



UPPER BOW RIVER HAZARD STUDY GOVERNING DESIGN FLOOD HAZARD MAP PRODUCTION

FINAL REPORT



Prepared for:



Alberta Environment and Parks



17 November 2022

NHC Ref. No. 3001178

**UPPER BOW RIVER HAZARD STUDY
GOVERNING DESIGN FLOOD HAZARD MAP PRODUCTION**

FINAL REPORT

Prepared for:

Alberta Environment and Parks
Edmonton, Alberta

Prepared by:

Northwest Hydraulic Consultants Ltd.
North Vancouver, BC

17 November 2022

NHC Ref No. 3001178

Report Prepared by:

Michael Brayall, M.Sc., P.Eng.
Project Engineer

Robyn Andrishak, M.Sc., P.Eng.
Principal

Report Reviewed by:

Dan Healy, Ph.D., P.Eng.
Principal

DISCLAIMER

This report has been prepared by **Northwest Hydraulic Consultants Ltd.** for the benefit of **Alberta Environment and Parks** for specific application to the **Upper Bow River Hazard Study in Alberta**. The information and data contained herein represent Northwest Hydraulic Consultants Ltd.'s best professional judgment in light of the knowledge and information available to **Northwest Hydraulic Consultants Ltd.** at the time of preparation, and was prepared in accordance with generally accepted engineering practices.

Except as required by law, this report and the information and data contained herein are to be treated as confidential and may be used and relied upon only by **Alberta Environment and Parks**, its officers and employees. **Northwest Hydraulic Consultants Ltd.** denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this report or any of its contents.

EXECUTIVE SUMMARY

Alberta Environment and Parks (AEP) retained Northwest Hydraulic Consultants Ltd. (NHC) in September 2015 to complete a river hazard study for the Bow River. The roughly 118 km long study reach extends from the Banff National Park boundary, located approximately 5 km upstream of the Town of Canmore, to Bearspaw Dam, near the City of Calgary western boundary. Within the Town of Canmore, the study area incorporates Policeman Creek, a channel roughly 6.5 km long situated on the Bow River floodplain and running parallel to the Bow River main channel. In addition, the study area includes three tributaries: the lower 1 km long reach of Exshaw Creek at the Hamlet of Exshaw; the lower 6 km of Bighill Creek at the Town of Cochrane; and the lower 5 km of Jumpingpound Creek at the Town of Cochrane.

The study is being conducted under the provincial Flood Hazard Identification Program (FHIP). Project stakeholders include the provincial government, local authorities, and the public.

The overall objectives of this project are to identify and assess river related hazards and enhance public safety along the Bow River and the three tributaries included in the study area. The intent is to reduce potential future flood damages and disaster assistance costs to the federal, provincial, and local governments, including First Nations. New floodplain maps will inform land use planning decisions, assist with developing flood mitigation options and facilitate emergency response planning.

The Upper Bow River Hazard Study has been structured into eight major project components. This report summarizes the work of the sixth component: Governing Design Flood Hazard Map Production. A summary of the work supporting the determination of the governing design flood and flood hazard mapping is provided.

The open water design flood is the governing design flood upstream of Ghost Dam on the Bow River, on Exshaw Creek, and on Policeman Creek. For the Bow River reach between Ghost Dam and Bearspaw Dam, the ice jam design flood governs between RS 34,562 and RS 5,633. The ice jam design flood also governs from RS 369 to RS 185 on Bighill Creek and from RS 386 to RS 116 on Jumpingpound Creek, due to backwater effects from the Bow River reach. The open water design flood governs for all remaining Bow River cross sections between Ghost and Bearspaw dams, as well as all remaining Jumpingpound Creek and Bighill Creek cross sections.

The governing design flood hazard maps are included with this summary report. These maps depict the governing floodway and flood fringe, which was developed from a combination of the floodway criteria mapping in the open water and ice jam design flood analyses. Supporting GIS data are provided as a separate electronic deliverable. These include: floodway and flood fringe limit polygons, including high hazard flood fringe and protected flood fringe areas; governing design flood water surface TIN; and governing design flood depth and water surface elevation grids.

CREDITS AND ACKNOWLEDGEMENTS

Northwest Hydraulic Consultants Ltd. (NHC) would like to express appreciation to Alberta Environment and Parks (AEP) for initiating this project, making available extensive background information and providing advice and support throughout the survey, modelling, and mapping work. Key AEP representatives were Jane Eaket, P.Eng. (Project Manager) and Peter Onyshko, P.Eng. (Alternate Project Manager).

The following NHC personnel were part of the study team and participated in the governing flood hazard map production component of the study. Monica Mannerström, P.Eng. (Project Manager) ensured the overall direction of the project. Robyn Andrishak, P.Eng. (Hydraulic Modeller) and Sarah North, GISP, (GIS Analyst) were responsible for completing the governing flood hazard maps, with assistance from Michael Brayall, P.Eng. (Hydraulic Modeller).

This report was authored by Michael Brayall and Robyn Andrishak. Dan Healy reviewed the report.

DRAFT

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
CREDITS AND ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS.....	iii
LIST OF TABLES.....	iv
LIST OF FIGURES.....	iv
LIST OF MAPS AND DRAWINGS.....	iv
1 INTRODUCTION	1
1.1 Project Background	1
1.2 Project Objective	1
1.3 Study Area and Reach.....	2
2 GOVERNING DESIGN FLOOD DETERMINATION	4
2.1 Open Water and Ice Jam Design Flood Details.....	4
2.2 Comparison of Open Water and Ice Jam Design Flood Hazards	4
2.3 Governing Design Flood Limiting Criteria	4
2.4 Governing Design Flood Profile	6
3 GOVERNING DESIGN FLOOD HAZARD MAP PRODUCTION	7
3.1 Areas in the Floodway	7
3.2 Areas in the Flood Fringe.....	8
4 GOVERNING DESIGN FLOOD GRIDS	10
4.1 Water Surface Grids.....	10
4.2 Flood Depth Grids.....	10
4.3 General Comments.....	10
5 POTENTIAL CLIMATE CHANGE IMPACTS.....	11
5.1 Comparative Scenarios.....	11
5.2 Results	11
5.3 Supplementary Information	12
6 CONCLUSIONS	13
7 REFERENCES	14

MAPS AND DRAWINGS

APPENDIX A Governing Design Flood Levels and Details

LIST OF TABLES

Table 1 Increases in water level associated with more severe open water flood scenarios..... 11

LIST OF FIGURES

Figure 1 Study Area
Figure 2 Overview of Governing Design Flood Mechanisms

LIST OF MAPS AND DRAWINGS

Governing Design Flood Hazard Maps (Sheets 1 to 35)
Governing Design Flood Profiles (Sheets 1 to 10)

DRAFT

1 INTRODUCTION

1.1 Project Background

Alberta Environment and Parks (AEP) retained Northwest Hydraulic Consultants Ltd. (NHC) in September 2015 to complete a river hazard study for the Bow River, along a reach defined between the Banff National Park boundary at the upstream end and Bearspaw Dam at the downstream end. The study is being conducted under the provincial Flood Hazard Identification Program (FHIP).

The Bow River has been exposed to severe flooding in the past, with three extreme events occurring from the late 1800s to early 1900s, two around 1930, and, more recently, in 2013.

For the Bow River reach within the current study limits, provincial flood hazard mapping was previously prepared for Cochrane (Alberta Environment, 1990), Canmore (W-E-R Agra, 1993), and Municipal District (M.D.) of Bighorn (Acres, 1996). The Cochrane study was completed by Alberta Environment in 1986 with an addendum issued in 1990. The study reach covered 21 km of the Bow River (from Bearspaw Dam to upstream of the Town of Cochrane boundary) and the lower 4.5 to 5 km reaches of Jumpingpound and Bighill Creeks (two tributaries discharging to the Bow River within the Town of Cochrane limits). The M.D. of Bighorn study, completed by Acres International Ltd., includes a 15 km reach of the Bow River from the west boundary of Bow Valley Provincial Park to Dead Man's Flats and includes the lower one kilometre reach of Exshaw Creek. The Canmore study completed by W-E-R Agra Ltd. covered a 20 km reach of Bow River from Dead Man's Flats, through the Town of Canmore (including Policeman Creek), to the Banff National Park boundary.

AEP identified a need to update and expand the coverage of this mapping following the 2013 floods. Stakeholders of the present project are the Government of Alberta, the Town of Canmore, the M.D. of Bighorn, Stoney Nakoda First Nation, Rocky View County, the Town of Cochrane, and the public.

1.2 Project Objective

The overall objectives of this project are to identify and assess river related hazards and enhance public safety along the Bow River and three tributaries within the study area. The intent is to reduce potential future flood damages and disaster assistance costs to the federal, provincial, and local governments, as well as First Nations. The updated flood mapping will also inform land use planning decisions, assist with developing flood mitigation options and facilitate emergency response planning.

Specific study components, as outlined in the AEP Upper Bow River Hazard Study Terms of Reference, are:

- survey and base data collection;
- hydraulic model development; calibration and validation;
- open water flood inundation map production;

- open water flood hazard identification;
- ice jam assessment and associated flood hazard identification;
- governing flood hazard map production;
- flood risk assessment and inventory; and
- channel stability investigation.

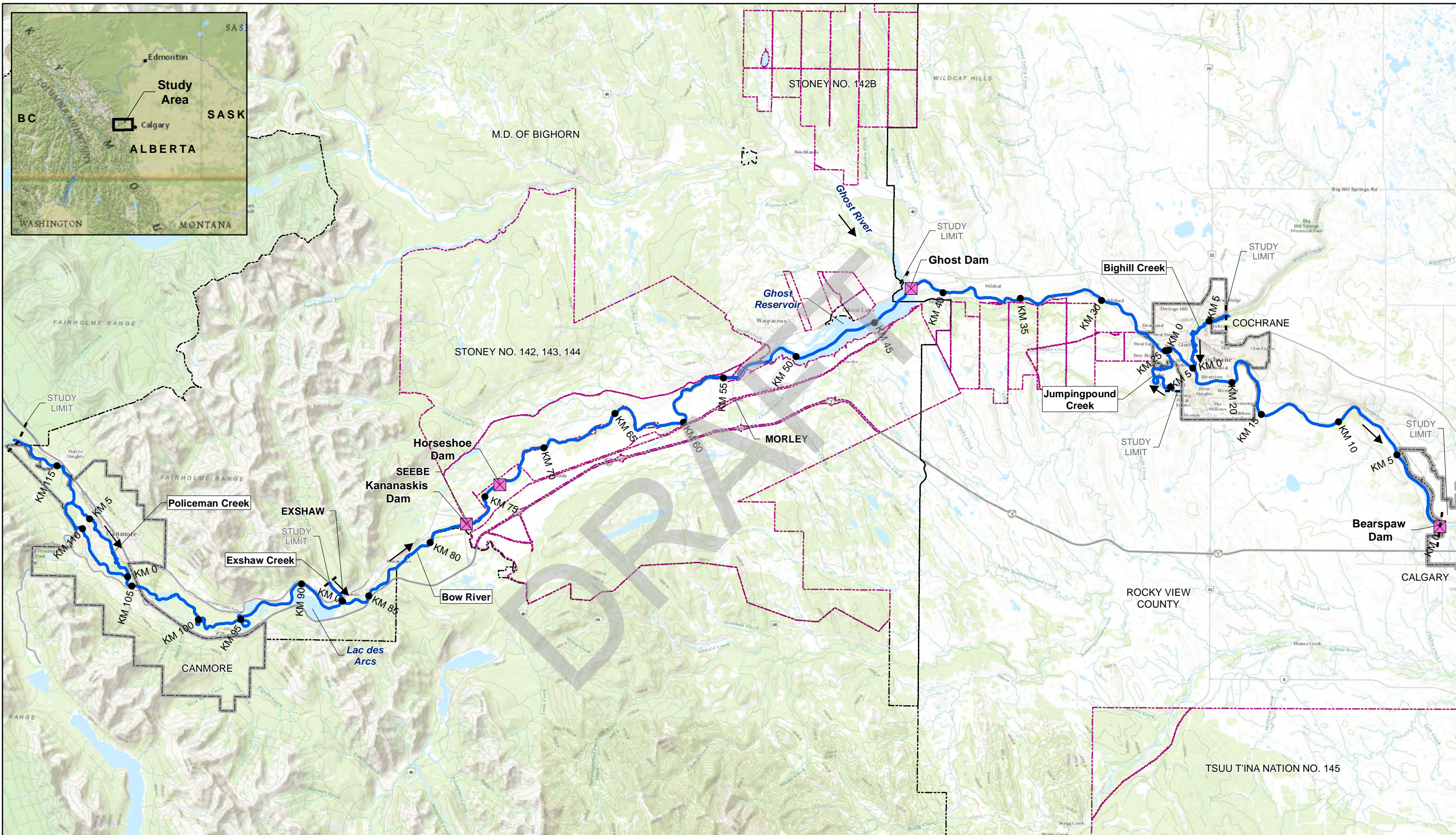
The results of each component are summarized in individual stand-alone reports. This report summarizes the work conducted regarding Governing Flood Hazard Map Production and forms the sixth report of the Upper Bow River Hazard Study. The work included determination of the governing design flood and development of the governing design flood hazard map, as well as associated deliverables that support development of the statistics pertaining to the floodway and flood fringe required for the flood risk assessment.

1.3 Study Area and Reach

From the Bow River headwaters at Bow Lake (Elev. 1940 m), just north of Lake Louise, the river flows in a south-easterly to easterly direction over nearly 600 km before draining into the South Saskatchewan River. The Upper Bow River study area comprises a roughly 118 km long reach, extending from the Banff National Park boundary, located approximately 5 km upstream of the Town of Canmore, to Bearspaw Dam, near the City of Calgary western boundary. Within the Town of Canmore, the study area incorporates Policeman Creek, an inlet controlled high water channel roughly 6.5 km long situated on the floodplain and running parallel to the Bow River main channel. In addition, the study area includes three tributaries:

- the lower 1 km long reach of Exshaw Creek at the Hamlet of Exshaw;
- the lower 6 km of Bighill Creek at the Town of Cochrane; and
- the lower 5 km of Jumpingpound Creek at the Town of Cochrane.

Flow is regulated both on the Bow River main stem and on several tributaries. In addition to the Bearspaw Dam at the downstream end, the Ghost, Horseshoe Falls, and Kananaskis dams also impound the river. The study area is shown in Figure 1.



2 GOVERNING DESIGN FLOOD DETERMINATION

2.1 Open Water and Ice Jam Design Flood Details

Details on the open water design and ice jam design floods are provided within the Open Water Flood Hazard Identification (NHC, 2022a) and Ice Jam Modelling Assessment and Flood Hazard Identification (NHC, 2022b) reports. The study reach for the ice jam assessment was limited to the reach between Ghost and Bears paw dams, where ice jam flooding was known to be of similar or greater risk than open water flooding. Details on the differences in the open water and ice jam design floods between Ghost Dam and Bears paw Dam are described in the following section.

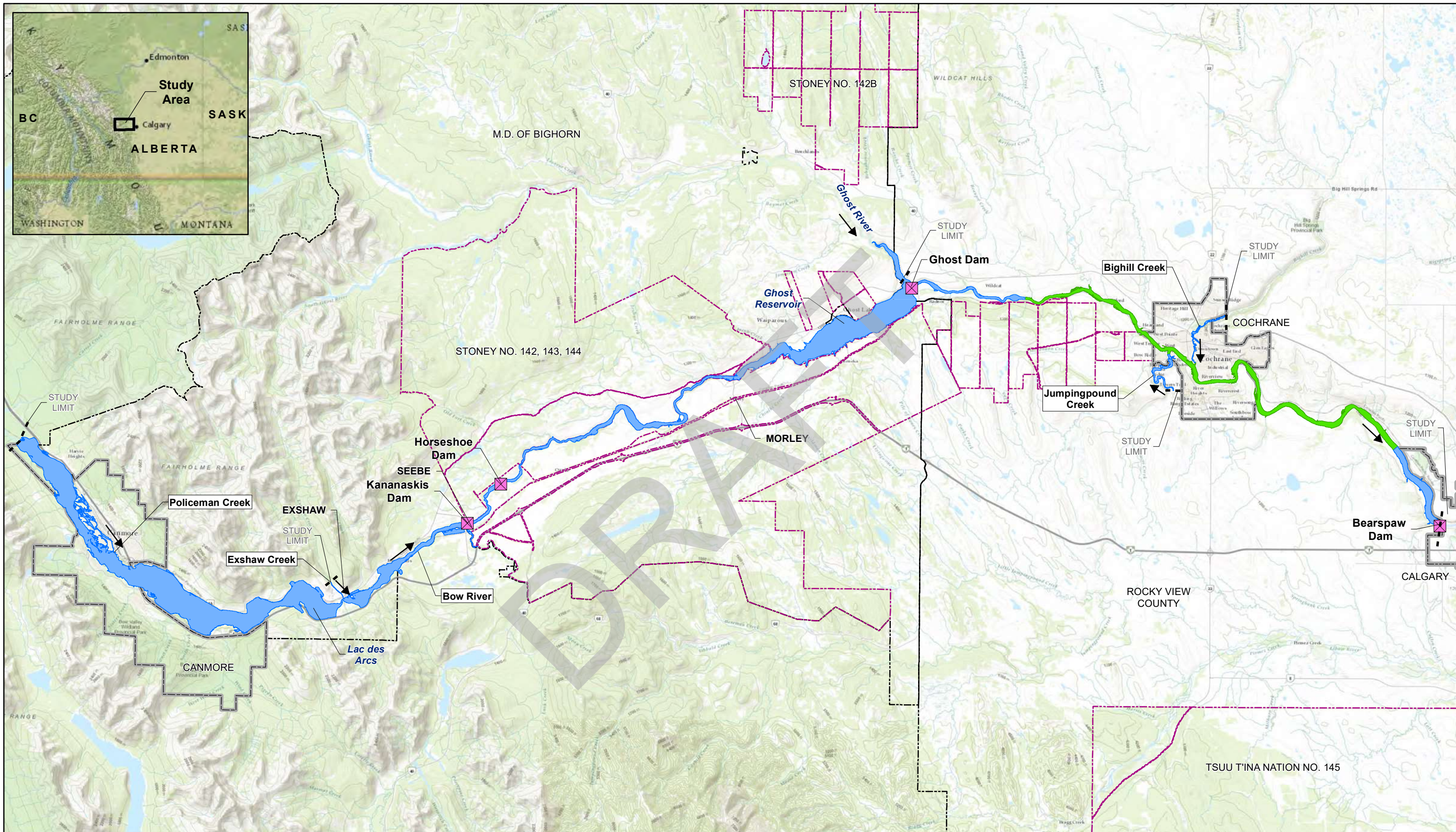
2.2 Comparison of Open Water and Ice Jam Design Flood Hazards

A comparison between the open water and ice jam design floods was required along the Bow River between Ghost and Bears paw dams and at the confluence of Bighill and Jumpingpound creeks. Design flood levels for each cross section are provided in Appendix A. On average, the ice jam design flood levels are 0.85 m higher than the open water design flood levels on the Bow River between RS 34,562 and RS 5,633. Near the mouth of Bighill Creek, the ice jam design flood levels exceed the open water design flood levels from RS 369 to the confluence, with a maximum difference of 0.13 m at the confluence. On Jumpingpound Creek, the ice jam design flood levels exceed the open water design flood levels from RS 386 to the confluence, with the maximum difference being 0.74 m at the confluence.

2.3 Governing Design Flood Limiting Criteria

Flood hazards on the Bow River between Bears paw and Ghost dams may be associated with open water or ice jam conditions. On Bighill and Jumpingpound creeks, flooding is mainly attributable to open water events. The exception to this is near their confluences with the Bow River, where an ice jam event on the Bow River could potentially cause backwater flood levels that exceed the open water design flood levels for those tributaries. Elsewhere in the study area, ice jam flood hazards are not considered significant relative to the design open water flood hazards.

The governing design flood was determined on a reach basis, with the limiting criteria being the flood mechanism (open water or ice jam) that produced higher design flood levels. Figure 2 provides an overview of the applicable governing design flood mechanisms throughout the study area. The governing design flood levels and floodway determination criteria are provided for each cross section in Appendix A. The ice jam design flood governs for the reach between RS 34,562 and RS 5,633 on the Bow River, RS 369 to RS 185 on Bighill Creek, and RS 386 to RS 116 on Jumpingpound Creek. The open water design flood governs for all other reaches.



2.4 Governing Design Flood Profile

The Governing Design Flood Profile (Sheets 1 to 10) is provided in the Maps and Drawings section of this report. Design flood levels at cross sections not included in the ice-enhanced HEC-RAS model were linearly interpolated between adjacent cross sections. This is indicated in the table provided in Appendix A.

Governing design flood water levels at each cross section were used to develop a triangular irregular network (TIN) representing the governing design flood water surface elevation (WSE) profile along the study reach. Adjustments were made in the TIN to account for significant backwater influences, based on the size of the area affected and water level differences. Governing design flood WSE and depth grids were subsequently generated from the adjusted TIN, as described in Section 4 of this report.

DRAFT

3 GOVERNING DESIGN FLOOD HAZARD MAP PRODUCTION

The governing design flood hazard map was developed through minor adjustments to the open water and ice jam flood hazard mapping products. Development of those components is described under separate cover in the Open Water Flood Hazard Identification (NHC, 2022a) and Ice Jam Modelling Assessment and Flood Hazard Identification (NHC, 2022b) reports.

The governing floodway boundary was taken as either: (1) the open water floodway boundary for reaches governed by the open water design flood hazard or (2) the ice jam floodway boundary for reaches governed by the ice jam design flood hazard. A smooth governing floodway boundary was drawn between adjacent model cross sections at the transition between reaches governed by open water and ice jam design floods. Areas of high ground or areas of depth less than 1 m inside the floodway boundaries were included as part of the floodway. The resulting floodway is represented as a single contiguous polygon.

The design flood extents developed for the open water and the ice jam floodway criteria maps were combined and adjusted to create the flood fringe, including the high hazard flood fringe and protected flood fringe areas. The limits of the flood fringe follow the extent of direct inundation for the applicable governing design flood; isolated potentially flooded areas beyond these extents were not included in the flood fringe. Areas of high ground within the extent of direct inundation (and outside of the floodway) were preserved and are not indicated as flood fringe in the flood hazard map.

In addition, governing design flood hazard maps show incremental areas at risk of flooding for the 200-year and 500-year open water floods, or the 200-year ice jam flood, as appropriate for the relevant study reach. Areas of direct inundation and inundation due to potential flood control structure failure are not differentiated in the mapped areas at risk of flooding for the 200-year and 500-year open water floods.

3.1 Areas in the Floodway

For the most part, developed areas and critical infrastructure along the Bow River study reach are situated outside of the floodway. Notable areas within the Bow River and tributary reach floodway boundaries include:

Canmore

- Policeman Creek and some adjacent low-lying areas of its floodplain;
- the Canmore Wastewater Treatment Plant;

M.D. of Bighorn

- the extent of Exshaw Creek that is expected to be inundated under design flood conditions;

Cochrane

- a portion of the recreational trail near the Cochrane Water Treatment Plant;
- a portion of Riverfront Park near the mouth of Bighill Creek;
- Jumpingpound and Bighill creeks and adjacent low-lying areas of their floodplains; and
- recreational trails on the west (right) floodplain adjacent to the Girl Guide Camp Jubilee.

The floodway boundaries were also carried into the mouths of small tributaries, following the governing criteria established for adjacent cross sections on the Bow River.

More information regarding existing infrastructure and property within the floodway can be found in the Flood Risk Assessment and Inventory Report (NHC, 2022c), provided under separate cover.

3.2 Areas in the Flood Fringe

The flood fringe includes all inundated areas outside the floodway at design flood levels. Areas behind flood control structures are mapped as flooded if they are overtopped, but areas at risk of flooding behind dedicated flood control structures that are not overtopped are identified as a protected flood fringe zone. The only areas of protected flood fringe, where existing flood control structures are not overtopped, are found in Canmore. These include:

- portions of the Canmore Golf Club;
- Riverside Park along River Road;
- Rundle Crescent and adjacent areas behind the Canmore Mine Dike; and
- residential areas south and west of Centennial Park behind the Canmore Town Dike.

Other significant areas of flood fringe include:

Canmore

- low-lying areas adjacent to the Bow River and Policeman Creek;

M.D. of Bighorn

- portions of the Trans Canada Highway and Highway 1A at Lac des Arcs;
- an industrial area at Exshaw between Diamond Drive and the Bow River;

Cochrane

- low-lying areas around the Cochrane Water Treatment Plant;
- a portion of the Bow Meadows community near the mouth of Jumpingpound Creek;

- Riverfront Park near the mouth of Bighill Creek; and
- a portion of the Girl Guide Camp Jubilee, including several buildings on the property.

The high hazard flood fringe includes areas outside of the floodway that are directly inundated and deeper than 1 m and/or flowing faster than 1 m/s. The additional areas determined to be high hazard flood fringe are insignificant.

More information regarding infrastructure and property within the flood fringe can be found in the Flood Risk Assessment and Inventory Report (NHC, 2022c), provided under separate cover.

DRAFT

4 GOVERNING DESIGN FLOOD GRIDS

WSE and flood depth grids were prepared for the governing design flood and are provided with the GIS deliverables for this study component, along with the associated TIN and inundation extent polygons. A description of the governing design flood grids is provided below.

4.1 Water Surface Grids

The governing WSE TIN was converted to a tiled set of WSE grids matching the alignment, horizontal resolution, and tiling boundaries of the LiDAR-derived DTM supplied by AEP. Water surface elevations in metres are provided as 32-bit floating point grid cell values. The WSE grids at this stage were used to compute the flood depth grids, as described in Section 4.2.

As a final step, the inundation extent polygons were used to clip the WSE grids such that a value of *NoData* is provided for all dry areas and the water surface elevation values are indicated only where inundation is shown.

4.2 Flood Depth Grids

Each bare earth DTM grid tile was subtracted from the WSE grid tile (prior to clipping) for the governing design flood to generate a set of flood depth grid tiles representing water depth in metres as 32-bit floating point values. All flood depth grids maintained the same alignment, horizontal resolution, and tiling boundaries as the LiDAR-derived bare earth DTM supplied by AEP. Grid cells with depth values less than 0 m, which represent dry areas, were assigned a value of *NoData*.

4.3 General Comments

The design flood grids are provided for information only. Grid values are based on linear interpolation of water surface elevations between cross sections in the hydraulic model, and as such, should be considered approximate. Water's edge boundaries implied by the raster depth grids may deviate slightly from the flood hazard extents shown on the governing design flood hazard map. The flood depth grids are computed by subtracting the bare earth DTM grids from the water surface grids, whereas the mapped inundation extent boundaries (derived from the depth grids) have been further filtered and smoothed.

Since the LiDAR-derived DTM indicates the approximate water surface elevation at the time of the LiDAR survey, depth values where water covered the ground at the time of the survey should not be considered accurate. Elsewhere, the grids may be used to estimate local flood depths and water levels associated with the governing design flood.

5 POTENTIAL CLIMATE CHANGE IMPACTS

To address the potential impacts of climate change on flood levels, more severe open water and ice jam flood scenarios were compared to the current design flood estimates in order to obtain a measure of “freeboard” that may be generally appropriate for long-term planning purposes. To obtain information appropriate for other applications, the simplified approach taken herein could be supplemented by a future more rigorous regional climate analysis and site-specific impact assessment.

5.1 Comparative Scenarios

For the open water hazard, the current 100-year flood water levels were compared to those associated with discharges that are 10 and 20 percent greater than the current 100-year flood estimates. This approach is consistent with guidelines prepared by EGBC (2018). EGBC recommends that for basins where no historical trend is detectable in local or regional streamflow magnitude frequency relations, a 10 percent upward adjustment in design discharge be applied to account for likely future changes in water input from precipitation. On the other hand, if a statistically significant trend is detected, a 20 percent adjustment may be appropriate, particularly for smaller basins.

For the ice jam hazard, the previously computed 200-year flood levels were compared to the current 100-year ice jam flood level estimates.

5.2 Results

The results of the analysis for the open water flood hazard are provided in Table 1. The magnitude of the increases were found to be fairly uniform along each stream, except within the reservoirs on the Bow River where dam operations heavily influence water levels.

Table 1 Increases in water level associated with more severe open water flood scenarios

Stream	Open Water Flood Discharge	
	100-Year Plus 10%	100-Year Plus 20%
Bow River	0.2 m	0.4 m
Policeman Creek	0.1 m	0.2 m
Exshaw Creek	0.1 m	0.1 m
Jumpingpound Creek	0.2 m	0.3 m
Bighill Creek	0.1 m	0.2 m

The ice jam hazard scenario for this analysis is only applicable for the portion of the Bow River between RS 34,562 and RS 5,633 through Cochrane. On average, the ice jam design flood hazard is approximately 0.9 m above the open water design flood hazard along this reach, notwithstanding any potential climate change impacts. For comparison, the 200-year return period ice jam amounts to an additional 0.2 m above the 100-year ice jam design flood levels along this reach.

5.3 Supplementary Information

Climate change has the potential to affect many factors related to flood severity and ice jam propensity. For open water floods, more frequent and greater intensity summer rain storms are commonly attributed to future climate flood risks. A comprehensive analysis would consider meteorological and hydrological factors at the basin scale to assess changes in flood peak discharges and their associated return periods. For ice jam induced flooding, the effects of climate change are even more complex as precipitation, temperature, streamflow regulation, and antecedent conditions affecting ice cover thickness and integrity all come into play.

DRAFT

6 CONCLUSIONS

The objectives of this study were to assess river flood-related hazards along a 118 km long reach of the Bow River (including Policeman Creek), 1 km of Exshaw Creek, 6 km of Bighill Creek, and 5 km of Jumpingpound Creek. The Upper Bow River Hazard Study was divided into eight major project components. This report summarizes the work on production of the governing flood hazard maps, which included determination of the governing design flood and development of the governing design flood hazard map, as well as associated deliverables that support development of the statistics pertaining to the floodway and flood fringe required for the flood risk assessment. The reports for work components one through five should be read in conjunction with this report, as they provide additional pertinent background information.

The governing design flood hazard map depicts the floodway and associated flood hazard extents, including flood fringe, high hazard flood fringe, and protected flood fringe areas. The governing design flood hazard maps also show incremental areas at risk of flooding for the 200-year and 500-year open water floods, or the 200-year ice jam flood, as appropriate for the relevant study reach.

The ice jam design flood is the governing condition for a portion of the Bow River between Ghost and Bearspaw dams through Cochrane. The lower portions of Bighill and Jumpingpound creeks near their confluences with the Bow River are also governed by ice jam flood levels on the Bow River due to backwater effects. Elsewhere, the open water design flood is the governing condition.

Potential climate change impacts were estimated for this study by comparing the design flood levels to flood levels associated with more severe events. Based on the results, up to 0.4 m of additional “freeboard” above the governing design flood levels may be appropriate for the comparative scenarios considered.

7 REFERENCES

Engineers and Geoscientists British Columbia (2018). Legislated Flood Assessments in a Changing Climate in BC. Version 2.1.

Northwest Hydraulic Consultants (2022a). Upper Bow River Hazard Study – Open Water Flood Hazard Identification. Report for Alberta Environment and Parks.

Northwest Hydraulic Consultants (2022b). Upper Bow River Hazard Study – Ice Jam Modelling Assessment and Flood Hazard Identification. Report for Alberta Environment and Parks.

Northwest Hydraulic Consultants (2022c). Upper Bow River Hazard Study – Flood Risk Assessment and Inventory. Report for Alberta Environment and Parks.

DRAFT

APPENDIX A
Design Flood Levels

DRAFT

Table A1 Governing hazards and design flood levels

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	117,852	1326.12	n/a	Open Water	1326.12
Bow River	117,547	1325.65	n/a	Open Water	1325.65
Bow River	117,241	1325.15	n/a	Open Water	1325.15
Bow River	116,670	1323.52	n/a	Open Water	1323.52
Bow River	116,188	1322.50	n/a	Open Water	1322.50
Bow River	115,644	1321.47	n/a	Open Water	1321.47
Bow River	115,415	1320.69	n/a	Open Water	1320.69
Bow River	115,134	1320.04	n/a	Open Water	1320.04
Bow River	114,700	1319.24	n/a	Open Water	1319.24
Bow River	114,258	1318.66	n/a	Open Water	1318.66
Bow River	113,821	1317.75	n/a	Open Water	1317.75
Bow River	113,472	1317.04	n/a	Open Water	1317.04
Bow River	113,065	1316.28	n/a	Open Water	1316.28
Bow River	112,898	1316.09	n/a	Open Water	1316.09
Bow River	112,726	1315.88	n/a	Open Water	1315.88
Bow River	112,580	1315.62	n/a	Open Water	1315.62
Bow River	112,416	1315.35	n/a	Open Water	1315.35
Bow River	112,279	1315.20	n/a	Open Water	1315.20
Bow River	112,071	1314.94	n/a	Open Water	1314.94
Bow River	111,915	1314.73	n/a	Open Water	1314.73
Bow River	111,823	1314.61	n/a	Open Water	1314.61
Bow River	111,706	1314.51	n/a	Open Water	1314.51
Bow River	111,305	1313.83	n/a	Open Water	1313.83
Bow River	111,132	1313.49	n/a	Open Water	1313.49
Bow River	110,887	1312.84	n/a	Open Water	1312.84
Bow River	110,734	1312.61	n/a	Open Water	1312.61
Bow River	110,352	1312.11	n/a	Open Water	1312.11
Bow River	110,148	1311.93	n/a	Open Water	1311.93
Bow River	109,981	1311.67	n/a	Open Water	1311.67
Bow River	109,938	1311.69	n/a	Open Water	1311.69
Bow River	109,921	1311.51	n/a	Open Water	1311.51
Bow River	109,727	1311.40	n/a	Open Water	1311.40

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	109,501	1311.09	n/a	Open Water	1311.09
Bow River	109,366	1310.81	n/a	Open Water	1310.81
Bow River	109,235	1310.43	n/a	Open Water	1310.43
Bow River	109,202	1310.34	n/a	Open Water	1310.34
Bow River	109,114	1310.02	n/a	Open Water	1310.02
Bow River	108,998	1309.58	n/a	Open Water	1309.58
Bow River	108,757	1309.23	n/a	Open Water	1309.23
Bow River	108,586	1308.91	n/a	Open Water	1308.91
Bow River	108,458	1308.73	n/a	Open Water	1308.73
Bow River	108,052	1308.36	n/a	Open Water	1308.36
Bow River	107,747	1307.78	n/a	Open Water	1307.78
Bow River	107,333	1307.09	n/a	Open Water	1307.09
Bow River	107,113	1306.92	n/a	Open Water	1306.92
Bow River	106,702	1305.56	n/a	Open Water	1305.56
Bow River	106,497	1305.42	n/a	Open Water	1305.42
Bow River	106,143	1305.16	n/a	Open Water	1305.16
Bow River	105,995	1304.99	n/a	Open Water	1304.99
Bow River	105,742	1304.79	n/a	Open Water	1304.79
Bow River	105,620	1304.61	n/a	Open Water	1304.61
Bow River	105,224	1304.34	n/a	Open Water	1304.34
Bow River	104,790	1303.73	n/a	Open Water	1303.73
Bow River	104,631	1303.21	n/a	Open Water	1303.21
Bow River	104,575	1303.04	n/a	Open Water	1303.04
Bow River	104,490	1302.60	n/a	Open Water	1302.60
Bow River	104,338	1302.30	n/a	Open Water	1302.30
Bow River	104,163	1301.67	n/a	Open Water	1301.67
Bow River	103,697	1300.12	n/a	Open Water	1300.12
Bow River	103,126	1299.16	n/a	Open Water	1299.16
Bow River	102,497	1298.09	n/a	Open Water	1298.09
Bow River	101,706	1297.29	n/a	Open Water	1297.29
Bow River	101,260	1296.55	n/a	Open Water	1296.55
Bow River	100,785	1295.95	n/a	Open Water	1295.95
Bow River	100,276	1295.47	n/a	Open Water	1295.47

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	99,728	1295.01	n/a	Open Water	1295.01
Bow River	99,027	1294.83	n/a	Open Water	1294.83
Bow River	98,134	1294.60	n/a	Open Water	1294.60
Bow River	97,769	1294.50	n/a	Open Water	1294.50
Bow River	97,378	1294.30	n/a	Open Water	1294.30
Bow River	97,076	1294.18	n/a	Open Water	1294.18
Bow River	96,451	1294.08	n/a	Open Water	1294.08
Bow River	94,012	1294.00	n/a	Open Water	1294.00
Bow River	93,591	1293.98	n/a	Open Water	1293.98
Bow River	93,261	1293.98	n/a	Open Water	1293.98
Bow River	92,667	1293.96	n/a	Open Water	1293.96
Bow River	92,367	1293.90	n/a	Open Water	1293.90
Bow River	92,095	1293.82	n/a	Open Water	1293.82
Bow River	91,818	1293.78	n/a	Open Water	1293.78
Bow River	91,466	1293.75	n/a	Open Water	1293.75
Bow River	91,102	1293.73	n/a	Open Water	1293.73
Bow River	90,778	1293.72	n/a	Open Water	1293.72
Bow River	90,350	1293.71	n/a	Open Water	1293.71
Bow River	89,770	1293.69	n/a	Open Water	1293.69
Bow River	89,451	1293.67	n/a	Open Water	1293.67
Bow River	89,200	1293.65	n/a	Open Water	1293.65
Bow River	88,802	1293.63	n/a	Open Water	1293.63
Bow River	88,345	1293.60	n/a	Open Water	1293.60
Bow River	88,021	1293.57	n/a	Open Water	1293.57
Bow River	87,652	1293.55	n/a	Open Water	1293.55
Bow River	87,519	1293.54	n/a	Open Water	1293.54
Bow River	87,122	1292.38	n/a	Open Water	1292.38
Bow River	86,899	1291.65	n/a	Open Water	1291.65
Bow River	86,717	1291.06	n/a	Open Water	1291.06
Bow River	86,352	1290.02	n/a	Open Water	1290.02
Bow River	86,209	1288.68	n/a	Open Water	1288.68
Bow River	85,929	1288.17	n/a	Open Water	1288.17
Bow River	85,513	1288.02	n/a	Open Water	1288.02

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	85,060	1287.83	n/a	Open Water	1287.83
Bow River	84,733	1287.39	n/a	Open Water	1287.39
Bow River	84,602	1287.01	n/a	Open Water	1287.01
Bow River	84,367	1286.32	n/a	Open Water	1286.32
Bow River	84,072	1285.80	n/a	Open Water	1285.80
Bow River	83,674	1285.26	n/a	Open Water	1285.26
Bow River	83,328	1284.71	n/a	Open Water	1284.71
Bow River	82,904	1284.33	n/a	Open Water	1284.33
Bow River	82,575	1284.19	n/a	Open Water	1284.19
Bow River	82,081	1283.73	n/a	Open Water	1283.73
Bow River	81,556	1283.41	n/a	Open Water	1283.41
Bow River	81,162	1283.20	n/a	Open Water	1283.20
Bow River	80,811	1283.07	n/a	Open Water	1283.07
Bow River	80,511	1282.92	n/a	Open Water	1282.92
Bow River	80,146	1282.50	n/a	Open Water	1282.50
Bow River	79,719	1281.71	n/a	Open Water	1281.71
Bow River	79,688	1281.60	n/a	Open Water	1281.60
Bow River	79,662	1281.48	n/a	Open Water	1281.48
Bow River	79,598	1281.34	n/a	Open Water	1281.34
Bow River	79,245	1281.04	n/a	Open Water	1281.04
Bow River	78,845	1280.91	n/a	Open Water	1280.91
Bow River	78,451	1280.79	n/a	Open Water	1280.79
Bow River	78,039	1280.65	n/a	Open Water	1280.65
Bow River	77,716	1280.38	n/a	Open Water	1280.38
Bow River	77,654	1280.31	n/a	Open Water	1280.31
Bow River	77,609	1280.30	n/a	Open Water	1280.30
Bow River	77,494	1280.20	n/a	Open Water	1280.20
Bow River	77,488	1265.68	n/a	Open Water	1265.68
Bow River	76,811	1259.41	n/a	Open Water	1259.41
Bow River	76,468	1259.10	n/a	Open Water	1259.10
Bow River	76,158	1258.88	n/a	Open Water	1258.88
Bow River	75,774	1258.70	n/a	Open Water	1258.70
Bow River	75,465	1257.85	n/a	Open Water	1257.85

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	75,281	1257.94	n/a	Open Water	1257.94
Bow River	75,120	1257.72	n/a	Open Water	1257.72
Bow River	74,927	1257.63	n/a	Open Water	1257.63
Bow River	74,746	1257.43	n/a	Open Water	1257.43
Bow River	74,376	1257.35	n/a	Open Water	1257.35
Bow River	74,053	1257.11	n/a	Open Water	1257.11
Bow River	73,903	1257.10	n/a	Open Water	1257.10
Bow River	73,863	1257.10	n/a	Open Water	1257.10
Bow River	73,845	1240.77	n/a	Open Water	1240.77
Bow River	73,571	1238.27	n/a	Open Water	1238.27
Bow River	73,410	1237.01	n/a	Open Water	1237.01
Bow River	73,134	1236.27	n/a	Open Water	1236.27
Bow River	72,680	1234.93	n/a	Open Water	1234.93
Bow River	72,441	1234.24	n/a	Open Water	1234.24
Bow River	71,892	1229.43	n/a	Open Water	1229.43
Bow River	71,726	1228.40	n/a	Open Water	1228.40
Bow River	71,458	1226.85	n/a	Open Water	1226.85
Bow River	71,322	1226.14	n/a	Open Water	1226.14
Bow River	70,886	1224.69	n/a	Open Water	1224.69
Bow River	70,342	1223.56	n/a	Open Water	1223.56
Bow River	69,862	1222.87	n/a	Open Water	1222.87
Bow River	69,341	1221.50	n/a	Open Water	1221.50
Bow River	69,060	1219.58	n/a	Open Water	1219.58
Bow River	68,797	1218.78	n/a	Open Water	1218.78
Bow River	68,599	1218.61	n/a	Open Water	1218.61
Bow River	68,516	1218.49	n/a	Open Water	1218.49
Bow River	68,296	1217.91	n/a	Open Water	1217.91
Bow River	68,089	1217.49	n/a	Open Water	1217.49
Bow River	67,716	1216.81	n/a	Open Water	1216.81
Bow River	67,419	1216.27	n/a	Open Water	1216.27
Bow River	67,278	1215.87	n/a	Open Water	1215.87
Bow River	67,115	1215.58	n/a	Open Water	1215.58
Bow River	66,773	1215.04	n/a	Open Water	1215.04

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	66,431	1214.57	n/a	Open Water	1214.57
Bow River	66,144	1214.16	n/a	Open Water	1214.16
Bow River	65,921	1213.16	n/a	Open Water	1213.16
Bow River	65,549	1212.53	n/a	Open Water	1212.53
Bow River	65,150	1212.00	n/a	Open Water	1212.00
Bow River	64,837	1211.32	n/a	Open Water	1211.32
Bow River	64,628	1211.11	n/a	Open Water	1211.11
Bow River	64,302	1210.78	n/a	Open Water	1210.78
Bow River	64,027	1210.13	n/a	Open Water	1210.13
Bow River	63,717	1209.26	n/a	Open Water	1209.26
Bow River	63,212	1208.55	n/a	Open Water	1208.55
Bow River	62,736	1207.57	n/a	Open Water	1207.57
Bow River	62,402	1206.89	n/a	Open Water	1206.89
Bow River	61,981	1206.35	n/a	Open Water	1206.35
Bow River	61,281	1205.20	n/a	Open Water	1205.20
Bow River	60,832	1204.45	n/a	Open Water	1204.45
Bow River	60,261	1203.49	n/a	Open Water	1203.49
Bow River	59,664	1202.16	n/a	Open Water	1202.16
Bow River	59,198	1201.07	n/a	Open Water	1201.07
Bow River	58,730	1199.92	n/a	Open Water	1199.92
Bow River	58,375	1199.15	n/a	Open Water	1199.15
Bow River	57,997	1198.22	n/a	Open Water	1198.22
Bow River	57,624	1196.87	n/a	Open Water	1196.87
Bow River	57,271	1196.06	n/a	Open Water	1196.06
Bow River	56,775	1195.07	n/a	Open Water	1195.07
Bow River	56,284	1193.94	n/a	Open Water	1193.94
Bow River	55,904	1193.44	n/a	Open Water	1193.44
Bow River	55,458	1192.96	n/a	Open Water	1192.96
Bow River	55,088	1192.54	n/a	Open Water	1192.54
Bow River	54,806	1192.54	n/a	Open Water	1192.54
Bow River	54,585	1192.50	n/a	Open Water	1192.50
Bow River	54,487	1192.29	n/a	Open Water	1192.29
Bow River	54,433	1192.11	n/a	Open Water	1192.11

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	54,283	1192.13	n/a	Open Water	1192.13
Bow River	54,078	1192.10	n/a	Open Water	1192.10
Bow River	53,802	1192.06	n/a	Open Water	1192.06
Bow River	53,388	1191.98	n/a	Open Water	1191.98
Bow River	52,796	1191.93	n/a	Open Water	1191.93
Bow River	52,139	1191.88	n/a	Open Water	1191.88
Bow River	51,427	1191.84	n/a	Open Water	1191.84
Bow River	50,452	1191.80	n/a	Open Water	1191.80
Bow River	49,366	1191.80	n/a	Open Water	1191.80
Bow River	48,977	1191.80	n/a	Open Water	1191.80
Bow River	47,540	1191.80	n/a	Open Water	1191.80
Bow River	45,971	1191.80	n/a	Open Water	1191.80
Bow River	44,631	1191.80	n/a	Open Water	1191.80
Bow River	42,928	1191.80	n/a	Open Water	1191.80
Bow River	42,170	1191.80	n/a	Open Water	1191.80
Bow River	42,132	1162.92	n/a	Open Water	1162.92
Bow River	41,824	1161.92	1158.99	Open Water	1161.92
Bow River	41,537	1161.44	1158.73	Open Water	1161.44
Bow River	41,361	1160.93	1158.41	Open Water	1160.93
Bow River	40,989	1159.61	1157.23	Open Water	1159.61
Bow River	40,712	1159.15	1156.91	Open Water	1159.15
Bow River	40,439	1158.77	1156.46	Open Water	1158.77
Bow River	40,129	1158.09	1155.48	Open Water	1158.09
Bow River	39,836	1157.47	1154.18	Open Water	1157.47
Bow River	39,478	1156.46	1153.33	Open Water	1156.46
Bow River	39,161	1155.83	1153.05	Open Water	1155.83
Bow River	38,875	1155.27	1152.60	Open Water	1155.27
Bow River	38,529	1154.67	1151.59	Open Water	1154.67
Bow River	38,248	1153.91	1150.73	Open Water	1153.91
Bow River	38,018	1153.29	1150.25	Open Water	1153.29
Bow River	37,774	1153.02	1149.89	Open Water	1153.02
Bow River	37,502	1152.26	1149.59	Open Water	1152.26
Bow River	37,086	1151.37	1148.95	Open Water	1151.37

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	36,785	1150.61	1148.33	Open Water	1150.61
Bow River	36,450	1149.69	1147.00	Open Water	1149.69
Bow River	36,158	1148.85	1146.64	Open Water	1148.85
Bow River	35,863	1148.05	1146.48	Open Water	1148.05
Bow River	35,381	1146.91	1146.19	Open Water	1146.91
Bow River	35,009	1145.92	1145.91	Open Water	1145.92
Bow River	34,562	1145.16	1145.18	Ice Jam	1145.18
Bow River	34,140	1144.38	1144.60	Ice Jam	1144.60
Bow River	33,877	1143.74	1144.11	Ice Jam	1144.11
Bow River	33,609	1143.19	1143.55	Ice Jam	1143.55
Bow River	33,289	1142.60	1142.96	Ice Jam	1142.96
Bow River	32,977	1141.84	1142.37	Ice Jam	1142.37
Bow River	32,605	1141.15	1141.82	Ice Jam	1141.82
Bow River	32,220	1140.38	1140.91	Ice Jam	1140.91
Bow River	31,935	1139.99	1140.44	Ice Jam	1140.44
Bow River	31,588	1139.27	1139.98	Ice Jam	1139.98
Bow River	31,260	1138.66	1139.39	Ice Jam	1139.39
Bow River	30,935	1137.99	1138.74	Ice Jam	1138.74
Bow River	30,566	1137.14	1138.02	Ice Jam	1138.02
Bow River	30,214	1136.49	1137.22	Ice Jam	1137.22
Bow River	29,937	1136.02	1136.80	Ice Jam	1136.80
Bow River	29,563	1135.40	1136.24	Ice Jam	1136.24
Bow River	29,172	1134.77	1135.43	Ice Jam	1135.43
Bow River	28,925	1134.07	1135.03	Ice Jam	1135.03
Bow River	28,798	1133.97	1134.78	Ice Jam	1134.78
Bow River	28,448	1133.16	1134.03	Ice Jam	1134.03
Bow River	27,998	1132.29	1133.22	Ice Jam	1133.22
Bow River	27,701	1131.84	1132.73	Ice Jam	1132.73
Bow River	27,469	1131.32	1132.26	Ice Jam	1132.26
Bow River	27,386	1130.98	1132.14	Ice Jam	1132.14
Bow River	27,359	1130.77	1132.09*	Ice Jam	1132.09
Bow River	27,295	1130.72	1131.97	Ice Jam	1131.97
Bow River	27,116	1130.29	1131.61	Ice Jam	1131.61

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	26,844	1129.73	1131.02	Ice Jam	1131.02
Bow River	26,671	1129.64	1130.63	Ice Jam	1130.63
Bow River	26,466	1129.34	1130.17	Ice Jam	1130.17
Bow River	26,203	1128.54	1129.49	Ice Jam	1129.49
Bow River	25,944	1128.10	1129.01	Ice Jam	1129.01
Bow River	25,748	1127.72	1128.65	Ice Jam	1128.65
Bow River	25,534	1127.35	1128.29	Ice Jam	1128.29
Bow River	25,343	1127.18	1127.95	Ice Jam	1127.95
Bow River	25,205	1127.01	1127.69	Ice Jam	1127.69
Bow River	24,999	1126.50	1127.28	Ice Jam	1127.28
Bow River	24,879	1126.25	1127.02	Ice Jam	1127.02
Bow River	24,684	1126.01	1126.65	Ice Jam	1126.65
Bow River	24,482	1125.11	1126.19	Ice Jam	1126.19
Bow River	24,338	1124.73	1125.98	Ice Jam	1125.98
Bow River	24,132	1124.38	1125.58	Ice Jam	1125.58
Bow River	24,010	1124.13	1125.31	Ice Jam	1125.31
Bow River	23,713	1123.81	1124.46	Ice Jam	1124.46
Bow River	23,562	1123.52	1124.01	Ice Jam	1124.01
Bow River	23,415	1123.13	1123.72*	Ice Jam	1123.72
Bow River	23,391	1122.90	1123.67*	Ice Jam	1123.67
Bow River	23,317	1122.77	1123.52	Ice Jam	1123.52
Bow River	23,130	1122.43	1123.16	Ice Jam	1123.16
Bow River	22,973	1122.14	1122.83	Ice Jam	1122.83
Bow River	22,894	1122.16	1122.65	Ice Jam	1122.65
Bow River	22,726	1121.69	1122.23	Ice Jam	1122.23
Bow River	22,599	1121.18	1121.92	Ice Jam	1121.92
Bow River	22,340	1120.69	1121.40	Ice Jam	1121.40
Bow River	22,028	1120.38	1120.77	Ice Jam	1120.77
Bow River	21,803	1119.45	1120.39	Ice Jam	1120.39
Bow River	21,608	1119.12	1120.12	Ice Jam	1120.12
Bow River	21,421	1118.76	1119.91	Ice Jam	1119.91
Bow River	21,274	1118.53	1119.71	Ice Jam	1119.71
Bow River	21,235	1118.41	1119.64*	Ice Jam	1119.64

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	21,217	1118.28	1119.60*	Ice Jam	1119.60
Bow River	21,170	1118.22	1119.51	Ice Jam	1119.51
Bow River	21,030	1118.04	1119.12	Ice Jam	1119.12
Bow River	20,876	1117.59	1118.69	Ice Jam	1118.69
Bow River	20,666	1117.28	1118.22	Ice Jam	1118.22
Bow River	20,496	1116.95	1117.92	Ice Jam	1117.92
Bow River	20,329	1116.69	1117.66	Ice Jam	1117.66
Bow River	20,174	1116.51	1117.44	Ice Jam	1117.44
Bow River	19,933	1116.17	1117.00	Ice Jam	1117.00
Bow River	19,798	1115.88	1116.62	Ice Jam	1116.62
Bow River	19,603	1114.88	1116.09	Ice Jam	1116.09
Bow River	19,507	1114.59	1115.96	Ice Jam	1115.96
Bow River	19,342	1114.30	1115.75	Ice Jam	1115.75
Bow River	19,150	1114.16	1115.44	Ice Jam	1115.44
Bow River	18,984	1114.02	1115.11	Ice Jam	1115.11
Bow River	18,840	1113.76	1114.75	Ice Jam	1114.75
Bow River	18,709	1113.57	1114.52	Ice Jam	1114.52
Bow River	18,500	1113.28	1113.68	Ice Jam	1113.68
Bow River	18,270	1112.28	1113.24	Ice Jam	1113.24
Bow River	17,960	1111.66	1112.73	Ice Jam	1112.73
Bow River	17,680	1111.46	1112.38	Ice Jam	1112.38
Bow River	17,298	1110.74	1111.61	Ice Jam	1111.61
Bow River	16,969	1110.38	1110.93	Ice Jam	1110.93
Bow River	16,703	1109.68	1110.40	Ice Jam	1110.40
Bow River	16,437	1109.36	1110.01	Ice Jam	1110.01
Bow River	16,269	1109.12	1109.75	Ice Jam	1109.75
Bow River	16,024	1108.70	1109.23	Ice Jam	1109.23
Bow River	15,830	1108.39	1108.95	Ice Jam	1108.95
Bow River	15,648	1108.29	1108.66	Ice Jam	1108.66
Bow River	15,440	1107.62	1108.27	Ice Jam	1108.27
Bow River	15,224	1107.32	1107.97	Ice Jam	1107.97
Bow River	14,981	1106.84	1107.59	Ice Jam	1107.59
Bow River	14,763	1106.30	1107.23	Ice Jam	1107.23

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	14,383	1105.44	1106.56	Ice Jam	1106.56
Bow River	14,213	1105.12	1106.28	Ice Jam	1106.28
Bow River	13,874	1104.46	1105.49	Ice Jam	1105.49
Bow River	13,626	1103.93	1105.06	Ice Jam	1105.06
Bow River	13,399	1103.75	1104.71	Ice Jam	1104.71
Bow River	13,018	1102.81	1104.03	Ice Jam	1104.03
Bow River	12,701	1102.19	1103.47	Ice Jam	1103.47
Bow River	12,451	1101.71	1102.85	Ice Jam	1102.85
Bow River	12,234	1101.31	1102.47	Ice Jam	1102.47
Bow River	11,894	1100.98	1102.01	Ice Jam	1102.01
Bow River	11,503	1100.14	1101.29	Ice Jam	1101.29
Bow River	11,230	1099.57	1100.87	Ice Jam	1100.87
Bow River	10,967	1099.21	1100.51	Ice Jam	1100.51
Bow River	10,591	1098.70	1099.98	Ice Jam	1099.98
Bow River	10,200	1097.87	1099.02	Ice Jam	1099.02
Bow River	10,063	1097.79	1098.75	Ice Jam	1098.75
Bow River	9,667	1097.21	1097.89	Ice Jam	1097.89
Bow River	9,467	1096.76	1097.35	Ice Jam	1097.35
Bow River	9,283	1096.29	1097.03	Ice Jam	1097.03
Bow River	9,041	1096.12	1096.69	Ice Jam	1096.69
Bow River	8,729	1095.35	1096.19	Ice Jam	1096.19
Bow River	8,459	1094.95	1095.69	Ice Jam	1095.69
Bow River	8,192	1094.69	1095.17	Ice Jam	1095.17
Bow River	7,916	1094.06	1094.74	Ice Jam	1094.74
Bow River	7,653	1093.70	1094.36	Ice Jam	1094.36
Bow River	7,469	1093.39	1094.13	Ice Jam	1094.13
Bow River	7,251	1093.03	1093.96	Ice Jam	1093.96
Bow River	7,027	1092.80	1093.77	Ice Jam	1093.77
Bow River	6,740	1092.39	1093.41	Ice Jam	1093.41
Bow River	6,416	1091.97	1093.07	Ice Jam	1093.07
Bow River	6,005	1091.74	1092.28	Ice Jam	1092.28
Bow River	5,633	1091.61	1091.68	Ice Jam	1091.68
Bow River	5,196	1091.51	1091.43	Open Water	1091.51

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	4,675	1091.36	1090.92	Open Water	1091.36
Bow River	4,201	1091.23	1090.91	Open Water	1091.23
Bow River	3,744	1091.15	1090.91	Open Water	1091.15
Bow River	3,204	1091.06	1090.90	Open Water	1091.06
Bow River	2,677	1091.05	1090.90	Open Water	1091.05
Bow River	2,148	1091.04	1090.90	Open Water	1091.04
Bow River	1,302	1091.02	1090.90	Open Water	1091.02
Bow River	329	1091.01	1090.90	Open Water	1091.01
Bow River	12	1090.90	1090.90	Open Water	1090.90
Bighill Creek	6,300	1165.17	n/a	Open Water	1165.17
Bighill Creek	6,133	1164.04	n/a	Open Water	1164.04
Bighill Creek	5,995	1163.08	n/a	Open Water	1163.08
Bighill Creek	5,798	1161.90	n/a	Open Water	1161.90
Bighill Creek	5,618	1160.34	n/a	Open Water	1160.34
Bighill Creek	5,483	1159.06	n/a	Open Water	1159.06
Bighill Creek	5,403	1158.18	n/a	Open Water	1158.18
Bighill Creek	5,281	1157.44	n/a	Open Water	1157.44
Bighill Creek	5,185	1156.57	n/a	Open Water	1156.57
Bighill Creek	5,129	1156.21	n/a	Open Water	1156.21
Bighill Creek	5,092	1156.10	n/a	Open Water	1156.10
Bighill Creek	5,082	1155.74	n/a	Open Water	1155.74
Bighill Creek	5,064	1155.66	n/a	Open Water	1155.66
Bighill Creek	5,060	1155.33	n/a	Open Water	1155.33
Bighill Creek	5,030	1155.14	n/a	Open Water	1155.14
Bighill Creek	4,966	1154.34	n/a	Open Water	1154.34
Bighill Creek	4,883	1153.71	n/a	Open Water	1153.71
Bighill Creek	4,810	1153.39	n/a	Open Water	1153.39
Bighill Creek	4,715	1152.78	n/a	Open Water	1152.78
Bighill Creek	4,639	1152.30	n/a	Open Water	1152.30
Bighill Creek	4,527	1151.52	n/a	Open Water	1151.52
Bighill Creek	4,461	1151.19	n/a	Open Water	1151.19
Bighill Creek	4,363	1150.59	n/a	Open Water	1150.59
Bighill Creek	4,357	1150.43	n/a	Open Water	1150.43

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bighill Creek	4,295	1150.09	n/a	Open Water	1150.09
Bighill Creek	4,203	1149.33	n/a	Open Water	1149.33
Bighill Creek	4,129	1148.37	n/a	Open Water	1148.37
Bighill Creek	4,055	1147.86	n/a	Open Water	1147.86
Bighill Creek	3,915	1147.07	n/a	Open Water	1147.07
Bighill Creek	3,851	1146.30	n/a	Open Water	1146.30
Bighill Creek	3,797	1145.91	n/a	Open Water	1145.91
Bighill Creek	3,790	1145.78	n/a	Open Water	1145.78
Bighill Creek	3,675	1145.22	n/a	Open Water	1145.22
Bighill Creek	3,563	1144.47	n/a	Open Water	1144.47
Bighill Creek	3,388	1143.90	n/a	Open Water	1143.90
Bighill Creek	3,382	1143.87	n/a	Open Water	1143.87
Bighill Creek	3,263	1143.46	n/a	Open Water	1143.46
Bighill Creek	3,094	1142.88	n/a	Open Water	1142.88
Bighill Creek	2,960	1142.41	n/a	Open Water	1142.41
Bighill Creek	2,905	1142.34	n/a	Open Water	1142.34
Bighill Creek	2,848	1142.12	n/a	Open Water	1142.12
Bighill Creek	2,826	1142.09	n/a	Open Water	1142.09
Bighill Creek	2,804	1141.58	n/a	Open Water	1141.58
Bighill Creek	2,792	1141.55	n/a	Open Water	1141.55
Bighill Creek	2,780	1141.40	n/a	Open Water	1141.40
Bighill Creek	2,761	1141.32	n/a	Open Water	1141.32
Bighill Creek	2,748	1141.22	n/a	Open Water	1141.22
Bighill Creek	2,729	1140.87	n/a	Open Water	1140.87
Bighill Creek	2,676	1140.73	n/a	Open Water	1140.73
Bighill Creek	2,631	1140.48	n/a	Open Water	1140.48
Bighill Creek	2,573	1140.39	n/a	Open Water	1140.39
Bighill Creek	2,543	1140.10	n/a	Open Water	1140.10
Bighill Creek	2,517	1139.97	n/a	Open Water	1139.97
Bighill Creek	2,482	1139.00	n/a	Open Water	1139.00
Bighill Creek	2,387	1138.82	n/a	Open Water	1138.82
Bighill Creek	2,267	1138.15	n/a	Open Water	1138.15
Bighill Creek	2,161	1137.67	n/a	Open Water	1137.67

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bighill Creek	2,154	1137.40	n/a	Open Water	1137.40
Bighill Creek	2,106	1137.04	n/a	Open Water	1137.04
Bighill Creek	1,937	1136.60	n/a	Open Water	1136.60
Bighill Creek	1,769	1136.09	n/a	Open Water	1136.09
Bighill Creek	1,723	1135.86	n/a	Open Water	1135.86
Bighill Creek	1,720	1135.78	n/a	Open Water	1135.78
Bighill Creek	1,606	1135.11	n/a	Open Water	1135.11
Bighill Creek	1,536	1134.82	n/a	Open Water	1134.82
Bighill Creek	1,501	1134.58	n/a	Open Water	1134.58
Bighill Creek	1,484	1134.01	n/a	Open Water	1134.01
Bighill Creek	1,395	1132.47	n/a	Open Water	1132.47
Bighill Creek	1,212	1131.77	n/a	Open Water	1131.77
Bighill Creek	1,202	1131.36	n/a	Open Water	1131.36
Bighill Creek	1,168	1130.99	n/a	Open Water	1130.99
Bighill Creek	1,095	1130.29	n/a	Open Water	1130.29
Bighill Creek	995	1129.37	n/a	Open Water	1129.37
Bighill Creek	989	1129.28	n/a	Open Water	1129.28
Bighill Creek	915	1128.47	n/a	Open Water	1128.47
Bighill Creek	822	1127.44	n/a	Open Water	1127.44
Bighill Creek	740	1126.72	n/a	Open Water	1126.72
Bighill Creek	617	1126.62	n/a	Open Water	1126.62
Bighill Creek	586	1126.61	n/a	Open Water	1126.61
Bighill Creek	576	1126.61	n/a	Open Water	1126.61
Bighill Creek	505	1126.58	n/a	Open Water	1126.58
Bighill Creek	454	1124.27	n/a	Open Water	1124.27
Bighill Creek	376	1123.74	n/a	Open Water	1123.74
Bighill Creek	369	1123.49	1122.83 ^A	Open Water	1123.49
Bighill Creek	335	1122.79	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	262	1122.71	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	211	1122.70	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	206	1122.70	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	185	1122.70	1122.83 ^A	Ice Jam	1122.83
Exshaw Creek	1,319	1342.75	n/a	Open Water	1342.75

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Exshaw Creek	1,182	1338.97	n/a	Open Water	1338.97
Exshaw Creek	1,105	1335.69	n/a	Open Water	1335.69
Exshaw Creek	1,014	1331.54	n/a	Open Water	1331.54
Exshaw Creek	922	1328.19	n/a	Open Water	1328.19
Exshaw Creek	838	1323.16	n/a	Open Water	1323.16
Exshaw Creek	708	1317.90	n/a	Open Water	1317.90
Exshaw Creek	593	1313.16	n/a	Open Water	1313.16
Exshaw Creek	475	1307.83	n/a	Open Water	1307.83
Exshaw Creek	454	1306.31	n/a	Open Water	1306.31
Exshaw Creek	449	1306.14	n/a	Open Water	1306.14
Exshaw Creek	434	1305.72	n/a	Open Water	1305.72
Exshaw Creek	352	1302.59	n/a	Open Water	1302.59
Exshaw Creek	233	1297.29	n/a	Open Water	1297.29
Exshaw Creek	219	1297.13	n/a	Open Water	1297.13
Exshaw Creek	198	1296.21	n/a	Open Water	1296.21
Exshaw Creek	190	1295.64	n/a	Open Water	1295.64
Exshaw Creek	171	1294.23	n/a	Open Water	1294.23
Exshaw Creek	161	1294.08	n/a	Open Water	1294.08
Exshaw Creek	147	1294.03	n/a	Open Water	1294.03
Exshaw Creek	133	1293.90	n/a	Open Water	1293.90
Exshaw Creek	118	1293.69	n/a	Open Water	1293.69
Exshaw Creek	104	1293.27	n/a	Open Water	1293.27
Exshaw Creek	89	1292.47	n/a	Open Water	1292.47
Jumpingpound Creek	5,294	1154.88	n/a	Open Water	1154.88
Jumpingpound Creek	5,202	1154.07	n/a	Open Water	1154.07
Jumpingpound Creek	5,101	1153.46	n/a	Open Water	1153.46
Jumpingpound Creek	4,984	1152.85	n/a	Open Water	1152.85
Jumpingpound Creek	4,882	1152.25	n/a	Open Water	1152.25
Jumpingpound Creek	4,791	1151.91	n/a	Open Water	1151.91
Jumpingpound Creek	4,648	1150.63	n/a	Open Water	1150.63
Jumpingpound Creek	4,550	1150.09	n/a	Open Water	1150.09
Jumpingpound Creek	4,463	1149.85	n/a	Open Water	1149.85
Jumpingpound Creek	4,369	1149.49	n/a	Open Water	1149.49

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Jumpingpound Creek	4,277	1148.43	n/a	Open Water	1148.43
Jumpingpound Creek	4,168	1148.29	n/a	Open Water	1148.29
Jumpingpound Creek	4,040	1147.04	n/a	Open Water	1147.04
Jumpingpound Creek	3,915	1146.85	n/a	Open Water	1146.85
Jumpingpound Creek	3,824	1145.98	n/a	Open Water	1145.98
Jumpingpound Creek	3,672	1145.27	n/a	Open Water	1145.27
Jumpingpound Creek	3,591	1144.53	n/a	Open Water	1144.53
Jumpingpound Creek	3,503	1143.90	n/a	Open Water	1143.90
Jumpingpound Creek	3,363	1143.57	n/a	Open Water	1143.57
Jumpingpound Creek	3,202	1142.30	n/a	Open Water	1142.30
Jumpingpound Creek	3,095	1141.43	n/a	Open Water	1141.43
Jumpingpound Creek	3,006	1140.83	n/a	Open Water	1140.83
Jumpingpound Creek	2,867	1140.28	n/a	Open Water	1140.28
Jumpingpound Creek	2,745	1139.86	n/a	Open Water	1139.86
Jumpingpound Creek	2,650	1139.11	n/a	Open Water	1139.11
Jumpingpound Creek	2,557	1138.57	n/a	Open Water	1138.57
Jumpingpound Creek	2,410	1137.99	n/a	Open Water	1137.99
Jumpingpound Creek	2,301	1137.42	n/a	Open Water	1137.42
Jumpingpound Creek	2,181	1136.72	n/a	Open Water	1136.72
Jumpingpound Creek	2,081	1136.33	n/a	Open Water	1136.33
Jumpingpound Creek	1,861	1134.61	n/a	Open Water	1134.61
Jumpingpound Creek	1,733	1134.29	n/a	Open Water	1134.29
Jumpingpound Creek	1,592	1134.02	n/a	Open Water	1134.02
Jumpingpound Creek	1,455	1132.92	n/a	Open Water	1132.92
Jumpingpound Creek	1,327	1132.33	n/a	Open Water	1132.33
Jumpingpound Creek	1,224	1131.93	n/a	Open Water	1131.93
Jumpingpound Creek	1,056	1131.01	n/a	Open Water	1131.01
Jumpingpound Creek	901	1130.65	n/a	Open Water	1130.65
Jumpingpound Creek	791	1130.52	n/a	Open Water	1130.52
Jumpingpound Creek	722	1130.51	n/a	Open Water	1130.51
Jumpingpound Creek	665	1130.29	n/a	Open Water	1130.29
Jumpingpound Creek	625	1128.93	n/a	Open Water	1128.93
Jumpingpound Creek	562	1128.76	n/a	Open Water	1128.76

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Jumpingpound Creek	501	1127.91	n/a	Open Water	1127.91
Jumpingpound Creek	386	1127.34	1127.02 ^B	Open Water	1127.34
Jumpingpound Creek	232	1126.76	1127.02 ^B	Ice Jam	1127.02
Jumpingpound Creek	116	1126.27	1127.02 ^B	Ice Jam	1127.02
Policeman Creek	6,418	1313.76	n/a	Open Water	1313.76
Policeman Creek	6,410	1313.73	n/a	Open Water	1313.73
Policeman Creek	6,344	1313.64	n/a	Open Water	1313.64
Policeman Creek	6,312	1313.57	n/a	Open Water	1313.57
Policeman Creek	6,227	1313.37	n/a	Open Water	1313.37
Policeman Creek	6,126	1313.11	n/a	Open Water	1313.11
Policeman Creek	6,075	1312.98	n/a	Open Water	1312.98
Policeman Creek	6,023	1312.88	n/a	Open Water	1312.88
Policeman Creek	5,960	1312.81	n/a	Open Water	1312.81
Policeman Creek	5,946	1312.66	n/a	Open Water	1312.66
Policeman Creek	5,877	1312.65	n/a	Open Water	1312.65
Policeman Creek	5,782	1312.64	n/a	Open Water	1312.64
Policeman Creek	5,719	1312.64	n/a	Open Water	1312.64
Policeman Creek	5,673	1312.60	n/a	Open Water	1312.60
Policeman Creek	5,666	1312.30	n/a	Open Water	1312.30
Policeman Creek	5,651	1312.15	n/a	Open Water	1312.15
Policeman Creek	5,646	1311.93	n/a	Open Water	1311.93
Policeman Creek	5,599	1311.68	n/a	Open Water	1311.68
Policeman Creek	5,531	1311.67	n/a	Open Water	1311.67
Policeman Creek	5,468	1311.64	n/a	Open Water	1311.64
Policeman Creek	5,364	1311.61	n/a	Open Water	1311.61
Policeman Creek	5,257	1311.59	n/a	Open Water	1311.59
Policeman Creek	5,248	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,163	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,110	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,101	1311.57	n/a	Open Water	1311.57
Policeman Creek	5,023	1311.56	n/a	Open Water	1311.56
Policeman Creek	4,985	1311.10	n/a	Open Water	1311.10
Policeman Creek	4,936	1311.00	n/a	Open Water	1311.00

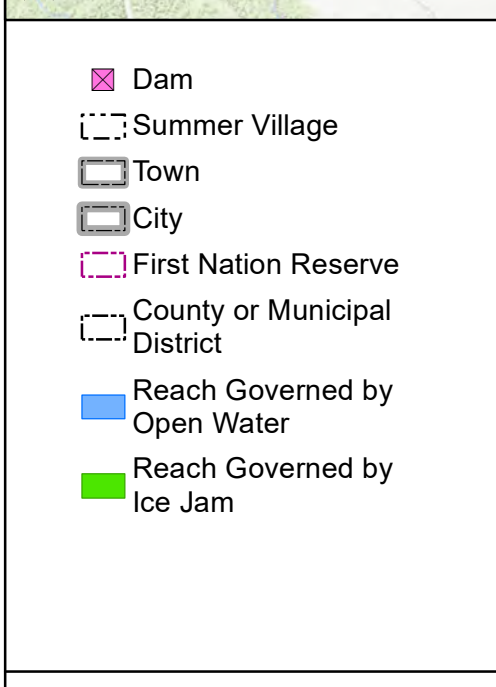
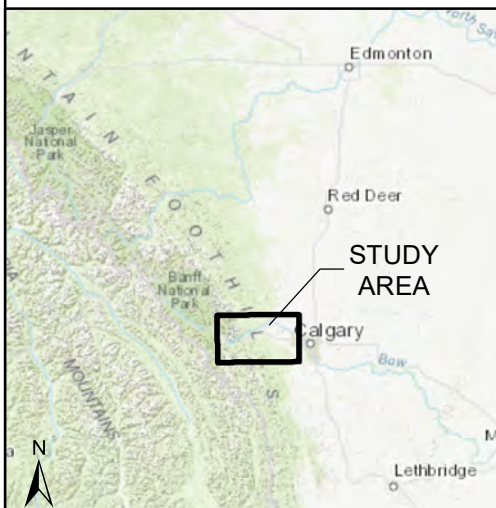
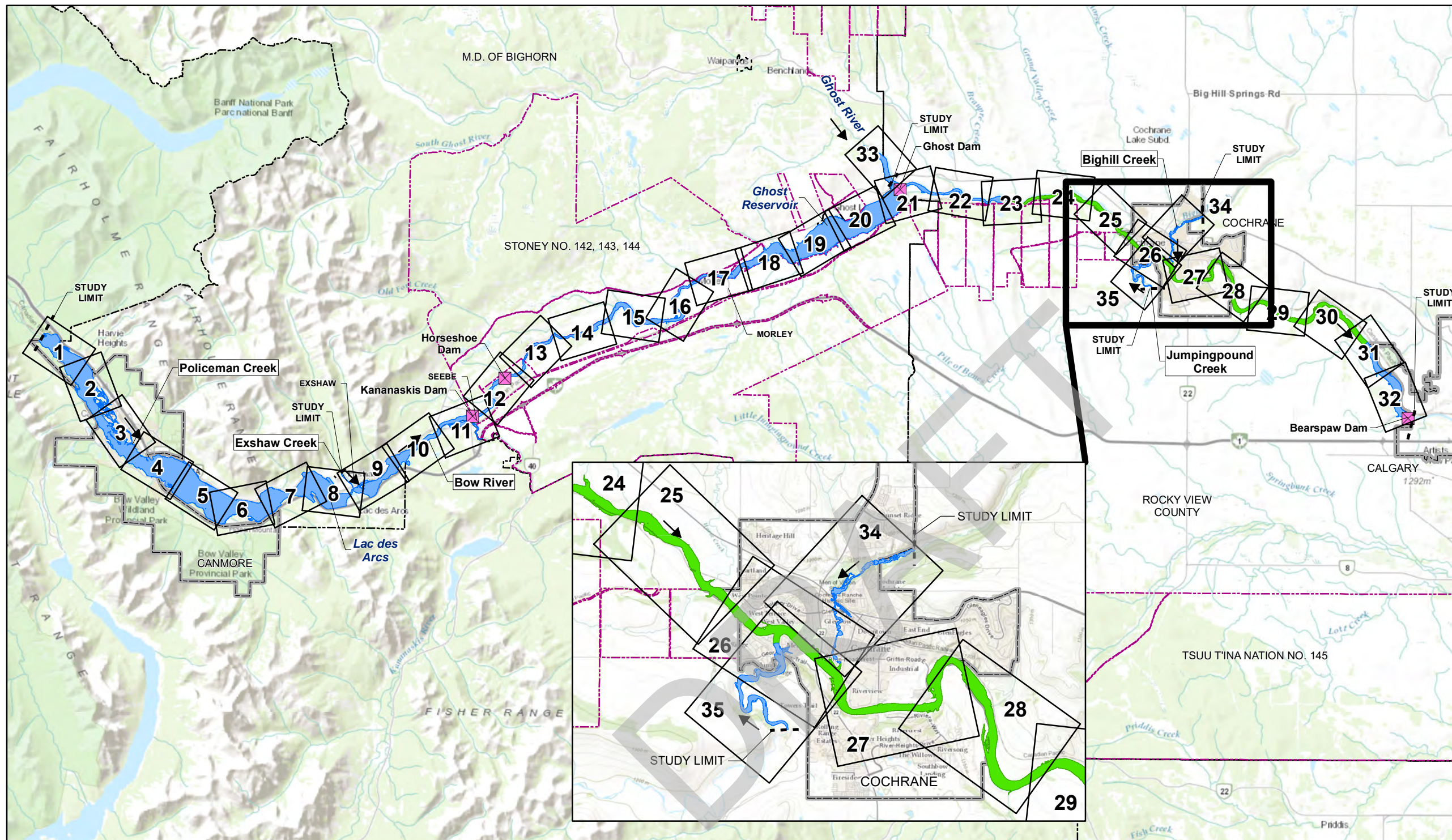
River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Policeman Creek	4,907	1310.77	n/a	Open Water	1310.77
Policeman Creek	4,880	1310.51	n/a	Open Water	1310.51
Policeman Creek	4,855	1310.42	n/a	Open Water	1310.42
Policeman Creek	4,852	1310.20	n/a	Open Water	1310.20
Policeman Creek	4,796	1310.08	n/a	Open Water	1310.08
Policeman Creek	4,726	1310.05	n/a	Open Water	1310.05
Policeman Creek	4,720	1310.01	n/a	Open Water	1310.01
Policeman Creek	4,714	1310.00	n/a	Open Water	1310.00
Policeman Creek	4,675	1309.95	n/a	Open Water	1309.95
Policeman Creek	4,603	1309.72	n/a	Open Water	1309.72
Policeman Creek	4,544	1309.47	n/a	Open Water	1309.47
Policeman Creek	4,463	1309.08	n/a	Open Water	1309.08
Policeman Creek	4,380	1308.81	n/a	Open Water	1308.81
Policeman Creek	4,337	1308.78	n/a	Open Water	1308.78
Policeman Creek	4,320	1308.62	n/a	Open Water	1308.62
Policeman Creek	4,220	1308.50	n/a	Open Water	1308.50
Policeman Creek	4,184	1308.47	n/a	Open Water	1308.47
Policeman Creek	4,030	1308.32	n/a	Open Water	1308.32
Policeman Creek	3,921	1308.24	n/a	Open Water	1308.24
Policeman Creek	3,888	1308.18	n/a	Open Water	1308.18
Policeman Creek	3,862	1308.00	n/a	Open Water	1308.00
Policeman Creek	3,835	1308.01	n/a	Open Water	1308.01
Policeman Creek	3,784	1308.00	n/a	Open Water	1308.00
Policeman Creek	3,713	1307.95	n/a	Open Water	1307.95
Policeman Creek	3,685	1307.53	n/a	Open Water	1307.53
Policeman Creek	3,527	1307.40	n/a	Open Water	1307.40
Policeman Creek	3,354	1307.36	n/a	Open Water	1307.36
Policeman Creek	3,191	1307.34	n/a	Open Water	1307.34
Policeman Creek	3,154	1307.31	n/a	Open Water	1307.31
Policeman Creek	3,141	1307.29	n/a	Open Water	1307.29
Policeman Creek	3,002	1307.14	n/a	Open Water	1307.14
Policeman Creek	2,822	1306.99	n/a	Open Water	1306.99
Policeman Creek	2,804	1306.96	n/a	Open Water	1306.96

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Policeman Creek	2,782	1306.95	n/a	Open Water	1306.95
Policeman Creek	2,666	1306.67	n/a	Open Water	1306.67
Policeman Creek	2,518	1306.54	n/a	Open Water	1306.54
Policeman Creek	2,394	1306.50	n/a	Open Water	1306.50
Policeman Creek	2,306	1306.49	n/a	Open Water	1306.49
Policeman Creek	2,128	1306.25	n/a	Open Water	1306.25
Policeman Creek	1,771	1306.19	n/a	Open Water	1306.19
Policeman Creek	1,560	1306.18	n/a	Open Water	1306.18
Policeman Creek	1,544	1306.18	n/a	Open Water	1306.18
Policeman Creek	1,373	1306.18	n/a	Open Water	1306.18

- Notes:** *
- * Denotes cross sections that were omitted from the ice enhanced model for improved model performance. The water surface elevation presented in the table were interpolated between the closest upstream and downstream cross sections.
 - A Ice jam water levels at the confluence of Bighill Creek with the Bow River were transferred upstream along Bighill Creek from Bow River RS 22,973.
 - B Ice jam water levels at the confluence of Jumpingpound Creek with the Bow River were transferred upstream along Jumpingpound Creek from Bow River RS 24,879.

MAPS AND DRAWINGS

DRAFT



Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	02-NOV-2022	

UPPER BOW RIVER HAZARD STUDY
GOVERNING DESIGN FLOOD HAZARD INDEX MAP
INDEX MAP

- Notes to Users:**
- Please refer to the accompanying **Upper Bow River Hazard Study – Governing Design Flood Hazard Mapping Report** for important information concerning these maps.
 - Within the flood inundation areas shown on this map, there may be isolated pockets of high ground. To determine whether or not a particular site is subject to flooding, reference should be made to the computed flood levels in conjunction with site-specific surveys where detailed definition is required.
 - Non-riverine and local sources of water have not been considered, and structures such as roads, railways or barriers such as levees can restrict water flow and affect local flood levels. Channel obstruction, local stormwater inflow, groundwater seepage or other land drainage can cause flood levels to exceed those indicated on the map. Lands adjacent to a flooded area may be subject to flooding from tributary streams not indicated on the maps.
 - Exshaw Creek is subject to debris flows during extreme events. Debris flows can cause flood levels to exceed those indicated on the map.
 - Backwater flood inundation along the Ghost River, Kananaskis River and other tributaries that were not modelled was considered using simulated water levels from the Bow River.
 - Full supply level (maximum operating water level) was assumed at Kananaskis, Horseshoe, Ghost, and Bears paw dams.
 - Line work for bridges and flood control structures is shown above flood inundation areas, even in cases where bridges or flood control structures are inundated.

Definitions:

Flood Hazard Map - A flood hazard map is a specific type of flood map that identifies the area flooded for the 1:100 design flood, and divides that flood hazard area into floodway and flood fringe zones. Flood hazard maps can also show additional flood hazard information, including the incremental areas at risk for more severe floods like the 1:200 and 1:500 floods. Flood hazard maps are typically used for long-term flood hazard area management and land-use planning.

Design Flood - The design flood standard in Alberta is the 1:100 flood, which is a flood that has a 1% chance of being equaled or exceeded in any given year. The design flood is typically based on the 1:100 open water flood, but it can also reflect 1:100 ice jam flood levels or be based on a historical flood event. Different sized floods have different chances of occurring – for example, a 1:200 flood has a 0.5% chance of occurring in any given year and a 1:500 flood has a 0.2% chance of occurring in any given year – but only the 1:100 design flood is used to define the floodway and flood fringe zones on flood hazard maps.

Floodway - When a floodway is first defined on a flood hazard map, it typically represents the area of highest flood hazard where flows are deepest, fastest, and most destructive during the 1:100 design flood. When a flood hazard map is updated, the floodway will not get larger in most circumstances to maintain long-term regulatory certainty, even if the flood hazard area gets larger or design flood levels get higher.

Flood Fringe - The flood fringe is the area outside of the floodway that is flooded or could be flooded during the 1:100 design flood. The flood fringe typically represents areas with

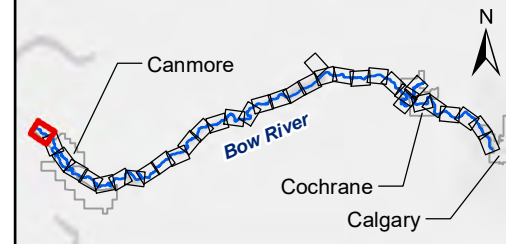
Definitions (continued):

shallower, slower, and less destructive flooding, but it may also include “high hazard flood fringe” areas. Areas at risk of flooding behind flood berms may also be mapped as “protected flood fringe” areas.

High Hazard Flood Fringe - The high hazard flood fringe identifies areas within the flood fringe with deeper or faster moving water than the rest of the flood fringe. High hazard flood fringe areas are likely to be most significant for flood maps that are being updated, but they may also be included in new flood maps.

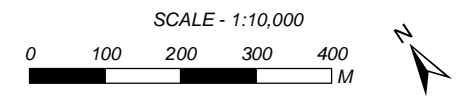
Protected Flood Fringe - The protected flood fringe identifies areas that could be flooded if dedicated flood berms fail or do not work as designed during the 1:100 design flood, even if they are not overtopped. Protected flood fringe areas are part of the flood fringe and do not differentiate between areas with deeper or faster moving water and shallower or slower moving water.

- Data Sources and References:**
- Orthophoto imagery acquired by ORTHOSHOP Geomatics Ltd. (3 June 2016) for Alberta Environment and Parks.
 - Base data from Town of Canmore, M.D. Bighorn, Town of Cochrane, Alberta Environment and Parks, AltaLIS and Natural Resources Canada.
 - Additional base mapping from Esri.



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 770 m³/s

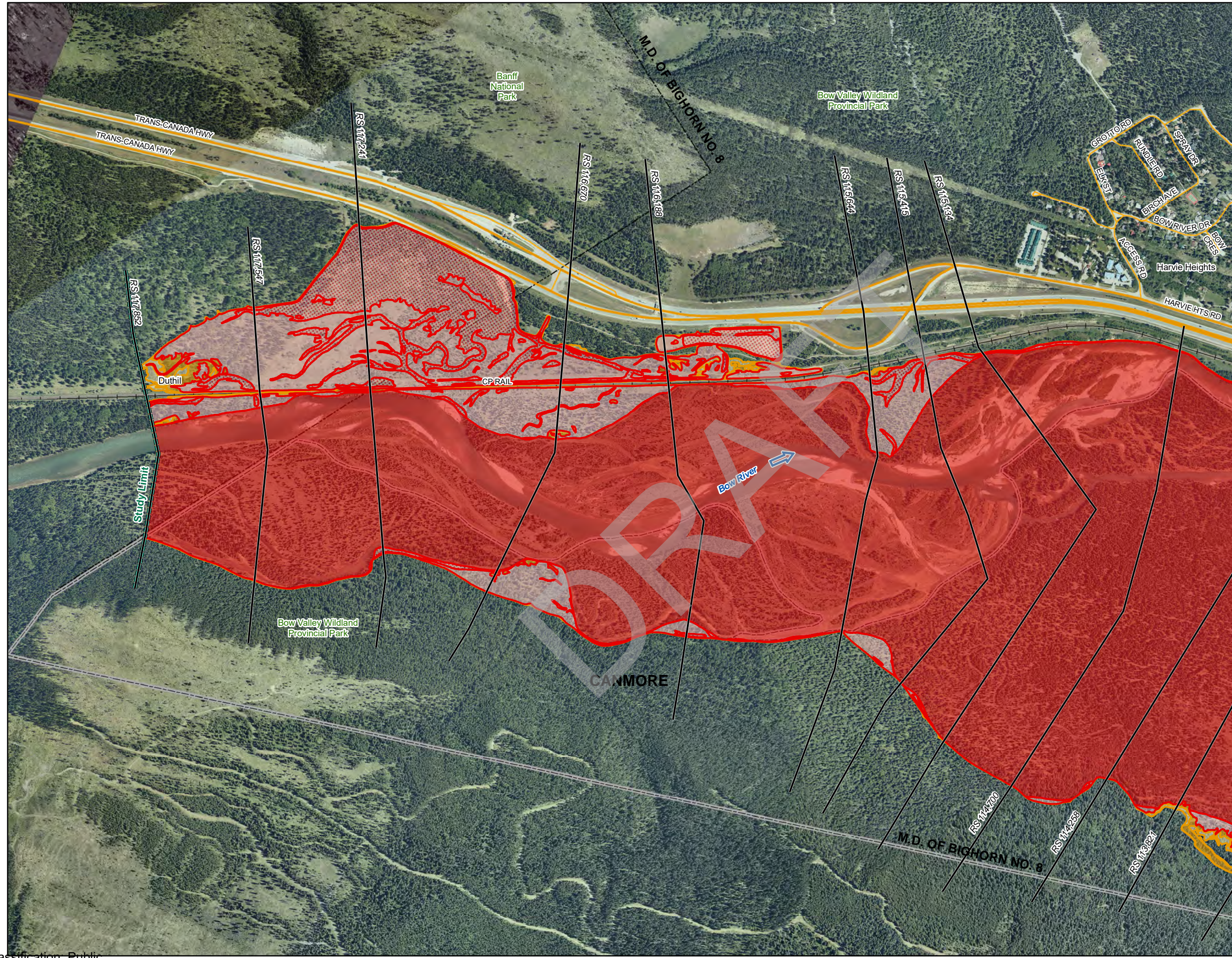


Coordinate System: NAD 1983 3TM 114
Units: METRES

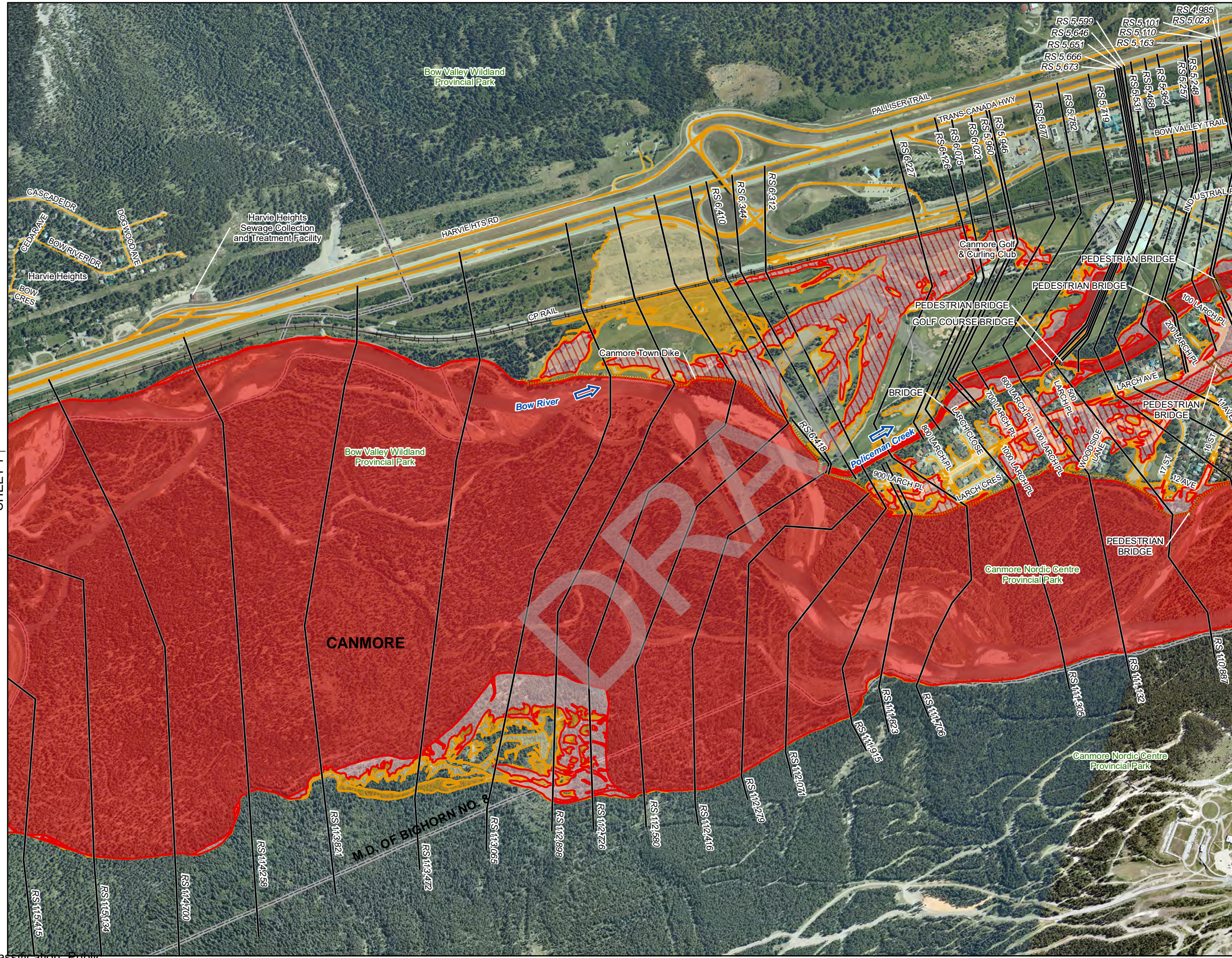
Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

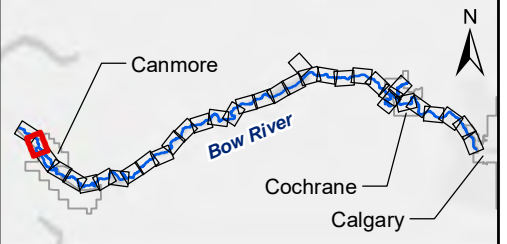


MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



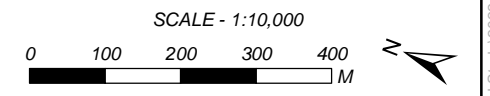
SHEET 1 ↑

↑ SHEET 3



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 770 m³/s
POLICEMAN CREEK = 10.8 m³/s



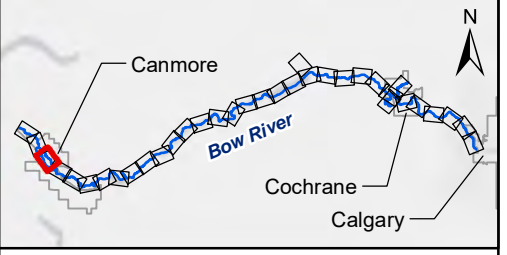
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

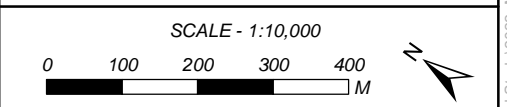
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER = 770 m³/s
 POLICEMAN CREEK = 10.8 m³/s



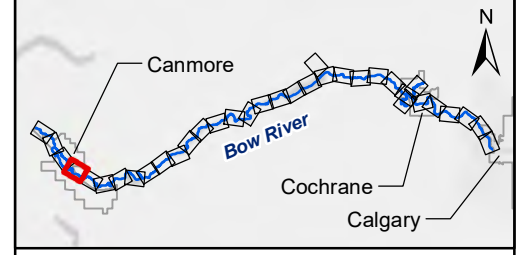
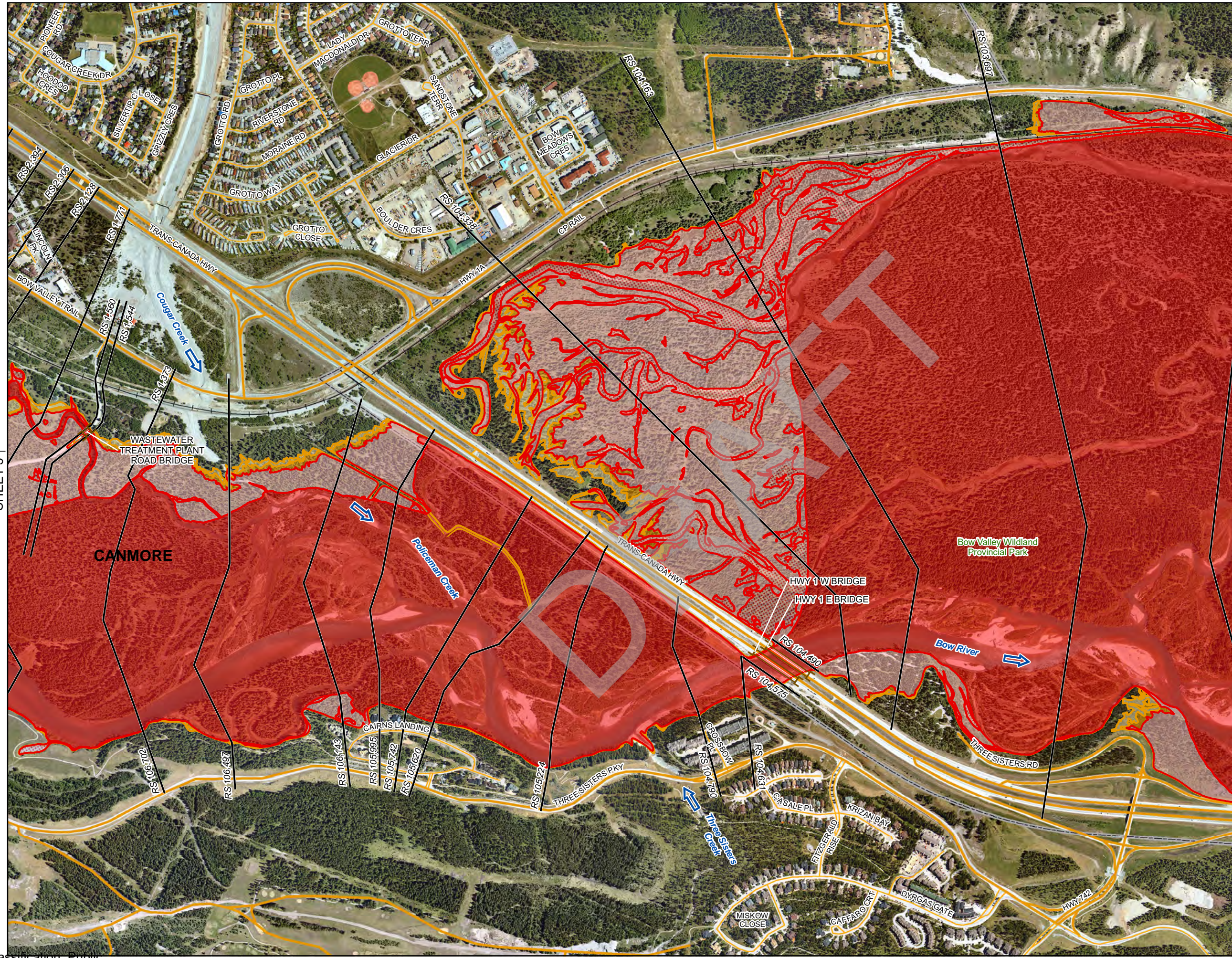
Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

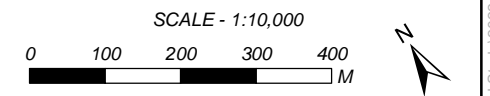
**GOVERNING DESIGN
 FLOOD HAZARD MAP**

C:\Users\Public\Documents\3001178_UpperBowRiverHazardStudy2022\Municipal_Review_Update\GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER ABOVE RS 104,338 = 770 m³/s
 BOW RIVER BELOW RS 104,338 = 843 m³/s
 POLICEMAN CREEK = 10.8 m³/s



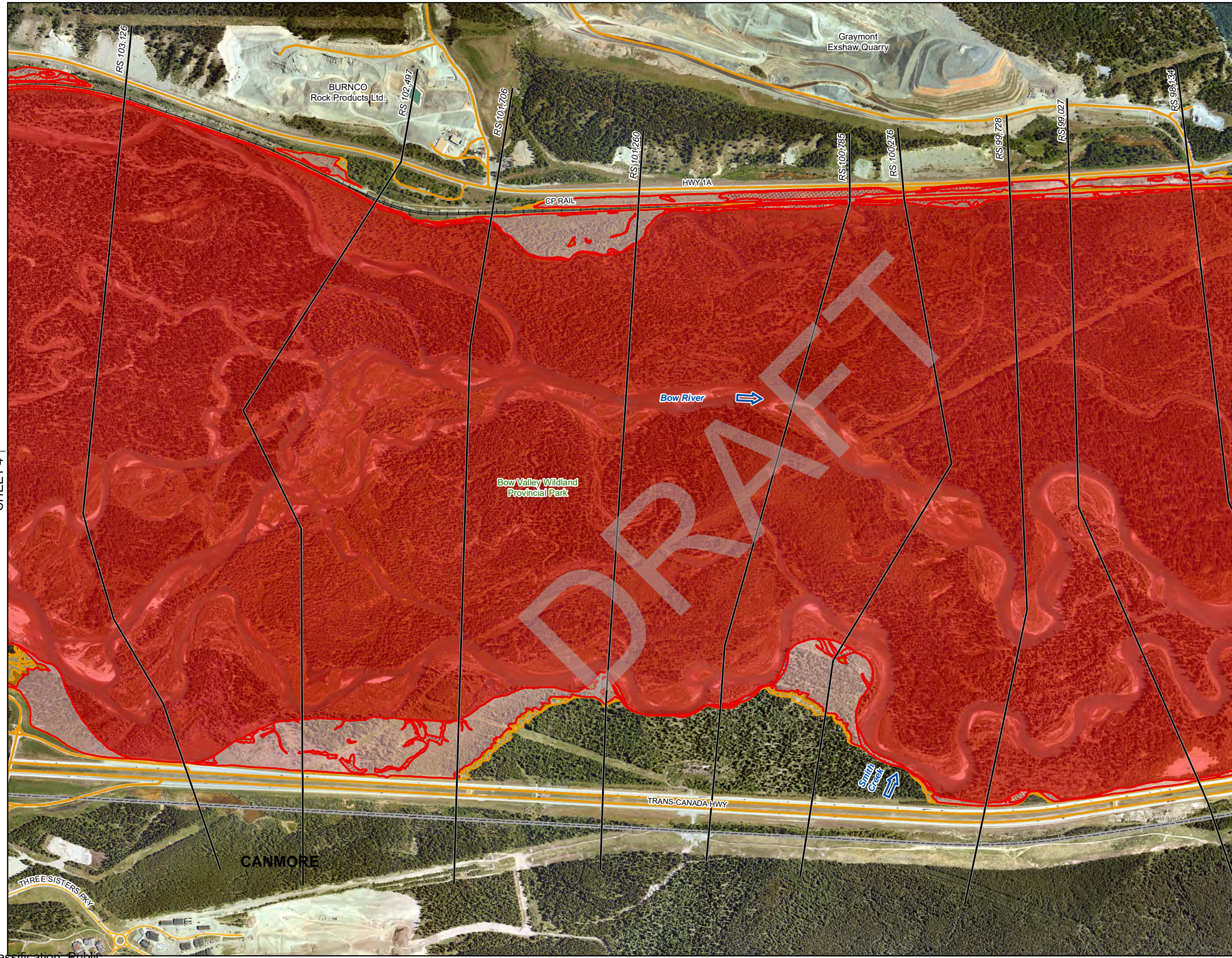
Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

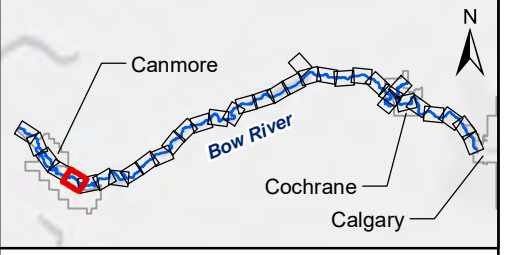
GOVERNING DESIGN FLOOD HAZARD MAP

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



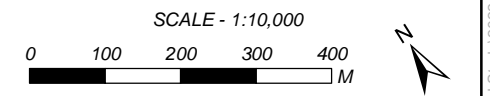
SHEET 4 ↑

↓ SHEET 6



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s



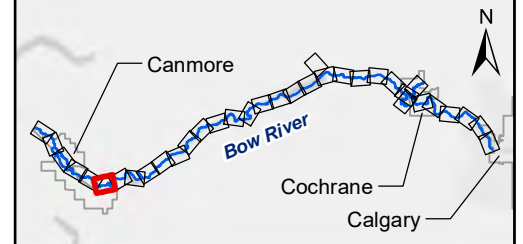
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

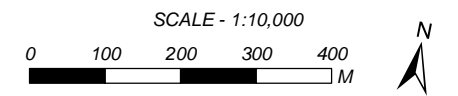
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s

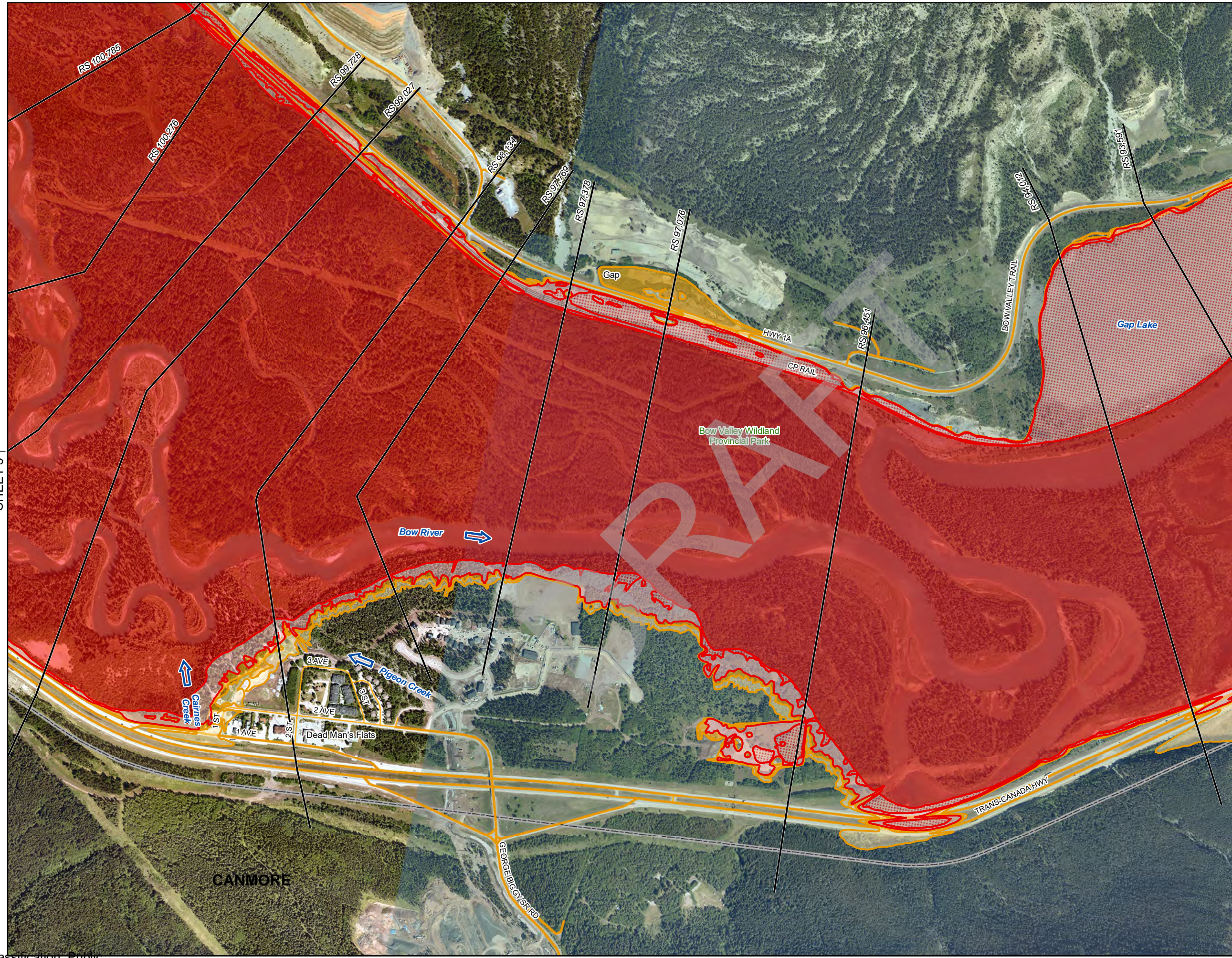


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

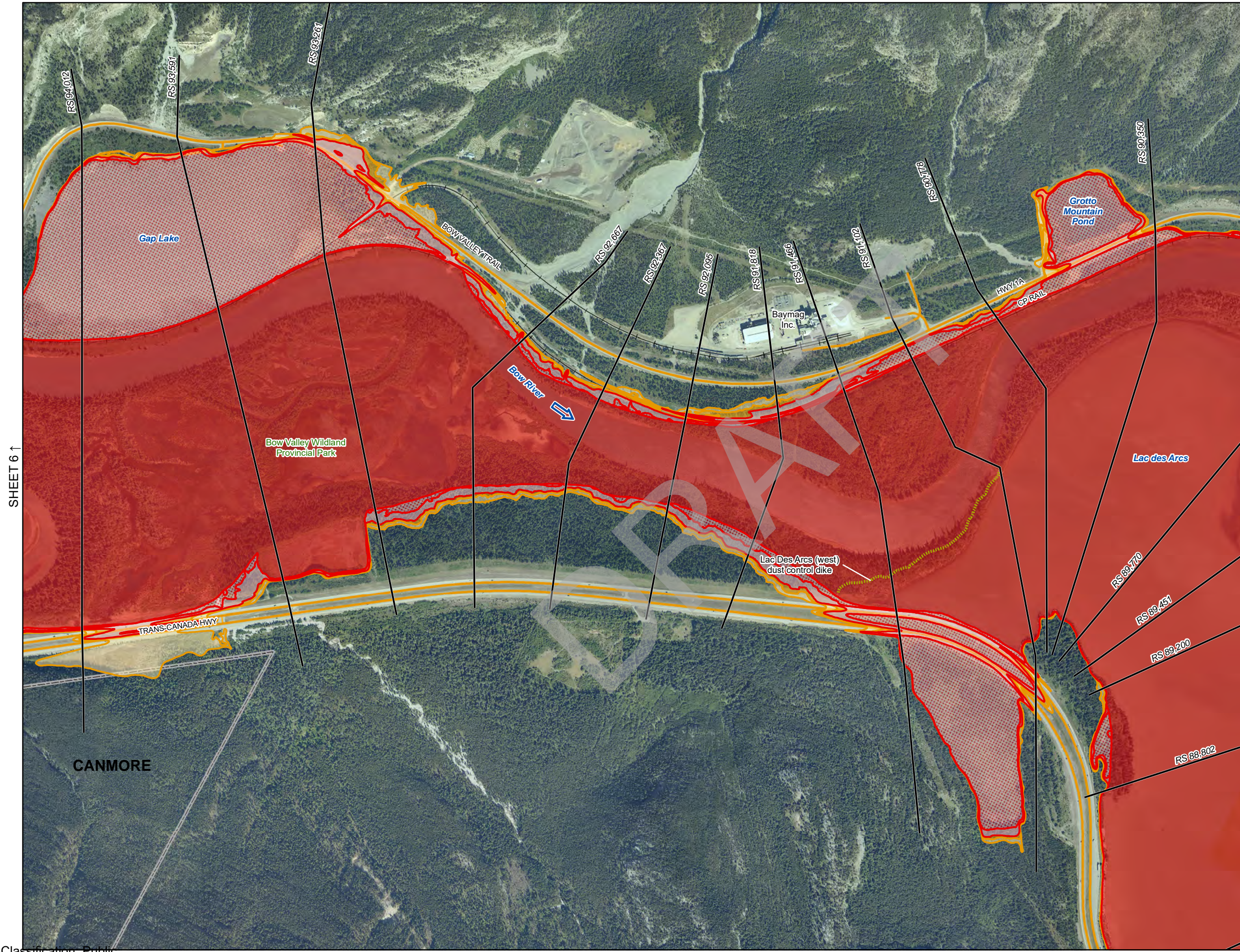
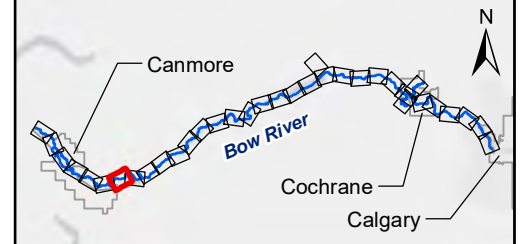
**GOVERNING DESIGN
FLOOD HAZARD MAP**



SHEET 5 ↑

↓ SHEET 7

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd

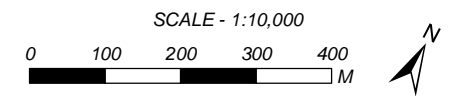


SHEET 6 ↑

↓ SHEET 8

- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s



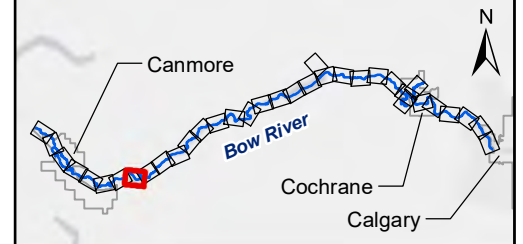
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

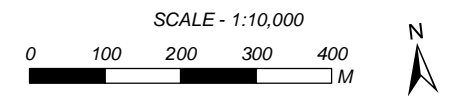
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s
EXSHAW CREEK = 31.9 m³/s

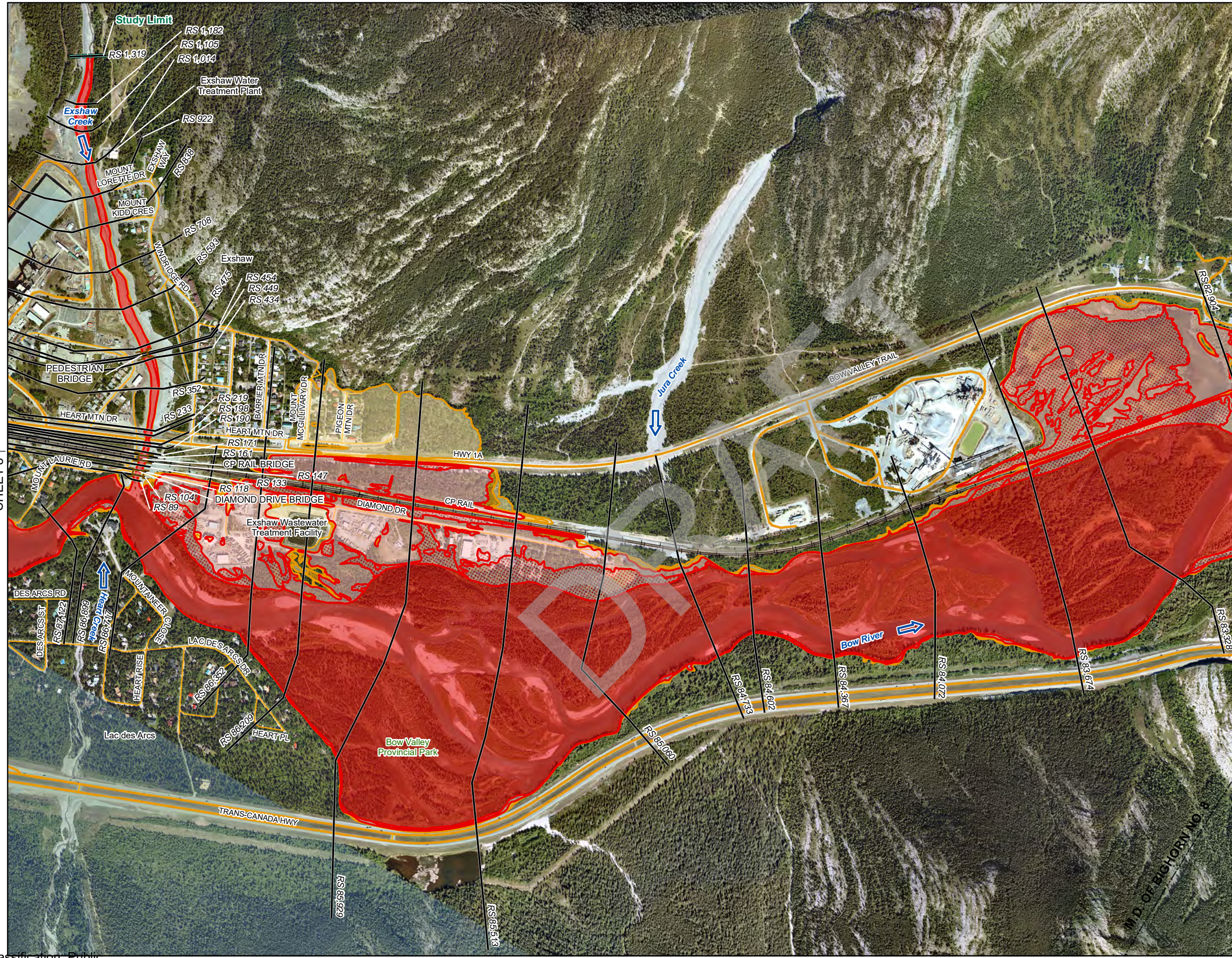


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

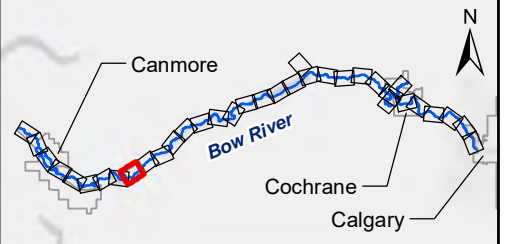
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



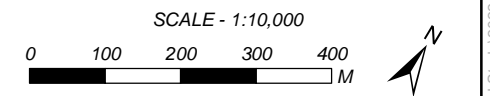
SHEET 8 ↑

↓ SHEET 10



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s
EXSHAW CREEK = 31.9 m³/s



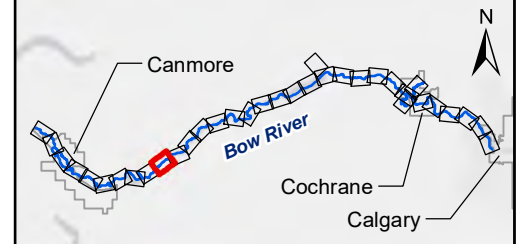
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

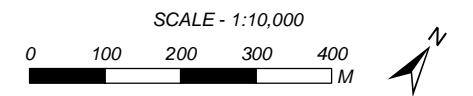
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 843 m³/s

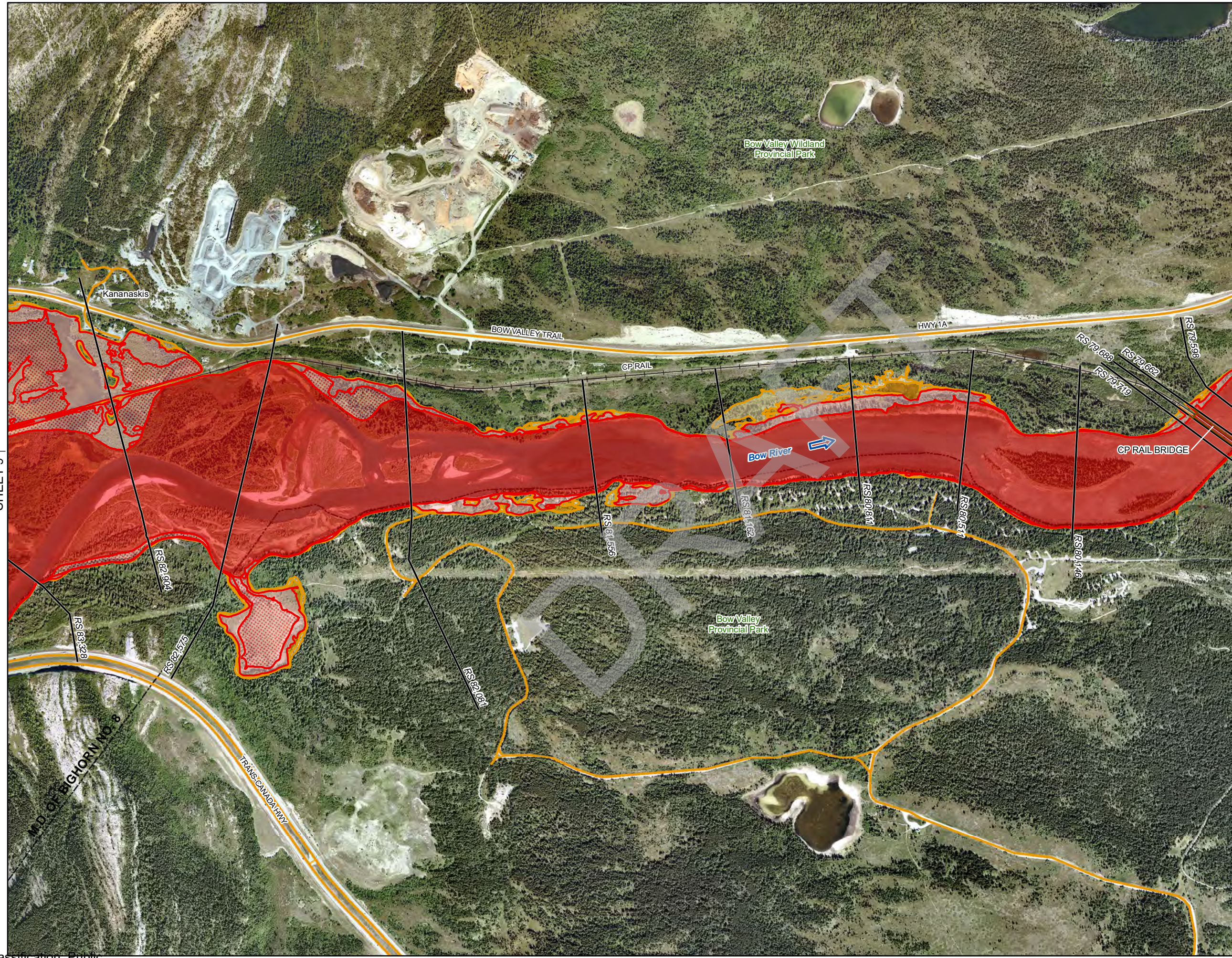


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

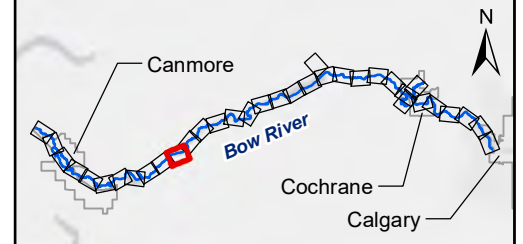
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



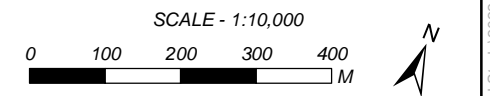
SHEET 9 ↑

↓ SHEET 11



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- LOCAL ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER ABOVE RS 77,488 = 843 m³/s
BOW RIVER BELOW RS 77,488 = 1,050 m³/s

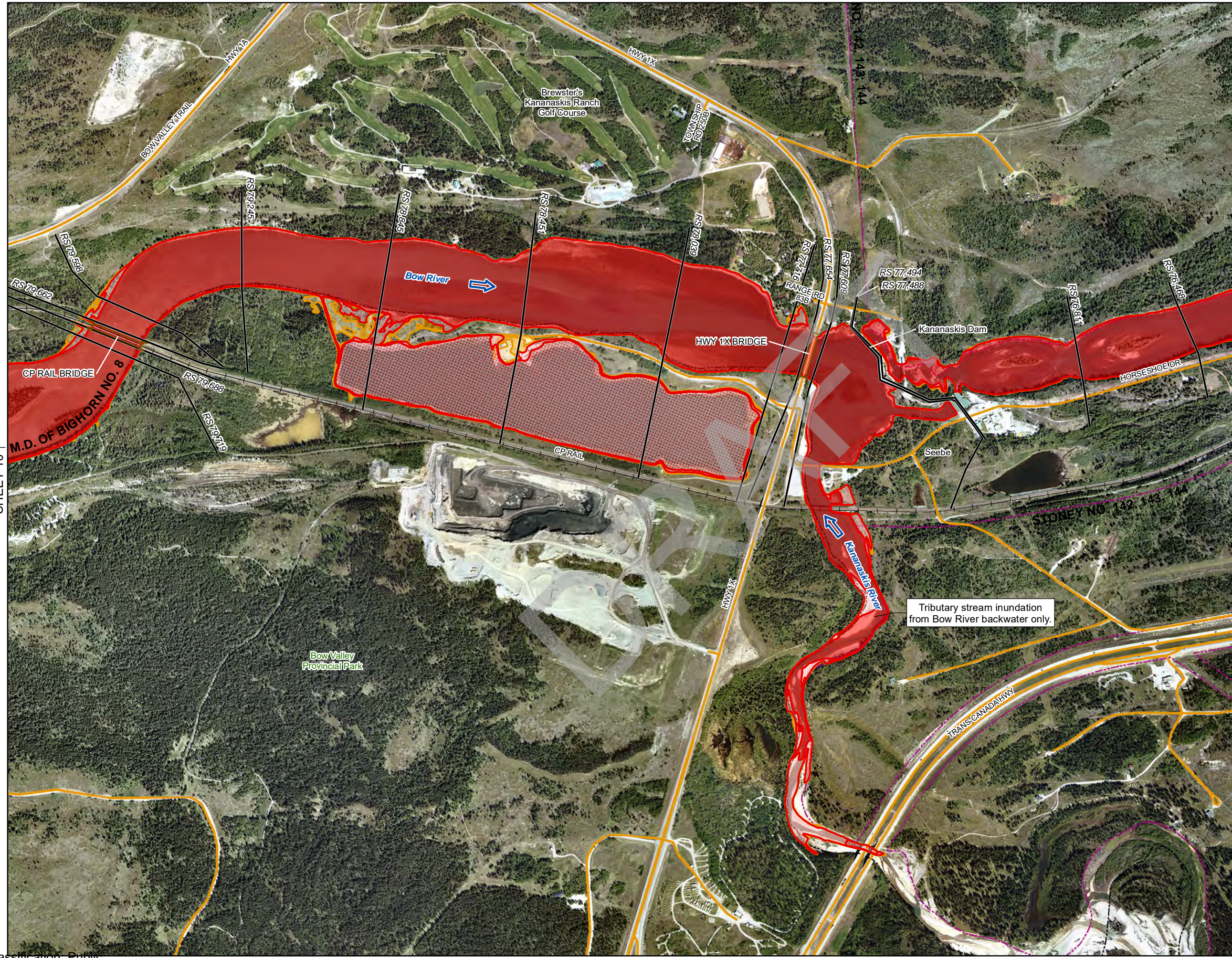


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

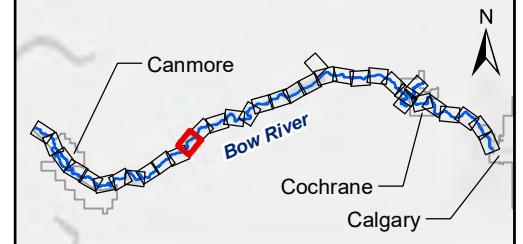
**GOVERNING DESIGN
FLOOD HAZARD MAP**



SHEET 10 ↑

↓ SHEET 12

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd

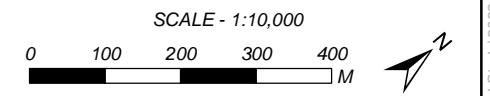


SHEET 11 ↑

↓ SHEET 13

- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER ABOVE RS 73,845 = 1,050 m³/s
BOW RIVER BELOW RS 73,845 = 1,060 m³/s



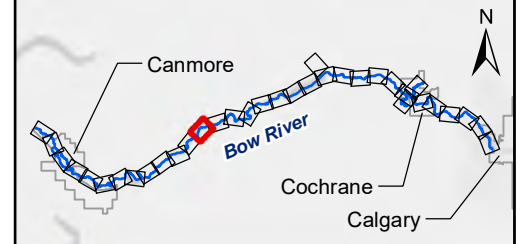
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

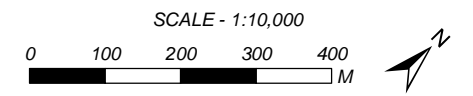
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,060 m³/s

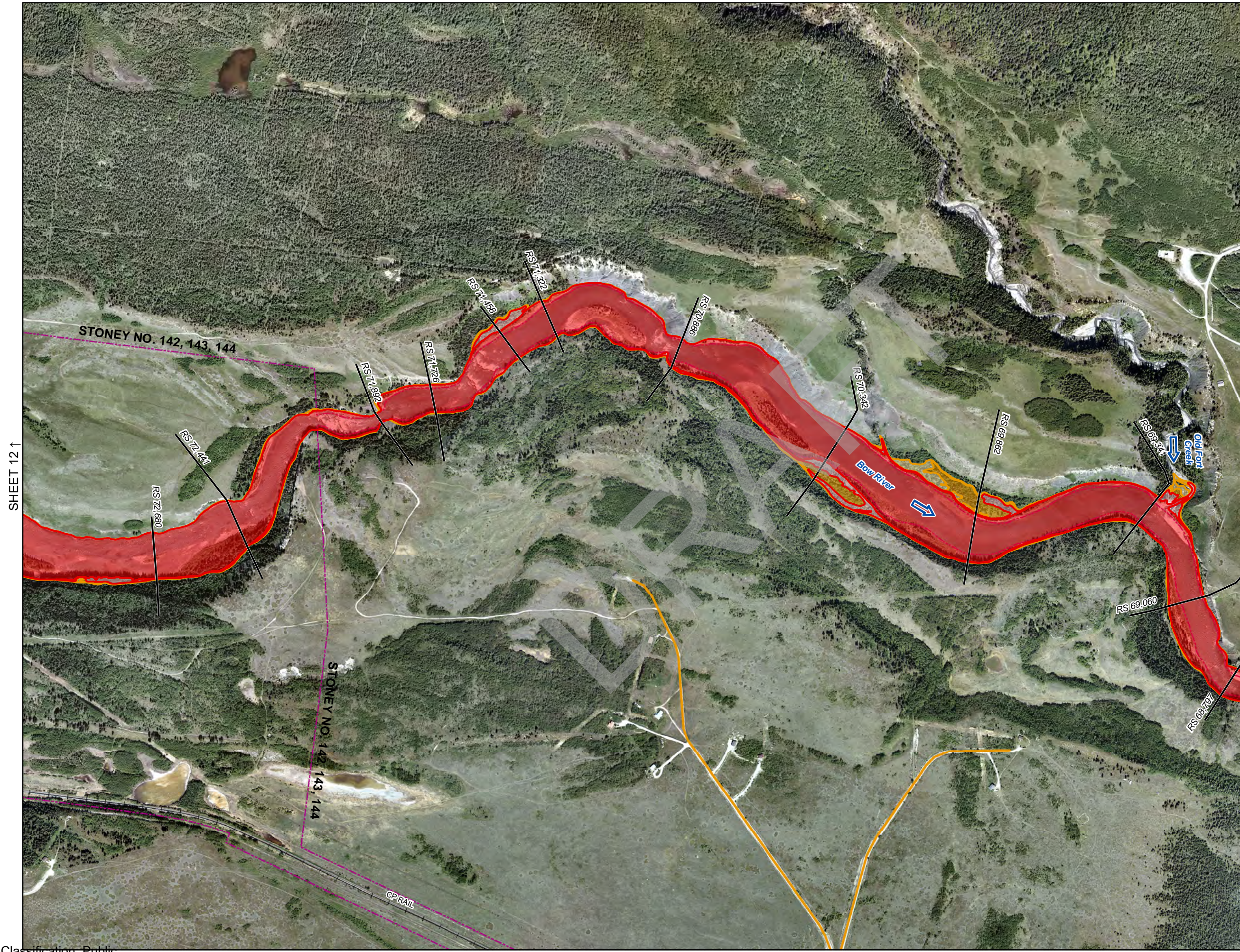


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

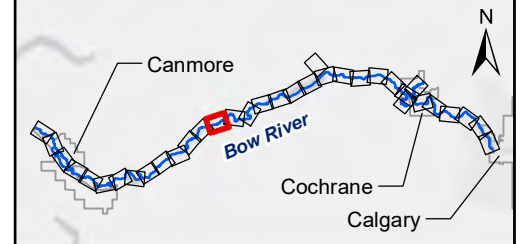
**GOVERNING DESIGN
FLOOD HAZARD MAP**



SHEET 12 ↑

↓ SHEET 14

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd

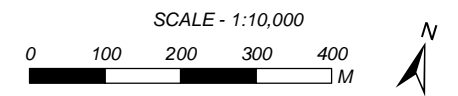


SHEET 13 ↑

↓ SHEET 15

- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,060 m³/s

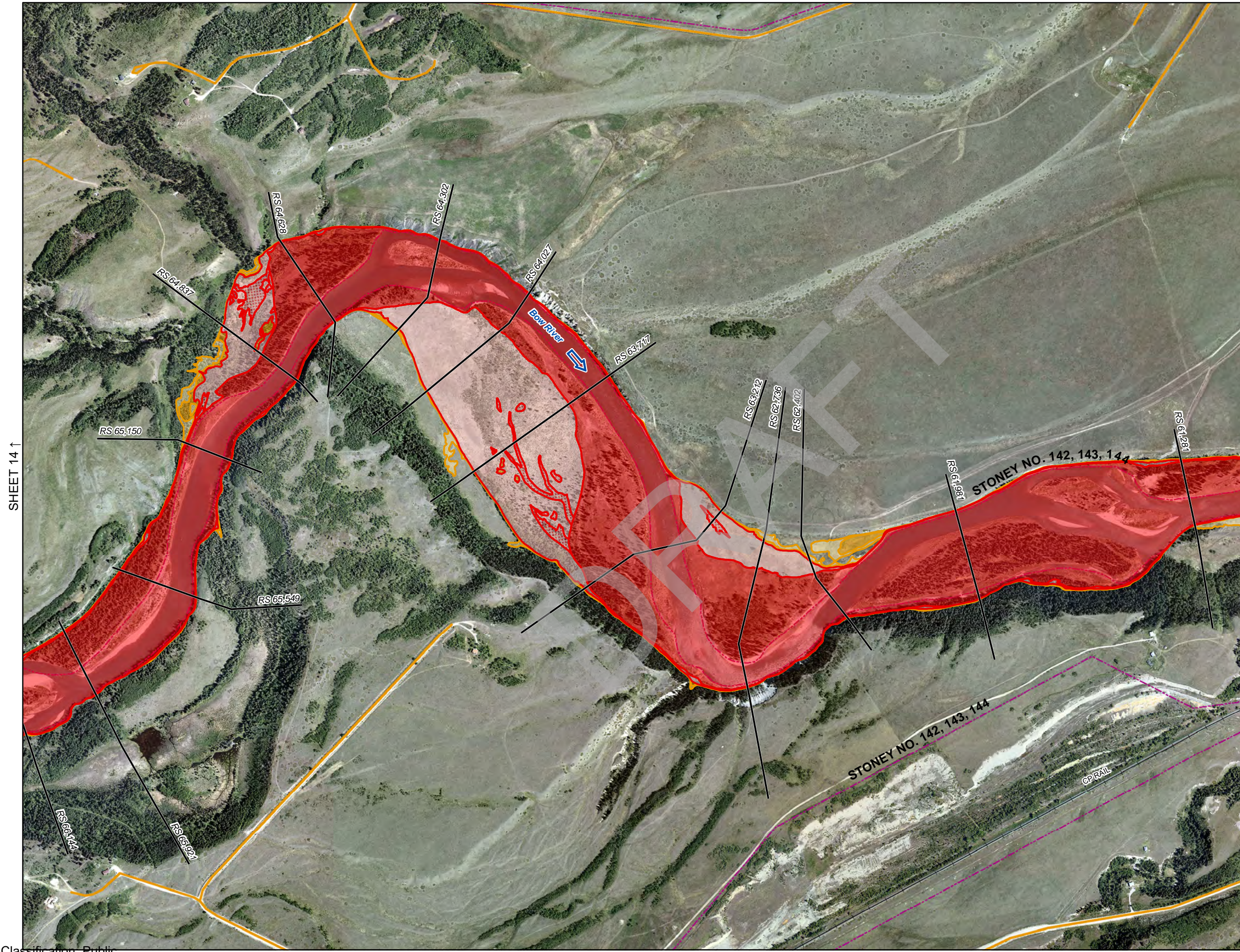
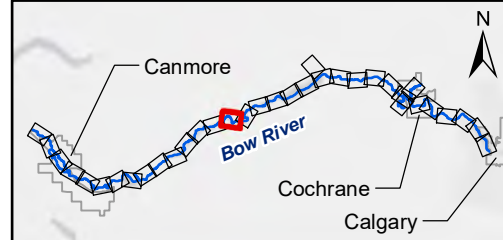


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

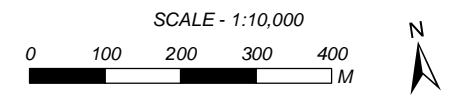


SHEET 14 ↑

↓ SHEET 16

- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,060 m³/s



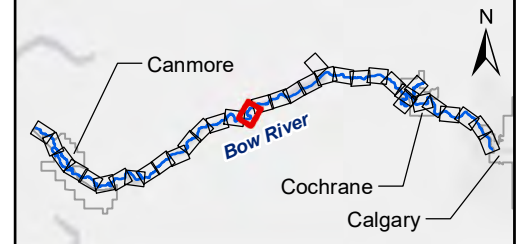
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

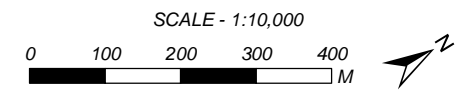
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,060 m³/s



Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

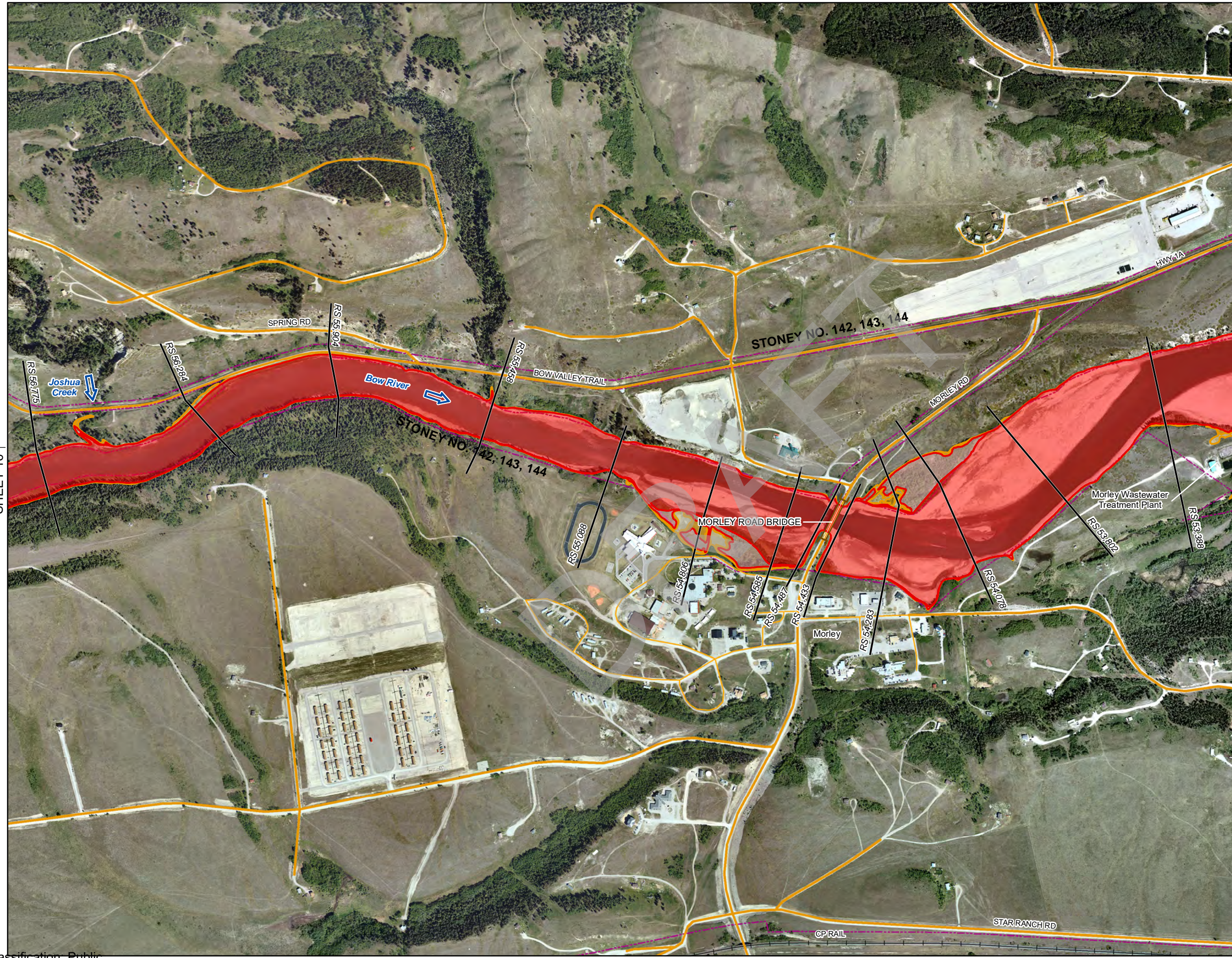
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



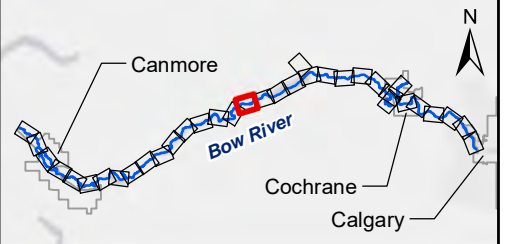
SHEET 15 ↑

↑ SHEET 17



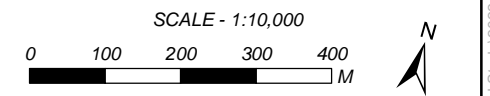
SHEET 16 ↑

↓ SHEET 18



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,060 m³/s



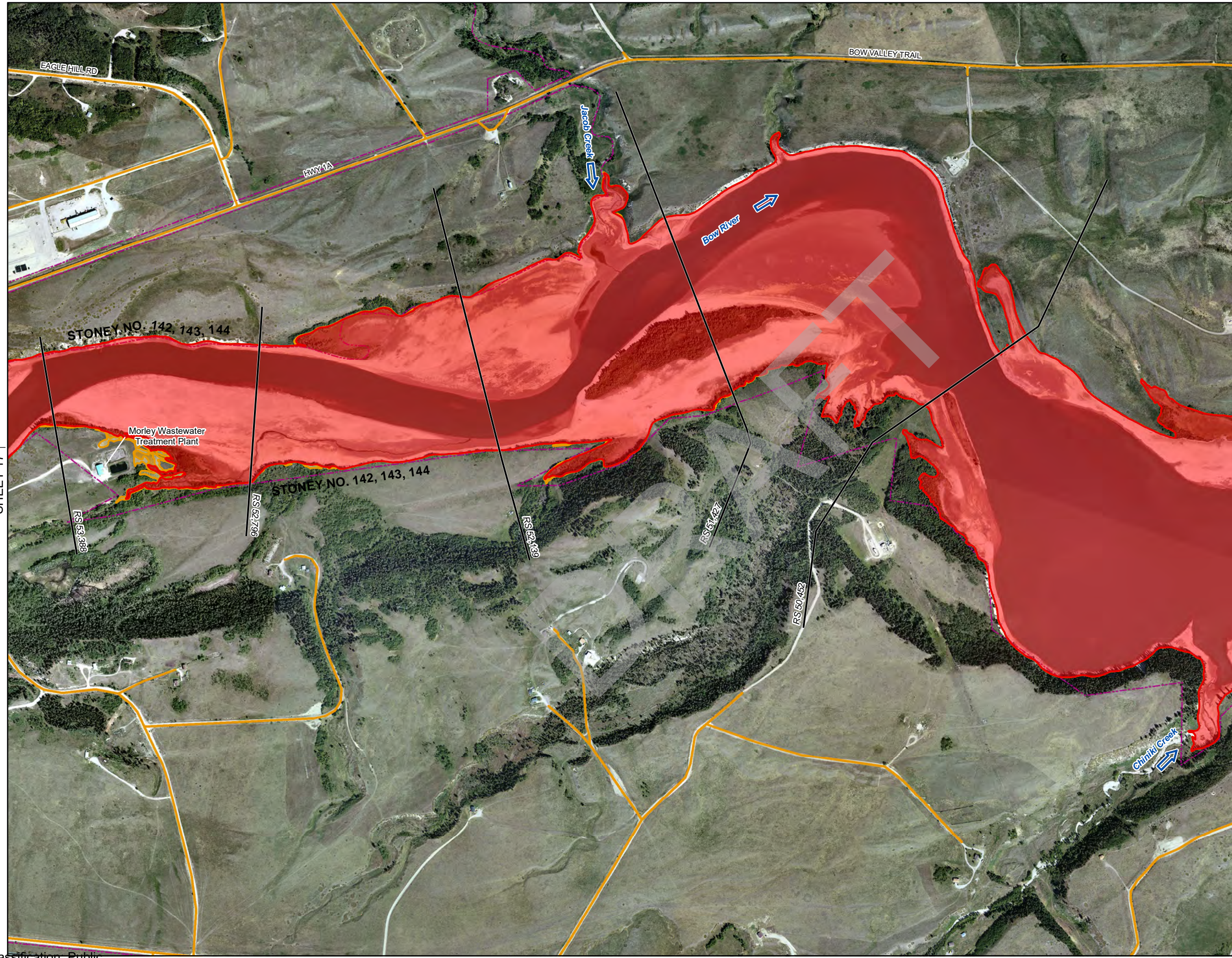
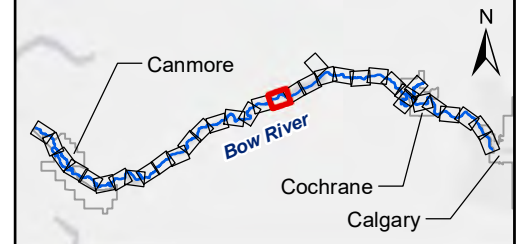
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

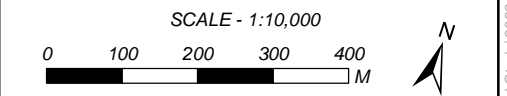
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MR_Update.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER ABOVE RS 50,542 = 1,060 m³/s
 BOW RIVER BELOW RS 50,452 = 1,120 m³/s



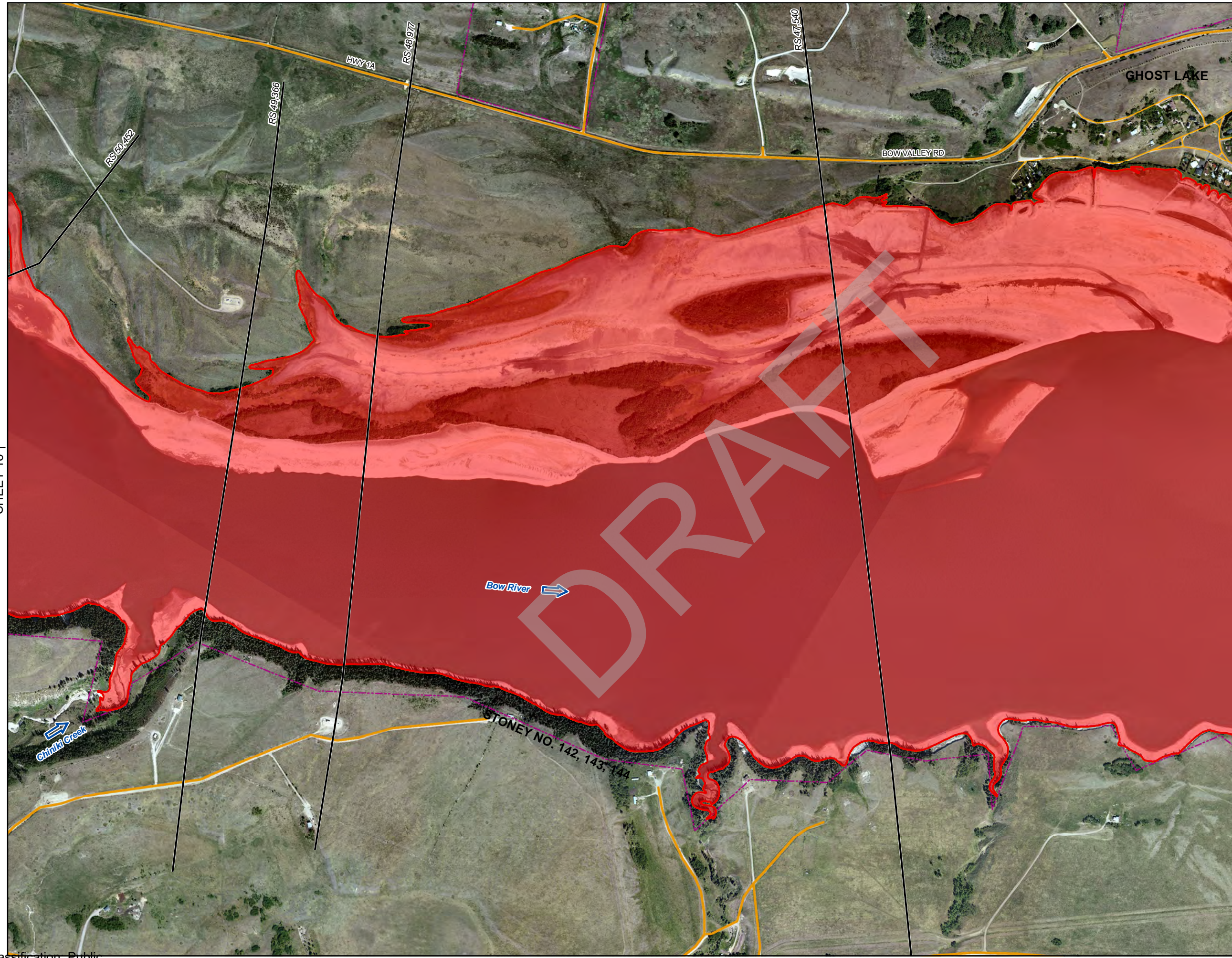
Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

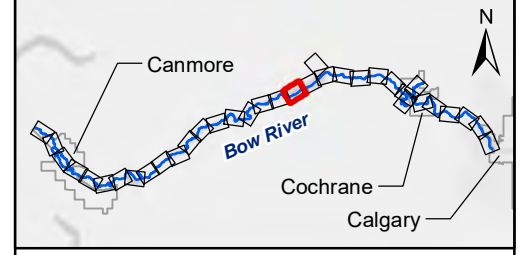
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



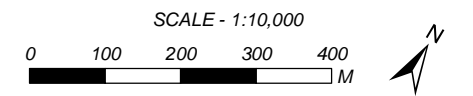
SHEET 18 ↑

↓ SHEET 20



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,120 m³/s

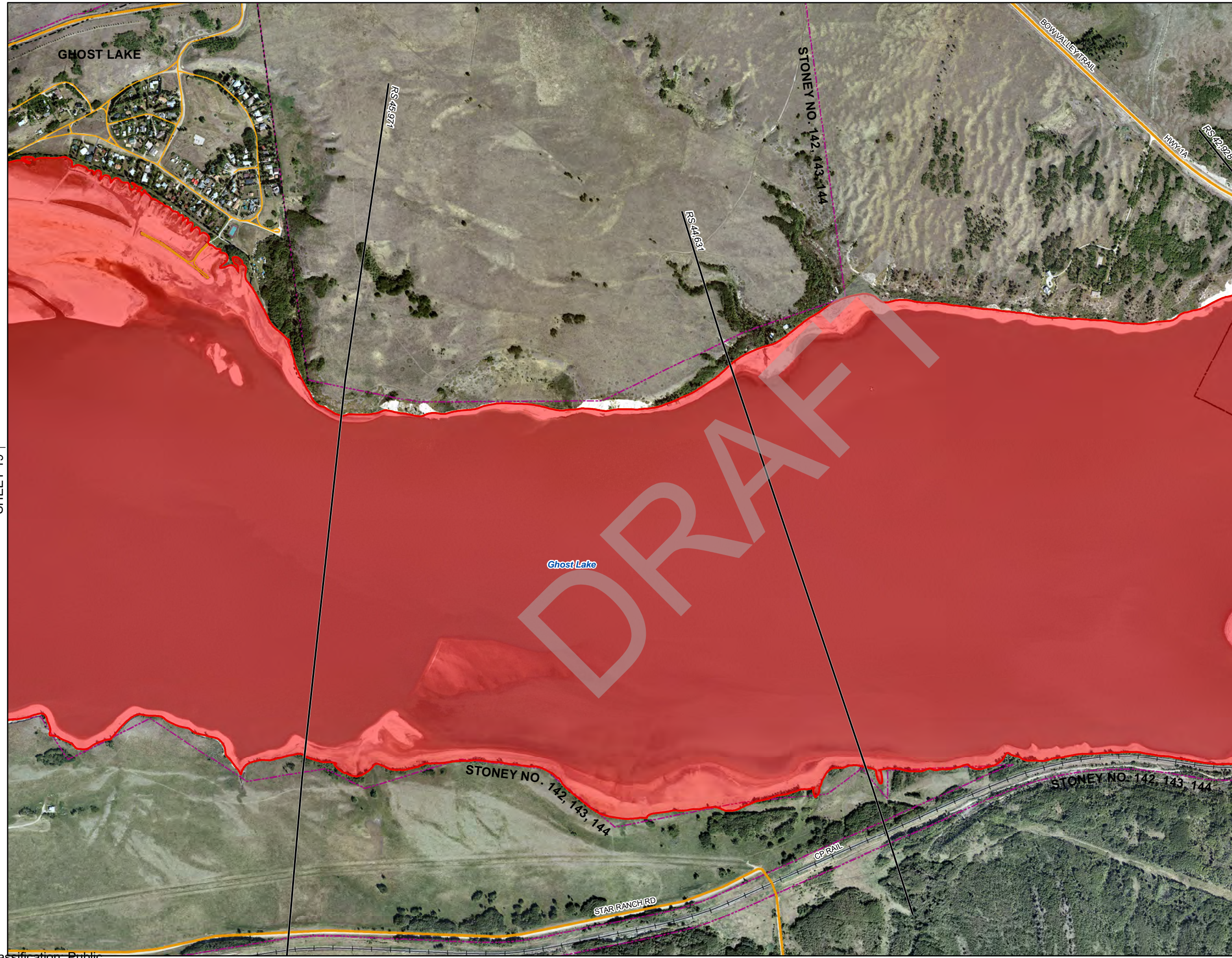


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

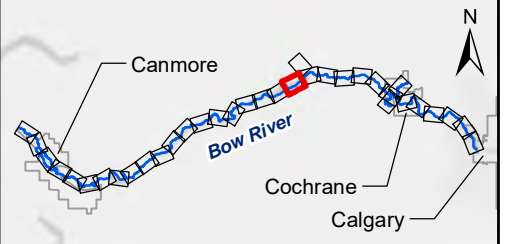
UPPER BOW RIVER HAZARD STUDY

GOVERNING DESIGN FLOOD HAZARD MAP



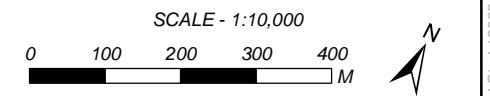
SHEET 19 ↑

↓ SHEET 21



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,120 m³/s



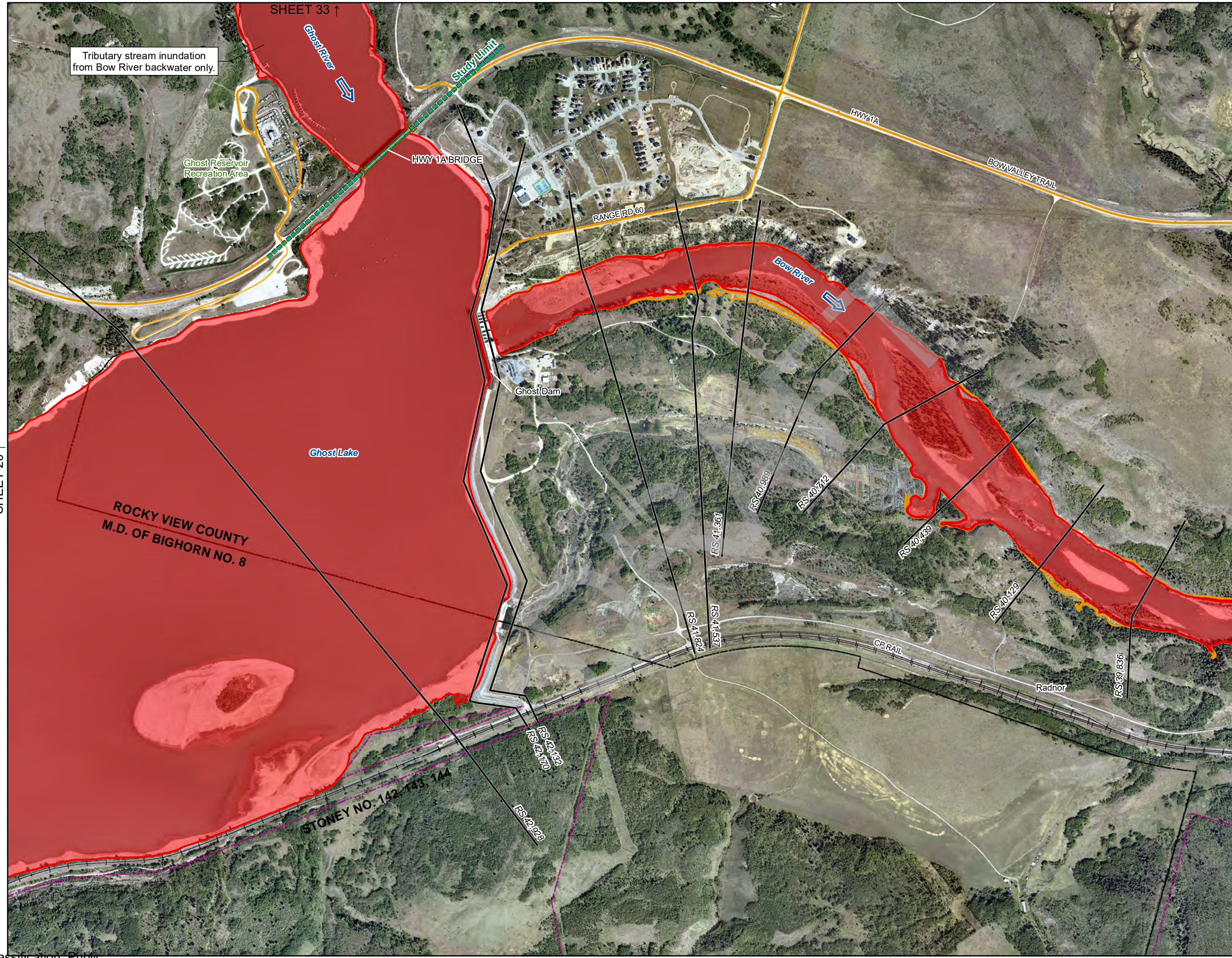
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

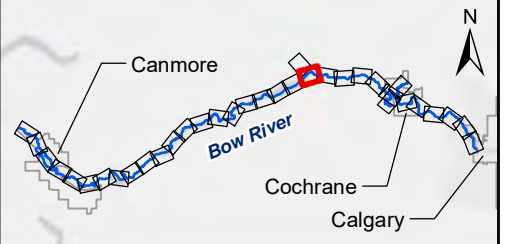
MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



SHEET 20 ↑

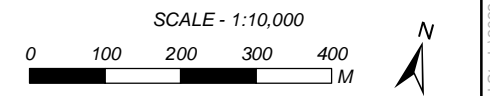
SHEET 33 ↑

SHEET 22 ↓



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- LOCAL ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER ABOVE RS 42,132 = 1,120 m³/s
 BOW RIVER BELOW RS 42,132 = 1,350 m³/s



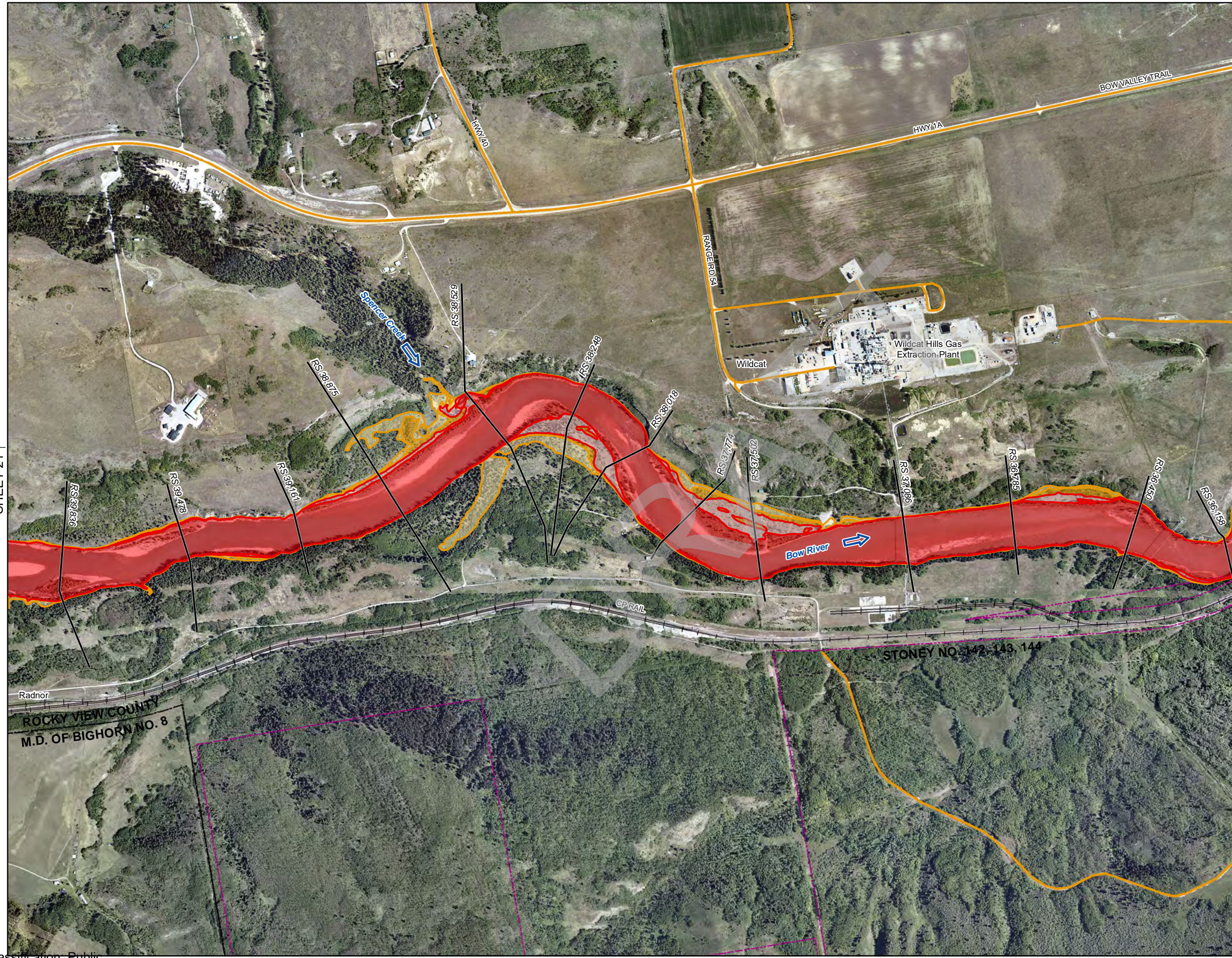
Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

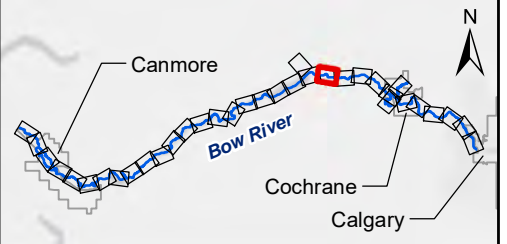
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



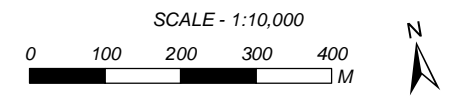
SHEET 21 ↑

↓ SHEET 23



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,350 m³/s



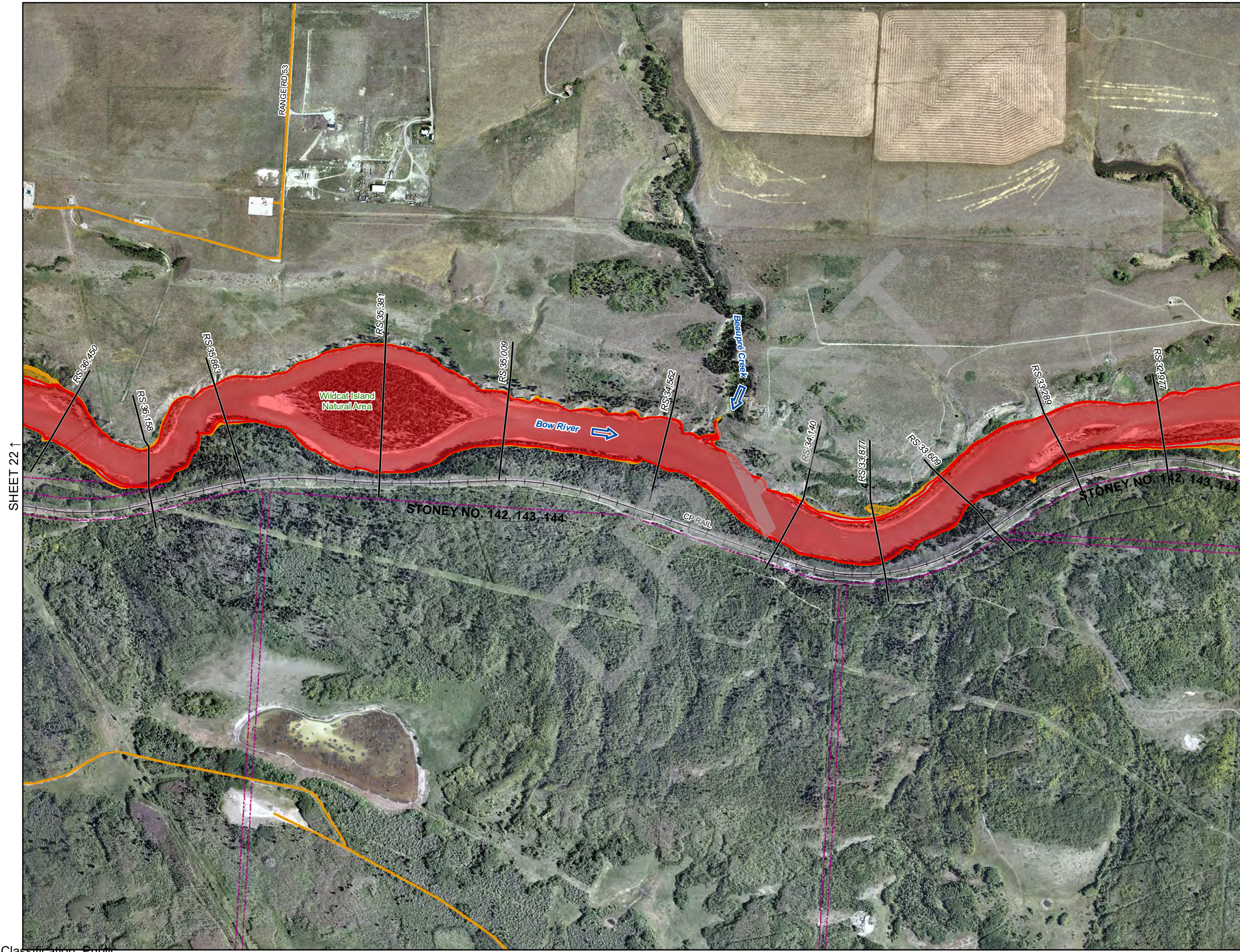
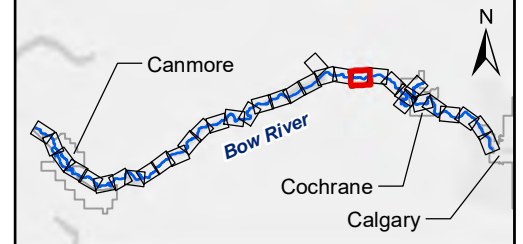
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MR_Update.mxd

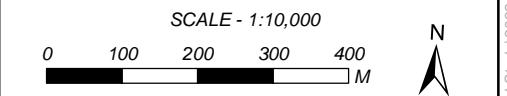


SHEET 22 ↑

↓ SHEET 24

- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER ABOVE RS 35,009 = 1,350 m³/s
BOW RIVER BELOW RS 34,562 - ICE JAM GOVERNS



Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

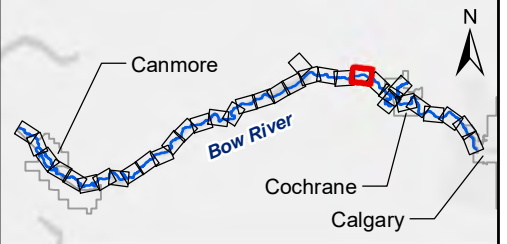
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MR_Update.mxd



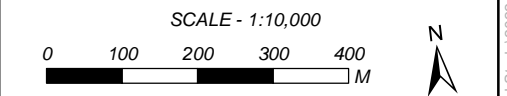
SHEET 23 ↑

↓ SHEET 25



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
ICE JAM GOVERNS



Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

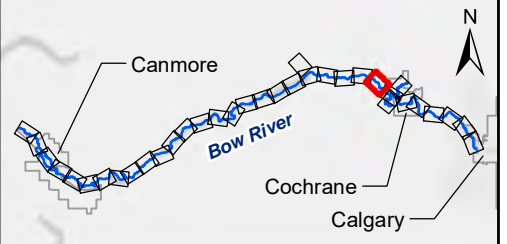
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



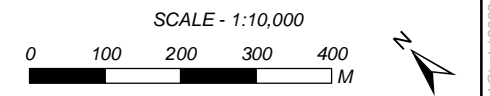
SHEET 24 ↑

↓ SHEET 26



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
ICE JAM GOVERNS

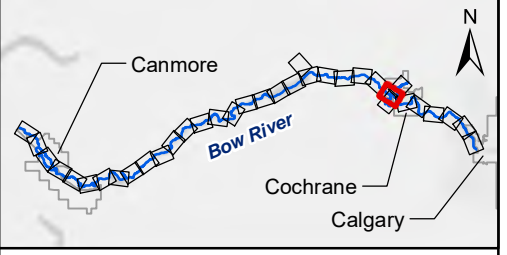


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

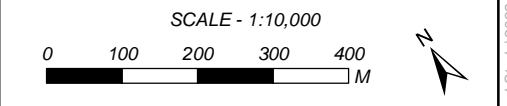
UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- LOCAL ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER - ICE JAM GOVERNS
 BIGHILL CREEK ABOVE RS 369 = 27.4 m³/s
 BIGHILL CREEK BELOW RS 335 - ICE JAM GOVERNS
 JUMPINGPOUND CK ABOVE RS 386 = 425 m³/s
 JUMPINGPOUND CK BELOW RS 232 - ICE JAM GOVERNS



Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

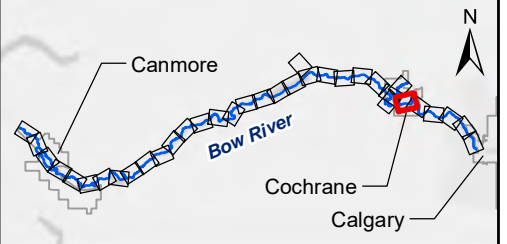
UPPER BOW RIVER HAZARD STUDY

GOVERNING DESIGN FLOOD HAZARD MAP



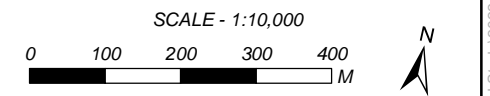
SHEET 26 ↑

↓ SHEET 28



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER - ICE JAM GOVERNS
 BIGHILL CREEK ABOVE RS 369 = 27.4 m³/s
 BIGHILL CREEK BELOW RS 335 - ICE JAM GOVERNS

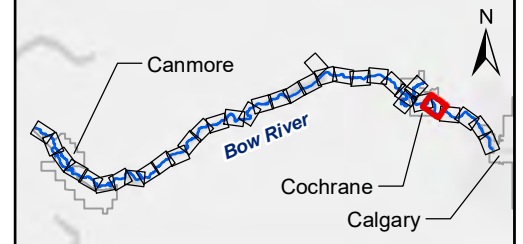


Coordinate System: NAD 1983 3TM 114		
Units: METRES		
Engineer	GIS	Reviewer
RA	MSN/MMM	MM
Job Number	Date	
3001178	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

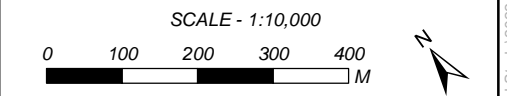
**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
ICE JAM GOVERNS



Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**



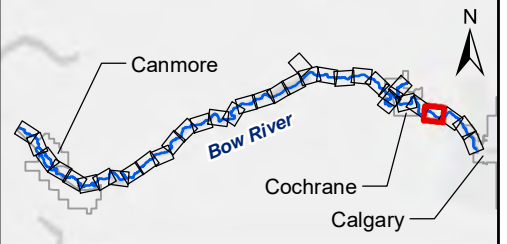
SHEET 27 ↑

↓ SHEET 29



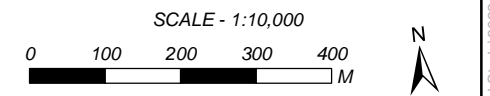
SHEET 28 ↑

↓ SHEET 30



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE
- LOCAL ROAD

DISCHARGE
ICE JAM GOVERNS



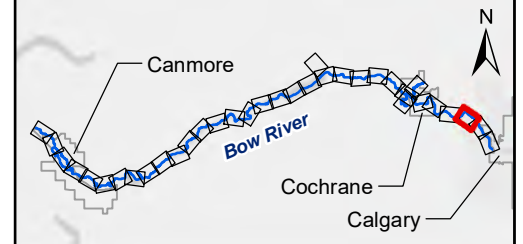
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
ICE JAM GOVERNS

SCALE - 1:10,000



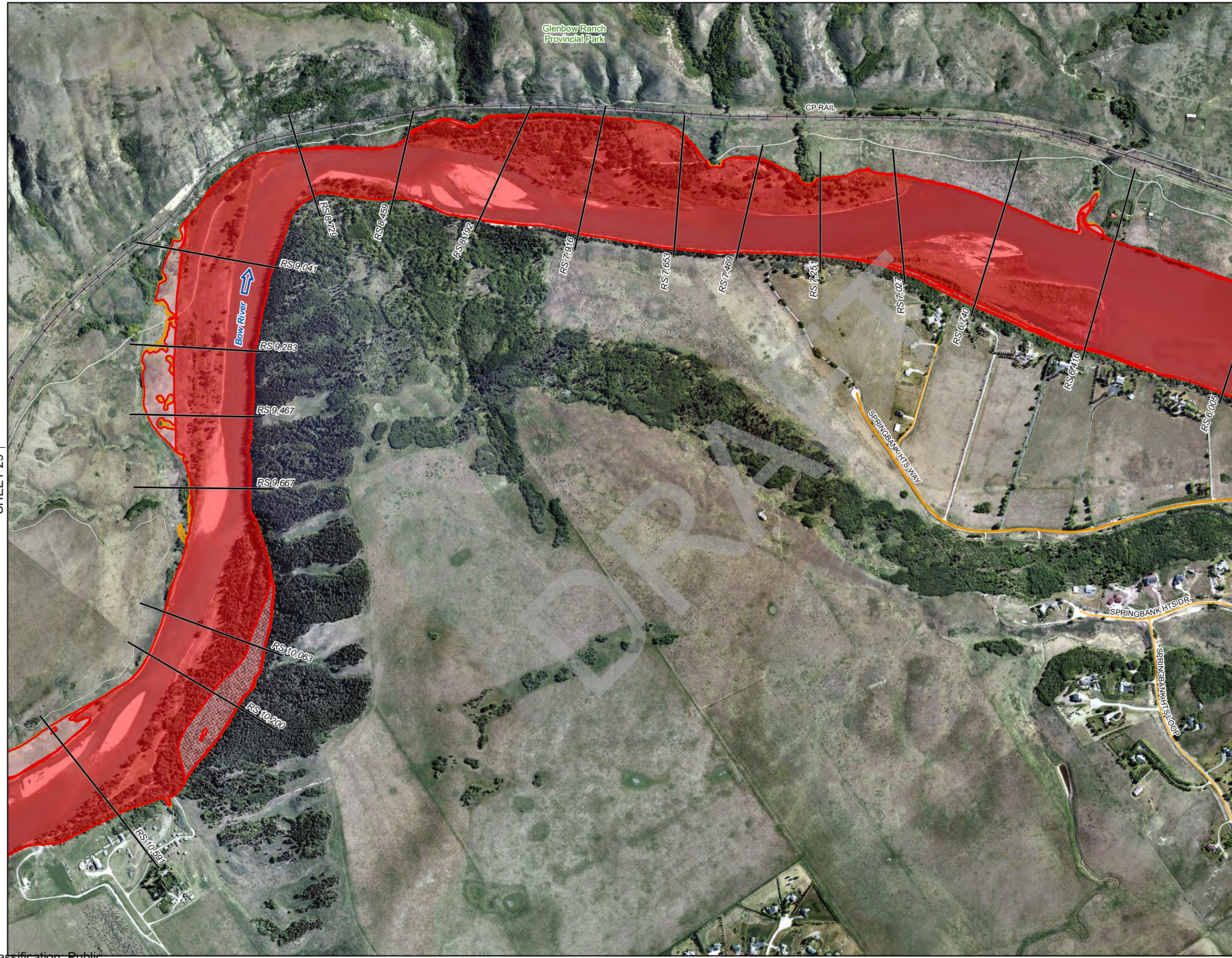
Coordinate System: NAD 1983 3TM 114
Units: METRES

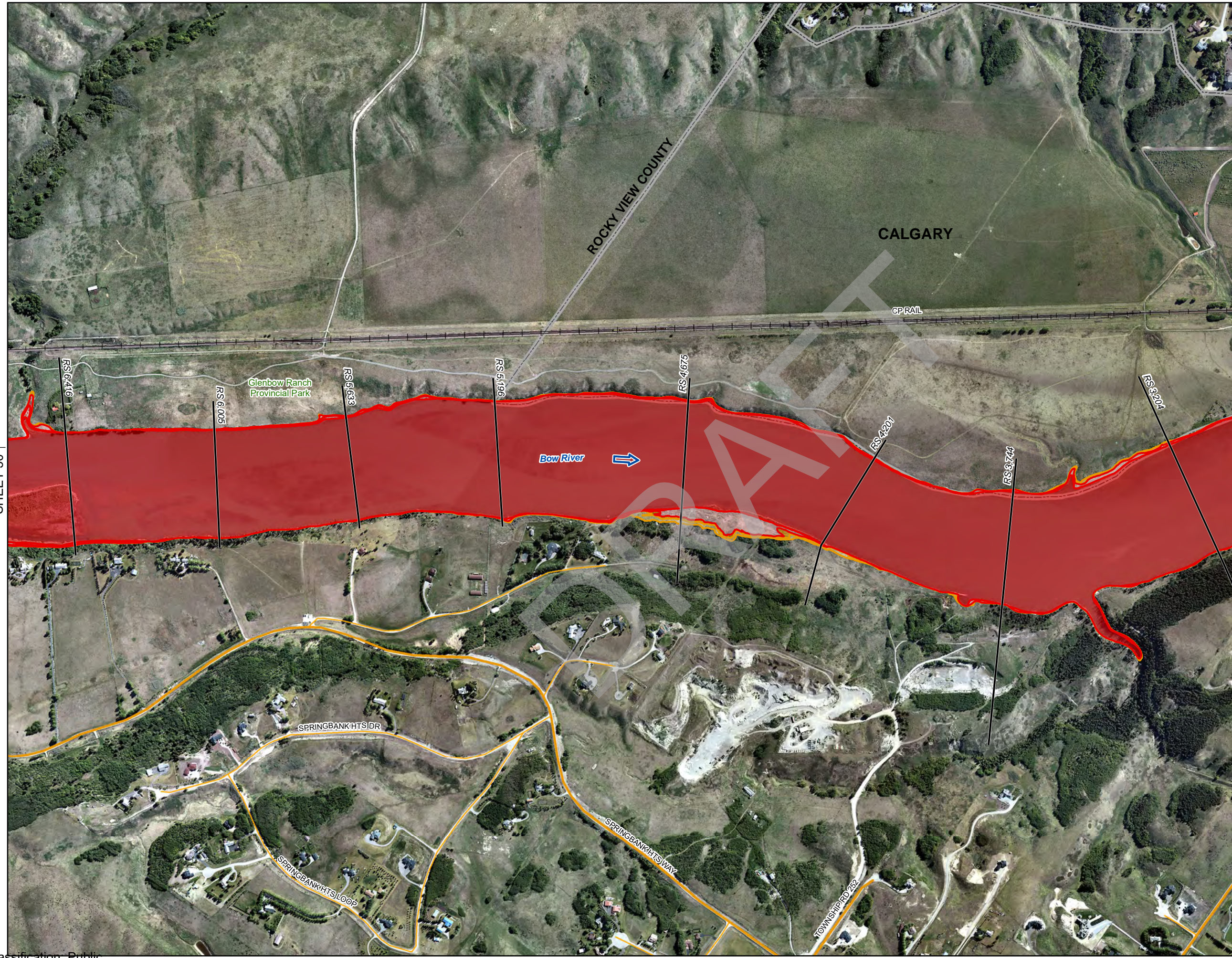
Engineer	RA	GIS	MSN/MMM	Reviewer	MM
----------	----	-----	---------	----------	----

Job Number	3001178	Date	01-NOV-2022
------------	---------	------	-------------

UPPER BOW RIVER HAZARD STUDY

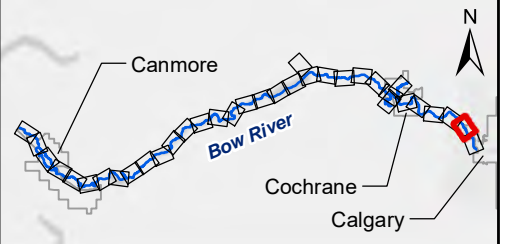
**GOVERNING DESIGN
FLOOD HAZARD MAP**





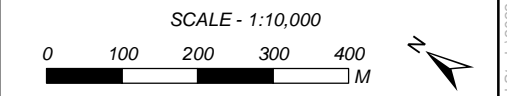
SHEET 30 ↑

↓ SHEET 32



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER ABOVE RS 5,633 - ICE JAM GOVERNS
BOW RIVER BELOW RS 5,196 = 1,790 m³/s

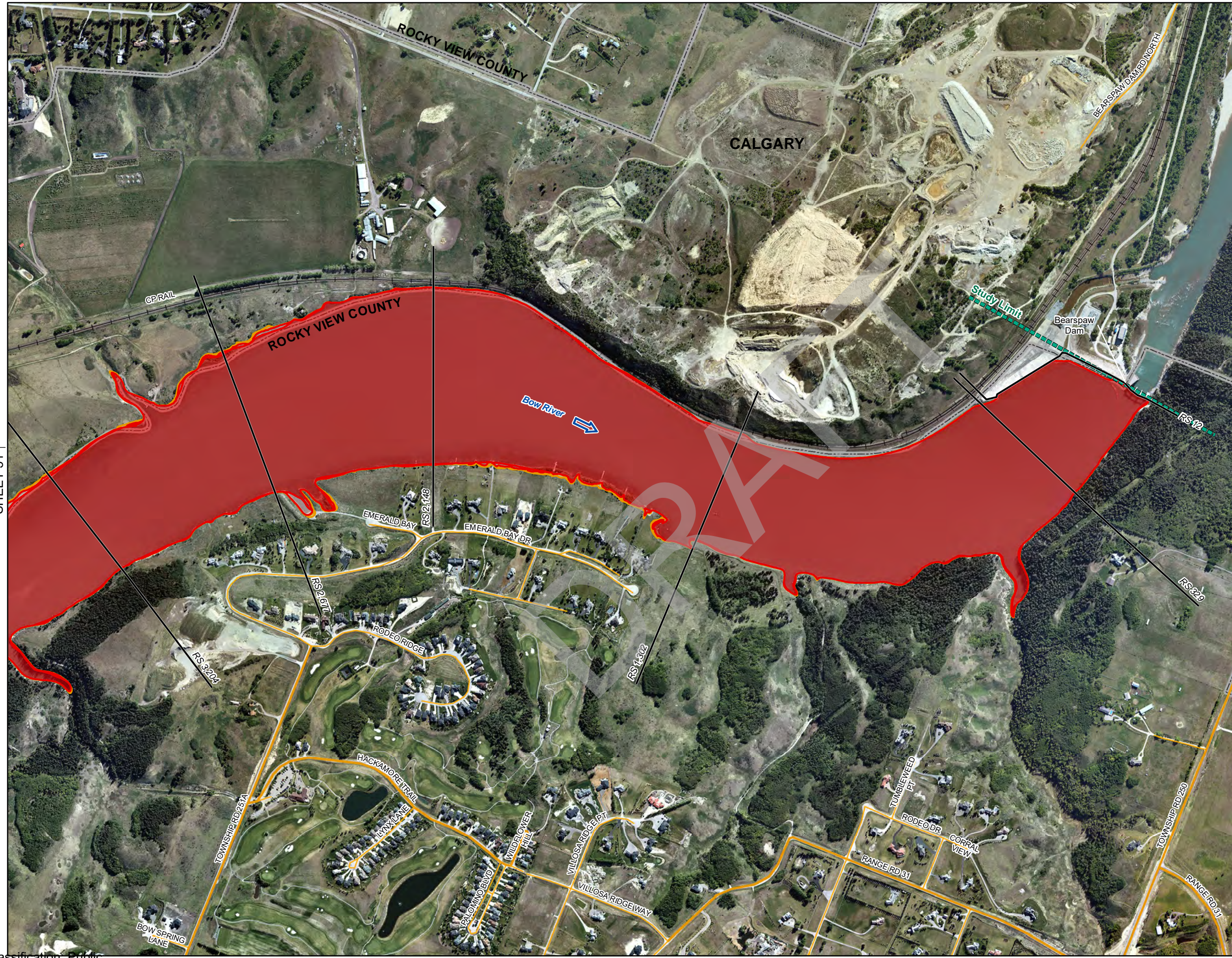


Coordinate System: NAD 1983 3TM 114
Units: METRES

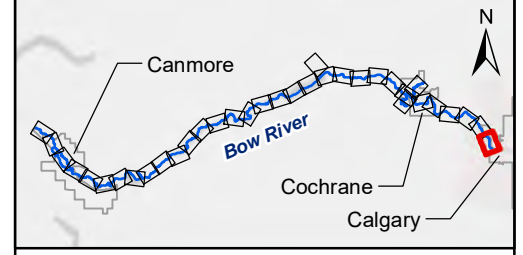
Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

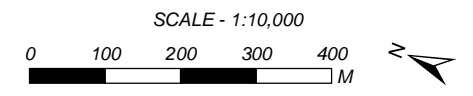


SHEET 31 1



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION RS 12,345
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
BOW RIVER = 1,790 m³/s



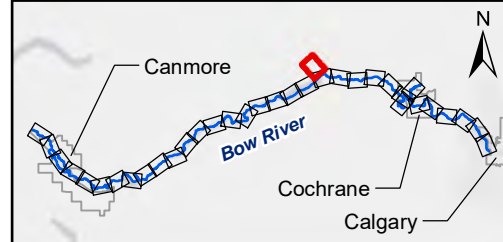
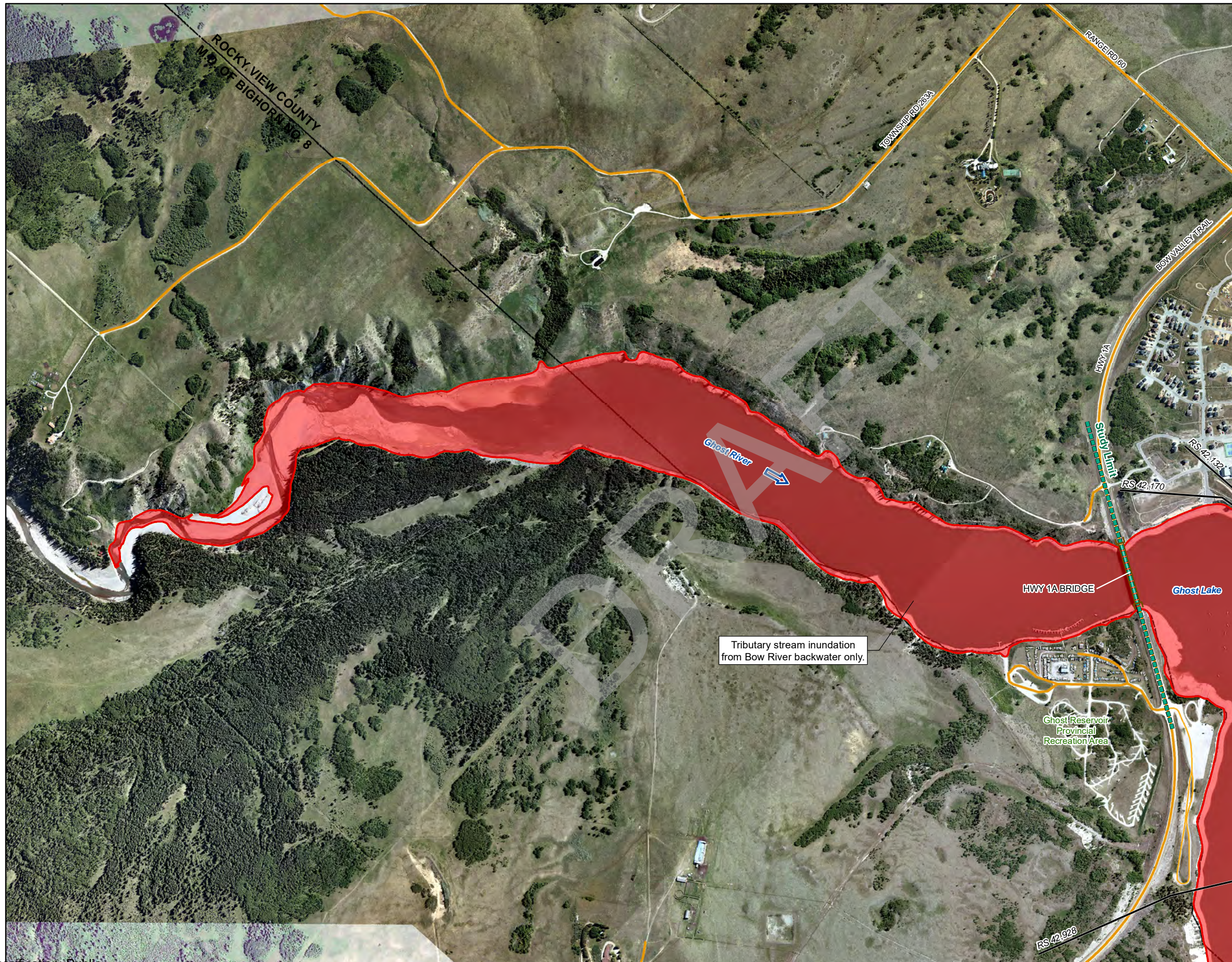
Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

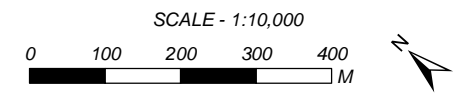
MMM:\P\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Review_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

SHEET 21 ↓

DISCHARGE
BOW RIVER = 1,120 m³/s

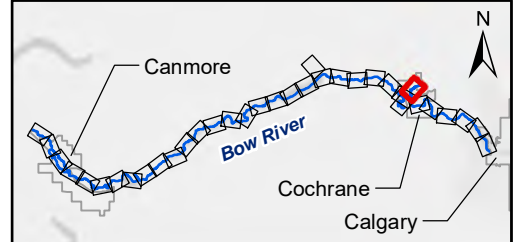
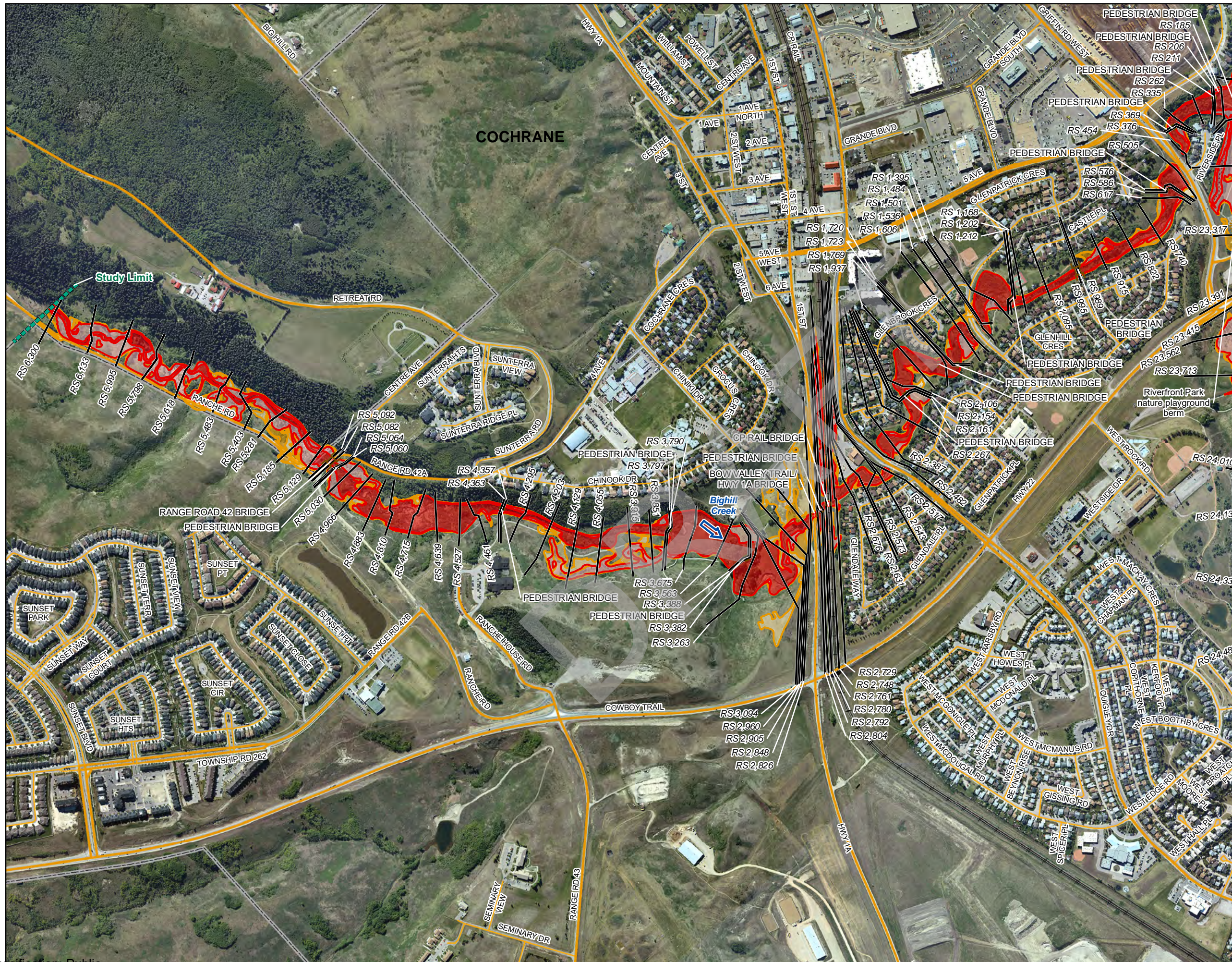


Coordinate System: NAD 1983 3TM 114
Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

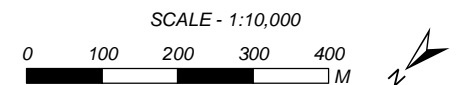
UPPER BOW RIVER HAZARD STUDY

GOVERNING DESIGN FLOOD HAZARD MAP



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

DISCHARGE
 BOW RIVER - ICE JAM GOVERNS
 BIGHILL CREEK ABOVE RS 369 = 27.4 m³/s
 BIGHILL CREEK BELOW RS 335 - ICE JAM GOVERNS



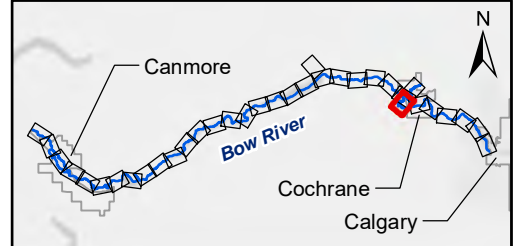
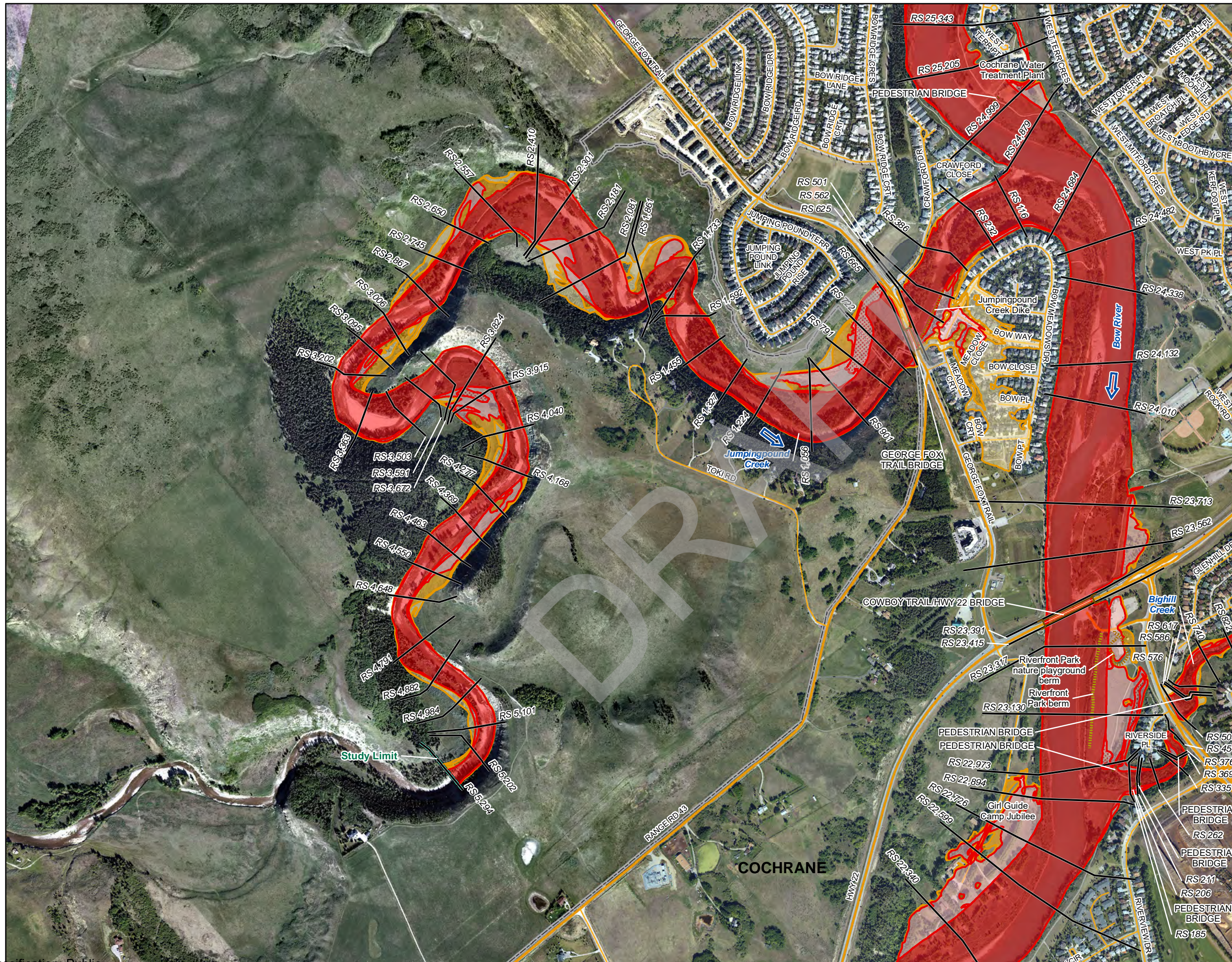
Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
 FLOOD HAZARD MAP**

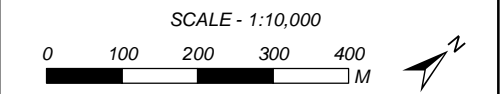
MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Update\90_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd



- FLOW DIRECTION
- BRIDGE
- DAM
- CROSS SECTION
- RS 12,345 RIVER STATION
- STUDY LIMIT
- FLOOD CONTROL STRUCTURE
- OTHER FEATURE
- FLOODWAY
- FLOOD FRINGE
- PROTECTED FLOOD FRINGE
- HIGH HAZARD FLOOD FRINGE
- 200-YEAR FLOOD EXTENT
- 500-YEAR FLOOD EXTENT
- RAILWAY
- MAJOR ROAD
- CITY
- LOCAL ROAD
- TOWN
- SUMMER VILLAGE
- COUNTY OR MUNICIPAL DISTRICT
- FIRST NATION RESERVE

SHEET 34 ↓

DISCHARGE
 BOW RIVER - ICE JAM GOVERNS
 BIGHILL CREEK ABOVE RS 369 = 27.4 m³/s
 BIGHILL CREEK BELOW RS 335 - ICE JAM GOVERNS
 JUMPINGPOUND CK ABOVE RS 386 = 425 m³/s
 JUMPINGPOUND CK BELOW RS 232 - ICE JAM GOVERNS



Coordinate System: NAD 1983 3TM 114
 Units: METRES

Engineer	RA	GIS	MSN/MMM	Reviewer	MM
Job Number	3001178		Date	01-NOV-2022	

UPPER BOW RIVER HAZARD STUDY

**GOVERNING DESIGN
FLOOD HAZARD MAP**

MMM: P:\Projects (Active)\3001178_Upper Bow River Hazard Study\2022_Municipal_Update\00_GIS\UpperBowRHS_Governing_Map_FloodHazard_2022MRUpdate.mxd

APPENDIX A
Design Flood Levels

DRAFT

Table A1 Governing hazards and design flood levels

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	117,852	1326.12	n/a	Open Water	1326.12
Bow River	117,547	1325.65	n/a	Open Water	1325.65
Bow River	117,241	1325.15	n/a	Open Water	1325.15
Bow River	116,670	1323.52	n/a	Open Water	1323.52
Bow River	116,188	1322.50	n/a	Open Water	1322.50
Bow River	115,644	1321.47	n/a	Open Water	1321.47
Bow River	115,415	1320.69	n/a	Open Water	1320.69
Bow River	115,134	1320.04	n/a	Open Water	1320.04
Bow River	114,700	1319.24	n/a	Open Water	1319.24
Bow River	114,258	1318.66	n/a	Open Water	1318.66
Bow River	113,821	1317.75	n/a	Open Water	1317.75
Bow River	113,472	1317.04	n/a	Open Water	1317.04
Bow River	113,065	1316.28	n/a	Open Water	1316.28
Bow River	112,898	1316.09	n/a	Open Water	1316.09
Bow River	112,726	1315.88	n/a	Open Water	1315.88
Bow River	112,580	1315.62	n/a	Open Water	1315.62
Bow River	112,416	1315.35	n/a	Open Water	1315.35
Bow River	112,279	1315.20	n/a	Open Water	1315.20
Bow River	112,071	1314.94	n/a	Open Water	1314.94
Bow River	111,915	1314.73	n/a	Open Water	1314.73
Bow River	111,823	1314.61	n/a	Open Water	1314.61
Bow River	111,706	1314.51	n/a	Open Water	1314.51
Bow River	111,305	1313.83	n/a	Open Water	1313.83
Bow River	111,132	1313.49	n/a	Open Water	1313.49
Bow River	110,887	1312.84	n/a	Open Water	1312.84
Bow River	110,734	1312.61	n/a	Open Water	1312.61
Bow River	110,352	1312.11	n/a	Open Water	1312.11
Bow River	110,148	1311.93	n/a	Open Water	1311.93
Bow River	109,981	1311.67	n/a	Open Water	1311.67
Bow River	109,938	1311.69	n/a	Open Water	1311.69
Bow River	109,921	1311.51	n/a	Open Water	1311.51
Bow River	109,727	1311.40	n/a	Open Water	1311.40

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	109,501	1311.09	n/a	Open Water	1311.09
Bow River	109,366	1310.81	n/a	Open Water	1310.81
Bow River	109,235	1310.43	n/a	Open Water	1310.43
Bow River	109,202	1310.34	n/a	Open Water	1310.34
Bow River	109,114	1310.02	n/a	Open Water	1310.02
Bow River	108,998	1309.58	n/a	Open Water	1309.58
Bow River	108,757	1309.23	n/a	Open Water	1309.23
Bow River	108,586	1308.91	n/a	Open Water	1308.91
Bow River	108,458	1308.73	n/a	Open Water	1308.73
Bow River	108,052	1308.36	n/a	Open Water	1308.36
Bow River	107,747	1307.78	n/a	Open Water	1307.78
Bow River	107,333	1307.09	n/a	Open Water	1307.09
Bow River	107,113	1306.92	n/a	Open Water	1306.92
Bow River	106,702	1305.56	n/a	Open Water	1305.56
Bow River	106,497	1305.42	n/a	Open Water	1305.42
Bow River	106,143	1305.16	n/a	Open Water	1305.16
Bow River	105,995	1304.99	n/a	Open Water	1304.99
Bow River	105,742	1304.79	n/a	Open Water	1304.79
Bow River	105,620	1304.61	n/a	Open Water	1304.61
Bow River	105,224	1304.34	n/a	Open Water	1304.34
Bow River	104,790	1303.73	n/a	Open Water	1303.73
Bow River	104,631	1303.21	n/a	Open Water	1303.21
Bow River	104,575	1303.04	n/a	Open Water	1303.04
Bow River	104,490	1302.60	n/a	Open Water	1302.60
Bow River	104,338	1302.30	n/a	Open Water	1302.30
Bow River	104,163	1301.67	n/a	Open Water	1301.67
Bow River	103,697	1300.12	n/a	Open Water	1300.12
Bow River	103,126	1299.16	n/a	Open Water	1299.16
Bow River	102,497	1298.09	n/a	Open Water	1298.09
Bow River	101,706	1297.29	n/a	Open Water	1297.29
Bow River	101,260	1296.55	n/a	Open Water	1296.55
Bow River	100,785	1295.95	n/a	Open Water	1295.95
Bow River	100,276	1295.47	n/a	Open Water	1295.47

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	99,728	1295.01	n/a	Open Water	1295.01
Bow River	99,027	1294.83	n/a	Open Water	1294.83
Bow River	98,134	1294.60	n/a	Open Water	1294.60
Bow River	97,769	1294.50	n/a	Open Water	1294.50
Bow River	97,378	1294.30	n/a	Open Water	1294.30
Bow River	97,076	1294.18	n/a	Open Water	1294.18
Bow River	96,451	1294.08	n/a	Open Water	1294.08
Bow River	94,012	1294.00	n/a	Open Water	1294.00
Bow River	93,591	1293.98	n/a	Open Water	1293.98
Bow River	93,261	1293.98	n/a	Open Water	1293.98
Bow River	92,667	1293.96	n/a	Open Water	1293.96
Bow River	92,367	1293.90	n/a	Open Water	1293.90
Bow River	92,095	1293.82	n/a	Open Water	1293.82
Bow River	91,818	1293.78	n/a	Open Water	1293.78
Bow River	91,466	1293.75	n/a	Open Water	1293.75
Bow River	91,102	1293.73	n/a	Open Water	1293.73
Bow River	90,778	1293.72	n/a	Open Water	1293.72
Bow River	90,350	1293.71	n/a	Open Water	1293.71
Bow River	89,770	1293.69	n/a	Open Water	1293.69
Bow River	89,451	1293.67	n/a	Open Water	1293.67
Bow River	89,200	1293.65	n/a	Open Water	1293.65
Bow River	88,802	1293.63	n/a	Open Water	1293.63
Bow River	88,345	1293.60	n/a	Open Water	1293.60
Bow River	88,021	1293.57	n/a	Open Water	1293.57
Bow River	87,652	1293.55	n/a	Open Water	1293.55
Bow River	87,519	1293.54	n/a	Open Water	1293.54
Bow River	87,122	1292.38	n/a	Open Water	1292.38
Bow River	86,899	1291.65	n/a	Open Water	1291.65
Bow River	86,717	1291.06	n/a	Open Water	1291.06
Bow River	86,352	1290.02	n/a	Open Water	1290.02
Bow River	86,209	1288.68	n/a	Open Water	1288.68
Bow River	85,929	1288.17	n/a	Open Water	1288.17
Bow River	85,513	1288.02	n/a	Open Water	1288.02

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	85,060	1287.83	n/a	Open Water	1287.83
Bow River	84,733	1287.39	n/a	Open Water	1287.39
Bow River	84,602	1287.01	n/a	Open Water	1287.01
Bow River	84,367	1286.32	n/a	Open Water	1286.32
Bow River	84,072	1285.80	n/a	Open Water	1285.80
Bow River	83,674	1285.26	n/a	Open Water	1285.26
Bow River	83,328	1284.71	n/a	Open Water	1284.71
Bow River	82,904	1284.33	n/a	Open Water	1284.33
Bow River	82,575	1284.19	n/a	Open Water	1284.19
Bow River	82,081	1283.73	n/a	Open Water	1283.73
Bow River	81,556	1283.41	n/a	Open Water	1283.41
Bow River	81,162	1283.20	n/a	Open Water	1283.20
Bow River	80,811	1283.07	n/a	Open Water	1283.07
Bow River	80,511	1282.92	n/a	Open Water	1282.92
Bow River	80,146	1282.50	n/a	Open Water	1282.50
Bow River	79,719	1281.71	n/a	Open Water	1281.71
Bow River	79,688	1281.60	n/a	Open Water	1281.60
Bow River	79,662	1281.48	n/a	Open Water	1281.48
Bow River	79,598	1281.34	n/a	Open Water	1281.34
Bow River	79,245	1281.04	n/a	Open Water	1281.04
Bow River	78,845	1280.91	n/a	Open Water	1280.91
Bow River	78,451	1280.79	n/a	Open Water	1280.79
Bow River	78,039	1280.65	n/a	Open Water	1280.65
Bow River	77,716	1280.38	n/a	Open Water	1280.38
Bow River	77,654	1280.31	n/a	Open Water	1280.31
Bow River	77,609	1280.30	n/a	Open Water	1280.30
Bow River	77,494	1280.20	n/a	Open Water	1280.20
Bow River	77,488	1265.68	n/a	Open Water	1265.68
Bow River	76,811	1259.41	n/a	Open Water	1259.41
Bow River	76,468	1259.10	n/a	Open Water	1259.10
Bow River	76,158	1258.88	n/a	Open Water	1258.88
Bow River	75,774	1258.70	n/a	Open Water	1258.70
Bow River	75,465	1257.85	n/a	Open Water	1257.85

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	75,281	1257.94	n/a	Open Water	1257.94
Bow River	75,120	1257.72	n/a	Open Water	1257.72
Bow River	74,927	1257.63	n/a	Open Water	1257.63
Bow River	74,746	1257.43	n/a	Open Water	1257.43
Bow River	74,376	1257.35	n/a	Open Water	1257.35
Bow River	74,053	1257.11	n/a	Open Water	1257.11
Bow River	73,903	1257.10	n/a	Open Water	1257.10
Bow River	73,863	1257.10	n/a	Open Water	1257.10
Bow River	73,845	1240.77	n/a	Open Water	1240.77
Bow River	73,571	1238.27	n/a	Open Water	1238.27
Bow River	73,410	1237.01	n/a	Open Water	1237.01
Bow River	73,134	1236.27	n/a	Open Water	1236.27
Bow River	72,680	1234.93	n/a	Open Water	1234.93
Bow River	72,441	1234.24	n/a	Open Water	1234.24
Bow River	71,892	1229.43	n/a	Open Water	1229.43
Bow River	71,726	1228.40	n/a	Open Water	1228.40
Bow River	71,458	1226.85	n/a	Open Water	1226.85
Bow River	71,322	1226.14	n/a	Open Water	1226.14
Bow River	70,886	1224.69	n/a	Open Water	1224.69
Bow River	70,342	1223.56	n/a	Open Water	1223.56
Bow River	69,862	1222.87	n/a	Open Water	1222.87
Bow River	69,341	1221.50	n/a	Open Water	1221.50
Bow River	69,060	1219.58	n/a	Open Water	1219.58
Bow River	68,797	1218.78	n/a	Open Water	1218.78
Bow River	68,599	1218.61	n/a	Open Water	1218.61
Bow River	68,516	1218.49	n/a	Open Water	1218.49
Bow River	68,296	1217.91	n/a	Open Water	1217.91
Bow River	68,089	1217.49	n/a	Open Water	1217.49
Bow River	67,716	1216.81	n/a	Open Water	1216.81
Bow River	67,419	1216.27	n/a	Open Water	1216.27
Bow River	67,278	1215.87	n/a	Open Water	1215.87
Bow River	67,115	1215.58	n/a	Open Water	1215.58
Bow River	66,773	1215.04	n/a	Open Water	1215.04

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	66,431	1214.57	n/a	Open Water	1214.57
Bow River	66,144	1214.16	n/a	Open Water	1214.16
Bow River	65,921	1213.16	n/a	Open Water	1213.16
Bow River	65,549	1212.53	n/a	Open Water	1212.53
Bow River	65,150	1212.00	n/a	Open Water	1212.00
Bow River	64,837	1211.32	n/a	Open Water	1211.32
Bow River	64,628	1211.11	n/a	Open Water	1211.11
Bow River	64,302	1210.78	n/a	Open Water	1210.78
Bow River	64,027	1210.13	n/a	Open Water	1210.13
Bow River	63,717	1209.26	n/a	Open Water	1209.26
Bow River	63,212	1208.55	n/a	Open Water	1208.55
Bow River	62,736	1207.57	n/a	Open Water	1207.57
Bow River	62,402	1206.89	n/a	Open Water	1206.89
Bow River	61,981	1206.35	n/a	Open Water	1206.35
Bow River	61,281	1205.20	n/a	Open Water	1205.20
Bow River	60,832	1204.45	n/a	Open Water	1204.45
Bow River	60,261	1203.49	n/a	Open Water	1203.49
Bow River	59,664	1202.16	n/a	Open Water	1202.16
Bow River	59,198	1201.07	n/a	Open Water	1201.07
Bow River	58,730	1199.92	n/a	Open Water	1199.92
Bow River	58,375	1199.15	n/a	Open Water	1199.15
Bow River	57,997	1198.22	n/a	Open Water	1198.22
Bow River	57,624	1196.87	n/a	Open Water	1196.87
Bow River	57,271	1196.06	n/a	Open Water	1196.06
Bow River	56,775	1195.07	n/a	Open Water	1195.07
Bow River	56,284	1193.94	n/a	Open Water	1193.94
Bow River	55,904	1193.44	n/a	Open Water	1193.44
Bow River	55,458	1192.96	n/a	Open Water	1192.96
Bow River	55,088	1192.54	n/a	Open Water	1192.54
Bow River	54,806	1192.54	n/a	Open Water	1192.54
Bow River	54,585	1192.50	n/a	Open Water	1192.50
Bow River	54,487	1192.29	n/a	Open Water	1192.29
Bow River	54,433	1192.11	n/a	Open Water	1192.11

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	54,283	1192.13	n/a	Open Water	1192.13
Bow River	54,078	1192.10	n/a	Open Water	1192.10
Bow River	53,802	1192.06	n/a	Open Water	1192.06
Bow River	53,388	1191.98	n/a	Open Water	1191.98
Bow River	52,796	1191.93	n/a	Open Water	1191.93
Bow River	52,139	1191.88	n/a	Open Water	1191.88
Bow River	51,427	1191.84	n/a	Open Water	1191.84
Bow River	50,452	1191.80	n/a	Open Water	1191.80
Bow River	49,366	1191.80	n/a	Open Water	1191.80
Bow River	48,977	1191.80	n/a	Open Water	1191.80
Bow River	47,540	1191.80	n/a	Open Water	1191.80
Bow River	45,971	1191.80	n/a	Open Water	1191.80
Bow River	44,631	1191.80	n/a	Open Water	1191.80
Bow River	42,928	1191.80	n/a	Open Water	1191.80
Bow River	42,170	1191.80	n/a	Open Water	1191.80
Bow River	42,132	1162.92	n/a	Open Water	1162.92
Bow River	41,824	1161.92	1158.99	Open Water	1161.92
Bow River	41,537	1161.44	1158.73	Open Water	1161.44
Bow River	41,361	1160.93	1158.41	Open Water	1160.93
Bow River	40,989	1159.61	1157.23	Open Water	1159.61
Bow River	40,712	1159.15	1156.91	Open Water	1159.15
Bow River	40,439	1158.77	1156.46	Open Water	1158.77
Bow River	40,129	1158.09	1155.48	Open Water	1158.09
Bow River	39,836	1157.47	1154.18	Open Water	1157.47
Bow River	39,478	1156.46	1153.33	Open Water	1156.46
Bow River	39,161	1155.83	1153.05	Open Water	1155.83
Bow River	38,875	1155.27	1152.60	Open Water	1155.27
Bow River	38,529	1154.67	1151.59	Open Water	1154.67
Bow River	38,248	1153.91	1150.73	Open Water	1153.91
Bow River	38,018	1153.29	1150.25	Open Water	1153.29
Bow River	37,774	1153.02	1149.89	Open Water	1153.02
Bow River	37,502	1152.26	1149.59	Open Water	1152.26
Bow River	37,086	1151.37	1148.95	Open Water	1151.37

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	36,785	1150.61	1148.33	Open Water	1150.61
Bow River	36,450	1149.69	1147.00	Open Water	1149.69
Bow River	36,158	1148.85	1146.64	Open Water	1148.85
Bow River	35,863	1148.05	1146.48	Open Water	1148.05
Bow River	35,381	1146.91	1146.19	Open Water	1146.91
Bow River	35,009	1145.92	1145.91	Open Water	1145.92
Bow River	34,562	1145.16	1145.18	Ice Jam	1145.18
Bow River	34,140	1144.38	1144.60	Ice Jam	1144.60
Bow River	33,877	1143.74	1144.11	Ice Jam	1144.11
Bow River	33,609	1143.19	1143.55	Ice Jam	1143.55
Bow River	33,289	1142.60	1142.96	Ice Jam	1142.96
Bow River	32,977	1141.84	1142.37	Ice Jam	1142.37
Bow River	32,605	1141.15	1141.82	Ice Jam	1141.82
Bow River	32,220	1140.38	1140.91	Ice Jam	1140.91
Bow River	31,935	1139.99	1140.44	Ice Jam	1140.44
Bow River	31,588	1139.27	1139.98	Ice Jam	1139.98
Bow River	31,260	1138.66	1139.39	Ice Jam	1139.39
Bow River	30,935	1137.99	1138.74	Ice Jam	1138.74
Bow River	30,566	1137.14	1138.02	Ice Jam	1138.02
Bow River	30,214	1136.49	1137.22	Ice Jam	1137.22
Bow River	29,937	1136.02	1136.80	Ice Jam	1136.80
Bow River	29,563	1135.40	1136.24	Ice Jam	1136.24
Bow River	29,172	1134.77	1135.43	Ice Jam	1135.43
Bow River	28,925	1134.07	1135.03	Ice Jam	1135.03
Bow River	28,798	1133.97	1134.78	Ice Jam	1134.78
Bow River	28,448	1133.16	1134.03	Ice Jam	1134.03
Bow River	27,998	1132.29	1133.22	Ice Jam	1133.22
Bow River	27,701	1131.84	1132.73	Ice Jam	1132.73
Bow River	27,469	1131.32	1132.26	Ice Jam	1132.26
Bow River	27,386	1130.98	1132.14	Ice Jam	1132.14
Bow River	27,359	1130.77	1132.09*	Ice Jam	1132.09
Bow River	27,295	1130.72	1131.97	Ice Jam	1131.97
Bow River	27,116	1130.29	1131.61	Ice Jam	1131.61

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	26,844	1129.73	1131.02	Ice Jam	1131.02
Bow River	26,671	1129.64	1130.63	Ice Jam	1130.63
Bow River	26,466	1129.34	1130.17	Ice Jam	1130.17
Bow River	26,203	1128.54	1129.49	Ice Jam	1129.49
Bow River	25,944	1128.10	1129.01	Ice Jam	1129.01
Bow River	25,748	1127.72	1128.65	Ice Jam	1128.65
Bow River	25,534	1127.35	1128.29	Ice Jam	1128.29
Bow River	25,343	1127.18	1127.95	Ice Jam	1127.95
Bow River	25,205	1127.01	1127.69	Ice Jam	1127.69
Bow River	24,999	1126.50	1127.28	Ice Jam	1127.28
Bow River	24,879	1126.25	1127.02	Ice Jam	1127.02
Bow River	24,684	1126.01	1126.65	Ice Jam	1126.65
Bow River	24,482	1125.11	1126.19	Ice Jam	1126.19
Bow River	24,338	1124.73	1125.98	Ice Jam	1125.98
Bow River	24,132	1124.38	1125.58	Ice Jam	1125.58
Bow River	24,010	1124.13	1125.31	Ice Jam	1125.31
Bow River	23,713	1123.81	1124.46	Ice Jam	1124.46
Bow River	23,562	1123.52	1124.01	Ice Jam	1124.01
Bow River	23,415	1123.13	1123.72*	Ice Jam	1123.72
Bow River	23,391	1122.90	1123.67*	Ice Jam	1123.67
Bow River	23,317	1122.77	1123.52	Ice Jam	1123.52
Bow River	23,130	1122.43	1123.16	Ice Jam	1123.16
Bow River	22,973	1122.14	1122.83	Ice Jam	1122.83
Bow River	22,894	1122.16	1122.65	Ice Jam	1122.65
Bow River	22,726	1121.69	1122.23	Ice Jam	1122.23
Bow River	22,599	1121.18	1121.92	Ice Jam	1121.92
Bow River	22,340	1120.69	1121.40	Ice Jam	1121.40
Bow River	22,028	1120.38	1120.77	Ice Jam	1120.77
Bow River	21,803	1119.45	1120.39	Ice Jam	1120.39
Bow River	21,608	1119.12	1120.12	Ice Jam	1120.12
Bow River	21,421	1118.76	1119.91	Ice Jam	1119.91
Bow River	21,274	1118.53	1119.71	Ice Jam	1119.71
Bow River	21,235	1118.41	1119.64*	Ice Jam	1119.64

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	21,217	1118.28	1119.60*	Ice Jam	1119.60
Bow River	21,170	1118.22	1119.51	Ice Jam	1119.51
Bow River	21,030	1118.04	1119.12	Ice Jam	1119.12
Bow River	20,876	1117.59	1118.69	Ice Jam	1118.69
Bow River	20,666	1117.28	1118.22	Ice Jam	1118.22
Bow River	20,496	1116.95	1117.92	Ice Jam	1117.92
Bow River	20,329	1116.69	1117.66	Ice Jam	1117.66
Bow River	20,174	1116.51	1117.44	Ice Jam	1117.44
Bow River	19,933	1116.17	1117.00	Ice Jam	1117.00
Bow River	19,798	1115.88	1116.62	Ice Jam	1116.62
Bow River	19,603	1114.88	1116.09	Ice Jam	1116.09
Bow River	19,507	1114.59	1115.96	Ice Jam	1115.96
Bow River	19,342	1114.30	1115.75	Ice Jam	1115.75
Bow River	19,150	1114.16	1115.44	Ice Jam	1115.44
Bow River	18,984	1114.02	1115.11	Ice Jam	1115.11
Bow River	18,840	1113.76	1114.75	Ice Jam	1114.75
Bow River	18,709	1113.57	1114.52	Ice Jam	1114.52
Bow River	18,500	1113.28	1113.68	Ice Jam	1113.68
Bow River	18,270	1112.28	1113.24	Ice Jam	1113.24
Bow River	17,960	1111.66	1112.73	Ice Jam	1112.73
Bow River	17,680	1111.46	1112.38	Ice Jam	1112.38
Bow River	17,298	1110.74	1111.61	Ice Jam	1111.61
Bow River	16,969	1110.38	1110.93	Ice Jam	1110.93
Bow River	16,703	1109.68	1110.40	Ice Jam	1110.40
Bow River	16,437	1109.36	1110.01	Ice Jam	1110.01
Bow River	16,269	1109.12	1109.75	Ice Jam	1109.75
Bow River	16,024	1108.70	1109.23	Ice Jam	1109.23
Bow River	15,830	1108.39	1108.95	Ice Jam	1108.95
Bow River	15,648	1108.29	1108.66	Ice Jam	1108.66
Bow River	15,440	1107.62	1108.27	Ice Jam	1108.27
Bow River	15,224	1107.32	1107.97	Ice Jam	1107.97
Bow River	14,981	1106.84	1107.59	Ice Jam	1107.59
Bow River	14,763	1106.30	1107.23	Ice Jam	1107.23

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	14,383	1105.44	1106.56	Ice Jam	1106.56
Bow River	14,213	1105.12	1106.28	Ice Jam	1106.28
Bow River	13,874	1104.46	1105.49	Ice Jam	1105.49
Bow River	13,626	1103.93	1105.06	Ice Jam	1105.06
Bow River	13,399	1103.75	1104.71	Ice Jam	1104.71
Bow River	13,018	1102.81	1104.03	Ice Jam	1104.03
Bow River	12,701	1102.19	1103.47	Ice Jam	1103.47
Bow River	12,451	1101.71	1102.85	Ice Jam	1102.85
Bow River	12,234	1101.31	1102.47	Ice Jam	1102.47
Bow River	11,894	1100.98	1102.01	Ice Jam	1102.01
Bow River	11,503	1100.14	1101.29	Ice Jam	1101.29
Bow River	11,230	1099.57	1100.87	Ice Jam	1100.87
Bow River	10,967	1099.21	1100.51	Ice Jam	1100.51
Bow River	10,591	1098.70	1099.98	Ice Jam	1099.98
Bow River	10,200	1097.87	1099.02	Ice Jam	1099.02
Bow River	10,063	1097.79	1098.75	Ice Jam	1098.75
Bow River	9,667	1097.21	1097.89	Ice Jam	1097.89
Bow River	9,467	1096.76	1097.35	Ice Jam	1097.35
Bow River	9,283	1096.29	1097.03	Ice Jam	1097.03
Bow River	9,041	1096.12	1096.69	Ice Jam	1096.69
Bow River	8,729	1095.35	1096.19	Ice Jam	1096.19
Bow River	8,459	1094.95	1095.69	Ice Jam	1095.69
Bow River	8,192	1094.69	1095.17	Ice Jam	1095.17
Bow River	7,916	1094.06	1094.74	Ice Jam	1094.74
Bow River	7,653	1093.70	1094.36	Ice Jam	1094.36
Bow River	7,469	1093.39	1094.13	Ice Jam	1094.13
Bow River	7,251	1093.03	1093.96	Ice Jam	1093.96
Bow River	7,027	1092.80	1093.77	Ice Jam	1093.77
Bow River	6,740	1092.39	1093.41	Ice Jam	1093.41
Bow River	6,416	1091.97	1093.07	Ice Jam	1093.07
Bow River	6,005	1091.74	1092.28	Ice Jam	1092.28
Bow River	5,633	1091.61	1091.68	Ice Jam	1091.68
Bow River	5,196	1091.51	1091.43	Open Water	1091.51

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bow River	4,675	1091.36	1090.92	Open Water	1091.36
Bow River	4,201	1091.23	1090.91	Open Water	1091.23
Bow River	3,744	1091.15	1090.91	Open Water	1091.15
Bow River	3,204	1091.06	1090.90	Open Water	1091.06
Bow River	2,677	1091.05	1090.90	Open Water	1091.05
Bow River	2,148	1091.04	1090.90	Open Water	1091.04
Bow River	1,302	1091.02	1090.90	Open Water	1091.02
Bow River	329	1091.01	1090.90	Open Water	1091.01
Bow River	12	1090.90	1090.90	Open Water	1090.90
Bighill Creek	6,300	1165.17	n/a	Open Water	1165.17
Bighill Creek	6,133	1164.04	n/a	Open Water	1164.04
Bighill Creek	5,995	1163.08	n/a	Open Water	1163.08
Bighill Creek	5,798	1161.90	n/a	Open Water	1161.90
Bighill Creek	5,618	1160.34	n/a	Open Water	1160.34
Bighill Creek	5,483	1159.06	n/a	Open Water	1159.06
Bighill Creek	5,403	1158.18	n/a	Open Water	1158.18
Bighill Creek	5,281	1157.44	n/a	Open Water	1157.44
Bighill Creek	5,185	1156.57	n/a	Open Water	1156.57
Bighill Creek	5,129	1156.21	n/a	Open Water	1156.21
Bighill Creek	5,092	1156.10	n/a	Open Water	1156.10
Bighill Creek	5,082	1155.74	n/a	Open Water	1155.74
Bighill Creek	5,064	1155.66	n/a	Open Water	1155.66
Bighill Creek	5,060	1155.33	n/a	Open Water	1155.33
Bighill Creek	5,030	1155.14	n/a	Open Water	1155.14
Bighill Creek	4,966	1154.34	n/a	Open Water	1154.34
Bighill Creek	4,883	1153.71	n/a	Open Water	1153.71
Bighill Creek	4,810	1153.39	n/a	Open Water	1153.39
Bighill Creek	4,715	1152.78	n/a	Open Water	1152.78
Bighill Creek	4,639	1152.30	n/a	Open Water	1152.30
Bighill Creek	4,527	1151.52	n/a	Open Water	1151.52
Bighill Creek	4,461	1151.19	n/a	Open Water	1151.19
Bighill Creek	4,363	1150.59	n/a	Open Water	1150.59
Bighill Creek	4,357	1150.43	n/a	Open Water	1150.43

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bighill Creek	4,295	1150.09	n/a	Open Water	1150.09
Bighill Creek	4,203	1149.33	n/a	Open Water	1149.33
Bighill Creek	4,129	1148.37	n/a	Open Water	1148.37
Bighill Creek	4,055	1147.86	n/a	Open Water	1147.86
Bighill Creek	3,915	1147.07	n/a	Open Water	1147.07
Bighill Creek	3,851	1146.30	n/a	Open Water	1146.30
Bighill Creek	3,797	1145.91	n/a	Open Water	1145.91
Bighill Creek	3,790	1145.78	n/a	Open Water	1145.78
Bighill Creek	3,675	1145.22	n/a	Open Water	1145.22
Bighill Creek	3,563	1144.47	n/a	Open Water	1144.47
Bighill Creek	3,388	1143.90	n/a	Open Water	1143.90
Bighill Creek	3,382	1143.87	n/a	Open Water	1143.87
Bighill Creek	3,263	1143.46	n/a	Open Water	1143.46
Bighill Creek	3,094	1142.88	n/a	Open Water	1142.88
Bighill Creek	2,960	1142.41	n/a	Open Water	1142.41
Bighill Creek	2,905	1142.34	n/a	Open Water	1142.34
Bighill Creek	2,848	1142.12	n/a	Open Water	1142.12
Bighill Creek	2,826	1142.09	n/a	Open Water	1142.09
Bighill Creek	2,804	1141.58	n/a	Open Water	1141.58
Bighill Creek	2,792	1141.55	n/a	Open Water	1141.55
Bighill Creek	2,780	1141.40	n/a	Open Water	1141.40
Bighill Creek	2,761	1141.32	n/a	Open Water	1141.32
Bighill Creek	2,748	1141.22	n/a	Open Water	1141.22
Bighill Creek	2,729	1140.87	n/a	Open Water	1140.87
Bighill Creek	2,676	1140.73	n/a	Open Water	1140.73
Bighill Creek	2,631	1140.48	n/a	Open Water	1140.48
Bighill Creek	2,573	1140.39	n/a	Open Water	1140.39
Bighill Creek	2,543	1140.10	n/a	Open Water	1140.10
Bighill Creek	2,517	1139.97	n/a	Open Water	1139.97
Bighill Creek	2,482	1139.00	n/a	Open Water	1139.00
Bighill Creek	2,387	1138.82	n/a	Open Water	1138.82
Bighill Creek	2,267	1138.15	n/a	Open Water	1138.15
Bighill Creek	2,161	1137.67	n/a	Open Water	1137.67

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Bighill Creek	2,154	1137.40	n/a	Open Water	1137.40
Bighill Creek	2,106	1137.04	n/a	Open Water	1137.04
Bighill Creek	1,937	1136.60	n/a	Open Water	1136.60
Bighill Creek	1,769	1136.09	n/a	Open Water	1136.09
Bighill Creek	1,723	1135.86	n/a	Open Water	1135.86
Bighill Creek	1,720	1135.78	n/a	Open Water	1135.78
Bighill Creek	1,606	1135.11	n/a	Open Water	1135.11
Bighill Creek	1,536	1134.82	n/a	Open Water	1134.82
Bighill Creek	1,501	1134.58	n/a	Open Water	1134.58
Bighill Creek	1,484	1134.01	n/a	Open Water	1134.01
Bighill Creek	1,395	1132.47	n/a	Open Water	1132.47
Bighill Creek	1,212	1131.77	n/a	Open Water	1131.77
Bighill Creek	1,202	1131.36	n/a	Open Water	1131.36
Bighill Creek	1,168	1130.99	n/a	Open Water	1130.99
Bighill Creek	1,095	1130.29	n/a	Open Water	1130.29
Bighill Creek	995	1129.37	n/a	Open Water	1129.37
Bighill Creek	989	1129.28	n/a	Open Water	1129.28
Bighill Creek	915	1128.47	n/a	Open Water	1128.47
Bighill Creek	822	1127.44	n/a	Open Water	1127.44
Bighill Creek	740	1126.72	n/a	Open Water	1126.72
Bighill Creek	617	1126.62	n/a	Open Water	1126.62
Bighill Creek	586	1126.61	n/a	Open Water	1126.61
Bighill Creek	576	1126.61	n/a	Open Water	1126.61
Bighill Creek	505	1126.58	n/a	Open Water	1126.58
Bighill Creek	454	1124.27	n/a	Open Water	1124.27
Bighill Creek	376	1123.74	n/a	Open Water	1123.74
Bighill Creek	369	1123.49	1122.83 ^A	Open Water	1123.49
Bighill Creek	335	1122.79	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	262	1122.71	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	211	1122.70	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	206	1122.70	1122.83 ^A	Ice Jam	1122.83
Bighill Creek	185	1122.70	1122.83 ^A	Ice Jam	1122.83
Exshaw Creek	1,319	1342.75	n/a	Open Water	1342.75

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Exshaw Creek	1,182	1338.97	n/a	Open Water	1338.97
Exshaw Creek	1,105	1335.69	n/a	Open Water	1335.69
Exshaw Creek	1,014	1331.54	n/a	Open Water	1331.54
Exshaw Creek	922	1328.19	n/a	Open Water	1328.19
Exshaw Creek	838	1323.16	n/a	Open Water	1323.16
Exshaw Creek	708	1317.90	n/a	Open Water	1317.90
Exshaw Creek	593	1313.16	n/a	Open Water	1313.16
Exshaw Creek	475	1307.83	n/a	Open Water	1307.83
Exshaw Creek	454	1306.31	n/a	Open Water	1306.31
Exshaw Creek	449	1306.14	n/a	Open Water	1306.14
Exshaw Creek	434	1305.72	n/a	Open Water	1305.72
Exshaw Creek	352	1302.59	n/a	Open Water	1302.59
Exshaw Creek	233	1297.29	n/a	Open Water	1297.29
Exshaw Creek	219	1297.13	n/a	Open Water	1297.13
Exshaw Creek	198	1296.21	n/a	Open Water	1296.21
Exshaw Creek	190	1295.64	n/a	Open Water	1295.64
Exshaw Creek	171	1294.23	n/a	Open Water	1294.23
Exshaw Creek	161	1294.08	n/a	Open Water	1294.08
Exshaw Creek	147	1294.03	n/a	Open Water	1294.03
Exshaw Creek	133	1293.90	n/a	Open Water	1293.90
Exshaw Creek	118	1293.69	n/a	Open Water	1293.69
Exshaw Creek	104	1293.27	n/a	Open Water	1293.27
Exshaw Creek	89	1292.47	n/a	Open Water	1292.47
Jumpingpound Creek	5,294	1154.88	n/a	Open Water	1154.88
Jumpingpound Creek	5,202	1154.07	n/a	Open Water	1154.07
Jumpingpound Creek	5,101	1153.46	n/a	Open Water	1153.46
Jumpingpound Creek	4,984	1152.85	n/a	Open Water	1152.85
Jumpingpound Creek	4,882	1152.25	n/a	Open Water	1152.25
Jumpingpound Creek	4,791	1151.91	n/a	Open Water	1151.91
Jumpingpound Creek	4,648	1150.63	n/a	Open Water	1150.63
Jumpingpound Creek	4,550	1150.09	n/a	Open Water	1150.09
Jumpingpound Creek	4,463	1149.85	n/a	Open Water	1149.85
Jumpingpound Creek	4,369	1149.49	n/a	Open Water	1149.49

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Jumpingpound Creek	4,277	1148.43	n/a	Open Water	1148.43
Jumpingpound Creek	4,168	1148.29	n/a	Open Water	1148.29
Jumpingpound Creek	4,040	1147.04	n/a	Open Water	1147.04
Jumpingpound Creek	3,915	1146.85	n/a	Open Water	1146.85
Jumpingpound Creek	3,824	1145.98	n/a	Open Water	1145.98
Jumpingpound Creek	3,672	1145.27	n/a	Open Water	1145.27
Jumpingpound Creek	3,591	1144.53	n/a	Open Water	1144.53
Jumpingpound Creek	3,503	1143.90	n/a	Open Water	1143.90
Jumpingpound Creek	3,363	1143.57	n/a	Open Water	1143.57
Jumpingpound Creek	3,202	1142.30	n/a	Open Water	1142.30
Jumpingpound Creek	3,095	1141.43	n/a	Open Water	1141.43
Jumpingpound Creek	3,006	1140.83	n/a	Open Water	1140.83
Jumpingpound Creek	2,867	1140.28	n/a	Open Water	1140.28
Jumpingpound Creek	2,745	1139.86	n/a	Open Water	1139.86
Jumpingpound Creek	2,650	1139.11	n/a	Open Water	1139.11
Jumpingpound Creek	2,557	1138.57	n/a	Open Water	1138.57
Jumpingpound Creek	2,410	1137.99	n/a	Open Water	1137.99
Jumpingpound Creek	2,301	1137.42	n/a	Open Water	1137.42
Jumpingpound Creek	2,181	1136.72	n/a	Open Water	1136.72
Jumpingpound Creek	2,081	1136.33	n/a	Open Water	1136.33
Jumpingpound Creek	1,861	1134.61	n/a	Open Water	1134.61
Jumpingpound Creek	1,733	1134.29	n/a	Open Water	1134.29
Jumpingpound Creek	1,592	1134.02	n/a	Open Water	1134.02
Jumpingpound Creek	1,455	1132.92	n/a	Open Water	1132.92
Jumpingpound Creek	1,327	1132.33	n/a	Open Water	1132.33
Jumpingpound Creek	1,224	1131.93	n/a	Open Water	1131.93
Jumpingpound Creek	1,056	1131.01	n/a	Open Water	1131.01
Jumpingpound Creek	901	1130.65	n/a	Open Water	1130.65
Jumpingpound Creek	791	1130.52	n/a	Open Water	1130.52
Jumpingpound Creek	722	1130.51	n/a	Open Water	1130.51
Jumpingpound Creek	665	1130.29	n/a	Open Water	1130.29
Jumpingpound Creek	625	1128.93	n/a	Open Water	1128.93
Jumpingpound Creek	562	1128.76	n/a	Open Water	1128.76

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Jumpingpound Creek	501	1127.91	n/a	Open Water	1127.91
Jumpingpound Creek	386	1127.34	1127.02 ^B	Open Water	1127.34
Jumpingpound Creek	232	1126.76	1127.02 ^B	Ice Jam	1127.02
Jumpingpound Creek	116	1126.27	1127.02 ^B	Ice Jam	1127.02
Policeman Creek	6,418	1313.76	n/a	Open Water	1313.76
Policeman Creek	6,410	1313.73	n/a	Open Water	1313.73
Policeman Creek	6,344	1313.64	n/a	Open Water	1313.64
Policeman Creek	6,312	1313.57	n/a	Open Water	1313.57
Policeman Creek	6,227	1313.37	n/a	Open Water	1313.37
Policeman Creek	6,126	1313.11	n/a	Open Water	1313.11
Policeman Creek	6,075	1312.98	n/a	Open Water	1312.98
Policeman Creek	6,023	1312.88	n/a	Open Water	1312.88
Policeman Creek	5,960	1312.81	n/a	Open Water	1312.81
Policeman Creek	5,946	1312.66	n/a	Open Water	1312.66
Policeman Creek	5,877	1312.65	n/a	Open Water	1312.65
Policeman Creek	5,782	1312.64	n/a	Open Water	1312.64
Policeman Creek	5,719	1312.64	n/a	Open Water	1312.64
Policeman Creek	5,673	1312.60	n/a	Open Water	1312.60
Policeman Creek	5,666	1312.30	n/a	Open Water	1312.30
Policeman Creek	5,651	1312.15	n/a	Open Water	1312.15
Policeman Creek	5,646	1311.93	n/a	Open Water	1311.93
Policeman Creek	5,599	1311.68	n/a	Open Water	1311.68
Policeman Creek	5,531	1311.67	n/a	Open Water	1311.67
Policeman Creek	5,468	1311.64	n/a	Open Water	1311.64
Policeman Creek	5,364	1311.61	n/a	Open Water	1311.61
Policeman Creek	5,257	1311.59	n/a	Open Water	1311.59
Policeman Creek	5,248	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,163	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,110	1311.58	n/a	Open Water	1311.58
Policeman Creek	5,101	1311.57	n/a	Open Water	1311.57
Policeman Creek	5,023	1311.56	n/a	Open Water	1311.56
Policeman Creek	4,985	1311.10	n/a	Open Water	1311.10
Policeman Creek	4,936	1311.00	n/a	Open Water	1311.00

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Policeman Creek	4,907	1310.77	n/a	Open Water	1310.77
Policeman Creek	4,880	1310.51	n/a	Open Water	1310.51
Policeman Creek	4,855	1310.42	n/a	Open Water	1310.42
Policeman Creek	4,852	1310.20	n/a	Open Water	1310.20
Policeman Creek	4,796	1310.08	n/a	Open Water	1310.08
Policeman Creek	4,726	1310.05	n/a	Open Water	1310.05
Policeman Creek	4,720	1310.01	n/a	Open Water	1310.01
Policeman Creek	4,714	1310.00	n/a	Open Water	1310.00
Policeman Creek	4,675	1309.95	n/a	Open Water	1309.95
Policeman Creek	4,603	1309.72	n/a	Open Water	1309.72
Policeman Creek	4,544	1309.47	n/a	Open Water	1309.47
Policeman Creek	4,463	1309.08	n/a	Open Water	1309.08
Policeman Creek	4,380	1308.81	n/a	Open Water	1308.81
Policeman Creek	4,337	1308.78	n/a	Open Water	1308.78
Policeman Creek	4,320	1308.62	n/a	Open Water	1308.62
Policeman Creek	4,220	1308.50	n/a	Open Water	1308.50
Policeman Creek	4,184	1308.47	n/a	Open Water	1308.47
Policeman Creek	4,030	1308.32	n/a	Open Water	1308.32
Policeman Creek	3,921	1308.24	n/a	Open Water	1308.24
Policeman Creek	3,888	1308.18	n/a	Open Water	1308.18
Policeman Creek	3,862	1308.00	n/a	Open Water	1308.00
Policeman Creek	3,835	1308.01	n/a	Open Water	1308.01
Policeman Creek	3,784	1308.00	n/a	Open Water	1308.00
Policeman Creek	3,713	1307.95	n/a	Open Water	1307.95
Policeman Creek	3,685	1307.53	n/a	Open Water	1307.53
Policeman Creek	3,527	1307.40	n/a	Open Water	1307.40
Policeman Creek	3,354	1307.36	n/a	Open Water	1307.36
Policeman Creek	3,191	1307.34	n/a	Open Water	1307.34
Policeman Creek	3,154	1307.31	n/a	Open Water	1307.31
Policeman Creek	3,141	1307.29	n/a	Open Water	1307.29
Policeman Creek	3,002	1307.14	n/a	Open Water	1307.14
Policeman Creek	2,822	1306.99	n/a	Open Water	1306.99
Policeman Creek	2,804	1306.96	n/a	Open Water	1306.96

River	River Station (m)	Design Flood Level (m)		Governing Hazard	Governing Design Flood Level (m)
		Open Water	Ice Jam		
Policeman Creek	2,782	1306.95	n/a	Open Water	1306.95
Policeman Creek	2,666	1306.67	n/a	Open Water	1306.67
Policeman Creek	2,518	1306.54	n/a	Open Water	1306.54
Policeman Creek	2,394	1306.50	n/a	Open Water	1306.50
Policeman Creek	2,306	1306.49	n/a	Open Water	1306.49
Policeman Creek	2,128	1306.25	n/a	Open Water	1306.25
Policeman Creek	1,771	1306.19	n/a	Open Water	1306.19
Policeman Creek	1,560	1306.18	n/a	Open Water	1306.18
Policeman Creek	1,544	1306.18	n/a	Open Water	1306.18
Policeman Creek	1,373	1306.18	n/a	Open Water	1306.18

- Notes:** *
- * Denotes cross sections that were omitted from the ice enhanced model for improved model performance. The water surface elevation presented in the table were interpolated between the closest upstream and downstream cross sections.
 - A Ice jam water levels at the confluence of Bighill Creek with the Bow River were transferred upstream along Bighill Creek from Bow River RS 22,973.
 - B Ice jam water levels at the confluence of Jumpingpound Creek with the Bow River were transferred upstream along Jumpingpound Creek from Bow River RS 24,879.

DRAFT