

DISTRICT OF SPALLUMCHEEN
WATER SERVICES STUDY

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Due to the rural nature of the community, Spallumcheen does not provide the full range of services provided by other municipalities. For example, the Township does not own or operate any utilities such as sewer and water. Domestic water supply is provided by 17 water improvement districts and one water users community.

Over the years, the water improvement districts have provided one of the most important services required by the population of the Township. It is clear that many individuals and community groups made significant sacrifices and committed substantial resources to the planning and development of the various water systems in the community.

In the recent past, there have been increasing concerns related to the provision of domestic water supply in the Township. These are as follows:

- the quality of drinking water varies throughout the municipality. Boil orders or advisories have been issued by the Medical Health Officer for a number of the systems;
- a number of the systems are old and in need of repair. The capital funds required to maintain and upgrade the systems will be difficult to find;
- the policies of the Municipal Council and those of the improvement districts are sometimes at variance, particularly as they relate to land use and servicing. The Municipality also wishes to improve the standards of water systems such as the provision of fire flow in urban areas. Most of the water systems are developed to a rural standard and do not provide adequate fire flow;
- there may be some potential for economies of scale in the administration and maintenance of water systems allowing higher levels of service;
- new regulations, such as the Safe Drinking Water Regulation of the Ministry of Health, are placing additional requirements on the districts for the management of their systems.

In view of the concerns, the Township of Spallumcheen, together with the improvement districts authorized the preparation of a report to document the issues more fully and to identify potential options for changing the present organizational structure for the provision of water. The study is funded by the Ministry of Municipal Affairs, Recreation and Housing.

This report is intended to begin the process of evaluating whether or not organizational change will assist in resolving emerging issues related to the supply of water in Spallumcheen. It is not intended to be a definitive evaluation of the options, nor does it contain recommendations concerning the recommended option. Rather it is intended to:

- provide additional information on the issues including the condition and capacity of water systems, the financial capability of the improvement districts, future demands on the water systems etc;
- identify broad options for organizational change including maintaining the status quo;
- evaluate the broad options based on the issues as well as the impacts on existing agencies.

This report was prepared under the direction of a Steering Committee consisting of representatives of the various improvement districts, the Township of Spallumcheen and members of the public. Representatives of the Ministry of Municipal Affairs, Recreation and Housing also participated in the study.

The consultants met with the Steering Committee throughout the process of preparing the report. A public survey was also carried out to more accurately determine the views of the public on the provision of water. The draft report was also presented to the public at an open house.

This report is presented in five sections.

- Section 2 describes the present organizational context for the supply of water in the Township of Spallumcheen.*
- Section 3 describes the outcome of the analysis undertaken to identify existing issues. This includes an analysis of the existing water systems, determination of the financial capacity of the improvement districts, and the views of the public.*
- Section 4 describes the broad options for organizational change as well as describing the outcome of the evaluation of the options.*
- Section 5 contains concluding remarks as well as identifying potential future studies which may assist in resolving the water supply issue.*

Much of the Township's future residential growth is proposed to occur on rural residential lots. Areas identified for this form of growth include Crozier Bench, South Spallumcheen/Highway 97A, Eagle Rock, Glanzier Creek, Hallam, and Stepping Stones Estates.

Continued industrial development on presently zoned industrial land is also provided for to further expand the economic and employment base of the community.

The OCP proposes that commercial development in Vernon and Armstrong will continue to meet the commercial needs of the Township in the future.

2.2

PRESENT ORGANIZATIONAL STRUCTURE FOR THE PROVISION OF WATER

As a rural community, the Township of Spallumcheen does not provide the range of services provided by most other municipalities. As indicated earlier it does not operate utilities for sewer or water.

Water is provided by 17 water improvement districts, and one water users community. Figure 2.1 contained in Appendix 1 provides an indication of the boundaries of the improvement districts which provide water service within the Township of Spallumcheen. Table 2.1 provides a description of the various improvement districts in terms of number of connections, type of uses served, as well as other information.

The water improvement districts vary significantly in geographical area, number of users served, and the age of the improvement districts.

An overview analysis was carried out to more clearly identify the issues related to the provision of water in Spallumcheen. The analysis included:

- assessing the existing water systems from the perspective of condition, capacity, health concerns and fire flow capability. The analysis was undertaken both under existing and projected future demand conditions;
- assessing the financial capability of the individual water improvement districts to upgrade and expand their systems;
- identifying public concerns related to the provision of water.

3.1 ANALYSIS OF WATER SYSTEMS

An overview analysis of the 18 water systems in Spallumcheen was undertaken. The analysis was based on:

- existing engineering reports, as-built information and other documentation;
- meetings with representatives of the 18 water improvement districts and water users communities;
- field checks by the consultant;
- interviews with the Ministry of Health, the City of Armstrong and other agencies;
- results of a public survey carried out as part of this study.

3.1.1 METHODOLOGY

No detailed analysis of the individual water systems was undertaken as this was not required by the terms of reference. The methodology used in the analysis was as follows:

- meetings were held with representatives of each of the 18 improvement districts/water users communities to obtain information on the existing systems and to identify issues;

- the requirement for water purveyors to notify the Health Unit if something happens which could make the water unfit to drink;
- the establishment of the bacteriological parameters found in the Canadian Drinking Water Standards as standards to be applied to water systems in the Province.

The major impact of this regulation in the analysis of water systems in the Spallumcheen context is the need for disinfection of water drawn from surface sources. While there may be some flexibility in the time frame for enforcing this provision, it is clear that the regulations will be enforced by the Medical Health Officer in order to protect public health. A memorandum was forwarded to the various purveyors of water served by the North Okanagan Health Unit in July of this year to begin upgrading of their water systems.

FIRE PROTECTION

The Underwriters Survey establishes standards for fire protection for both urban and rural areas. The Water Act defines a domestic supply as including fire flow. The analysis of the water systems in Spallumcheen has applied the standards established for rural areas as found in the Fire Underwriters Survey. It should be pointed out that Improvement Districts were not required to provide fire flow at the time that many of the present water systems were constructed. However, as fire flow is an important consideration in the development of both urban and rural water systems, the analysis has incorporated this parameter.

3.1.3 RESULTS OF THE ANALYSIS

Figures 3.1 to 3.18 which follow, provide a summary of the outcome of the analysis of each of the water systems. Various components of the water systems were evaluated under existing demand conditions. The systems were then evaluated under projected future demand conditions based on projected future growth as provided for in Spallumcheen's existing Official Community Plan.

The analysis indicated that there are significant differences between the various water systems in terms of:

- condition of the system;
- ability to meet standards;
- capacity to accommodate future growth.

DISTRICT NAME: Canyon	FIGURE 3.1 ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p style="padding-left: 40px;">Groundwater</p> <p>Water Distribution System</p> <p style="padding-left: 40px;">Storage</p> <p style="padding-left: 40px;">Network</p> <p style="padding-left: 40px;">Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Classified as hard water with calcium bicarbonate deposits in pipes.</p> <p> • Disinfection is not used; there are no health concerns.</p> <p> • There are complaints regarding taste, color, and sediments.</p> <p>Quantity: • The existing well is at maximum capacity and its pump operates non-stop during high demand days.</p> <p>• Inadequate capacity for supplying the system or for meeting fire flow levels during peak demand periods.</p> <p>• High pressure during normal demand, but low pressures during high demand periods due to inadequate pipe size. Pipe network is long and branched, resulting inadequate supply during peak demand and for fire flow. Domestic supply is adequate as densities are low.</p> <p>• Storage inadequate for fire flow; only 20 minutes supply of 400 Igpm. Inadequate fire flow due to 2" pipes occurs mainly in the south portion of the service area. There are no fire hydrants.</p> <p><u>Future Demand</u></p> <p>• Most land in the service area is in the ALR. Growth potential is minimal.</p> <p>• Portions of the central and south areas of the District are not in the ALR and rezoning may be possible, although the land use is agricultural.</p> <p>• The system is at maximum capacity and could not support increased demand. Improvements are required in the source, storage, and network.</p> <p><u>Suggestions</u></p> <p>• Source upgrading is imperative.</p> <p>• Hydrants required in areas of population concentrations or areas considered to be higher fire risks.</p> <p>• Storage capacity requires 2.5 times increase for peak demand and 6.0 times increase for fire flow. Pipelines must be upgraded for increased flows. The 2" pipes should also be upgraded.</p> <p>• Water softening may be required to negate reductions in pipe capacity systems.</p>

FIGURE 3.3

DISTRICT NAME: Grandview	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Surface Water</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Inadequate treatment - filtration but no disinfection. • Boil advisory. <p>Quantity:</p> <ul style="list-style-type: none"> • Surface source is at limit - additional source (eg. well) will soon be commissioned. • Complaints concerning water shortages during times of peak use. <p>• Not sufficient to supply fire protection. Inadequate to supply peak hour demand during high use periods.</p> <p>• Low pressures at peak times due to long branched network and lower static head. Supply problems occur at a periphery of system due to long pipes.</p> <p>• Supply inadequate to provide fire protection. Maximum fire flow is approximately 220 Igpm in 4" pipes; fireflow adequate in 6" pipes. No hydrants.</p> <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • System is not capable of providing additional supply without major expansion of the source and network. • Most of the land in the service area is in the ALR - potential for growth is small. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Upgrading of source capacity - a new well is being developed. • Increase storage capacity for fire flow and peak demand levels to a minimum of 70,000 Igal. • Hydrants required in denser areas or areas of high risk. • Pipe capacity needs to be increased for fire flow and peak demand levels.

FIGURE 3.5

DISTRICT NAME: Highland Park	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Armstrong</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Water quality is considered good. • No health concerns.</p> <p>Quantity: • Limited by size of supply main from Armstrong's system.</p> <p>• Dependant on Armstrong's storage capacity for peak demand and fire protection.</p> <p>• New system. Pipe diameters are adequate. Fire hydrant quantities are adequate.</p> <p>• Storage capacity is dependant on Armstrong's system storage. Fire protection flow is limited by Armstrong's undersized connection to Highland system.</p> <p><u>Future Demand</u></p> <p>• System is capable of supplying double the number of existing users.</p> <p>• All the land in the service area is in the ALR - potential growth is minimal.</p> <p><u>Suggestions</u></p> <p>• Upgrade Armstrong's network connection to increase flow capacity for peak demand and fire protection.</p>

FIGURE 3.7

DISTRICT NAME: Lansdowne	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Armstrong</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Water quality is good with no health concerns.</p> <p>Quantity: • Considered adequate.</p> <p>• Dependant upon Armstrong's storage capacity for peak demand and fire protection flows.</p> <p>• Pipe diameters are adequate. Fire hydrants are adequate. Some 2" lines in the system are inadequate. Periphery of system may have lower pressures during peak demand periods.</p> <p>• Storage capacity is dependant on Armstrong's system storage.</p> <p><u>Future Demand</u></p> <p>• Capacity to service more consumers is in place, but increased demand could reduce water pressures at the periphery of the system. This would require twinning the watermains.</p> <p><u>Suggestions</u></p> <p>• Replace the existing 2" galvanized iron pipe with PVC pipe. This will reduce head loss and increase flow levels.</p> <p>• To reach rural community fire protection levels of 400 Igpm; 6" pipes to fire hydrants are required. Some existing 4" pipes will need to be twinned.</p>

FIGURE 3.9

DISTRICT NAME: Meighan Creek	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Surface Water Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Water from creek does not meet Provincial Safe Drinking Water Regulation. • Water is not disinfected. • Boil order has been issued by Ministry of Health. <p>Quantity:</p> <ul style="list-style-type: none"> • Sufficient to meet existing demand but not capable of supplying additional demand. <ul style="list-style-type: none"> • No Storage. • System is old; little is known of the existing system. • No fire protection at all due to lack of storage; inadequate pipe sizes. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • System is not capable of meeting increased demand. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Chlorinate water supply to prevent bacteriological growth. • A more reliable water source, such as groundwater, is required in the future.

FIGURE 3.11

DISTRICT NAME: Otter Lake	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Groundwater Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • The well is not disinfected; there are no health problems. • Corrosion in some parts of the system. <p>Quantity:</p> <ul style="list-style-type: none"> • Production is sufficient, but there is no backup source in case of well or pump failure. <p>Adequate for peak demand and fire flow.</p> <p>Maximum fire flow is 220 Igpm. Some areas have high pressures. System has long pipes but densities are low. Domestic consumers are supplied adequately. Higher elevations are serviced by small diameter pipes requiring boosting. Network is long and branched; peripheral areas have low pressures during peak demand.</p> <p>4" pipe only permits a 220 Igpm fire flow, which is below recommended levels. Reservoir storage is adequate for fire flow levels but distribution system capacity is inadequate to supply required fire flow levels. The number of hydrants is inadequate for a District of this size.</p> <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • Almost all land in the service area is in the ALR and growth potential is limited. • If demand increases, pipe lines connecting to the north areas would need to be twinned. • The south and central areas can accommodate some growth without upgrading. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • The system's branched network requires a minimum of 6" pipes to ensure adequate fire flows. • A back-up water source is required for emergency purposes.

FIGURE 3.13

DISTRICT NAME: Round Prairie	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Armstrong Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality: • Quality is good and there are no health concerns.</p> <p>Quantity: • Limited by present distribution system.</p> <ul style="list-style-type: none"> • Peak demand and fire protection flows are dependant upon Armstrong's storage. • Pipes are old, galvanized iron and are small diameter. Age and material reduces capacity, resulting in low pressures during peak hours, especially when sprinkling occurs. • Storage capacity is dependant on Armstrong's system storage. Pipe capacity flow is 50 Igpm maximum, and only if pipe system is in good shape. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • All land in the service area is in the ALR and growth potential is limited. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Replace existing 2" galvanized pipe with PVC pipe to reduce head loss and increase flow capacity. • 6" connection pipe from Armstrong system to hydrants is required for the minimum 400 Igpm rural community fire flow.

FIGURE 3.15

DISTRICT NAME: Stardel	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Armstrong</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Water quality is considered good - no health concerns.</p> <p>Quantity: • Can meet existing demand; could accommodate additional connections.</p> <p>• Dependant on Armstrong's storage capacity for peak demand and fire protection.</p> <p>• Majority of pipes in network are 4" lines or less and therefore not adequate for fire flow. Pressures are generally adequate; may be high in certain parts of the system. Small section of ¾" GI pipe requires replacement.</p> <p>• Storage capacity is dependant on Armstrong's system storage. Distribution system is capable of delivering fire flow of 220 Igpm which is less than desirable but may be acceptable for a small system such as this.</p> <p><u>Future Demand</u></p> <p>• The system could accommodate some increase in connections.</p> <p><u>Suggestions</u></p> <p>• Upgrade ¾" GI pipe.</p>

FIGURE 3.17

DISTRICT NAME: Stepney	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Surface Water</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Considered good by users (survey). • Bacteriological analysis does not meet Provincial Safe Drinking Water Regulation for total coliform. • Water is not disinfected. <p>Quantity:</p> <ul style="list-style-type: none"> • Glanzier Creek source not able to meet system demand during drought period in 1967 - and was at limit in 1988/89. <ul style="list-style-type: none"> • Not able to supply fire flow. • Adequate to meet peak hour demand. <ul style="list-style-type: none"> • Maximum fire flow is approximately 220 IGPM. • High static pressures at some points in the system. • Long branched network results in low pressures at peak demands. • Due to very low densities, long pipes do not present problems in providing domestic supply. <ul style="list-style-type: none"> • Not adequate to supply fire protection - only 50 min @ 400 IGPM. • Maximum fire flow allowed by 4" dia. is approximately 220 IGPM. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • Source is a major problem for system expansion - another surface or groundwater source required. • Increased demand would require extensive upgrading to extend distribution system (duplication of existing network) and expand storage capacity. • Almost all land within service area is in ALR - very limited development potential. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Chlorinate water to prevent bacterial growth. • 6 inch pipes are required for fire flows in a branched network. • Storage capacity should be twinned to provide for required fire flow.

3.2

FINANCIAL ANALYSIS

The financial position of each of the water improvement districts was reviewed with the objective of assessing their financial capability to respond to expected future capital and operating costs. Various financial indicators were reviewed albeit in an overview fashion. These included operating costs and revenues, rates for tolls, taxes and capital charges, debt, and reserves.

The financial analysis was carried using the following methodology:

- financial records and bylaws including audited financial statements, rate bylaws, and capital charge bylaws were reviewed;
- financial concerns and issues were discussed during the interviews with representatives of the improvement districts;
- the financial information was reviewed by the Steering Committee to verify the accuracy of the information.

Tables 3.19 to 3.36 provide an overview of the financial position of each of the eighteen improvement districts and water users communities. The tables also contain comments concerning each district's ability to pay for future capital and operating costs.

The analysis indicates that there is considerable variability in the financial position and capability of the various districts.

Some of the improvement districts lack the financial capability to respond to future upgrading or expansion of their systems. This is due to a variety of factors including the limited number of users on the system, the inability to increase already high tolls/taxes/capital charges, low reserves or fairly high existing debt load.

Some general observations can be made concerning the financial capability of the districts to respond to future costs.

There are a number of very small districts who have very limited financial capability due to the small number of users on the systems. Many of the smaller districts operate old systems which are in need of significant upgrading. Revenue for such upgrading must be generated from tolls and taxes. This would result in significant increases to tolls and taxes depending on the extend of upgrading undertaken. Improvement districts and water user communities falling into this category include Pleasant

FIGURE 3.20

DISTRICT NAME: Eagle Rock	FINANCIAL ASSESSMENT OF WATER DISTRICTS								
Tolls/Taxes/Charges	<table> <tr> <td>Tolls:</td> <td>• \$98 - Residential (Detailed Rate Structure For Other Uses)</td> </tr> <tr> <td>Taxes:</td> <td>• \$45/Parcel</td> </tr> <tr> <td>Capital Charges</td> <td>• \$1,500/Residential Unit • \$1,800/Commercial Unit</td> </tr> <tr> <td>Connection Fee</td> <td>• N/A</td> </tr> </table>	Tolls:	• \$98 - Residential (Detailed Rate Structure For Other Uses)	Taxes:	• \$45/Parcel	Capital Charges	• \$1,500/Residential Unit • \$1,800/Commercial Unit	Connection Fee	• N/A
Tolls:	• \$98 - Residential (Detailed Rate Structure For Other Uses)								
Taxes:	• \$45/Parcel								
Capital Charges	• \$1,500/Residential Unit • \$1,800/Commercial Unit								
Connection Fee	• N/A								
Financial Status	<table> <tr> <td>Reserves</td> <td>Operating Surplus - \$90,648 Capital Reserve - \$7,148</td> </tr> <tr> <td>Debt</td> <td>\$55,000 (\$32,000 is in Sinking Fund)</td> </tr> </table>	Reserves	Operating Surplus - \$90,648 Capital Reserve - \$7,148	Debt	\$55,000 (\$32,000 is in Sinking Fund)				
Reserves	Operating Surplus - \$90,648 Capital Reserve - \$7,148								
Debt	\$55,000 (\$32,000 is in Sinking Fund)								
Assessment of Financial Capacity	<ul style="list-style-type: none"> • Tolls are low compared with other districts in Spallumcheen. • Financial capability somewhat limited in view of required upgrading. 								

FIGURE 3.22

DISTRICT NAME: Hankey	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	• \$30/Yr.
	Taxes:	• None
	Capital Charges	• None
	Connection Fee	• None
Financial Status	Reserves	Approximately \$1,000.
	Debt	None
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Very limited financial capability in view of small size of district. • Very limited financial information received.

FIGURE 3.23

DISTRICT NAME: Highland Park	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	<ul style="list-style-type: none"> • \$150/Yr.
	Taxes:	<ul style="list-style-type: none"> • None
	Capital Charges	<ul style="list-style-type: none"> • \$2000
	Connection Fee	<ul style="list-style-type: none"> • Actual Cost
Financial Status	Reserves	Accumulated Operating Surplus of \$8,523
	Debt	None
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls/Taxes are lower than most other districts. • No debt. • Very limited reserves. • No major financial issues unless significant expansion of the systems takes place which is unlikely due to land use policies and regulations.

FIGURE 3.25

DISTRICT NAME: Landsdowne	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	<ul style="list-style-type: none"> • \$250/Yr.
	Taxes:	<ul style="list-style-type: none"> • None
	Capital Charges	<ul style="list-style-type: none"> • \$2200
	Connection Fee	<ul style="list-style-type: none"> • \$500 Minimum
Financial Status	Reserves	\$29,425
	Debt	None
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Fairly high tolls compared with other Districts. • Reasonable financial capability to respond to upgrading requirements.

FIGURE 3.27

DISTRICT NAME: Meighan Creek	FINANCIAL ASSESSMENT OF WATER DISTRICTS
Tolls/Taxes/Charges	<p>Tolls: • \$190/Yr.</p> <p>Taxes: • None</p> <p>Capital Charges • \$2000/Connection</p> <p>Connection Fee • None</p>
Financial Status	<p>Reserves None</p> <p>Debt None</p>
Assessment of Financial Capacity	<ul style="list-style-type: none"> • Tolls are in middle range for Spallumcheen. • No debt • No reserves • Very small District - limited capacity to undertake improvements.

FIGURE 3.29

DISTRICT NAME: Otter Lake	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	• \$300
	Taxes:	• None
	Capital Charges	• \$3,500
	Connection Fee	• Actual Cost Plus \$150
Financial Status	Reserves	Accumulated Surplus - \$41,326
	Debt	\$3,250
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls are on the high side compared with other Districts. • Good reserves. • Generally good financial capacity to undertake required upgrading.

FIGURE 3.30

DISTRICT NAME: Pleasant Valley	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	• \$250/Yr.
	Taxes:	• None
	Capital Charges	• \$25 (under review)
	Connection Fee	• Actual Cost of Connection
Financial Status	Reserves	Accumulated Operating Surplus - \$34,200
	Debt	None
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls are on the high side compared with other Districts. • Limited financial capacity due to small size of District. • Considerable upgrading required.

FIGURE 3.28

DISTRICT NAME: Mountain View	FINANCIAL ASSESSMENT OF WATER DISTRICTS								
Tolls/Taxes/Charges	<table> <tr> <td>Tolls:</td> <td>• \$150/Yr.</td> </tr> <tr> <td>Taxes:</td> <td>• None</td> </tr> <tr> <td>Capital Charges</td> <td>• \$2000/Connection</td> </tr> <tr> <td>Connection Fee</td> <td>• Actual Cost Plus \$350</td> </tr> </table>	Tolls:	• \$150/Yr.	Taxes:	• None	Capital Charges	• \$2000/Connection	Connection Fee	• Actual Cost Plus \$350
Tolls:	• \$150/Yr.								
Taxes:	• None								
Capital Charges	• \$2000/Connection								
Connection Fee	• Actual Cost Plus \$350								
Financial Status	<table> <tr> <td>Reserves</td> <td>Accumulated Operating Surplus - Approximately \$12,000</td> </tr> <tr> <td>Debt</td> <td>None</td> </tr> </table>	Reserves	Accumulated Operating Surplus - Approximately \$12,000	Debt	None				
Reserves	Accumulated Operating Surplus - Approximately \$12,000								
Debt	None								
Assessment of Financial Capacity	<ul style="list-style-type: none"> • Tolls are in middle range for Spallumcheen. • Fairly low reserves although very small district. • No debt. • Limited financial capacity to undertake required improvements to the system. 								

FIGURE 3.26

DISTRICT NAME: Larkin	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls: Taxes: Capital Charges Connection Fee	<ul style="list-style-type: none"> • \$240/Yr. • \$100 unserviced, \$200 serviced • \$3,500 plus cost of meter installation • Actual Cost Plus \$50
Financial Status	Reserves Debt	<p>Accumulated Operating Surplus - \$102,785 Capital Reserve - \$23,007</p> <p>\$219,062 (\$21,571 annual payments)</p>
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls and taxes are fairly high - limited ability for significant increases. • Fairly high existing debt - 30% of total operating expenditures. • Reserves are limited in view of required upgrading (eg. source) • Financial capability to undertake suggested upgrading is limited.

FIGURE 3.24

<p>DISTRICT NAME: Laird</p>	<p>FINANCIAL ASSESSMENT OF WATER DISTRICTS</p>	
<p>Tolls/Taxes/Charges</p>	<p>Tolls: Taxes: Capital Charges Connection Fee</p>	<ul style="list-style-type: none"> • \$168/Yr. • None • None • Actual Cost Plus \$50
<p>Financial Status</p>	<p>Reserves Debt</p>	<p>Accumulated Operating Surplus - \$18,158 \$15,500</p>
<p>Assessment of Financial Capacity</p>		<ul style="list-style-type: none"> • Tolls are in the middle of the range for Spallumcheen. • Debt load is not a major issue. • Financial capacity is better than smaller districts but may not be sufficient to undertake suggested upgrading.

FIGURE 3.21

<p>DISTRICT NAME:</p> <p>Grandview</p>	<p>FINANCIAL ASSESSMENT OF WATER DISTRICTS</p>	
<p>Tolls/Taxes/Charges</p>	<p>Tolls:</p> <p>Taxes:</p> <p>Capital Charges</p> <p>Connection Fee</p>	<ul style="list-style-type: none"> • \$188-\$376/Yr. (depending on use) • None • \$8,000 • Actual Cost Plus \$50
<p>Financial Status</p>	<p>Reserves</p> <p>Debt</p>	<p>None</p> <p>\$9,288</p>
<p>Assessment of Financial Capacity</p>		<ul style="list-style-type: none"> • Tolls in upper range. • Very high capital charges. • No reserves. • Fairly low debt. • Limited financial capacity to undertake required upgrading.

FIGURE 3.19

DISTRICT NAME: Canyon Creek	FINANCIAL ASSESSMENT OF WATER DISTRICTS
Tolls/Taxes/Charges	Tolls: • \$250/Yr. Taxes: • None Capital Charges • None Connection Fee • Actual Cost Plus \$500
Financial Status	Reserves Accumulated Surplus - \$14,670 Debt None
Assessment of Financial Capacity	• Tolls are on the high side compared with other districts. • Limited financial capacity to upgrade system due to small size of the district.

A number of the districts which are a somewhat larger than those referred to above, must also undertake significant upgrading to meet existing demand. These districts are not located in growth areas and therefore do not need to address the issue of expanding the capacity of their systems. They also do not have financial capability to undertake the upgrading without significant impacts on taxes and tolls. District's falling in this category include Canyon, Grandview, and Steele Springs.

A number of the water improvement districts would incur future costs only if they wish to upgrade their systems to provide for the required fire flows. This could be accomplished over time without significant financial impact. District's falling into this category include Landsdowne, Highland Park, Stardel, Otter Lake, Mountain View, Stepney and Laird.

The Silver Star water improvement district can expect future growth within its service area as the McLeod Road subdivision expands. It is however, in a reasonable position to supply future growth without major financial implications.

Two of the larger districts (Eagle Rock and Larkin) serve not only residential users but also industrial users. The issue of fire protection has been a significant concern. If the districts wish to provide industrial fire flow, significant costs and financial impacts would be incurred. The Larkin Water Improvement District will also incur significant costs associated with upgrading the system to meet current demand. Major financial impacts are projected associated with this upgrading.

FIGURE 3.18

DISTRICT NAME: Vernon Irrigation District	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Surface Water	<u>Existing Demand</u> Quality: <ul style="list-style-type: none"> • No bacteriological problems; water is disinfected. • Colour problems. Quantity: <ul style="list-style-type: none"> • Source is adequate to allow for increased demand.
Water Distribution System Storage Network Fire Flow	<ul style="list-style-type: none"> • No storage other than at source and balancing reservoir - storage and line size provide for reasonable fire protection. • Lines are generally 6" diameter. • Some longer branched lines. • Generally adequate to provide necessary fire flow. <u>Future Demand</u> <ul style="list-style-type: none"> • Future demand will occur as a result of expansion of service boundaries. • System has capacity to provide increased demand.

FIGURE 3.16

DISTRICT NAME: Steele Springs	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Surface Water Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Spring source; occasional high coliform count in raw water; after disinfection water is satisfactory for domestic use. • Chlorination used for disinfection. • Water is hard; calcium bicarbonate deposits in pipes. • Some complaints of sediments (silt), taste, colour, and odour. <p>Quantity:</p> <ul style="list-style-type: none"> • Pumping system from source is not adequate to supply demand. • License to draw water from source is at limit. <ul style="list-style-type: none"> • Storage inadequate to supply fire flow. Storage may not be sufficient to meet peak hour demand. • Some pipes in the system are small diameter, galvanized iron - generally not adequate for supply. Network consists of long branches. Flows are reduced due to calcium carbonate encrustation in pipes. • Storage is inadequate to provide fire protection (only 25 min @ 400 Igpm). Fire flow limited due to pipe capacity. No hydrants and very few standpipes in the system. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • System is at capacity; cannot accommodate increased demand. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Intake requires a sand removal well to filter out suspended solids. • Upgrading required of the water source and pumping capacity. • Analysis required to determine if chlorine and sulphates are only affecting water taste and odour, or if by-products are also being formed. • 6 inch pipes are needed in a branch network to provide required fire flow levels. • Storage capacity upgrading needed for fire flow requirements.

FIGURE 3.14

DISTRICT NAME: Silver Star	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Armstrong Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <ul style="list-style-type: none"> Quality: • Water quality is considered good - no health concerns. Quantity: • Can meet existing demand. <ul style="list-style-type: none"> • Dependant on Armstrong's storage capacity for peak demand and fire protection. • Relatively new and good diameter network; well serviced by hydrants. Some 4" lines do not transmit the required fire flow. These may be duplicated or looped at Highway No. 97. Some sections with 2" pipes have poor water supply and fire protection. • Storage capacity is dependant on Armstrong's capacity. Generally adequate although areas of 2" - 4" lines do not provide adequate fire flow. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • Expansion of McLeod Subdivision can be accommodated. Some looping and twinning is desirable.

FIGURE 3.12

<p>DISTRICT NAME:</p> <p>Pleasant Valley</p>	<p>ASSESSMENT OF WATER SYSTEM</p>
<p>System Component</p>	<p>Assessment</p>
<p>Water Source/Intake</p> <p>Armstrong</p> <p>Water Distribution System</p> <p>Storage</p> <p>Network</p> <p>Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Quality is good and there are no health concerns. • Water could be discoloured by old pipes in the system. <p>Quantity:</p> <ul style="list-style-type: none"> • Limited by present distribution system not source. <ul style="list-style-type: none"> • Peak demand and fire protection flows are dependant upon Armstrong's storage capacity. • System pipes are old, small diameter and are made of galvanized iron. Age and material reduces capacity. The system suffers from low pressures during peak hour demand and there are occurrences of pipes breaking. • Storage is dependent on Armstrong's system storage. It is estimated that the existing system can only provide 50 Igpm, provided that the pipes are in good condition. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • All land in the service area is in the ALR. There is little growth potential unless land is released. • While there is an adequate supply to service more users, the capacity of the distribution system cannot service any more consumers until the system is upgraded. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Replace existing 2" or less galvanized pipes with PVC pipe to reduce head loss. • 6" pipe is required from the Armstrong line connection to fire hydrants to provide the minimum 400 Igpm fire flow for rural communities.

FIGURE 3.10

DISTRICT NAME: Mountain View	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Surface Water Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Water is not disinfected. • Coliform count increases when creek water is used during freshet. • Boil advisory issued by Ministry of Health. • Complaints concerning sediments. <p>Quantity:</p> <ul style="list-style-type: none"> • Creek sometimes dries in summer. <ul style="list-style-type: none"> • Storage tank of 5,700 i.g. is sufficient for peak demand; inadequate for fire protection. • System consists of small diameter pipes (2" - 4"). Network inadequate for fire protection and water supply. • No protection due to inadequate pipe size, storage, and hydrants. Some stand pipes have been developed which delivery approximately 50 igpm. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Source upgrading required to increase supply and prevent health problems. • Chlorination required to prevent bacterial growth, or else the creek could be abandoned and another source found. • Pipe capacity upgraded for peak demand and fire flow levels.

FIGURE 3.8

DISTRICT NAME: Larkin	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Groundwater Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • Water is not disinfected. • Complaints about sediment. <p>Quantity:</p> <ul style="list-style-type: none"> • Capacity is insufficient during peak demand; water is purchased from the Eagle Rock District to make up the shortfall. • The water source limits ability to supply increased demand. • A third well was drilled but the water was too hard. <ul style="list-style-type: none"> • Adequate for peak demand and fire flow. <ul style="list-style-type: none"> • This is a large District with a large, branched network. Only the pipes that connect the network to the source are 6" diameter. The remaining pipes are 4" or less. The water supply is restricted by pipe sizes. • Fireflow is inadequate because of the pipe sizes and the extended branch lines. Storage is sufficient. Flow restricted by small pipe diameters. There are 4 hydrants in the system, with some stand pipes throughout the network. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • Most land is in the ALR and growth potential is limited. • There is some growth potential in the Industrial Park, and in proposed rural residential areas near the Eagle Rock District. • System is at maximum capacity. Growth and increased demand will require upgrading of source and network. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • System upgrading required to improve supply to peripheral areas; 2" and 4" pipes need upgrading. • Increase the number of hydrants and upgrade all fire protection appurtenances. • Upgrade water source to ensure adequate supply for peak demand and fire flows.

FIGURE 3.6

DISTRICT NAME: Laird	ASSESSMENT OF WATER SYSTEM	
System Component	Assessment	
<p>Water Source/Intake</p> <p> Groundwater</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Water is not disinfected. • There are no health concerns or bacteriological problems.</p> <p>Quantity: • Good supply of water from the well. An old well could be used as a backup source, but has poor water quality.</p> <p>• There is no storage.</p> <p>• System is new and considered good, although there are problems with 4" pipes limiting fire flow (to 220 Igpm, which is below recommended levels.)</p> <p>• Hydrants are lacking. 4" pipes limit fire flow (to 220 Igpm, which is below recommended levels.) 400 Igpm is required as this district has denser land use than other areas.</p> <p><u>Future Demand</u></p> <p>• Only a small land area is in the ALR and a good part of the District is in residential use. • The well could supply twice the present number of residences. • System requires upgrading due to the 4" pipes. • A reservoir is required to meet peak demand and fire flow requirements.</p> <p><u>Suggestions</u></p> <p>• Chlorination required to prevent possible bacteriological contamination. • Construct a reservoir to ensure supply for peak demand and fire flow levels. • Hydrants required at critical points in the system. • Major pipes require upgrading. 4" pipes to hydrants should be 6".</p>	

FIGURE 3.4

DISTRICT NAME: Hankey	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
<p>Water Source/Intake</p> <p> Surface Water</p> <p>Water Distribution System</p> <p> Storage</p> <p> Network</p> <p> Fire Flow</p>	<p><u>Existing Demand</u></p> <p>Quality: • Water source is a spring located very close to Highway #97. • Water is not disinfected - chlorination is required.</p> <p>Quantity: • Adequate - no shortages have been experienced. Over time a new source (eg. well) could be investigated.</p> <p>• Not sufficient to supply fire protection. • Adequate for peak hour demand. • Storage is covered by wood roof - not considered satisfactory from water quality perspective.</p> <p>• Generally in poor condition due to age and material type. • Small diameter line - not capable of supplying domestic and fire flow. • Low pressure in system. • Pipe is galvanized iron - colour problems may emerge. Poor material.</p> <p>• System is not capable of delivering fire flow due to inadequate storage and line sizes.</p> <p><u>Future Demand</u></p> <p>• System is not capable of servicing growth - significant upgrading would be required. • Land within service area is predominantly in ALR. Growth areas are limited.</p> <p><u>Suggestions</u></p> <p>• Chlorinate supply to prevent bacterial growth. • A more reliable water source such as groundwater is required. • Pipe upgrading is required to at least replace galvanized iron components.</p>

FIGURE 3.2

DISTRICT NAME: Eagle Rock	ASSESSMENT OF WATER SYSTEM
System Component	Assessment
Water Source/Intake Groundwater Water Distribution System Storage Network Fire Flow	<p><u>Existing Demand</u></p> <p>Quality:</p> <ul style="list-style-type: none"> • There are no health concerns. • Water disinfection is not used but is necessary only if Proctor Lake is used as a back-up source. <p>Quantity:</p> <ul style="list-style-type: none"> • Adequate supply at present. • Only 1 of 2 wells can be utilized as the mains are too small for both sources. <ul style="list-style-type: none"> • Adequate for residential fire flows (800 igpm) and peak demands. Inadequate for industrial fire flow (2000 Igpm). • Pipe diameters sufficient for residential supply. Upgrading required for industrial fire flows. • Fire flow to industrial park is hampered by inadequate storage capacity and pipelines. <p><u>Future Demand</u></p> <ul style="list-style-type: none"> • Residential and industrial growth potential is significant. Only a small portion of the service area is in the ALR. • New water sources are required to increase supply capacity, such as a new well or a surface source (Proctor Lake). • System upgrading for fire flows and peak demands will be required for any future growth, especially in the industrial area. <p><u>Suggestions</u></p> <ul style="list-style-type: none"> • Water disinfection required only if a surface source (Proctor Lake) is used. • Network upgrading required for industrial fire flow. • Storage capacity upgrading required for fire flow requirements.

A number of general observations can be drawn from the analysis of the water systems.

There are a number of very small districts which operate old systems. These districts presently, or will soon, experience difficulty in supplying existing users with a safe drinking water supply. The ability to provide for additional growth does not exist. Districts falling into this category are Pleasant Valley, Round Prairie, Meighan Creek, (Water Users Community) and Hankey.

There are a number of districts which must undertake fairly significant upgrading to meet existing demand. These districts are not located in future urban growth areas. Rather, the concern is to meet existing demand, rectify quality problems or supply limited rural growth. Improvement District's falling into this category include Steele Springs and Canyon. The Grandview District has also had difficulty meeting peak demand during periods of high water use (eg. summer months).

A number of water districts, some of which obtain their water supply from Armstrong, operate systems which are in good condition. These districts are not located in growth areas and require upgrading only to meet fire flow standards. District's falling into this category include Landsdowne, Highland Park, Stardel, Otter Lake, Mountain View, Stepney and Laird.

The Silver Star District can expect further growth within its boundaries. However, it is in a reasonable position to supply future growth without major financial issues arising.

Two water districts will experience future growth, including industrial development. One of the districts in this position (Larkin) will also be required to undertake significant upgrading of its system to not only supply future requirements, but to rectify existing deficiencies. If the Eagle Rock District wishes to meet fire flow requirements, it will have to undertake some upgrading.

All of the water systems analyzed are not capable of meeting the standard for fire flow as set out in the Underwriters Survey.

- all engineering reports, as built drawings and other material obtained from the improvement districts were reviewed;
- interviews were held with representatives of the Ministry of Health, the Ministry of Municipal Affairs, Recreation and Housing, the Ministry of Environment, Lands and Parks, the Township of Spallumcheen, and the City of Armstrong to review issues;
- appropriate standards were selected and used in the evaluation of the water systems. These related to water quality, fire flow, etc.;
- an overview assessment of each water system was undertaken based on the methodology described above.

3.1.2 STANDARDS

The nature of the standards to be applied in the analysis of water systems has significant implications for the outcome. In addition to accepted engineering practices, two specific standards were applied to the analysis of water systems. These were the Safe Drinking Water Regulation (B.C. Regulation No. 230-92) and the Fire Underwriter's Survey prepared by Insurer's Advisory Organization Inc. for fire protection.

MINISTRY OF HEALTH - SAFE DRINKING WATER REGULATION

In July of 1992, the Provincial Government enacted B.C. Regulation No. 230-92 under the Health Act, known as the Safe Drinking Water Regulation. This regulation which became effective October 1, 1992, addresses a wide variety of concerns related to the quality of drinking water. The most important of these provisions in the Spallumcheen context are:

- the requirement for disinfection of all water drawn from surface water sources;
- the need for purveyors of water to prepare emergency response plans to deal with potential risks to their water supplies;
- the need for water purveyors to report the sampling results to the users;
- the increased involvement of purveyors of water in the ongoing sampling and testing of water quality;

TABLE 2.1 DESCRIPTION OF IMPROVEMENT DISTRICTS AND WATER USERS COMMUNITY

Water Improvement District	Number of Connections	Types of Users Served	Average Daily Demand (MIGPD)	Maximum Daily Demand (MIGPD)
Canyon	26	Domestic	.035	.055
Eagle Rock	85	Domestic/Commercial/ Industrial	.1576	.5725
Grandview	95	Domestic	N/A	N/A
Hankey	7	Domestic	N/A	N/A
Highland Park	27	Domestic	.0154	N/A
Laird	99	Domestic/Limited Commercial	.031	.0826
Landsdowne	35	Domestic/Some Commercial & Industrial	N/A	.045
Larkin	149	Domestic/Commercial/ Industrial	.1977	.484
Mountain View	15	Domestic	N/A	N/A
Otter Lake	106	Domestic/Limited Commercial	N/A	N/A
Pleasant Valley	20	Domestic	.005	.0175
Round Prairie	8	Domestic	.033	.045
Silver Star	110	Domestic	.0046	N/A
Stardel	11	Domestic	.0769	N/A
Steele Springs	46	Domestic	.005	N/A
Stepney	38	Domestic	.033	.045
Vernon		Domestic		
Water Users Communities				
Meighan Creek	6	Domestic	N/A	N/A

This section provides an introduction to the Township of Spallumcheen and describes the present organizational structure for the supply of water.

2.1 TOWNSHIP OF SPALLUMCHEEN

The Township of Spallumcheen, incorporated in 1892, is a rural community with a strong agricultural heritage. Agriculture remains an important economic activity in the Township and some 53% of the Township's 26,386 ha are presently in the Agricultural Land Reserve.

The present population of the Township is approximately 5,000. Population growth in the past 20 years has averaged almost 3.5% per annum. This is one of the faster growth rates experienced by municipalities in the North Okanagan Regional District.

Much of the population resides on larger rural lots. Only 450 of the 1700 dwellings in the municipality are developed to urban or suburban densities. These include Otter Lake Cross Road, McLeod Road, Highway No. 97A, and Stepping Stone Estates. The remaining dwellings are located on either rural residential lots or larger agricultural or rural holdings.

Commercial development within the Township is quite limited comprised predominantly of highway oriented commercial uses along Highway No. 97A.

The Township contains some 265 ha of industrially zoned land of which 178 ha is presently in industrial use. Eighty acres are presently vacant. Much of the industrial land is located north of Larkin and south of Crozier Road between Highway No. 97A and the railway.

The Township's present Official Community Plan provides for the retention of the rural character of the community. Future urban residential development will be limited to infill of the McLeod Road and Crozier - Otter Lake Cross Road residential subdivisions as well as limited development in the Highway No. 97A area. Some 27 units are proposed in the context of future urban residential development.

FIGURE 3.31

DISTRICT NAME: Round Prairie	FINANCIAL ASSESSMENT OF WATER DISTRICTS
Tolls/Taxes/Charges	<p>Tolls: • \$140/Yr.</p> <p>Taxes: • None</p> <p>Capital Charges • \$1,000</p> <p>Connection Fee • Actual Cost</p>
Financial Status	<p>Reserves Surplus - \$10,263</p> <p>Debt None</p>
Assessment of Financial Capacity	<ul style="list-style-type: none"> • Tolls are lower than most other districts. • Small district with very limited financial capacity. • Small reserves, no capital reserve.

FIGURE 3.33

DISTRICT NAME: Stardel	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	<ul style="list-style-type: none"> • \$165/Yr.
	Taxes:	<ul style="list-style-type: none"> • None
	Capital Charges	<ul style="list-style-type: none"> • None
	Connection Fee	<ul style="list-style-type: none"> • Actual Cost Plus \$500
Financial Status	Reserves	Accumulated Surplus - \$14,855
	Debt	None
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls are in mid range compared with other Districts. • Limited financial capacity in view of the small size of the District.

FIGURE 3.35

<p>DISTRICT NAME:</p> <p>Stepney</p>	<p>FINANCIAL ASSESSMENT OF WATER DISTRICTS</p>
<p>Tolls/Taxes/Charges</p>	<p>Tolls: • \$125/Yr.</p> <p>Taxes: • None</p> <p>Capital Charges • None</p> <p>Connection Fee • Actual Cost Plus \$1500</p>
<p>Financial Status</p>	<p>Reserves Approximately \$15,000 in Accumulated Operating Surplus</p> <p>Debt None</p>
<p>Assessment of Financial Capacity</p>	<ul style="list-style-type: none"> • Tolls are in lower end of range for Spallumcheen. • District has no long term debt. • No reserves. • Limited financial capability to undertake suggested upgrading.

3.3

PUBLIC SURVEY

A survey of public opinion on the issue of water supply was undertaken in the Township of Spallumcheen. The objective of the survey was to obtain a more accurate and comprehensive picture of how residents of Spallumcheen view the present manner in which domestic water is provided the Township. Appendix 2 provides a more detailed description of how the survey was carried out, the responses received and an interpretation of the responses.

A number of important insights can be drawn from the results of the survey.

On the whole, Spallumcheen residents are satisfied with the quality of their water supply. Of the respondents, 86.7% indicated that they were satisfied or very satisfied with the quality of their water. The remainder (13.2%) indicated that they were either dissatisfied or very dissatisfied with the quality of their water.

The majority (84.3%) of respondents indicated that they had never received a notice advising them of health issues related to their water supply, while, 11.5% indicated that they had received such a notice.

In terms of the quantity of water, 26% indicated that they had experienced water shortages while 72% indicated that they had not experienced shortages.

When asked the question as to whether the lack of water had ever impeded development of their property, 42 of the 104 respondents who answered the question indicated that they had been hindered in their development plans due to lack of water.

On the questions of annual water tolls and taxes, 71.3% indicated that the rates were about right while 25.5% indicated that their rates were too high. Predictably, very few respondents felt their rates were too low.

3.4 SERVICING AND FINANCIAL ISSUES BY WATER IMPROVEMENT DISTRICT

The analysis of the water systems as well as a review of the financial position of each of the water improvement districts would indicate that while there are common issues, there are also significant differences. The issues facing each of the improvement districts are summarized below.

CANYON

This water improvement supplies water to a rural area which is not expected to experience any residential or other form of urban growth in the future. Much of the land within the district's boundaries is in the Agricultural Land Reserve and designated for larger agricultural holdings in the Township's Official Community Plan.

The District provides a reasonable service to existing users on the system. In terms of the water system, the major concerns relate to rectifying water quality issues as well as servicing limited rural development in the future given that the source is at capacity. The provision of fire flow would significantly add to the cost of upgrading the system. The Board of Trustees is considering the development of an additional well if demand warrants. At present, individuals residing within the service area who are not connected to the system are being asked to drill their own wells to meet their domestic water needs.

The District's financial position is not strong although it is debt free. The fairly high rates for tolls and the limited reserves would suggest that the District is not in the best position to finance major upgrading or expansion of the system.

There are no major public concerns related to the operation of this system. Users gave the quality of the water a lower rating than the average in Spallumcheen due primarily to odour. The users appeared to be less interested in having the Township take over the operation of the system than the average for Spallumcheen.

The present system is not adequate to meet present peak hour demand during the summer months, and is not capable of providing required fire flows. The district has also experienced poor water quality and a boil advisory has been issued by the Ministry of Health. Upgrading will be required to the source (e.g. development of a groundwater source), storage and the distribution system if fire flow is to be provided.

The financial capacity of the district to undertake the required improvements is limited. Rates for tolls are already high and there is limited opportunity for increases. The district has a reasonable reserve although it is not adequate to meet future capital needs.

The users of the Grandview system rated their system lower than the Spallumcheen average. Water quality, water quantity (shortages) during summer months and high rates contribute to the lower satisfaction rating given to the district. However, more Grandview users (56.5%) would like to see the District continue to manage the system than have the Township manage the system (26.1%).

HANKEY

The Hankey District is very small, serving only six users. The system is very old and in need of repair to allow it to continue to meet the present demand into the future. Land within the district's boundaries is in the ALR and no growth is expected. Specific improvements include the need for disinfection, main upgrading and replacement and upgrading of storage facilities. The district, in view of its small size, has very limited financial capability to upgrade the system.

HIGHLAND PARK

Highland Park Water District is a smaller district (27 connections) which is supplied from the City of Armstrong's water system. Much of the land within the district's boundaries is in the ALR and is designated for larger agriculture holdings in the Township's OCP. No major upgrading is required to meet existing demand. The District, in fact has sufficient capacity to serve twice the number of users it presently serves. Users of the Highland Park system rate their system higher than average in Spallumcheen. The majority of users (66.7%) would like to see the water district continue to manage the system.

The Larkin system is at capacity. In fact, the system is not capable of meeting present peak demand. The water source limits the ability to supply existing demand. Disinfection, source upgrading, and improvements to the distribution system are required. Fire flow is a significant concern in view of industrial areas. The financial capacity to upgrade the system is limited. Tolls are already fairly high limiting the opportunity for significant increases. The District also has a high debt load. Reserves are reasonable, providing the financial resources to accommodate some upgrading of the system.

Users of the Larkin system rated their system close to the Spallumcheen average. The majority (76%) however, believe that rates are too high. Larkin water users were also more prepared to see their system managed by the Township of Spallumcheen (50%) compared to 38% which would like to see the water district continue managing the system.

MEIGHAN CREEK

Meighan Creek Water Users Community operates a very small system supplying approximately six rural users. The system is old and has experienced water quality problems. A boil advisory was issued by the Ministry of Health in 1990 and has not been removed. The system can meet existing demand but cannot be expanded. Little, if any growth is anticipated in the future. The District is debt free but clearly has little capability to pay for resolving existing water quality problems.

MOUNTAIN VIEW

The Mountain View Water District is a small district serving 15 users. The land within the District's boundary is predominately in the ALR and designated for large agriculture holdings in the OCP.

There are some quality problems when creek water is used to supplement groundwater sources. Source upgrading will be required. Some upgrading of pipe size will be required to provide fire flow although this upgrading could occur gradually due to the rural nature of the service area.

The financial capability if the District is limited but could support some upgrading. Users of the Mountain View system rate their system close to the Spallumcheen average on most quality and quantity.

ROUND PRAIRIE

The Round Prairie Water District is a very small district serving eight rural users. The land within the District is rural and is proposed to remain in large agriculture holdings.

The distribution system is old. Age and material type (galvanized iron) are reducing capacity resulting in low pressures during peak hours.

As a small district, the financial capacity to undertake improvements is very limited.

The users of the system rated the water pressures as unsatisfactory. The majority of users would prefer to have the Township manage their system.

SILVER STAR

The Silver Star Water District is also one of the larger districts in the Township with approximately 110 connections. The majority of the properties served by the system are smaller residential holdings located in the McLeod Road subdivision.

The system is capable of accommodating future growth without major upgrading. Some upgrading of the distribution network would be desirable to provide required fire flows.

Financially, the District is generally capable of undertaking the required upgrading.

Users of the Silver Star system rated their water above the Spallumcheen average on all counts and believe that the rates for tolls/taxes are about right. More Silver Star users believe that the District should continue to manage the system (44.8%) compared with 34.5% who believe the Township should manage the system.

STARDEL

The Stardel Water District is very small, serving eleven users. Land within the District is presently agricultural and is designated as such in the Township's OCP.

As pointed out in the previous section, there are considerable differences among the improvement districts in terms of:

- the extent of upgrading required to rectify existing deficiencies or to expand the system to accommodate future growth;
- the financial capability of each district to respond to future capital and operating costs.

The objective of this report is to determine whether or not changes to the present organizational structure for water supply would permit the issues to be resolved more cost effectively. This section provides an overview of the broad organizational options which may be appropriate. The various options are discussed and evaluated based on the specific issues and needs identified in relationship to the supply of water in Spallumcheen.

The differences between improvement districts and municipalities are reviewed as a basis for discussing the various organizational options.

4.1 IMPROVEMENT DISTRICT AND MUNICIPALITIES

There are considerable differences between improvement districts and municipalities. An overview of the differences is presented in Figure 4.1.

The difference which is most significant in the Spallumcheen context is the inability of the improvement districts to access the Revenue Sharing Grants of the Ministry of Municipal Affairs, Recreation and Housing. Grants up to 50% of the capital cost of upgrading or expanding water systems are available from the Ministry. The financial implications of the Revenue Sharing Program for a variety of typical water projects is demonstrated in Appendix 3. The analysis shows that depending on the type of project, the financial impacts of water projects on the users of the system can be significantly reduced.

Another issue which limits the range of options available to improvement districts for cost recovery is the inability to access the tax roll. This has been overcome in Spallumcheen as the Township, through a provision in the Municipalities Enabling and Validating Act, may act as the assessor and collector of taxes for improvement districts in the Township.

4.2 OPTIONS FOR ORGANIZATIONAL CHANGE

A number of broad options for organizational change for water service delivery in the District of Spallumcheen were identified. Four options were selected for more detailed review. These were:

- no involvement by the Township of Spallumcheen in the provision of water;
- maintaining the status quo in which the Township of Spallumcheen is not involved in the provision of water other than acting as the assessor and collector for improvement districts;
- dissolution of improvement districts and transfer of assets and management responsibility to the Township of Spallumcheen. The Township would create a number of separate utilities and appoint local management committees to assist in decision making and administration;
- dissolution of improvement districts and creation of a single municipal utility.

A fuller discussion of each of these options is provided below followed by an evaluation of the options in the context of Spallumcheen.

4.2.1 OPTION 1 - CONTINUED PROVISION OF WATER BY IMPROVEMENT DISTRICTS

Under this option, all of the existing improvements districts and water users communities would be retained. Service area boundary expansion would be supported to allow the provision of water service to areas presently outside of boundaries. The Township would only become involved in the provision of water service outside of established service areas where the districts are unwilling or unable to provide service. The Township would also relinquish its responsibility for collecting taxes on behalf of a number of the districts.

.1 IMPACTS

The impacts of this option would be as follows:

Financial Impacts

- limited financial impacts on the Township of Spallumcheen as it is only required to respond to areas which will not be serviced by improvement districts;

.2 PROS AND CONS

This option will affect the various stakeholders in various ways. The following table points out some of the pros and cons associated with this option for the various stakeholders.

OPTION 1 - CONTINUED PROVISION OF WATER BY IMPROVEMENT DISTRICTS		
	PROS	CONS
Township of Spallumcheen	No financial impacts or risks to the municipality	<ul style="list-style-type: none"> • No ability to access Revenue Sharing Grants to upgrade systems • Loss of economies of scale to maintain, operate and administer systems • Lack of coordination in plans and policies will frustrate the Township in carrying out plans • Health and safety issues related to supply of water will continue and perhaps become more critical
Improvement Districts	Retention of ability to represent interests of users and to exercise authority over the system	<ul style="list-style-type: none"> • Lack of coordination in planning and decision making may continue to place increased pressure on improvement districts to expand systems • No ability to access Revenue Sharing Grants leading to higher costs • Significant financial impacts will be experienced by some districts
Provincial Government		<ul style="list-style-type: none"> • Ability to upgrade systems to meet Provincial Standards will be limited. • Limited coordination in servicing, land use and other decisions related to development.
Water Users/ Public	More localized representation for management of water systems	<ul style="list-style-type: none"> • Rates may increase significantly in some cases to allow for an acceptable level of water service • Confusion on the part of the public given the complexity in jurisdictions.

Ability To Fund Upgrading

As under the first option, ability to fund upgrading of the water systems would depend on the financial capability of each improvement district. A large number of districts would not be in a strong position to fund upgrading of their systems to reflect prevailing standards. There would not be any opportunities to access Revenue Sharing Grants for upgrading of the systems.

Coordination Between Improvement District's And Townships

There is again greater potential for loss of coordination between the districts and the Township on policy and planning issues.

4.2.3

OPTION 3 - DISSOLUTION OF IMPROVEMENT DISTRICT AND ESTABLISHMENT OF LOCAL MANAGEMENT COMMITTEES

This option would entail the dissolution of some or all improvement districts and transfer of their assets to the Township. The Township would own the systems and be responsible for their operation, management and upgrading. However, to assist in this regard the Township would establish up to 18 local management committees. The local management committees would be established based on either the existing boundaries of the districts or revised boundaries should it be found that combining one or more of the districts is reasonable. Rather than establishing one utility, the Township would establish up to 18 utilities to reflect existing differences in rates, debt, reserves, etc. Responsibilities and duties could be shared between the Township and the districts. The responsibilities of the management committees could range from being advisory only to taking on certain delegated functions on behalf of the Township and having small budgets to pay for incidental costs associated with operation (e.g., rental or facilities, telephone, etc.).

The Township would be responsible for bylaw preparation and enactment; financial management including billing and collection; maintenance and operation of the systems, planning and engineering of the systems as well as all upgrading and expansion. The Township may contract with individuals or firms who presently provide service to water districts to carry on routine maintenance of the systems.

Up to eighteen specified areas would be created to ensure that all capital and operating costs incurred by each utility are paid for by the beneficiaries of that system only. Subsidies from one utility to another would not be permitted.

The management committees would be established by the Supplementary Letters Patent which would dissolve the improvement districts. Depending on whether or not the Township delegates authority to the improvement districts, the Township would establish a Standing Committee for each of the specified areas. This could either be provided for in the Supplementary Letters Patent or by bylaw. The Supplementary Letters Patent could give the Township the authority to allow the make-up of the Management Committee to consist predominantly of non Council members. The members of the management committees would be appointed by the Council of the Township. However, Council may allow an election to be held before appointing the successful candidates.

Ability To Fund Upgrading

The ability to fund capital project would be strengthened by the Township's ability to access Revenue Sharing Grants for water capital projects. Grant between 25% and 50% of the capital cost of water system improvements could be available based on the merits of the application. Grants would also be available to study the individual systems and to establish plans for upgrading.

Coordination Between Policies And Plans

This option would serve to improve coordination between servicing, land use and other policy area in that the Township would be involved in all decisions concerning these areas.

Ability To Respond To User Concerns

Through the establishment of local management committees, there is opportunity for water users to be represented at the level of the utility or specified area. Depending on the jurisdiction of the local committees, there may be little difference in the ability of water users to be represented at the local level.

4.2.4 **OPTION 4 - DISSOLUTION OF IMPROVEMENT DISTRICTS AND ESTABLISHMENT OF ONE MUNICIPAL UTILITY**

Under this option, all of the existing improvement districts would be dissolved and all assets transferred to the Township. The Township would therefore assume total responsibility for the operation and maintenance of the water systems within its boundary. Rather than establishing 18 utilities with costs recovered on a specified area basis, only one municipal utility would be established with common water rates for all existing water systems.

1. IMPACTS

The following impacts are anticipated with this option:

Financial Impact

The financial impact on the Township would be more significant than previous options. The establishment of one utility would place the Township at greater financial risk as costs are not recovered on a specified area basis but from the municipality utility as a whole.

Economies Of Scale/Administrative Efficiencies

As in the previous option, there would be economies of scale and administrative efficiencies in having one agency responsible for the operation of the water systems. The establishment of one utility rather than 18 utilities as proposed in the previous option would also result in less administration and therefore lower costs.

Operation And Maintenance

More resources as well as more specialized resources could be brought to bear on the maintenance and operation of the systems. All of the benefits cited for Option 3 would also apply to this option.

Ability To Fund Capital Projects

There would be an increased ability to fund capital projects as the Township would be eligible for Revenue Sharing Grants as well as study grants.

Ability To Represent Interests Of User

The issue of developing an appropriate organizational structure for the delivery of local government services is a complex one. It is possible to approach this issue from a variety of perspectives, including economic or organizational efficiency, the public interest, etc. Many of these approaches ignore the fact that there are a variety of established interests, relationships and loyalties already in place.

Virtually all successful local government restructures involve a negotiated solution through which affected stakeholders are able to achieve a sufficient number of their objectives to make the restructure attractive. There have been few, if any, local government restructures in the recent past where a win/lose situation has resulted. Restructures are successful when innovative organizational solutions result in outcomes which are win/win.

The analysis conducted on the issue of water supply in the Township of Spallumcheen has led to some important conclusions. The most important of these is that there are significant differences among the various water improvement districts in terms of their ability to continue to supply water to the users on their systems. Some of the water districts, due to their size and the poor condition of their system, are not in a position to continue supplying water for domestic purposes in the future. This is recognized by the users who have voiced an interest in having the Township take over the management of their system. There are those districts which provide water service to areas which are presently urban or are proposed for continued urban development. In these districts, increased standards including the provision of fire flows are required. Again, the financial capability of these districts to achieve these standards is in doubt. Finally, there are a number of water districts which operate newer systems which have been constructed to reasonable standards. Many of these districts have the financial ability to continue operating, upgrading, and expanding their systems without significant impact to their financial position.

5.1 Future Trends

The future may also bring important changes to the manner in which water is supplied in the Province and in Spallumcheen specifically. It is clear that the management and administration of public water systems will continue to come under increased scrutiny by the Provincial Government. The enactment of the Safe Drinking Water Regulation is evidence that increased responsibility will be placed on water purveyors to ensure that their water supplies meet public health standards. There is also evidence that the public is placing greater emphasis on both quantity and quality of water supply. In many cases, the public is expecting an increased level of service with no significant increases in tolls and taxes. This is borne out to some degree by the public survey conducted in the context of this study.

It is clear that the involvement of the Township in the provision of water will not be welcomed by some improvement districts nor by the users they represent. This is evident in discussions with trustees, from the survey responses received from the public and from those attending the Public Open House. For example, a slight majority of those attending the Public Open House wished to see continued involvement of the water improvement districts in the operation of their water systems. There is evidence, however, that some improvement districts and a significant number of the public may be prepared to have the Township play an increased role in the provision of water. This is due, primarily to the ability of the Township to access Revenue Sharing Programs of the Provincial Government. As shown in Appendix 3, the Revenue Sharing Program of the Provincial Government can have an important effect in reducing the cost of water system upgrading. In such cases, the District must ensure that there is an advantage (or at least no disadvantage) to both the water district and the Township in becoming involved in the provision of water. This will require more study and analysis on both the part of the Township and the districts.

In the final analysis, organizational change will only occur if the organization model satisfies the concerns of the major stakeholders involved. The concerns of the four major stakeholders in Spallumcheen are as follows:

Township of Spallumcheen

- ability to meet established standards for the provision of water in the municipality including fire flow, meeting Ministry of Health standards, etc;
- ability to supply water to areas proposed for development in the Official Community Plan and to achieve economic development and other objectives of the Township. The need to coordinate servicing, land use and development decisions is critical from the perspective of the Township;
- avoiding major financial impacts and risks to the Township and the general taxpayers of the municipality as a whole.

Improvement Districts

- ability to access the Revenue Sharing Grant Program of the Provincial Government in view of the high capital cost of upgrading water systems and limited financial capacity of the districts. The Districts wish to avoid major increases in tolls and taxes.

APPENDIX 2

Spallumcheen Water Services Study

Water User Survey Results

Prepared by:

Urban Systems Ltd.

1128501.1

July, 1992

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Spallumcheen Water Services Study

Water User Survey Results

1.0 Introduction

The Township of Spallumcheen and representatives from Spallumcheen area Water Improvement Districts are currently undertaking a study of the provision of water services within Spallumcheen boundaries. The purpose of this study is to provide a description of the existing water delivery regime and to establish a factual basis for further investigation of preferred water delivery options for the future.

As part of this exercise, a survey was developed to gather comments from Spallumcheen water users for input into the study. A summary of the results of this survey are presented in this report.

2.0 Survey Administration

Due to the importance of the issue of water services, it was decided that every household in the Township should be given an opportunity provide study input. Therefore, a blanket mail out of 1575 survey forms was initiated on June 29, 1992. A total of 410 responses were returned, resulting in a response rate of just over 26%. Out of the total responses, 13 survey forms were not sufficiently complete to be included in the analysis leading to a response sample of 397.

A random sample of this size drawn from a community the size of Spallumcheen would be large enough to be considered representative of the overall population. The results could be taken as an accurate depiction of the opinions of the actual population within a range of plus or minus 2.5%, 19 times out of 20. However, it is possible that the sample that was received is not sufficiently random, and this should be kept in mind when interpreting these results.

Caution should also be used when examining the results from categories of respondents, such as those from individual Water Districts. In several cases, the number of responses from a given District is very small. For example, only 3 responses were received from the Pleasant Valley, Round Prairie and Meighan Creek Water Districts. Due to these small numbers, it would not be appropriate to generalize the comments of these few respondents to the population of the entire Water District.

Table 1

District	Number of Respondents Within Each District	Number of Respondents Drawing Water From Each District
Canyon	13	7
Eagle Rock	51	45
Fortune Creek	6	3
Grandview	31	23
Hankey	0	0
Highland Park	9	7
Laird	28	28
Landsdowne	11	10
Larkin	45	37
Mountain View	5	3
Otter Lake	42	38
Pleasant Valley	4	3
Round Prairie	3	3
Silver Star	29	29
Stardel	0	0
Steele Springs	19	18
Stepney	10	3
Vernon	12	12
Meigan Creek	3	1
Don't Know	7	--
Not in a District	69	--
TOTAL	397	270

A total of 321 (80.9%) of responses came from residents who live or have land within a Water District. Of these, 270 indicated that they draw water from their District, and 44 do not. The District with the highest representation of users among respondents (45) was the Eagle Rock District, with Larkin and Otter Lake close behind with 41 and 38 respectively. As mentioned, only three surveys came from within the Pleasant Valley, Round Prairie, Stepney and Meighan Creek Districts, and no responses at all came from the Hankey and Stardel Districts. In the case of Meighan Creek, only one respondent out the three draws their water from the District.

The largest single category of respondents (69) was those who are not in a District, while 7 respondents did not know which District they are in.

5.2 Section B - Water Quantity

In question B1, respondents were asked if they have ever had any **water shortages**. Twenty-six percent answered yes, and 72.1% answered no.

In question B2, those that had answered yes to B1 were asked **how they had coped with the shortage**. Sixty-seven percent said that they reduced consumption, 20% resorted to an alternate supply, while 12.6% coped in some other way.

Question B3 asked respondents **whether a lack of water had ever hindered development** of their property. A large number of respondents (293) did not answer this question. It appears that those respondents who have never had a water shortage considered this question to be not applicable, and therefore did not respond. Of the 104 who did answer, 42 (or 40.4%) answered yes.

5.3 Section C - Health Issues

Question C1 asked residents if they have every **received a notice advising of health issues related to their water supply**. A majority, 84.3%, said they had not, while 11.5% said they had. When asked in question C3 who the notice had been from, 9 respondents indicated the notice had been from the **Ministry of Health**, 16 said their notice had come from their **Water District**, 12 had received notices from some **other** source, and 10 people **did not know** where their notice had originated.

5.4 Section D - Rates and Administrative Issues

An unusually high number of residents chose not to answer some or all of the questions in section D. One reason for this is that those respondents who have their own well, and do not pay Water District rates, seem to have felt the section did not apply to them and they left it blank. In question D2, respondents were asked how much they were prepared to pay each year for adequate water services. Many were apparently unwilling or unable to provide this information and left the question blank. Others simply indicated that the amount they are paying now is acceptable, but did not indicate what that amount was. These facts should be remembered when analysing the results for this section.

Question D1 asked water users **how they felt about their annual water rates**. Of the 282 responses, a substantial majority (201 or 71.3%) answered that the rates were **about right**, while 72 or 25.5% said that they were **too high**. Only

9 respondents feel their rates are too low.

Table 2

Land Use	Number	Percent
Residential	225	58.1
Commercial	4	1.0
Agricultural	152	39.3
Industrial	4	1.0
Other	2	0.5
No Answer	8	---
TOTAL	372	100.0

Question E1 enquired about the primary use of respondents' land, and the results are presented in Table 2. A majority, 58.1%, indicated that the primary use of their land is **residential**, while 39.3%, stated that the primary use of their land is **agricultural**.

5.0 Overall Survey Results

5.1 Section A - Water Quality

The results of section A of the survey suggest that Spallumcheen residents, overall, are generally satisfied with the quality of their water. When asked in question A1 how satisfied they are with the quality of their water, 44.3% indicated they were **very satisfied**, and 42.4% indicated they were **satisfied**. A minority of 13.2% said they were either **dissatisfied** or **very dissatisfied**. In this question, satisfaction levels were assigned numbers ranging from 1 for very satisfied to 4 for very dissatisfied. The average rating was 1.72, which means the average respondent lies between 1 (very satisfied) and 2 (satisfied).

Questions A3a to A3e asked for more specific ratings on different characteristics of water quality. They again showed a high degree of satisfaction with water quality. Over 90% of respondents indicated that their **water pressure**, and the **odour, taste, and colour** of their water, was either **very satisfactory** or **satisfactory**. The degree of satisfaction with the **amount of sediment** in their water was slightly lower, although still high, with 84.6% indicating it was **very satisfactory** or **satisfactory**. The average ratings given each of these features is presented in appendix A.

Despite these limitations, the accuracy of the results should be sufficient for the purposes of the study. Further, the results could be very useful in identifying issues that warrant attention in the study.

3.0 Interpretation

The results of the survey are presented below. First, an overview of the respondents is made by looking at the number of respondents from each Water District and the primary use of their land. This is followed by a look at the overall results from each of the 5 sections of the survey, Sections A through E. The results from individual Water Districts are then discussed and compared against the overall results. Finally, a brief analysis of the written comments found on the survey forms is made.

The overall results and the results for individual Water Districts are presented in appendix A through E2. These results are presented in three forms:

- ▶ ***Frequencies:*** For most questions, the frequency of each response is presented. This is simply a number, which refers to the number of respondents who provided a given answer.

- ▶ ***Percentages:*** Where frequencies are reported in the tables, a percentage is usually reported as well (in brackets). **These percentages have been calculated based on the number of respondents who actually answered the question.** Where questions were left blank, the missing respondent has been removed from the analysis. This should be remembered when interpreting the results.

- ▶ ***Averages:*** In a few cases, responses are numerical in nature, and allow average responses to be calculated.

A copy of the original questionnaire form is also provided, in appendix F. Referring to this appendix should facilitate the interpretation of the results.

4.0 Overview of Respondents

Question E2 in the survey asked respondents to indicate in which Water District their land was located. Table 1 shows a break down of the responses.

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- ability to remain involved in decisionmaking concerning the future of the water systems, and ability to respond to local concerns.
- ability to manage risks associated with the supply of water including reducing liability.

Provincial Government

Ministry of Health

- ability of the various water systems to provide water which meets the Ministry's standards as set out in the Safe Drinking Water Regulation;

Ministry Of Municipal Affairs, Recreation And Housing

- ability to achieve coordination in local government decision making.
- developing an increased ability for management of water systems at local level, thereby reducing the role of the Ministry in approvals, etc.

Water Users/Public

- ability to ensure a quality water supply at reasonable tolls and taxes in order to protect health and safety (quality and quantity for fire flow). This applies to both residents who are now on a system and those who are presently not on a system.

The options presented in this report provide some opportunity for further discussion between the Township and those improvement districts and water user's communities which believe that some increased role for the Township in the management and operations of their water system may be warranted.

In cases where there is interest on the part of both an improvement district of the Township, additional studies should be carried out. These include:

- more definitive analysis of the water systems in order to more accurately define upgrading requirements and costs.
- more detailed study of the preferred options for reorganization.

The Ministry of Municipal Affairs, Recreation of Housing may be prepared to fund such additional studies which relate to the planning and upgrading of water systems in Spallumcheen as well as further investigating organizational models which have merit.

The need for disinfection and other improvements to the water systems will result in increased operating costs and a need for skilled operators to maintain and operate the systems. In the past, the Districts have been able to keep operating costs to a minimum due to a number of factors including the simplicity of the systems and the ability to secure equipment and services at very reasonable costs, often from users on the systems. This method of operation may not be possible in the future as the systems will become more sophisticated (eg. disinfection equipment). Based on the survey, users may also be prepared to see modest increases in rates but will demand prompt and efficient service.

In the future, there may be a need to devote increased time to operation and maintenance. There will also be a need to ensure that maintenance staff are well trained in order to avoid operational problems and perhaps liability

The future growth and development within the Township of Spallumcheen may also differ from the character of the community portrayed in the OCP. Increased rates of growth, as well as increasing pressure for higher densities and more diverse land uses could result in significant demands for water. There is evidence that growth rates are increasing in the Township of Spallumcheen.

Population growth, the lack of a community sanitary sewer system as well as the extent of agricultural use in the Township may also have implications for water quality in the future. Industrial uses presently developed in the Township use ground disposal or other means of sewage disposal. The use and disposal of chemicals (eg. wood preserving) by industry is a concern in terms of the impact on the water quality of the aquifer on which a number of water districts depend. There is also evidence that agricultural uses are having an impact on water quality for both surface water and ground water resources. Of particular concern is the impact of fertilizers on shallow aquifers. Finally, growth and development in the various watersheds is resulting in a gradual decline of water quality, particularly surface water.

.2 PROS AND CONS

The following table points out the pros and cons associated with this option from the perspective of various stakeholders:

OPTION 4 - DISSOLUTION OF IMPROVEMENT DISTRICTS AND ESTABLISHMENT OF ONE UTILITY		
	PROS	CONS
Township of Spallumcheen	<ul style="list-style-type: none"> • Administratively simple • Economies of scale would occur • Ability to access Revenue Share Grants for water system improvements • Coordination in servicing and landuse policy 	<ul style="list-style-type: none"> • Increased financial impact as costs are not recovered by specified areas but by the utility as a whole
Improvement Districts	<ul style="list-style-type: none"> • Opportunity to access Revenue Share Grants • Improved coordination in servicing and landuse policy 	<ul style="list-style-type: none"> • Loss of ability to represent interest of users • Loss of authority of involvement in operation of systems
Provincial Grants	<ul style="list-style-type: none"> • Ability to upgrade systems to meet Provincial standards is increased • Improved coordination at local government level. 	
Water Users	<ul style="list-style-type: none"> • Costs for operation and maintenance may decrease • Ability to access Revenue Share Grants will reduce capital costs with less impact on tolls and taxes 	<ul style="list-style-type: none"> • Inequities would result as a single utility would not reflect existing differences in rates, reserves, debt, etc. • Rates may increase for some users and decrease for others

.2 PROS AND CONS

The pros and cons associated with this option from the perspective of the various stakeholders would be as follows:

OPTION 3 - DISSOLUTION OF IMPROVEMENT DISTRICT'S AND ESTABLISHMENT OF LOCAL MANAGEMENT COMMITTEES		
	PROS	CONS
Township of Spallumcheen	<ul style="list-style-type: none"> • Opportunity to access Revenue Sharing Grant • Economies of scale would occur in terms of maintaining, operating and administering individual systems • Improved coordination between land use and servicing decisions 	<ul style="list-style-type: none"> • Administratively complex as up to 18 utilities and 18 management committees would be involved • Some financial impacts and risks
Improvement Districts	<ul style="list-style-type: none"> • Opportunity to access Revenue Sharing Grants • Retention of some ability to represent interests of local users • Improved coordination between land use and servicing decisions. 	<ul style="list-style-type: none"> • Loss of some ability to represent interests of users • Loss of authority over system
Provincial Grants	<ul style="list-style-type: none"> • Ability to upgrade systems to meet Provincial standards is increased • Increased coordination in planning and policy making at local government level. 	
Water Users	<ul style="list-style-type: none"> • Cost of operation and maintenance of systems may decrease • Ability to access Revenue Sharing Grant will reduce capital costs with less impact on tolls/taxes 	<ul style="list-style-type: none"> • Some loss of local representation for water system

.1 IMPACTS

The impacts associated with this option would be as follows:

Financial Impacts

There would be financial impacts on the Township as it will incur costs for operating and maintaining the systems as well as for capital projects. However, the financial risks to the Township are not great as all costs would be recovered from the users of the system on a specified area basis. The municipality may incur debt which would again be serviced from revenue generated in the specified areas benefitting from the projects. The Township's borrowing power for other municipal projects may be reduced if significant amounts of debt are incurred for water capital projects. An important benefit associated with this option is that it would allow access the Revenue Sharing Program of the Provincial Grant. This would reduce the capital costs which must be borne by the users on the various systems.

Economies Of Scale/Administrative Efficiency

There would be increased economies of scale and administrative efficiencies given that all of the water systems would be administered by one agency. Some costs would be incurred for the operation of the local management committees.

Maintenance And Operation Of Systems

By having all of the systems maintained and operated by one agency, there may be an opportunity to employ full time and perhaps more specialized staff. This staff would be capable of operating more complex systems (eg. those with disinfection facilities) and may develop more comprehensive approaches to maintenance planning as well as take on other tasks such as design, etc. There may also be efficiencies in the use of equipment, supplies, etc.

.2 PROS AND CONS

The pros and cons associated with this option from the perspective of each stakeholder are shown in the following table.

OPTION 2 - MAINTAIN THE STATUS QUO		
	PROS	CONS
Township of Spallumcheen	No financial impacts or risks	<ul style="list-style-type: none"> • No ability to access Revenue Sharing Grants to upgrade systems • Loss of some economies of scale to maintain, operate and administer systems • Lack of coordination in planning and policies will frustrate implementation of the Township's plans • Health and safety problems related to the supply of water may become more critical
Improvement Districts	Retention of ability to represent interests of users and to exercise authority over the system	<ul style="list-style-type: none"> • No ability to access Revenue Sharing Grants • Lack of coordination may continue to place pressure on districts to expand capacity and increase standards • Significant financial impacts will be experienced by some districts.
Provincial Government		<ul style="list-style-type: none"> • Ability to upgrade systems to meet Provincial Standards is reduced • Limited coordination in servicing, land use and other decisions related to development
Water Users	More localized representation for management of water systems	<ul style="list-style-type: none"> • Rates may increase significantly in some cases to allow for an acceptable level of water service • Confusion on the part of the public given complexity in jurisdiction

4.2.2 OPTION 2 - MAINTAINING THE STATUS QUO

This option would be similar to the first option except that the Township would continue to perform assessment and collection duties on behalf of those districts which desire this service.

.1 IMPACTS

The impacts of this options would be as follows.

Financial Impacts

As under the first option there would be limited financial impacts on the Township of Spallumcheen.

A number of improvement districts would experience significant impacts due to the need to upgrade existing deficiencies from their own revenue sources.

Economies Of Scale/Administrative Efficiency

Some economies of scale and administrative efficiencies would occur as a result of the Township becoming involved in billing and collection on a request basis.

Maintenance And Operation Of Systems

Maintenance and responsibility for operating the systems would remain with the individual districts. Economies of scale would be lost as improvement districts would be required to maintain and operate their individual systems. Increasing standards and requirements for water districts to become more involved in monitoring water quality, emergency response planning and to operate systems for disinfection may increase operating costs.

- significant financial impacts on a number of improvement districts which must finance upgrading of existing deficiencies from their own revenue sources. Impacts on improvement districts will vary depending on their financial position and the extent and timing of required upgrading. The inability to access Provincial Revenue Sharing Grants would increase the financial impacts on the districts.

Economies of Scale -Administrative Efficiency

Loss of administrative efficiencies and economies of scale would result as each district must carry out its own billing, collection and financial management. Existing economies of scale as a result of the Township's involvement in collection of tolls and taxes would be lost.

Maintenance and Operation of Systems

As a number of systems are old, maintenance and operating costs will increase. Increased operating costs will also result due to new health regulations. (eg. monitoring quality, operation of disinfection systems, etc.) Economies of scale would not result as each district would continue to undertake its own maintenance and operation.

Ability to Fund Upgrading

Ability to fund upgrading of the system would vary depending on the financial capability of the individual districts. For the most part, improvement districts will not be in the position to fund all of the required upgrading due to limited financial capability. Inability to access Revenue Sharing Grants could be a significant factor in the ability of water districts to fund required upgrading.

Coordination Between Improvement District And The Township

The potential for poor communication and lack of coordination between the improvement districts and the Township is greater under this option than any other. Problems related to the coordination of land use, economic development and servicing decisions will continue to mount and become more critical. This may frustrate implementation of the Township's plans and policies as well result in increasing demands on the improvement districts.

FIGURE 4.1

COMPARISON OF IMPROVEMENT DISTRICTS AND MUNICIPALITIES

	IMPROVEMENT DISTRICT	MUNICIPALITY
General Features	<ul style="list-style-type: none"> • most junior form self government • no population limits • no area limits • suited for the lower level of community development and narrower range of services 	<ul style="list-style-type: none"> • no minimum population size • status related to population size • suited for higher levels of community development and demands for broader range of services
Method of Formation	<ul style="list-style-type: none"> • created by Letters Patent • assent of voters required 	<ul style="list-style-type: none"> • created by Letters Patent • assent of voters required
Representation	<ul style="list-style-type: none"> • full local representation • board of trustees 3, 5, or 7 persons 	<ul style="list-style-type: none"> • full local representation • Council varies in size
Administration	<ul style="list-style-type: none"> • secretary to the Board of Trustees and support staff as required 	<ul style="list-style-type: none"> • administrator, clerk, treasurer and support staff as required
Cost Recovery	<ul style="list-style-type: none"> • tax collection ability weak • no access to Revenue Sharing grants • residents must pay provincial rural services levy • Home Owner Grant applicable only to fire and street lighting portion of tax bill • local control of tax distribution policy except where using provincial tax administration 	<ul style="list-style-type: none"> • tax collection ability strong • fully eligible for Revenue Sharing • access only to municipal general tax base • residents do not pay provincial rural service levy • Home Owner Grant fully applicable to tax bill • full local control of tax distribution policy
Provincial Supervision	<ul style="list-style-type: none"> • limited legislative requirements • supervision is exercised through extensive review of by-law registration submissions 	<ul style="list-style-type: none"> • more explicit legislative requirements • supervision is exercised through general review of by-law registration submissions

The deficiencies in the present system relate solely to fire flow. This may not be an immediate concern in view of the rural nature of the area.

The financial capability of the District is limited due to its size. No survey responses were received from Stardel users.

STEELE SPRINGS

The Steele Springs Water District is a moderate size district serving 46 rural users. Growth potential is limited as much of the land is in the ALR and has been designated as large agriculture holdings in Spallumcheen's OCP.

Upgrading of the system is required to rectify existing deficiencies related to quality and quantity. The system is at capacity and cannot accommodate any increases in demand.

Financial capacity of the District is limited, tolls are very high and reserves are fairly limited. The District also has outstanding debt.

Users of the Steele Spring system gave their water quality the second poorest rating in the Township. They also reported the second highest number of water shortages. Even with the present high tolls, users on the Steele Spring system were prepared to pay higher tolls for better water service.

The majority of users (61%) would like to have the system managed by the Water District rather than the Township.

STEPNEY

The Stepney Water District is geographically large, but serves only 38 users. The land within the boundaries is presently rural and is proposed to remain that way based on the Township's OCP. The Stepney system is able to meet existing demand other than fire flow. The financial capability of the District is limited due to its small size.

VERNON IRRIGATION DISTRICT

The Vernon Irrigation District is a large district which serves a large geographical area including Coldstream, parts of Vernon, Spallumcheen and rural areas. In Spallumcheen it serves the Stepping Stones Subdivision. The Stepping Stones system is part of a larger system. The District, due to its size, has the financial capability to maintain and expand its system to meet the needs of the Stepping Stones area. The District is also addressing water quality problems which have been encountered by users on the system.

Mountain View users are split on whether the District or the Township should manage the system. However, due to the limited public response from Mountain View users, no clear indication can be taken from the survey results.

OTTER LAKE

Otter Lake Water District is also one of the larger districts in the Township, serving some 102 rural users. The land within the boundaries of the District is presently agricultural and rural in nature and is proposed to remain as such based on the policies of the OCP.

The water system, which is supplied by a well, is generally able to meet present demand. A backup source is required in case of well or pump failure. The system can meet domestic needs but not fire flow requirements.

The financial position of the District is reasonable. While the District has very high tolls, reserves are reasonable and debt is low.

Users of the system rated their system close to the Spallumcheen average. The majority (62.2%) would like to see management of the system remain with the water district.

PLEASANT VALLEY

The Pleasant Valley system serves 20 rural users. The land within the District's boundaries is presently rural and is proposed to remain rural based on the Township's OCP.

The distribution system is old and suffers from low pressures during peak hour demand. Upgrading of the distribution system will ultimately be required.

The financial position of the District is limited due to its small size. Tolls are fairly high and reflect the need for increased maintenance of an old distribution system. Reserves are reasonable.

Users of the system rated the system above the Spallumcheen average on all counts. Although public response from Pleasant Valley users was limited, all users preferred the management of the system to be carried out by the Township.

LAIRD

The Laird Water District is one of the largest districts in the Township in terms of connections with approximately 100 connections. Geographically, it is one of the smallest. The district services predominately residential users as opposed to rural users. There is some upgrading required, including some main upgrading to allow for adequate fire flows. Generally, the system is in good condition and the present well is capable of supplying twice the existing demand.

The financial position of the Laird Water District is better than many of the other districts. In view of the suburban nature of the service area, the system should be brought to an urban standard over time. This may result in pressure for increases in water rates as the District does not have large reserves.

Laird water users rated their system higher than the average of Spallumcheen in terms of water quality and quantity. Approximately 70% of the respondents from within the service area of the Laird system indicated that management of the system should remain with the water district.

LANDSDOWNE

The Landsdowne Water District supplies 29 users and obtains its water supply from the City of Armstrong. Virtually all of the land within the District's boundaries is in the ALR and is designated in the OCP for larger agriculture holdings. The exception is a small residential area on McLeery Road. The capacity of the system is adequate and additional demand could be supplied without major upgrading. There is one old galvanized iron line which should be replaced. Some twinning of 4" lines may also be required to provide required fire flows. Landsdowne users rated their water quality higher than the Spallumcheen average although water pressure was rated slightly below average.

LARKIN

The Larkin Water District is one of the largest districts in the Township, both geographically and in terms of connections (approximately 150). The district is predominantly rural although pockets of residential and industrial use are found within the boundaries. The OCP designates much of the land within the District for large agriculture or rural holdings. There is some growth potential in the industrial park and in existing proposed rural residential areas.

EAGLE ROCK

The Eagle Rock Water District is one of the larger districts in the Township. It also serves an area in the Township in which industrial and residential uses predominate. The Official Community Plan designates the area within the District for continued industrial and residential development.

The District has prepared a 20 year plan for upgrading the system which proposes an additional well, reservoir, upgrading of mains to a larger diameter and the potential development of Proctor Lake as a potential supply. Due to funding limitations the District has not been able to fully implement the plan.

In view of the fire flow issues and the proposed growth within the service area, upgrading of the system will be required. Upgrading will include source capacity, increased storage, and upgrading of the distribution system.

Tolls are quite low compared with other districts, suggesting that some increases may be possible to increase revenues. While the District is not in a difficult financial position, the required upgrading to provide industrial fire flow to meet future demands could result in high capital costs straining the financial capability of the District.

There are few public concerns related to the operation of the system. Users on the Eagle Rock system rate their water quality higher than the Spallumcheen average. The majority of users on the system (70.7%) would like to see the management of their water system remain in the hands of the water district.

GRANDVIEW

Geographically, and in terms of number of users, the Grandview system is one of the larger systems in the Township. The majority of the land within the District's boundaries is in the ALR and has been designated for larger agriculture holdings in the Township. The majority of the land within the District's boundaries is in the ALR and has been designated for larger agriculture holdings in the Township's Official Community Plan. A small residential area is located within the District's boundaries. The further development of existing rural lots is possible.

An interesting series of questions were asked concerning residents willingness to pay for higher water quality.

- 10.8% indicated that they would like to see increased rates with better water quality;
- 52.2% indicated they would like to see rates increased only if necessary to maintain the existing water quality;
- 13.0% would like to see the status quo maintained for both rates and quality;
- 4.3% felt that rates should stay the same or be cut while water quality is improved;
- 1.8% would like to see lower rates even if water quality is reduced.

Generally, more residents (45.3%) would prefer to see the individual water improvement districts manage their water systems, although 37% indicated that they would like the Township to manage the systems. Of the respondents, 7.4% preferred some other arrangement for the management of their water system. The preferences for management of the water systems varied significantly between the water districts.

Of those responding to the survey, 13.7% indicated that while they reside within the service area of a water district, they are not served by an improvement district. The majority (73.3%) of this group rely on private wells for their water supply. Of this group, 26.7% had requested service from a water improvement district and had been refused.

Of the respondents residing outside of water district service areas, only 5.8% had applied for connection to a system operated by an improvement district and been refused. The majority, (92.3%) indicated that they had never applied due to the high connection charges, high rates, adequacy of their existing water supply or fear of being turned down.

FIGURE 3.36

<p>DISTRICT NAME:</p> <p>Vernon Irrigation District</p>	<p>FINANCIAL ASSESSMENT OF WATER DISTRICTS</p>	
<p>Tolls/Taxes/Charges</p>	<p>Tolls:</p>	<ul style="list-style-type: none"> • \$10/Mo.
	<p>Taxes:</p>	<ul style="list-style-type: none"> • \$69.00/Yr.
	<p>Capital Charges</p>	<ul style="list-style-type: none"> • \$800 For Single Family Dwellings (varies for other uses)
	<p>Connection Fee</p>	<ul style="list-style-type: none"> • Actual Cost Plus 25%
<p>Financial Status</p>	<p>Reserves</p>	<p>Well established reserves</p>
	<p>Debt</p>	<p>Major portion of debt will be repaid within next 2-3 year period.</p>
<p>Assessment of Financial Capacity</p>		<ul style="list-style-type: none"> • The District has the financial capacity to maintain and expand the system serving Spallumcheen.

FIGURE 3.34

DISTRICT NAME: Steele Springs	FINANCIAL ASSESSMENT OF WATER DISTRICTS	
Tolls/Taxes/Charges	Tolls:	<ul style="list-style-type: none"> • \$350/Yr.
	Taxes:	<ul style="list-style-type: none"> • None
	Capital Charges	<ul style="list-style-type: none"> • \$3,500/Unit
	Connection Fee	<ul style="list-style-type: none"> • Actual Cost Plus \$100
Financial Status	Reserves	Accumulated Operating Surplus - \$20,790
	Debt	\$36,178 (\$3,934 annual payments)
Assessment of Financial Capacity		<ul style="list-style-type: none"> • Tolls are very high; limited ability to increase. • Debt load is reasonable. • Reserves are low. • Small district with very limited financial capacity to undertake major required improvements to the system.

FIGURE 3.32

<p>DISTRICT NAME:</p> <p>Silver Star</p>	<p>FINANCIAL ASSESSMENT OF WATER DISTRICTS</p>	
<p>Tolls/Taxes/Charges</p>	<p>Tolls:</p> <p>Taxes:</p> <p>Capital Charges</p> <p>Connection Fee</p>	<ul style="list-style-type: none"> • \$160/Yr. • None • \$200 • Actual Cost
<p>Financial Status</p>	<p>Reserves</p>	<p>Operating Surplus - \$20,519</p> <p>Capital Reserve - \$11,330</p> <p>Construction Account \$5,544</p>
<p>Assessment of Financial Capacity</p>	<p>Debt</p>	<p>None</p> <ul style="list-style-type: none"> • Tolls are in middle range of rates in Spallumcheen. • Reserves in place although not high. • No debt. • Financial capability to carry out limited improvements appears to be good.

Only 125 respondents gave an answer for question D2, wherein they were asked **how much they were willing to pay each year** for adequate water services. Of those who did answer, the average amount given was \$236.00.

Question D3 asked respondents what they would prefer to see with respect to their water rates over the next year. The responses were as follows:

- ▶ 30 (10.8%) said they would like to see **increased rates with better quality water provided.**
- ▶ A majority, 150 or 54.2%, indicated they would like to see **rates increased only if necessary to maintain present quality levels.**
- ▶ Only 7 (1.8%) of respondents would like to see **rates cut or maintained while quality is reduced.**
- ▶ Thirty-six respondents (13.0%) would like the **status quo maintained for both rates and quality.**
- ▶ Seventeen (4.3%) feel that **rates should stay the same or be cut while water quality is improved.**

In question D4, respondents were asked about **who they felt should manage Spallumcheen's water supply.** The most common response was **individual Water Improvement Districts**, with 45.3% in agreement. Thirty-seven percent chose the **Township of Spallumcheen**, while 7.4% preferred some **other** arrangement. This question was answered by more people than any other of the questions in section D, with 340 responding.

5.5 Section E - Background Information

This section was aimed at determining where respondents live and where they get their water. The results from question E1, about land use, and E2, about which Water District respondents live in, have already been discussed above and are presented above in tables 1 and 2.

Question E3 asked residents that do live within a Water District, **whether or not they draw their water from that district.** Eighty-four percent answered that they did, while 13.7%, or 44, indicated that they did not.

6.0 District Breakdowns

Looking at the survey results for Spallumcheen as a whole is only one part of the analysis. It is also useful to look at the results for different categories of respondents. Categories of interest are:

- ▶ Individual Water Districts;
- ▶ Respondents who reside within a Water District, but do not draw water from that District;
- ▶ Respondents who reside outside of any Water District.

If significant differences exist between the responses from a sub-category and the overall responses, it may point to issues that warrant closer examination.

However, as indicated above, in some cases only a very few responses came from a given water district. In these cases, it should be remembered generalizations cannot always be made about the District as a whole.

Results for the majority of questions are presented in appendix A through E2. They include the overall results, as well as the results broken down into categories. This facilitates comparing results from different Districts. For example, the average score a District assigns to the quality of its water can be compared to the overall Spallumcheen results, or to other Districts. The highlights from the results for each category of interest is briefly looked at below.

6.1 Canyon

Thirteen responses came from residents in the Canyon Water District, 7 of these came from residents who draw their water from the District.

The average quality ratings these 7 users gave their water was lower than the Spallumcheen average (appendix A). The characteristic of Canyon water which received the lowest rating was its **odour**. However, the overall quality rating given to Canyon water was still **satisfactory**.

Canyon water users appear to be less interested than the Spallumcheen average in having the Township take over water management. In Spallumcheen overall, 36.5% of respondents are in favour of municipal management, while in Canyon the figure is 14.3% (appendix D4).

Grandview has the largest number of users who reported having suffered water shortages, at 55.0% (appendix B1), and the largest number who reported having received a health notice, at 78.3% (appendix C1).

Grandview users are more likely than the Spallumcheen average to feel that their water rates are **too high**, at 40.0% for Grandview and 25.5% for Spallumcheen (appendix D1).

6.5 Hankey

None of the responses received came from this Water District.

6.6 Highland Park

This Water District produced 9 responses, 7 of which came from residents who draw their water from the District.

Highland Park users rate the overall quality of their water higher than the Spallumcheen average, although the ratings for **taste** and **colour** are below the Spallumcheen average for these aspects (appendix A).

No Highland Park respondents reported having ever received a health notice about their water (appendix C1), and there are a relatively high number of Highland Park users whose land is used for agriculture, at 71.4% (appendix E1).

6.7 Laird

Twenty-eight responses came from the Laird Water District, all respondents draw their water from the District.

Laird water users gave higher than average ratings to all aspects of their water quality (appendix A), and only one Laird resident reported ever having received a health notice (appendix C1).

At 88.5%, higher number of Laird residents feel their water rates are **about right** compared to the Spallumcheen average (appendix D1). The number who feel that water management should stay with the Water Districts is also high, at 69.2% (appendix D4).

The primary land use of the property of all Laird respondents is residential.

6.11 Otter Lake

Forty-two responses came from the Otter Lake Water District, and 38 of these came from residents who draw their water from that District.

Otter Lake users rated the quality of their water very close to the Spallumcheen average (appendix A).

No Otter Lake respondents reported ever having received a health notice (appendix C1), and a relatively high number support water management remaining in the hands of the Water District, at 62.2% (appendix D4).

A comparatively high number of Otter Lake users are involved in agriculture (73.7%) (appendix E1).

6.12 Pleasant Valley

Four responses came from the Pleasant Valley Water District, of which 3 rely on the District for their water.

These three users gave Pleasant Valley water above average quality ratings on all counts (appendix A).

All 3 reported that they have never received a health notice (appendix C1).

6.13 Round Prairie

Three responses came from the Round Prairie Water District, all 3 draw their water from the District.

These three users rated their water **pressure** as **unsatisfactory**, far below the Spallumcheen average (appendix A). Lower than average ratings were also given to **odour** and **colour**, although these ratings were still satisfactory. Surprisingly, the rating given the overall quality of Round Prairie water was actually higher than the Spallumcheen average.

No Round Prairie users reported having ever experienced a water shortage (appendix B1) or having ever received a health notice (appendix C1).

6.14 Silver Star

Twenty-nine responses were received from the Silver Star Water District, all of which were from respondents who draw water from the District.

6.18 Vernon

Twelve responses were received from residents who draw their water from the Vernon Irrigation District.

Vernon users rated the quality of their water lower than any of the other Districts (appendix A). The overall quality rating was 2.58, indicating that, on average, users are closer to feeling their water is **unsatisfactory** (3) than **satisfactory** (2). Three aspects of Vernon District water received notably low ratings: **amount of sediment; taste; and colour.**

No Vernon users reported that they had ever received a health notice (appendix C1).

This District has the lowest level of support for water management remaining in the hands of the Water District's, with only 16.7% in favour (appendix D4).

6.19 Meighan Creek

Three responses were received from this District, but only one of these came from a resident who draws water from that District. The results from this single respondent are included in the appendices.

6.20 District Residents Who Do Not Draw Water From Their District

Forty-Four responses were received from Spallumcheen residents who live within a Water District, but do not draw water from that District.

For the most part, this group draws its water from private wells. The ratings this group gave to the quality of its water were slightly below the overall Spallumcheen ratings (appendix A).

This group is much more likely to support the idea of municipal management of the water supply, with 60.7% in favour compared to 36.5% for the Spallumcheen average (appendix D4).

6.21 Residents Not In A Water District

Sixty-nine responses came from residents who live in Spallumcheen but do not live within any Water District.

Again, private wells are the primary source of water for this group. Quality ratings were again slightly below the Spallumcheen average (appendix A).

"My present system is working well and providing good water... I like the idea of each district funding its system independently and let's keep administration to a minimum."

7.2 Support For Municipal Management

While not as numerous, there were many comments in favour of changing the existing water management regime. Some see the large number of Districts as inefficient.

"The current system of 17 districts within one municipality seems to be very cumbersome - there must be a better way to administer the water resource in our area"

"Seventeen districts each with its own managers results in duplication of management services which would more easily be managed by one body"

Others feel excluded by the Water District system, and feel their interests are not being represented.

"Some residents who have poor wells don't have the chance to hook up to a system because each district's rules, regulations, supply etc."

"I feel everyone in our municipality should be given an opportunity to have a good water supply. It seems if you are on a system they don't care about people who are not".

"Maybe everybody could be involved in water management & Districts would not be able to discriminate"

Finally, some residents feel that more professional water management is needed.

[Township management would mean] "More reliable, professional management; consistent policies; elimination of favouritism."

"We are in a water district with high rates due to past mismanagement. We feel that better management would happen with a municipally run service".

Water Services Study: Section A results

Questions 1, 3a, 3b, 3c, 3d, and 3e

District	1* Quality	3a* Pressure	3b* Odour	3c* Sediment	3d* Taste	3e* Colour
Spallumcheen (overall)	1.72	1.69	1.65	1.78	1.62	1.60
Canyon	2.00	1.85	2.14	1.83	1.86	1.71
Eagle Rock	1.44	1.64	1.36	1.64	1.40	1.40
Fortune Creek	1.33	1.00	1.33	1.33	1.33	1.33
Grandview	2.14	1.65	1.54	1.77	1.65	1.65
Hankey	--	--	--	--	--	--
Highland Park	1.57	1.68	1.50	1.68	2.00	1.83
Laird	1.44	1.43	1.33	1.44	1.22	1.33
Lansdowne	1.40	1.90	1.40	1.30	1.50	1.40
Larkin	1.78	1.49	1.57	2.14	1.56	1.94
Mountain View	1.33	2.00	1.33	2.00	1.33	1.68
Otter Lake	1.68	1.79	1.89	1.53	1.58	1.40
Pleasant Valley	1.33	1.33	1.33	1.33	1.33	1.33
Round Prairie	1.33	3.00	2.00	1.67	1.67	2.00
Silver Star	1.35	1.62	1.35	1.55	1.35	1.38
Stardel	--	--	--	--	--	--
Steele Springs	2.22	1.82	1.82	2.33	2.06	1.83
Stepney	1.33	1.00	1.33	1.33	1.00	1.33
Vernon	2.58	1.83	2.16	2.50	2.75	2.83
Meighan Creek	2.00	1.00	--	3.00	--	--
In a District but do not draw water	1.71	1.83	1.82	1.72	1.51	1.57
Not in a District	1.79	1.70	1.78	1.75	1.75	1.51

* Results are average scores, when 1 = Very Satisfactory, 2 = Satisfactory, 3 = Unsatisfactory and 4 = Very Unsatisfactory. The lower the average score, the more satisfied respondents are, on average.

Water Services Study: Survey Results Question B3

B3) If you have ever had water shortages,
how did you cope?

District	Reduced Consumption	Alternate Supply	Other	No Answer Or Not Applicable
Spallumcheen (overall)	64 (67.4%)	19 (20%)	12 (12.6%)	302
Canyon	1 (14.3%)	--	--	6
Eagle Rock	2 (66.7%)	1 (33.3%)	--	42
Fortune Creek	--	--	--	3
Grandview	7 (77.8%)	2 (22.2%)	--	14
Hankey	--	--	--	--
Highland Park	1 (50.0%)	1 (50.0%)	--	5
Laird	3 (60.0%)	2 (40.0%)	--	23
Lansdowne	2 (100%)	--	--	8
Larkin	8 (80%)	--	2 (20%)	27
Mountain View	--	1 (100%)	--	2
Otter Lake	4 (50%)	1 (12.5%)	3 (37.5%)	30
Pleasant Valley	1 (100%)	--	--	2
Round Prairie	--	--	--	3
Silver Star	4 (66.7%)	--	2 (33.3%)	23
Stardel	--	--	--	--
Steele Springs	7 (87.5%)	1 (12.5%)	--	10
Stepney	--	--	--	3
Vernon	1 (50%)	1 (50%)	--	10
Meighan Creek	--	--	--	1
In a District but do not draw water	8 (66.7%)	3 (25%)	1 (8.3%)	32
Not in a District	14 (58.3%)	7 (29.2%)	3 (12.5%)	45

Water Services Study: Survey Results Question C1

C1) Have you ever received a health notice?

District	Yes	No	Don't Know	No Answer Or Not Applicable
Spallumcheen (overall)	43 (11.5%)	316 (84.3%)	16 (4.3%)	22
Canyon	--	5 (71.4%)	2 (28.6%)	--
Eagle Rock	1 (2.3%)	42 (95.5%)	1 (2.3%)	1
Fortune Creek	--	2 (66.7%)	1 (33.3%)	--
Grandview	18 (78.3%)	4 (17.4%)	1 (4.3%)	--
Hankey	--	--	--	--
Highland Park	--	6 (85.7%)	1 (14.3)	--
Laird	1 (3.8%)	25 (96.2%)	--	2
Lansdowne	--	10 (100%)	--	--
Larkin	2 (5.6%)	32 (88.9%)	2 (5.6%)	1
Mountain View	2 (66.7%)	1 (33.3%)	--	--
Otter Lake	--	37 (97.4%)	1 (2.6%)	--
Pleasant Valley	--	3 (100%)	--	--
Round Prairie	--	3 (100%)	--	--
Silver Star	--	28 (96.6%)	1 (3.4%)	--
Stardel	--	--	--	--
Steele Springs	11 (64.7%)	6 (35.3%)	--	1
Stepney	--	3 (100%)	--	--
Vernon	--	10 (83.3%)	2 (16.7%)	--
Meighan Creek	1 (100%)	--	--	--
In a District but do not draw water	2 (5.7%)	31 (88.6%)	2 (5.7%)	--
Not in a District	4 (6.6%)	55 (90.2%)	2 (3.3%)	8

Water Services Study: Survey Results Question D1

D1) How do you feel about your water rates?

District	Too High	About Right	Too Low	No Answer Or Not Applicable
Spallumcheen (overall)	72 (25.5%)	201 (71.3%)	9 (3.2%)	115
Canyon	1 (16.7%)	5 (83.3%)	--	1
Eagle Rock	5 (13.9%)	31 (86.1%)	--	9
Fortune Creek	--	3 (100%)	--	--
Grandview	8 (40.0%)	9 (45.0%)	3 (15.0%)	3
Hankey	--	--	--	--
Highland Park	1 (14.3%)	6 (85.7%)	--	--
Laird	3 (11.5%)	23 (88.5%)	--	2
Lansdowne	2 (20%)	8 (80%)	--	--
Larkin	26 (76.5%)	8 (23.5%)	--	3
Mountain View	--	3 (100%)	--	--
Otter Lake	7 (18.9%)	28 (75.7%)	2 (5.4%)	1
Pleasant Valley	--	2 (66.7%)	--	1
Round Prairie	1 (33.3%)	2 (66.7%)	--	--
Silver Star	1 (3.7%)	25 (92.6%)	1 (3.7%)	2
Stardel	--	--	--	--
Steele Springs	6 (35.3%)	10 (55.6%)	1 (5.9%)	1
Stepney	3 (100%)	--	--	--
Vernon	2 (16.7%)	8 (66.7%)	2 (16.7%)	--
Meighan Creek	--	1 (100%)	--	--
In a District but do not draw water	6 (50%)	6 (50%)	--	32
Not in a District	1 (7.7%)	12 (92.3%)	--	56

Water Services Study: Survey Results Question D4

D4) Who should manage Spallumcheen's water supply?

District	Township of Spallumcheen	Water Districts	Other	Don't Know	No Answer Or Not Applicable
Spallumcheen (overall)	124 (36.5%)	154 (45.3%)	25 (7.4%)	37 (10.9%)	57
Canyon	1 (14.3%)	4 (57.1%)	2 (28.6%)	--	--
Eagle Rock	7 (17.1%)	29 (70.7%)	3 (7.3%)	2 (4.9%)	4
Fortune Creek	1 (33.3%)	1 (33.3%)	--	1 (33.3%)	--
Grandview	6 (26.1%)	13 (56.5%)	2 (8.7%)	2 (8.7%)	--
Hankey	--	--	--	--	--
Highland Park	2 (33.3%)	4 (66.7%)	--	--	1
Laird	4 (15.4%)	18 (69.2%)	1 (3.8%)	3 (11.5%)	2
Lansdowne	4 (40%)	4 (40%)	--	1 (10%)	1
Larkin	17 (50.0%)	13 (38.2%)	2 (5.9%)	2 (5.9%)	3
Mountain View	1 (33.0%)	1 (33.0%)	1 (33.0%)	--	--
Otter Lake	9 (24.3%)	23 (62.2%)	--	5 (13.5%)	1
Pleasant Valley	3 (100%)	--	--	--	--
Round Prairie	2 (66.7%)	1 (33.3%)	--	--	--
Silver Star	10 (34.5%)	13 (44.8%)	1 (3.4%)	5 (17.2%)	--
Stardel	--	--	--	--	--
Steele Springs	4 (25%)	11 (61.1%)	--	1 (5.6%)	2
Stepney	--	2 (66.7%)	--	1 (33.3%)	--
Vernon	4 (33.3%)	2 (16.7%)	4 (33.3%)	2 (16.7%)	12
Meighan Creek	--	1 (100%)	--	--	--
In a District but do not draw water	17 (60.7%)	6 (21.4%)	2 (7.1%)	3 (10.7%)	16
Not in a District	24 (55.8%)	6 (14.0%)	7 (16.3%)	6 (14.0%)	26

Water Services Study: Survey Results Questions E2 and E3

E3) Do You Draw Your Water From Your Water District?

District	E2) Which Water District Is Your Land In?	Yes	No	Don't Know	No Answer Or Not Applicable
Spallumcheen (in a District)	321	270 (83.9%)	44 (13.7%)	8 (2.5%)	75
Canyon	13	7 (53.8%)	5 (38.5%)	--	--
Eagle Rock	51	45 (88.2%)	6 (11.8%)	--	--
Fortune Creek	6	3 (50%)	1 (16.6%)	--	2
Grandview	31	23 (74.2%)	7 (22.6%)		1
Hankey	--	--	--	--	--
Highland Park	9	7 (77.8%)	2 (22.2%)	--	--
Laird	28	28 (100%)	--	--	
Lansdowne	11	10 (90.9%)	1 (9.1%)	--	--
Larkin	45	37 (82.2%)	4 (8.8%)		3
Mountain View	5	3 (60.0%)	2 (40.0%)	--	--
Otter Lake	42	38 (90.4%)	4 (9.5%)	--	--
Pleasant Valley	4	3 (75%)	1 (25%)	--	--
Round Prairie	3	3 (100%)	--	--	--
Silver Star	29	29 (100%)	--	--	--
Stardel	--	--	--	--	--
Steele Springs	19	18 (94.7%)	1 (5.3%)	--	--
Stepney	10	3 (30%)	7 (70%)	--	--
Vernon	12	12 (100%)	--	--	--
Meighan Creek	3	1 (33.3%)	2 (66.7%)	--	--
In a District but do not draw water	44	--	44 (100%)	--	--
Not in a District	69	--	--	--	69

SECTION B. WATER QUANTITY

1. Have you ever had any water shortages?

- 1. Yes ⇒ go to question 2
- 2. No ⇒ go to Section C
- 3. Don't Know

2. If yes, when was the most recent shortage?

3. How did you cope with the shortages?

- 1. Reduced consumption
- 2. Alternate water supply, please specify _____
- 3. Other, please comment....

4. Has a lack of water ever hindered the development of your property(ies)?

- 1. Yes
- 2. No
- 3. Don't Know

SECTION C. HEALTH ISSUES

1. Have you ever received a notice advising of health issues with your water supply?

- 1. Yes
- 2. No
- 3. Don't Know

2. What was the notice warning of?

SECTION E. BACKGROUND INFORMATION

1. Is your land used primarily for:

1. Residential
2. Commercial
3. Agricultural
4. Industrial
5. Other, please specify _____

2. Is your land located within a water improvement district in Spallumcheen?

1. Yes ⇒ please specify which one:

- | | |
|-------------------|---------------------------------|
| 1. Canyon | 11. Otter Lake |
| 2. Eagle Rock | 12. Pleasant Valley |
| 3. Fortune Creek | 13. Round Prairie |
| 4. Grandview | 14. Silver Star |
| 5. Hankey | 15. Stardel |
| 6. Highland Park | 16. Steele Springs |
| 7. Laird | 17. Stepney |
| 8. Landsdowne | 18. Vernon |
| 9. Larkin | 19. Meighan Creek Wtr Community |
| 10. Mountain View | |

2. No ⇒ go to question 8

3. Don't Know

FOR RESIDENTS WITHIN A WATER IMPROVEMENT DISTRICT:

3. Do you draw your water from that improvement district?

1. Yes ⇒ go to Section F
2. No
3. Don't Know

4. If you answered No to question 3, then what is the source of your water supply?

1. Private Well
2. Shared Well
3. Reservoir
4. Other, please specify _____

11. If your answer to question 9 was no, please note why you have not applied? (Circle as many as apply)

- a. Connection charge too high.
- b. Rates too high.
- c. Alternative water supply is adequate.
- d. Believed application would be rejected.
- e. Other, please specify _____

SECTION F OTHER COMMENTS

1. Please feel free to make any other comments below:

THANK YOU FOR THE TIME TO FILL OUT THIS SURVEY FORM. PLEASE RETURN IT IN THE ENCLOSED POSTAGE-PAID ENVELOPE OR DROP IT OFF AT THE TOWNSHIP OF SPALLUMCHEEN, 4144 SPALLUMCHEEN WAY, ARMSTRONG, B.C. - PH: 546-3013.

APPENDIX 3

APPENDIX 3

Financial Implications of Provincial Revenue Sharing Program

1. INTRODUCTION

The Provincial Government's Revenue Sharing Programs for Water and Sanitary Sewer have been drawn on by municipalities and regional districts to assist in the financing of capital projects. The financial impact of the grant program is assessed in this appendix by analyzing a number of typical water capital projects.

Three projects have been analyzed. These include:

- the construction of chlorination facilities;
- the development of a well;
- the construction of a reservoir.

These three projects reflect the most common needs of the water improvement districts in Spallumcheen. Typical operating and maintenance costs have also been provided.

The financial analysis has been carried out on the basis of a water district serving 100 homes with a service population of 300. The financial analysis also reflects the provisions and priorities of the Water Facilities Assistance Program in which projects with health and environmental implications receive a higher priority and an increased level of funding (i.e. 50% of the capital cost) than growth related projects (25% of the capital cost).

The following assumptions concerning demand have been made using the City of Armstrong as a base. In Armstrong the demand is as follows:

Typical Max Day	536 Ig/c/d.
Typical Avg Day	226 Ig/c/d.

For small systems demand may be somewhat less (eg. less leakage).

We have used 400 Ig/c/d. resulting in a daily demand of 400 Ig/c/d x 300 people = 120,000 GPD.

.2 Financial Analysis

For chlorination facilities, a grant in the amount of 50% of the capital cost has been assumed. In order to keep the analysis simple, it has been assumed that debt service and operating costs would be recovered by tolls. The assumption has also been made that people on the system are already paying tolls in the amount of \$200. per annum for a residential user.

Annual Debt Service Cost (assuming no grant)	\$ 7,101.
Annual Debt Service Cost (assuming 50% grant)	3,550.
Operating Costs (per annum)	\$ 8,000.

	<u>Existing</u>	<u>Increase</u>	<u>New Rate</u>
Rate Increase Without Revenue Sharing	\$ 200	\$ 71	\$ 271
Rate Increase With Revenue Sharing	\$ 200	\$ 36	\$ 236

Recovery of annual operating costs would add another \$80 in annual tolls per unit.

.2 Development of Water Well

.1 Costs

Capital Costs

The following are the projected capital costs for the development of a water well:

- Assume depth approximately 200 ft.
- Test drilling: 200' @ \$25/ft. = \$ 5,000
- Well drilling & development
 - Casing 200' @ \$50/ft. \$10,000
 - Screens 20' @ \$200/ft. \$ 4,000

3. RESERVOIR

.1 Cost Estimates

Cost estimated would be the same for both a well and surface source unless storage can be achieved at the intake of a surface source.

Fire Proj:	=	60,000 GAL
25% Max Day: .25 x 120,000	=	30,000 GAL
Misc.		10,000 GAL

Storage		100,000 GAL
Cost -		\$100,000

.2 Financial Analysis

The development of a reservoir may be eligible for a 25% grant. However, if the project is an integral component of a broader upgrading plan which is motivated by health concerns, a 50% grant may also be available.

Annual Debt Service Costs (no grant)	\$ 11,095
Annual Debt Service Costs (25% grant)	\$ 8,321
Annual Debt Service Costs (50% grant)	\$ 5,548

Rate increases would be as follows:

	Existing Tolls	Increase	New Tolls
No Revenue Sharing Grant	\$ 200	\$ 111	\$ 311
25% Revenue Sharing Grant	\$ 200	\$ 83	\$ 283
50% Revenue Sharing Grant	\$ 200	\$ 55	\$ 255

APPENDIX 4

APPENDIX 4

Results of the Open House

EXIT SURVEY

1. Introduction

A public open house was held to review the Spallumcheen Water Services Study on November 26, 1992. The content of the study was presented and discussed with representatives of the public. Approximately 50-60 members of the public attended the Open House.

2. Results of Exit Survey

An exit survey was taken in order to allow the public to respond to the study. The questionnaire used for the exit survey is included in this Appendix. Not all members of the public attending the Open House completed the survey. Of the residents attending, 31 completed the questionnaire. The following is a summary of the results.

1. Have you experienced any water problems in the past two years?

	Yes	No
Shortages		
Domestic Use	25.8%	74.2%
Irrigation	22.7%	77.3%
Quality problems	19.2%	80.8%

2. Do you generally agree with the outcome of the analysis of the report?

Yes 52%
No 48%

3. Which of the broad organizational options do you agree with?

42.8% - Option 1 Provision of water by improvement district.
17.8% - Option 2 Status Quo.
10.7% - Option 3 Dissolution of improvement districts - Local management committees and specified areas.
46.4% - Option 4 Dissolution of improvement districts - establishment of single municipal utility.

- Well pump & building

Pump: say 100 GPM	6,000
Piping, valves	3,000
Building	8,000
Electrical service	5,000
	<hr/>
Subtotal	\$ 41,000
E&C (30%)	\$ 13,000
	<hr/>
TOTAL	\$ 54,000

Annual operating costs would be as follows:

Labour	\$ 5,000
Power	12,000
Misc.	1,000
	<hr/>
	\$ 18,000

.2 Financial Analysis

The available grant under the Revenue Sharing Program will depend on whether the well is required to resolve health issues or to accommodate future growth. If health issues are to be resolved, a 50% grant may be obtained. Growth related projects are eligible for grants up to a maximum of 25%.

Annual Debt Service Costs (no grant)	\$ 6,657
Annual Debt Service Costs (25% grant)	\$ 4,993
Annual Debt Service Costs (50% grant)	\$ 3,328

Rate increases would be as follows:

	Existing Tolls	Increase	New Tolls
No Revenue Sharing Grant	\$ 200	\$ 67	\$ 267
25% Revenue Sharing Grant	\$ 200	\$ 52	\$ 252
50% Revenue Sharing Grant	\$ 200	\$ 33	\$ 233

Operating costs would further increase tolls by \$180 per year/per unit.

2. ANALYSIS

.1 Disinfection - Chlorination Facilities

The assumptions made in the cost estimate are as follows:

- good water of low turbidity
- screening is used
- chlorination occurs by use of hypochlorinator

.1 Cost Estimate

Capital Costs

• Screen	\$ 5,000.
• 200 Gal Chlorine Solution Tanks	2,000.
• Chemical Feed Pump	3,000.
• Flowmeter & Control System	3,000.
• Contact Tank - 20 Minutes	18,000.
• Building, Electrical	6,000.
	<hr/>
SUBTOTAL	\$ 37,000.
E&C (30%)	11,000.
	<hr/>
TOTAL	<u>\$ 48,000.</u>

If Giardia is a problem, contact tank may be increased in size for 2-3 hours detention. For 3 hours, contact tank cost increased to \$30,000, for a total costs of: \$64,000.

Cost range for disinfection only: \$50,000. - \$60,000.

Operating Costs

Annual operating and maintenance costs would be as follows:

Labour	\$ 6,500.
Power	Nil
Chemical	400.
Misc. (Parts, Repairs)	1,100.
	<hr/>
	<u>\$ 8,000.</u>

5. Have you ever applied for water service from your water improvement district?
1. Yes ⇒ go to question 6
 2. No ⇒ go to question 7
 3. Don't Know
6. If your answer to question 5 was yes, what was the outcome of your application?
1. Application Refused
 2. Withdrew Application
 3. Other, please specify _____
 4. Don't Know
7. If your answer to question 5 was no, please note why you have not applied? (Circle as many as apply, then go to Section F)
- a. Connection charge too high.
 - b. Rates too high.
 - c. Alternative water supply is adequate.
 - d. Believed application would be rejected.
 - e. Other, please specify _____

FOR RESIDENTS WHO ARE NOT WITHIN A WATER IMPROVEMENT DISTRICT:

8. If your answer to question 2 was no, what is your source of water?
1. Private Well
 2. Shared Well
 3. Reservoir
 4. Other, please specify _____
9. Have you ever applied for water service from a water improvement district?
1. Yes ⇒ go to question 10
 2. No ⇒ go to question 11
 3. Don't Know
10. If your answer to question 9 was yes, what was the outcome of your application?
1. Application Refused
 2. Withdrew Application
 3. Other, please specify _____
 4. Don't Know

3. Was the notice from the Ministry of Health or from the water improvement district?
 1. Ministry of Health
 2. Water Improvement District
 3. Other, please specify _____
 4. Don't Know

SECTION D. RATES AND ADMINISTRATIVE ISSUES

1. How do you feel about the water rates you paid for your property last year?
 1. The rates are too high
 2. The rates are about right
 3. The rates are too low
2. How much are you prepared to pay per year for adequate water service?
\$ _____
3. In thinking about your rates for the following year, which would you prefer?
 1. Increase rates and provide better water quality and quantity.
 2. Increase rates only if needed to maintain present water quality and quantity.
 3. Maintain rates and cut water quality and quantity, if necessary.
 4. Reduce rates and cut water quality and quantity.
 5. None of the above, would prefer to:

 6. Don't Know
4. Do you feel that Spallumcheen's water supply should be managed by the District of Spallumcheen or individually by the separate water improvement districts?
 1. District of Spallumcheen
 2. Individual Water Improvement Districts
 3. Other, please specify _____
 4. Don't Know
5. Why do you feel this way?

**TOWNSHIP OF SPALLUMCHEEN
WATER SERVICES STUDY**

This survey is designed to help gather comments from residents on water services in Spallumcheen. Please take the time to complete this survey form and return it to Urban Systems Ltd. in the enclosed postage-paid envelope before July 10, 1992. Please call Gerry Tonn of Urban Systems Ltd. at 1-762-2517 with any questions about this survey.

Thank you for your help with this important survey.

PLEASE CIRCLE THE # OF YOUR RESPONSE CLEARLY

SECTION A WATER QUALITY

1. How satisfied are you with the quality of your water?

1. Very Satisfied
2. Satisfied
3. Dissatisfied
4. Very Dissatisfied
5. Don't Know

2. Do you have any comments on the above?

3. How would you rate the following for your water supply?

	Very Satisfactory	Satisfactory	Unsatisfactory	Very Unsatisfactory	Don't Know
a. Water Pressure	1	2	3	4	5
b. Odor	1	2	3	4	5
c. Amount of Sediment	1	2	3	4	5
d. Taste	1	2	3	4	5
e. Colour	1	2	3	4	5

Water Services Study: Survey Results Questions E1

E1) What is your land primarily used for?

District	Residential	Commercial	Agricultural	Industrial	Other	No Answer Or Not Applicable
Spallumcheen (overall)	225 (58.1%)	4 (1.0%)	152 (39.3%)	4 (1.0%)	2 (0.5%)	10
Canyon	4 (57.1%)	--	3 (42.9%)	--	--	--
Eagle Rock	37 (84.1%)	3 (6.8%)	1 (2.3%)	3 (6.8%)	--	1
Fortune Creek	3 (100%)	--	--	--	--	--
Grandview	9 (40.9%)	--	13 (59.1%)	--	--	1
Hankey	--	--	--	--	--	--
Highland Park	2 (28.6%)	--	5 (71.4%)	--	--	--
Laird	28 (100%)	--	--	--	--	--
Lansdowne	5 (50%)	--	5 (50%)	--	--	--
Larkin	22 (59.5%)	--	15 (40.5%)	--	--	--
Mountain View	2 (66.7%)	--	--	--	1 (33.0%)	--
Otter Lake	9 (23.7%)	--	28 (73.7%)	--	1 (2.6%)	--
Pleasant Valley	2 (66.7%)	--	1 (33.3%)	--	--	--
Round Prairie	1 (33.3%)	--	2 (66.7%)	--	--	--
Silver Star	25 (86.2%)	--	4 (13.8%)	--	--	--
Stardel	--	--	--	--	--	--
Steele Springs	7 (38.9%)	--	11 (61.1%)	--	--	--
Stepney	1 (33.3%)	--	2 (66.7%)	--	--	--
Vernon	8 (66.7%)	--	4 (33.3%)	--	--	--
Meighan Creek	--	--	1 (100%)	--	--	--
In a District but do not draw water	18 (41.9%)	--	25 (58.1%)	--	--	1
Not in a District	32 (51.6%)	--	29 (46.8%)	1 (1.6%)	--	7

Water Services Study: Survey Results Question D2

D2) How much are you prepared to pay for adequate water service (per year)*

District	Annual Payment*	No Answer Or Not Applicable
Spallumcheen (overall)	\$236.00	272
Canyon	\$250.00	6
Eagle Rock	\$147.00	32
Fortune Creek	--	3
Grandview	\$300.00	16
Hankey	--	--
Highland Park	--	7
Laird	\$184.00	16
Lansdowne	\$300.00	6
Larkin	\$251.00	13
Mountain View	--	3
Otter Lake	\$233.00	23
Pleasant Valley	\$325.00	1
Round Prairie	\$170.00	2
Silver Star	\$170.00	19
Stardel	--	--
Steele Springs	\$360.00	8
Stepney	\$125.00	2
Vernon	\$181.00	5
Meighan Creek	\$100.00	--
In a District but do not draw water	\$248.00	40
Not in a District	\$324.00	58

*Average response.

Water Services Study: Survey Results Question C3

C3) If you received a health notice, who was the notice from?

District	Min. of Health	Water District	Other	Don't Know	No Answer Or Not Applicable
Spallumcheen (overall)	9 (19.1%)	16 (53.2%)	12 (25.5%)	10 (21.3%)	350
Canyon	--	--	--	--	7
Eagle Rock	--	--	--	--	45
Fortune Creek	--	--	--	--	3
Grandview	4 (22.2%)	8 (44.4%)	4 (22.2%)	2 (11.1%)	5
Hankey	--	--	--	--	--
Highland Park	--	--	--	--	7
Laird	--	--	1 (100%)	--	27
Lansdowne	--	--	--	--	10
Larkin	1 (50%)	--	1 (50%)	--	35
Mountain View	1 (50%)	--	1 (50%)	--	1
Otter Lake	--	--	--	1 (100%)	37
Pleasant Valley	--	--	--	--	3
Round Prairie	--	--	--	--	3
Silver Star	--	--	--	--	29
Stardel	--	--	--	--	--
Steele Springs	--	6 (54.5%)	3 (27.3%)	2 (18.2%)	7
Stepney	--	--	--	--	3
Vernon	--	--	--	--	12
Meighan Creek	--	1 (100%)	--	--	--
In a District but do not draw water	2 (100%)	--	--	--	44
Not in a District	1 (25%)	--	2 (50%)	1 (25%)	--

Water Services Study: Survey Results Question B4

B4) Has a lack of water ever hindered the development of your property?

District	Yes	No	Don't Know	No Answer Or Not Applicable
Spallumcheen (overall)	42 (40.4)	53 (51%)	9 (8.7%)	293
Canyon	--	--	1 (14.3%)	6
Eagle Rock	1 (33.3%)	2 (66.7%)	--	42
Fortune Creek	--	--	--	3
Grandview	5 (35.7%)	7 (50.0%)	2 (14.3%)	9
Hankey	--	--	--	--
Highland Park	--	2 (100%)	--	7
Laird	--	5 (100%)	--	23
Lansdowne	1 (50%)	1 (50%)	--	8
Larkin	4 (40%)	5 (50%)	1 (10%)	27
Mountain View	--	1 (100%)	--	2
Otter Lake	5 (55.6%)	4 (44.4%)	--	29
Pleasant Valley	--	2 (100%)	--	2
Round Prairie	--	--	--	3
Silver Star	1 (14.3%)	5 (71.4%)	1 (14.3%)	22
Stardel	--	--	--	--
Steele Springs	3 (37.5%)	4 (50%)	1 (12.5%)	10
Stepney	--	--	--	3
Vernon	--	2 (100%)	--	10
Meighan Creek	--	--	--	1
In a District but do not draw water	8 (61.5%)	5 (38.5%)	--	31
Not in a District	14 (56%)	8 (32%)	3 (12%)	44

Water Services Study: Survey Results Question B1

B1) Have you ever had any water shortages?

District	Yes	No	Don't Know	No Answer Or Not Applicable
Spallumcheen (overall)	93 (25.7%)	261 (72.1%)	8 (2.2%)	35
Canyon	1 (14.3%)	6 (85.7%)	--	--
Eagle Rock	2 (4.4%)	38 (92.7%)	1 (2.4%)	4
Fortune Creek	--	2 (66.7%)	1 (33.3%)	--
Grandview	11 (55.0%)	9 (45.0%)	--	3
Hankey	--	--	--	--
Highland Park	2 (28.6%)	5 (71.4%)	--	--
Laird	5 (19.2%)	21 (80.8%)	--	2
Lansdowne	2 (20%)	7 (70%)	1 (10%)	--
Larkin	10 (28.6%)	25 (71.4%)	--	2
Mountain View	1 (33.3%)	2 (66.7%)	--	--
Otter Lake	7 (19.4%)	29 (80.6%)	--	2
Pleasant Valley	1 (33.3%)	2 (66.7%)	--	--
Round Prairie	--	3 (100%)	--	--
Silver Star	6 (20.7%)	21 (72.4%)	2 (6.9%)	--
Stardel	--	--	--	--
Steele Springs	7 (41.2%)	10 (58.8%)	--	1
Stepney	--	2 (66.7%)	1 (33.3%)	--
Vernon	2 (20%)	8 (80%)	--	2
Meighan Creek	--	1 (100%)	--	--
In a District but do not draw water	11 (32.4%)	22 (50%)	1 (2.9%)	10
Not in a District	24 (39.3%)	36 (59.0%)	1 (1.6%)	8

7.3 Support For Other Management Alternatives

A few comments were made in support of some other water management arrangement, rather than the Water Districts or the municipality. Some would like to see an amalgamation of the existing Water Districts, to retain the advantages of the Districts while realizing efficiency gains and consistent policies throughout the Township.

Others suggested the Regional District take over water management, so that a broader perspective could be taken.

Finally, a few respondents would like to see a water management for the entire Okanagan Valley in the hands of a single body, so that comprehensive water management and conservation policies could be developed and enforced.

These respondents were also much less likely to support Water Districts, with 55.8% in favour of water management being taken over by the Township of Spallumcheen. These results suggest that the support for Water Districts is significantly higher among residents who receive Water District services.

7.0 Written Comments

Space was left in various places throughout the survey form to allow respondents to make additional comments.

Various specific comments were made about water quality and health issues, and the need for water conservation. However, the vast majority of comments dealt with the question of who should manage Spallumcheen's water supply; the Township of Spallumcheen, Individual Water Districts or some other body.

These comment can be broken down into those who support the idea of Water District management, and those who feel there should be some changes.

7.1 Support For Water District Management

Those who support Water Districts do so for several reasons. There appears to be a feeling that improvement districts are more responsive and cost effective than a municipal government. This sentiment is summed up in the following typical statements:

"Water rates would most likely increase [under Spallumcheen management] and there would be more red tape to deal with when problems arise. I am satisfied with how our District operates".

"Large bureaucracies tend to become faceless and have a tendency to dismiss individual concerns"

Many others feel that their District is operating well, so no changes are needed.

"We would lose management control and end up paying for the 'lesser' Water Districts".

"Each Water District is quite capable of their own management"

Silver Star users rated their water above average on all counts (appendix 1).

No Silver Star users reported ever having received a health notice (appendix C1). A high 92.6% feel that their water rates are **about right** (appendix D1).

A higher than average number of Silver Star residents are residential users only, at 86.2% (appendix E1).

6.15 Stardel

None of the responses received came from this Water District.

6.16 Steele Springs

Nineteen responses were received from the Steele Springs Water District, of which 18 draw their water from the District.

Steele Springs users gave their water the second poorest overall quality rating, although they are, on average, close to being **satisfied** (appendix A). All individual aspects of their water were given below average ratings, with **taste and amount of sediment** receiving the lowest ratings.

Steele Springs respondents reported the second highest number of water shortages, at 41.2% (appendix B1), and a high 64.7% reported having received health notices in the past (appendix C1).

Steele Springs residents said they were prepared to pay higher annual rates for adequate water services than any other District. The average annual payment given was \$360.00 (appendix D2).

6.17 Stepney

Ten responses were received from residents in the Stepney Water District, but only 3 of these draw their water from the District.

These 3 users rated their water quality higher than the Spallumcheen average on all counts (appendix A).

None reported having experienced water shortages (appendix B1) or having received health notices (appendix C1).

All 3 indicated that they felt their water rates were 'Too High' (appendix D1).

6.8 Lansdowne

Eleven responses were received from the Lansdowne Water District, all but one draw their water from the District.

Lansdowne users generally gave their water a higher rating than the Spallumcheen average, although the rating for **pressure** was slightly below average (appendix A).

No Lansdowne residents reported ever having received a health notice (appendix C1).

6.9 Larkin

Forty-five responses were received from the Larkin Water District, 37 of these came from residents who draw their water from the District.

The quality ratings assigned to Larkin water by its users were close to the Spallumcheen average on all aspects except for the **amount of sediment**, which was lower than average but still very close to **satisfactory** (appendix A).

Larkin deviated quite sharply from the Spallumcheen average on the question of water rates. Over 76% of Larkin users feel their water rates are **too high**, compared to 25.5% in Spallumcheen overall (appendix D1). The average amount that Larkin residents indicated they were prepared to pay each year for adequate water services was \$251.00 (appendix D2).

Larkin also has one of the highest numbers of users who feel that water management should be in the hands of the Township of Spallumcheen, at 50.0% (appendix D4).

6.10 Mountain View

Five responses were received from the Mountain View District, of which 3 draw their water from the District.

These 3 users rated the quality of their water close to the Spallumcheen average on most aspects, with the ratings for **pressure** and **amount of sediment** being below average but still **satisfactory** (appendix A).

Two of the three users reported that they have received a health notice in the past (appendix C1), and all 3 feel their water rates are **about right**.

6.2 Eagle Rock

Fifty-one responses came from residents in the Eagle Rock District, 48 of these draw their water from the District. On all quality measures, Eagle Rock users rated their water higher than the Spallumcheen average (appendix A).

Eagle Rock has close to the fewest number of users that reported ever having experienced a water shortage, at 4.4% (appendix B1). It also has close to the fewest reporting that they have ever received health notices about their water, at 2.3% (appendix C1).

Eagle Rock users are slightly more likely than the Spallumcheen average to say their water rates are **about right** (appendix D1), and the District has the highest number who feel that water management should stay in the hands of the Water Districts, at 70.7% (appendix D4).

The District has the second highest number of residential respondents, at 84.1% (appendix E1).

6.3 Fortune Creek

Six responses came from this Water District. Of these 3 came from people who draw their water from the District.

These 3 Fortune Creek users rated all aspects of the quality of their water very highly (appendix A), with all average ratings being close to 1 or (**very satisfactory**). All feel that their water rates are **about right** (appendix D1) and all indicated the primary use of their land is agricultural (appendix E1).

6.4 Grandview

Thirty-one responses came from this Water District, with 23 coming from residents who draw their water from the District.

Grandview users gave their water one of the lower overall quality ratings at 2.14 versus 1.72 for Spallumcheen as a whole, however it was still close to **satisfactory** (appendix A). Surprisingly, the ratings given for **pressure, odour, amount of sediment, taste and colour** were all very close to the Spallumcheen average for each aspect. This suggests that some other factor may be influencing how Grandview users feel about the quality of their water.

The 44 respondents that indicated they did not draw water from a Water District were asked in question E4 what their source of water was. The majority (33 or 73.3%) said their water source was a **private well**, 6 (13.3%) said they **share a well**, 3 rely on a **reservoir**, and 3 have some **other** source.

These 44 respondents were then asked in question E5 if they had **ever applied for water service from their Water District**. The results for this question are below:

- ▶ 12 (26.7%) indicated that they had in the past applied to their Water District for service. When asked in question E6 about the outcome of their application, 9 said their **application had been refused**, 1 said they had **withdrawn their application**, and 3 indicated some **other** outcome.
- ▶ 32 (71.1%) indicated that they had never applied for Water District service. When asked in question E7 why they had never applied, 5 said the **connection charge was too high**, 2 said the **rates are too high**, 18 said their **alternate water supply was adequate**, and 10 said they **believed their application would have been rejected**. (Some respondents gave more than one reason).

The results in table 1 above show that 69 respondents, or 17.4%, do not live in a water district. Question E8 asked these respondents to indicate **what their source of water was**. Fifty-six responded that their water came from a **private well**; 4 said they **shared a well**, and 3 use a **reservoir**. The remainder indicated some other source.

These 69 were then asked in question E9 if they had **ever applied for water service from a Water District**. The results for this question are below:

- ▶ Only 4 (5.8%) indicated that they had in the past applied for service from their Water District. When asked in question E10 about the outcome of their application, all 4 said their **application had been refused**.
- ▶ 64 (92.3%) indicated that they had never applied for Water District service. When asked in question E7 why they had never applied, 5 said the **connection charge was too high**, 1 said the **rates are too high**, 43 said their **alternate water supply was adequate**, and 10 said they **believed their application would have been rejected**.