MUNICIPAL DISTRICT OF WILLOW CREEK NO. 26
IN THE PROVINCE OF ALBERTA

Clear Lake

AREA STRUCTURE PLAN

Background Report



Prepared by the

OLDMAN RIVER REGIONAL SERVICES COMMISSION

May 2004

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Clear Lake

AREA STRUCTURE PLAN

Background Report

1.0 INTRODUCTION

Clear Lake is a naturally-occurring water body located in the Municipal District of Willow Creek No. 26. The lake receives inflow from an intermittent stream, Clear Brook, and as a result, historic water levels in the lake have fluctuated. Identified as a regionally significant environmental area, it has been characterized by seasonal wetlands that are important nesting areas for birds. Since the early 1920s Clear Lake has been considered as a potential storage site to support recreation and irrigated agriculture.

In 1945 Ducks Unlimited proposed to construct a dam on Mosquito Creek to divert water to stabilize levels in Clear Lake. In 1956 the provincial Water Resources Branch investigated the potential for draining Clear Lake and surrounding wetlands. Again in 1963, the Stavely Fish and Game Association urged the province to divert water to the lake to ensure sport fish populations would not be put at risk from dropping water levels. Clear Lake supported a popular northern pike and perch sport fishery as recently as the late 1970s. Dry conditions in the late 1970s and early 1980s saw Clear Lake continue to experience problems with low water levels. Fish kills were recorded in the winter of 1979-80 when evaporation lowered the maximum depth to 2 m (7 feet). By the fall of 1985 the lake was totally dry.

The stabilization of Clear Lake was included in the 1998 application by Alberta Public Works, Supply and Services to develop the Little Bow Project, a water management project for the purposes of conveying and storing water from the Highwood River. The diversion canal from Mosquito Creek was completed in 2001 and diversions of water to fill both Clear Lake and the newly-constructed wetland habitat have occurred in both 2002 and 2003. The development of the Little Bow Project/Highwood Diversion Plan has created the potential to significantly change the local landscape.

Since land use planning has largely become the responsibility of local governments, the Municipal District of Willow Creek No. 26 has requested that a plan be created which will provide a framework to guide and direct future subdivision and development of the lands surrounding Clear Lake.

PURPOSE

The purpose of this report is to collect and summarize available date within the area surrounding Clear Lake. Information collected will be utilized, in part, for the preparation of an Area Structure Plan.

The background report will:

- provide an analysis of the existing circumstances;
- attempt to identify issues and opportunities that have emerged from the analysis of the preliminary information; and
- act as an agenda for future discussion by the Steering Committee and other interested stakeholders.

This Background Report will act as the foundation for the creation of an area structure plan which will serve as a guide for the administration and elected and appointed officials of the Municipal District of Willow Creek No. 26, area land owners, potential developers, provincial departments, the general public and any special interest groups who are concerned with the agricultural, natural, historic or recreational resources in the area in order to manage the lands surrounding Clear Lake in the best possible way.

CLEAR LAKE AND THE LITTLE BOW PROJECT

The formation of the Little Bow Water Users Association in 1979 marked the beginning of the long process connected with the approval of the Little Bow Project. In 1982, the ministry of Environment, in an effort to investigate water supply concerns and to study the feasibility of storage development in the Little Bow River basin, initiated the two-phase study.

Phase I of the Little Bow Basin Study (1981-1985) included identifying water problems for the entire basin, operational solutions and preparation of an action plan. In response to local concerns with the lack of water in Clear Lake, the Clear Lake Committee was formed in 1982 and members approached the Little Bow Public Advisory Committee to request that the Clear Lake Area be included in the study.

Phase II of the study (1985-1987) involved the development of forecasts of future water demands and the investigation of management options. When Clear Lake dried up in 1985, plans for stabilizing the lake level were incorporated into the project. The former Alberta Public Works, Supply, and Services submitted an application for project approval in May of 1996 to the Natural Resources Conservation Board (NRCB) and Fisheries and Oceans Canada. A joint federal/provincial panel was assembled to hold a public hearing in accordance with the NRCB Act and the Canadian Environmental Assessment Act. The panel held a pre-hearing conference in High River on June 3-4, 1997, to ascertain intervener interest and funding, and to establish the scope and jurisdiction of the review. The formal public hearing

began November 12, 1997 in Vulcan and High River and concluded January 9, 1998. Based on the evidence presented at the hearing and pertinent information presented by the applicant, a decision report was issued in May 1998.

The Little Bow Project, as originally proposed, included the following four interrelated components:

- enlarging the capacity of the Little Bow diversion and canal from 2.8 m3/s (100 cfs) to 8.5 m3/s (300 cfs),
- building a 10 km (6 mile) canal from Mosquito Creek to refill Clear Lake,
- constructing a dam on the Little Bow River creating a 50,000 acre feet reservoir, and
- altering the operation of diversions through Woman's Coulee Diversion and the Little Bow Canal.

The second component of the Little Bow Project was the construction of a diversion structure on Mosquito Creek and a 10 km (6 mile) long canal to Clear Lake. The canal head works are located on Mosquito Creek approximately 13 km east and 8 km north of Stavely. Seven gravity turnouts exist to divert water from either the canal or Clear Lake into the planned wetland basin complex. As a result, 164 ha (405 acres) of currently intermittent wetlands would be stabilized.

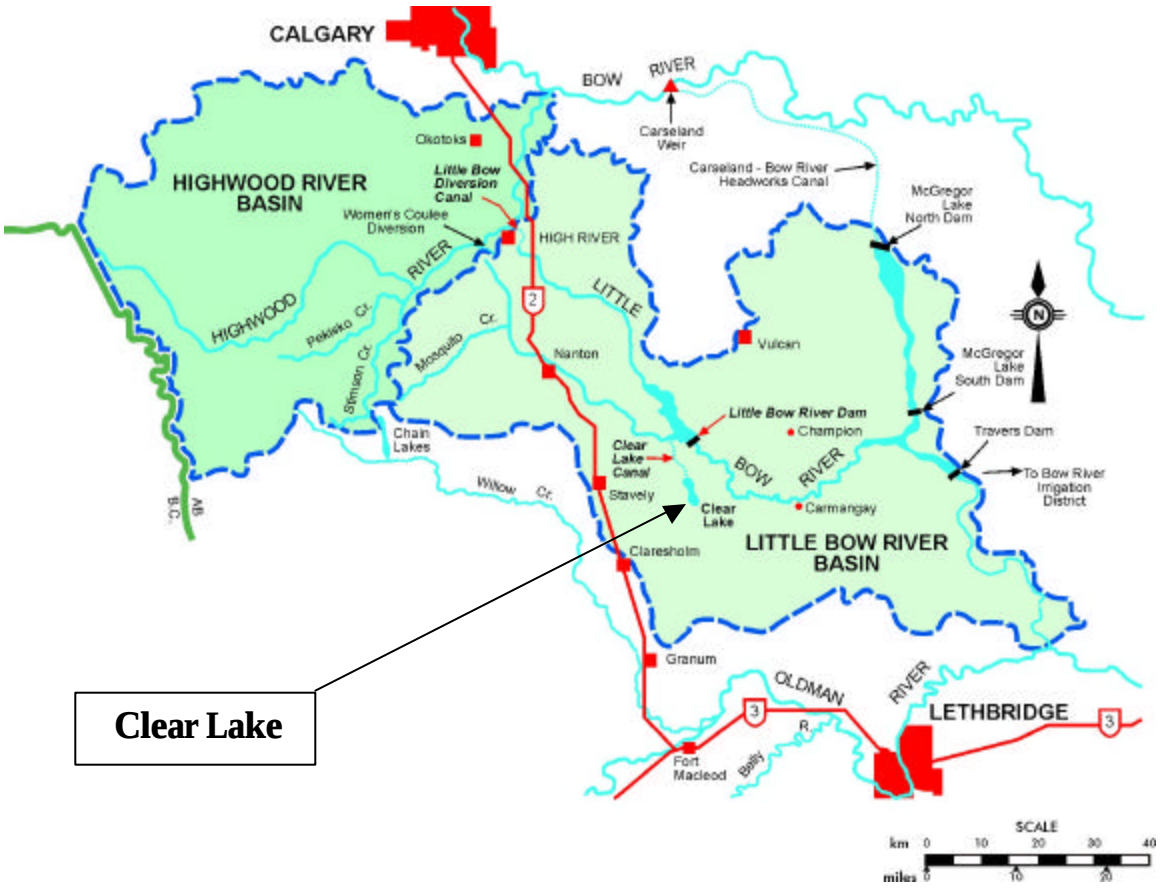


Diversion Structure on Mosquito Creek (photo taken 2003)

REGIONAL LOCATION

Clear Lake is located in the Little Bow River Basin. The Little Bow and Highwood Rivers are tributaries of the Oldman and Bow Rivers respectively and contribute to the South Saskatchewan River Basin (Map 1). Little Bow River drainage basin is approximately 5930 km^2 in size and is located almost entirely in the western Alberta plains. The 267 km river begins near High River and meanders in a southeasterly direction towards the Travers Reservoir. From the reservoir outlet it continues an additional 68 km to its confluence with the Oldman River approximately 30 km northeast of Lethbridge. Most of the natural flow into the Little Bow River comes from Mosquito Creek; the historic low flows create a need to divert water from the Highwood River.

Map 1



Source: Alberta Transportation

LEGISLATIVE AUTHORITY & CONSULTATION PROCESS

Pursuant to Part 17 of the Municipal Government Act, Statutes of Alberta, 2000, Chapter M-26, as amended, a municipality is responsible for the control of land use and development on private land within its boundaries.

Municipalities are encouraged to "foster the establishment of land use patterns which make efficient use of land, infrastructure, public services and public facilities; promote resource conservation; enhance economic development activities; minimize environmental impact; protect significant natural environments and contribute to the development of healthy, safe and viable communities."

Several planning tools are available to the municipality to manage and control development for a particular area. One of which is the area structure plan, a statutory document a municipality can adopt pursuant to section 633 of the Municipal Government Act, 2000.

Area Structure Plans

633 *(1) For the purpose of providing a framework for subsequent subdivision and development of an area of land, a council may, by bylaw, adopt an area structure plan.*

(2) An area structure plan

(a) must describe

(i) the sequence of development proposed for the area,

(ii) the land uses proposed for the area, either generally or with respect to specific parts of the area,

(iii) the density of population proposed for the area either generally or with respect to specific parts of the area, and

(iv) the general location of major transportation routes and public utilities, and

(b) may contain any other matters the council considers necessary.

The Municipal District of Willow Creek No. 26 has an obligation to allow for public participation into the area structure plan process to any person who may be affected by the plan pursuant to sections 230, 606, 636 and 692 of the Municipal Government Act, 2000. Public involvement is solicited through public meetings and questionnaires before the draft plan is prepared. Once a draft plan is completed, it will be circulated to all concerned stakeholders and agencies. After incorporating any changes, the draft plan will require first reading from the council of the Municipal District of Willow Creek No. 26 and a public hearing will be held. Following any subsequent revisions, a draft plan will be given second and third readings and adopted by council.

AREA STRUCTURE PLAN APPROVAL PROCESS

The Municipal District of Willow Creek No. 26 has decided to pursue the preparation of an area structure plan as a means to regulate land use and ensure consistency of development on the lands adjacent to Clear Lake.

As part of the plan preparation process, council has appointed two members to an Area Structure Plan Steering Committee and they have been given the role to:

- steer and direct the preparation of a draft area structure plan,
- evaluate the results of the public consultation process,
- work with other established committees, and
- submit draft plan to council with recommendations.

2.0 ANALYSIS

Information utilized in the analysis consisted of a review of current mapping, a field study of existing land uses, and a survey of landowners located in the area immediately surrounding Clear Lake.

As part of the analysis process, a Study Area was established which encompassed an approximate one-half to one-mile area surrounding Clear Lake (Map 2). As identified, the Study Area includes 10.5 sections of land, totalling approximately 6839.0 acres (2767.65 ha), with Clear Lake itself covering nearly 575.67 acres (232.97 ha). This leaves approximately 6263.3 acres (2534.77 acres) of agricultural land surrounding the lake.

While the final area structure plan boundary may be significantly smaller in size, it was considered reasonable to survey land use patterns, geographic characteristics, population and public opinion on a wider scale because of the potential impact on surrounding landowners.

PHYSICAL CHARACTERISTICS

The Study Area is located on the Alberta Plains, part of the physiographic subdivision known as the Interior Plains of Canada. Specifically, the project site sits on both the Willow Creek Formation and the underlying Horseshoe Canyon Formation dating from the Tertiary and Cretaceous period. The general slope of the area is from west to east from approximately 1200 m to 900 m. The regional climate is classified as a boreal climate regime. Soils are of glacial and post-glacial origin and cover the underlying bedrock in most locations outside the valley, while post-glacial fluvial deposits are found within the valley. The soils can be categorized as Dark Brown Chernozems associated with fair to well drained areas.

CLEAR LAKE

AREA STRUCTURE PLAN
BACKGROUND REPORT
STUDY AREA BOUNDARY MAP 2

LEGEND:

STUDY AREA BOUNDARY

CLEAR LAKE FULL SUPPLY LINE (Elevation 966)

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LAND USE

The existing land use within the study area is predominantly agricultural with most of the land utilized as either cropland or grazing land. A survey of the existing land use was completed for the study area in November of 2000 (see Map 4) and results are shown in Table 2. The type and frequency of land use indicates that the majority of use is agricultural in nature and farmsteads and farm buildings constitute the bulk of land use recorded.

There are few existing residences and they are located in conjunction with agricultural uses. A large amount of marginal land located to the north and west of Clear Lake. It is owned by Alberta Municipal Affairs and Ducks Unlimited and utilized as conservation wetlands. In addition, Clear Lake Municipal Park is located within the study area.

Table 2
Clear Lake Study Area Existing Land Use

Land Use	Number
Farmstead	5
Abandoned Farmstead	1
Intensive Livestock – Cattle	1
Utilities	3
Municipal Park	1
Total	11



Pump located at the north end of Clear Lake (photo taken 2003)

LAND OWNERSHIP

With the intent to survey their opinions on future land use, names and addresses of registered owners were obtained from the tax roll of the Municipal District of Willow Creek No. 26. As of the spring of 2004, there were approximately 21 individuals with title to the 10.5 sections of land within the Study Area.

AGRICULTURAL LAND QUALITY

Map 3 indicates the varying potential of the area for agricultural production as classified by the Canada Land Inventory (CLI). The CLI maps a specific area according to the Soil Capability Classification for Agriculture, which is based on the characteristics of the soil as determined by soil surveys. The soils are grouped into seven classes according to the potential of each soil for the production of field crops. The Study Area was analyzed in relation to the CLI and the results are found in Table 3.

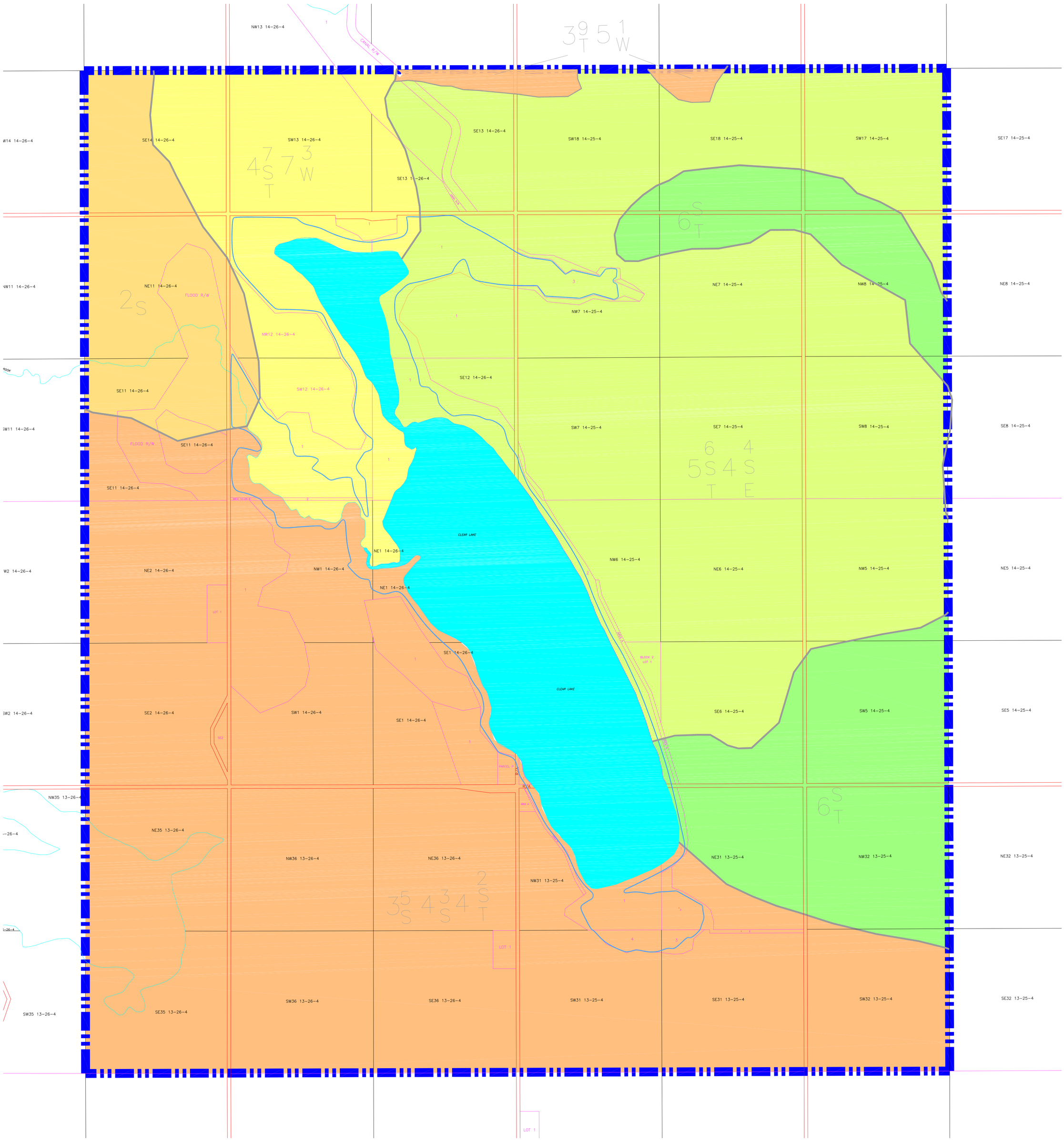
Table 3
Study Area Agriculture Capability according to the Canada Land Inventory

Class	Hectares*	Acres*	Percentage of Total
1	0	0	0
2	143.87	355.51	5.7
3	1045.85	2548.27	40.7
4	227.94	563.24	8.9
5	845.07	2088.22	33.4
6	285.77	706.16	11.3
Total	2548.50	6261.40	100.0

* The area calculations are approximate.

Class 1: Soils in this class have no significant limitation in use for crops.
Class 2: Soils in this class have moderate limitations that restrict the range of crops.
Class 3: Soils in this class have moderately severe limitations that restrict the range of crops.
Class 4: Soils in this class have severe limitations that restrict the range of crops.
Class 5: Soils in this class have severe limitations that restrict the capability of producing perennial forage crops but improvement practices are feasible.
Class 6: Soils in this class are only capable of producing perennial forage crops and improvement practices are not feasible.

Clear Lake and the surrounding land consist mainly of land devoted to cultivated agriculture with some cattle grazing. According to the CLI, nearly 75 percent of the land is classified as Class 3 and 5. Soils in these classes are characterized by moderate limitations that restrict productivity, to severe limitations which restrict the range of crops or require special conservation practices (see Map 3). The main limiting factors to agricultural productivity are regional topography and lack of precipitation.



CLEAR LAKE

AREA STRUCTURE PLAN
BACKGROUND REPORT
SOIL CLASS MAP 3

LEGEND:

- STUDY AREA BOUNDARY AREA = 2767.65±ha (6839.0±Acres)
- CLEAR LAKE FULL SUPPLY LINE (Elevation 966) AREA OF LAKE = 232.97±ha (576.67±Acres)
- SOIL CLASS 6 AREA = 285.77±ha (706.16±Acres)
- SOIL CLASS 5 AREA = 845.07±ha (2088.22±Acres)
- SOIL CLASS 4 AREA = 227.94±ha (563.24±Acres)
- SOIL CLASS 3 AREA = 1045.85±ha (2548.27±Acres)
- SOIL CLASS 2 AREA = 143.87±ha (355.51±Acres)

SOIL CLASSES DATA TAKEN FROM "SOIL CLASS FOR AGRICULTURE- CANADA LAND INVENTORY MAP"

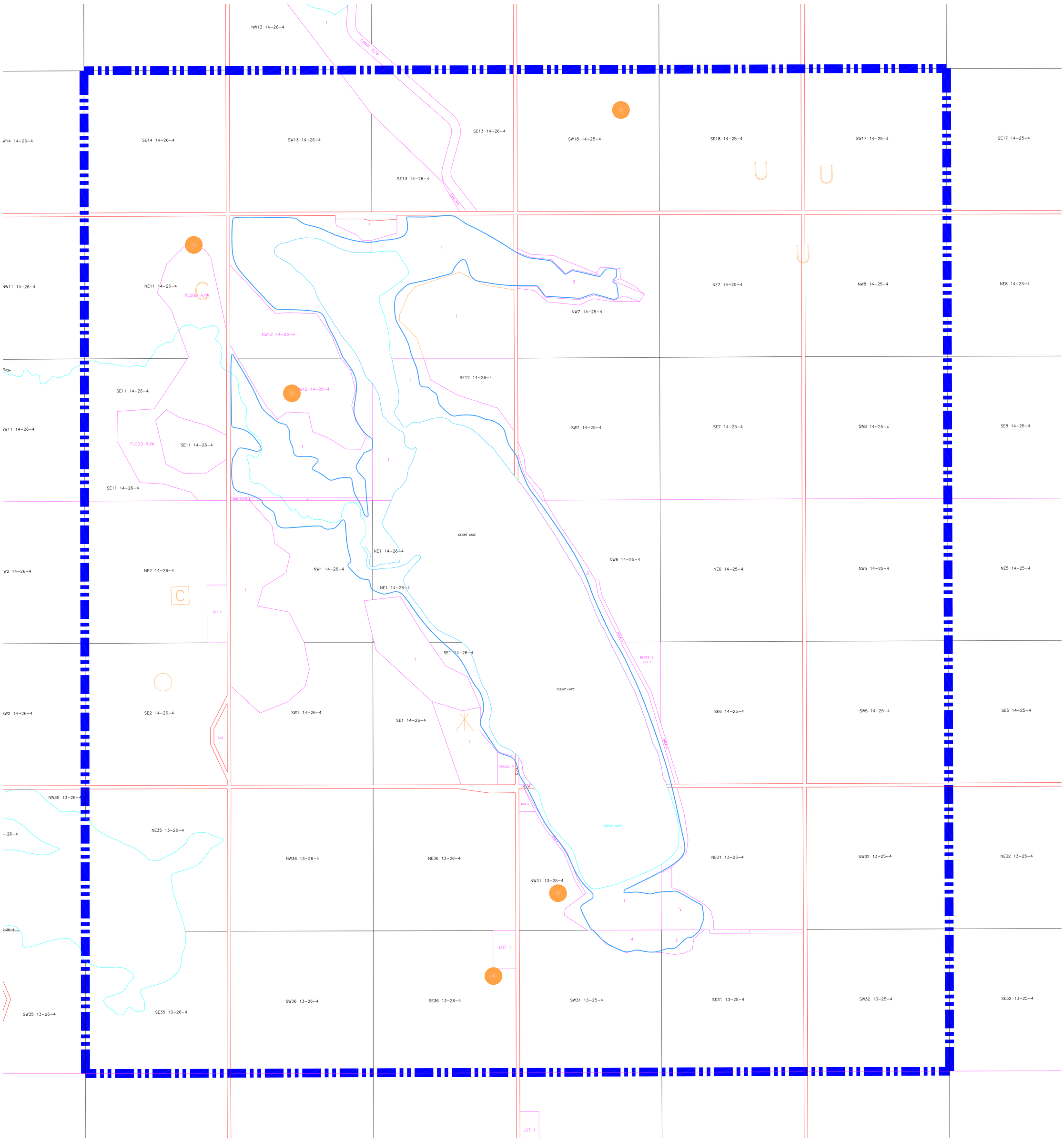
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CLEAR LAKE

AREA STRUCTURE PLAN
BACKGROUND REPORT
EXISTING LAND USE MAP 4

(November 2000)

LEGEND:

- STUDY AREA BOUNDARY
- CLEAR LAKE FULL SUPPLY LINE (Elevation 966)
- ABANDONED FARMSTEAD
- CAMPGROUND/PARK
- C — COMMERCIAL
- FARMSTEAD
- C — CATTLE
- U — UTILITIES

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PUBLIC CONSULTATION PROCESS

Since landowners near Clear Lake have a vested interest in the process, a key step was to distribute a questionnaire in order to investigate what types of recreational or other non-agricultural development, if any, they would find acceptable. A similar exercise was conducted in 1993 but results from that questionnaire were debatable as to their validity due to the passage of time and the possibility of changes to land ownership. To survey current local sentiment on the scale and type of future development and any other resident concerns, a survey similar to the 1993 version was conducted in the spring of 2004. The surveys were of similar structure to compare if attitudes towards development type and scale had remained the same or changed over the 11-year period.

The response rate for the questionnaire was 21.8 percent and 85.7 percent of landowners who responded reside in the immediate area (less than a mile). Overall, fewer landowners responded to the 2004 questionnaire (7 total) than to the 1993 questionnaire (24 total). It was interesting to discover the results of the two questionnaires were actually very similar in regards to the types and size of acceptable development and the potential problems that landowners felt they would experience.

The greatest difference between the two questionnaires was the attitude towards cottage and country residential development. In 1993, those surveyed were split in opinion with 54.2 percent of those surveyed supported allowing no development, while 41.7 percent favoured development limited to selected areas. The 2004 survey indicated that 56.9 percent of respondents were in favour of development limited to selected areas and another 28.5 percent favoured placing no limits on development. No responses were registered that would favour not allowing any development. A full accounting of the survey results can be found in Appendix A.

Clear Lake

AREA STRUCTURE PLAN

Background Report

3.0 IDENTIFICATION OF OPPORTUNITIES

The development of the Little Bow Project and the stabilization of Clear Lake create the challenge of how best to take advantage of the opportunity created by this new development.

The following list the potential opportunities that the Clear Lake may bring to the region:

- increase the stability and wealth of the community;
- increase productivity on new and existing irrigated farm land;
- provide the opportunity to tap the non-agricultural development potential of Clear Lake;
- restore a significant wetland community and improve water quality in the lower Little Bow River;
- provide significant new water-based recreational opportunities.

4.0 CONCLUSION

The intent of this Background Report was to provide a summary of the existing information regarding Clear Lake, to identify issues and opportunities relating to the water stabilization, and to provide a basis for discussion between the adjacent landowners, government departments and the municipality. As an agenda for discussion, the Background Report may assist in the creation an Area Structure Plan acceptable to all parties.

Clear Lake

AREA STRUCTURE PLAN

Background Report

Appendix A

QUESTIONNAIRE RESULTS 2004



Clear Lake

AREA STRUCTURE PLAN

Questionnaire Results 2004

Introduction

The Little Bow Project included the stabilization of Clear Lake mainly for the purpose of expanding irrigation and alleviating fluctuating water levels. However, the stabilization has the potential to attract other development such as recreational facilities, which in turn, would affect residents, existing land uses and the environment.

Summary of Questionnaire Results

The following represents a summary of the questionnaire responses to some of the main land use issues:

- Approximately 85.7 percent of the respondents have lived in the area for more than 15 years and respondents own approximately 3106 acres that is immediately adjacent to Clear Lake and have been affected by the project.
- Nearly 44.4 percent of those surveyed felt that if further recreational development was allowed it should be a combination of municipal, provincial and privately owned and financed.
- Approximately 56 percent of the respondents indicated that cottage or country residential development should be limited to selected areas.
- Half of those surveyed indicated that a private day use picnic area for up to 50 families was the most favoured recreational development.
- When asked what potential problems may occur as a result of recreational development along the lake, the top four responses included:
    - increased traffic volumes in the vicinity of the lake (14.7%);
    - the water may be too polluted for swimming (11.7%);
    - landowner/camper conflicts (11.7%); and
    - sewage disposal (11.7%).
- Questionnaire results indicated that respondents have a higher preference for isolated country residential development than previously.

Questionnaire Results

1. How long have you lived in the Municipal District of Willow Creek?

Years	Number of Responses	Percent
20-24	1	14
35-39	1	14
45-49	2	28
50-54	1	14
70+	1	14
Non-resident	1	14
Total	**7**	**100**

2. How long have you lived in your present residence?

Years	Number of Responses	Percent
5-9	1	14
15-19	3	42
45-49	1	14
50-54	1	14
No response	1	14
Total	**7**	**100**

3. How many acres of land do you presently own?

Land	Number of Responses	Percent
0-80 acres	1	14
80-160 acres	0	0
160-320 acres	0	0
More than 320	6	84
Total	**7**	**100**

4. How far is your land from Clear Lake?

Proximity	Number of Responses	Percent
Immediately adjacent	5	70
0.5 to 0.9 miles	1	14
1.0 to 1.9 miles	0	0
No response	1	14
Total	**7**	**100**

If your land is/was immediately adjacent to the lake, approximately how many acres have been affected by this water project?

	Number of Responses	Acres Affected
No response	0	--
None	0	--
Acres	6	3106

5. Do you have livestock that require water from the reservoir?

	Number of Responses	Acres Affected
Yes	0	--
No	0	--
No response	6	3106

Comments:

- N/A. There is no stock watering allowed.
- Not personally, though we rent pasture for livestock use. We absolutely require livestock water to effectively utilize the pasture. A new solar system from a wet well is in place.
- We have cattle next to the lake but water from a well. Cattle getting water from the lake, do not do as well as on a well. It is bad public relations for those who see it and alternatives should be encouraged.

6. Do you feel that further recreational development, if it was allowed, should be: (May check more than one)

	Number of Responses	Percent
Municipally owned & financed	2	22
Provincially owned and financed	1	11
Privately owned and financed	1	11
Combination of all of the above	4	44
No response	1	11
Total	**9**	**100**

Comments:

- I believe Municipal and provincial projects could enhance the area. Private developments should be possible as well.
- Have to have a deal on access to the Lake.
- Depends on type of development.
- Not sure.

7. What do you feel are essential elements for improved recreation? (May check more than one)

Elements	Number of Responses	% of Total
Tree plantings	6	12.7
Beach development	4	8.5
Parking areas	4	8.5
Improved access	1	2.1
Day use areas	4	8.5
Overnight campgrounds	1	2.1
Motorcycle trails	0	0
Stable water levels	3	6.3
Wildlife or natural areas	3	6.3
Bicycle trails	1	2.1
Fish stocking	6	12.7
Interpretative centers	1	2.1
Hiking trails Native plant areas	3	6.3
Boat launches	0	0
Swimming areas	5	10.6
Boat speed zones	1	2.1
Cottage development	3	6.3
Secluded areas	1	2.1
Total	**47**	**100**

8. Do you feel cottage or country residential development should be:

	Number of Responses	Percent
Limited to selected areas	4	56
Not limited at all	2	28
Not allowed	0	0
No response	1	14
Total	**7**	**100**

9. Please indicate which type of recreational developments you feel are acceptable near the lake. (may check more than one)

Elements	No. of Responses	% of Total
No development at all	0	0
Private cottage developments	5	9.0
Country residences	4	7.2
Provincial day use area/picnic grounds	**6**	**10.9**
Provincial overnight campgrounds	**6**	**10.9**
Private overnight campgrounds	4	7.2
Boat launch	5	9.0
Marina for mooring boats	2	3.6
Fishing areas	5	9.0
Swimming areas	5	9.0
Hiking trails	4	7.2
Wildlife sanctuaries	2	3.6
Provincial parks	1	1.8
Private resorts	1	1.8
Limited commercial development	5	9.0
Total	**55**	**100**

Comments:

- Understand water levels.
- The Lake is acceptable for recreation for such a short time because of water quality, except for fishing.
- It is not a very big lake. I don't see the need for any additional boat launches. For environmental concerns, I would rather see less motorized boats and no motorized ATV trails around the lake.
- Would like a separate site to launch fishing boats.

10. Please number, in order of preference, what scale or size of recreational development is acceptable to you. (Place a number 1 beside the option you favour most, a number 2 beside your second choice, and so on.)

	Weighted Results*	Frequency of Response
1-2 isolated country residences	29	5
5-10 private cottages	32	6
Private day use picnic area for up to 50 families	50	6
Private overnight campground for up to 100 recreational vehicles	27	5
No development at all	7	3

* A multiple factor is used to determine the rating of a specific development. Points are assigned as follows: 10 points for a No. 1 rating; 7 pointes for a No. 2 rating; 5 points for a No. 3 rating; 3 points for a No. 4 rating; and 1 point for a No. 1 rating.

Comments:

- Access roads are going to be a problem.
- I am not clear on what you mean. Is this total around the whole lake or per project?

11. What do you feel are potential benefits of recreational development around Clear Lake? (may check more than one)

Potential Benefits	Number	% of Total
Better recreational opportunities for M.D. residents	7	23.3
Attracts more tourist spending in the M.D. of Willow Creek	4	13.3
Takes pressure off existing facilities like Willow Creek Provincial Park	3	10.0
Adds to the M.D.'s tax base	5	16.6
May provide additional access to the shorelands	1	3.3
May provide seasonal employment for members of local families	6	20.0
May attract new residents	4	13.3
Total	**30**	**100**

Comments:

- There won't be much.

12. What do you feel are or have been potential problems for recreation development along the lake?

Potential Problems	Number	% of Total
No problems	0	0
Water may be too polluted for swimming (coliform levels)	4	11.7
Limited road access to the shorelands	2	5.8
Lack of suitable sites for recreational development	1	2.9
Water level fluctuations (draw down from irrigation)	4	11.7
Wildlife conflicts in the area	1	2.9
Landowner/camper conflicts (i.e. people crossing private land)	4	11.7
Effect on irrigation function	2	5.8
Effect on quiet, rural character of the area	3	8.8
Increased traffic volumes in the vicinity of the lake	5	14.7
Higher taxes to pay for improved services	1	2.9
Sewage disposal	4	11.7
Water supply	3	8.8
Total	**34**	**110**

Comments:

- Livestock access must be eliminated to maintain water quality. I also believe motorized watercraft and ATVs disturb/disrupt water quality and the integrity of adjacent land.
- With the Lake completely fenced, access to the shoreline is nearly impossible. On the east side of the lake, just imagine a fat person trying to get through that fence.
- Alcohol consumption in excess has been a problem. Cases of beer are often consumer right on the dock and in boats. If this is not stopped, a precedent has been set and a reputation given. It is difficult to stop later.

13. Are there any further comments you would like to make?

- I believe that some country residences or cottages and a few campgrounds are a good thing. The adjacent lands are fragile and I believe that all developments must be designed with water, air, and land quality and sustainability forefront in the plans. Many people are looking for a quiet, peaceful parcel to get away from the city rush. An interpretive centre would be a great way to tie in local history and bio-diversity and also educate people about the importance of environmental sustainability. Thank you for your consideration and efforts. I look forward to the results of your survey.

- I feel that more development would be an asset to the MD and the community.

- It would be very advisable to put more fish in the lake as soon as possible. Even though Ducks Unlimited added to his project, I don't feel that they should be able to get their requirements first. We need only a few ducks so why raise them for the American sportsman? People won't spend much for facilities on this lake for short term pleasure with no guarantees of water. Basically it is an improved slough.

- As landowners, we recognize that lots of effort and money has gone into this project. The benefits of these improvements should not be ours alone but belong to a community. We are however an agricultural community that depends on agriculture to sustain itself. The irrigators need to be allowed to irrigate according to the irrigation structure plan, for economic viability but also to keep the water healthy! Also, it is a small lake and cannot be developed beyond its capacity!

Clear Lake

AREA STRUCTURE PLAN

Background Report

Appendix B

LITERATURE REVIEW



Appendix B

LITERATURE REVIEW

Little Bow River Basin Study: Phase I Summary Report, Alberta Environment, Water Resources Management Services, Planning Division, 1985.

Little Bow River Basin Study: Phase II Summary Report on Storage Feasibility Investigations, Alberta Environment, Water Resources Management Services, Planning Division, 1986.

Little Bow River Basin Study: Phase I Inventory of Reports, Alberta Environment, Water Resources Management Services, Planning Division, 1985.

Little Bow River Basin Study: Phase II Inventory of Reports, Alberta Environment, Water Resources Management Services, Planning Division, 1986.

Little Bow Project/Highwood Diversion Plan: Environmental Impact Assessment: Volumes 1-9, Golder Associates, 1995.

Little Bow Project/Highwood Diversion Plan – Application to Construct a Water Management Project to convey and Store Water Diverted for the Highwood River, Report of the NRCB/CEAA Joint Review Panel # 9601, Alberta Public Works, Supply and Services, May 1996.

Application #9601 Little Bow Project/Highwood Diversion Plan: Response to NCRB October 29, 1996 Request for Supplemental Information.

Little Bow Project/Highwood Diversion Plan: Response to Federal Government January 6, 1997 Request for Supplemental Information.

Report of the Pre-Hearing Conference (June 3 & 4, 1997, High River, Alberta), NRCB/CEAA Joint Review Panel, Little Bow Project/Highwood Diversion Plan, NRCB, Application # 9601, July 1997.

Little Bow River Basin Study Community Input and Response to the Open House Sessions on Site 7-B1: Main Report, Alberta Environment, 1987.

Little Bow River Basin Study Community Input and Response to the Open House Sessions on Site 7-B1: Summary Report, Alberta Environment, 1988.

Little Bow Reservoir Recreation Site Development Concepts, Lombard North Group (1980) Ltd., August 1994.

Little Bow River Project: Project Brief, Alberta Public Works, Supply and Services, April 1994.

Little Bow River Basin: Economic and Financial Analysis of Irrigation Development, Anderson and Associates Limited, 1986.

Local Concerns Assessment of Three Potential Reservoir Sites in the Little Bow River Basin, Beak Associates Consulting Limited, 1986.

Environmental Overview Assessment of Four Potential Reservoir Sites in the Little Bow River Basin, Beak Associates Consulting Limited, 1986.

Lower Highwood River Instream Flow Needs Study, Executive Summary, Environmental Assessment Section, Planning Division, 1986.

Little Bow River Basin Storage Site Investigation, Conceptual Design Report, W-E-R Engineering Limited in association with Thurber Consultants Limited and Nanuk Engineering and Development, 1985.

Little Bow River Basin Storage Investigation, Feasibility Design Report, W-E-R Engineering Limited in association with Thurber Consultants Limited and Nanuk Engineering and Development, 1985.

Little Bow River Basin Phase II Planning Activities – Analysis of Water Supply Alternatives, Nanuk Engineering, 1986.

Water Balance Study of the Little Bow River Basin and Highwood Diversions, Nanuk Engineering and Development Limited, 1986.

Highwood Storage and Diversion Plan Review of Progress Towards Meeting Board Order 9601-1, Canadian Environmental Assessment Agency, NRCB and Government of Alberta, December 2000.