100000 17,100000 <td< td=""><td>S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td></td><td></td><td>NG</td><td></td><td></td><td></td><td></td></td<>	S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			NG				
No. No.		e via canal		RWR/Cg/Flc/RS/livpH/Na/OCI	55.733333	117.100000	×	
National Color Nati	2 × ×			Fe re/Osfit/CaOX.VTWR				
HAW WATE V 184 A	2000			N. I.				
Nat	O STAW WAIT			RWINCE/CEAUCIFUMIIVETZ		117.883333	×	
IESETTLEM MS 260	***	1						
T 7123 0.0% G 7115 NaCLZTWR 5138333 11643333 11643333 11643333	WS SW							
S 0 G S S 416667 116 300000 S High Prairie WTP 91 SS 416667 116 300000 SS 416667 116 300000 SS 416667 116 300000 SS 416667 116 3000000 SS 41667 116 3000000 SS 4167 116 3000000 SS 4167 116 3000000 SS 4167 116 3000000 SS 4167 116 30000000 SS 4167 116 30000000 SS 4167 116 30000000 SS 4167 116 300000000 SS 4167 116 300000000 SS 4167 116 300000000 SS 4167 116 30000000000000000000000000000000000	T 7323 0.0%		7115	NaOCL2/TWR		116 4111111	*	*
H 128 S High Prairie WTP 91 SSA18667 116.300000 V 478 -3.89% G SSA18667 SSA18667 116.300000 SSA18667 SSA18667 116.300000 SSA18667 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA1860000 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA18667 SSA1867 RTH S 0			N.					
V 478 -3.89% G GSIUFe re/Sc cnt/PPNacCCI2/TWR 53.600000 115.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.000000 15.0000000 15.000000 15.00000000 15.0000000 15.0000000 15.0000000 15.0000000 15.0000000 15.00000000 15.0000000 15.0000000 15.0000000000	H 128 S	WTP	16			116 300000		
WP 4 G 5 Nil 56490000	V 478 -3,896		089	GSflt/Fe re/Sc cnt/PPNsOCI2/TWR		115.000000	×	
	WP		\$	N.I.		118.733333		

	FACILITY	STATUS	STATUS POPULATION	M Pop.	TYPE	SOURCE	RAW STORAG TREATED ST	REATED ST	TREATMENT	LAT	DNOT	SURVEY	RAW	VISIT
V 1911 1918 1918 2 Free Form 6.64600 2317 Cert Cubridacia/Try R 2.146600 2.146				change			an s	'e				100	65	PLAMNED
A. D. 18.1 O. P. S. Prace River 60-600 612.7 N. WALLACQ-CACAR-Short ROCCUPRISH PROCEDTY R. S.	EVANSBURG	>	750	-3.6%	0			2722	Cort Cht/NaCK;J/TWR	53.600000	15.016667	×		
A.L. O. 1881 O.S.N. S. Thursen North Siebed December SER No. N. S. Thursen North Siebed December	EVERGREEN PARK, AGR	0	0		0				EN	35.166667	18,800000			
1 118 0.48 S. Images of Left of Control 2000 313 Average-Quedatible-Incontrol 2000 313 Ave	FAIRVIEW	⊢ (3281	%80	w (Peace River	636400	289	RWR/Ar/Cg&A/pH/SflvTO/Flw/PPC12/TWR	26,066667	188.383333	×	×	×
1 11 11 11 11 11 11 11	FAIRVIEW REGIONAL	o 1			0	Fairview WIP		7.7	N.	26.066667	18,383333			
No. 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	FALHER	⊢ :	1183	0 4%	0	Winagami Lake via canai	86360	322	Aer/Cg/CgA/Sd/Sn/pH/T&O/Clr/RSflVFlw/CL2/TWR	55.73333	7.366667	×		×
H OFF CARRELL HORDING 100 THE ADMINISTRACTORY 55 (1883) H 100 10	FAUSI	= =	344		0 0	Siave Lake	88700	570	RWR/10/Cg/CgApH/Flc/Sd/RSiit/PPC12/TWR	25.316667	15,633333	×		
γ γ	FOUTUBELAVE	= 12	E §		9 0	Uich I and WITE		3	re re/usitungucu I w R	54,533333	14.083333	×		
H 1200 S Elle Signation 6800 88 National State Application Process of State Application Proce	FORT ASSINIBOINE	- >	316	16.4%	0 0	riigii Level w I F		16	alter Do Neighbor - M	79901998	17.183333	3		
1. 1. 1. 1. 1. 1. 1. 1.	POPT CHIPPEWAN	- 3	200	10.40	0	I often Ashahanan	00000	970	MILE/OSIUMBOCULW R	24 333333	14.766667	×÷		;
Color 1,100 Color 1,100 Color Colo	EDDT MACKAV	= =	207		0 0	City binner	94000	600	KWKCgCgApH/KSnUCLZ/IWK	38 700000	11.133333	×	×	×
1	FORT MCMIPPAN	= (33500	0.387	0 0	A IN-II-D	2000	18	KWKI FEE/AET/Cg/CgApH/FIUFFNBCCI	57.183333	1,616667	×		× :
1	FORT WEBSELLTON	: נ	33096	2	0 0	Authors River	45500	00000	Cg/CgA/10/pH/Cir/DMII0/Flu/NH4/PPC12/91 WR	56.733333	11.383333	×	×	×
1	FORI VERMILION	Ξ (823		0	Peace River	100000	066	RWR/Cg/CgA/Clr/pH/RfivPPCL2/TWR	58 400000	116,000000	×		×
NA 478 6 Off Lulde 85 OFG-ADT-CLAPING-INCACTAVR 51 188811 NA 155 474-64 S. Off Lulde 4515 818 R. OFG-ADT-CLAPING-INCACTAVR 51 188811 T 182 3.44 S. Varier Lulde 4515 R. PATA-CLAPARA (1978-CLAPARA (1978-CLAPA	FOX CREEK	į.	2068	93%				4818	GW/(1:GSflt/NaOCI/TWR)(1:NT)(3:FeRe/Seq/Cl2/TWR)	54,400000	116.800000	×		×
V NA 45% S Wingsmit Lake viscanual 4445 S Companie 4445 S Valuation Lake viscanual 4445 S S Companie 4445 S S Victor Lake 510 N A <t< td=""><td>GIFT LAKE</td><td>MS</td><td>424</td><td></td><td></td><td>Gift Lake</td><td></td><td>830</td><td>Cg/CgA/Flc/Clr/pH/RSflt/NaOCI/TWR</td><td>55 883333</td><td>115,816667</td><td>×</td><td></td><td>×</td></t<>	GIFT LAKE	MS	424			Gift Lake		830	Cg/CgA/Flc/Clr/pH/RSflt/NaOCI/TWR	55 883333	115,816667	×		×
WP NA C 3815 S.M. C 1885 C <t< td=""><td>DIROUXVILLE</td><td>></td><td>367</td><td>-4.9%</td><td>90</td><td>Winngami Lake via canal</td><td>45455</td><td>818</td><td>RWR/Cg/Sd/Rflu/Sf/Cl2/TWR</td><td>55 750000</td><td>117,333333</td><td>×</td><td></td><td></td></t<>	DIROUXVILLE	>	367	-4.9%	90	Winngami Lake via canal	45455	818	RWR/Cg/Sd/Rflu/Sf/Cl2/TWR	55 750000	117,333333	×		
T 383.9 Neter Labe 4859 R PATPICALTYNR 531.6667	GOODWIN	WP	NA NA		D			10		55.216667	118,183333			
C 28330 6888 3 Mappin River 200000 28590 RWRVCyCyCyCyCyCyCyCyCyCyCyCyCyCyCyCyCyCyCy	GRANDE CACHE	-	3842	5.4%	s	Victor Lake		4545	Fe re/Pfl/CL2/TWR	53 881333	119,133333	×		×
AP 66 60 8.0 State structure 2.277.7 R. N. M. Alekter R. M. M. Alekter R. M. M. M. M. Alekter R. M.	GRANDE PRAIRIE	Ü	28350	968.9	10	Wapiti River	200000	26509	RWR/Cg/CgA/Flc/Sd/RflvFlwPPC12	55 164667	18.800000	×		×
H 66 Sign Suffice runoff 23777 R V V V V V V V V V V V V V V V V V V V	GRANDE PRAIRIE	AP			D				Nil	53,166667	18.800000			
WP NA O Private NT PROPRIATE SOUGHARD	GRASSLAND	H	99		S&C	Surface runoff	22727	82	RWS/Aer/KMnO4/Cg/CgA/pH/Clar/RSflvAC/NaOCl/TWR	54.116667	12.683333	×		
WP NA O O STITE FINATORY SERIOR STITE NA SERIOR STITE NA SERIOR STITE NA SERIOR STITE NA SERIOR SERIOR TOTAL COMBAN STITE	GREEN COURT	H	20			Private								
H 312 20% G Buffle BayLeaser Save 48500 21 RVR2, PRIOLIZITVR S.116657 S.116657 S.116657 S.116657 S. Surface runoff 48500 22 RVR2, PRIOLIZITVR S.116657 S. Surface runoff 48500 22 RVR2, PRIOLIZITVR S.116657 S. Surface runoff 48500 22 RVR2, PRIORIZIZE, PRI	ORIFFIN CREEK	WP	NA		0				TH.	26,016667	17.850000			
H 313 S Builting builting builting 48300 703 Fere-Ara (KMOOLG)g/ga/pluThPt-CLIRINCIZITYUR 353,56647 WP NA S Sunflere muoff 49900 22 RWRAPHLPPC-LIZTYUR 35,116647 WP NA S Sunflere muoff 14 LOal 51,11667 OSET T 2221 4,14 S Weep Interest muoff 36,418 Sunflere muoff 14 LOal 15,118333 36,116677 36,116677 36,116677 36,116677 <td>GRIMSHAW</td> <td>+</td> <td>2812</td> <td>9.0%</td> <td>0</td> <td></td> <td></td> <td>5773</td> <td>Flu/C12/TWR</td> <td>56.183333</td> <td>7,600000</td> <td>×</td> <td></td> <td>×</td>	GRIMSHAW	+	2812	9.0%	0			5773	Flu/C12/TWR	56.183333	7,600000	×		×
HP 544 Stanfface mooff 409000 124 RWPP/INTPCLIZTVUR 5114647 WP NA S Surfface mooff 409000 124 CACACUP/HINTPCLIZTVUR 5114647 WP NA S Surfface mooff 40900 234 GACGACUP/HINTPCLIZTVUR 5114647 OCNT AP 1.14 5 Surfface mooff 36468 4626ACUP/HINTPCLIZTVUR 5131333 OCNT AP 1.0 1.14 5 Surfface mooff 15648 4835 RWPANACACUP/CACACUP/HINTPCLIZTVUR 5131333 OCN 1.0 1.0 1.0 1.0 1.0 1.0 1.0 OCN 1.0	GROUARD	H	352		s	Buffalo Bay/Lesser Save	48500	703	Fe re-Aer, KMnO4/Cg/CgA/pH/Flc/Clr/RflvCl2/TWR	55.516667	116.150000	×		
VPP NA S Sunfree monoff 14 Loal 10al 55 Sunfree monoff 14 Loal 57,133333 Sunfree monoff 15 Loal 10al 57,133333 Sunfree monoff 16 Loal 10al 57,133333 Sunfree monoff 11 Loal 10al 58,13333 Sunfree monoff 58,648 QCQVACUPIPIRIOTRACITY 88,16667 58,433333 Sunfree monoff 58,433333 Sunfree monoff 10al	OUY	I	34		S	Surface runoff	40900	22	RWR/Pfl/PPCL2/TWR	55.550000	17,116667	×		
YP 10 S. States mooff 300000 345 I.Gall 97,1333333333333333333333333333333333333	HARMON VALLEY	WP	NA		S	Surface runoff		14	I.Gal.	19891198	116.833333			
T 2921 15.24 S North-Lake	HAWK HILLS	WP	01		S	Surface runoff			I.Gal.	57,233333	17.466667			
ORT T 2992 4.1% S Wet Puine River 356428 4553 RWRAARIC@CGA/CL/pHRAINFINCIZ 3543333 CO-O 0 0 0 1 S High Prairie WTP 156667 1513333 1513667 1513333 1513667 1513333 1513667 1513333 1513667 1513333 15136667 1513333 1513667 1513333 15136667 1513333 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 15136667 1513667 15136667 15136667 1513133 1513667 1513667 1513667 1513667 1513667 1513667 1513667 1513667 1513667 1513133<	HIGH LEVEL	-	2921	5.2%	S	Footner Lake	90006	2845	Cg/CgA/Clr/pH/RflvT&O/Flu/Cl2/R&TWR	58.516667	117,133333	×		×
No. No. No. Bottled water No.	HIGH PRAIRIE	-	2932	4.1%	S	West Prairie River	536428	4955	RWR/Aer/Cg/CgA/Clr/pH/Rflt/Flu/Cl2	55,433333	116 483333	×	×	×
OCO-OL O S High Pruisie WTP NHI OCO-OL O O S High Pruisie WTP S116667 V SD 23 O O S116667 S116667 V SD 23 O O S116667 S116667 S116667 V SD 23 O O PAR S Surface maniff S116667 S116667 S116667 WP NA O PAR NA O PAR NA Surface maniff S116667	HIGH PRAIRIE AIRPORT	AP	0			Bottled water			EN.	55,433333	116.481333			
V S13 V S14 V S15 V	HIGH PKAIKIE NW CO-O	0 1	0 1		0	High Prairie WTP			N.	55.433333	116 483333			
V 513 17.994 S 10 Clerk 136000 727 RVBACCQ/CQA/DH/SA/SINPPNACCI 51.10000 51.10000 51.10000 51.1000	HILLIARD BAY PROV. P	4	0		0 0				GSflVFe re/NaOCL2	15.516667	116 50000			
T 9893 4.884 5 Surface runoff 121 RWBACKPINGSUNDTRANSLINDTRANSL 34106677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 131146677 1311466677 131146677 131146677 131146677 131146677 13114667 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 1311467 13114677 1311467 1311467	HILLION ESTATES	og ×	3 5	17.002	5 0	Tank Charle	- France	900	Fe seq/NaOCI/IWR	55.166667	8 800000			
VP NAA S. Antifice runoff 5.22B. Comp. (Wedowood) 15.10 Gal 53.4166677 V NAA S. Christina River \$60000 31 RWR/Cg/FL/RSft/pH/NaCC/TWR \$5.533333 PAR H 413 S. Christina River \$60000 31 RWR/Cg/FL/RSft/pH/NaCC/TWR \$5.533333 PAR H 175 S. Surface runoff 45440 22 RWR/Cg/FL/RSft/pH/NaCC/TWR \$5.500000 VP HA 15 Surface runoff 45440 22 RWR/Cg/Cg/ATC/TWR \$5.500000 VP HA 15 Surface runoff 45440 22 RWR/Cg/Cg/ATC/PH/MMFIV/aCC/TWR \$5.500000 V V 154 18.4% Surface runoff 454 22 RWR/Cg/Cg/ATC/PH/MMFIV/aCC/TWR \$5.500000 V V 154 18.4% Surface runoff 455 NA \$5.500000 V V 154 18.4% Surface runoff 455 NA NA V V 154 18.4%	HINES CHEEN	> 6	313	4 007	0 0	Jack Cirek	136000	121	K WS/Aer/Cg/CgA/pH/Sd/Sitt/PP/NgOCI	36.230000	8.600000	×	×	
V NA S Surface runnil S Christina River 510 data H 435 S Christina River 56000 31 RWRCg/FlorRSflupHNacCC/TWR 55,33333 PAR NP 4473 S G Calen Lake 50000 31 RWRCg/FlorRSflupHNacCC/TWR 51,80000 H 102 35 S Surface runoff 43430 12 RWRPHUPPCLZ/TWR 51,80000 H 269 3 Surface runoff 43430 12 RWRPHUPPCLZ/TWR 51,80000 V 134 184% 5 Faust WTP 43430 12 RWRPG/Cg/CgAFIe/CL/pHAMFIU/aCC/TWR 51,80000 V 134 184 5 Faust WTP 435 RWRCg/CgAFIe/CL/pHAMFIU/aCC/TWR 51,80000 V 134 184 5 Faust WTP 435 RWRCg/CgAFIe/CL/pHAMFIU/aCC/TWR 51,80000 V 144 185 0 Private 1134 RWRCg/CgAFIe/CL/pHAMFIU/CL/TWR 54,10000 H 235 0 244 181 RWRCg/CgAFIe/CL/pHAMFIU/CL/TWR 54,10000 H 235 0 244 182 RAG Earth Creek WTP 9 NA H 235	HOMOTIVIES	10744	7893	4.676	0	Athabasca Kiver		3778	Comp. (Weldwood)	53,416667	7.566667	×	×	×
PAR 413 Christian River 50000 31 RWRCg/Flc/RSflt/pH/NaCC/TWR 5533333 PAR 102 0 Christian River 50000 31 RWRCg/Flc/RSflt/pH/NaCC/TWR 54,45000 PAR 1473 S&O Calvia Lake 9000 434 CRS140/ACC/TWR 51,450000 II 269 S Lester Slave Lake 9000 434 CRS2flt/NaCC/TWR 51,500000 V 134 S Surface Runolf 43430 22 RWRCg/CgAPIc/CIr/pH/MMFIN/aCC/TWR 51,500000 V 134 S Surface Runolf 435 NA CRS3flt/NaCC/TWR 51,33333 H 169 O Private 9 NA A 54,13333 H 233 O.2% S Las La Biche 9 NA A A H 233 O.2% S Las La Biche 9 NA A A H 233 O.2% S Red Enth Creek WTP <	HOTCHKISS	d'A	V.		0	Surface runoff		S	I Gal	27,066667	17.550000			
PAR 193 S. Chinton Royer 30000 31 RWR/Cg/FL/RSIUPHINACC/TWR 55,93333 PAR NP 4473 S&G Calin Lake 30000 31 RWR/PRIVPHINACC/TWR 55,90000 13,4430 22 RWR/PRIVPHINACC/TWR 55,90000 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 13,1440 14 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 14,1440 <	HILL OFFICE		V.		0 0	alanti.		d		35.333333	19.558000			
PAR NP 473 S&C Calun Lake 150 ARTIFICE FOLIAGE 150 ARTIFICE FOLIAGE 150 ARTIFICE FOLIAGE 150 ARTIFICE FOLIAGE 150	IAPVIEK	= 1	433		0	Christina Kiver	20000	15	RWR/Cg/Fic/RSitt/pH/NaOCL/TWR	55.933333	119.716667	×		×
H 71 75 75 75 75 75 75 75	IACDED MATTOMAL DAD	n an	701					80	Aet/Fe re/NaOCI	34,450000	113,983333	×		
11 259 Suffice Runoff 13 Suffice Runoff 14 Suffice R	IPAN POTE	n n	18			Calvin Lake	24480	1309	NII AMERICA PORTING	52.883333	114.083333	;		×
WP NA S. Suffice Runoff 2.3 Copy of JUNE A. S. Suffice Runoff 2.3 Copy of JUNE A. S. Suffice Runoff 3.5 A. S. Suffice Runoff A. S. Suffice Runoff A. S. Suffice Runoff<	IOTISSARD		260			Torre Clare Late	0000	77	KWINTPLLZ/IWK	35.90000	19991111	×		
V 144 18.4% S Fault WTP 455 NATOCOLOGO POTORIO MARCO IN TRANSPORTINGO	KFGRIVER	WP	NA MA			Surface Dunoff	Nene.	33	DIVENCE OF A COLOR OF	33.300001	113.783.133	×		
H 689 O Private 1136 Fe re/PR/Sft/NaCCI 55,400000 T 2553 0.246 S Las Las Biche 9 NA 34,766667 35,400000 H 253 S Haubel from Cadotte Lake 9 NA 54,13333 54,100000 35,400000 35,90000	KINUSO	>	154	18 4%		Farret WTD		337	NA NA SECULIAR MATINASCUL WA	57.800000	1,80900			
H 159 G Private 55 Lat La Biche 1134 RWRCg/MicrofluPfluTO/PluCL2/TWR 55 400000 H 233 0.246 5 Lat La Biche 9 NA H 233 Private 9 NA H 159 Private 9 NA H 218 S Red Earth Creek WTP 23 Prov for Dia/TWR 55,30000 T 1144 -0.4% S NoiLiwin River 16340 1830 RWRAcer/Cg/Sd/pH/RIN/Flu/Cl2/TWR 56,916667 WP 73 S Surface runoff 14 RWRAcer/Cg/Pflu/NaC/LTWR 56,916667 WP NA G NII NII NII	LA CRETE	×	689		0			9111	Fe re/DB/KB/Ne/O	40 101111	115 400000	>		
T 2553 0.246 S Lat La Biche 1134 RWAP/Cg/Microfit/Pflu/TL2/TWR 34,766667 H 233 S Hauted from Cadotte Lake 9 NA NA H 39 Private 9 NA NA 35,100000 F 161 O Private 131 Prov for Dis/TWR 55,30000 T 1144 -0.4% S Notitivin River 16540 1830 RWR/Aer/Cg/Sd/PH/RIVFIL/TWR 56,916667 WP 71 S Surface runoff 14 RWR/Aer/Cg/Pfl/MaC/CIT/WR 56,916667 WP I/A O Surface runoff 14 RWR/Aer/Cg/Pfl/MaC/CIT/WR 56,916667 WP I/A O Nail Nail Nail	LA GLACE	Ξ	169			Privale				\$5.400000	000031 61			
H 253 S Hauled from Cadotte Lake 9 NA 56,433333 H 39 Private 21 Private 33,100000 33,100000 H 218 S Red Earth Creek WTP 23 Prov for Dia/TWR 56,58000 T 1144 -0.4% S Noisiavin River 163640 1830 RWR/Aer/Cg/Sd/pH/RIU/Flu/CI2/TWR 56,916667 WP 33 S Surface runoff 14 RWR/Aer/Cg/Pfl/NaOCI/TWR 56,06667 WP HA Q Nil RRee & Mare/CSIPUCI2 31,990000 WP HA Q Nil Nil Nil	LAC LA BICHE	⊢	2553	0.2%		Lac La Biche		1134	RWR/Cg/MicroflvPflvTO/Flu/CL2/TWR	\$4.766667	1.966667	×		×
H 161 G Private 33,100000 H 118 S Red Earth Creek WTP 23 Prov for Dis/TWR 56,530000 T 1144 -0.4% S Notilawin River 163640 1830 RWR/Aer/Cg/Sd/pH/RIU/Flu/CI2/TWR 56,516667 WP 33 S Surface runoff 14 RWR/Aer/Cg/Pfl/NaOCI/TWR 56,066667 T 1632 19,7% G A 100000 Nil WP NA G Nil Nil Nil Nil	LITTLE BUFFALO	Ξ	253		S	Hauled from Cadotte Lake			NA	56.433333	116.100000	:		
H 161 Q Private 23 Prov for Dis/TWR 55,100000 T 114 -0.4% S Red Eurth Creek WTP 161440 1810 RWR/Aer/Cg/SdpH/Rfl/Flu/Cl2/TWR 56,580000 WP 71 S Prom Barrheid 91 NB NB A1,00000 WP 33 S Surface runoff 14 RWR/Aer/Cg/Pfl/NsOC/T/WR 56,06667 WP HA G NB NII NII WP HA G NII NII	LITTLE SMOKY	Ξ	380											
H 218 S Red Earth Creek WTP 23 Prov for Dia/TWR \$6,500000 T 1144 -0.4% S Notitivinin River 165440 1810 RWR/Aer/Cg/5d/pH/Rfl/Flu/Cl2/TWR \$6,916667 WP 71 S Srom Bartheid 91 Nil T4 RWR/Aer/Cg/Pfl/Na/CCI/TWR \$6,06667 T 1952 19,7% G American cundit 14 RWR/Aer/Cg/Pfl/Na/CCI/TWR \$6,06667 WP NA G American cundit American cundit American cundit American cundit \$1,950000 WP NA G American cundit Nai Nai Nai	LODGEPOLE	×	191			Private				53,100000	115.316667			
T 1144 -0.4% S Notitiwin River 163640 1830 RWR/Aer/Cg/Sd/pH/Rl/PlwCl2/TWR 56,916667 WP 71 S Prom Bantheid 91 Nil FWR/Aer/Cg/Pfl/NaCCI/TWR 54,100000 WP I/A G Surface runoff 144 RWR/Aer/Cg/Pfl/NaCCI/TWR 56,006667 WP I/A G American River American River 33,910000 WP I/A G American River American River American River	LOON LAKE	Ξ	218		S	Red Earth Creek WTP		23	Prov for Dis/TWR	56.550000	115.400000	×		
H 71 S From Barsheld 91 Nil 94.100000 94.100000 WP 33 S Surface runoff 14 RWPARAer/Cg/PfuNaOCI/TWR \$6,06667 \$6,06667 T 1692 19.7% Q 3410 FeRe & Mine/GSft/CI2 \$3,950000 WP NA Q Nil Nil Nil	MANNING	-	1144	-0.4%		Notikiwin River	163640	1830	RWR/Aer/Cg/Sd/pH/Rfl/Flu/Cl2/TWR	56.916667	117.616667	×		×
WP 33 S Surface runoff L4 RWR/Aer/Cg/Pfl/NaOCI/TWR \$6,006667 T 1692 19.7% G 3410 FeRe & Mnre/GSfl/Cf2 \$3,950000 WP NA G Nil Nil Nil	MANOLA	Ξ	7.1			From Barrhead		16	Nil	54.100000	114.233333			
T 1692 19.7% G 3410 FeRe & Mure/GSfl/C12 53.950000 WP NA G NII	MARIE-REINE	WP	93			Surface runoff		3	RWR/Aer/Cg/PflvNaOCI/TWR	56.066667	117 283333	×		
WP MA G	MAYERTHORPE	è	1592	19.7%	0			3410	FeRe & Mnre/GSflVCl2	53.950000	11,133333	×		
WP HA G	MCINNIS (WELL #1)	WP	MA		0				Nil					
	MCINNIS (WELL #2)	WP	MA		D				Nil					

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FACILITY	SIALUS	STATUS POPULATION	do Lob	411	SOUNCE	TO THE PROPERTY AND THE PARTY	,	The state of the s					
			change			m,	Ē				SAMPLES	SAMPLES SAMPLES PLANNED	PLANNE
MCLENNAN	T	1026	2.7%	S	Winagami Lake via canal	207500	1300	RWR/Cg/CgA/pH/Clr/RSflvFlu/PPCl2/TWR	55.700000	116.90000	×		
MILDRED LAKE/LOWER	-			50	Athebasca River	910	36	Stdby C12	57.050000	111,583333			
MILDRED LAKEAUPPER	_			S	Athebases River	17728	932	P.Filt., Polymer	\$7.050000	111.583333			
MITSUE IND. PARK	0	0		S	Lesser Slave River			P.Filt/Non-Potable	53.266667	114,616667			
MOONSHINE LAKE PRO	PF	0		s	Moonshine Lake			P.Filt	55.883333	119,216667			
NAMPA	WP	NA		S	Surface Runoff			I. Gal.	56.033333	117,133333	×		
NAMPA	>	96#	6.9%	S	North Heart River	113650	1137	RWR/Aer/Cg/CgA/pH/Sd/Clr/RflvPPCL2/TWR	\$6.033333	117,133333			
NEERLANDIA	H	7.1		s	Baird Lake	22500	1360	RWR/Cg/CgA/Flc/Clr/pH/KMnO4/Flt/Cloram/TWR	54.333333	114.36667	×		
NEW FISH CREEK	WP	NA		0			80	N.i	55.300000	117,250000			
NITON JUNCTION	#	7.5			Private								
NORTH STAR	WP	NA		S	Surface ranoff		=	I.Gal.	\$6.850000	117,613333			
PADDLE PRAIRIE	MS	470		S	Boyer River	00089	255	RWR/Aer/Cg/CgA/Flc/Sd/Flt/NaOCI	57.950000	117,483333	×		3
PEACE RIVER	۲	9699	6.8%	s	Peace River		14189	AC/Cg/CgA/Clr/RflvFlu/Cl2/TWR	\$6.233333	117,283333	×		×
PEACE RIVER AIRPORT	AP	0		0	East Grimshaw Co-op			Res/NaOCI	56.233333	117.783333			
PEACE RIVER C.C.	0	0		67	Peace River	4546	1795	RWR/Cg/CgA/pH/Clr/Flr	56.166667	117.416667			
PEACE RIVER PULP MIL	0								26.166667	117.416667			
PEAVINE	MS	163		or:	South Heart River			RWS/Cg/CgA/MMflvNaOCI	The same of				3
PEERLESS LAKE	WP	253		80	Peerless Lake		100	Comp.	26,666667	114.583333	×		×
PEERLESS LAKE	va :	0		5&0				Soft.	26.666667	114,583333			
PEERS	E :	791		9 4	Physic	1000	,	ALIEN AND AND AND AND AND AND AND AND AND AN	40.41449	110 202225	>		
PEORIA	Ξ:	5.5		0 0	Surface runoil	COFOI	, 80	C-6+C-20N-CCLUIWR	54 766667	111 866667	< >		
PIBLOCH	= =	3 5		۰ د	Bareline Bires Officelook		3 8	Nacional and a series of the s	\$4 050000	111 601111			
PICKARDVILLE	MIND	S 6		0 0	rembbig River (Westlous)		9	NA COOK	43 583333	116 43333			
PI AMONDON	, A	200	2 384	, ,	Can La Bioka		717	Carpson MyCl2/PWB	54 850000	112 116667	×		
DISK WASH ALL	W	2 4		, C	The real city of			N. S.	\$\$ 250000	117,650000			
OTHEN FLIZ (LAC CARD	dd	6		0					\$4.050000	111.333333			
RAINBOW LAKE	Ę-	213	21 0%	000	Surface ratnoff	318000	1576	RWR/Oxi/Aer/Cg/CgA/pH/RSflvPPCI2/TWR	58.500000	119.383333	×		
RED EARTH	WP	N.		so	Red Earth Creek WTP				36.616667	115 300000			
GCOWNIA	WP	NA		s	Surface runoff			N.	56.733333	117,450000			
RENO	WP	20		s	Surface runoff	3182	14	1.0aL	\$6.00000	117.000000			
RIDGE VALLEY	H	52		0			46	EN	55.166667	117.866667			
RIDGE VALLEY	HC								55.166667	117.866667			
ROBB	WP	230		0	Private			N.	53,216667	116.966667			
ROCHESTER	= :	84			Private								
ROCHFORT BEIDGE	I				Private			100	*********	***************************************			
ROCKY LANE	WP	V.		s o	Surface Runoff			P. Full.	53,516667	116.366667			
BOVCE	000	2		2 0	Surface Dunoff	6870	-	DOWNAMMEN	56.216667	114 966667			
PYCBOET		Y27	4784		Spirit Biver	412000	5 PO	RWS/Aer/Co/CoA/Clar/Sflt/PPC12	55.750000	118.716667	×		
SANDYLAKE	Ξ	NA		· •	Sandy Lake	1300	173	RWR/MMFIVACFIVN®OCI	56 000000	113.883333	×		
SANDITION	: >	NY	3.6%		and frame		-	Fe men / NaOCI/TWR	53 883333	114,900000	×		
SASKATOON ISLAND PR	dd	0		0				GaffuFe re/NaOCI	55.201000	119,083333			
SEXSMITH	-	1256	0.3%	0			2728	TWR	55.350000	118,783333			×
SHELL PEACE R. INSITU	-	0		200	Peace River			FlvSfl/AC/Chlor	56 233333	117.283333			
SIR WINSTON CHURCHI	Ь	0		S	Lac La Biche		45	Pfluna Octytwr	54,833333	111,983333			
SLAVELAKE	+	3607	3.3%	S	Leuer Slave Lake		4786	Cg/CgA/Hc/Sd/pH/T&O/Rflt/Flu/Cl2/TWR	55.283333	114.766667	×	×	×
SMITH	Ξ	323		S	Athibases River	32731	454	RWR/Cg/Pflu/CL2/TWR	55.146667	114,033333	×	×	×
SPIRITRIVER	H	1044	-6.4%	S	Surface nanoff	\$10556	1586	RWR/Cg/CgA/Flc/Sd/Clr/TO/pH/2RSflr/FlwPPC12	\$5,783333	118.833333	×		
ST. ISIDORE	Ξ	8		S	Surface nunoff)B600	185	2RWR/Aet/Cg/CgA/Flc/Clr/pH/RSflvAC/NaOCl/TWR	56.200000	117,100000	×		
STRONG CREEK	WP	NA NA		O			11	Na	56.166667	117,416667			
STURGEON HEIGHT CO	Ξ				Private								
SUNSET HOUSE	WP	NA.		Đ				N.E.	55.116667	116,866667			
SUNSET HOUSE	S			0				EV.	35.116667	116.866667			
SWAN HILLS	L	1407	-2.3%	S	Freeman Lake		4546	Cg/Sed/Sfl/pH/AC/Rfl/Flu/PPC12/NnOCl/TWR	54.716667	115.400000	×		×
SWEATHOUSE	WP	٧V		0			28	N.	55.016667	116.883333			
T&E TRAILER PARK	MHF	150		0	A A.				55.166667	118.766667	3		>
TANGENT	=	Ş		v	Surface ninell	23000	-	RWRUPIIVNBOCITWR	23.800000	111/000001	•		<

E-12-12-12-12-12-12-12-12-12-12-12-12-12-	1, 10, 10, 10, 10, 10, 10, 10, 10, 10,	FACILITY	STATUS POPULATION		% Pop. TYPE	E SOURCE	RAW_STORAG TREATED_ST	REATED_ST	TREATMENT	LAT	LONG	SURVEY	RAW	VISIT
St. CALE FROM St. A. S. S. Antice band 1	State Stat	EEPEE CREEK							Iron Removal	73338 55	118 400000			A
NACTORERY F 0 0 0 0 0 0 0 0 0	Miles Mile	HREE CREEKS		_	S	Surface Runoff		14	I.Gal.	\$6.350000	117.083333			<
	No. No. No. No. No. Stander Randf No. No. Stander Randf No. No. Stander Randf No. No. Stander Randf No.	FUNDER LAKE PROV.P			Đ				NaOCI (Apr. 1 to Oct 31 each year)	54 116667	114 700000			
100 100	100 100	OMKINS LANDING			S	Surface Runoff			P. Filt.	58 181111	116 400000			
No. 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	MPKINS LANDING SC			S	Hauled From Local WP				58.183333	116.400000			
1.0.0000 1.0.0000	1,10,000 1,10,000			0	O			55	Ni	55.166667	118,683333			
1.1. 1.1.	Marche (Marcheller) St. 100 Color All Activity (Marcheller) All Activity (0	Đ			33	Cg/CgA/Sd/Sfl/Clr/Rfl/Fe re/NaOCI/TWR	\$6.500000	114.533333	×		
No. 1971 1970 197	14 15 15 15 15 15 15 15	OUT LAKE (KATERI)		0	S	Trout Lake			P.Filt	\$6.500000	114.533333			
1	NATIONAL No. 1	LHALLA			0				Nil					
COLUMNITATION (NOTE) 11 50 10 10 NOTIFICATION (NOTE) 55,000 111111111 X SCAL 11 50 6 6 10 50 50 60 11111111 X 50 11111111 X A STATION (NUML (N)) 31 6 30	State He	LLEYVIEW	T 203			Sturgeon Creek	194000	3000	RWR/Cg/CgA/pH/Fe re/Sd/AC/RSflVFlw/PPC12/TWR	55.066667	117.283333	×		
State Stat	ENTRY 1	LLEYVIEW			0					55.066667	117.283333			
Statistic Part	Figure 1974 14 15 15 15 15 15 15 1	BASCA		-	S	North Wabasca Lake	15000	1050	RWR/Cg/CgA/Sd/pH/PflvACflvCL2/TWR	56.000000	113.883333	×		
Fig. 10 Fig.	ENVILE (b) W 1	GNER			S	Canyon Creek WTP			NA					
Mathematic No. 216 218	Mathematic National Process Mat	NDERING RIVER			S	Wandering River	27000	573	RWR/Cg/CgA/RSflVpH/TO/NaOCI/TWR	55.200000	112.466667	×		×
National Control	National Park	NHAM				Surface Runoff	20000	89	RWR/Cg/Sd/Rfl/JCL2	55.733333	118.400000	×		
No. No.	National Control	RRENSVILLE		_	Đ				NI	\$6,300000	117.666667			
No. No.	National Control	ONIL			0				N.	58.716667	117 616667			
LEY 18	March Marc	BERVILLE (#1)		,	0				! 2	\$6 781111	117 316667			
Columb	Court	BERVILLE (#2)			0									
Courties 1	Statistic Court	MBLEY	T 138					682	TWR	45 150000				
NAMESTER CROW 1 1 1 1 1 1 1 1 1	Statistic Orbanic 1	STLOCK	T 446			Pembina River	256849	4546	RWR/Ce/CeA/AC/Sd/Rfl/Flu/PPC12/TWR	54 150000		*		>
COUNTY 1 1 10 10 10 10 10 10	National Computer	YERHAEUSER GRAN	-											
Contitue	COUNTY ST COUNTY ST COUNTY ST COUNTY ST COUNTY ST COUNTY ST COUNTY ST Spring ST ST ST ST ST ST ST S	YERHAEUSER GRAN	_		S	Wapiti River			Complete					
LAW F 650 30.94 S Spring 1103 TOOGGGAARTOGIT/TOWR 54116667 118.64667 N A CLACUSTID Dee, 1/921 5411667 118.64667 N A CLACUSTID Dee, 1/921 5411667 118.66667 N A CLACUSTID Dee, 1/921 3411667 118.66667 N A CLACUSTID Dee, 1/921 3411667 118.66667 N A CLACUSTID Dee, 1/921 3411667 118.66677 N A CLACUSTID Dee, 1/921 3411667 118.66677 N A CLACUSTID Dee, 1/921 34116677 N A CLACUSTID Dee, 1/921 <	LAW SPRING IT 159 Spring Macked River 1041 NCCG/CR/ADRIC/L/Flux/GZ/CR/ADRIC/CR/ADR	ITE GULL	SV 0		0				NT (operated Apr 1 - Nov 1)					
MacCaTCATAN	LAW PRING H 199 S Spring 114 NACCÍTYDR S4116667 LAW SRING H 200 Carjoni Creek WTP 133 G. Carjoni Creek WTP 133 63 64667 53 6416687<	ITECOURT	T 669			Macleod River		10433	TO/Cg/CgA/RflVpH/Clr/Flw/Cl2/TWR	54.150000	115.683333	×	×	×
LAWERRING WP NA	Manufacture Manufacture	ITELAW	Н 139	6	S	Spring		114	NaOCUTWR	56.116667	118.066667			:
MASON ROUNDER H 10 0 5 Canyon Creek WTP 118 Fe SeqCT2 1550000 115 1155000 115 500000 115 50000 115 50000 115 50000 115 50000 115 50000 115 50000	VATER H 130 S Canyon Creek WTP 131 Fe Seq/CI2 55 0683333 VOODOD V 3 0 AMSON PROV.PK PP 10 0 AMSON PROV.PK AMSON PR	TELAW SPRING		,	S	Spring			NaOCL2/CLOSED Dec 5, 1991	56.116667	118.066667			
13 15 15 15 15 15 15 15	MATION PROPER V 333 O D D D D D D D D D	EWATER		0	S	Canyon Creek WTP								
MARION ROVING Page 0	AMSON PROOF PROOF Page P	DWOOD			0			1318	Fe Seq/C12	53.616667	115.233333	×		
March Marc	No. No. No. No. No. No. No. No. No. No.	LIAMSON PROV.PK.			0				GSflvNaOCI	55.083333	117.550000			
AMM AME P. P. P. O. S. Stringe Runoff Prairie 34600	Main Main	LOW GROVE T.P.(H			0				Iron Removal	55.333333	119.550000			
Harden Harden Samine Runof S	Note Note	AGAMI LAKE P.P.			S	Hauled From High Prairie				25.616667	116.650000			
National Process 1	Nil	KING			S	Surface Runoff	34060	78	RWR/Aer/Cg/CgA/Sd/FlunaOCI/TWR	55.583333	118.766667	×		×
No. No.	Nij	KSLEY			S	Eureka River	73640	418	RWR/Cg/CgA/Flc/flu/NaOCI	56.516667	119.133333	×	×	×
Nil	WP NA O Nill NII SRIFE rePPNBCCT SRIFE rePNBCCT	ING'S POINT PROV.P			0					\$5.066667	117.533333			
TREATMENT CODES TREATMENT	TATIS CODES TREATMENT CODES TREATMENT CODES TREATMENT CODES C City NOT Treatment CSept DMRW V Village RAW RAW Not Treatment CSept SRV V Village Code Cudent Free of Code SRV SV Summer Village Act Actuality Actuality Free of Code SD Subdivision Actuality Actuality Actuality Free of Person Free of Person SD Subdivision Actuality Actuality Actuality Free of Person Free of Person NMH Mobile Home Park Cog Cogediate and Common Park Free of Person	Y.		_	0				N.E.	58.750000	119.083333	×		
TREATMENT CODES TREATMENT CODES TREATMENT CODES	TREATMENT CODES TREATMENT CODES TREATMENT CODES	EA.		m	0			472	Sft/Fe re/PPNaOCI	\$8.750000	119.083333			
City NTP No Testment DMft/ Dual-media filtration Village C≠V Cutern SAP Cyclonic separation Village Handet SAP Softening Handet Alge control Fe re Iron removal Subdivision Providation Fe re Iron removal Provided non Acraflon Acraflon Fe re Iron requestering agent Provided Home Park Cogulation Fe re Iron requestering agent Provided Home Park Cogulation Scale Iron requestering agent Oward Copperative CgA Coagulation Iron deportation with NaCCI Nation registering Cathon adoption filtration CGA Scale School <td>City NTT No Treatment DMRtV Village Cute Cute Cote Hamlet Abg Algae control SN Summer Village Subdivision Fe red SN Provincial Park Aerril Aerrillon Fe red Provincial Park Aerrillon Fe seq Fe red P Mobile Home Park Cog Cogulant aid Fe red D Water Cooperative Cogulant aid Final D Water Cooperative Fol Cogulant aid Final Metaing Point Metaing Point Final Final Metaing Settlement Settlement Settlement FPCL2 School Presentered filtration Cocut Other Fol Presentered filtration</td> <td>15</td> <td>ATUS CODES</td> <td></td> <td></td> <td></td> <td>F</td> <td>EATMENT</td> <td>CODES</td> <td>TREATMEN</td> <td>TCODES</td> <td></td> <td></td> <td></td>	City NTT No Treatment DMRtV Village Cute Cute Cote Hamlet Abg Algae control SN Summer Village Subdivision Fe red SN Provincial Park Aerril Aerrillon Fe red Provincial Park Aerrillon Fe seq Fe red P Mobile Home Park Cog Cogulant aid Fe red D Water Cooperative Cogulant aid Final D Water Cooperative Fol Cogulant aid Final Metaing Point Metaing Point Final Final Metaing Settlement Settlement Settlement FPCL2 School Presentered filtration Cocut Other Fol Presentered filtration	15	ATUS CODES				F	EATMENT	CODES	TREATMEN	TCODES			
Town Town Cutern Carder Cydings Cydin	Town Town Town Cutern Casp Cutern Casp Cutern SRV Alge cointfol PH Alge cointfol PH PH PH PH PH PH PH PH PH Per eq PH PH<	O	Cify					VEN.	No Treatment	DMflt/	Dual-media fil	fration		10
Village Cast Cutern SRV Alg Algas control PPU Subminer Village Subminer Village PPU Subdivision Aret Aret Provincial Park Aret Aret Provincial Park TO Tast and Odour control Fe red P Mobile Home Park Cg Coagulant aid Fe red P Watering Point Fig Floculation NaCCJ Valering Point Clu Clarification PPNInCCJ Watering Point School Cathon adeorption filtration PPNInCCJ Mets Settlement School Carbon adeorption filtration CGCCJ Meter Coperate filtration Cathon adeorption filtration CGCCJ School Management filtration Cathon adeorption filtration CGCCJ Other Silve sand filtration CGCCJ Mills and Server adeorptic filtration CGCCJ Mills and Server adeorptic filtration CGCCJ Mills and Server adeorptic filtration CGCCJ Mills and Server	Village Village Cath Cuthern SRV Submirer (lage) Submirer (lage) Ph Oxidation Fe red Submirer (lage) Activities Activities Fe red Fe red Provincial Park Activities TOV Tate and Odour control Fe red P Mobile Home Park Cg Coagulation Fe red Fe red N Water Cooperative File Float Float Float N Water Cooperative CgA Coagulation Float Float Indian Reserve Float Floatinents aid Float Float Float Metia Settlement ChW Cathinents aid Float Floatinents aid Float School Indian Reserve CGW Cathinents aid Floatinents aid Floatinents aid School School Cathinents aid Floatinents aid CGW CGCU School Chlor Float Float Float Float CGCU <	-	Town					RWR/	Raw water reservoir	CSep/	Cyclonic separ	ration		2
Hamlet	Hamlet Alg/bit Algae control Ph/bit Ph/bit Summer Village Summer Village Fe re/ Subdivision Fe re/ Aernicon Fe re/ Fe re/ Aernicon Fe re/ Fe re/ Aernicon Fe re/ Fe re/ Fe re/ Aernicon Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Aernicon Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Aernicon Fe re/ Fe re/ Fe re/ Fe re/ Fe re/ Aernicon Fe re/ Fe re	>	Village					PEO.	Cintern	SAV	Softening			
Summer Village Ontidation Fe re/ Subdivision Act/ Actification Fe seq Provincial Park Tag Tag and Odour control Fe seq P Mobile Home Park Cg Coagulation Scrit/ O Water Cooperative Fig Float Float Indian Reserve Flo Floorulation PFNROCU Metis Settlement Cdr/ Carbinentation PFNROCU School Pfl/ Pressure filtration Cach CoCU School Pfl/ Pressure filtration Cach CoCU Other School Pfl/ Pressure filtration Cach CoCU Rfl/ Rapid eard filtration UV/ Rfl/ Mangunese green search filtration NH3/ MMRIN Mangunese green search filtration NH3/	Summer Village Oxidation Fe re/ Subdivision Actr/ Acrafion Fe seq Provincial Park TOV Taste and Odour control Fe seq P Mobile Home Park Cog Coagulation Sc cntrf N Regional System Cgv Coagulant aid Fin N Watering Point Clt/ Clarification NinCOV N Watering Point Clt/ Clarification PPK102 N Watering Point Clt/ Clarification PPK102 N Watering Point Clt/ Clarification PPK102 N Watering Point Mobile Reserve Clt/ Clt/ N Watering Point Mobile Reserve Clt/ Clt/ N Watering Point Mobile Reserve Clt/ Clt/ N Watering Sethement N Watering Mobile Reserve Clt/ Clt/ School Presented filtration Clt/ Clt/ N Watering Sethement Presented filtration Clt/ N Watering Sethement Presented filtration Clt/ N N Waterin	#	Hamlet					Alg/	Alga control	PH/	pH control			
Subdivision Actal Actalion Fe seq AV Provincial Park TOV Tast and Odour control Fe seq AV P Robotal System Cogulation Sc cntrl O Water Cooperative Cogulation NuCCV Watering Point Flo Floc Cogulation NuCCV Indian Reserve CMV Carification PPN4CCV School Metis Settlement CALV PPN4CCV School PRIV Mitration PPC2A School PRIV Mitration PPC2ACV RIIV Mitration UV/ RRIV Mitration UV/ MMRIV Mitration NH3/ MMRIV Mitration NH3/	Subdivision Actal Actallon Fe seq Provincial Park Toy Taste and Odour control Fe seq AV P Mobile Home Park Cog Coagulation Sc cntrl O Water Cooperative Fe/A Coagulant aid NatoCV Nater Cooperative Fe/A Classification NatoCV Natering Point Cla Clarification PPRACC Natering Point Cla Clarification PPRACC Natering Point Clarification PPRACC School Carbon adsorption filtration CGCV School Presenter filtration CGCV Other Silv Silv and filtration UV RRIV Rapid sand filtration NH3/ MMRIV Multi-media filtration NH3/	SV		llage				Oxi/	Oxidation	Fe re/	Iron removal			
Provincial Park	Provincial Park Toy Tasts and Odour control Fe seq A/ P. Mobile Home Park Cogulation Sc cntr/ Segional System Cg/ Cogulation Sc cntr/ O. Water Cooperative Flow Flow Flow Watering Point Flow Clarification Flow Cd2 Indian Reserve Sd/ Sedimentation Flor Cd2 Meta Settlement School Micro strainer filtration Flor CGC School Flow Flow Flow Flow Flow CGC Strain Flow	S		_				Aer/	Aeration	Fe seq/	Iron sequesteri	JUS		
P Mobile Home Park Cg/g Coagulation Sc cntr/ Flu 3 Regional System CgA/L Coagulant aid Flu O Watering Point Ch/L Flourification NMCCV Main Reserve Sd Sedimentation PPMIO Mets Settlement Sd Sedimentation PPC12 Mobil Miles Aside and filtration CGCV School PRIV Presente filtration CGCV Other Sfltv Slow sand filtration UV RMIV Management green green and filtration NH3/L MMRIV Management green and filtration NH3/L	P Mobile Home Park Cg/l Coagulation Sc entr/l 3 Regional System Cg/l Coagulation Flad 0 Water Cooperative Flad Flad Flad Water Cooperative Cg/l Carliforation PPN4sOCJ Water Septement Cg/l Carliforation CGJZ Metia Settlement CG/l Carbon adsorption filtration PPCQZ School Mill Mill PPCQC School CACM CACM School Sign Sign SupCU School Sign SupCU SupCU School Sign SupCU SupCU School Sign SupCU SupCU School SupCU SupCU SupCU School Malit-media filtration NH3V	dd.		Park				/OT	Tante and Odour control	Fe seq A	Iron sequesteri	ing agent		
3 Regional System CgAV Coagulant aid RIA O Water Cooperative Fig. Rocculation NaCQV Watering Point CLV Clarification PPNM-OCQV Indian Reserve SM Sedimentation CQL Mets Settlement CRV Carbon adeorption filtration PPCT2 School Metro strainer filtration CaCOCV PRIV Pressure filtration CaCOCV Other Sittle Slow sand filtration UV VV RMIV Managenese green and filtration UV MMRIV Managenese green and filtration NH3/ MMRIV Manishmedia filtration NH3/	3 Regional System CgAV Coagulant aid FILM O Water Cooperative FIG Flocustion NMCCV Valenting point CM Clarification PPCTA Indian Reserve Sd Settlement CTA Metis Settlement CMV Carbon adsorption filtration CACV School Maffly Micro strainer filtration CACV PflV Prove send filtration PPCACV School Strong strainer filtration CACV Other SflV RflV RflV RflV Mangunese greensand filtration NH3/ MMRIV Multi-media filtration NH3/	W		me Park				/80 C8	Coagulation	Se entr/	Scale Control			
O Water Cooperative Fig. Floculation NaCCV Watering Point CLV Clarification PPNB-0CJV Indian Reserve SdV Sedimentation CTV Mets Settlement CMV Carbon adatorption filtration PPCTJ School Pfl/V Pressure filtration Ca-OCCV Other Sfl/V Slow sand filtration UV/V Rfl/V Manganese greensend filtration UV/V MAMRIN Manganese greensend filtration NH3/V MAMRIN Manishmedia filtration NH3/V	O Water Cooperative Fig. Floculation NaOCU Watering Point Clr/ Clarification FPNR-OCU Indian Reserve Sd Sedimentation CT2 Metis Settlement CfM Carbon adsorption filtration PPC12 School PMI Mintor strainer filtration CAOCU Volter FRIV Slow sand filtration UV RRIV Rapid eard filtration UV RRIV Managenee greensand filtration NH34 MMRIV Multi-media filtration NH34	RE		yatem				Car	Coagulant aid	Flu	Fluoridation			
Watering Point Clavinication PPNHOCCY Indian Reserve Sd Sedimentation C12 Metis Settlement CRIV Carbon adsorption filtration C12 School Malt Micro strainer filtration CaCOCV PIN Pressure filtration PPCACK SflV Slow sand filtration UV/I RflV Mangeree generated filtration SupCu MMMIN Maniformet gittersion NH3/I MMMIN Multi-mode gittersion NH3/I	Watering Point CDL/ Clarification PPNRoCUY Indian Reserve Sd/ Sedimentation C12 Metis Settlement CNIV Carbon adeorption filtration PPCC12 School Misflt/ Misflt/ PPC02 Other PMI Preserve filtration Carbon Other Sifl Sign wand filtration UV/ RRIV Rapid eard filtration UV/ Grift Manganese greensand filtration NH3/ MMRIV Multi-media filtration NH3/	W		perative				FIc/	Flocculation	NBOCIV	Disinfection w	ith NaOCI		
Indian Reserve	Indian Reserve	M		oint				/PD	Clarification	PPNIOCI	Pre & post dist	infection with h	(a)	
Metia Settlement CRIV Carbon adsorption filtration PPC12 School Maffty Micro strainer filtration CaOCJ Pflu Pressure filtration PPC2CJ Sflu Slow and filtration UV/ Rflu Rapid and filtration UV/ Rflu Manganese greenand filtration SupCU MMRN Maniformetia filtration NH3/	Metia Settlement Carbon adaoption filtration PPCT2 School Mailty Micro strainer filtration CaOCUV PRIV Pressure filtration PPCT2 SMIV Siow sand filtration UV/V RftV Regid sand filtration SupCU GeftV Manganese greensand filtration NH3/ MMRIV Multi-media filtration NH3/	R		erve				/PS	Sedimentation	CID	Disinfection by	r chlorine gas		
Mailt Micro strainer filtration CaOCV Pill Presente filtration PPCaDCU Silf Slow sand filtration UV/ Rill Ranganese greensand filtration SupCU MAMMIN Multi-madia filtration NH3/ MAMMIN Multi-madia filtration NH3/	Mailt Micro strainer filtration CaOCU PRIV Presure filtration PPCaCCU SflW Slow sand filtration UV/V RflW Repid sand filtration SupCU Grift Manganere greensand filtration SupCU MMftV Multi-media filtration NH3/	MS		ement				CUIV	Carbon adsorption filtration	PPC12	Pre & post dist	infection with c	Morine gas	
PflV Pressure filtration PPCaCXCV SflV Slow sand filtration UV/ RflV Rapid and filtration UV/ RflV Manganee greenand filtration SupCV SupCV MMRW Multi-media filtration NH3V MMRW MMRW Multi-media filtration NH3V	PflV Pressure filtration PPC_aCXCV SflV Slow sand filtration UV/ RflV Rapid sand filtration UV/ SupCV SffW Manganese greensand filtration NH3/ MMIN Multi-media filtration NH3/	S	School					Mafity	Micro strainer filtration	CaOCIV	Disinfection w	ith CaOCI		
Slow reand filtration Repid eand filtration Repid eand filtration Manganese greenaand filtration NH3/	Slow eand filtration Rapid eand filtration Mutganese greensand filtration Multi-media filtration	0	Other					Pflv	Pressure filtration	PPCaDCV	Pre & post dist	infection with C	30CI	
Rapid eard filtration SupCl. Manganese greenand filtration Multi-mode filtration NH3/	Reprid search filtration Mutganese greensand filtration Multi-media filtration							SUV	Slow rand filtration	Š	Disinfection by	r ultra-violet		
Manganese greenand filtration Multi-media filtration	Manganee greensand filtration Multi-media filtration							RAIV	Rapid sand filtration	SupCl	Supplemental	chlorination		
								Contro	Manganese greensand filtranom	NH3/	Disinfection by	combined chl	prination	

APPENDIX F: SUMMARY OF RAW VS TREATED WATER COMPARISONS

LOCATION	DATE	PH	FE	CA	HARD	K	NO23	F	S O4	T_ALK
		pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ATHABASCA	18-Jan-90	7.7	.06	53	190	1.3	.12	.94	71	167
ATHABASCA RAW	18-Jan-90	8.5	.18	52	187	1.1	.12	.11	37	167
ATHABASCA DIFF	18-Jan-90	.8	.12	-1	-3	2	.00	83	-34	107
ATHABASCA	19-Jun-90	7.0	.10	36	123	1.0	.05	.84	96	91
ATHABASCA RAW	19-Jun-90	7.6	19.32	27	100	1.0	.05	.08	11	95
ATHABASCA DIFF	19-Jun-90	.6	19.22	-9	-23	.0	.00	76	-85	4
ATHABASCA	16-Jan-91	7.5	.12	60	220	1.4	.14	.95	78	185
ATHABASCA RAW	16-Jan-91	7.8	.10	60	220	1.3	.14	.12	45	191
ATHABASCA DIFF	16-Jan-91	.3	02	0	0	1	.00	83	-33	6
				24	110	,				00
ATHABASCA	16-Jul-91	7.3	.02	34	118	.6	.04	.66	75	88
ATHABASCA RAW	16-Jul-91 16-Jul-91	8.3 1.0	4.41 4.39	28 -6	111 -7	.6 .0	.04 .00	.07 59	16 -59	104 16
ATHABASCA DIFF	10-101-91	1.0	4.39	-0	-/	.0	.00	39	-39	10
ATHABASCA	13-Mar-92	7.7	.11	43	161	2.3	.24	.81	70	147
ATHABASCA RAW	13-Mar-92	8.0	.67	39	147	2.6	.16	.10	30	147
ATHABASCA DIFF	13-Mar-92	.2	.56	-4	-14	.3	08	71	-4 0	
ATHABASCA	28-May-9	7.8	.02	37	134	.8	.01 <	.82	57	126
ATHABASCA RAW	28-May-9	8.4	.49	36	131	.8	.01 <	.08	21	120
ATHABASCA DIFF	28-May-9	.5	.48	-1	-3	.0	.00	74	-36	-6
			-		-					
ATHABASCA	13-Jan-93	8.1	.07	60	224	1.7	.11	.87	89	197
ATHABASCA RAW	13-Jan-93	8.2	.13	61	226	1.5	.12	.12	55	188
ATHABASCA DIFF	13-Jan-93	.2	.06	1	2	2	.01	75	-34	-9
CLEARDALE	18-May-9	7.0	.06	51	197	5.3	.03	.08	155	69
CLEARDALE RAW	18-May-9	8.0	.03	48	186	5.0	.01	.24	85	112
CLEARDALE DIFF	18-May-9	1.0	03	-3	-11	3	01	.16	-70	43
T A ID I TITU	10 1/ 0	7.4	.04	32	109	1.3	.01	.99	38	82
FAIRVIEW FAIRVIEW RAW	19-May-9 19-May-9	8.3	.03	31	106	1.3	.01 <	.07	21	94
FAIRVIEW DIFF	19-May-9	.9	01	-1	-3	.0	01	92	-17	12
TARVIEW DIT	17-141ay-7	.,,	01	-			.01	.,,,,	**	
FORT CHIPEWYAN	16-Jun-93	7.1	.05	9	35	.7	.01 <	.03	22	30
FORT CHIPEWYAN RAW	16-Jun-93	7.6	.63	10	37	.8	.01 <	.06	8	34
FORT CHIPEWYAN DIFF	16-Jun-93	.5	.58	1	2	.1	.00	.03	-14	4
FORT MCMURRAY	20-Jul-90	7.0	.03	29	105	1.2	.06	.99	53	91
FORT MCMURRAY RAW	20-Jul-90	7.8	.65	29	105	1.1	.07	.10	19	100
FORT MCMURRAY DIFF	20-Jul-90	.7	.61	0	0	1	.01	89	-34	9
FORT MCMURRAY	19-Nov-90		.02	44	168	1.1	.03	.90	54	143
FORT MCMURRAY RAW FORT MCMURRAY DIFF	19-Nov-90 19-Nov-90		.14 .11	47 3	175 7	1.1 .0	.02 < 01	.12 78	38 -16	155 12
FORT MCMURRAT DIFF	19-1404-90	4				.0	01	/0	-10	12
FORT MCMURRAY	10-Apr-91	7.6	.03	52	196	1.6	.21	.77	69	178
FORT MCMURRAY RAW	10-Apr-91	8.0	.16	53	198	1.5	.19	.13	47	180
FORT MCMURRAY DIFF	10-Арг - 91	.4	.14	1	2	1	02	64	-22	2
FORT MCMURRAY	27-Арг-92	7.8	.02	37	134	1.6	.03	.93	50	128
FORT MCMURRAY RAW	27-Apr-92 27-Apr-92		.02	36	134	1.6	.03 .01 <	.93 .09	26	128
FORT MCMURRAY DIFF	27-Apr-92	.6	.35	-1	-3	2	02	84	-24	-5
- CICI MONIORONI DILI	ar 11p1-72		.55		-3	-24	,72		<u> </u>	
FORT MCMURRAY	19-Apr-93		.01	46	173	1.6	.05	.18	76	158
FORT MCMURRAY RAW	19-Apr-93	r	.13	46	173	1.6	.04	.12	54	163
FORT MCMURRAY DIFF	19-Apr-93	.4	.12	0	0	.0	01	06	-22	5

LOCATION	DATE	PH	FE	CA	HARD	К	NO23	F	SO4	T ALK
		pH units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	rng/L
HIGH PRAIRIE	13-Feb-91	6.9	.01	50	174	2.4	.04	.74	138	118
HIGH PRAIRIE RAW	13-Feb-91	7.8	.39	52	183	2.3	.04	.11	48	148
HIGH PRAIRIE DIFF	13-Feb-91	1.0	.38	2	9	1	.00	63	-90	30
Inon ricald Diri	13-1 00-71	1.0	.56			7.1	.00	03	-90	30
HINES CREEK	19-May-9	6.8	.10	37	134	9.0	.02	.02	118	51
HINES CREEK RAW	19-May-9	7.4	.64	36	131	8.9	.01 <	.11	47	98
HINES CREEK DIFF	19-May-9	.6	.54	-1	3	1	02	.09	-71	47
HINTON	23-Oct-90	7.6	.15	59	209	.4	.06	.98	92	106
HINTON RAW	23-Oct-90	8.2	.22	45	174	.4	.06	.12	59	112
HINTON DIFF	23-Oct-90	.6	.08	-14	-35	.0	.00	86	-33	6
								00	-55	
HINTON	12-Aug-91	8.0	.03	38	124	.3	.04	.90	43	84
HINTON RAW	12-Aug-91	8.1	4.31	26	94	.4	.05	.06	20	80
HINTON DIFF	12-Aug-91	.2	4.28	-12	-30	.1	.00	84	-23	-4
SLAVE LAKE	14-Feb-91	7.2	.09	27	92	2.9	.03	1.04	3 <	95
SLAVE LAKE RAW	14-Feb-91	7.5	.01 <	28	95	2.9	.04	.10	11	100
SLAVE LAKE DIFF	14-Feb-91	.3	08	1	3	.0	.01	94	8	5
SMITH	22-Jun-92	8.0	.04	46	164	1.2	.01	.09	48	137
SMITH RAW	22-Jun-92	8.3	1.25	34	118	.7	.04	.07	23	96
SMITH DIFF	22-Jun-92	.4	1.21	-12	-46	5	.04	02	-25	-41
SMITH	19-May-9	7.7	.02	44	163	.8	.01	.10	49	131
SMITH RAW	19-May-9	5.9	1.23	44	163	.9	.01 <	.01 <	201	.28
SMITH DIFF	19-May-9	-1.8	1.22	0	0	.1	.00	09	152	-103
NATE COLDA	12 F-L 00	7.8	10		224		10	04	1.4	242
WHITECOURT	12-Feb-90		.10	64	224	1.1	.18	.94	14	242
WHITECOURT RAW WHITECOURT DIFF	12-Feb-90	7.8	.11	55	211	1.0	.18	.10	15	248
WHITECOURT DIFF	12-Feb-90	.0	.01	-9	-13	1	.00	84	1	6
WHITECOURT	12-Jun-91	8.1	.04	46	152	.8	.01	.86	47	117
WHITECOURT RAW	12-Jun-91	8.5	.48	35	124	.7	.01 <	.08	13	129
WHITECOURT DIFF	12-Jun-91	.4	.44	-11	-28	1	01	78	-34	12
WHITECOURT	25-Feb-92	7.7	.01	70	237	1 1	.23	00	24	222
WHITECOURT RAW	25-Feb-92 25-Feb-92	7.7 7.9	.10	64	237	1.1 1.1	.23	.98 .10	34 10	232 247
WHITECOURT DIFF	25-Feb-92 25-Feb-92	.2	.10	-6	-11	.0	.00	.10 88	-24	15
WHITECOOK! DIFF	23-160-92	.2	.09	-0	-11	.0	.00	86	-24	1.5
WHITECOURT	15-Oct-92	8.1	.00	55	195	1.0	.01 <	.93	44	181
WHITECOURT RAW	15-Oct-92	8.5	.09	49	180	1.1	.01 <	.10	21	196
WHITECOURT DIFF	15-Oct-92	.3	.08	-6	-15	.1	.00	83	-23	15
WORSLEY	18-May-9	7.2	.05	42	150	2.6	.01 <	.07	101	68
WORSLEY RAW	18-May-9	7.8	.38	41	148	2.5	.01 <	.14	55	105
WORSLEY DIFF	18-May-9	.6	.33	-1	-2	1	.00	.07	-46	37

LOCATION	DATE	TC_P	TURB	COND	TDS	MN	NA	SIO2	NO2_N	CL
-		_	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ATHABASCA	18-Jan-90	0.08	0.2	471	275	0.006	32	6.0	0.001	3.2
ATHABASCA RAW	18-Jan-90	0.07	NA	388	217	0.004	10	5.9	0.004	2.5
ATHABASCA DIFF	18-Jan-90	-0.01		-83	-58	-0.002	-22	1	0.003	7
ATHABASCA	19-Jun-90	0.02 <	0.5	384	229	0.036	31	5.9	0.001	1.7
ATHABASCA RAW	19-Jun-90	13.10	370.0	207	110	0.464	4	5.6	0.002	1.3
ATHABASCA DIFF	19-Jun-90	13.08	369.5	-177	-119	0.428	-27	3	0.001	4
ATHABASCA	16-Jan-91	0.02 <	0.4	520	303	0.011	31	6.5	0.001	4.0
ATHABASCA RAW ATHABASCA DIFF	16-Jan-91 16-Jan-91	0.06 0.04	1.2 0.8	453 -67	254 -49	0.004 -0.007	13 -18	6.5 .0	0.005 0.004	2.9 -1.1
THABASCA DIFF	10-341-91	0.04	0.6					.0		-
ATHABASCA	16-Jul-91	0.02 <	0.1 <	340	193	0.009	21	4.4	0.001 <	2.0
ATHABASCA RAW ATHABASCA DIFF	16-Jul-91 16-Jul-91	5.34 5.32	9.4 9.3	217 -123	121 -72	0.117 0.108	3 -18	4.1 3	0.001 0.000	1.0 -1.0
ATHABASCA DIFF	10-341-91	3.32	7.3					•		
ATHABASCA	13-Mar-92	NA	0.4	450	256	0.013	32	6.6	0.001 <	7.2 6.1
ATHABASCA RAW ATHABASCA DIFF	13-Mar-92 13-Mar-92	NA NA	9.1 8.7	357 -93	193 -63	0.022 0.009	15 -17	6.4 2	0.016 0.015	-1.1
ATTIABASCA DILI		IVA			-			• • • •		
ATHABASCA	28-May-9	NA	0.1	373	211	0.003	28	4.5	0.001 <	2.5
ATHABASCA RAW ATHABASCA DIFF	28-May-9 28-May-9	NA NA	9.4 9.3	276 -97	149 -62	0.028 0.025	7 -21	4.0 5	0.001 < 0.000	1.7 8
THABASCA DIFF	20-1VIAY-9	. NA			.					
ATHABASCA	13-Jan-93	0.09	0.3	570	335	0.007	40	5.6	0.001 <	8.3
ATHABASCA RAW ATHABASCA DIFF	13-Jan-93 13-Jan-93	0.21 0.12	1.3 1.0	478 -92	274 -61	0.005 -0.002	18 -22	5.9 .3	0.002 0.001	6.4 -1.9
ATHABASCA DIFF	13-341-73	0.12	1.0	-72	-01	-0.002	-22		0.001	
CLEARDALE	18-May-9	0.36	0.2	491	298	0.010	20	1.0	0.001 <	7.6
CLEARDALE RAW CLEARDALE DIFF	18-May-9 18-May-9	NA	1.0 0.7	396 -95	231 -67	0.004 -0.006	6 -14	.5 5	0.003 0.002	2.8 -4.8
CLEARDALE DIFF	16-May-2			-73	-07	-0.000			0.002	
FAIRVIEW	19-May-9	0.57	0.2	254	137	0.017	6	2.1	0.001 <	2.8
FAIRVIEW RAW FAIRVIEW DIFF	19-May-9 19-May-9	NA	0.7 0.5	227 -27	120 -17	0.005 -0.012	2 -4	1.6 5	0.001 < 0.000	1.2 -1.6
AIRVIEW DITT	1 yelvlayey					-0.012			0.000	
FORT CHIPEWYAN	16-Jun-93	0.30	0.2	120	67	0.003	9	2.2	0.001 <	5.4
FORT CHIPEWYAN RAW FORT CHIPEWYAN DIFF	16-Jun-93 16-Jun-93	0.57 0.27	15.1 14.9	89 -31	50 -17	0.009 0.006	4 -5	2.3 .1	0.001 < 0.000	4.3 -1.1
FORT CHIFEW TAIN DIFF		0.27		-51						
FORT MCMURRAY	20-Jul-90	0.13	0.2	309	168	0.013	18	4.6	0.001	3.8
FORT MCMURRAY RAW FORT MCMURRAY DIFF	20-Jul-90 20-Jul-90	0.55 0.42	18.6 18.4	231 -78	126 -42	0.023 0.010	7 -11	4.5 1	0.002 0.001	1.4 -2.4
FORT MCMORRAT DIFT							•			
FORT MCMURRAY	19-Nov-90		0.2	389	221	0.007	18	4.0	0.007	3.7
FORT MCMURRAY RAW FORT MCMURRAY DIFF	19-Nov-90 19-Nov-90		2.8 2.6	362 -27	204 -17	0.010 0.003	9 - 9	4.0 .0	0.002 -0.005	1.7 -2.0
····										
FORT MCMURRAY	10-Apr-91	0.15	0.3	495 445	284 249	0.004 0.005	29 17	6.3 6.0	0.004 0.006	8.1 5.6
FORT MCMURRAY RAW FORT MCMURRAY DIFF	10-Apr-91 10-Apr-91	0.27 0.12	3.4 3.1	-50	-35	0.003	-12	3	0.008	-2.5
	•									
FORT MCMURRAY	27-Арт-92		0.3	375	207	0.003	25	4.5	0.011	5.6
FORT MCMURRAY RAW FORT MCMURRAY DIFF	27-Арг-92 27-Арг-92	NA NA	7.2 6.9	297 -78	162 -45	0.011 0.008	12 -13	3.7 8	0.001 < -0.010	3.0 -2.6
										
FORT MCMURRAY	19-Apr-93		0.1	470 425	271	0.003	29	2.7	0.009	8.7
FORT MCMURRAY RAW FORT MCMURRAY DIFF	19-Арт-93 19-Арт-93	0.63 0.33	1.3 1.2	425 -45	240 -31	0.005 0.002	21 -8	2.6 1	0.003 -0.006	6.5 - 2.2
FOR I MUNIORRA I DIFF	12-Wh1-23	V.33	1.4	-4.5	-31	0.002	-0	1	-0.000	-2.2

LOCATION	DATE	TC_P	TURB	COND	TDS	MN	NA	SIO2	NO2_N	CL
			NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HIGH PRAIRIE	13-Feb-91	0.16	1.1	527	321	0.006	44	8.9	0.001	2.4
HIGH PRAIRIE RAW	13-Feb-91	V.16	2.4	372	217		11	10.0	0.001	3.4
HIGH PRAIRIE DIFF	13-Feb-91	NA.	1.3	-155	-104	NA				1.5
HIGH PRAIRIE DIFF	13-Feb-91		1.3	-133	-104		-33	1.1	0.001	-1.9
HINES CREEK	19-May-9	1.30	1.9	388	229	0.034	18	3.3	0.002	6.7
HINES CREEK RAW	19-May-9	NA	3.2	299	168	0.080	4	3.6	0.002	3.5
HINES CREEK DIFF	19-May-9		1.3	-89	-61	0.046	-14	.3	0.000	-3.2
HINTON	23-Oct-90	0.23	3.9	396	233	0.013	2	3.6	0.001 <	1.2
HINTON RAW	23-Oct-90	0.56	11.1	331	190	0.010	2	3.7	0.001 <	.9
HINTON DIFF	23-Oct-90	0.33	7.2	-65	-43	-0.003	-	.1	0.000	3
HINTON	12-Aug-91	0.13	0.8	253	141	0.006	1 <	2.1	0.001 <	1.0
HINTON RAW	12-Aug-91	11.30	220.0	180	103	0.092	1	2.1	0.003	1.0
HINTON DIFF	12-Aug-91	11.17	219.2	-73	-38	0.086		.0	0.002	.0
SLAVE LAKE	14-Feb-91	0.03	0.4	227	106	0.012	7	1.4	0.001	3.8
SLAVE LAKE RAW	14-Feb-91	NA	0.5	222	117	NA	8	.9	0.010	1.1
SLAVE LAKE DIFF	14-Feb-91		0.1	-5	11		1	5	0.009	-2.7
SMITH	22-Jun-92	NA	0.9	372	208	0.002	12	2.6	0.001 <	6.5
SMITH RAW	22-Jun-92	NA	40.0	225	128	0.041	4	3.1	0.001	1.3
SMITH DIFF	22-Jun-92	NA	39.1	-147	-80	0.039	-8	.5	0.000	-5.2
SMITH	19-May-9	0.31	0.4	372	206	0.001 <	13	2.4	0.002	6.6
SMITH RAW	19-May-9	NA	NA	505	315	0.016	35	2.2	0.002	4.8
SMITH DIFF	19-May-9			133	109	0.015	22	2	0.000	-1.8
WHITECOURT	12 Eab 00	0.02 <	1.0	482	263	0.004	20	10.0	0.001	2.5
WHITECOURT RAW	12-Feb-90				260			10.0	0.001	2.5
WHITECOURT DIFF	12-Feb-90 12-Feb-90	0.10	1.4 0.4	482	-3	0.007 0.003	20	9.5	0.003	1.2
WHITECOOK! DIFF	12-160-90	0.08	0.4		-3	0.003		5	0.002	-1.3
WHITECOURT	12-Jun-91	0.02	0.4	323	181	0.002	6	3.7	0.002	2.0
WHITECOURT RAW	12-Jun-91	0.46	11.5	261	142	0.019	6	6.0	0.001 <	1.0
WHITECOURT DIFF	12-Jun-91	0.44	11.1	-62	-39	0.017		2.3	-0.001	-1.0
WHITECOURT	25-Feb-92	NA	0.1	510	284	0.004	21	9.4	0.009	3.0
WHITECOURT RAW	25-Feb-92	NA	1.4	481	263	0.006	21	9.6	0.010	1.3
WHITECOURT DIFF	25-Feb-92	NA.	1.3	-29	-21	0.002		.2	0.001	-1.7
WARTE COLUMN	14.0	0.00	٥.	4.45	0.10	0.002	10	2-	0.001	
WHITECOURT	15-Oct-92	0.02 <	0.1	447	243	0.003	18	3.7	0.001 <	2.6
WHITECOURT RAW	15-Oct-92	0.04	1.2	411	221	0.006	18	4.0	0.001	1.2
WHITECOURT DIFF	15-Oct-92	0.02	1.1	-36	-22	0.003		.3	0.000	-1.4
WORSLEY	18-May-9	0.32	0.3	366	213	0.061	11	1.8	0.001 <	4.3
WORSLEY RAW	18-May-9	NA	3.2	317	179	0.070	6	2.1	0.001 <	.5
WORSLEY DIFF	18-May-9		2.9	-4 9	-34	0.009	-5	.3	0.000	-3.8

LOCATION	DATE	HCO3	DOC	DIC	AS	В	CU	CD	Z	CR
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ATHABASCA	18-Jan-90	204	4.0	41.2	0.0001 <	0.015	0.009	0.001 <	0.004	0.001 <
ATHABASCA RAW	18-Jan-90	192	6.7	40.2	0.0001	NA NA	0.004	0.001 <	0.004	0.001 <
ATHABASCA DIFF	18-Jan-90	-12	2.7	-1.0	0.0000		-0.005	0.001	0.004	0.000
ATHABASCA	19-Jun-90	111	3.0	24.0	0.0002	0.008	0.020	0.001 <	0.004	0.001
ATHABASCA RAW	19-Jun-90	116	11.4	23.3	0.0002	0.008 NA	0.020	0.001 <	0.004 0.071	0.001 0.022
ATHABASCA DIFF	19-Jun-90	5	8.4	-0.7	0.0075	141	0.008	0.002	0.067	0.021
ATHABASCA	16-Jan-91	226	3.7	45.6	0.0003	0.015	0.013	0.004	0.006	0.001
ATHABASCA RAW	16-Jan-91	233	5.5	45.6	0.0004	NA NA	0.007	0.004	0.006	0.001
ATHABASCA DIFF	16-Jan-91	7	1.8	0.0	0.0001		-0.006	-0.003	0.000	0.001
ATHABASCA	16-Jul-91	107	1.4	21.7	0.0001 <	0.006	0.014	0.001 <	0.004	0.002
ATHABASCA RAW	16-Jul-91	127	4.9	22.2	0.0018	NA	0.010	0.001	0.019	0.006
ATHABASCA DIFF	16-Jul-91	20	3.5	0.5	0.0017		-0.004	0.000	0.015	0.004
ATHABASCA	13-Mar-92	179	3.9	38.1	0.0003	0.013	0.016	0.001	0.007	0.001
ATHABASCA RAW	13-Маг-92	179	7.6	36.0	0.0006	NA	0.005	0.001 <	0.007	0.002
ATHABASCA DIFF	13-Mar-92		3.7	-2.1	0.0003		-0.011	0.000	0.000	0.001
ATHABASCA	28-May-9	154	2.7	30.3	0.0001	0.007	0.013	0.001	0.005	0.002
ATHABASCA RAW	28-May-9	145	5.9	27.2	0.0005	NA	0.003	0.002	0.005	0.002
ATHABASCA DIFF	28-May-9	-9	3.2	-3.1	0.0004		-0.010	0.001	0.000	0.000
ATHABASCA	13-Jan-93	240	3.8	44.3	0.0002	0.019	0.016	0.001 <	0.015	0.002
ATHABASCA RAW	13-Jan-93	229	5.8	42.0	0.0004	NA	0.004	0.001	0.004	0.002
ATHABASCA DIFF	13-Jan-93	-11	2.0	-2.3	0.0002		-0.012	0.000	-0.011	0.000
CLEARDALE	18-May-9	85	4.1	17.0	0.0002	0.051	0.038	0.001 <	0.025	0.001 <
CLEARDALE RAW	18-May-9	137	NA	NA		NA	0.005	0.001 <	0.010	0.001 <
CLEARDALE DIFF	18-May-9	52	,		0.0001		-0.033	0.000	-0.015	0.000
FAIRVIEW	19-May-9	100	2.4	18.5	0.0001	0.008	0.030	0.001 <	0.001 <	0.001 <
FAIRVIEW RAW	19-May-9	115	NA	NA	0.0003	NA	0.057	0.001 <	0.002	0.001 <
FAIRVIEW DIFF	19-May-9	15			0.0002		0.027	0.000	0.001	0.000
FORT CHIPEWYAN	16-Jun-93	37	1.8	6.3	0.0001 <	0.009	0.056	0.001 <	0.005	0.001 <
FORT CHIPEWYAN RAW	16-Jun-93	41	3.3	6.8	0.0004	NA	0.002	0.001 <	0.009	0.001 <
FORT CHIPEWYAN DIFF	16-Jun-93	4	1.5	0.5	0.0003		-0.054	0.000	0.004	0.000
FORT MCMURRAY	20-Jul-90	111	4.1	20.2	0.0002	0.013	0.103	0.001 <	0.004	0.001
FORT MCMURRAY RAW	20-Jul-90	122	7.8	21.3	0.0006	NA	0.021	0.001	0.003	0.002
FORT MCMURRAY DIFF	20-Jul-90	11	3.7	1.1	0.0004		-0.082	0.000	-0.001	0.001
FORT MCMURRAY	19-Nov-90	174	3.0	32.5	0.0003	0.011	0.062	0.002	0.004	0.002
FORT MCMURRAY RAW	19-Nov-90	189	4.6	34.2	0.0003	NA	0.009	0.001	0.004	0.003
FORT MCMURRAY DIFF	19-Nov-90	15	1.6	1.7	0.0000		-0.053	-0.001	0.000	0.001
FORT MCMURRAY	10-Apr-91	217	4.1	39.9	0.0002	0.031	0.031	0.001	0.005	0.002
FORT MCMURRAY RAW	10-Apr-91	219	5.8	43.3	0.0004	NA	0.004	0.001 <	0.005	0.001
FORT MCMURRAY DIFF	10-Apr-91	2	1.7	3.4	0.0002		-0.027	0.000	0.000	-0.001
FORT MCMURRAY	27-Apr-92	156	4.4	30.0	0.0002	0.015	0.028	0.001	0.003	0.002
FORT MCMURRAY RAW	27-Apr-92	146	6.7	27.7	0.0004	NA	0.004	0.001 <	0.003	0.002
FORT MCMURRAY DIFF	27-Apr-92	-10	2.3	-2.3	0.0002		-0.024	0.000	0.000	0.000
FORT MCMURRAY	19-Apr-93	193	4.1	35.8	0.0002	0.030 NA	0.004	0.001 <	0.009	0.001
FORT MCMURRAY RAW	19-Apr-93	198	5.8	35.8	0.0003	NA	0.004	0.001 <	0.007	0.001
FORT MCMURRAY DIFF	19-Apr-93	5	1.7	0.0	0.0001	-0.030 NA	0.000	0.000	-0.002	0.000

LOCATION	DATE	HCO3	DOC	DIC	AS	В	CU	CD	Z	CR
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HIGH PRAIRIE	13-Feb-91	144	7.9	29.3	0.0001	0.023	0.070	0.001 <	0.001 <	0.001 <
HIGH PRAIRIE RAW	13-Feb-91	180	na Na	NA NA	NA	0.025 NA	NA	0.001 < NA	0.001 < NA	
HIGH PRAIRIE DIFF	13-Feb-91	36	NA	MA	NA	NA.	NA	NA	NA	NA
	1037									
HINES CREEK	19-May-9	62	6.3	11.5	0.0002	0.036	0.151	0.001 <	0.012	0.001 <
HINES CREEK RAW	19-May-9	119	NA	NA	0.0006	NA	0.020	0.001 <	0.004	0.001 <
HINES CREEK DIFF	19-May-9	57			0.0004		-0.131	0.000	-0.008	0.000
HINTON	23-Oct-90	129	0.6	25.6	0.0003	0.003	0.005	0.002	0.005	0.002
HINTON RAW	23-Oct-90	137	0.7	26.2	0.0001	NA	0.001 <	0.002	0.002	0.001 <
HINTON DIFF	23-Oct-90	8	0.1	0.6	-0.0002		-0.004	0.000	-0.003	-0.001
HINTON	12-Aug-91	102	0.3	18.2	0.0001	0.003	0.004	0.001 <	0.002	0.002
HINTON RAW	12-Aug-91	97	1.3	18.7	0.0015	NA NA	0.005	0.001	0.002	0.002
HINTON DIFF	12-Aug-91	-5	1.0	0.5	0.0014	***	0.001	0.000	0.013	0.005
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SLAVE LAKE	14-Feb-91	116	10.5	21.3	0.0007	0.016	0.006	0.004	0.001 <	0.002
SLAVE LAKE RAW	14-Feb-91	122	NA	NA	NA	NA	NA	NA	NA	NA
SLAVE LAKE DIFF	14-Feb-91	6								
SMITH	22-Jun-92	167	2.5	34.3	0.0002	0.015	0.005	0.002	0.003	0.002
SMITH RAW	22-Jun-92	116	2.5	23.1	0.0006	NA	0.005	0.002	0.008	0.003
SMITH DIFF	22-Jun-92	-51	0.0	-11.2	0.0004		0.000	0.000	0.005	0.001
SMITH	19-May-9	160	2.6	31.3	0.0001	0.015	0.045	0.001 <	0.003	0.001 <
SMITH RAW	19-May-9	34	NA	NA	0.0003	NA	0.003	0.001 <	0.006	0.001 <
SMITH DIFF	19-May-9	-126			0.0002		-0.042	0.000	0.003	0.000
WHITECOLDT	10 E-L 00	205	4.0	50.2	0.0003	0.016	0.007	0.001	0.001	0.001
WHITECOURT WHITECOURT RAW	12-Feb-90 12-Feb-90	295 302	4.2 4.1	59.3 59.5	0.0003 0.0002	0.015	0.027 0.072	0.001 <	0.001	0.001 <
WHITECOURT DIFF	12-Feb-90 12-Feb-90	302 7	-0.1	0.2	-0.0001	NA	0.072	0.001 < 0.000	0.002 0.001	0.001 < 0.000
WINTECOOKT DITT	12-1-0-90		-0.1	0.2	-0.0001		0.045	0.000	0.001	0.000
WHITECOURT	1 2-Jun- 91	143	4.4	27.3	0.0003	0.004	0.021	0.001	0.001 <	0.004
WHITECOURT RAW	12-Jun-91	154	6.1	29.5	0.0005	NA	0.041	0.002	0.002	0.004
WHITECOURT DIFF	12-Jun-91	11	1.7	2.2	0.0002		0.020	0.001	0.001	0.000
WHITECOURT	25-Feb-92	283	2.8	55.3	0.0001	0.016	0.015	0.002	0.004	0.004
WHITECOURT RAW	25-Feb-92	301	3.7	58.5	0.0003	NA	0.075	0.002	0.004	0.003
WHITECOURT DIFF	25-Feb-92	18	0.9	3.2	0.0002		0.060	0.000	0.000	-0.001
WATTECOLDT	15 0-+ 02	220	2.0	42.0	0.0002	0.016	0.001	0.001	0.001	0.000
WHITECOURT WHITECOURT RAW	15-Oct-92 15-Oct-92	220 233	3.0 4.1	43.8 45.8	0.0002	0.015	0.001 < 0.020	0.001 <	0.001 <	0.002
WHITECOURT RAW WHITECOURT DIFF	15-Oct-92 15-Oct-92	13	4.1 1.1	45.8 2.0	0.0004 0.0002	NA	0.020	0.001 < 0.000	0.001 < 0.000	0.003
WINIECOURI DIFF	10-001-72	13	1.1	2.0	0.0002		0.017	0.000	0.000	0.001
WORSLEY	18-May-9	83	6.2	16.3	0.0001	0.044	0.057	0.001 <	0.017	0.001 <
WORSLEY RAW	18-May-9	128	NA	NA	0.0005	NA	0.012	0.001 <	0.020	0.001 <
WORSLEY DIFF	18-May-9	45			0.0004		-0.045	0.000	0.003	0.000

LOCATION	DATE	V	AL	TN_P	HG	SE	co	NI	PB	MG
		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ATHABASCA	18-Jan-90	0.002 <	0.05	0.03	0.0002	0.0004	0.001 <	0.002	0.002 <	14.0
ATHABASCA RAW	18-Jan-90	0.002 <	0.01	0.02	0.0001	0.0001	0.005	0.006	0.013	14.0
ATHABASCA DIFF	18-Jan-90	0.000	-0.03	-0.01	-0.0001	-0.0003	0.004	0.004	0.011	0.0
ATHABASCA	19-Jun-90	0.002 <	0.03	0.02 <	0.0001 <	0.0001 <	0.001 <	0.002	0.002 <	8.0
ATHABASCA RAW	19-Jun-90	0.036	1.72	0.65	> 1000.0	0.0004	0.012	0.028	0.008	8.0
ATHABASCA DIFF	19 -Jun- 90	0.034	1.69	0.63	0.0000	0.0003	0.011	0.026	0.006	0.0
ATHADASCA	16 Ion 01	0.002 <	0.10	0.02 <	0.0001 <	0.0001 <	0.001 <	0.001 <	0.002 <	17.0
ATHABASCA ATHABASCA RAW	16-Jan-91 16-Jan-91	0.002 <	0.10	0.02 <	0.0001 <	0.0001 <	0.001 <	0.001	0.002 <	17.0
ATHABASCA DIFF	16-Jan-91	0.003	-0.08	0.02	0.0001	0.0001 <	0.001	0.003	0.002	0.0
ATTIADASCA DIFF	10-344-51	0.001	-0.00	0.00	0.0000	0.0000	0.000	0.002	0.000	0.0
ATHABASCA	16 -Jul- 91	0.002	0.02	0.02 <	0.0001 <	0.0001 <	0.001	0.003	0.002 <	8.0
ATHABASCA RAW	16-Jul-91	0.010	0.55	0.21	0.0010 <	0.0001	0.004	0.009	0.004	10.0
ATHABASCA DIFF	16-Jul-91	0.008	0.53	0.19	0.0009	0.0000	0.003	0.006	0.002	2.0
ATHABASCA	13-Mar-92	0.002 <	0.08	NA	0.0001 <	0.0001 <	0.001 <	0.001	0.002 <	13.0
ATHABASCA RAW	13-Mar-92	0.002	0.03	NA.	0.0001 <	0.0001 <	0.001 <	0.004	0.002 <	12.0
ATHABASCA DIFF	13-Mar-92	0.002	-0.05	NA NA	0.0000	0.0000	0.000	0.003	0.000	-1.0
	10 1/10 72	0.000		****		· · · · · · · · · · · · · · · · · · ·			-	
ATHABASCA	28-May-9	0.002 <	0.02	NA	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	10.0
ATHABASCA RAW	28-May-9	0.002	0.08	NA	0.0001 <	0.0001	0.001 <	0.003	0.002 <	10.0
ATHABASCA DIFF	28-May-9	0.000	0.06	NA NA	0.0000	0.0000	0.000	0.000	0.000	0.0
ATHABASCA	13-Jan-93	0.003	0.12	0.03	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	18.0
ATHABASCA RAW	13-Jan-93	0.003	0.03	0.02	0.0001 <	0.0001 <	0.001 <	0.002	0.002 <	18.0
ATHABASCA DIFF	13-Jan-93	0.000	-0.09	-0.01	0.0000	0.0000	0.000	-0.001	0.000	0.0
CLEARDALE	18-May-9	0.002 <	0.04	0.02	0.0001 <	0.0001 <	0.001 <	0.001	0.002	17.0
CLEARDALE RAW	18-May-9	0.002 <	0.02	NA	NA	0.0002	0.001 <	0.001 <	0.004	16.0
CLEARDALE DIFF	18-May-9	0.000	-0.02			0.0001	0.000	0.000	0.002	-1.0
FAIRVIEW	19-May-9	0.002 <	0.09	0.04	0.0001 <	0.0001 <	0.001 <	0.001	0.002 <	7.0
FAIRVIEW RAW	19-May-9	0.002 <	0.01	NA	NA	0.0001 <	0.001 <	0.003	0.002 <	7.0
FAIRVIEW DIFF	19-May-9	0.000	-0.08			0.0000	0.000	0.002	0.000	0.0
FORT CHIPEWYAN	16-Jun-93	0.002 <	0.05	0.04	0.0001 <	0.0001 <	0.002	0.001 <	0.002	3.0
FORT CHIPEWYAN RAW	16-Jun-93	0.002 <	0.11	0.04	0.0001 <	0.0001 <	0.001 <	0.001 <	0.002 <	3.0
FORT CHIPEWYAN DIFF	16-Jun-93	0.002	0.06	0.02	0.0000	0.0000	-0.001	0.000	0.000	0.0
FORT MCMURRAY	20-Jul-90	0.002 <	0.27	0.02 <	0.0001 <	0.0001 <	0.001 <	0.001 <	0.003	8.0
FORT MCMURRAY RAW	20-Jul-90	0.003	0.26	0.04	0.0001	0.0001 <	0.001 <	0.003	0.004	8.0
FORT MCMURRAY DIFF	20-Jul-90	0.001	-0.01	0.02	0.0000	0.0000	0.000	0.002	0.001	0.0
FORT MCMURRAY	19-Nov-90	0.002	0.10	0.02 <	0.0001 <	0.0001 <	0.001 <	0.003	0.002	14.0
FORT MCMURRAY RAW	19-Nov-90	0.003	0.08	0.03	0.0001 <	0.0001	0.001	0.004	0.002 <	14.0
FORT MCMURRAY DIFF	19-Nov-90	0.001	-0.03	0.01	0.0000	0.0000	0.000	0.001	0.000	0.0
FORT MCMURRAY	10-Арг-91	0.002 <	0.21	0.02 <	0.0001 <	0.0001 <	0.001 <	0.002	0.002 <	16.0
FORT MCMURRAY RAW	10-Apr-91	0.002 <	0.26	0.02	0.0001	0.0001	0.001 <	0.001 <	0.002 <	16.0
FORT MCMURRAY DIFF	10-Apr-91	0.002	0.05	0.03	0.0003	0.0000	0.000	-0.001	0.000	0.0
FORT MCMURRAY	27-Арг-92	0.002	0.22	NA	0.0001	0.0001 <	0.001 <	0.001 <	0.002 <	10.0
FORT MCMURRAY RAW	27-Apr-92		0.05	NA	0.0001 <	0.0001	0.001 <	0.001 <	0.002 <	10.0
FORT MCMURRAY DIFF	27-Apr-92	0.000	-0.17	NA	0.0000	0.0000	0.000	0.000	0.000	0.0
FORT MCMURRAY	19-Арг-93	0.002 <	0.14	0.03	0.0001 <	0.0001	0.001 <	0.001	0.002 <	14.0
FORT MCMURRAY RAW	19-Арт-93		0.51	0.05	0.0001 <	0.0001	0.001 <	0.001	0.002 <	14.0
FORT MCMURRAY DIFF	19-Apr-93		0.37	0.02	0.0000	0.0000	0.000	0.000	0.000	0.0
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LOCATION	DATE	V	AL	TN_P	HG	SE	CO	NI	PB	MG
		mg/L	mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
HIGH PRAIRIE	13-Feb-91	0.002 <	0.43	0.02 <	0.0001 <	0.0001	0.001 <	0.001 <	0.002	12.0
HIGH PRAIRIE RAW	13-Feb-91	NA	NA	NA	NA	NA NA	NA NA	NA NA	NA	13.0
HIGH PRAIRIE DIFF	13-Feb-91							****	1111	1.0
HINES CREEK	19-May-9	0.002 <	1.01	0.09	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	10.0
HINES CREEK RAW	19-May-9	0.002 <	0.02	NA	NA	0.0002	0.001 <	0.004	0.002 <	10.0
HINES CREEK DIFF	19-May-9	0.000	-0.99		<u>_</u>	0.0001	0.000	0.001	0.000	0.0
HINTON	23-Oct-90	0.002	0.96	0.02 <	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	15.0
HINTON RAW	23-Oct-90	0.002 <	0.04	0.02 <	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	15.0
HINTON DIFF	23-Oct-90	0.000	-0.93	0.00	0.0000	0.0000	0.000	0.000	0.000	0.0
HINTON	12-Aug-91	0.002 <	0.21	0.02 <	0.0002	0.0001 <	0.001 <	0.002	0.003	7.0
HINTON RAW	12-Aug-91	0.007	0.72	0.16	0.0001 <	0.0001 <	0.003	0.007	0.004	7.0
HINTON DIFF	12-Aug-91	0.005	0.51	0.14	-0.0001	0.0000	0.002	0.005	0.001	0.0
SLAVE LAKE	14-Feb-91	0.002 <	0.03	0.02 <	0.0001 <	0.0001 <	0.001 <	0.002	0.002 <	6.0
SLAVE LAKE RAW	14-Feb-91	NA	NA	NA	NA	NA	NA	NA NA	NA NA	6.0
SLAVE LAKE DIFF	14-Feb-91		****	•••		****	1411	1471	1471	0.0
	1110071									0.0
SMITH	22-Jun-92	0.002	0.38	NA	0.0001 <	0.0001 <	0.001 <	0.003	0.002 <	12.0
SMITH RAW	22-Jun-92	0.004	0.14	NA	0.0001 <	1000.0	0.001	0.004	0.002 <	8.0
SMITH DIFF	22-Jun-92	0.002	-0.24	NA	0.0000	0.0000	0.000	0.001	0.000	-4.0
SMITH	19-May-9	0.002 <	0.22	0.03	0.0001 <	0.0001 <	0.001 <	0.001 <	0.002 <	13.0
SMITH RAW	19-May-9	0.002 <	40.10	NA	NA	0.0001	0.001	0.001	0.002 <	13.0
SMITH DIFF	19-May-9	0.000	39.88			0.0000	0.000	0.000	0.000	0.0
WHITECOURT	12-Feb-90	0.002 <	0.03	0.02 <	0.0001 <	0.0001 <	0.001 <	0.001 <	0.002 <	15.5
WHITECOURT RAW	12-Feb-90	0.002 <	0.02	0.05	0.0001 <	0.0001	0.001 <	0.001 <	0.002 <	18.0
WHITECOURT DIFF	12-Feb-90	0.000	-0.01	0.03	0.0000	0.0000	0.000	0.000	0.000	2.5
VAUTECOLINT	12 I 01	0.003	0.32	0.02 <	0.0001 <	0.0001 <	0.001	0.004	0.002 <	9.0
WHITECOURT	12-Jun-91	0.003	0.32	0.02 <	0.0001 <	0.0001 <	0.001	0.004		
WHITECOURT RAW WHITECOURT DIFF	12-Jun-91 12-Jun-91	0.004	-0.21	0.04	0.0001 <	0.0002	0.001	0.003	0.002 < 0.000	9.0 0.0
WHITECOOK! DIFF	12-3411-71	0.001	-0.21	0.02	0.0000	0.0001	0.000	0.001	0.000	0.0
WHITECOURT	25-Feb-92	0.002	0.01 <	NA	0.0001 <	0.0001 <	0.001	0.006	0.002 <	15.0
WHITECOURT RAW	25-Feb-92	0.002	0.01 <	NA	0.0001 <	0.0001	0.001	0.006	0.002 <	16.0
WHITECOURT DIFF	25-Feb-92	0.000	0.00	NA	0.0000	0.0000	0.000	0.000	0.000	1.0
WHITECOURT	15-Oct-92	0.002	0.17	0.02 <	0.0001 <	0.0001 <	0.001 <	0.002	0.002 <	14.0
WHITECOURT RAW	15-Oct-92	0.003	0.02	0.02 <	0.0001 <	0.0002	0.001 <	0.003	0.002 <	14.0
WHITECOURT DIFF	15-Oct-92	0.001	-0.15	0.00	0.0000	0.0001	0.000	0.001	0.000	0.0
WORSLEY	18-May-9	0.002 <	0.06	0.02	0.0001 <	0.0001 <	0.001 <	0.003	0.003	11.0
WORSLEY RAW	18-May-9	0.002 <	0.02	NA	NA NA	0.0001	0.001 <	0.002	0.003	11.0
WORSLEY DIFF	18-May-9	0.000	-0.04	****	****	0.0000	0.000	-0.001	-0.001	0.0

LOCATION	DATE	BE	MO	BA	T_COLOR	CO3	TKN	NH3_N	T_PHOS	COD
		mg/L	mg/L	mg/L	TCU	mg/L	mg/L	mg/L	mg/L	mg/L
ATHABASCA	18-Jan-90	0.001 <	0.002	0.063	NA	NA	NA	NA	NA	NA
ATHABASCA RAW	18-Jan-90	0.001 <	0.025	0.077	NA	6.0	NA	NA	NA	NA
ATHABASCA DIFF	18-Jan-90	0.000	0.023	0.014	NA	NA	NA	NA	NA	NA
ATHABASCA	19-Jun-90	0.001 <	0.001 <	0.099	NA	NA	NA	NA	NA	NA
ATHABASCA RAW	19-Jun-90	0.001 <	0.011	0.274	NA	NA	NA	NA	NA	NA
ATHABASCA DIFF	19- Jun- 90	0.000	0.010	0.175	NA	NA	NA	NA	NA	NA
ATHABASCA	16-Jan-91	0.001 <	0.001 <	0.074	NA	NA	NA	NA	NA	NA
ATHABASCA RAW	16-Jan-91	0.001 <	0.001 <	0.088	NA	NA	NA	NA	NA	NA
ATHABASCA DIFF	16-Jan-91	0.000	0.000	0.014	NA	NA	NA	NA	NA	NA
ATHABASCA	16-Jul-91	0.001 <	0.002	0.069	NA	NA	NA	NA	NA	NA
ATHABASCA RAW	16-Jul-91	0.001 <	0.004	0.100	NA	NA	NA	NA	NA	NA
ATHABASCA DIFF	16-Jul-91	0.000	0.002	0.031	NA	NA	NA	NA	NA	NA
ATHABASCA	13-Mar-92	0.001 <	0.001 <	0.075	7.0	NA	NA	NA	NA	NA
ATHABASCA RAW ATHABASCA DIFF	13-Mar-92 13-Mar-92	0.001 < 0.000	0.001 < 0.000	0.087 0.012	NA	NA NA	NA NA	NA NA	NA NA	NA NA
ATHABASCA DIFF							NA .	NA .		NA.
ATHABASCA	28-May-9	0.001 <	0.001	0.063	NA	NA	NA	NA	0.0	NA
ATHABASCA RAW ATHABASCA DIFF	28-May-9 28-May-9	0.001 < 0.000	0.001 0.000	0.065 0.002	NA NA	NA NA	0.3 NA	0.0 NA	0.0 0.0	NA NA
ATHABASCA DIFF	20-1VIay-9	0.000	0.000	_	NA NA	NA .	NA.	, , ,	0.0	IVA
ATHABASCA	13-Jan-93	0.001 <	0.003	0.082	NA	NA	NA 0.2	NA 0.1	NA O O	NA 14.0
ATHABASCA RAW ATHABASCA DIFF	13-Jan-93 13-Jan-93	0.001 < 0.000	0.002 -0.001	0.091 0.009	NA NA	NA NA	0.3 NA	U.I NA	0.0 NA	14.0 NA
ATTIABASCA DILI					NA .	- 100				
CLEARDALE	18-May-9	0.001 <	0.001 <	0.082	NA	NA	0.3	0.1	0.0	NA
CLEARDALE RAW CLEARDALE DIFF	18-May-9 18-May-9	0.001 < 0.000	0.002 0.001	0.083	NA NA	NA NA	0.6 0.3	0.1 0.0	0.0 0.0	NA NA
										···········
FAIRVIEW	19-May-9	0.001 <	0.001 <	0.040	NA	NA	0.2 0.4	NA 0.1	0.0 0.3	NA
FAIRVIEW RAW FAIRVIEW DIFF	19-May-9 19-May-9	0.001 < 0.000	0.001	0.040 0.000	NA NA	NA NA	0.4	V.1 NA	0.3	NA NA
					· · · · · · · · · · · · · · · · · · ·		-			
FORT CHIPEWYAN	16-Jun-93	0.001 < 0.001 <	0.001 < 0.001 <	0.024 0.027	NA	NA	0.1 0.2	0.0 0.1	0.0 0.0	NA
FORT CHIPEWYAN RAW FORT CHIPEWYAN DIFF	16-Jun-93 16-Jun-93	0.001 <	0.001 <	0.027	NA NA	NA NA	0.1	0.1	0.0	NA NA
CODE MONGED AV	00 Tul 00	0.001	0.001	0.052	374		***		***	274
FORT MCMURRAY FORT MCMURRAY RAW	20-Jul-90 20-Jul-90	0.001 < 0.001 <	0.001 < 0.001 <	0.053 0.062	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
FORT MCMURRAY DIFF	20-Jul-90	0.000	0.000	0.009	NA	NA	NA	NA	NA	NA
FORT MCMURRAY	19-Nov-90	0.001 <	0.001 <	0.053	NA	NA	NA	NA	NA	NA
FORT MCMURRAY RAW	19-Nov-90	0.001 <	0.001 <	0.072	NA	NA	NA	NA	NA	NA
FORT MCMURRAY DIFF	19-Nov-90	0.000	0.000	0.019	<u>N</u> A	NA	NA	NA	NA	NA
FORT MCMURRAY	10-Apr-91	0.001 <	0.001 <	0.081	NA	NA	NA	NA	NA	NA
FORT MCMURRAY RAW	10-Apr-91	0.001 <	0.001 <	0.085	NA	NA	NA	NA	NA	NA
FORT MCMURRAY DIFF	10-Apr-91	0.000	0.000	0.004	NA	NA	NA	NA	NA	NA
FORT MCMURRAY	27-Apr-92	0.001 <	0.002	0.049	NA	NA	NA	NA	NA	NA
FORT MCMURRAY RAW	27-Apr-92	0.001 <	0.001	0.058	NA	NA	NA	NA	NA	NA
FORT MCMURRAY DIFF	27-Apr-92	0.000	-0.001	0.009	NA	NA	NA	NA	NA	NA
FORT MCMURRAY	19-Apr-93	0.001 <	0.001 <	0.056	NA	NA	0.3	0.0 <	0.0	NA
FORT MCMURRAY RAW	19-Apr-93	0.001 <	0.001 <	0.082	NA	NA	0.3	> 0.0	0.0	NA
FORT MCMURRAY DIFF	19-Apr-93	0.000	0.000	0.026	0.0 NA	0.0 NA	0.0	0.0	0.0	NA

LOCATION	DATE	BE	MO	BA	T COLOR	CO3	TKN	NH3_N	T PHOS	COD
		mg/L	mg/L	mg/L	TCU	mg/L	mg/L	mg/L	mg/L	mg/L
HICH DD A DUC	12 5-1-01	0.001	0.001	0.050						
HIGH PRAIRIE	13-Feb-91	0.001 <	0.001 <	0.052	NA	NA	NA	NA	NA	NA
HIGH PRAIRIE RAW	13-Feb-91	NA	NA	NA	NA	NA	NA	NA	NA	NA
HIGH PRAIRIE DIFF	13-Feb-91				NA NA	NA	NA	NA	NA	NA
HINES CREEK	19-May-9	0.001 <	0.001	0.033	NA	NA	0.4	0.1	0.0	NA
HINES CREEK RAW	19-May-9	0.001 <	0.001	0.037	NA	NA	1.5	0.1	0.1	NA
HINES CREEK DIFF	19-May-9	0.000	0.000	0.004	NA	NA	1.1	0.0	0.1	NA
HINTON	23-Oct-90	0.001 <	0.001 <	0.060	NA	NA	NA	NA	NA	NA
HINTON RAW	23-Oct-90	0.001 <	0.001 <	0.057	NA	NA	NA	NA	NA	NA
HINTON DIFF	23-Oct-90	0.000	0.000	-0.003	NA	NA	NA	NA	NA	NA
LIDITON	12 4 01	0.001	0.001	0.022		-				
HINTON BAN	12-Aug-91	0.001 <	0.001	0.033	NA	NA	NA	NA	NA	NA
HINTON RAW HINTON DIFF	12-Aug-91	0.001 < 0.000	0.003 0.002	0.058 0.025	NA	NA	NA	NA	NA	NA
HIN ION DIFF	12-Aug-91	0.000	0.002	0.023	NA	NA NA	NA	NA	NA	NA
SLAVE LAKE	14-Feb-91	0.001 <	0.007	0.057	NA	NA	NA	NA	NA	NA
SLAVE LAKE RAW	14-Feb-91	NA	NA	NA	NA	NA	NA	NA	NA	NA
SLAVE LAKE DIFF	14-Feb-91				NA	NA	NA	NA	NA	NA
SMITH	22-Jun-92	0.001 <	0.003	0.098	1.0 <	NA	NA	NA	NA	NA
SMITH RAW	22-Jun-92	0.001 <	0.002	0.059	8.0	1.0 <	NA	NA.	NA NA	NA NA
SMITH DIFF	22-Jun-92	0.000	-0.001	-0.039	7.0	NA	NA	NA	NA NA	NA NA
	1011									
SMITH	19-May-9	0.001 <	0.001	0.090	3.0	NA	0.1	0.0	> 0.0	NA
SMITH RAW	19-May-9	0.001 <	0.002	0.091	NA	NA	NA	NA	NA	NA
SMITH DIFF	19-May-9	0.000	0.001	0.001		NA NA				NA
WHITECOURT	12-Feb-90	0.001 <	0.001 <	0.111	NA	NA	NA	NA	NA	NA
WHITECOURT RAW	12-Feb-90	0.001 <	0.001 <	0.112	NA	NA	NA	NA	NA	NA
WHITECOURT DIFF	12-Feb-90	0.000	0.000	0.001	NA	NA	NA	NA	NA	NA
WHITECOURT	12-Jun-91	0.001 <	0.002	0.067	NA	NA	NA	NA	NA	NA
WHITECOURT RAW	12-Jun-91	0.001 <	0.001 <	0.081	NA NA	2.0	NA NA	NA NA	NA NA	NA NA
WHITECOURT DIFF	12-Jun-91	0.000	-0.001	0.014	NA.	NA NA	NA NA	NA NA	NA.	NA NA
										101
WHITECOURT	25-Feb-92	0.001 <	0.001	0.055	NA	NA	NA	NA	NA	NA
WHITECOURT RAW	25-Feb-92	0.001 <	0.002	0.106	NA	NA	NA	NA	NA	NA
WHITECOURT DIFF	25-Feb-92	0.000	0.001	0.051	NA	NA	NA NA	NA	NA	NA
WHITECOURT	15-Oct-92	0.001 <	0.002	0.052	7.0	NA	0.2	0.0	0.0	5.0
WHITECOURT RAW	15-Oct-92	0.001 <	0.002	0.095	15.0	NA	0.2	0.0	0.0	13.0
WHITECOURT DIFF	15-Oct-92	0.000	0.000	0.043	8.0	NA	0.1	0.0	0.0	8.0
WORSLEY	18-May-9	0.001 <	0.001 <	0.069	NA	NA	0.3	0.1	0.0	NA
WORSLEY RAW	18-May-9	0.001 <	0.001 <	0.074	NA NA	NA NA	0.6	0.1	0.0	NA NA
WORSLEY DIFF	18-May-9	0.000	0.000	0.005	NA	NA NA	0.3	0.0	0.0	NA NA

LOCATION	DATE	CYANIDE mg/L	u	ΙA	LR
		mg/L			
ATHABASCA	18-Jan-90	NA.	-0.4	12.1	0.027
ATHABASCA RAW	18-Jan-90	NA NA	0.4	12.1	0.027
ATHABASCA DIFF	18-Jan-90	NA NA	0.7	0.8	-0.005
ATTIABABEAT BITT	10-341-50	144	0.7		-0.005
ATHABASCA	19 -Jun-9 0	NA	-1.3	10.9	0.026
ATHABASCA RAW	19-Jun-90	NA	-0.8	11.4	0.019
ATHABASCA DIFF	19-Jun-90	NA	0.5	0.5	-0.007
ATHABASCA	16-Jan-91	NA.	-0.5	12.0	0.031
ATHABASCA RAW	16-Jan-91	NA NA	-0.2	12.3	0.031
ATHABASCA DIFF	16-Jan-91	NA NA	0.3	0.3	-0.009
ATTABASCA DIFT	10-3421-31	NA.	0.5	0.5	-0.003
ATHABASCA	16-Jul-91	NA	-0.9	11.2	0.032
ATHABASCA RAW	16-Jul-91	NA	0.1	12.2	N
ATHABASCA DIFF	16-Jul-91	NA	1.0	0.9	N
ATHABASCA	13-Mar-92	0.0	-0.5	11.9	0.069
ATHABASCA RAW	13-Mar-92	NA	-0.3	12.1	0.059
ATHABASCA DIFF	13-Mar-92	144	0.2	0.2	-0.011
ATHABASCA	28-May-9	0.0 <	-0.5	11.9	0.028
ATHABASCA RAW	28-May-9	> 0.0	0.1	12.4	0.020
ATHABASCA DIFF	28-May-9	0.0	0.5	0.5	-0.008
ATHABASCA	13-Jan-93	0.0	0.1	12.5	0.059
ATHABASCA RAW	13-Jan-93	NA	0.2	12.7	0.048
ATHABASCA DIFF	13-Jan-93		0.2	0.2	-0.011
CLEARDALE	18-May-9	NA	-1.5	10.9	0.154
CLEARDALE RAW	18-May-9	NA NA	-0.3	12.1	0.035
CLEARDALE DIFF	18-May-9	NA	1.2	1.2	-0.119
CAIDITEIU	10.14			11.0	0.040
FAIRVIEW FAIRVIEW RAW	19-May-9 19-May-9	NA NA	-1.1 -0.2	11.2 12.1	0.048 0.018
FAIRVIEW DIFF	19-May-9 19-May-9	NA NA	1.0	0.9	-0.030
I I II I I I I I I I I I I I I I I I I	17 14123 7	1424	1.0	0.7	
FORT CHIPEWYAN	16-Jun-93	0.0 <	-2.2	9.9	0.251
FORT CHIPEWYAN RAW	16-Jun-93	NA	-1.6	10.6	0.181
FORT CHIPEWYAN DIFF	16-Jun-93		0.6	0.6	-0.071
FORT MCMURRAY	20-Jul-90	NA	-1.2	10.8	0.059
FORT MCMURRAY RAW	20-Jul-90	NA	-0.4	11.6	0.020
FORT MCMURRAY DIFF	20-Jul-90	NA	0.8	0.8	-0.039
CORT LONG TOP 137	10.3700			10.	0.00=
FORT MCMURRAY	19-Nov-90	NA	-0.4	12.1	0.037
FORT MCMURRAY RAW FORT MCMURRAY DIFF	19-Nov-90 19-Nov-90	NA NA	0.1 0.4	12.5 0.4	0.015 -0.021
I OKT MOMORRAT DIFF	17-1404-30	NA	0.4	0.4	-0.021
FORT MCMURRAY	10-Apr-91	NA	-0.4	12.0	0.064
FORT MCMURRAY RAW	10-Apr-91	NA	0.0	12.4	0.044
FORT MCMURRAY DIFF	10-Apr-91	NA	0.4	0.4	-0.020
FORT MCMURRAY	27-Apr-92	0.0 <	-0.4	11.9	0.062
FORT MCMURRAY RAW	27-Apr-92	NA	0.2	12.5	0.035
FORT MCMURRAY DIFF	27-Apr-92	1474	0.6	0.6	-0.026
FORT MCMURRAY	19-Apr-93	NA	0.1	12.5	0.056
FORT MCMURRAY RAW	19-Apr-93	NA	0.1	12.5	0.056
FORT MCMURRAY DIFF	19-Apr-93	NA	0.0	0.0	0.000

LOCATION	DATE	CYANIDE	Ц	Al	LR
		mg/L	_		
					
HIGH PRAIRIE	13-Feb-91	NA	-1.4	11.0	0.041
HIGH PRAIRIE RAW	13-Feb-91	NA	-0.3	12.1	0.014
HIGH PRAIRIE DIFF	13-Feb-91	NA	1.1	1.1	-0.026
HINES CREEK	10 1/2 0		1.0	10.5	0.106
HINES CREEK RAW	19-May-9	NA	-1.9	10.5	0.186
HINES CREEK DIFF	19-May-9	NA	-0.9	11.4	0.051
HINES CREEK DIFF	19-May-9	NA	0.9	0.9	-0.135
HINTON	23-Oct-90	NA	-0.6	11.8	0.016
HINTON RAW	23-Oct-90	NA.	0.0	12.3	0.011
HINTON DIFF	23-Oct-90	NA	0.5	0.5	-0.005
HINTON	12-Aug-91	NA	-0.2	11.9	NA
HINTON RAW	12-Aug-91	NA	-0.2	11.9	NA
HINTON DIFF	12-Aug-91	NA	0.0	0.0	NA_
SLAVE LAKE	14-Feb-91		1.4	11.0	0.066
SLAVE LAKE RAW	14-Feb-91	NA NA	-1.4 -1.0		0.056
SLAVE LAKE DIFF	14-Feb-91	NA		11.4	0.015
SLAVE LAKE DIFF	14-760-91	NA	0.4	0.4	-0.041
SMITH	22-Jun-92	0.0 <	0.0	12.2	0.067
SMITH RAW	22-Jun-92	0.0 <	0.1	12.2	0.019
SMITH DIFF	22-Jun-92	0.0	0.1	0.1	-0.048
a) (1771)	10.14				
SMITH SN (ITH DAN)	19-May-9	0.0 <	-0.5	11.8	0.071
SMITH RAW SMITH DIFF	19-May-9	NA	-3.0	9.4	0.243
SMITH DIFF	19-May-9		-2.5	-2.4	0.172
WHITECOURT	12-Feb-90	NA	-0.1	12.4	0.015
WHITECOURT RAW	12-Feb-90	NA	-0.2	12.3	0.007
WHITECOURT DIFF	12-Feb-90	NA	-0.1	-0.1	-0.008
WHITECOURT	12-Jun-91	NA	0.0	12.2	0.024
WHITECOURT RAW	12-Jun-91	NA	0.3	12.5	NA
WHITECOURT DIFF	12-Jun-91	NA	0.3	0.3	NA
WHITECOURT	25-Feb-92	0.0 <	-0.1	12.3	0.018
WHITECOURT RAW	25-Feb-92 25-Feb-92	0.0 <	0.0	12.5	0.018
WHITECOURT DIFF	25-Feb-92 25-Feb-92	0.0	0.0	0.1	-0.011
		0.0			0.011
WHITECOURT	15-Oct-92	0.0 <	0.1	12.5	0.020
WHITECOURT RAW	15-Oct-92	NA	0.5	12.8	0.009
WHITECOURT DIFF	15-Oct-92		0.3	0.3	-0.011
WODOL 537	10.14				
WORSLEY	18-May-9	NA	-1.3	11.0	0.089
WORSLEY RAW WORSLEY DIFF	18-May-9	NA	-0.5	11.8	0.007
WOKSLET DIFF	18-May-9	NA	0.8	0.8	-0.083

			BROMOCHLORO-	BROMODICHL-		
LOCATION	DATE	BENZENE	METHANE	OROMETHANE	BROMOFORM	BROMOMETHANE
		ug/L	ug/L	ug/L	ug/L	ug/L
	10.1.00	10.11	10.11	1037	1077	10.17
ATHABASCA	18-Jan-90	1.0 U	1.0 U	1.0 X 1.0 U	1.0 U	1.0 U
ATHABASCA RAW	18-Jan-90	1.0 U	1.0 U		1.0 U	1.0 U
ATHABASCA DIFF	18-Jan-90	0.0	0.0	0.0	0.0	0.0
ATHABASCA	19-Jun-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	19-Jun-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	19-Jun-90	0.0	0.0	0.0	0.0	0.0
ATHABASCA	16-Jan-91	1.0 U	1.0 U	1.0	1.0 U	1.0 U
ATHABASCA RAW	16-Jan-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	16-Jan-91	0.0	0.0	0.0	0.0	0.0
ATHABASCA	16-Jul-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	16-Jul-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	16-Jul-91	0.0	0.0	0.0	0.0	0.0
ATUADASCA	13-Mar-92	1.0 U	1.0 U	1.0	1.0 U	1.0 U
ATHABASCA ATHABASCA RAW	13-Mar-92 13-Mar-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	13-Mar-92	0.0	0.0	0.0	0.0	0.0
ATRABASCA DIFF	13-Mai-72	0.0	0.0	0.0	0.0	0.0
ATHABASCA	28-May-92	1.0 U	1.0 U	1.0 X	1.0 U	1.0 U
ATHABASCA RAW	28-May-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	28-May-92	0.0	0.0	0.0	0.0	0.0
ATHABASCA	13-Jan-93	1.0 U	1.0 U	1.0	1.0 U	1.0 U
ATHABASCA RAW	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	13-Jan-93	0.0	0.0	0.0	0.0	0.0
CLEARDALE	18-May-93	1.0 U	1.0 U	5.0	1.0 U	1.0 U
CLEARDALE RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CLEARDALE DIFF	18-May-93	0.0	0.0	-4.0	0.0	0.0
CLEARDALE DITT	10-14129-75	0.0	0.0	7.0	V.0	<u> </u>
FAIRVIEW	19-May-93	1.0 U	1.0 U	1.0 X	1.0 U	1.0 U
FAIRVIEW RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FAIRVIEW DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
FORT CHIPEWYAN	16-Jun-93	1.0 U	1.0 U	8.0	1.0 U	1.0 U
FORT CHIPEWYAN RAW	16-Jun-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT CHIPEWYAN DIFF	16-Jun-93	0.0	0.0	-7.0	0.0	0.0
FORT MCMURRAY	20-Jul-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	20-Jul-90 20-Jul-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	20-Jul-90 20-Jul-90	0.0	0.0	0.0	0.0	0.0
FORT MCMURRAY	19-Nov-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Nov-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	19-Nov-90	0.0	0.0	0.0	0.0	0.0
FORT MCMURRAY	10-Apr-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	10-Apr-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	10-Apr-91	0.0	0.0	0.0	0.0	0.0
FORT MCMURRAY - RAW	27-Apr-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY - RAW	•	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY - DIFF	-	0.0	0.0	0.0	0.0	0.0
					 -:	
FORT MCMURRAY	19-Apr-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Apr-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	19-Apr-93	0.0	0.0	0.0	0.0	0.0

			BROMOCHLORO-	BROMODICHL-		
LOCATION	DATE	BENZENE	METHANE	OROMETHANE	BROMOFORM	BROMOMETHANE
		ug/L	ug/L	ug/L	ug/L	ug/L
HIGH PRAIRIE	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE RAW	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE DIFF	13-Feb-91	0.0	0.0	0.0	0.0	0.0
HIGH FRAIRIE DIFF	13-1-60-91	0.0	0.0	0.0	0.0	0.0
HINES CREEK	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
HINTON	23-Oct-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON RAW	23-Oct-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	23-Oct-90	0.0	0.0	0.0	0.0	0.0
MINTON DIFF	23-001-90	0.0	0.0	0.0	0.0	0.0
HINTON	12-Aug-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON RAW	12-Aug-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	12-Aug-91	0.0	0.0	0.0	0.0	0.0
SLAVE LAKE	14-Feb-91	1.0 U	1.0 U	2.0	1.0 U	1.0 U
SLAVE LAKE RAW	14-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SLAVE LAKE DIFF	14-Feb-91	0.0	0.0	-1.0	0.0	0.0
DENVE ENRE DIN	14-100-51	0.0		-1.0	0.0	0.0
SMITH RAW	22-Jun-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH RAW	22-Jun-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	22-Jun-92	0.0	0.0	0.0	0.0	0.0
SMITH	19-May-93	1.0 U	1.0 U	1.0	1.0 U	1.0 U
SMITH RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
NAME OF THE	10 5-1-00	1011	1011	103/	1011	10.11
WHITECOURT	12-Feb-90	1.0 U	1.0 U	1.0 X	1.0 U	1.0 U
WHITECOURT RAW	12-Feb-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Feb-90	0.0	0.0	0.0	0.0	0.0
WHITECOURT	12-Jun-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	12-Jun-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Jun-91	0.0	0.0	0.0	0.0	0.0
WALTER COLUMN	25 F-1-02	1011	1011	10.17	101	1011
WHITECOURT	25-Feb-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	25-Feb-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	25-Feb-92	0.0	0.0	0.0	0.0	0.0
WHITECOURT	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	15-Oct-92	0.0	0.0	0.0	0.0	0.0
WORSLEY	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1071
WORSLEY RAW	18-May-93 18-May-93	1.0 U	1.0 U	1.0 U		1.0 U 1.0 U
					1.0 U	
WORSLEY DIFF	18-May-93	0.0	0.0	0.0	0.0	0.0

LOCATION	DATE	CHLOROETHANE ug/L	CHLOROFORM ug/L	DIBROMOCHL- OROMETHANE ug/L	1,2,-DICHLORO- BENZENE ug/L	1,3,-DICHLORO- BENZENE ug/L
ATHABASCA	18-Jan-90	1.0 U	15.0	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	18-Jan-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	18-Jan-90	0.0	-14.0	0.0	0.0	0.0
ATHABASCA	19-Jun-90	1.0 U	18.0	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	19-Jun-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	19-Jun-90	0.0	-17.0	0.0	0.0	0.0
HABASCA 16-Jan-91		1.0 U	18.0	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	16-Jan-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	16-Jan-91	0.0	-17.0	0.0	0.0	0.0
ATHABASCA	16-Jul-91	1.0 U	6.0	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	16-Jul-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	16-Jul-91	0.0	-5.0	0.0	0.0	0.0
ATHABASCA	13-Mar-92	1.0 U	33.0	1.0 U	1.0 U	1.0 U
ATHABASCA ATHABASCA RAW	13-Mar-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA RAW ATHABASCA DIFF	13-Mar-92 13-Mar-92	0.0	-32.0	0.0	0.0	0.0
ATUADASCA	28-May-92	1.0 U	22.0	1.0 U	1.0 U	1.0 U
ATHABASCA ATHABASCA RAW	•	1.0 U	22.0 1.0 U	1.0 U	1.0 U	1.0 U
	28-May-92		-21.0	0.0	0.0	0.0
ATHABASCA DIFF	28-May-92	0.0	-21.0	0.0	0.0	0.0
ATHABASCA	13-Jan-93	1.0 U	37.0	1.0 U	1.0 U	1.0 U
ATHABASCA RAW	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
ATHABASCA DIFF	13-Jan-93	0.0	-36.0	0.0	0.0	0.0
CLEARDALE	18-May-93	1.0 U	58.0	1.0 U	1.0 U	1.0 U
CLEARDALE RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
CLEARDALE DIFF	18-May-93	0.0	-57.0	0.0	0.0	0.0
FAIRVIEW	19-May-93	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
FAIRVIEW RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FAIRVIEW DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
FORT CHIPEWYAN	16-Jun-93	1.0 U	1.0 B	2.0	1.0 U	1.0 U
FORT CHIPEWYAN RAW	16-Jun-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT CHIPEWYAN DIFF	16-Jun-93	0.0	0.0	-1.0	0.0	0.0
FORT MCMURRAY	20-Jul-90	1.0 U	8.0	1.0 U	1.0 U	1.0 U
			1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW FORT MCMURRAY DIFF	20-Jul-90 20-Jul-90	1.0 U 0.0	-7.0	0.0	0.0	0.0
FORT MCMURRAY	19-Nov-90	1.0 U	3.0	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Nov-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	19-Nov-90	0.0	-2.0	0.0	0.0	0.0
FORT MCMURRAY	10-Apr-91	1.0 U	2.0	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	10-Apr-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	10-Apr-91	0.0	-1.0	0.0	0.0	0.0
FORT MCMURRAY - RAW	27-Apr-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY - RAW	•	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY - DIFF	_	0.0	0.0	0.0	0.0	0.0
FORT MCMURRAY	19-Apr-93	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Apr-93 19-Apr-93	1.0 U	1.0 B 1.0 U	1.0 U	1.0 U	1.0 U
FORT MCMURRAY DIFF	-	0.0	0.0	0.0	0.0	0.0
FOR I MUNICIPAL DIFF	19-Apr-93	I 0.0	0.0	0.0	0.0	0.0

				DIBROMOCHL-	1,2,-DICHLORO-	1,3,-DICHLORO-
LOCATION	DATE	CHLOROETHANE	CHLOROFORM	OROMETHANE	BENZENE	BENZENE
		ug/L	ug/L	ug/L	ug/L	ug/L
HIGH PRAIRIE	13-Feb-91	1.0 U	55.0	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE RAW	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE DIFF	13-Feb-91	0.0	-54.0	0.0	0.0	0.0
HINES CREEK	19-May-93	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
HINES CREEK RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
HINTON	23-Oct-90	1.0 U	3.0	1.0 U	1.0 U	1.0 U
HINTON RAW	23-Oct-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	23-Oct-90	0.0	-2.0	0.0	0.0	0.0
HINTON	12-Aug-91	1.0 U	5.0	1.0 U	1.0 U	1.0 U
HINTON RAW	12-Aug-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	12-Aug-91	0.0	-4.0	0.0	0.0	0.0
SLAVE LAKE	14-Feb-91	1.0 U	74.0	1.0 U	1.0 U	1.0 U
SLAVE LAKE RAW	14-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SLAVE LAKE DIFF	14-Feb-91	0.0	-73.0	0.0	0.0	0.0
SMITH RAW	22-Jun-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH RAW	22-Jun-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	22-Jun-92	0.0	0.0	0.0	0.0	0.0
SMITH	19-May-93	1.0 U	78.0	1.0 U	1.0 U	1.0 U
SMITH RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	19-May-93	0.0	-77.0	0.0	0.0	0.0
WHITECOURT	12-Feb-90	1.0 U	24.0	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	12-Feb-90	1.0 U	1.0	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Feb-90	0.0	-23.0	0.0	0.0	0.0
WHITECOURT	12-Jun-91	1.0 U	49.0	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	12-Jun-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Jun-91	0.0	-48.0	0.0	0.0	0.0
WHITECOURT	25-Feb-92	1.0 U	23.0	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	25-Feb-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	25-Feb-92	0.0	-22.0	0.0	0.0	0.0
WHITECOURT	15-Oct-92	1.0 U	33.0	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	15-Oct-92	0.0	-32.0	0.0	0.0	0.0
WORSLEY	18-May-93	1.0 U	63.0	1.0 U	1.0 U	1.0 U
WORSLEY RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WORSLEY DIFF	18-May-93	0.0	-62.0	0.0	0.0	0.0

LOCATION	DATE	1,4,-DICHLORO- BENZENE ug/L	METHALENE CHLORIDE ug/L	TOLUENE ug/L	1,1,1-TRICHLORO- ETHANE ug/L	TRICHLOROFLU- OROMETHANE ug/L	
ATHABASCA	18-Jan-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	18-Jan-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	18-Jan-90	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	19-Jun-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	19-Jun-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	19-Jun-90	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	16-Jan-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	16-Jan-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	16-Jan-91	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	16-Jul-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	16-Jul-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	16-Jul-91	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	13-Mar-92	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	13-Mar-92	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	13-Mar-92	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	28-May-92	1.0 X	1.0 B	1.0 U	1.0 U	1.0 L	
ATHABASCA RAW	28-May-92	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	28-May-92	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ATHABASCA RAW	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ATHABASCA DIFF	13-Jan-93	0.0	0.0	0.0	0.0	0.0	
CLEARDALE	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
CLEARDALE RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
CLEARDALE DIFF	18-May-93	0.0	0.0	0.0	0.0	0.0	
FAIRVIEW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
FAIRVIEW RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
FAIRVIEW DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0	
FORT CHIPEWYAN	16-Jun-93	2.0	1.0 U	1.0 U	1.0 U	1.0 U	
FORT CHIPEWYAN RAW	16-Jun-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 L	
FORT CHIPEWYAN DIFF	16-Jun-93	-1.0	0.0	0.0	0.0	0.0	
FORT MCMURRAY	20-Jul-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY RAW	20-Jul-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY DIFF	20-Jul-90	0.0	0.0	0.0	0.0	0.0	
FORT MCMURRAY	19-Nov-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY RAW	19-Nov-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY DIFF	19-Nov-90	0.0	0.0	0.0	0.0	0.0	
FORT MCMURRAY	10-Apr-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY RAW	10-Apr-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U	
FORT MCMURRAY DIFF	10-Apr-91	0.0	0.0	0.0	0.0	0.0	
FORT MCMURRAY - RAW	27-Apr-92	1.0 U	1.0 B	1.0 U	1.0 U	76.0	
FORT MCMURRAY - RAW	•	1.0 U	1.0 B	1.0 U	1.0 U	76.0	
FORT MCMURRAY - DIFF	-	0.0	0.0	0.0	0.0	0.0	
FORT MCMURRAY	19-Apr-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 L	
FORT MCMURRAY RAW	19-Арт-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 t	
FORT MCMURRAY DIFF	19-Apr-93	0.0	0.0	0.0	0.0	0.0	

LOCATION	DATE	1,4,-DICHLORO- BENZENE ug/L	METHALENE CHLORIDE ug/L	TOLUENE ug/L	1,1,1-TRICHLORO- ETHANE ug/L	TRICHLOROFLU- OROMETHANE ug/L
HIGH PRAIRIE	13-Feb-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE RAW	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE DIFF	13-Feb-91	0.0	0.0	0.0	0.0	0.0
HINES CREEK	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
HINTON	23-Oct-90	3.0	1.0 B	1.0 U	1.0 U	1.0 U
HINTON RAW	23-Oct-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
HINTON DIFF	23-Oct-90	-2.0	0.0	0.0	0.0	0.0
HINTON	12-Aug-91	5.0	1.0 B	1.0 U	1.0 U	1.0 U
HINTON RAW	12-Aug-91 12-Aug-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
HINTON DIFF	12-Aug-91	-4.0	0.0	0.0	0.0	0.0
SLAVE LAKE	14-Feb-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
SLAVE LAKE RAW	14-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SLAVE LAKE DIFF	14-Feb-91	0.0	0.0	0.0	0.0	0.0
SMITH RAW	22-Jun-92	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
SMITH RAW	22-Jun-92	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
SMITH DIFF	22-Jun-92	0.0	0.0	0.0	0.0	0.0
SMITH	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
WHITECOURT	12-Feb-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	12-Feb-90	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Feb-90	0.0	0.0	0.0	0.0	0.0
WHITECOURT	12-Jun-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	12-Jun-91	1.0 U	1.0 B	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Jun-91	0.0	0.0	0.0	0.0	0.0
WHITECOURT	25-Feb-92	1.0 U	1.0 B	1.0 B	1.0 U	1.0 U
WHITECOURT RAW	25-Feb-92	1.0 U	1.0 B	1.0 B	1.0 U	1.0 U
WHITECOURT DIFF	25-Feb-92	0.0	0.0	0.0	0.0	0.0
WHITECOURT	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	15-Oct-92	0.0	0.0	0.0	0.0	0.0
WORSLEY	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WORSLEY RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WORSLEY DIFF	18-May-93	0.0	0.0	0.0	0.0	0.0

LOCATION	DATE	o-XYLENE ug/L	m.p-XYLENE ug/L
ATHABASCA	18-Jan-90	1.0 U	1.0 U
ATHABASCA RAW	18-Jan-90	1.0 ป	1.0 U
ATHABASCA DIFF.	18-Jan-90 '	0.0	0.0
ATHABASCA	19-Jun-90	1.0 ปั	1.0 U
ATHABASCA RAW	19-Jun-90	1.0 ປັ	1.0 U
ATHABASCA DIFF	19-Jun-90	0.0	0.0
ATHABASCA	16-Jan-91	1.0 U	1.0 U
ATHABASCA RAW	16-Jan-91	1.0 U	1.0 U
ATHABASCA DIFF	16-Jan-91	0.0	0.0
ATHABASCA	16-Jul-91	1.0 U	1.0 U
ATHABASCA RAW	16-Jul-91	1.0 U	1.0 U
ATHABASCA DIFF	16-Jul-91	0.0	0.0
ATTABASCA DITT	10-361-71	- U.O	0.0
ATHABASCA	13-Mar-92	1.0 U	1.0 U
ATHABASCA RAW	13-Mar-92	1.0 U	1.0 U
ATHABASCA DIFF	13-Mar-92	0.0	0.0
ATHABASCA	28-May-92	1.0 U	1.0 U
ATHABASCA RAW	28-May-92	1.0 U	1.0 U
ATHABASCA DIFF	28-May-92	0.0	0.0
ATTABASCA DITT	20-Way-72	0.0	0.0
ATHABASCA	13-Jan-93	1.0 U	1.0 U
ATHABASCA RAW	13-Jan-93	1.0 U	1.0 U
ATHABASCA DIFF	13-Jan-93	0.0	0.0
CLEARDALE	19 May 02	1.0 U	1.0 U
CLEARDALE RAW	18-May-93 18-May-93	1.0 U	1.0 U
CLEARDALE DIFF	18-May-93	0.0	0.0
CLEARDALE DIFF	16-May-93	0.0	0.0
FAIRVIEW	19-May-93	1.0 U	1.0 U
FAIRVIEW RAW	19-May-93	1.0 U	1.0 U
FAIRVIEW DIFF	19-May-93	0.0	0.0
CODE CUEDEVALA	16 1 02	1011	1011
FORT CHIPEWYAN	16-Jun-93	1,0 U	1.0 U
FORT CHIPEWYAN RAW	16-Jun-93	1.0 U	1.0 U
FORT CHIPEWYAN DIFF	16-Jun-93	0.0	0.0
FORT MCMURRAY	20-Jul-90	1.0 U	1.0 U
FORT MCMURRAY RAW	20-Jul-90	1.0 U	1.0 U
FORT MCMURRAY DIFF	20-Jul-90	0.0	0.0
CORT MONTH TO THE	10.31	1077	10.71
FORT MCMURRAY	19-Nov-90	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Nov-90	1.0 U	1.0 U
FORT MCMURRAY DIFF	19-Nov-90	0.0	0.0
FORT MCMURRAY	10-Apr-91	1.0 U	1.0 U
FORT MCMURRAY RAW	10-Apr-91	1.0 U	1.0 U
FORT MCMURRAY DIFF	10-Apr-91	0.0	0.0
CODT LOS CONTROLES	27.4 02	1077	10.77
FORT MCMURRAY - RAW	•	1.0 U	1.0 U
FORT MCMURRAY - RAW	•	1.0 U	1.0 U
FORT MCMURRAY - DIFF	27-Apr-92	0.0	0.0
FORT MCMURRAY	19-Apr-93	1.0 U	1.0 U
FORT MCMURRAY RAW	19-Apr-93	1.0 U	1.0 U
FORT MCMURRAY DIFF	19-Apr-93	0.0	0.0
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LOCATION	DATE	o-XYLENE A ug/L	ug/L
HIGH PRAIRIE	13-Feb-91,	1.0 U	1.0 U
HIGH PRAIRIE RAW	13-Feb-91	1.0 U	1.0 U
HIGH PRAIRIE DIFF	13-Feb-91,	0.0	0.0
HINES CREEK	19-May-93	1.0 U	1.0 U
HINES CREEK RAW	19-May-93	1.0 U	1.0 U
HINES CREEK DIFF	19-May-93	0.0	0.0
HINTON	23-Oct-90	1.0 U	1.0 U
HINTON RAW	23-Oct-90	1.0 U _i	1.0 U
HINTON DIFF	23-Oct-90	0.0	0.0
HINTON	12-Aug-91	1.0 U,	1.0 U
HINTON RAW	12-Aug-91	1.0 U	1.0 U
HINTON DIFF	12-Aug-91	0.0	0.0
SLAVE LAKE	14-Feb-91	1.0 U	1.0 U
SLAVE LAKE RAW	14-Feb-91	1.0 U	1.0 U
SLAVE LAKE DIFF	14-Feb-91	0.0	0.0
SMITH RAW	22-Jun-92	1.0 U	1.0 U
SMITH RAW	22-Jun-92	1.0 U	1.0 U
SMITH DIFF	22-Jun-92	0.0	0.0
SMITH	19-May-93	1.0 U	1.0 U
SMITH RAW	19-May-93	1.0 U	1.0 U
SMITH DIFF	19-May-93	0.0	0.0
WHITECOURT	12-Feb-90	1.0 U	1.0 U
WHITECOURT RAW	12-Feb-90	1.0 U	1.0 U
WHITECOURT DIFF	12-Feb-90	0.0	0.0
WHITECOURT	12-Jun-91	1.0 U	1.0 U
WHITECOURT RAW	12-Jun-91	1.0 U	1.0 U
WHITECOURT DIFF	12-Jun-91	0.0	0.0
WHITECOURT	25-Feb-92	1.0 U	1.0 U
WHITECOURT RAW	25-Feb-92	1.0 U	1.0 U
WHITECOURT DIFF	25-Feb-92	0.0	0.0
WHITECOURT	15-Oct-92	1.0 U	1.0 U
WHITECOURT RAW	15-Oct-92	1.0 U	1.0 U
WHITECOURT DIFF	15-Oct-92	0.0	0.0
WORSLEY	18-May-93	1.0 U	1.0 U
WORSLEY RAW	18-May-93	1.0 U	1.0 U
WORSLEY DIFF	18-May-93	0.0	0.0

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LOCATION	DATE	HEXADECANOIC ACID ug/L	BUTYLBENZYL- PHTHALATE ug/L	DIETHYL- PHTHALATE ug/L	DI-n-OCTYL- PHTHALATE ug/L	BIS(2-ETHYLHE- XYL)PHTHALATE ug/L	The state of the s
ATHABASCA	18-Jan-90	3.0	1.0 U	1.0 U	1.0 U	1.0 U	1 1 1 0
ATHABASCA RAW	18-Jan-90	1.0 U	1.0 U	1.0 U	1.0 U"	100	THE TOWN
ATHABASCA DIFF	18-Jan-90	-2.0	₹ 0.0	0.0		0.0	1,14,1183 1)
ATHABASCA	19-Jun-90	1.0 U	1.0 U	1.0 U	1.0 U ⁸⁴	1.0 U	1. 1 6 3
ATHABASCA RAW	19-Jun-90	1.0 U	1.0 U	1.0 U	1.0 U		5 CO C.A.
ATHABASCA DIFF	19-Jun-90	0.0	1 0.0	0.0	0.0	the second secon	3. opt
ATHABASCA	16-Jan-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	(8)(5)
ATHABASCA RAW	16-Jan-91	1.0 U	1.0 U	1.0 U	1.0 U	8.0	4 - X- 65
ATHABASCA DIFF	16-Jan-91	0.0	0.0	0.0	0.0	7.0	12
THABASCA	16-Jul-91	1.0 U	1.0 U	1.0 U	1.0 U		A - 1
ATHABASCA RAW	16-Jul-91	1.0 U	1.0 U	1.0 U	1.0 U~		15 775
ATHABASCA DIFF	16-Jul-91	0.0	0.0	0.0	0.0	0.0	-
ATHABASCA	13-Mar-92	1.0 U	1.0 U	1.0 U	1.0 U		: 4 D
ATHABASCA RAW	13-Mar-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	70 Se
THABASCA DIFF	13-Mar-92	0.0	0.0	0.0	0.0	0.0	
ATHABASCA	28-May-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1001
THABASCA RAW	28-May-92	1.0 U	1.0 U	1.0 U	1.0 U		Ar mon
THABASCA DIFF	28-May-92	0.0	0.0	0.0	0.0	0.0	A 11
THABASCA	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U°	1.0 U	8.70
THABASCA RAW	13-Jan-93	1.0 U	1.0 U	1.0 U	1.0 U		0.00
THABASCA DIFF	13-Jan-93	0.0	0.0	0.0 €	0.0		E 146
CLEARDALE	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0	9 35 "
CLEARDALE RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	150
LEARDALE DIFF	18-May-93	0.0	0.0	0.0	0.0	0.0	20 m)
AIRVIEW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
AIRVIEW RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	- J
AIRVIEW DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0	1
ORT CHIPEWYAN	16-Jun-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT CHIPEWYAN RAW	16-Jun-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT CHIPEWYAN DIFF	16-Jun-93	0.0	0.0	0.0	0.0	0.0	_
ORT MCMURRAY	20-Jul-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY RAW	20-Jul-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY DIFF	20-Jul-90	0.0	0.0	0.0	0.0	0.0	
ORT MCMURRAY	19-Nov-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0
ORT MCMURRAY RAW	19-Nov-90	1.0 U	€1.0 U	1.0 U	1.0 U	4.0	
ORT MCMURRAY DIFF	19-Nov-90	0.0	₹0.0	0.0	0.0	3.0	
ORT MCMURRAY	10-Apr-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY RAW	10-Арг-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY DIFF	10-Apr-91	0.0	0.0	0.0	0.0	0.0	
ORT MCMURRAY - RAW	27-Apr-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY - RAW		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY - DIFF		0.0	0.0	0.0	0.0	0.0	
ORT MCMURRAY	19-Арг-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	
ORT MCMURRAY RAW	19-Apr-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	

LOCATION	DATE	HEXADECANOIC i ACID ug/L	BUTYLBENZYL- PHTHALATE ug/L	DIETHYL- PHTHALATE T Ug/L	DI-n-OCTYL- PHTHALATE Ug/L	BIS(2-ETHYLHE- XYL)PHTHALATE ug/L
HIGH PRAIRIE	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE RAW	13-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HIGH PRAIRIE DIFF	13-Feb-91	0.0	0.0	0,0	0.0	0.0
HINES CREEK	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINES CREEK DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
HINTON	23-Oct-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON RAW	23-Oct-90 23-Oct-90	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	23-Oct-90 23-Oct-90	0.0	0.0	0.0	0.0	0.0
V -			·	0.0	0.0	
HINTON	12-Aug-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON RAW	12-Aug-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0
HINTON DIFF	12-Aug-91	0.0	0.0	0.0	0.0	0.0
HINTON	12-Jul-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON RAW	12-Jul-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
HINTON DIFF	12-Jul-93	0.0	0.0	0.0	0.0	0.0
SLAVE LAKE	14-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SLAVE LAKE RAW	14-Feb-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SLAVE LAKE DIFF	14-Feb-91	0.0	0.0	0.0	0.0	0.0
CMITTI DAW	22-Jun-92	1.0 U	1.0 U	1011	1.0 U	1.0 U
SMITH RAW SMITH RAW	22-Jun-92 22-Jun-92	1.0 U	1.0 U	1.0 U 1.0 U	1.0 U	1.0 U
SMITH DIFF	22-Jun-92	0.0	0.0	0.0	0.0	0.0
SMITH	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH RAW	19-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
SMITH DIFF	19-May-93	0.0	0.0	0.0	0.0	0.0
WHITECOURT	12-Feb-90	5.0	4.0	1.0 U	1.0 U	2.0
WHITECOURT RAW	12-Feb-90	4.0	4.0	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Feb-90	-1.C	0.0	0.0	0.0	-1.0
WHITECOURT	12-Jun-91	1.0 U	1.0 U	1.0 U	1.0 U	2.0
WHITECOURT RAW	12-Jun-91	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	12-Jun-91	0.0	0.0	0.0	0.0	-1.0
WHITECOURT	25-Feb-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	25-Feb-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT DIFF	25-Feb-92	0.0	0.0	0.0	0.0	0.0
WHITECOURT	15-Oct-92	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WHITECOURT RAW	15-Oct-92 15-Oct-92	1.0 U	1.0 U	1.0 Ú	1.0 U	1.0 U
WHITECOURT DIFF	15-Oct-92	0.0	0.0	0.0	0.0	0.0
WORSLEY	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WORSLEY RAW	18-May-93	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
WORSLEY DIFF	18-May-93	0.0	0.0	0.0	0.0	0.0

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