520

WASTE MANAGEMENT PLAN FOR ELECTORAL AREAS A, C, & D

Stage Three Report

Summary

Regional District of Okanagan Similkameen

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Our File: 308-011

August 24, 1989

Regional District of
Okanagan-Similkameen
101 Martin Street
Penticton, B.C.
V2A 5J9

Attention: Ms. V. Sutton,
Administrator

Dear Ms. Sutton:

Re: Stage Three Report (Summary)
Waste Management Plan for
Electoral Areas A, C & D

We submit herewith our final Stage Three Report for the Waste Management Plan for Electoral Areas A, C, and D. The Stage Three and Stage Two Reports were submitted to the Regional District in DRAFT form in August 1988. In the period August 1988 to April 1989, input and comments related to these Draft Reports were received from both the Regional District and Provincial Government agencies. These comments and input were incorporated into the FINAL Stage Two Report submitted in April 1989 and are now reflected in the FINAL Stage Three Report.

Submission of the FINAL Stage Three Report represents completion of the Waste Management Plan. We wish to thank the Regional District for providing an opportunity to our firm to participate in the Plan. We would also like to acknowledge the assistance provided by the Regional District staff, Area Directors, and the Okanagan Water Quality Project.

Yours truly,

T.R. Underwood, P.Eng.

TRU/db
enc.

WASTE MANAGEMENT PLAN FOR
ELECTORAL AREAS A, C AND D

Stage Three Report
SUMMARY

Table of Contents

EXECUTIVE SUMMARY

This Waste Management Plan addresses wastewater related concerns in the Electoral Areas A, C and D in the Regional District of Okanagan-Similkameen which generally comprises the area from U.S.A. border south of Osoyoos to the north end of Skaha Lake at the City of Penticton municipal boundary. Population centres in the Waste Management Plan area include fringe areas of the Town of Osoyoos and Village of Oliver, Gallagher Lake, Vaseux Lake, Okanagan Falls, Skaha Estates and Kaleden.

A primary objective of the Waste Management Plan is the derivation of a long range strategy addressing wastewater treatment and disposal with particular emphasis on reducing and minimizing phosphorus loadings to surface water courses in the Okanagan Basin. The Okanagan Water Quality Project have established a minimum phosphorus removal efficiency of 80% for existing septic tank and tile field systems and 90% for new installations.

The Waste Management Plan Stage One Report included a comprehensive inventory of wastewater sources in the three Electoral Areas together with phosphorus loading estimates. The overall population in the planning area is approximately 7500 (not including populations serviced by community sewerage systems in Oliver, Osoyoos and Okanagan Falls). Individual septic tank and tile field systems in the three rural areas represent an estimated phosphorus loading to surface water courses of about 2000 kg/year. Overall, existing septic tank and tile field systems in the three Electoral Areas have an average phosphorus removal efficiency of about 75%.

On the basis of input from the Ministry of Environment, Ministry of Health, Regional District Administration staff, and the Regional Directors, hydraulic performance of septic tank and tile field systems is generally satisfactory. No serious concentrations of failed and/or malfunctioning systems were identified although groundwater and

surface water contamination was defined as a concern in the northwest and southwest lakeshore areas adjacent to the Town of Osoyoos and the Tugulnuit Lake Area near the Village of Oliver.

The Stage One Report identifies ten areas having a population concentration justifying consideration for an alternative community sewerage system. Servicing all ten areas with community sewerage systems would reduce the total phosphorus loadings from the three rural areas from 2000 kg/year to about 970 kg/year, a reduction of about 50%, and resolve a majority of other wastewater related concerns.

The Stage One Report presents preliminary sewerage system evaluations for all ten areas as summarized in Table 6.1. On the basis of preliminary capital cost estimates and wastewater concerns resolved, the Stage One Report concludes by identifying the Osoyoos Northwest Area, Sawmill Road (near Oliver) and the Tugulnuit Lake areas as having the highest priority for alternative systems. The Osoyoos Southeast and South Vaseux Lake and East Vaseux Lake areas were placed in a second group in terms of priority and feasibility for alternative systems. Alternative system cost estimates for Gallagher Lake, Kaleden Lakeshore, Skaha Estates and the Osoyoos Southwest were high relative to other areas which resulted in these four areas being placed in the lowest priority group for alternative systems.

The Stage Two Report presents more detailed evaluation of community sewerage system feasibility for the six areas identified in priority groupings 1 and 2 in Table 6.1. The Stage Two Report also discusses wastewater related policies which have the objective of ensuring long term satisfactory operation of individual septic tank and tile field systems. The recommendations of the Stage Two Report are summarized as follows:

(A) Alternative Community Systems

(1) The highest priorities for alternative systems in Electoral Areas A, C and D are the Northwest Osoyoos, Tugulnuit Lake and Sawmill Road areas. Second priority areas are South Vaseux Lake, East Vaseux Lake and Southeast Osoyoos. Recommended systems are summarized in Table 6.1.

(2) An implementation schedule is not presented in the Waste Management Plan. The Regional District should establish a consultative procedure with the Ministry of Environment to address the implementation schedule.

(3) The level of Provincial Government assistance to be available for alternative system construction is uncertain. Capital cost assistance commitments will have to be obtained before any of the priority community systems are constructed.

(4) Development proposals in areas having the highest priority for community sewerage systems take into account the conceptual designs of proposed community systems.

(B) Waste Management Policies

(1) Minimum parcel sizes should be increased from 836 m^2 (9000 $ft.^2$) to 1672 m^2 (18000 $ft.^2$) in environmental concern areas (Very High, High or Moderately High phosphorus transmission). Increasing parcel size is recommended to ensure satisfactory long term performance of individual septic tank and tile field systems.

(2) Individual on-site disposal system design guidelines addressing phosphorus removal which are being prepared by the Ministries of Environment and Health should be adopted by the Regional District.

(3) As a requirement of subdivision approval, the Regional District should adopt a policy requiring detailed consideration of all waste disposal alternatives.

(4) Agriculture operations represent a major potential waste concern in the three Electoral Areas. The Regional District should promote awareness of the Ministry of Agriculture Guidelines in Community Planning documents.

(5) A referral system should be set up with Ministry of Health to enable the Regional District to document and compile statistics on individual system malfunctions and/or failures. This data will be important for future amendments to this Waste Management Plan.

TABLE 6.1

ALTERNATIVE SYSTEM SUMMARY

AREA	ALTERNATIVE SYSTEM	CAPITAL COST	OTHER WASTE-WATER CONCERN	PHOSPHORUS LOAD. REDUCTION (1)	COST PER kg/yr.	USER COST DATA					
						SYSTEM TYPE (2)	DEBT COST/Lot (3)	OPERATION COSTS (4)	TOTAL ANNUAL COSTS	CONNECTION COSTS (5)	REFERENCE (6)
GROUP 1											
Osoyoos Northwest	Connect to Osoyoos	$ 955,000	Yes	205.6	$ 4650	CGS & GSTE & LPS	$ 640	$90 - $180	$730 - $820	$500 - $1300	Stage II Sec. 11.1
Tugulnuit Lakeshore	Connect to Oliver	611,000	Yes	197.5	$ 3100	CGS & LPS	$ 480	$72 - $162	$552 - $642	$300 - $1100	Stage II Sec. 11.2
Sawmill Road	Connect to Oliver	360,000	Potential	143.7	$ 2500	LPS	$ 500	$162	$662	$1100	Stage II Sec. 11.3
Subtotals		**$1,926,000**		**546.8**							
GROUP 2											
Osoyoos Southeast	Connect to Osoyoos	$ 452,000	Potential	76.4	$ 5950	CGS & LPS	$ 415	$ 90(±)	$505(±)	$ 500	Stage II Sec. 11.4
South Vaseux Lake	Community Disposal Field	135,000	Potential	39.2	$ 3440	LPS	$ 705	$294	$999	$1100	Stage II Sec. 11.5
East Vaseux Lake	Community Disposal Field	211,000	Potential	30.5	$ 5300	GSTE & LPS	$ 570	$250- $310	$820 - $880	$300 - $1100	Stage II Sec. 11.6
Subtotals		**$ 798,000**		**146.1**							
GROUP 3											
Gallagher Lake	Treatment & Disposal Vaseux Creek Area	$ 588,000	No	77.4	$ 7600	CGS	$ 430	not est.	-	not est.	Stage I Sec. 7.3
Kaleden Lakeshore	Connect to Okanagan Falls	788,000	Yes	77.0	$10200	CGS & LPS	$ 1110	not est.	-	not est.	Stage I Sec. 8.3
Skaha Estates	Connect to Okanagan Falls	1,428,000	Potential	129.9	$11000	CGS	$ 1070	not. est.	-	not est.	Stage I Sec. 8.2
Osoyoos Southwest	Connect to Osoyoos	187,000	No	62.2	$ 3000	CGS	$ 510	$ 90(±)	$600	$ 500	Stage I Sec. 6.3
Subtotals		**$2,991,000**		**346.5**							
TOTALS		**$5,715,000**		**1039.4**							

(1) Reported in kg/year.

(2) Collection System Type: CGS - Conventional Gravity Sewer; LPS - Low Pressure Septic Tank Effluent; GSTE - Gravity Septic Tank Effluent

(3) Capital Cost Debt Retirement With 0% Senior Government Contribution

(4) Includes homeowner costs for pump and septic tank maintenance and operating authority O & M costs

(5) Includes connection fees and pump installation where required

(6) Section where detailed information is presented.

SECTION 1: INTRODUCTION AND PLAN OBJECTIVES

This Waste Management Plan for Electoral Areas A, C, and D of the Regional District of Okanagan-Similkameen has been undertaken in general accordance with criteria established by the Okanagan Water Quality Project. Throughout the preparation of the Waste Management Plan, consultation has been maintained between the staff and elected representatives of the R.D.O.S. and the staff of the Okanagan Water Quality Project.

A major objective of the Okanagan Water Quality Project is the reduction of phosphorus loadings from all sources to surface water courses in the Okanagan Basin. To provide a method to evaluate phosphorus contributions from individual septic tank and tile field systems in the rural areas of the Okanagan Valley, the Ministry of Environment has prepared phosphorus transmission mapping. The Ministry of Environment phosphorus transmission mapping for Electoral Areas A, C, and D is the basis of this Waste Management Plan in terms of quantifying phosphorus loadings and areas of major concern. In terms of phosphorus removal, the objective of the Okanagan Water Quality Project is that all existing septic tank and tile field systems should achieve a minimum phosphorus removal efficiency of 80%. For new or future septic tank and tile field systems, the objective for phosphorus removal is 90%.

Objectives of this Waste Management Plan with respect to phosphorus loadings and other septic tank operating concerns are:

- definition of present phosphorus loadings from development in the three Electoral Areas
- delineation of major areas of concern which have an unacceptably high phosphorus loading
- in combination with Regional District Community Plans, project future phosphorus loadings.

- after definition of sectors or areas which do not meet the phosphorus removal efficiencies, alternative systems are to be evaluated which will resolve the deficiencies
- alternative sewerage systems are to be evaluated on the basis of capital costs, operating costs, phosphorus removal efficiency and alternative senior government assistance formulae
- the evaluation of alternative systems, where considered feasible, should also consider social and public health criteria
- where alternative systems are not economical or technically feasible, policy options are to be considered to achieve phosphorus loading reductions and/or a status quo situation. These policy statements may address housing density in areas of environmental concern, alternative system design criteria, operation and maintenance, etc.

The Waste Management Plan was initiated in June 1987 and progress reports were prepared as each stage of the planning program was completed. Reports which comprise the Waste Management Plan include:

Progress Report -	September 1987
Stage One Report - Part 1; Inventory	March 1988
Stage One Report - Part 2; Analysis of Alternatives	March 1988
Stage Two Report	April 1989

The preparation of the Waste Management Plan has included workshop sessions with government agencies and public information meetings in the three Electoral Areas. These input sessions are summarized as follows:

Agency Workshop Sessions;
September 30, 1987, January 26, 1988, and November 10, 1988

Electoral Area A Public Meetings;
November 9, 1987 and February 22, 1988

Electoral Area C Public Meetings;
October 29, 1987 and February 23, 1988

Electoral Area D Public Meetings;
November 16, 1987 and February 29, 1988

Input from members of the public and agency representatives has been incorporated into the Waste Management Plan.

SECTION 2: WASTE MANAGEMENT PLAN AREA

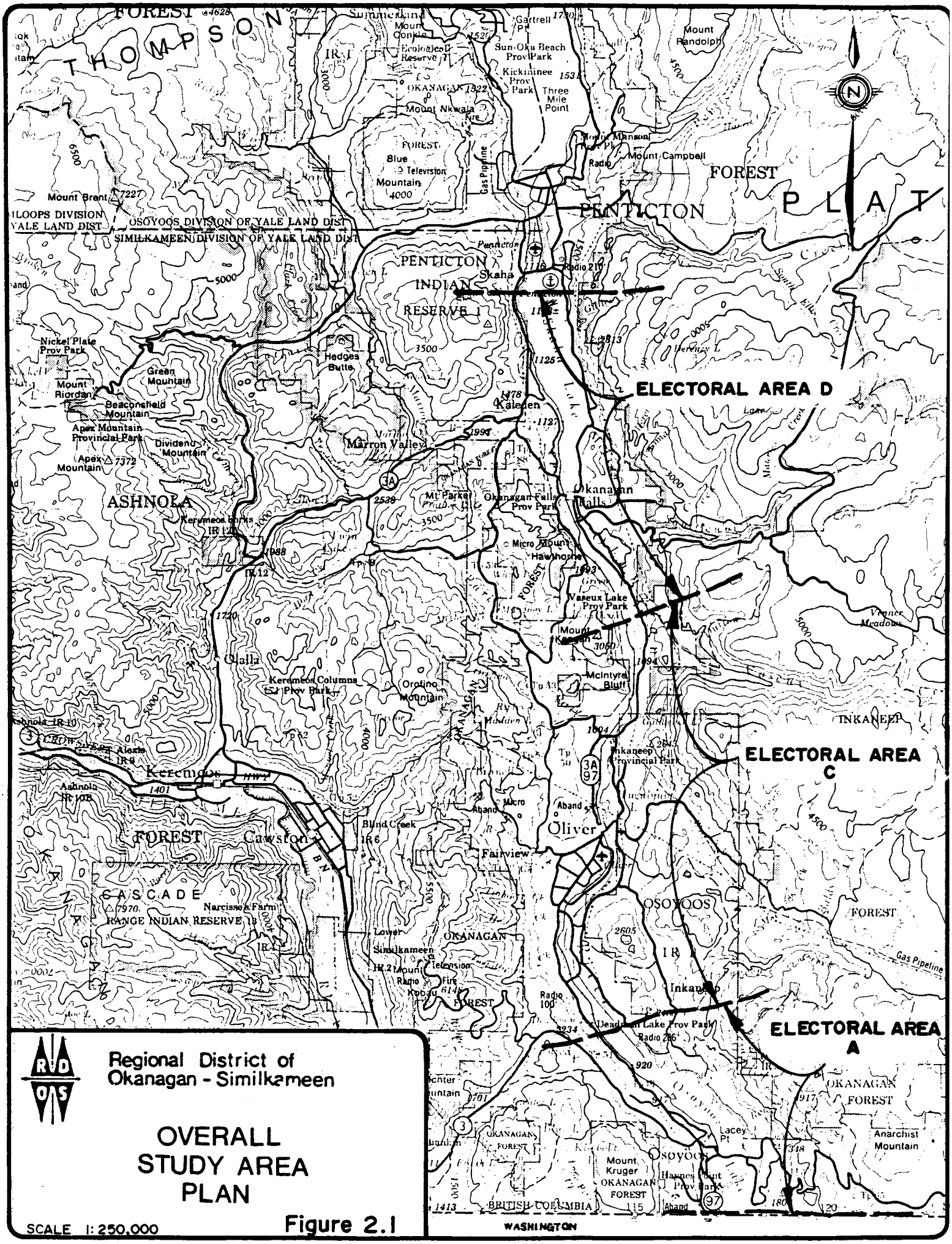
The Waste Management Planning Area encompasses the Southern Okanagan Area from the southern boundary of the City of Penticton to the U.S. border (see Figure 2.1). The Waste Management Plan focuses on three rural Electoral Areas of the Regional District of Okanagan-Similkameen. These Electoral Areas are:

Electoral Area A - Osoyoos Rural Area extending from the U.S.A. border to and including the north end of Osoyoos Lake.

Electoral Area C - Extending from the north end of Osoyoos Lake to the south end of Vaseux Lake including the residential areas abutting the Village of Oliver.

Electoral Area D - Extending from the south end of Vaseux Lake to the north end of Skaha Lake including the communities of Okanagan Falls and Kaleden.

The Waste Management Planning Area does not include the incorporated municipalities of Oliver and Osoyoos, the Penticton Indian Reserve #1, and the Osoyoos Indian Reserve #1. Inventories of phosphorus sources include development on the two Indian Reserves, however, no consideration has been given to options to reduce phosphorus and/or other concerns with septic tank systems on the Reserves.



Regional District of Okanagan - Similkameen

OVERALL STUDY AREA PLAN

SCALE 1: 250,000

Figure 2.1

SECTION 3: EVALUATION AND ASSESSMENT CRITERIA

The primary focus of the Waste Management Plan is phosphorus loadings and other operating concerns related to individual septic tank and tile field systems within the three Electoral Areas. It should, however, be recognized that there are other phosphorus sources in the Planning Area. Summarized following are significant phosphorus sources in the three Electoral Areas:

(1) Residential Septic Tank-Tile Field Systems

Phosphorus contributions from septic tank and tile field systems have been estimated from Ministry of Environment mapping which considers soil characteristics and horizontal distance and vertical separation to water courses to derive a transmission rating between Very High and Low. Mapping classifications with estimated transmission to receiving waters are:

Very High	75	to	100%	average	87.5%	transmission or	12.5% removal
High	50	to	75%	average	62.5%	transmission or	37.5% removal
Moderately High	30	to	50%	average	40.0%	transmission or	60 % removal
Moderate	15	to	30%	average	22.5%	transmission or	77.5% removal
Moderately Low	5	to	15%	average	10.0%	transmission or	90 % removal
Low	0	to	5%	average	2.5%	transmission or	97.5% removal

Housing groups located in mapping areas with phosphorus transmission ratings of Moderately High to Very High are of principal concern in the Waste Management Plan.

Septic tank systems throughout the Waste Management Planning Area are estimated to generate 7700 kg of phosphorus per year, of which approximately 2000 kg (4400 lbs.) of phosphorus per year is transmitted to receiving waters.

(2) Seasonal Sources

Seasonal phosphorus sources are campgrounds, motels, and hotels which provide accommodation to tourists, principally during the summer months. Seasonal facilities have an estimated phosphorus contribution to surface waters of 320 kg/year of which 120 kg/year is attributable to facilities on the Skaha Lakeshore on Penticton I.R. #1.

(3) Major Municipal Sewerage Systems

There are three municipal sewerage systems, Osoyoos, Oliver and Okanagan Falls, operating under Waste Management Permit within the study area. Oliver and Osoyoos achieve 100% phosphorus removal by disposal by irrigation and Okanagan Falls, approximately 95% removal by disposal to ground by infiltration basins. In general, the three municipal sewerage systems within the study area are not major contributors of phosphorus to receiving waters.

(4) Permitted Discharges under the Waste Management Act

Throughout the Waste Management Planning Area there are a total of fifteen (15) wastewater discharges which are permitted under the Waste Management Act. The permits relate mainly to agricultural industries and, with one exception, all involve a wastewater discharge to ground. Total phosphorus loadings from permitted discharges are less than 50 kg/year.

(5) Agricultural Sources Related to Livestock

The Waste Management Planning Area includes about 26 livestock operations representing a total of about 5000 head of cattle. Estimates of phosphorus produced by livestock is 110,000 kg/year of which about 0.2% or 194 kg/year "reaches" receiving waters by runoff and/or direct discharge. Livestock related loadings via groundwater may approach an additional 284 kg/year.

(6) Agricultural Sources Related to Fertilizer

Phosphorus loadings related to fertilizer use may approach 500 kg/year within the Waste Management Plan Area. Nitrate contamination of groundwater is a more significant concern related to fertilizer as confirmed by groundwater quality studies in the Osoyoos area.

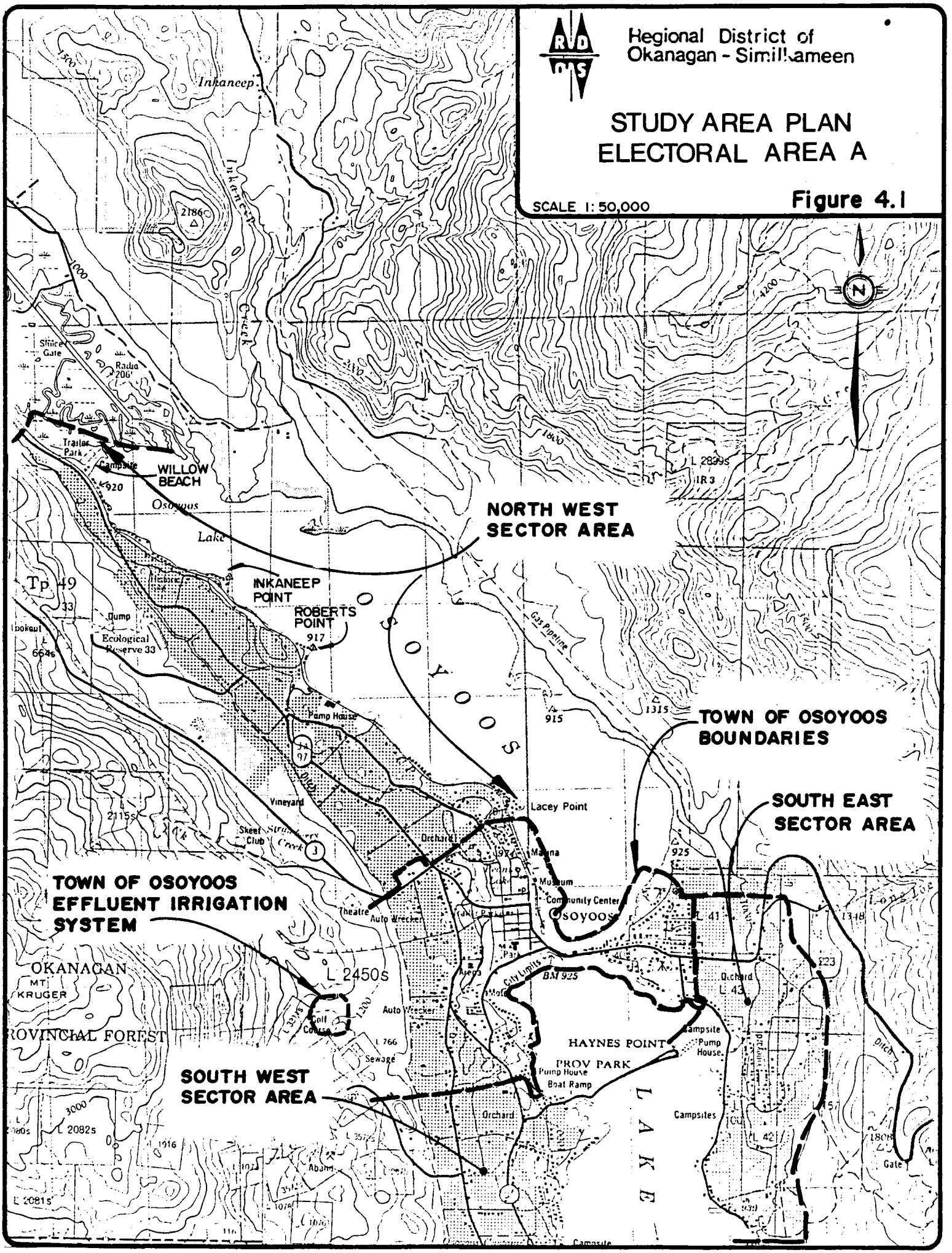
Of the preceding described major phosphorus sources, individual residential septic tanks and tile field systems are the largest source by group representing a loading of about 2000 kg/year.

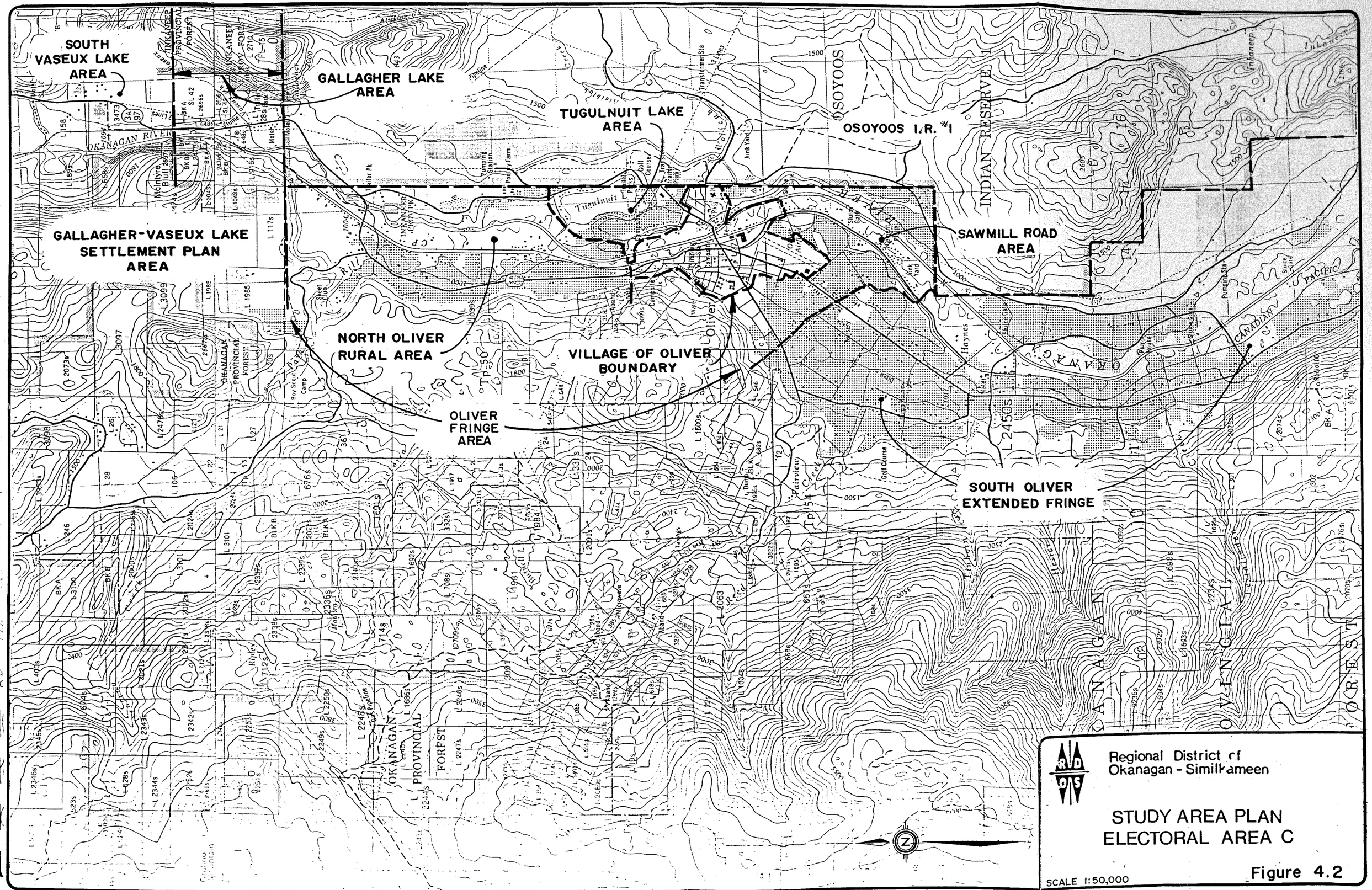
SECTION 4: SUMMARY OF PHOSPHORUS LOADING INVENTORY

The Waste Management Plan area has been divided into sectors corresponding to RDOS planning area boundaries and present and year 2007 projected phosphorus loadings calculated. Figure 4.1 illustrates the Town of Osoyoos and sectors of Electoral Area A located adjacent to the municipal boundaries. Figure 4.2 illustrates Electoral Area C and the Village of Oliver and Figure 4.3, Electoral Area D including Okanagan Falls and Kaleden. All population and present and projected phosphorus loading data for each sector are summarized in Tables 4.10 and 4.11.

From Table 4.10, permanent residences using individual septic tank and tile fields for wastewater disposal contribute a total of 1790 kg of phosphorus per year to Okanagan Basin watercourses. Overall, existing systems throughout the three Electoral Areas have an average phosphorus removal efficiency of about 75%. By comparison, the phosphorus removal objective for municipal sewage treatment plants in the Okanagan Basin is 95%. A subjective rating is given for other concerns recognizing the general nature of the background data. In total, three (3) areas have been assessed as having concerns in addition to phosphorus loading related to septic tank and field systems and an additional five (5) areas as having the potential of becoming concerns in the future.

Table 4.11 presents data indicating that the population in Electoral Areas A, C and D using individual septic tanks and disposal fields for wastewater disposal will increase from 7487 in 1987 to about 10500 in year 2007. Corresponding to the population growth, phosphorus loadings from permanent residences is projected to increase from 1790 kg/year to 2400 kg/year.


Regional District of
Okanagan - Similkameen
STUDY AREA PLAN
ELECTORAL AREA A
SCALE 1: 50,000
Figure 4.1
NORTH WEST
SECTOR AREA
SOUTH EAST
SECTOR AREA
SOUTH WEST
SECTOR AREA
TOWN OF OSOYOOS
BOUNDARIES
TOWN OF OSOYOOS
EFFLUENT IRRIGATION
SYSTEM
WILLOW
BEACH
INKANEEP
POINT
ROBERTS
POINT
HAYNES POINT
PROV PARK
OSOYOOS
LAKE
Inkaneep
Creek
Osoyoos
Lake
Lacey Point
Marina
Museum
Community Center
Theatre
Auto Wrecker
Golf
Course
Sewage
Lagoon
Orchard
Vineyard
Skeet
Club
Gas Pipeline
Pump House
Campsite
Campsites
Boat Ramp
Trailer
Park
Sluice
Gate
Radio
Tower
Dump
Ecological
Reserve 33
OKANAGAN
MT.
KRUGER
PROVINCIAL FOREST
Tp 49
33
L 2450s
L 2082s
L 2081s
L 2899s
IR 3
BM 925
City Limits
Gate


SOUTH VASEUX LAKE AREA
GALLAGHER LAKE AREA
TUGULNUIT LAKE AREA
OSOYOOS I.R. #1
INDIAN RESERVE
GALLAGHER-VASEUX LAKE SETTLEMENT PLAN AREA
SAWMILL ROAD AREA
NORTH OLIVER RURAL AREA
VILLAGE OF OLIVER BOUNDARY
OLIVER FRINGE AREA
SOUTH OLIVER EXTENDED FRINGE
OKANAGAN RIVER
OKANAGAN PROVINCIAL FOREST
CANADIAN PACIFIC
Regional District of Okanagan - Similkameen
STUDY AREA PLAN
ELECTORAL AREA C
SCALE 1:50,000
Figure 4.2

OKANAGAN FALLS RURAL AREA

OKANAGAN FALLS SETTLEMENT PLAN BOUNDARY

SKAHA LAKE ESTATES AREA

EAST PENTICTON FRINGE

CITY OF PENTICTON

PENTICTON I.R. 1

KALEDEN LAKESHORE AREA

SYCLE POINT

KALEDEN SETTLEMENT PLAN AREA

PONDEROSA POINT

EAST VASEUX LAKE AREA

TREE FARM LICENCE 15

OKANAGAN FALLS INFILTRATION BASINS

OKANAGAN FALLS TREATMENT PLANT

OKANAGAN FALLS COMMUNITY SEWER SYSTEM SERVICE AREA

PROVINCIAL FOREST

OKANAGAN

SKAHA LAKE

Regional District of Okanagan - Similkameen

STUDY AREA PLAN ELECTORAL AREA D

SCALE 1:50,000

Figure 4.3

TABLE 4.10

SUMMARY OF INVENTORY OF
PRESENT PHOSPHORUS LOADINGS AND OTHER
WASTEWATER CONCERNS

SECTOR	POPU-LATION	PHOSPHORUS LOADINGS* PERMANENT RESIDENCES	SEASONAL & PERMIT SOURCES	TOTAL	P. REMOVAL EFFICIENCY	OTHER WASTEWATER CONCERNS
ELECTORAL AREA A						
o Northwest Osoyoos Rural	687	239.4	23.6	263.0	67%	Yes
o Southeast Osoyoos Rural	571	67.3	33.1	100.4	88%	Potential
o Southwest Osoyoos Rural	710	96.5	48.0	144.5	86%	No
ELECTORAL AREA C						
o South Oliver Ext.Fringe	1347	230.0	1.20	231.2	83%	No
o Old Sawmill Road	396	190.3	0.4	190.7	52%	Potential
o Tugulnuit Lake	1088	226.6	50.8	277.4	79%	Yes
o North Oliver Rural	743	193.8	0	193.8	76%	No
o Gallagher Lake	224	57.6	33.3	90.9	75%	No
o South Vaseux Lake	89	47.9	3.2	51.1	46%	Potential
ELECTORAL AREA D						
o East Vaseux Lake	110	58.3	11.6	69.9	47%	Potential
o OK Falls Rural	253	59.2	0	59.2	77%	No
o Skaha Estates	348	158.6	0	158.6	58%	Potential
o Kaleden Lakeshore	117	74.8	6.3	81.1	36%	Yes
o Kaleden Bench Area	683	76.3	8.0	84.3	89%	No
o East Penticton Fringe	121	14.0	0	14.0	87%	No
TOTALS - ALL ELECTORAL AREAS	7487	1790.6	219.5	2010.1		
PENTICTON INDIAN RESERVE	696	267.1	121.5	388.6	62%	

*Phosphorus Loadings Expressed in kg/year

TABLE 4.11

SUMMARY OF PROJECTED (YEAR 2007)
PHOSPHORUS LOADINGS

SECTOR	POPU-LATION	PHOSPHORUS LOADINGS* PERMANENT RESIDENCES	SEASONAL SOURCES	OTHER	TOTAL	P. REMOVAL EFFICIENCY
ELECTORAL AREA A						
o Northwest Osoyoos Rural	888	317.7	23.6	0	341.3	65%
o Southeast Osoyoos Rural	658	92.4	33.1	0	125.5	87%
o Southwest Osoyoos Rural	835	107.2	5.8	42.2	155.2	87%
ELECTORAL AREA C						
o South Oliver Ext.Fringe	1608	267.7	1.2	0	268.9	83%
o Old Sawmill Road	453	229.4	0.4	0	229.8	50%
o Tugulnuit Lake	1654	301.4	50.8	0	352.2	82%
o North Oliver Rural	1032	306.0	0	0	306.0	70%
o Gallagher Lake	412	92.2	51.1	1.0	144.3	78%
o South Vaseux Lake	113	59.1	3.2	0	62.3	48%
ELECTORAL AREA D						
o East Vaseux Lake	125	67.6	11.6	0	79.2	46%
o OK Falls Rural	311	72.3	0	0	72.3	77%
o Skaha Estates	541	222.5	0	0	222.5	59%
o Kaleden Lakeshore	117	74.8	6.3	0	81.1	36%
o Kaleden Bench Area	1553	160.7	8.0	0	168.7	90%
o East Penticton Fringe	208	27.6	0	0	27.6	87%
TOTALS - ALL ELECTORAL AREAS	10508	2398.6	195.1	43.2	2636.9	

*Phosphorus Loadings in kg/year

SECTION 5: STRATEGIES FOR RESOLVING WASTEWATER RELATED CONCERNS

Two categories of possible "solutions" are evaluated to address wastewater related concerns. One category of solutions involves feasibility evaluations of alternative sewerage systems. A total of ten areas in the three Electoral Areas were identified as having an apparent sufficient concentration of development to warrant evaluation of an alternative system. Table 5.1 summarizes areas where an alternative system is considered as potentially feasible with an estimate of achieved phosphorus loading reductions. If alternative systems were provided in all ten identified areas, phosphorus loadings could be reduced from 2010 kg/year to 971 kg/year, a reduction of 50%. The alternative systems would reduce the permanent population using septic tank and tile field systems from the present 7500 to approximately 5700. The overall average phosphorus removal efficiency of remaining individual septic tank and tile field systems would be about 85%, up significantly from the present plan area average of 75%.

The other category of "solutions" to wastewater concerns involves policies which would apply primarily to areas not having a population density sufficient to warrant consideration of an alternative system and to areas where an alternative system is not planned in the foreseeable future. The policy proposals evolved from discussions at agency workshop sessions and include:

- alternative on-site system design criteria to achieve increased phosphorus removal efficiencies.
- an increase of minimum residential parcel size to reduce the density in High phosphorus transmission areas and provide adequate area for on-site disposal system construction.
- requirements for alternative sewer system evaluation at the time of subdivision.
- minimum phosphorus removal specifications for small community type systems common in mobile home parks, medium density developments, etc.

- proposals for Regional District participation in a septic tank pumpout program.
- Community Plan amendments to emphasize the importance of Ministry of Agriculture environmental guidelines related to agricultural uses.
- compilation of operational records related to septic tank and disposal system performance throughout the area.

TABLE 5.1

SUMMARY OF PHOSPHORUS REDUCTIONS
BY ALTERNATIVE SYSTEMS

SECTOR	PRESENT		REDUCTION BY ALT. SYSTEM*		RESIDUAL		P. REMOVAL EFFICIENCY	
	P. LOAD	POP.	P.	POP.	P.	POP.	PRESENT	REVISED
ELECTORAL AREA A								
o Northwest Osoyoos Rural	263.0	687	200	376	63.0	311	67%	82%
o Southeast Osoyoos Rural	100.4	571	70	93	30.4	478	88%	95%
o Southwest Osoyoos Rural	144.5	710	60	85	84.5	625	86%	87%
ELECTORAL AREA C								
o South Oliver Ext.Fringe	231.2	1347	0	0	231.2	1347	83%	83%
o Old Sawmill Road	190.7	396	130	207	60.7	189	52%	72%
o Tugulnuit Lake	277.4	1088	210	252	67.4	836	79%	87%
o North Oliver Rural	193.8	743	0	0	193.8	743	76%	76%
o Gallagher Lake	90.9	224	75	220	15.9	4	75%	**
o South Vaseux Lake	51.1	89	44	47	7.1	42	46%	83%
ELECTORAL AREA D								
o East Vaseux Lake	69.9	110	50	101	19.9	9	47%	**
o OK Falls Rural	59.2	253	0	0	59.2	253	77%	77%
o Skaha Estates	158.6	348	130	312	28.6	36	58%	**
o Kaleden Lakeshore	81.1	117	70	117	11.1	0	36%	**
o Kaleden Bench Area	84.3	683	0	0	84.3	683	89%	89%
o East Penticton Fringe	14.0	121	0	0	14.0	121	87%	87%
TOTALS - ALL ELECTORAL AREAS	2010.1	7487	1039	1810	971.1	5677		

* Reduction Values are Approximate

** Essentially Total Sector Population Serviced by Alternative System

Note: All Phosphorus Loadings are expressed as kg per year.

6.1 Alternative System Evaluations

Within Electoral Area A, C, and D, ten areas were identified where community sewerage systems appeared feasible to address phosphorus loading and other waste management concerns. Table 6.1 summarizes the ten areas considered, selected alternative system, estimated capital cost, phosphorus loading criteria and preliminary estimates of user costs. Priority groupings are also presented in Table 6.1 based on the following criteria:

- phosphorus loading reduction values.
- existence in the defined area of other wastewater related concerns.
- overall capital cost of the system and capital cost per reduced kg/year phosphorus loading.
- anticipated population growth potential in each area.

Higher priority areas for alternative systems are the Osoyoos Northwest Sector and the Tugulnuit Lakeshore and Sawmill Road areas bordering the Village of Oliver. All three areas either have a defined "other" wastewater concern or the potential of concerns occurring. The three areas combined represent a potential phosphorus loading reduction of 546.8 kg/year which is 50% of the total loading reduction achievable by alternative systems in the three Electoral Areas as a whole.

Medium priority has been given to the two Vaseux Lake Sectors and the Osoyoos Southeast Sector. In all cases, the potential has been established for other wastewater concerns to develop. All three areas have a per kg of reduced phosphorus loading capital cost in the range of $4,000 to $5,300. The implications of phosphorus loadings from septic tank systems on the water quality in Vaseux Lake requires study before a final decision is made on the construction of alternative sewerage systems. The three Priority Group 2 areas represent a combined phosphorus loading reduction of 146.1 kg/year, or 14% of the total possible in the three Electoral Areas.

TABLE 6.1

ALTERNATIVE SYSTEM SUMMARY

AREA	ALTERNATIVE SYSTEM	CAPITAL COST	OTHER WASTE-WATER CONCERN	PHOSPHORUS LOAD. REDUCTION (1)	COST PER kg/yr.	USER COST DATA					
						SYSTEM TYPE (2)	DEBT COST/Lot (3)	OPERATION COSTS (4)	TOTAL ANNUAL COSTS	CONNECTION COSTS (5)	REFERENCE (6)
GROUP 1											
Osoyoos Northwest	Connect to Osoyoos	$ 955,000	Yes	205.6	$ 4650	CGS & GSTE & LPS	$ 640	$90 - $180	$730 - $820	$500 - $1300	Stage II Sec. 11.1
Tugulnuit Lakeshore	Connect to Oliver	611,000	Yes	197.5	$ 3100	CGS & LPS	$ 480	$72 - $162	$552 - $642	$300 - $1100	Stage II Sec. 11.2
Sawmill Road	Connect to Oliver	360,000	Potential	143.7	$ 2500	LPS	$ 500	$162	$662	$1100	Stage II Sec. 11.3
Subtotals		**$1,926,000**		**546.8**							
GROUP 2											
Osoyoos Southeast	Connect to Osoyoos	$ 452,000	Potential	76.4	$ 5950	CGS & LPS	$ 415	$ 90(±)	$505(±)	$ 500	Stage II Sec. 11.4
South Vaseux Lake	Community Disposal Field	135,000	Potential	39.2	$ 3440	LPS	$ 705	$294	$999	$1100	Stage II Sec. 11.5
East Vaseux Lake	Community Disposal Field	211,000	Potential	30.5	$ 5300	GSTE & LPS	$ 570	$250- $310	$820 - $880	$300 - $1100	Stage II Sec. 11.6
Subtotals		**$ 798,000**		**146.1**							
GROUP 3											
Gallagher Lake	Treatment & Disposal Vaseux Creek Area	$ 588,000	No	77.4	$ 7600	CGS	$ 430	not est.	-	not est.	Stage I Sec. 7.3
Kaleden Lakeshore	Connect to Okanagan Falls	788,000	Yes	77.0	$10200	CGS & LPS	$ 1110	not est.	-	not est.	Stage I Sec. 8.3
Skaha Estates	Connect to Okanagan Falls	1,428,000	Potential	129.9	$11000	CGS	$ 1070	not. est.	-	not est.	Stage I Sec. 8.2
Osoyoos Southwest	Connect to Osoyoos	187,000	No	62.2	$ 3000	CGS	$ 510	$ 90(±)	$600	$ 500	Stage I Sec. 6.3
Subtotals		**$2,991,000**		**346.5**							
TOTALS		**$5,715,000**		**1039.4**							

(1) Reported in kg/year.

(2) Collection System Type: CGS - Conventional Gravity Sewer;
LPS - Low Pressure Septic Tank Effluent; GSTE - Gravity Septic Tank Effluent

(3) Capital Cost Debt Retirement With 0% Senior Government Contribution

(4) Includes homeowner costs for pump and septic tank maintenance and operating authority O & M costs

(5) Includes connection fees and pump installation where required

(6) Section where detailed information is presented.

The lower priority areas in terms of implementing an alternative sewerage system include Gallagher Lake, Southwest Osoyoos, Kaleden Lakeshore and Skaha Estates. The Gallagher Lake alternative system has a relatively high per kg capital cost of $7600. There is, at present, no other identified wastewater related concern for the Gallagher Lake area. The relationship between phosphorus loading and water quality in Gallagher Lake requires study before consideration of a community sewerage system. Skaha Estates and Kaleden Lakeshore areas have been included in the lower priority grouping because of the high capital cost expressed on a per kg of reduced phosphorus loading. In both cases, the capital cost for the alternative system exceeds $10000 per kg of reduced loading. Concerns related to the construction and age of existing septic tank and tile field systems in the north part of the Kaleden Lakeshore area warrant detailed study. The Osoyoos Southwest Sector is included in the low priority group because no other wastewater concerns have been identified and the system would service a relatively small population, approximately 80 people.

6.2 Group One (Highest Priority) Alternative Systems

6.2.1 Osoyoos Northwest Area

A community sewerage system is proposed for the Northwest sector of Electoral Area A which would service all lakeshore development from the Town of Osoyoos to the north end of Osoyoos Lake. As illustrated in Figures 11.1 to 11.3 inclusive, the major element of the system is a pressure collector main located within the old CP Railway right of way approximately 5.8 km in length. Collection systems in each of five areas of concentrated development along the lakeshore would pump into this collection main on the CP Railway right of way.

The sewerage system, as proposed, would reduce phosphorus loadings to Osoyoos Lake by an estimated 205 kg/year. Other wastewater related concerns that the system would resolve include:

Osoyoos Lake

MATCH LINE SEE FIGURE No

LACEY POINT

LIFT STATION PUMPS TO Ø300 TRUNK

TYPICAL PROPOSED GRAVITY SEWER

APPROX. LOC. SOLID WELL

Ø300 GRAVITY TRUNK SEWER TO TOWN SYSTEM

Ø150 FORCEMAIN COLLECTOR

104th AVE AREA

Ø150 GRAVITY SEWER MAIN

SEWAGE LIFT STATION

PUMPED SERVICES

C.P.R. RIGHT-OF-WAY

HWM FROM LAKE ZONE

OSOYOOS MUNICIPAL BOUNDARY

TOWN OF OSOYOOS SANITARY SEWER MAINS

SOUTHERN TRANS PROVIL

Scale 1:5000

Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A,C & D

Figure II.1
North West Sector
Osoyoos Rural Area
Electoral Area A

Osoyoos Lake

INKANEEP LODGE

38 VH

FORCEMAIN FROM LIFT STATION

Ø150 FORCEMAIN COLLECTOR

ROBERTS POINT

SEWAGE PUMPING STATION

37 VH

Ø150 GRAVITY SEWER MAIN

TYPICAL MANHOLE

Ø150 FORCEMAIN FROM TOWN OF OSOYOOS

MATCH LINE SEE FIGURE No. 12

MATCH LINE SEE FIGURE No. 10

L 435 L 436 L 436 A L 435 A L 437 L 438 L 439 L 440 L 441 L 442 L 443 L 444 L 459 L 460 L 461 L 462 L 463 L 464 L 465 L 466 L 467 L 468 L 449 L 450 L 451 L 452 L 453 L 454 L 455 L 456 L 458 L 469

PLAN C6506

PLAN H-175

PLAN 10495

PLAN 37422

PLAN E1684

PLAN 7269

PLAN 7184

PLAN 2135

PLAN B5895

PLAN 16439

PLAN 11604

PLAN 15853

C.P.R. RIGHT-OF-WAY

BLK. B

36 M

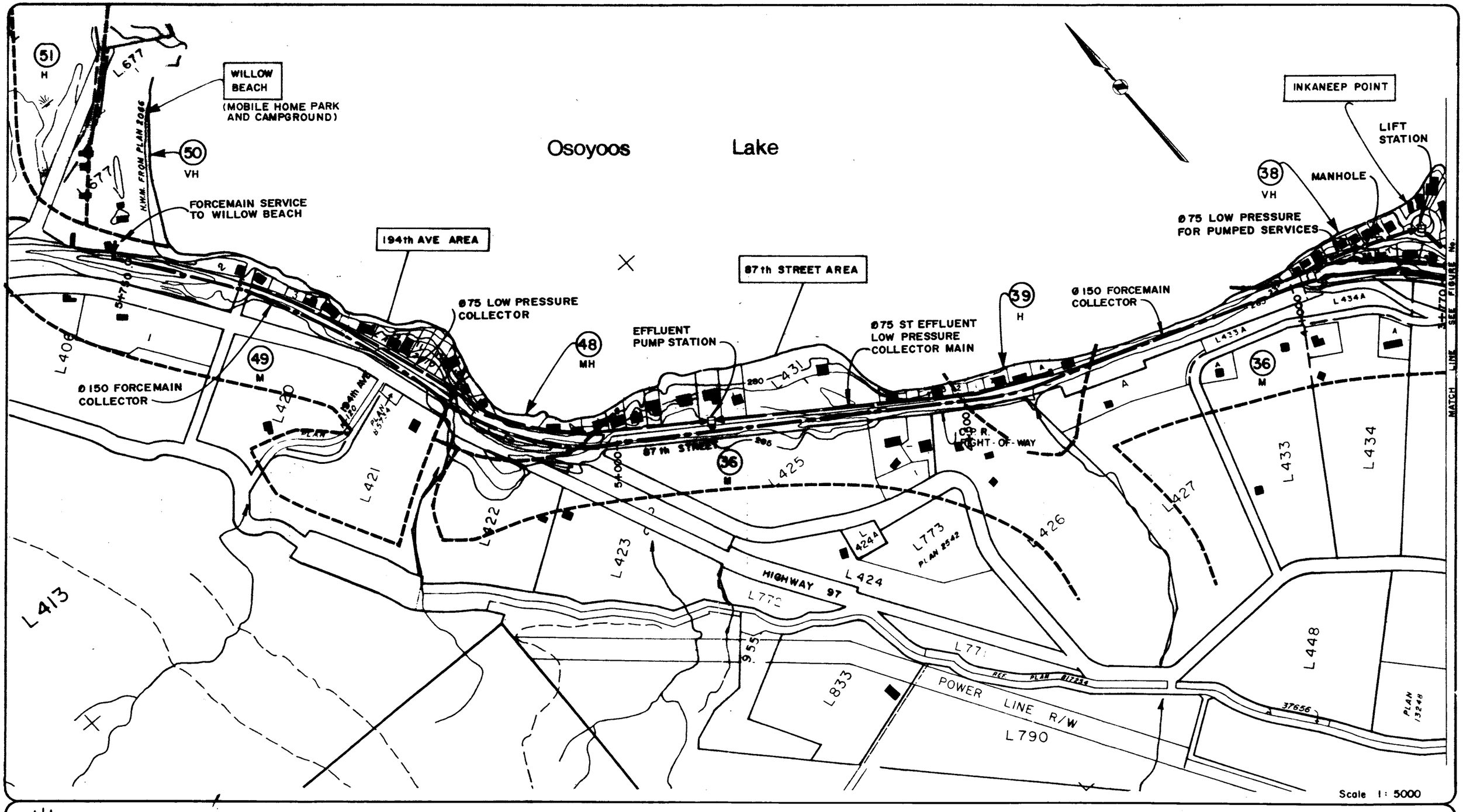
41 ML

Scale 1 : 5000

Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A, C & D

Figure 11.2
Osoyoos Rural Area
Electoral Area A
North West Sector



Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A, C & D

Figure 11.3
Osoyoos Rural Area
Electoral Area A
North West Sector

- lots being too small for an approved on-site sewerage system and water well
- lots not being "deep" enough to enable compliance with standard 30 m setback from lakeshore as specified by the Health Regulations
- separation distances often being inadequate for an individual well from disposal systems on neighbour's property.

An assessment of individual lot size in the Northwest Sector concluded that about 8% of lots using both individual on-site sewage disposal systems and water wells comply with the Regional District minimum parcel size area requirement of 1672 m^2 (18000 $ft.^2$). Approximately 72% of lots have an area of less than 836 m^2 (9000 $ft.^2$) which is one half of the specified minimum parcel size of 1672 m^2.

The overall capital cost for the Northwest Sector sewerage system is estimated to be $955,000, including collection components in all of the proposed system service areas. The system construction may be phased from a south to north direction beginning at Lacey Point immediately adjacent to the Town of Osoyoos.

The Regional District should undertake formal discussions with the Province and/or CP Rail to obtain recognition that the old CP Railway right of way will be available for future construction of the wastewater collection system as proposed. The alignment and grade of the railway right of way is ideal for the sewerage system. If the right of way is not available for the collection main, capital cost estimates for the system would increase significantly. The importance of the CP Railway right of way for the collection system cannot be over-emphasized.

6.2.2 Tugulnuit Lakeshore Area

Within Tugulnuit Lake Sector located adjacent and north of the Village of Oliver, lakeshore development has been identified as a priority area for service by an alternative sewerage system. Septic tanks and tile field systems servicing residences and commercial development along the Tugulnuit lakeshore are sited in Very High and High

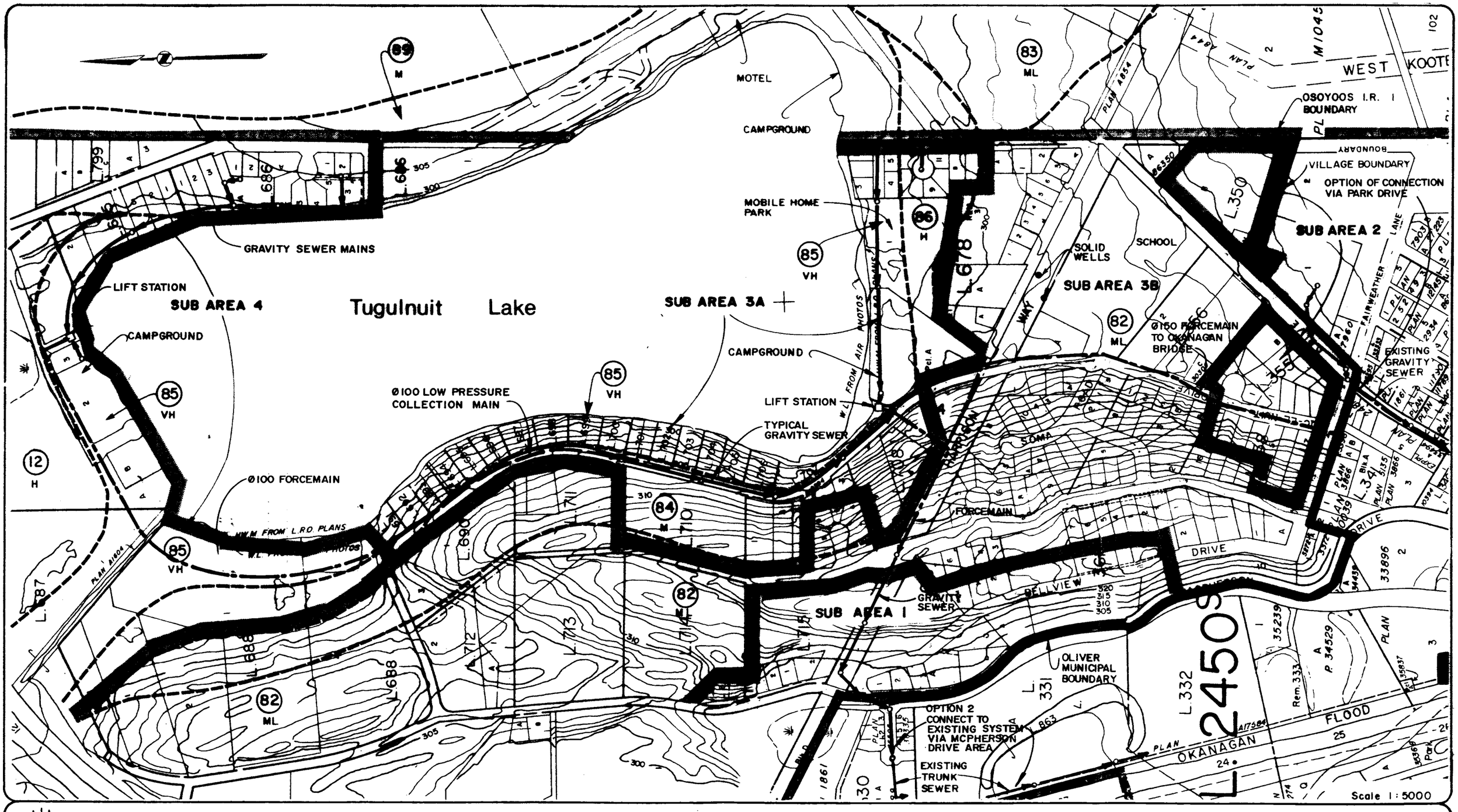
phosphorus transmission areas and contribute an estimated 197.5 kg/year of phosphorus to the Lake. Potential adverse impact of septic tank and tile field systems on individual and community water supply wells in the area is also a concern.

The system, illustrated conceptually in Figure 11.4, includes gravity collection mains and lift stations at both the north and south ends of the Lake. Development on the west side of the Lake is proposed to be serviced by a low pressure collection main requiring each homeowner to install pumping facilities for septic tank effluent. Wastewater is proposed to be collected to a lift station at the south end of Tugulnuit Lake and pumped to the Village of Oliver sewerage system. Connection alternatives via Park Drive and via McPherson Drive were evaluated with the McPherson Drive option preferred because of lower capital costs. The Park Drive alignment may warrant further consideration if sewer extensions to other areas in the Tugulnuit Lake Sector are also constructed.

The sewerage system proposed for the Tugulnuit lakeshore does not include residential and commercial development on the Osoyoos Indian Reserve sited on Very High and High phosphorus transmission areas. Ideally, the proposed lakeshore sewerage system should service development at the south end of the Lake on the Indian Reserve. Discussions with the Osoyoos Indian Band Council about the general objectives of the Waste Management Plan and the conceptual plan to provide a sewerage system on the Tugulnuit lakeshore are recommended.

The Tugulnuit lakeshore sewerage system, as proposed, would service a total population approaching 250 and recreation related commercial development. Overall project costs are estimated to be $611,000, which includes a $140,000 allowance for capacity improvements at the Oliver sewage treatment plant. Additional evaluation is required to confirm the validity of the $140,000 allowance for improvements to the Oliver treatment and disposal systems.

The proposed sewerage system results decreases the phosphorus loadings in the Tugulnuit Lake Sector from 277.4 kg/year to 79.9 kg/year, a



Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A,C & D

Collection System with connection to Village of Oliver system

Figure 11.4
Tugulnuit Lake Area
Oliver Rural Area
Electoral Area C

VH
50mm EFFLUENT COLLECTION

75mm LOW PRESSURE EFFLUENT COLLECTION
-OPTION 1 FLOWS NORTH
-OPTION 2 FLOWS SOUTH

OPTION 1
CONNECT TO VILLAGE OF OLIVER

INDUSTRIAL PARK

VILLAGE SEWAGE TREATMENT PLANT

EXISTING GRAVITY SEWER

SEE FIGURE 7.2 FOR CONTINUATION

SEE FIGURE NO.

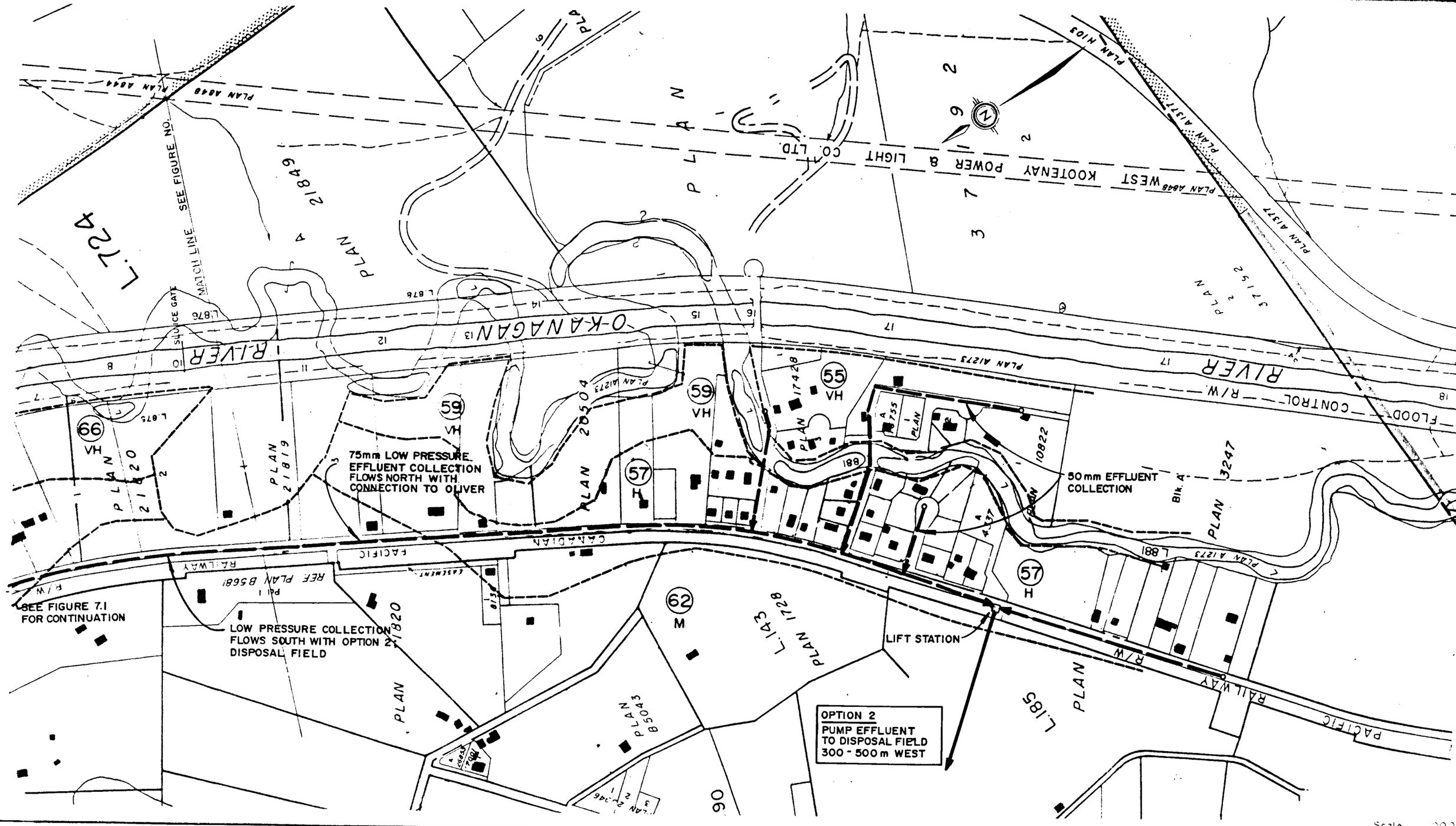
MATCH LINE

Scale 1:5000

Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A, C & D

Figure 11.5
Sawmill Road Area
Oliver Rural Area
Electoral Area C



Regional District of Okanagan - Similkameen

Waste Management Plan
Electoral Areas A, C & D

Figure **11.6**
Sawmill Road Area
Oliver Rural Area
Electoral Area C

reduction of 197.5 kg/year. Although the sewerage system, as proposed, only services 23% of the population in the Tugulnuit Lake Sector, the phosphorus loading reduction achieved approaches 72% of the total for the sector.

6.2.3 Sawmill Road Area

The Sawmill Road Area, located adjacent to the Okanagan River south of the Village of Oliver, has been identified as a priority area for service by a community sewer system. The entire Sawmill Road Area has been mapped by the Ministry of Environment as Very High and High phosphorus transmission zones. Septic tank and tile field systems servicing the estimated population of 396 in the area contribute an estimated 190.7 kg of phosphorus per year to the Okanagan River. On an overall sector basis, existing septic tank and disposal field systems achieve a 52% phosphorus removal efficiency.

A low pressure septic tank effluent collection system is proposed which would service a population of 207 in the Sawmill Road Area. The proposed sewer system would connect to the Village of Oliver system at the southern boundary of the Village as illustrated in Figures 11.5 and 11.6. The provision of a community sewer system in the Sawmill Road Area will result in an estimated phosphorus loading reduction of 143.7 kg/year and will reduce potential concerns relating to possible contamination of individual wells in the area by on-site sewage disposal systems. The estimated capital cost of the community sewerage system in the Sawmill Road Area is $360,000 which includes a $110,000 provision for capacity improvements at the Oliver treatment plant.

About 33% of the land parcels in the Sawmill Road Area are over 0.4 ha (1 acre) in size and are potentially subdividable, assuming A.L.R. and floodplain constraints can be addressed. The construction of a community sewer system in the area may increase the potential for development in the area. Concerns were expressed at agency workshop and public meetings about the sewer system negatively impacting the rural character of the area. The financial feasibility of the sewer system is significantly improved if additional development is permitted in the Sawmill Road Area.

The implications of the community sewer system on land use and increased residential development in the Sawmill Road Area will have to be evaluated by the Regional District as a component of future detailed sewerage system feasibility assessment studies.

6.3 Group Two (Second Priority) Alternative Systems

Alternatives designated as lower priority systems include sewerage systems for:

Second Priority	Lowest Priority
South Vaseux Lake Area	Gallagher Lake Area
East Vaseux Lake Area	Kaleden Lakeshore
Southeast Osoyoos Area	Skaha Estates
	Southwest Osoyoos Area

Recommendations related to these sewerage system proposals are summarized as follows:

(1) Possible land exclusions from the Agricultural Land Commission along the Osoyoos lakeshore in the Southeast Sector may significantly alter the priority rating for this sewerage system by increasing the potential number of benefiting parcels and potentially increasing phosphorus loadings and other wastewater related concerns. Refinements of the system feasibility assessment and user cost calculations are recommended once the ALR boundary adjustments and land use objectives are finalized.

(2) The potential benefits of community sewerage systems for the East and South Vaseux Lake areas in terms of improved water quality in Vaseux Lake is uncertain. It is recommended that the Regional District request the Ministry of Environment to undertake lake water quality assessment studies to confirm whether any definable water quality improvement will be achieved by constructing the system.

(3) Significant population growth potential exists in the Gallagher Lake area which may increase the priority rating for a community sewerage system. Recommendations related to a sewerage system at Gallagher Lake are:

- Regional District should request that the Ministry of Environment undertake detailed water quality studies of Gallagher Lake to quantify the potential impact from existing and future septic tank and disposal systems in the area.
- evaluations should be undertaken to define and ultimately acquire a suitable treatment and disposal site in the area. As development occurs in the area, site alternatives will be reduced and acquisition costs are likely to increase.
- trunk sewer and forcemain alignments conceptually illustrated in the Waste Management Plan should be recognized and easements obtained where necessary as development proposals are received.
- the feasibility of establishing a development cost charge bylaw for the sewerage system should be evaluated. While development could be permitted to use septic tank and field systems, the development cost charges would accumulate to assist in the system construction at some future date.

(4) Community sewerage system conceptual designs are presented in the Waste Management Plan for the Kaleden Lakeshore, Skaha Estates and Southwest Osoyoos areas. The Regional District should ensure that rights-of-way for future trunk sewer alignments are preserved when considering land development or subdivision proposals.

SECTION 7: WASTE MANAGEMENT IMPLEMENTATION STRATEGY

7.1 Alternative System Implementation

With respect to alternative systems described in the Waste Management Plan, the following recommendations are presented for consideration of the Regional District.

(1) The general priorities for system need and construction as defined in Table 6.1 be accepted. On this basis, highest priority systems include the Northwest Osoyoos, Tugulnuit Lakeshore and Sawmill Road (south of Oliver) areas. Second priority areas include South Vaseux Lake, East Vaseux Lake and Osoyoos Southeast areas.

(2) The Waste Management Plan does not present specific schedules for implementation of the recommended community sewerage systems. The Regional District should establish a consultative procedure with the Ministry of Environment and the Okanagan Water Quality Project, with the objective of defining an implementation schedule for the alternative systems as proposed. The conclusion of other Waste Management Plans being undertaken in the Okanagan Basin will be a factor in deriving a basin-wide alternative system implementation schedule which will include Electoral Areas A, C, and D of the R.D.O.S.

(3) Capital cost assistance which will be provided by the Provincial Government and the Okanagan Basin Water Board is uncertain. The Regional District should endeavour to obtain firm commitments from senior levels of government and the Okanagan Basin Water Board on the level of capital cost assistance to be made available for community sewer system construction. In all cases, the net end cost to properties benefiting from the systems will be a major factor in final feasibility assessments. Calculations of the net costs to benefiting properties cannot be finalized without commitments on levels of capital cost assistance.

7.2 Waste Management Policy Implementation

The Stage Two Report (Section 12) of the Waste Management Plan describes general waste management policies which primarily apply to areas likely to remain serviced by individual septic tank and tile field systems in the long term future. These policies would also apply to areas where a community sewerage system would not be considered in the foreseeable future. The basic objectives of the policy statements are:

- where possible, achieve phosphorus loading reductions from individual systems presently on Very High, High or Moderately High polygons.
- reduce the possibility of increased phosphorus loadings in the rural areas by reducing the potential of development on Moderately High or higher rated polygons.
- enhance the operation and performance of individual septic tank and tile field systems throughout the three Electoral Areas in general.

Specific policies suggested for consideration by the Regional District are summarized as follows:

(1) INCREASE MINIMUM PARCEL SIZE IN DEFINED ENVIRONMENTAL CONTROL ZONES

The minimum parcel size of 836 m^2 (9000 $ft.^2$) where community water system service is available and individual on-site sewerage system is used, is considered to be too small to provide a reserve area for system replacement (if necessary) and meet phosphorus removal objectives. It is recommended that the Regional District adopt a minimum parcel size of 1672 m^2 (18000 $ft.^2$) for houses to be serviced by individual sewage disposal systems and where the proposed lot is within an area having a Very High, High or Moderately High phosphorus transmission classification as shown on Ministry of Environment Phosphorus Transmission Maps.
Implementation of this policy will require amendments first to Community Plans throughout the Waste Management Plan area and secondly to zoning bylaws.

(2) ADOPT ALTERNATIVE ON-SITE SYSTEM DESIGN CRITERIA

Individual on-site disposal system design objectives are being prepared by the Ministries of Health and Environment. The revised standards are a "step beyond" the present Ministry of Health requirements and define design criteria to maximize phosphorus removal. It is recommended that the Regional District support in principle the revised on-site disposal system guidelines for phosphorus removal currently being formulated by the Ministries of Health and Environment. As the standards are finalized, the Regional District should confirm the general applicability of the standards and ensure that a degree of flexibility and regulatory agency discretion applies to present homes and vacant lots within the to-be-defined environmental control zone. Subject to review of the standards upon completion by the Provincial Government, it is recommended that the R.D.O.S. formally accept the standards. In the interim, it is suggested that the R.D.O.S. Board reaffirm their prior resolutions supporting the concept of disposal system design standards which recognize phosphorus removal objectives.

(3) ALTERNATIVE SYSTEM EVALUATION STUDIES AT THE TIME OF SUBDIVISION

Individual septic tank and tile field systems in Electoral Areas A, C, and D generally function satisfactorily. The objective of this policy is to ensure that the record of satisfactory performance is maintained by requiring a thorough review of all wastewater disposal alternatives at the time of subdivision. In the future, the majority of residential development is likely to occur on hillside areas in the southern Okanagan Valley where there may be a significantly greater number of factors, including low permeability soil types, bedrock, topography, etc. influencing the satisfactory long term performance of individual disposal systems. Accordingly, this policy would make a thorough analysis of options a condition of subdivision approval. Implementation of this policy will require a resolution of the Regional Board and amendments to Subdivision Control Bylaws.

(4) WASTE MANAGEMENT OBJECTIVES FOR AGRICULTURAL OPERATIONS

Agricultural operations represent a significant potential source of phosphorus in Electoral Areas A, C, and D. This policy would involve recognition of the Ministry of Agriculture Environmental Guidelines in sections of Community Planning documents relating to Agricultural Land Use. It is not intended that the Regional District would become actively involved in the regulation and inspection of agricultural operations. Until Section 977 of the Municipal Act relating to intensive agriculture is revised and accepted by the Provincial Government, the Regional District has no jurisdictional authority to consider this proposed policy statement.

(5) SEPTIC TANK PUMPOUT COORDINATION and OPERATIONAL DATA COMPILATION

Suggestions were made during review meetings and workshop sessions that the Regional District should consider expanding their functions to include pump-out of individual septic tanks. Through a taxation levy, the Regional District would obtain sufficient funds such that each homeowner having a septic tank would receive a pump-out service at three year intervals. Implementation of the policy is not recommended in the short term future recognizing potential adverse public opinion and the lack of staff and resources of the Regional District to administer the program. A referral system with the Ministry of Health is recommended so that the Regional District can establish a data base of septic tank malfunctions-failures. The information will be of benefit to future amendments of the Plan and can be set up by expanding referral procedures currently in place with the Ministry of Health.