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A STUDY OF THE DOMESTIC WATER SYSTEM
OF THE
ROSS POINT WATER ASSOCIATION
IN
KOOTENAI COUNTY, IDAHO

Dated: November 1, 1972

PREPARED BY:

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ROSS POINT WATER ASSOCIATION

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OF THE
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SECTION I

A. INTRODUCTION

The following is a written report of the results of an in-depth study made of a small rural domestic water system owned and operated by the Ross Point Water Association. The area served lays adjacent to and generally north and east of the city of Post Falls and along the north side of Interstate Highway No. 90 in the North Idaho Panhandle.

The present Ross Point Water Association is an off-shoot of the old Ross Point Irrigation District and was formed in 1946 at which time a small existing water system was reconstructed basically to provide the domestic water requirements of the rural farming people residing in the Ross Point Irrigation District.

Originally membership was reserved for residents of irrigated tracts of land in the irrigation district. Because these tracts were relatively large (10 acres or more) and the water for outside use was furnished by the irrigation system, the demand on the original plant was not great and the design and construction did not take into account the requirements of present day developments.

In recent years many of the tracts have been divided into smaller units. A number of multi-use trailer and mobile home courts have been developed and, in addition, areas once not eligible for membership (dry lands) have been added to the system by vote and approval of the Association members. The insatiable thirst for building land in recent years has had a very pronounced effect in this area until presently the demand for water from this system out distances its ability to serve. Even more important, the indications are that demand in this area will greatly increase in the very near future.

While it is true that additions and improvements have been made from time to time, they have been generally made on an emergency catch-up basis without a definite master plan in mind. This has resulted in an inefficient, widespread jumble of undersized, mismatched pipe lines reaching beyond their practical limits, an inadequate and antiquated water source and a large demand for additional services in areas that could and should be served but which cannot be handled by the present facilities.

In order to plan for the future and to make the most practical use of the limited resources available and to provide the present and future customers with an adequate, reliable domestic water supply, the Board of Directors have felt the need for a comprehensive study of the system to determine the priority of needs. Toward this end the Board of Directors retained K. A. Durtschi and Associates, Consulting Engineers of Coeur d'Alene, Idaho to act as the Association's engineer to provide the required study and to help in expediting the findings and recommendations resulting therefrom in an orderly and efficient manner. The study will help the Board decide what improvements are appropriate and economically feasible at the time.

Among others, the basic goals of this investigation are as follows:

1. Recommend a limiting boundary for the Association to provide a basis for planning. (Recommended boundaries will be subject to approval of the Association membership).
2. Project a population trend for the area to allow for design of adequate capacity for present and anticipated future needs.
3. Provide a preliminary master plan for guidance of future development work in order to assure maximum benefits from the funds available for upgrading of the system.
4. Set tentative priorities for future construction work.
5. Provide preliminary cost estimates for work considered to be critically needed.

6. Offer conclusions, recommendations and help in methods of financing for future development.

SPECIAL NOTE: The plans and recommendations herein are of a preliminary nature intended for guidance to the Association in steering a course of management and development toward a definite attainable goal. Actual construction scheduling and design details are to be provided at a later date as required following affirmative action by the Board of Directors.

SECTION II
EXISTING FACILITIES

A. WATER SOURCE

The existing water source for the Ross Point Water System consists of an old dug well originally constructed in the early 1920's and cribbed with timbers. Due to the fact that the top of this well is completely sealed at this time, it was not possible to make a visual inspection. Information from the members of the Board who are familiar with the system indicates the following:

Total Depth of Well	220 feet
Depth of Static Water Level	180 feet

It is reported that repair work was done on the well some time about 1938 to replace the wood cribbing with a concrete liner and a perforated steel casing in the bottom near the pumping area. We are advised that the well presently is pumping a certain amount of sand which shows up in the meters and main lines in some areas of the distribution system.

At the present time this well contains two pumps:

1. A 30 h.p. deep-well turbine which is approximately 20 years old.
2. A more recently installed 20 h.p. submersible pump approximately 5 years old.

While there are no meters or other means of checking the actual production from these two pumps,

the 30 h.p. turbine pump reportedly pumps	280 gpm
the 20 h.p. submersible is rated to pump	160-170 gpm

In recent years the Association has had some difficulty with these pumps. Among other things, a lightning strike burned out the motors or some of the controls, and caused considerable difficulty in maintaining adequate water at one period earlier this year.

The pump operation is controlled by overhead wires from probes in the storage tank which is located generally to the east on a hillside.

While this well reaches into a virtually unlimited water source known as the Rathdrum Prairie aquifer, there are several conditions which tend to make it an inadequate source for the system.

- (1) The well is old, possibly caving or in some other manner allowing sand to encroach into the pumping system.
- (2) The location of the well is on the same end of the project as the storage. This provides for an inefficient use of the existing distribution system inasmuch as there is no opportunity to obtain benefit to the system from both the pumping and the storage at the same time.
- (3) Inasmuch as this is a single source to serve this utility, it provides for no standby protection in the event of such occurrences as lightning damage to the pump and motors which has occurred in the past.

For this reason, it is considered imperative that the well be supplemented by an additional source and eventually should be replaced completely.

B. EXISTING DISTRIBUTION SYSTEM

The distribution system for this utility consists of a network of basically undersized pipes of many types, sizes and ages. The original system was laid with so-called "invasion" pipe (dipped and wrapped steel of post World War II vintage). Additions and replacements in later years include sections of asbestos cement, galvanized steel, PVC plastic, cement and cast iron pipes.

The pipe lines vary in size from 2" to 8" diameter. (See the exhibit at the end of this report for a plan of the existing distribution system).

The system has grown over the years in a haphazard manner adding on or replacing short sections of piping as were required without an engineered plan to provide for the future requirements. There has been considerable amount of trouble in the maintaining of certain portions of the older lines, particularly, in those areas where the dipped and wrapped pipe was installed shortly after World War II.

The distribution includes mostly 3/4" service lines and meters to each service. There are several 1" services and one 1 1/4" service serving some of the larger commercial trailer courts.

At the present time there is only one fire hydrant on this entire system and the amount of water that would be available from this hydrant in the event of fire would be questionable due to the low capacity of the distribution mains leading to the hydrant.

It is anticipated that a large portion of the distribution system should eventually be replaced with larger pipe lines suitable for both the future domestic demand on the systems as well as to provide for possible fire protection when, and if, fire fighting equipment is available in this area.

The larger lines including 6" and 8" P.V.C. or asbestos cement pipe and the newer 4" P.V.C. and cast iron pipes laid near the new freeway are the only lines considered adequate for future use in the system.

C. EXISTING STORAGE

The Association has one bright spot in their equipment picture in that recent construction of the new Interstate Highway No. I-90 resulted in the taking of the original storage site and, as a result, the State Highway Department provided a new 100,000 gallon steel storage tank and certain lines and equipment to replace that part of the system destroyed by the freeway. (See the maps at the end of this report for location).

The new tank is located generally on the southeast corner of the Association's system on a hillside with sufficient elevation to provide 55 to 68 p.s.i., static pressure throughout the area served. (When the tank is full).

While it is considered that the existing tank would be adequate for the present and that the new tank is of excellent quality and has a long anticipated life, it is probable that future development in this area will result in the need for additional storage at some later date.

Except for the fact that the Association might be well advised to secure additional tank site property, it is considered that the storage on this system would not require attention within the near future, at least until fire protection is to be incorporated.

SECTION III
POPULATION STATISTICS

A. PRESENT

At the present time there are approximately 227 metered services taking water from the existing water system. This is misleading, however, inasmuch as there are at least four large trailer and mobile home courts. Each court being on a single meter and serving from 8 to 37 trailers. It is estimated that the actual number of families residing in this district and using water from the system approaches 300.

In addition, there are several small businesses including a store, a plastic pipe manufacturer and four dairy farms all taking water from the system.

B. FUTURE POPULATION ESTIMATE

While the projection of future development of any rural area is at best an educated guess, we feel safe in assuming that the area served by the Ross Point Water Association and laying within the proposed new boundaries, provides a prime prospect for an extensive residential development over the next few years. The land is not only relatively level, easily accessible and a prime living area, but it also lays in the projected population corridor connecting the city of Spokane and the city of Coeur d'Alene laying generally along the route of Interstate Highway I-90.

This area has been predicted by knowledgeable planners to be the site of one of the fastest population explosions in the entire Pacific Northwest. Statistics obtained from the most recent years tend to bear these projections out.

We feel that the most acceptable method of projecting a future population equivalent for an area of this type would be based on the amount of usable land for building. The area encompassed by the proposed new boundaries of the Association includes approximately 2500 acres.

The trend in the past has been to divide the irrigation tracts and it does not seem at all out of line to think that eventually the housing within this particular area will reach a minimum density of one residence to each two acres.

Based on this assumption, the Ross Point water system could be required, within the next 20 years, to serve 1250 families. Using a standard assumption that the average family will consist of approximately $3\frac{1}{2}$ persons per family unit this would result in a net population of 4375 people more or less by the Year 1992.

C. WATER REQUIREMENTS

At best, estimating of future water requirements on a domestic system is based on assumptions and projections which are educated guesses based on past experience and the trends which have been established and accepted as standards. Among others, the following conditions on the Ross Point system have affect on the projections:

1. Average lot size: Rural areas with gardens and large yards or animals to water tend to use more water than their urban counterpart. Even though extensive development is anticipated for this area, the lot size will likely remain relatively large (over one acre average at least during the estimated design life of the system. (20 years.)
2. The use of meters on individual services has a decided affect in holding the excessive use of water to a minimum. The Association policy includes meters and we assume this will continue to be the attitude of the Board. Meters are a very valuable tool in the control of a water system even if only read intermittently.
3. The fact that there is a supplemental source of water for irrigation and yard watering tends to reduce the demand on the domestic system. We would expect, however, that this effect will be greatly reduced as the land becomes divided into smaller parcels thereby making the use of the irrigation system less convenient and may, in fact, practically reach a point of little importance on the total demand on the domestic water system.

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4. Demand on any domestic system varies greatly from hour to hour during the day as well as from season to season. Adequate storage facilities tend to equalize daily demand on the pumping facilities. It is difficult, however, to do much about the high seasonal demands which occur on the hot summer season.

For this reason system design must be predicted on that maximum demand period even though it may be excessive for most of the year.

Based upon considerable experience with similar rural water systems and the above conditions, we are estimating the average residential use will reach 1,500 gallons of water per day during high demand period when development has reached a density sufficient to negate the effect of the irrigation system. At the present time with much of the water for outdoor irrigation coming from other than the domestic system, we would estimate an average maximum summer-time demand per household to be approximately 1,000 gallons per day.

Therefore:

Est. water required under present conditions
for high demand period:

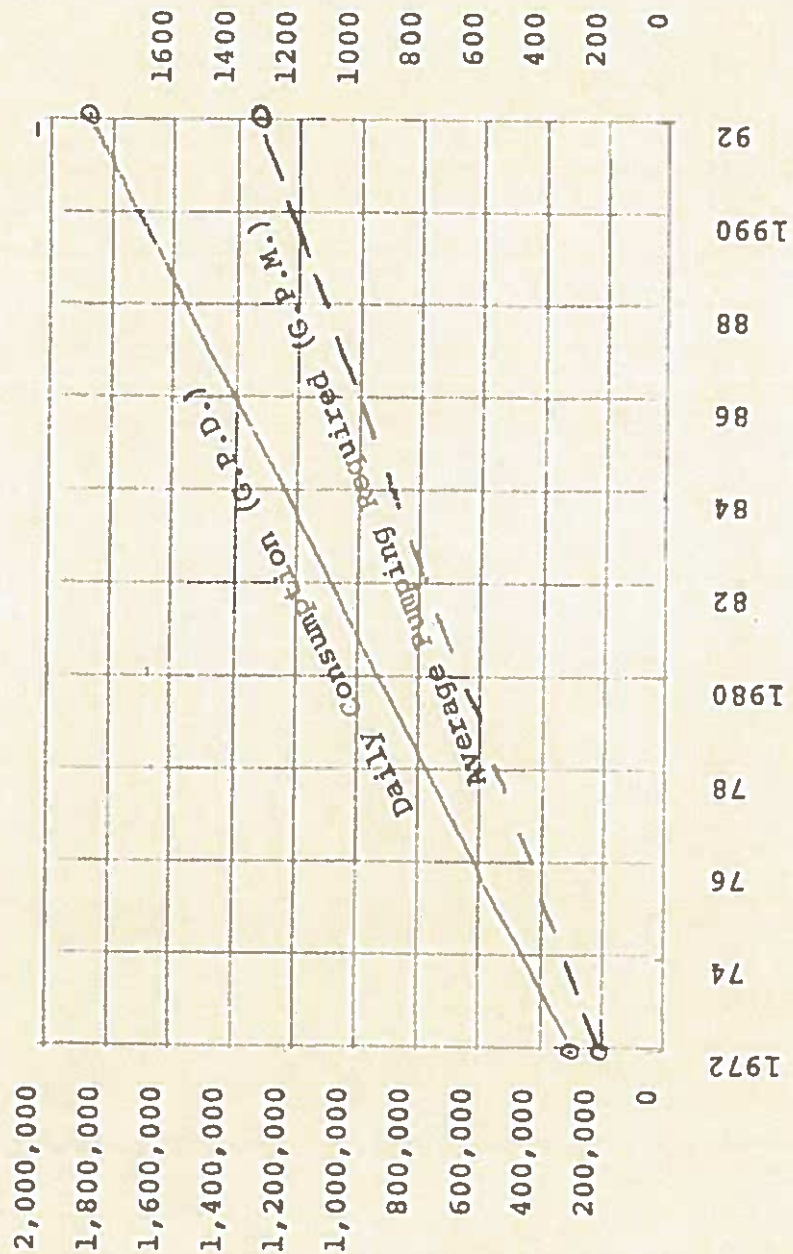
$$300 \text{ residences} \times 1000 \text{ gpd} = 300,000 \text{ gpd} = 208 \text{ gpm}$$

Est. Future Demand - 1992

$$1250 \text{ residences} \times 1500 \text{ gpd} = 1,875,000 \text{ gpd} = 1300 \text{ gpm}$$

Assuming a steady rate of growth in the area over the next 20 years, the following chart illustrates the estimated water consumption for the design period.

AVERAGE PUMPING RATE
REQUIRED (G.P.M.)



DAILY CONSUMPTION (GAL.)

SECTION IV

PROPOSED IMPROVEMENTS

A. WATER SOURCE (PROPOSED)

As indicated previously, the existing well serving the Ross Point system is considered to be inadequate for the present needs in particular and will be totally unsatisfactory to provide water for anticipated future needs. For this reason, we are recommending that the Association proceed immediately with the construction of a new well to be located as indicated on the Master Plan at some location on the westerly end of the project. The exact location for the well is not shown as it is not a critical matter as long as it is placed so as to be readily connectible to the larger mains also to be recommended for construction on the same project.

It is anticipated that a new well at this time would likely be supplemented further by a second new well to be constructed at such time as the water requirements increase sufficiently to warrant additional construction. In the meantime the new well No. 1 could be used to provide the main water supply for the system while the existing dug well would remain on the system as an emergency standby water source.

A study of the existing well logs and geological and hydrological data available indicate a new well in the area indicated on the map will be approximately 200 feet from the ground surface to static water and we would estimate the need to excavate a minimum of 60 feet into the water strata giving a total estimated depth of the new well of 260 feet.

We recommend that this well be drilled to a casing diameter of 14 inches and that sufficient screen be placed in the well to develop this aquifer to a minimum of 1,000 gallons per minute pumping capability.

For the present purposes, it is recommended that a pump be installed in the new well capable of pumping 500 g.p.m. to the required head which will be approximately 382 feet TDH. This pump should be preferably a 1760 r.p.m. 3-phase deep-well turbine pump and will require between 50 and 60 h.p. for operation.

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NOTE: Some initial investment can be saved by the use of a deep well submersible pump. However, troubles with burned out motors, such as a lightning strike, then requires removal of the pump from the well. It is questionable economy in our opinion.

The new well will require a pump house and should be controlled automatically from tank level probes in the storage tank. Lines from the tank to the pump house can be either buried with the proposed pipe lines or the Association could use a leased circuit on commercial telephone lines. We would further recommend that the well be operated on a first priority basis with automatic controls to kick in the deep-well submersible pump in the existing well at such times as demand may require additional capacity.

It would appear that the new well should handle the water supply for the anticipated demand on this system some where in the vicinity of 5 to 10 years at which time a second new well should be developed and brought onto the system, if the growth occurs as expected.

Present state regulations require that a new well for domestic purposes be located a minimum of 50 feet from any other possible source of contamination. We would recommend that sufficient land be purchased to allow for at least 100' clear area around the well. This will require approximately one acre of ground.

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PROPOSED PUMP SIZING

The question arises as to the economy of installing a 500 g.p.m. pump at this time when a 250 g.p.m. could serve the present demand. This is due to the added cost of electricity for larger demand of a bigger pump. The following are estimates of power costs for various horsepower motors to pump an average flow of 250 g.p.m. (est. present demand) (360,000 g.p.d.):

<u>MOTOR SIZE</u> <u>HP</u>	<u>PUMPING RATE</u> <u>GPM</u>	<u>PUMPING</u> <u>TIME</u>	<u>PER YEAR</u>
30	250	Continuous	\$1,522.32
40	335	17.9 hrs/day	1,782.00
50	418	14.4 hrs/day	1,940.88
60	500	12.0 hrs/day	2,097.00

NOTE: Pumping costs are based on Washington Water Power Schedule 35 Rates for Pumping Service

Assuming the 40 h.p. pump were installed now, this would save \$315.00 per year.

If the 60 h.p. pump were required in 5 years, this would then be a net power savings

5 x \$315 =	\$1,575.00
Difference in cost of 40 h.p. and 60 h.p. pumps =	<u>1,350.00</u>
Total Savings	\$2,925.00

This is somewhat less than the estimated cost of exchanging the 40 h.p. pump for a 60 h.p. in 5 years.

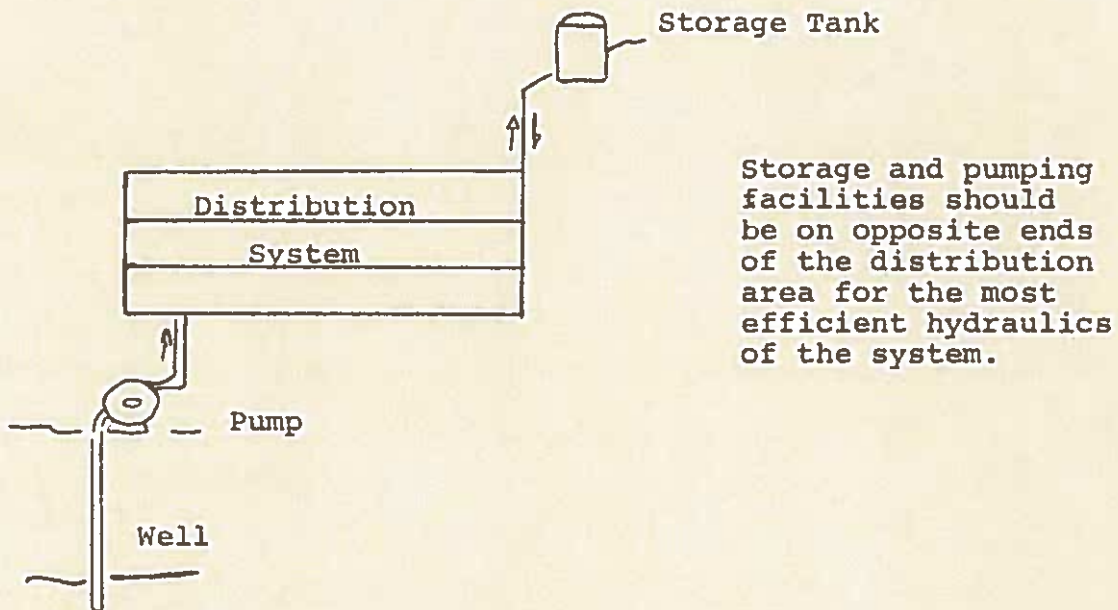
Therefore, we would be inclined to recommend the installation of the larger pump initially as this then relieves the need for changing at a later date with all of the administrative problems this would incur.

B. DISTRIBUTION SYSTEM (PROPOSED)

With the exception of certain of the more recently constructed and larger sized lines, it is anticipated that the majority of the distribution system for the Ross Point Water Association will be replaced on a priority basis some time during the next 20 years. Assuming that the Board of Directors would prefer to make these additions and improvements to the distribution system on the basis of need as it develops in order to spread out the cost of construction, we have divided the proposed work into three priority groups.

Priority Group No. 1 (New Water Lines)

Those additional lines indicated on Priority Group No. 1 are considered to be critical at this time. It is felt that they should be constructed in conjunction with the addition of any new well to be installed on the westerly end of the project. The reason for this being that the existing mains would not have sufficient capacity to carry the water production from the new well to the existing storage tank. This is very important to provide efficient hydraulic operation between the pumping system and the storage as indicated on the following sketch. We are, therefore, recommending that Priority No. 1 pipe lines be considered for construction at the same time the new well is being developed.



Priority Group No. 2 (New Water Lines)

Water lines listed under Priority Group No. 2 are not considered as critical at this time as Priority No. 1 but would be required, particularly in the event that additional extensive development is to occur in the northwesterly section of the proposed new district boundaries. This would provide adequate capacity for additional services in the northwest corner of the system. Property owners in this area have indicated considerable interest recently for a large number of additional services.

NOTE: The division of the system into priorities is based on the assumption that it would be economically feasible to perform construction work on either Priority No. 1 or No. 2 as a unit in order to take advantage of quantity material and labor prices.

Priority Group No. 3 (New Water Lines)

Priority Group No. 3 is a listing of the balance of the new lines required to bring this system up to the full standards as indicated on the Master Plan. Work on these lines might be done either on an "as needed" basis or, once again, on a contract for the entire priority.

Right of Ways

All proposed new water lines on Priorities No. 1 and 2 will be constructed in existing road right-of-ways except the additional line to the storage tank which can be laid in the existing pipe line easement. No new easements will be required.

Some of the pipe lines on Priority No. 3 grouping would require easements if the lines were constructed prior to the opening of roads in those areas where they are not yet developed.

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PROPOSED WATER LINE REPLACEMENT
PRIORITY CHART

PRIORITY GROUP 1

8,000 L.F. 10" Water Main in 12th St.
3,000 L.F. 8" " " Hwy #41

Syringa Road to Hwy #41
12th St. to Storage Tank

Note: (Retain existing 6" main in Hwy #41)

12th St. to tank)

PRIORITY GROUP 2

2,600 L.F. 6" Water Main in Hwy #41
1,320 L.F. 8" " " "
8,000 L.F. 6" " " 24th St.

12th St. to 20th St.
20th St. to 24th St.
Hwy #41 to Syringa St.

PRIORITY GROUP 3

8,000 L.F. 8" Water Main in 20th St.
8,000 L.F. 8" Water Main in 16th St.
8,000 L.F. 6" " " 8th St. (Mullan)
2,640 L.F. 6" " " 12th St.
2,640 L.F. 6" " " 16th St.
2,640 L.F. 6" " " 20th St. (Horse Haven Rd)
2,640 L.F. 6" " " 24th St.
5,280 L.F. 4" " " Idaho St.
1,320 L.F. 4" " " Syringa St.
2,640 L.F. 6" " " Green Ferry Rd
2,640 L.F. 4" " " Green Ferry Rd
5,280 L.F. 6" " " 24th St.
5,280 L.F. 6" " " 20th St.
5,260 L.F. 6" " " 16th St.
2,640 L.F. 4" " " Along East Side NE 1/2 Sec. 31
2,640 L.F. 6" " " from existing well westerly to 6" cast iron

Hwy #41 to Syringa St.
" " " " "
" " " Idaho St.
Syringa St. to Idaho St.
" " " " "
" " " " "
" " " " "
(Mullan) 8th St. to 24th St.
20th St. to 24th St.
12th St. to 20th St. (Horse Haven Rd)
20th St. (Horse Haven Road) to 28th St.
East from Hwy #41
" " " "
" " " "

SPECIAL NOTE:

Preliminary estimates made for the cost of construction of new pipe lines in the district are based upon the use of either asbestos cement or P.V.C. rigid plastic pipe lines. The prices (of which) are comparable at least in 6" and 8" pipe. We would consider these to be the best value considering economy, life expectancy, and the laying conditions which we anticipate would be found in this particular area.

C. FIRE PROTECTION (PROPOSED)

The Ross Point area at present is part of the Post Falls Rural Fire Protection District No. 4. This District has tanker trucks and pumping equipment.

As discussed previously, except for one hydrant, at the present time there are no on-site facilities to provide for fire protection within the Ross Point Association area. It is anticipated, however, that the desire and the need for adequate fire protection devices including fire hydrants and adequate sized mains to meet modern fire fighting standards will become more important as the population density increases. For this reason, the pipe lines recommended on the Master Plan are designed to provide for adequate flow for Class I fire rating. It is recommended that serious consideration be given to the installation of at least turn-out tees at the locations as recommended for fire hydrants as new lines are constructed in the project. In some cases the Board may desire to proceed with the actual installation of fire hydrants at the time of pipe line construction. In any event, the installation of the pipe line tees will save considerable expense and inconvenience when future fire protection is to be installed.

D. STORAGE (PROPOSED)

The existing storage being new is considered to be acceptable and adequate for the water system for the present. We feel that, at this time with the installation of a new well and a 500 g.p.m. pump, the existing 100,000 gallon tank will be sufficient for the system until such time as the average maximum demand on the system reaches the 500 g.p.m. rate proposed to be supplied by the new well. At that time, when additional capacity is required, we would recommend that an additional storage tank also be installed. The next tank should be a minimum of 200,000 gallons and can be located in the same basic area as the existing tank.

In the event that fire fighting equipment becomes available and the District should decide to install the fire hydrants, as indicated on the Master Plan, then additional storage should be considered at that time to provide the protection required by the class of fire rating anticipated.

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We would strongly recommend that the Board of Directors take action to obtain an additional acre of ground for the installation of the new tank when, and if, required in the future. This is something which can be done at this time at probably a considerable savings to the Association in lieu of waiting until land prices have increased as they most assuredly will.

SECTION V

PRELIMINARY ENGINEERING COST ESTIMATES

- A. Est. of cost new 14" Well - 1,000 g.p.m. capacity
14" diameter casing - 500 G.P.M. pump & pump house.

WELL

1. Move in and set up	\$150.00
2. Drill 14" hole - 260 L.F. @ \$22.00	5,720.00
3. 14" steel casing 240 L.F. @ \$8.00	1,920.00
4. 14" stainless steel tel. screen 20 L.F. @ \$115.00	2,300.00
5. Develop well Est. 20 hrs. @ \$18.50	370.00
6. Test Pump Est.	<u>1,200.00</u>
Total Est. Cost of Well	\$11,660.00

PUMP

- | | |
|---|-----------|
| 1. One 60 HP 10" deep well turbine pump
w/9 stages for 500 g.p.m. @ 382' T.D.H.
complete with installation, electrical
controls, 1-3/16" x 6" column, air line
and pump control valves L.S. | 11,000.00 |
|---|-----------|

PUMP HOUSE

1. One 10' x 12' prefab metal insulated with electrical service installed complete on concrete slab and founda- tion. Est.	<u>2,500.00</u>
Sub Total	\$25,160.00
10% Contingencies	2,516.00
Sub Total	<u>\$27,676.00</u>
10% Engineering & Administrative	<u>2,767.00</u>
Total Est. cost new well & pump (Exclusive of land)	<u><u>\$30,443.00</u></u>

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B. PRIORITY GROUP 1 WATER MAINS

10" A.C. Cl. 150 Water Mains	8,000 L.F.	\$5.25	\$42,000
8" A.C. Cl. 150 " "	3,000 L.F.	4.25	<u>12,750</u>
Sub Total			\$54,750
5% for valves and fittings			<u>2,737</u>
Sub Total			\$57,487
10% Contingencies & Service Connections			<u>5,749</u>
Sub Total			\$63,236
10% Engineering and Administrative			<u>6,324</u>
Total Est. Cost Priority No. Water Mains			<u>\$69,560</u>

PRIORITY GROUP 2 WATER MAINS

6" AC or PVC Cl. 150 Water Mains	10,600 L.F.	3.75	39,750
8" AC Cl. 150 Water Mains	1,320 L.F.	4.25	<u>5,610</u>
Sub Total			\$45,360
5% for valves and fittings			<u>2,268</u>
Sub Total			\$47,628
10% Contingencies and Service Connections			<u>4,763</u>
Sub Total			\$52,391
10% Engineering and Administrative			<u>5,239</u>
Total Est. Cost Priority No. 2 Water Mains			<u>\$57,630</u>

FIRE HYDRANTS

6" Fire Hydrants w/valve, 2-2½" Hose Ports & 1 - 3" Pumper port. Est. Cost - installation complete in place.	\$	375
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C. REPAYMENT CALCULATIONS

Assuming full cost of improvements were borrowed from the Farmers Home Administration on a 40-year 5% loan - repayment = \$58.28/year/\$1,000 loan.

FHA requires 10% of annual payment be accumulated for 10 years.

Assuming 300 paying customers

Therefore:

For new well

Repayment = 58.28×30.443	\$1,774.22 Ann.Pay
10% Reserve	177.42
Revenue req'd per year	<u>\$1,951.64/year</u>

Cost per customer = .54/mon.
 $1951.64 \div 300 = \$6.51 =$

For Priority No. 1 Water Mains

Repayment = $58.28 \times 69,560$	\$4,053.96 Ann.Pay
10% Reserve	405.40
Revenue req'd per year	<u>\$4,459.36/year</u>

Cost per customer Pr. 1 Water Mains 1.24/mon
 $4,459.36 \div 300 = \$14.85$

For Priority No. 2 Water Mains

Repayment = 58.28×57.630	\$3,358.68 Ann.Pay
10% Reserve	335.87
Revenue req'd per year	<u>\$3,694.54/yr</u>

Cost per customer Pr. 2 Water Mains = 1.03/mon.
 $3694.54 \div 300 = \$12.32$

NOTE: Repayment calculations show only revenue required to amortize loan and create required reserve.
(Operation and maintenance costs not included).

Summary - Cost per customer

New Well	.54/mo/cust
New Well + Pr. 1 Water Mains =	1.78/mo/cust
.54 + 1.24	
New Well + Pr. 1 & 2 Water Mains =	2.81/mo/cust
.54 + 1.24 + 1.03	

ROSS POINT WATER ASSOCIATION
SCHEDULE OF
WATER RATES
July 1, 1972

0 to 10,000 gal.- - - - - \$3.00 Flat Rate
10,001 to 20,000 gal. - - - .30 per 1000 gal.
Over 20,000 gal. - - - - - .15 per 1000 gal.

Present policy on meters which serve more than one household (trailer courts etc.) is to charge one service fee on the meter with all water billed as above and to charge \$1.50 per month for each additional service over one.

New memberships are presently sold for \$300 plus \$80.00 hookup fee.

NOTE: No attempt was made to project Operation and Maintenance costs on this project until the decisions are complete on the extent of the improvements to be made. With the excess water payments and new membership fees and water revenue it would appear that the above rate schedules will provide adequate revenue for repayment of a loan for the proposed well and pipe line priorities No. 1 and 2 and still pay the maintenance and operating costs.

D. FINANCING

The most pressing problem facing the Board of Directors in their decisions to provide improvements and thereby better service for the members of the water association lies in the methods by which revenue or financing will be obtained to proceed with the required construction work. It is recognized that there is considerable tendency toward rejection by the people for any increase in the cost of their water. However, it must be recognized that the only way to make the necessary improvements in order to modernize the water system is for the customers using the facility to pay for these improvements.

The present rate structure, a copy of which is included herewith, is in our opinion a bargain as domestic water systems go at this time. Since the system at present does not have any long term debts, most of the revenue being obtained from the present rate structure can be channeled for the purpose of improving the system. It is considered probable that said revenue will provide sufficient capital for the required expenditures.

It is our understanding that there is a strong sentiment among the Board of Directors to hold repairs to a schedule the cost of which can be met by incoming revenue and to refrain from incurring any long-term debt to the Association. It is, however, our opinion that this is not necessarily the best approach economically to their problems and that, in fact, it will be very difficult to bring this system up to modern standards without the borrowing of monies from some lending agency.

Based on the cost estimate, as indicated above, and the present rate structure, it is obvious that it would be considerable time before revenue would be sufficient to take care of those items which are considered critical and which have been recommended for immediate improvement. For this reason, we would anticipate that the Board of Directors may deem it wise and necessary to consider a loan to cover construction costs. There are a number of government agencies, as well as private banking institutions, which have programs to cover rural domestic water and sewer facilities.

Because of the criteria by which these agencies determine eligibility of a particular organization, we are inclined to feel that the most logical program for the betterment of the Ross Point water system is that administered by the Farmers Home Administration, Department of Agriculture. At the present time this government agency has loan and grant programs which provide considerable help to the rural resident. The loan program makes money available on long-term low interest contracts. They take a mortgage only on the water system and do not encumber the individual member or his property. When the extent of the improvements to be completed on the first stage of construction is determined, if additional funding does prove necessary, we would recommend that the Board of Directors strongly consider making application to the Farmers Home Administration for loan funds as may be available.

The county supervisor for the Farmers Home Administration in Kootenai County is Mr. Jack Nelson located in the old federal building in Coeur d'Alene, Idaho.

SECTION VI

CONCLUSIONS AND RECOMMENDATIONS

It is well understood by the Engineer that the Board of Directors for the Ross Point Water Association, while anxious to do whatever is necessary to maintain and promote this water system, are, in fact, strongly influenced by at least two important considerations:

1. The Board has expressed a desire to keep the Association out of debt and to proceed with any alterations or improvements basically upon the premise that they would do that work which their present funds would allow and hold off on other works which may be necessary or needed until such time as sufficient funds have been once more accumulated.
2. They are somewhat reluctant to spend any large amount of money on the system due to the fact that there are rumors of a possible new combined irrigation and domestic water system presently under study by the Soil Conservation Service.

Regardless of these two facts, we feel it our duty, to present the conclusions and recommendations resulting from this study as though these considerations were not governing points by which the management of this system may be operated.

We feel that in some cases the incurring of a debt to provide adequate water service might be the better alternative unless the Association does have sufficient funds available to proceed at least with the first two priority items listed above. Namely, the installation of a new well and the construction of certain water mains sufficiently sized to allow for efficient use of the new pumping facilities. Neither of these items alone will provide the needed improvements to the Association's system which we feel are relatively critical at this time if severe water shortage is to be avoided. Further, with the low interest, long-term loans presently available from various government agencies and the rapid increase in the cost of construction work over the past few years, it would appear that any savings in interest realized by construction work done on a "pay as you go" basis would be very quickly offset by the increase

in construction cost during the time of waiting to accumulate funding. Certainly, it would appear to be to the advantage of the Association to have the use of these facilities at the earliest possible date.

In regard to the possibility of a future new system to be constructed by the federal government, we would comment only that programs of this nature require, generally, a rather extensive period of time between the planning and actual final construction and, secondly, that assuming the proposed system is ever constructed and, if improvements to the Ross Point system are made in accordance with the Master Plan presented herewith, we would assume that those portions of this existing system which were in accordance with the requirements of a modern up-to-date domestic water system could be re-used in any new system and that credit for this equipment would be made in determining the cost to the people of any new system sponsored by the government.

For the above reasons the following conclusions and recommendations are presented for the help and guidance of the Board of Directors in making the necessary decisions as to what should be accomplished and the order of priority in the up-grading of the existing domestic water system.

1. The study of this system leads us to the conclusion that there is presently a definite lack of capacity even to serve the existing demand on the system and that it can be anticipated that the future demand, including that already noted, will be extensive. We would anticipate a probable water requirement of at least 4 to 5 times that of the existing population and, further, that this requirement will be in existence within the next 10 to 20 years.
2. We have concluded that the most pressing problems as far as the water system is concerned are basically:
 - a. A need for a new water source
 - b. Undersized water mains
3. It is felt that with the density of the population presently residing in the Ross Point area and with the indications of considerable increase in the very near future, it is concluded that the necessary expenditures required to improve this system to a point where

it could be considered a modern domestic water utility will be well within the ability of the people to pay compared to the average cost of domestic water throughout the North Idaho area.

Based on these conclusions the following recommendations are presented for consideration by the Association:

1. Our first recommendation would be that the Board of Directors pass a resolution adopting the Master Plans presented herewith as a part of their overall planning for the water association.
2. We would further recommend that the membership be requested to vote on the establishment of the new boundary lines as indicated on the Master Plan, all as indicated on the Preliminary Exhibit Plan in the back of this report. It is further recommended, if and when the boundaries have been accepted, that resolution be passed that these boundaries be maintained and that caution be used in any future extension of the system beyond these boundaries in order to assure orderly growth of the system and to prevent overloading of the water plant to the point that service can no longer be maintained in a suitable manner.
3. Final plans and specifications should be prepared and a contract let for the construction of a new well to be located in the westerly portion of this project. This well should be a minimum casing size of 14" and should be so located as to be assured of reaching the Rathdrum Prairie aquifer to provide an adequate water source. The well should be located as far as is practical from the storage tank. The well should be connected either by telephone circuit or other remote control to operate automatically with respect to the elevation of water in the storage tank.

A general recommended area for the proposed new well is indicated on the master map at the end of this report.

NOTE: The Board should apply for a water permit for the new well from the State Department of Water Administration in the amount of 2.0 sec. ft. of water for domestic purposes. This agency has an office in Coeur d'Alene at 401 Front Avenue. Phone 667-6484.

4. It is recommended that the plans and specifications be prepared for the initial stages of the reconstruction of water mains; namely, Priorities No. 1 and 2 as set out previously in this report.
5. It is recommended that tees be left in any new water mains as they are laid at the proposed fire hydrant locations. If the Board feels so inclined, hydrants may also be included. It is somewhat doubtful how much value the hydrants would have at the present time, however, until a fire protection system is available for the entire district.
6. It would be our recommendation that inasmuch as both of the Items 3 and 4 above are considered dependent upon each other for the most efficient operation of this utility, that the Association make application to the Farmers Home Administration for a loan, if required, to cover construction of these two items to be installed simultaneously.

This report is presented to the Association with appreciation for the help from various members of the Board of Directors and for the opportunity to be of service. If and when we can be of further assistance in the developing of the planning and improvements to the water system, we stand ready to be of service.

Very truly yours,

K. A. DURTSCHI & ASSOCIATES

SCANNED

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