

DEPARTMENT OF INDIAN AFFAIRS
CANADA

OFFICE OF
INDIAN AGENT

155-0-5
Cranbrook, B.C.,
April 1, 1931.

11/406.



Sir,

I beg to enclose herewith the Quarterly Return for the Kootenay Indian Residential School for the quarter ended March 31, 1931, which I trust will be found in order.

I also beg to enclose a letter from the Reverend Principal and quotations furnished by Messrs F. Parks & Company of Cranbrook of the cost of new equipment for the School laundry. These I would respectfully recommend for consideration by the Department.

The above is respectfully submitted.

I have the honour to be,
Sir,
Your obedient servant,

F. S. Ryckman
F. S. Ryckman,
Indian Agent.

The Secretary,
Department of Indian Affairs,
Ottawa.

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Ottawa, April 13, 1931.

Sir:

I have to acknowledge your 11/406 of the first instant, with enclosure from the Rev. Principal of the Kootenay Indian Residential School, with reference to new laundry equipment. In reply I have to inform you it is regretted that there are no funds at the present time for this improvement.

Your obedient servant,

A. F. Mackenzie
A. F. Mackenzie,
Secretary.

F. S. Ryckman
F. S. Ryckman, Esq.,
Indian Agent,
Cranbrook, B. C.

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No. 1498.



DEPARTMENT OF THE INTERIOR, CANADA
DOMINION WATER POWER AND RECLAMATION SERVICE

REPORT
on
WATER SUPPLY
for
ST. EUGENE SCHOOL
near Cranbrook, B.C.
by
W. C. Warren.

C. E. Webb, Esq.,
District Chief Engineer,
Dom. Water Power & Hydrometric Bureau,
739 Hastings Street, West,
Vancouver, B.C.

Vancouver, B.C.
March 4, 1931.

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Vancouver, B.C.
March 4, 1931.

Sir: Re - St.Eugene School (near Cranbrook)
 Water Supply.

Following your instructions, investigations of a suitable supply for St.Eugene School were continued along the lines suggested in my report number 254, dated June 25, 1930.

SYNOPSIS OF PREVIOUS REPORT

St.Mary's river and St.Joseph's creek are the most readily available sources of supply. St.Joseph's creek, however, is very badly contaminated throughout the year.

The St.Mary's river water was found, after investigations extending over a year, to be contaminated for about one-half of the year, with the probability of an increase in the degree of pollution in the future. It was concluded that only in the event of failure to secure a suitable supply from underground sources should the St.Mary's be developed.

SUBSEQUENT DEVELOPMENTS

Since the submission of that report an underground supply has been located on the school property at an approximate distance of three-quarters of a mile from the school buildings. While it may have been possible to secure a similar supply in closer proximity to the school, the possibility of contamination through seepage from St.Joseph's creek had to be considered.

C.E.Webb, Esq.,
District Chief Engineer,
Dom. Water Power & Hydrometric Bureau,
739 Hastings Street, West,
Vancouver, B.C.

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This prospective source of supply provides a flow of approximately 25 g.p.m., sufficient for all domestic requirements. Tests of the water bacteriologically and chemically found it suitable in all respects for domestic use.

The springs rise at a lower elevation than where the school is situated and although it is possible to provide a gravity flow to within three hundred feet of the school, pumping would be necessary to service the school.

FIRE PROTECTION

This source of supply can not readily be developed to provide for fire protection for the following reasons. The delivery from the springs is so small that storage to the extent of approximately 60,000 gallons would be necessary to provide for minimum requirements, which for such an institution should be a rate of flow of 500 gal.per minute for a period of 2 hours. Such a large amount of storage is not very desirable for domestic purposes, especially so as the average rate of use does not exceed 4000 gals.per day, and as all water in this area has a slight alkalinity, short storage periods are most desirable.

In view of the limited rate of flow of these springs investigations were extended to a consideration of procuring an additional supply for fire protection from either St. Joseph's creek by gravity, or from the St. Mary's river by an auxiliary pumping plant. The system to be adopted for this purpose will,

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to a large extent, control the design of the system for supplying domestic requirements.

DEVELOPMENT FOR DOMESTIC WATER SUPPLY

Neglecting the problem of fire protection for the moment a suitable supply of water for domestic use may be developed by making use of the present plant at an estimated outlay of \$5660.00.

In this development the water would be conveyed from the springs by pipe line to a storage reservoir of 5000 gals. capacity at point on the suction line of the present system from which it would be pumped as required. The cost of a new engine is included as the present one is worn out and is not of a type which may economically be rebuilt.

This system would work satisfactorily for some years, or until such time as the pneumatic tank or the suction line would have to be replaced. As these are buried at an average depth of 13 feet below ground surface, it is not possible to determine with any degree of accuracy their present condition. The least expenditure, however, would be incurred by adopting this system.

Estimate of cost of proposed development is attached marked Appendix I. Plan of development and profile of pipe line are included under Appendix II.

DEVELOPMENT OF GRAVITY SUPPLY FROM ST. JOSEPH'S CREEK FOR FIRE PROTECTION

The cost of developing a gravity supply from St. Joseph's Creek for fire protection in conjunction with the system for domestic supply from the springs has been estimated at \$27,527.00.

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The present equipment consisting of pneumatic tanks, compressor, etc., would be made use of for the purpose of supplying domestic needs, the same system being adopted as is at present in use. Suitable housing, however, would be provided for this equipment.

The system for fire protection would consist of a reservoir in the creek bed of approximately 100,000 gal. capacity, and a pipe line slightly over a mile in length with a head of 135 feet, which would deliver 500 g.p.m. continuously at a hydrant pressure of 45 lbs.

The reservoir is necessary, although the flow of the creek does not fall below 500 g.p.m., the rate required for fire protection, to avoid possibility of interference with other users during the irrigation season.

Two standard two-way outside hydrants are provided with suitable shelters, hose and equipment, and in addition one inside hydrant with hose and hose rack would be installed on each floor of the school building.

Included in this estimate is an amount of \$1200.00 for development of power from the pipe line during the non-irrigation period. The purpose of the power installation is for pumping the domestic supply, and it would in addition provide for school lighting for the greater part of the year.

This power development could only be made possible by the adoption of the gravity system, as otherwise it would be uneconomical to install.

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Plan and profiles of pipe lines as well as detailed estimate of cost are attached hereto, marked Appendix II.

There is, however an impediment to the immediate development of this project owing to the existence of a record for the development of power. While there are also prior rights for irrigation purposes, these are all held by the school or for the benefit of the school.

Negotiations have been instituted with the holder of this power record for the relinquishment to the school of prior rights to sufficient water to fill the requirements for fire protection. Should it not be possible to affect such an arrangement, the projected development would be undesirable.

DEVELOPMENT OF SUPPLY FROM ST.MARY'S RIVER FOR FIRE PROTECTION PURPOSES.

The cost of developing a system capable of providing for fire protection requirements from St.Mary's river together with the system for domestic use from the springs is estimated at \$21,110.00.

This development would provide for the accumulation of 10,000 gals. of spring water at a low elevation to be pumped to a higher elevation for a gravity supply to the school. Storage at the reservoir would be about 15,000 gals., sufficient for daily requirements and a reserve available for emergency. To provide for fire protection an additional pump of 500 g.p.w. capacity would be installed with its intake in the St.Mary's river.

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The present pump would be used for supplying domestic requirements. Duplicate pipe lines would be laid as far as the school to avoid the possibility of the domestic supply being contaminated by that from the St. Mary's river.

The pump house to shelter both sets of equipment would be located one-quarter mile from the school.

Plan, profile and estimate of cost are attached, marked Appendix III.

COMPARISON OF SYSTEMS

In submitting these two proposals for consideration an attempt was made to maintain as nearly as possible, the same standard for each service.

This has been maintained in the domestic supply but in the case of the supply for fire protection, the service would not be quite on the same basis of comparison. Whereas the gravity supply could be maintained indefinitely at full capacity, the pressure is limited to 45 lbs. at the hydrant. The service is, however, available instantly and would fill all requirements for fire protection, except possibly in the case of a high wind.

In the case of the pumping plant, it is of necessity located at a considerable distance from the school. To offset this, however, storage has been arranged to provide for the time lost in placing the fire pump in operation. The pumping plant would have an equal rate of flow to that of the gravity system but would deliver at 60 lbs. hydrant pressure when in operation.

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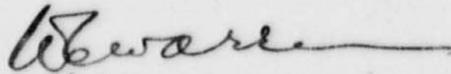
It will be noted that without considering capital cost and depreciation that the gravity system would show a saving of about \$400.00 per year to the institution over the pumping plant installation, due to its ability to take care of the pumping and electric light load for from 8 to 9 months in the year.

A comparative statement of carrying charges, depreciation and operating expenses is attached, marked Appendix IV.

CONCLUSIONS

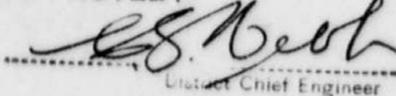
For such an institution where adult assistance is limited, the absence of one individual required to operate a pump in the event of a fire would be a considerable handicap. In all, it is considered that the gravity system would prove the more suitable.

Your obedient servant,



W. C. Warren,
Assistant Hydraulic Engineer.

APPROVED:-


District Chief Engineer

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APPENDIX I.

Domestic Water Supply Only.

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APPENDIX I

St. Eugene School
Estimate of Cost
Domestic Water Supply System Only.

Intake Works	\$ 221.25
Fencing	40.00
3000' 4" pipe @ 1.11	3330.00
Excavation and backfilling 30 cu.yds.	60.00
5000 gal. storage tank	725.00
Fittings	60.00
Connections, etc.	35.00
New pumping engine	<u>675.00</u>
	\$5146.25
Supervision and Contingencies	<u>513.75</u>
	<u>\$5660.00</u>

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APPENDIX II

Domestic Water Supply Together With Gravity
Supply from St. Joseph's Creek
for Fire Protection.

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APPENDIX II

St. Eugene School

Domestic Water Supply with Gravity Supply
from St. Joseph's Creek for Fire Protection.

Domestic Supply

Intake works at springs	\$ 221.25
Pump house and shelter for storage tanks	2430.00
Pump house equipment installed	1620.00
Recovery and repairs of pneumatic tanks	160.00
Pipe line for domestic supply	4589.85

Gravity System for Fire Protection

Storage reservoir	1582.35
Pipe line (steel)	11839.10
Right-of-way	250.00

Equipment for Fire Protection

Inside \$ 324.01	
Outside <u>798.10</u>	1122.11

Electrical Development	<u>1210.00</u>
	\$ 25024.66
Supervision and Contingencies 10%	<u>2502.34</u>
	<u><u>\$ 27527.00</u></u>

For itemized costs see attached sheets.

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Domestic Supply

Intake

2	4'x4'x4' concrete well covers	@ 62.00	\$ 124.00
1	screen section 4'x4' with bottom and cover		57.00
1	3'x3' screen		21.00
1	4" valve		<u>19.25</u>
			\$ 221.25

Pipe Line - 4135' long.

Comparison of cost of different types of pipe
(installed cost)

C.I.	4135' 4" C.I. pipe	@ 1.37	5664.95
Steel	4135' steel pipe 4"	@ 1.11	4589.85
W.S.	4135' 4" W.S. pipe	@ 1.07	4424.45

Pump House

Excavation - 140 yds.	@ .75	105.00
Construction of house		
55 cu.yds. reinforced concrete	@ 30.00	1650.00
Floor - 480 sq.ft.	@ .15	72.00
Floor forms, etc., for machinery		120.00
Roof		225.00
Drain - 80'	@ 1.50	120.00
Backfilling - 100 yds.	@ .20	20.00

Extras

118.00
\$ 2430.00

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Pump House Equipment
Domestic Water Supply from Spring

\$ 875.00

Engine and Compressor

Tank Water Pipes

2	4" gate valves	@ 14.25	\$ 28.50	
2	2" float valves	50.00	100.00	
6	2" gate valves	4.75	28.50	
4	2" check valves	6.00	24.00	
1	4" to 2" reducer	1.15	1.15	
20'	4" W.I. pipe galv.	87.66	17.53	
1	4"x2"x2" tee	1.95	1.95	
4	2" unions	1.30	5.20	
10	2" ells	.32	3.20	
3	2" tees	.35	1.05	
60'	2" G.I. pipe	19.71	11.83	
	Assorted 2" nipples	10.00	<u>10.00</u>	232.91

Tank Air Pipes

Air line 1".

2	1" globe valves	@ 3.00	\$ 6.00	
2	1" check valves	3.00	6.00	
6	1" ells	.12	.72	
2	1" tees	.14	.28	
4	1" unions R.R.	.55	2.20	
2	1" air press. relief valves	10.75	21.50	
2	" check valves	2.35	4.70	
2	" crosses	.45	.90	
2	" unions	.45	.90	
2	" globe valves	1.90	3.80	
6	" ells	.05	.30	
6	" tees	.06	.36	
4	" unions	.30	1.20	
2	"xl2" water gauge	4.75	9.50	
2	5" pressure gauges	8.00	16.00	
2	automatic unloaders, low press.	8.50	17.00	
60'	1" G.I.P.	12.18	7.31	
	Assorted nipples	5.00	<u>5.00</u>	103.67

1	2" s. & w.	@ 2.34	\$ 2.34	
3	1" globe valves	1.50	4.50	
2	1" tees	.12	.24	
5	1" ells	.12	.60	
2	1" unions	.35	.70	
50'	1" G.I.P.	8.53	4.26	
	Nipples	2.50	2.50	15.14

Extras				75.00
Freight on materials				25.00
Installation				<u>293.28</u>
				<u>\$ 1620.00</u>

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Pump House Equipment
Domestic Water Supply from Spring
-- Continued.

Recovering and Installing Storage Tanks

Excavation and disconnecting tank	\$ 75.00
Cleaning and painting 2 tanks	60.00
Installing in pump house	<u>25.00</u>
	<u>\$ 160.00</u>

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Itemized Costs of Different
Parts of Installation

STORAGE RESERVOIR ON ST. JOSEPH'S CREEK

Excavation - 600 cu.yds.	@ .65	\$ 390.00	
Dam 15 cu.yds. ex.	5.50	82.50	
" 12 " " concrete	32.00	384.00	
Retaining wall 11 cu.yds.			
concrete	30.00	330.00	
dry rock -			
3 cords	12.50	37.50	
Screen box		55.00	
Screens - 2	21.00	42.00	
Cleanout post, frame and gate		26.00	
Fencing - 20 rods	2.50	50.00	
 <u>Fittings</u>			
1 8" flanged pipe 3'		18.00	
1 8" gate valve, flanged		60.25	
1 gate stem, 7'		6.00	
1 8"x2" flanged tee		22.40	
1 8' length 2" pipe		2.40	
1 2" ret. bend		1.30	
Extras		<u>75.00</u>	1582.35

PIPE LINE Comparative costs of various types of pipe - pipe in place.

Cast Iron Pipe

5750'	8" C.I.	@ 2.20	12650.00	
410'	6" C.I.	@ 1.75	717.50	
40'	4" C.I.	@ 1.37	<u>54.80</u>	13422.30

Steel Pipe - Wrapped and coated

5750'	8" steel	@ 1.95	11212.50	
410'	6" "	@ 1.42	582.20	
40'	4" "	@ 1.11	<u>44.40</u>	11839.10

Wood Stave Pipe - Wrapped and coated

5750'	8" W.S.	@ 1.48	8510.00	
410'	6" W.S.	@ 1.30	533.00	
40'	4" W.S.	@ 1.07	<u>42.80</u>	9085.80

Right-of-Way for Pipe Line 250.00

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Itemized Costs of Different Parts of Installation - Cont.

FIRE PROTECTION CONNECTIONS AND EQUIPMENT

Inside School - 3 Floors - One outlet on each

100'	2 1/2" pipe	@ 44.11	\$ 44.11	
4	2 1/2" ells	.60	2.40	
2	2 1/2" tees	.75	1.50	
2	2 1/2"x2" ells	.60	1.20	
8	Floor and ceiling plates	.10	.80	
	Hangers		7.25	
3	Hydrant valves, 2"		25.50	
3	Hose racks	4.00	12.00	
200'	2" hose	30.75	61.50	
3	2"x12" plain nozzles	2.25	6.75	
	Freight on material		16.00	
	Installation		<u>145.00</u>	324.01

Outside Service - 2 Hydrants and Shelters

3	Fittings (8x8x6 tee) (8x8x4 " (8x6x6 Y	in place	40.40	
2	std. hydrants 6' bury	@ 75.00	150.00	
2	gate valves 2 1/2 hyd.	17.10	34.20	
2	hydrant houses	65.00	130.00	
500'	hose, underwriter's std.	.75	375.00	
2	nozzles		22.50	
4	hose wrenches		3.00	
	Freight on material		18.00	
	Installation		<u>25.00</u>	<u>798.10</u>
				\$ <u>1122.11</u>

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ELECTRICAL DEVELOPMENT FROM ST. JOSEPH'S CREEK PIPE LINE

15" Pelton with needle nozzle			\$ 335.00	
1 3 k.w. generator		\$ 245.00		
1 Tex rope drive		63.00		
Switchboard		<u>85.00</u>	<u>393.00</u>	728.00
Piping and connection				25.00
Conduit	60	1½"	@ .27½	16.50
	4	bends	2.15	8.60
	50'	¾"	.11	5.50
4 poles 30'			@ .25 per lin.ft.	30.00
4 X arms std. 4 pin				5.00
900' #4 solid W.P. wire 148#			@ 30.00	44.40
180' #4 strand " "		31#	36.00	11.16
900' #6 solid W.P.		91#	30.00	27.30
180' #10 strand W.P.		10#	36.00	3.60
100' #4 duplex			17.94	1.80
12 Insulators #19				2.40
20 Knobs and screws		3½#	.11	2.20
3 2" Type A conduit fittings			.80	2.40
1 2" Type B " "			1.04	1.04
4 4-hole porcelain covers			.48	1.92
Outlet, switches, etc., for light, installed				12.00
2 Single D.C. lightning arrestors				21.00
<u>Labour</u>				
Installing machinery			35.00	
Switchboard			12.00	
Conduit			14.00	
Poles, 4 @ 2.00 incl. X arm, etc.			8.00	
Wiring, 2 services			24.00	
Pole line			<u>4.00</u>	97.00
Freight and handling charges				41.00
Extras				50.00
Supervision and Contingencies				<u>72.18</u>
				<u>\$ 1210.00</u>

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INDIAN VILLAGE

LOT. 1 G.I.

ST. JOSEPH'S CREEK

27

34

ST JOSEPH'S CREEK

38

ST. MARY'S
RIVER

LOT 497

405

24.70

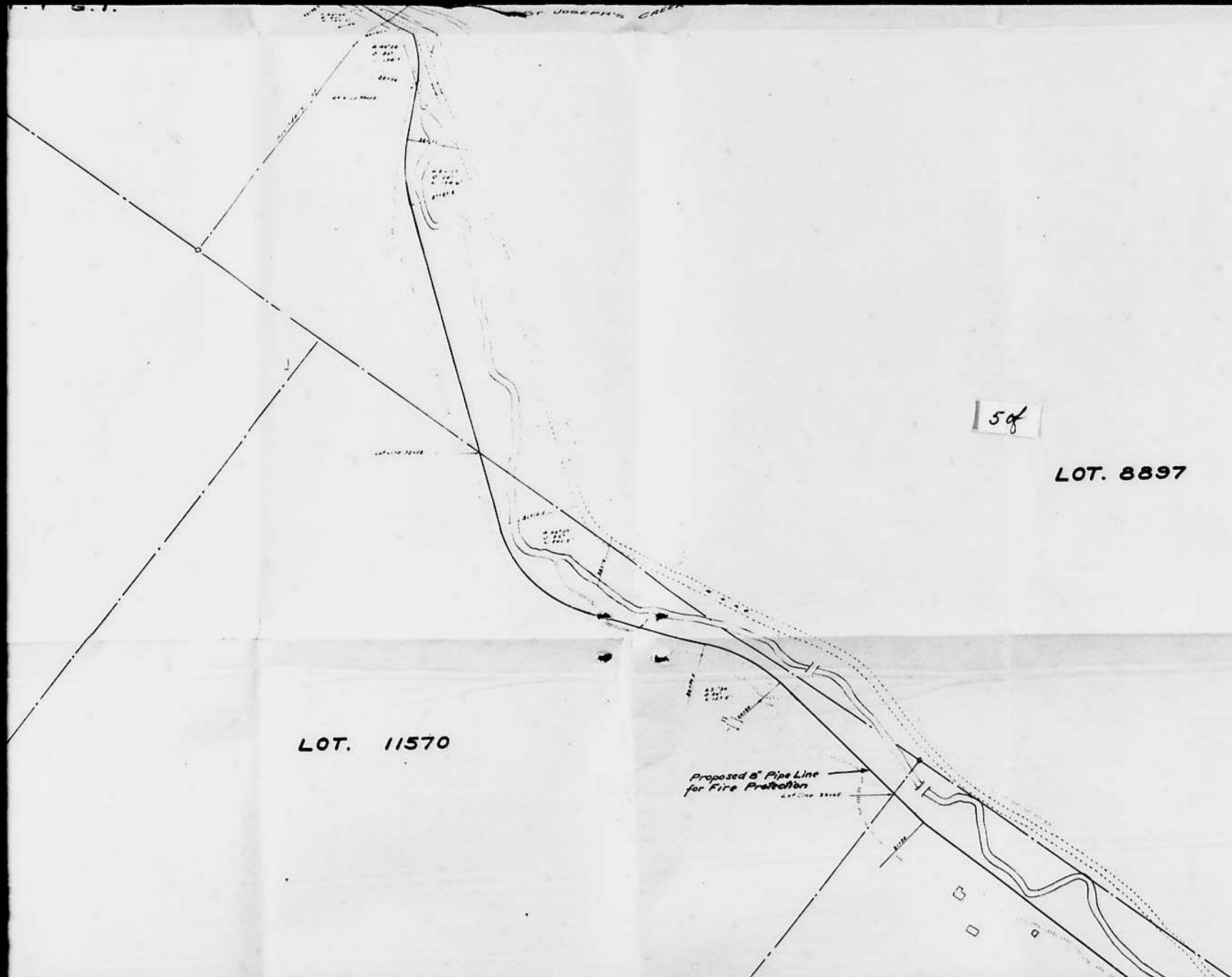
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LOT. 494

SCALE 1 INCH = 100 FEET.

← Proposed 4" PipeLine
for Domestic Supply.

LC



LOT. 11570

50

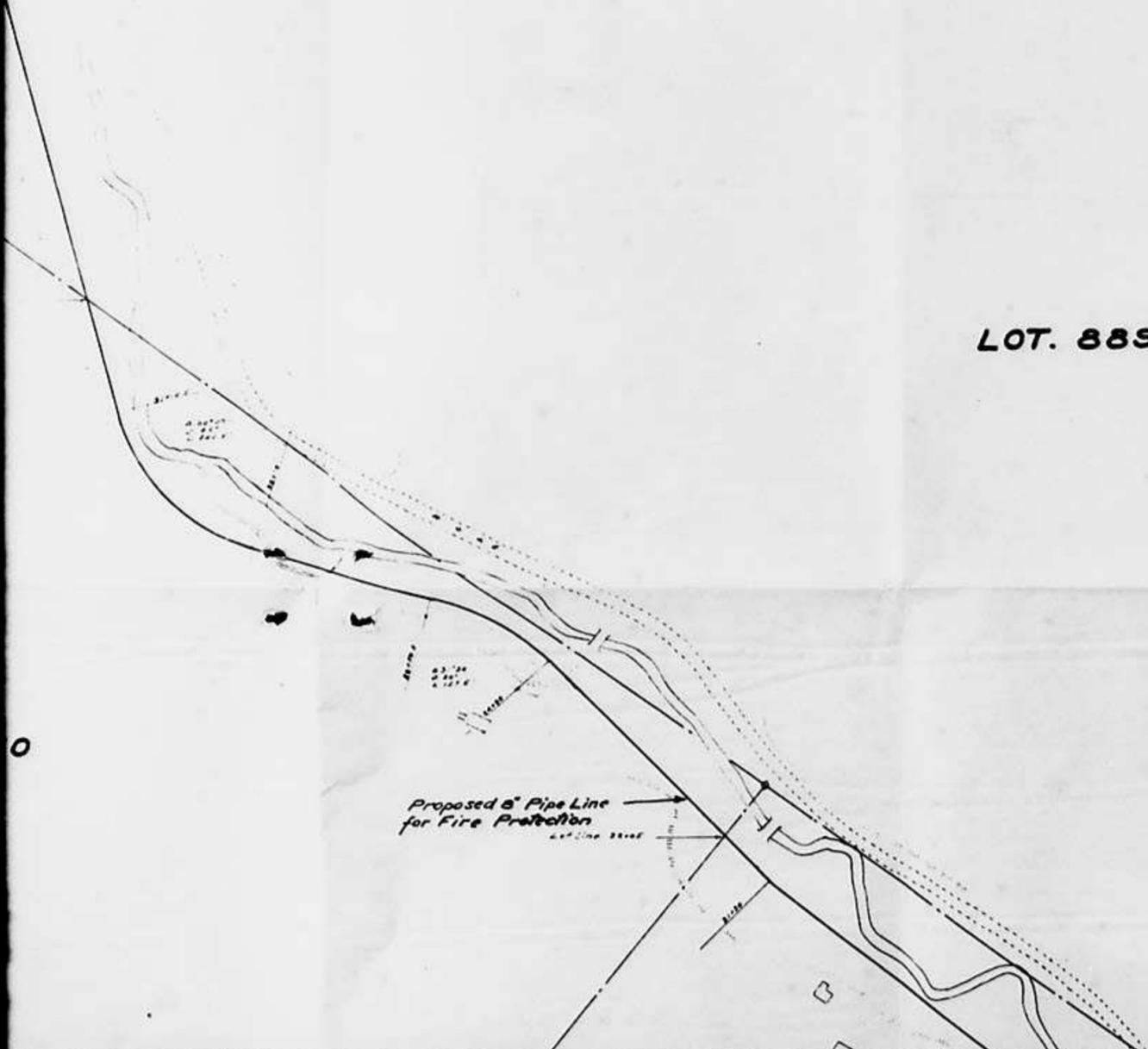
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Proposed 8" Pipe Line
for Fire Protection

RIGHT-OF-WAY REQUIREMENTS					
Lot Number	Owner	Location on Plan	width	Length	Area
2595	I.N. Campbell	Stn 1400 to 0+00	60'	100'	0.16 AC
"	"	Stn 0+00 to 0+72	10'	372'	0.211
	Crown	Stn 0+60			
11563	I.N. Campbell	Stn 0+72 to 22+05	10'	1533'	1.306
11570	I.N. Campbell	Stn 22+05 to 32+52	10'	1047'	0.240
0007	Mrs Lettie Smith	Stn 32+52 to 39+60	10'	708'	0.163
0007	Crown	Stn 39+60 to 41+34		171'	Pipeline
Lot 1.01	"	Stn 41+34 to 44+00		266'	
Total Area Required					1.007 AC

LOT. 8897

6 of



RIGHT-OF-WAY REQUIREMENTS						
Lot Number	Owner	Location on Plan	width	Length	Area	Remarks
2595	I.N. Campbell	S6 - 1400 ft 0+00	60'	100'	0.156 Ac	Reservoir P.P.
"	"	S6 0+00 to 0+72	10	572'	0.210 "	PIPELINE
"	Crown	S6 0+60	"	"	"	ROAD EXISTING
11563	I.N. Campbell	S6 0+72 to 22+05	10'	1333'	0.306 "	PIPE LINE
11570	"	S6 22+05 to 32+52	10'	1047'	0.286 "	"
2027	Mrs Leticia Smith	S6 32+52 to 39+60	10'	708'	0.163 "	"
2027	Crown	S6 39+60 to 41+34	"	174'	"	PIPELINE ON ROAD RIGHT
Lot 1 & 2	"	S6 41+34 to 49+00	"	766'	"	"
Total Area Required					1.047 AC	

Proposed 8" Pipe Line for Fire Protection

← Proposed 4" Pipe Line
for Domestic Supply.

77

3-612

Proposed Intake Works
Kenced



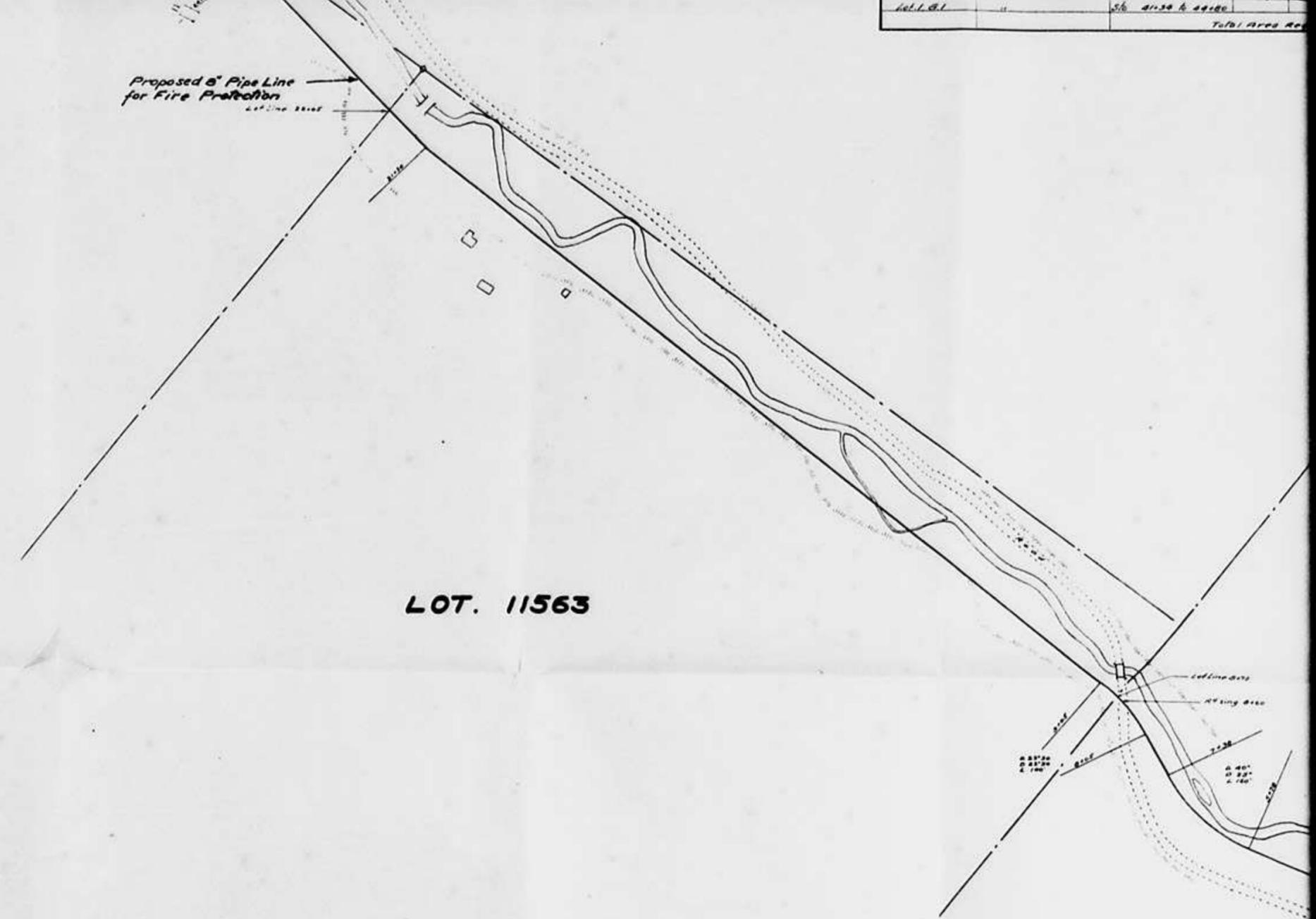
The diagram shows a rectangular area representing the 'Proposed Intake Works Kenced'. Inside this rectangle, there is a small circle with a dot in the center, labeled 'Springs'. A solid line extends from the top of the rectangle upwards and to the right, labeled 'Proposed 4" Pipe Line for Domestic Supply'. A dashed line follows the same path as the solid line but is slightly offset to the right.

LOT. 11570

8f

Proposed 8" Pipe Line
for Fire Protection

LOT. 11563



DOMINION WATER POWER AND HYDROMETRIC BUREAU		
<p>SURVEYS <i>W.S.</i> PLAN <i>W.S.</i> CHECKED <i>W.S.</i> DATE NOVEMBER 1930 APPROVED <i>E.S.B.</i> DIST CHIEF ENGINEER</p>	<p>WATER SUPPLY SYSTEMS FOR DOMESTIC USE AND FIRE PROTECTION ST. EUGENE SCHOOL, CRANBROOK. KOOTENAY AGENCY.</p>	<p>PLAN FILE NO. 142 CORRES FILE NO. 25720-2 REPORT FILE NO. 270 3 DRAWINGS. SHEET. 1.</p>