12-10-011

AMENDMENT TO MODIFIED SERVICE PLAN

OF ST. MARY'S GLACIER WATER AND SANITATION DISTRICT

CLEAR CREEK COUNTY, COLORADO

August, 1992

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DIV OF LOCAL GOVERNMENT

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INTRODUCTION

The St. Mary's Glacier Water and Sanitation District (the "District") is located at the foot of St. Mary's Glacier, approximately 10 miles from the Fall River Road Exit off I-70, west of Idaho Springs, Colorado. The District's elevation ranges from 10,000 feet to 10,900 feet. It is located in the NW¼, and NE½, Section 11, Township 3S, Range 74W, 6th P.M. A legal description of the boundaries of the District is attached hereto as Exhibit A and incorporated into this Amended Plan by this reference. A map of the District boundaries is attached hereto as Exhibit A-1 and incorporated into this Amended Plan by this reference.

The area's climate is characterized by cold winters, mild summers and a wide daily and seasonal variation in temperature. The majority of precipitation is in the form of snow. The cold temperatures impact the operation of both the wastewater facilities and the water facilities. Freeze/thaw cycles cause excessive stresses on the wastewater collection system lines and manholes and the water distribution lines. The cold temperatures also impact the operation of the wastewater treatment facilities.

The Service Plan for the proposed St. Mary's Glacier Water and Sanitation District was approved by the Board of County Commissioners of Clear Creek County, Colorado by a resolution dated July 1, 1968. The District was formed pursuant to an Order and Decree signed in the District Court of Clear Creek County, Colorado on February 13, 1969. A modification of the Service Plan for the District dated January 1970 was approved by the Board of County Commissioners of Clear Creek County, Colorado by Resolution dated June 25, 1970. An order modifying the Order and Decree creating the District and incorporating the Modified Service

Plan and Resolution of the Clear Creek County Commissioners was signed in the Clear Creek County District Court on May 20, 1971.

It has now become necessary to amend the Modified Service Plan dated January 1970. The principal reason for this Amendment to the Modified Service Plan (the "Amended Plan") is problems with the wastewater collection and treatment system which necessitate a review and repair of the system.

The District is currently operating under a Notice of Violation of its Discharge Permit No. CO-0023094, and a Cease and Desist Order dated December 23, 1991 has been issued to the District by the Water Quality Control Division of the Colorado Department of Health.

The District proposes to develop sufficient capital funds through grants, low cost loans and/or the issuance of general obligation and/or revenue bonds to make modifications to and repair the wastewater system of the District and to bring the wastewater system up to the requirements of the District's discharge permit. It is also anticipated that certain improvements will be made to the District's water supply and distribution system.

The purpose of this Amended Plan is to present that information required pursuant to the Special District Control Act located at Part 2, Title 32 C.R.S. for consideration by the Board of County Commissioners of Clear Creek County, Colorado (the "Board") and to allow the Board to adopt a resolution regarding the Amended Plan as required by said act.

FLO Engineering, Inc., Breckenridge, Colorado has prepared an engineering review of both the wastewater facilities and the water facilities of the District. The Wastewater Facilities Review is dated December 6, 1991 and the Water Facilities Review is dated February 1992 as revised in April, 1992. The Wastewater Facilities Review is attached hereto as Exhibit B and incorporated into this Amended Plan by this reference. The Water Facilities Review is attached hereto as Exhibit C and incorporated into this Amended Plan by this reference.

WASTEWATER FACILITIES

A. Collection System.

The wastewater collection system consists of interceptor, trunk and collection sewer lines ranging in size from 8" to 12" in diameter. The system was built in the early 1970s. The sewer lines were constructed using vitrified clay pipe ("VCP") and asbestos cement ("AC") pipe. Manholes in the system were built using precast concrete barrel sections or masonry placed on pour-in-place bases.

Past maintenance records and infiltration and inflow ("I&I") studies indicate that a number of lines are in very poor condition. Infiltration throughout the majority of the system is high, both into the lines as well as the manholes. Excavation during repairs have shown that little or no bedding or select cover was used during installation. Therefore, the principal

problems with the wastewater system are the result of poor construction practices aggravated by the harsh climate.

B. Treatment Facility.

The existing treatment facility consists of two lagoons. The primary aeration lagoon has a volume of 0.35 million gallons with approximate dimensions of 110' x 110' x 5' deep and 3:1 side slopes. The polishing lagoon has a volume of 0.27 million gallons with approximate dimensions of 100' x 100' x 5' deep and 3:1 side slopes. One aerator exists in the pond area.

Present capacity for the treatment system is 30,000 gallons per day which is based on a single aerated lagoon, a 10-day detention period, and the 345,000 gallon capacity of the aerated lagoon.

C. Summary.

The first major task in upgrading the system as proposed by the wastewater facilities report is to repair the known problems within the existing wastewater collection system. The wastewater facilities report estimates the cost to be $220,000 to $240,000 for the repair and/or replacement of wastewater collection lines.

The second major task associated with the upgrade of the wastewater facilities is to increase the capacity of the lagoon system. The wastewater facilities report proposes the addition of a new lagoon with an additional 100,000 g.p.d. capacity. The addition of the new lagoon would include new piping, aerators, the lining of the new lagoon, along with retrofitting connections to the existing system. The projected cost for the new lagoon is $180,000.

WATER FACILITIES

A. Water Supply.

The District water facilities consist of two water supply sources and a distribution system serving six separate pressure zones. The present water sources for the District are wells. These wells supply approximately 60-70 g.p.m. to the system. Chlorination is used to treat the water supply.

B. Water Distribution Facilities.

Water distribution facilities consist of water lines ranging from 4" to 10" in diameter. Lines have been constructed of cast iron pipe. In addition, 3 booster pump stations, three pressure reducing valves, a recirculating pump and a vault make up the distribution facilities.

No storage facilities exist for the water system. All demands are supplied directly by the wells and booster pumps.

Pressure and flow problems exist in various locations in the water facilities system. Leakage plays a major part in pressure problems.

C. Summary.

The water facilities study recommends an upgrading of the water supply system and the addition of some storage to the system. The first task associated with upgrading the water facilities system would be to isolate the leaks in the existing system and make the necessary repairs. The task of detecting existing leaks will require installation of flow meters at strategic points in the water system. Once these meters are installed, breaks in the water line can be isolated and repaired. The cost for this work is estimated in the engineering report of approximately $15,000.

The second step in upgrading the water system would be to install 5,000 gallon storage reservoirs at the two booster pump stations to allow for a continuous supply of water to the areas served by these stations. This work may include increasing the capacity of the booster pumps if required. The estimated cost for this work is $15,000 per booster pump station for a total of $30,000.

A third step in upgrading the water system which is not included in the FLO Engineering Report, but which should be considered, is looping several water lines and recirculating systems to certain areas of the District. The estimated cost for this work is $30,000.

POPULATION

The existing population for the area peaks in the spring, summer and fall to 240 people which is approximately double the winter population of 120 full-time residents. This population resides in a total of 203 residences. Table 2.1, page 3, of the Wastewater Facilities Report sets forth the current year, 20-year and ultimate population projections of the District for areas presently served by the Wastewater Facilities Collection System and the Water Distribution System. Ultimate projections for the area are based on the number of lots in the platted subdivisions.

FINANCIAL

The budget for the District for the period from January 1, 1992 to December 31, 1992 is shown as Exhibit D. The 1991 assessed valuation for the District was $2,181,540. The 1992 mill levy for operating purposes was 5.737 mills which generated taxable revenues of $12,550. The current annual water and sewer fee per single family equivalent (SFE) is $230. The projected revenue from these fees in 1992 is $53,100.

The District has no outstanding debt at the present time; therefore, no mill levy is levied for debt service.

Projected capital expenditures are shown as Exhibit E. These figures are based on numbers in the Wastewater Facilities and Water Facilities Reviews prepared by FLO Engineering, Inc.

Coughlin and Company, Inc., an investment banking firm, is acting as financial advisor to the District. It is anticipated that general obligation bonds and/or revenue bonds will be issued in one or more series in 1992 and 1993 following approval by the electors of the District at an election authorizing the issuance of the debt. The estimated proposed maximum interest rate on the bonds is 12.0% and the maximum estimated proposed discount is 5.0%. It is anticipated that bonds can be marketed at a lower interest rate and discount than the estimated maximums. Coughlin & Company, Inc. has provided projections showing the revenue required

to service a 20 year debt at 8.0%, in the principal amount of $650,000. The projections show that an additional mill levy of 32 mills would be required to service the projected debt if no other revenues are available. A projection has also been prepared which shows an additional mill levy of 18 mills and additional user revenues of $33,000 per year. These projections are considered conservative because they do not provide for any growth within the boundaries of the District. These projections are shown as Exhibit F.

CONCLUSION

The Board of Directors of the St. Mary's Glacier Water and Sanitation District, as the proponents of this Amended Plan for the District, feel that the evidence presented in this Amended Plan is sufficient to show that:

1. There is sufficient existing and projected need for organized service in the area to be serviced by the District. The District is already in existence and serving an estimated 203 residences with a full-time population of 120 and a part-time population of 240 persons.

2. The existing service in the area to be served by the District is inadequate for present and projected needs. This Amended Plan shows that the existing wastewater facilities and water facilities are in need of upgrading, repair and modification in order to meet state requirements.

3. The District is capable of providing economical and sufficient service to the area within its proposed boundaries. The financial projections show that the District is capable of providing economical service as set forth in this Amended Plan.

4. The area included in the District has, or will have, the financial ability to discharge the proposed indebtedness on a reasonable basis. The financial projections show that the District will have the ability to discharge the proposed indebtedness on a reasonable basis based upon this Amended Plan.

5. Adequate service is not, or will not be, available to the area through the county or through other existing municipal or quasi-municipal corporations, including other special districts, within a reasonable time and on a comparable basis. The area is being served by the St. Mary's Glacier Water and Sanitation District and the county or other existing municipal or quasi-municipal corporations are not able to provide this service.

6. The facility and service standards of the District are compatible with the facility and service standards of each county within which the proposed special district is to be located and each municipality which is an interested party under Section 32-1-204(1). The repairs and new improvements proposed under the Amended Plan will meet the facility and service standards of the county and special districts and municipalities which are interested parties under the statute.

7. The proposal is in substantial compliance with a master plan adopted pursuant to Section 30-28-106, C.R.S., if any.

8. The proposal is in compliance with any duly adopted county, regional, or state long-range water quality management plan for the area, if any.

9. The proposed improvements to the District's water and wastewater facilities will be in the best interests of the District, its residents and property owners. The St. Mary's Glacier Water and Sanitation District is already in existence. This Amended Plan for the District proposes repairs and improvements which are necessary to meet state standards for the wastewater facilities and also proposes needed improvements to both the wastewater and water facilities.

In conclusion, the Board of Directors of the St. Mary's Glacier Water and Sanitation District hereby requests that the County Commissioners of Clear Creek County approve this Amended Plan for the District.

EXHIBIT A

Legal Description of Boundaries
of St. Mary's Glacier Water and Sanitation District

That portion of the R. O. Phillips Placer Mining Claim, U. S. Survey Lot No. 1356, The Rockwood No. 2 Placer Mining Claim, U. S. Survey No. 2082, and the Lincoln Placer Mining Claim, U. S. Survey Lot No. 2080, falling within the following description: Beginning at Corner No. 6, Survey No. 2080, Lincoln Placer Claim; thence North 3300 feet to Corner No. 7; thence East 1320 feet to Corner No. 8; thence South 390 feet to Corner No. 9; thence North 16°36'47" East 101.9 feet to Corner No. 6, Survey No. 1356, R. O. Phillips Placer Claim; thence South 35°8' East 535 feet to Corner No. 7; thence South 16°45' West 24.4 feet to Corner No. 10, Survey No. 2082, Rockwood No. 2, Placer Claim; thence South 3206.6 feet to Corner No. 11; thence West 330 feet to Corner No. 1; thence South 17°25' West 913.91 feet along line 1-2 of said Rockwood No. 2 Placer Claim; thence West 1051.83 feet to line 5-6 Survey No. 1356, R. O. Phillips Placer Claim; thence North 18°40' West 920.43 feet to a point on line 1-2 of said Lincoln Placer Claim; thence North 659.9 feet to Line 5-6 of said Lincoln Placer Claim; thence East 300 feet to Corner No. 6 of said Lincoln Placer Claim, the place of beginning.

A part of Lincoln Placer Mining Claim, U.S. Survey Lot No. 2080; a part of the Nebraska Placer Mining Claim, U.S. Survey Lot No. 2079; a part of the G. B. Harris Placer Mining Claim, U.S. Survey Lot No. 1426; all of the Texas Placer Mining Claim, U.S. Survey Lot No. 2081; a part of the Rockwood No. 2 Placer Mining Claim, U.S. Survey Lot No. 2082; a part of the R. O. Phillips Placer Mining Claim, U.S. Survey Lot No. 1356; Upper Fall River Mining District, County of Clear Creek, State of Colorado, more particularly described as follows:

Beginning at Corner No. 5 of said Lincoln Placer Mining Claim; thence S.89°59'28"E. and along Line 5-6 of said Claim a distance of 3001.19 feet to a point, said point being 300.00 feet Westerly of Corner No. 6 and said point being on the Westerly line of a parcel described in Book 235 at Page 313 of the Clear Creek County records; thence S.0°02'00"W. and along said Westerly line a distance of 660.42 feet to a point on Line 1-2 of said Lincoln Placer; thence S.18°37'51"E, and along said Westerly line a distance of 921.38 feet to a point on Line 5-6 of said R. O. Phillips Placer; thence S.89°49'09"E. and along the Southerly line of parcel described in Book 235 at Page 313 a distance of 1050.56 feet to a point on Line 1-2 of said Rockwood No. 2 Placer; thence S.17°46'19"W, and along said Line 1-2 a distance of 868.62 feet to a point 828.00 feet South of the South line of that portion of the parcel described and conveyed by deed recorded in Book 235 at Page 313, as measured at right angles thereto; thence N.89°49'09"W. and parallel to said South line a distance of 1036.79 feet to a point on Line 5-6 of said R. O. Phillips Placer; thence S.16°54'08"W. and along said Line 5-6 a distance of 1116.34 feet to Corner No. 1 of the G. B. Harris Placer; thence S.26°53'35"E. and along the Line 1-2 of the said G. B. Harris Placer and along Line 1-2 of the said Texas Placer a distance of 4212.16 feet to said Corner No. 2 of said Texas Placer; thence S.20°37'55"W. a distance of 516.05 feet to Corner No. 3 of said Texas Placer; thence S.20°38'04"W. a distance of 1064.63 feet to Corner No. 4 of said Texas Placer; thence N.1°20'32"E. a distance of 1930.48 feet to Corner No. 5 of said Texas Placer; thence N.49°55'41"W. a distance of 2297.19 feet to Corner No. 6 of said Texas Placer;

thence S.87°07'00"W. a distance of 3913.88 feet to Corner No. 7 of said Texas Placer; thence N.1°40'13"E. a distance of 500.00 feet to Corner No. 8 of said Texas Placer; thence N.77°55'59"W. a distance of 323.61 feet to Corner No. 4 of said Nebraska Placer; thence S.24°33'30"W. a distance of 50.00 feet to Corner No. 5 of said Nebraska Placer; thence N.75°22'36"W. a distance of 677.02 feet to Corner No. 6 of said Nebraska Placer; thence N.48°57'12"E. a distance of 3428.79 feet to Corner No. 4 of the said Lincoln Placer; thence N.0°02'20"W. a distance of 2485.93 feet to the true point of beginning; including therein all of the Belmont, Flora Thorne, Pilgrim and Annie May Lode Claims and a part of the Little Fred Lode Claim, all U.S. Survey Lot No. 10759, and the Maid of the Mist Lode Claim, U.S. Survey Lot No. 16093, and a part of the Saint Ignacio Lode Claim, U.S. Survey Lot No. 18633, and a part of the Anna Arnold Extension Lode Claim, U.S. Survey Lot No. 16224: and excepting therefrom the following described Forest Land: beginning at Corner No. 2 of the said Lincoln Placer Mining Claim; thence S.89°58'31"E. a distance of 1193.35 feet to Corner No. 7 of the Nebraska Placer Mining Claim; thence S.49°20'34"W. a distance of 2007.19 feet to Corner No. 3 of the said Lincoln Placer; thence N.14°07'49"E. a distance of 1349.09 feet to the true point of beginning, containing 511.041 net acres, more or less.

EXCEPTING AND EXCLUDING THEREFROM THE FOLLOWING DESCRIBED TRACT:

All that part of the Nebraska Placer Claim, U.S. Survey Lot No. 2079, described as follows: Beginning at a post which bears from Corner No. 7, U.S. Survey Lot No. 2079, Nebraska Placer Claim, S 73° 50' E, 373 feet; thence S 54° W, 756.34 feet to a post; thence S 63° W, 743.66 feet to a post; thence S 27° E, 150 feet to a post; thence N 63° E, 756.34 feet to a post; thence N 54° E, 743.66 feet to a post; thence N 27° W, 150.5 feet to the point of beginning, containing 5.6 acres, more or less.

Faulkner-Kellogg & Assoc., Inc.
Consulting Engineers
1423 Brentwood St. Lakewood, Calif.

PROJECT ST. MARY'S GLACIER W. & S. DISTRICT
SHEET OVERALL SEWER PLAN

EXHIBIT A-1

BOUNDARY MAP

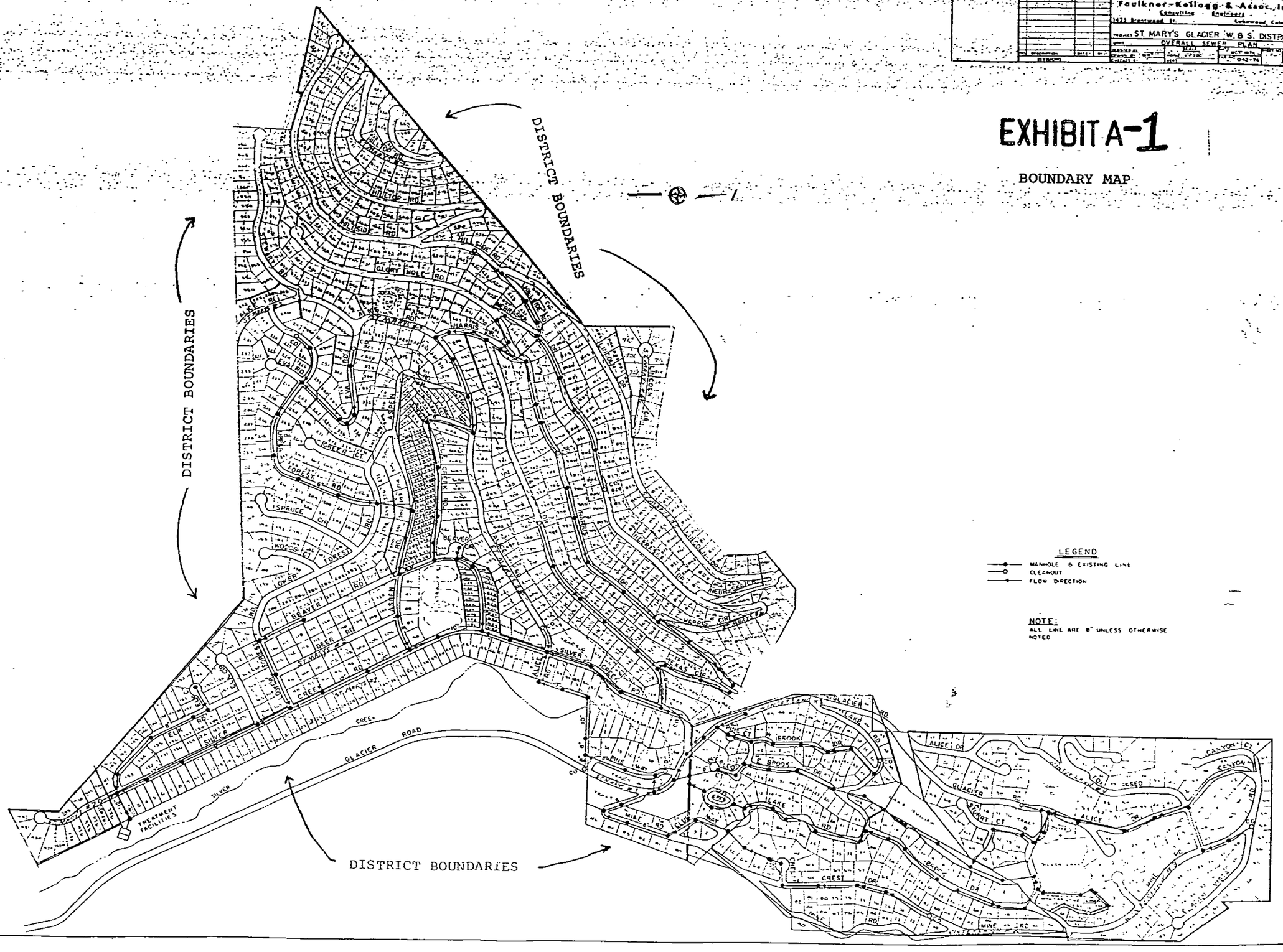

EXHIBIT B

PRELIMINARY REPORT
WASTEWATER FACILITIES
REVIEW

ST. MARYS GLACIER
WATER & SANITATION DISTRICT

Prepared For: St. Marys Glacier Water & Sanitation District

Prepared By: FLO Engineering, Inc.
P.O. Box 1659
Breckenridge, Colorado 80424

FLO
ENGINEERING
INC

FULLERTON
LENZOTTI
O'BRIEN
CONSULTING
ENGINEERS

CIVIL AND
WATER
RESOURCES
ENGINEERING

December 6, 1991

Mr. Tom Fiore
Chairman
St. Marys Glacier Water &
Sanitation District

Hand Delivered

Re: Preliminary Report - Wastewater Facilities Review,
St. Marys Glacier Water & Sanitation District

Dear Mr. Fiore:

We are pleased to submit this Preliminary Wastewater Facilities Report. The report presents the existing wastewater facilities problems and a cost-effective solution to these problems.

We have enjoyed working with you on this study and would like to express our appreciation for the valuable assistance and cooperation we received from the District and its staff.

Sincerely,

FLO ENGINEERING, INC.

James A. Lenzotti, P.E.

JAL/del

130 Ski Hill Road / Suite 160 PO Box 1659 Breckenridge, Colorado 80424
(303) 453-6394 • • • • • • • • • FAX (303) 453-4579

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I. INTRODUCTION

A. Purpose

The purpose of this preliminary report is to review the existing conditions of the St. Marys Glacier Water and Sanitation District's (SMGWSD) wastewater facilities and make recommendations for proceeding with a plan to improve the facilities' numerous shortfalls. This preliminary report and subsequent final report are part of the requirements of the existing Wastewater Discharge Permit of the Colorado Department of Health (Permit No. CO-0023094). The numerous system problems encountered through the operation and maintenance of the wastewater facility are discussed.

B. Planning Objectives & Goals

The goal of this preliminary report is to identify existing problems, provide preliminary solutions and associated costs and outline additional information needed to design solutions.

Planning objectives for the facilities are as follows:

- Identify schematic improvements to the wastewater system in order to comply with applicable state and federal requirements for wastewater discharges
- Identify specific improvements and associated costs where possible
- Establish groundwork for a detailed Infiltration and Inflow (I & I) study
- Establish a realistic time schedule for improvements

C. Sources of Information

Information used in the preparation of this preliminary report included background data from the District, the Colorado Department of Health, Utility Management Services, Inc. and previous studies and plans prepared by MSM, Faulkner Kellogg and LRF Engineering.

II. PLANNING CHARACTERISTICS

A. Climate

The St. Marys Water and Sanitation District is located at the foot of St. Marys Glacier, near the Fall River Road exit of I-70, Idaho Springs, Colorado. The District's elevation ranges from 10,000 feet to 10,900 feet. It is located in the NW 1/4, NE 1/2, Sec 11, Township 3S, Range 74W, 6th P.M.

The area's climate is characterized by cold winters, mild summers and a wide daily and seasonal variation in temperature. The majority of precipitation is in the form of snow. Most of the water resources are the result of snowpack. The cold temperatures impact the wastewater facilities' operation including year-round cold wastewater temperatures, freezing lines and excessive I & I due to freeze/thaw cycles. This causes stresses on the collection system lines and manholes.

B. Hydrologic

Hydrologic features in the District include Silver Creek which feeds from St. Marys Glacier through the District into Fall River, and two lakes, Silver Lake and Lake Quivira, which are located in the subdivision. The sewage collection system crosses and parallels Silver Creek. It is also contiguous to the two lakes.

C. Population

Population figures for SMGWSD have been formulated by tabulating the number of existing private and commercial units presently on the system. Total lot build-out has also been included in the analysis. The population includes permanent residents along with second home residents. Commercial facilities have minimal impact on the population estimate due to the small number of commercial establishments.

Existing population for the area peaks in the spring, summer and fall to 240 people which approximately doubles the winter population (120 full-time residents). This population resides in 205 residences. Table 2.1 outlines the current-year, twenty-year

Table 2.1 - Population Estimates, St. Marys Glacier Water & Sanitation District

Area	Existing		Year 2010		Build-out Population	
	Residences	Population	Residences	Population	Residences	Population
1	95	120	130	455	287	1,004
2	8	"	16	56	42	147
3	10	"	18	63	30	105
4	45	"	65	227	154	539
5	6	"	17	59	67	234
6	37	"	57	199	145	507
Outside Collection System Area	2	"	20	70	275	962
Totals	203	Perm. 120 2nd Home 120	323	1,129	1,000	3,498

Future population figures based on: 3.5 persons per unit

and ultimate population projections of the District for areas presently serviced by the sewage Table 2.1 collection system. Ultimate projections for the area based on the lots in the platted subdivisions.

Population projections for the year 2010 were based on a population increase of 10-20 people per year based on 5-7 homes being built on an annual basis.

III. EXISTING CONDITIONS

Existing Conditions for the wastewater facilities will be reviewed to determine the their functional suitability for the ultimate system design. A major task in the analysis is to determine the volume and composition of the wastewater. This will be used in the design of collection and treatment facilities. This section will review the existing wastewater characteristics along with existing conditions of the collection and treatment facilities.

A. Wastewater Characteristics

The planning and design of wastewater facilities is dictated by wastewater characteristics. As a preface to a discussion of wastewater characteristics, various terms are defined.

Wastewater. Water-carried wastes from residences, businesses, institutions, and industrial establishments, together with such groundwater, snow melt and storm waters as may be present.

Domestic Wastewater. Wastewater principally derived from the sanitary conveniences of residences or produced by normal residential activities.

Infiltration. The unintentional entry of water into the wastewater collection system from the surrounding soil. Common points of entry include broken pipes and defective joints in the pipe or walls of manholes. Infiltration may result from sewers being laid below the groundwater table or from soil saturation during rainfall.

Inflow. Rainwater or snow melt which enters the collection system through roof drain connections, catch basin connections, and holes in the tops of manhole covers in flooded streets. Inflow is distinguished from infiltration by the inflow which begins and ends quickly after a period of rainfall or warm weather. Infiltration, on the other hand, may persist for an extended period after a rainfall.

Dry Weather Flow. Wastewater flow during periods of little or no rainfall or snow melt. Rates of flow exhibit hourly, daily and seasonal variations. A certain amount of infiltration may also be present. Average dry weather flow (ADWF) is the average flow during a 24-hour dry weather period. Peak dry weather flow (PDWF) is the rate of flow during the peak hour of a dry weather day.

Wet Weather Flow. Wastewater flow during periods of moderate to heavy rainfall or during a snow melt period. Inflow may increase the wet weather flow to a rate many times greater than the dry weather flow, and unless provided for in sewerage design, can produce hydraulic overloads resulting in wastewater overflows to streets or water courses.

Biochemical Oxygen Demand. The quantity of oxygen required to support biological oxidation of the organic matter contained in wastewater. Usually referred to as BOD, this characteristic defines the strength of a wastewater and often determines the type and degree of treatment which must be provided to produce a required effluent quality. BOD is commonly expressed as the amount of oxygen utilized in the oxidization of organic matter over a five-day period at 20° C (BOD_5).

Suspended Solids. The suspended material transported in wastewater. The quantity of suspended material removed during treatment varies with the type and degree of treatment and has an important bearing on the size of many mechanical and process units.

Total suspended solids (TSS) and BOD_5 are two principal criteria used in defining the strength of a waste or the quality of an effluent.

In estimating future waste loads, the most significant components are the flow, biological oxygen demand (BOD_5), total suspended solids (TSS) and fecal coliform counts. From monthly data for SMGWSD, it is apparent that the strength of wastewater generated within the planning area fluctuates considerably by season. The main reason for this is the high system infiltration. Even though a small number of units are presently on the system, by comparing the flow, BOD_5, TSS and fecal coliform concentrations in Table 3.1, a major difference is observed. The SMGWSD's main problems are the system flows and fecal coliform counts into the lagoons, not the BOD_5 or TSS concentration. This identifies an I & I problem in the system and correlates with the small population presently living at St. Marys Glacier.

TABLE 3.1
ST. MARYS GLACIER WATER & SANITATION DIST
MONTHLY WASTEWATER COMPOSITION
30 DAY AVERAGE

DATE	MIN Ph	AVG. FLOW INFLUENT MGD	AVG. FLOW EFFLUENT MGD	PERMIT FLOW MGD	BOD5 INFLUENT lbs/day	BOD5 EFFLUENT lbs/day	PERMIT BOD5 EFFLUENT lbs/day	TOTAL SUSPENDED SOLIDS lbs/day	PERMIT TOTAL SUSPENDE SOLIDS lbs/da	AVG FECAL COLIFORM /100ML	PERMIT AVG FECAL COLIFORM /100ML
1989											
JUNE	6.9	0.014	0.015	0.030	38.50	2.20	7.50	6.00	18.70	2000	1500
JULY	7.0			0.030	30.30	0.50	7.50	0.60	18.70	73	1500
AUGUST	7.0	0.050	0.060	0.030	14.50	2.80	7.50	0.55	18.70	170	1500
SEPT	7.0	0.039	0.040	0.030	14.00	1.30	7.50	1.30	18.70	187	1500
OCT	6.9	0.030	0.030	0.030	24.00	1.40	7.50	1.50	18.70	140	1500
NOV	7.0	0.024	0.024	0.030	25.80	3.40	7.50	5.20	18.70	750	1500
DEC	7.0	0.012	0.012	0.030	11.30	1.50	7.50	3.10	18.70	1480	1500
1990											
JAN	7.0	0.039	0.040	0.030	7.80	1.43	7.50	4.60	18.70	1850	1500
FEB	7.1	0.015	0.013	0.030	8.38	0.57	7.50	0.69	18.70	66	1500
MAR	6.8	0.015	0.015	0.030	7.10	0.30	7.50	1.20	18.70	550	1500
APRIL	6.8	0.029	0.025	0.030	16.90	1.00	7.50	0.40	18.70	607	1500
MAY	6.8	0.066	0.060	0.030	40.50	4.20	7.50	3.10	18.70	38	1500
JUNE	6.8	0.021	0.021	0.030	94.50	1.75	7.50	9.10	18.70	214	1500
JULY	6.8	0.170	0.170	0.030	35.40	1.40	7.50	4.25	18.70	2290	1500
AUG	6.8	0.085	0.085	0.030	48.90	1.50	7.50	3.50	18.70	80	1500
SEPT	6.8	0.039	0.039	0.030	37.00	3.60	7.50	12.40	18.70	60	1500
OCT	6.8	0.039	0.039	0.030	37.00	3.10	7.50	1.30	18.70	267	1500
NOV	6.9		0.063	0.030	10.50	7.50	7.50	13.96	18.70	106	1500
DEC	6.9	0.046	0.049	0.030	19.10	0.98	7.50	8.10	18.70	280	1500
1991											
JAN	6.9	0.036	0.034	0.030	25.00	4.50	7.50	4.50	18.70	3333	1500
FEB	6.9	0.040	0.040	0.030	9.30	4.00	7.50	4.30	18.70	2213	1500
MAR	6.9	0.046	0.042	0.030	56.00	2.30	7.50	15.70	18.70	953	1500
APRIL	6.9	0.055	0.058	0.030	12.80	5.60	7.50	3.80	18.70	1100	1500
MAY	6.9	0.950	0.950	0.030	331.00	6.30	7.50	87.90	18.70	5900	1500
JUNE	6.8	0.055	0.058	0.030	11.00	0.40	7.50	2.80	18.70	894	1500
JULY	6.9	0.223	0.230	0.030	21.00	8.80	7.50	11.50	18.70	2560	1500
AUG	6.7	0.073	0.078	0.030	7.30	0.70	7.50	0.70	18.70	70	1500
SEPT	7.0	0.058	0.058	0.030	10.60	0.50	7.50	1.30	18.70	100	1500
OCT	6.7	0.104	0.101	0.030	34.70	18.80	7.50	57.00	18.70	100	1500
NOV				0.030			7.50		18.70		1500
DEC				0.030			7.50		18.70		1500
									18.70		1500

B. Conveyance System

The wastewater conveyance system consists of interceptor, trunk and collection sewers ranging in size from 8" to 12". The system was built in the early 1970s. The sewer lines were constructed with vitrified clay pipe (VCP) and asbestos cement (AC) pipe. Manholes in the system were built with precast concrete barrel sections or masonry placed on pour-in-place bases.

From past maintenance records and I & I studies, a number of lines are in very poor condition. Infiltration throughout the majority of the system is high, both from the pipeline as well as the manholes. The problems that have occurred throughout the system are:

- Frozen lines
- Frozen service lines
- Blocked lines
- Line breaks
- Leaking manholes

Due to these problems, the District hired Utility Management Services, Inc. to clean, teleview and repair portions of the system from 1986 to 1991. The District has cleaned and reviewed approximately 18,000 LF of sewer line, televised approximately 3,000 LF of sewer line, repaired 30-50 manholes and repaired numerous line breaks and cracks. Excavation during repairs showed that little or no bedding or select cover was used during installation. Therefore, the principal problems with the system are the result of poor construction practices. As a result of poor construction or possibly chemical attack by ground water, many of the existing manholes have their bottom sections severely eaten away. The continuing deterioration of the system and increasing infiltration has led the District to abandon the cleaning and televising to perform an I & I analysis on the system and track the major problems and prioritize the repairs and/or replacement. This program was started in 1989 with flows being monitored in the month of May. Approximately 8 manholes were targeted in the system, with another 7 manholes added in 1990. The results of this I & I will be discussed later in this section.

The manholes which were monitored correlated well with the flows monitored at the treatment facility. The monitoring outlined approximately 100,000 GPD out of the 130,000 GPD registered at the facility. Comparing flow measurements at the lagoon at different times of the year shows that infiltration occurs in the spring with very distinct peaks around the end of June. Bleeding, which is common in mountainous area, does not contribute as much flow as originally anticipated and this is reflected in the flow records. Table 3.1 outlines flows recorded since June of 1989. Average monthly flows range from the low flow of 12,000 Gal/Day to a peak flow of 950,000 gallons. The low flows, although not consistent, occur in the winter months with peak flows occurring in May and June. Higher than normal flows occur in July and August. I & I repairs completed from 1987 to 1990 indicate little improvement on the total system flows. Even with repairs being done to eliminate 40,000-50,000 gallons per day of infiltration from the system, the flows at the treatment plant have slightly increased on the average. The logical reason for this occurring is the continual deterioration of the system.

Table 3.2, Population/Flow Conditions Based on Existing Population and Growth Factors, outlines anticipated flows based on the existing population versus flows recorded at the treatment facility. At the present time the population of St. Marys Glacier averages 2-2.5 people/unit. In the future, it is anticipated that the average people/unit ratio will increase to the 3.5 people/unit.

Table 3.2 POPULATION FLOW CONDITIONS BASED ON EXISTING POPULATION AND GROWTH FACTORS

Date	Existing[1] Population	2010 Population Units/Pop.	Existing[2] Estimates Flows (GPD)	2010[3] Estimates Flows (GPD)	1990-1991 Actual Flows Avg. (GPD)	Comments
January	120	/240	9600	19200	37000	
February	120	/240	9600	19200	26000	
March	120	/240	9600	19200	28000	
April	120	/240	9600	19200	41000	
May	150	/300	12000	24000	505000	Avg. using 1991 with 1 major leak
June	240	/480	19200	38400	39000	
July	240	/480	19200	38400	200000	
August	240	/480	19200	38400	81000	
September	240	/480	19200	38400	48000	
October	240	/480	19200	38400	39000	
November	150	/300	12000	24000	63000	
December	120	/240	9600	19200	49000	

(1) For existing population based on information from St. Marys Water & Sanitation District
(2) Flow estimates based on 80 gallon/unit/day
(3) 2010 population based on 280 gallon/unit/day with 3.5 people per unit

Based on the I & I analysis done in 1989 and 1990, along with the system configuration, the collection system has been broken up into 6 separate areas with Area 1 being broken up into 7 separate sub-areas to enable tighter control over the I & I analysis. Figure 1 outlines the existing sewage collection system and sub-areas. A description of each follows.

Service Area 1: Service Area 1 consists of units located in the northeast portion of the District. The area is predominantly the wettest of all areas. Lake Quivira, Silver Lake and Silver Creek are located in Service Area 1. Service Area 1 has 95 existing units on line with an ultimate build-out of 297 units. This area was studied more extensively for I & I since it contributes major portions to the system.

Due to the large amount of water existing adjacent to the sewer lines, a high infiltration inflow is observed in Area 1. Previous I & I studies done in May, 1989 and 1990, show a contribution of 50,000 gallons from this area. Area 1 has been further subdivided into 7 sub-basins to spot specific areas of infiltration. Two critical sections were televised through past I & I--the line under Lake Quivira and the line in Alice Drive. The Lake Quivira line showed no leakage into it. Leakage however, was occurring in the manholes through this section along with service lines. In May of this year, a 0.95 MGD flow was recorded at the treatment facility. This was due to manholes in Lake Quivira which have continually deteriorated. The manholes were repaired in June of 1991, and flows were reduced to the previous excessive amounts. Approximately 19,000 GPD were estimated to be infiltrating into this section of line. The line in Alice Drive has numerous leaks at joints and sections of cracked pipe and broken pipe exist along this section. Approximately 21,000 GPD were estimated to be flowing through this section of line. Other infiltration problem areas in this sub-area are between Lake Quivira and Alice Drive which contribute approximately 9,000 GPD. From site inspections, this appears to be a result of manhole leakage. The remaining sections of line showed signs of some leakage, but were high enough above high groundwater elevations that I & I has not been a concern. Approximately 18,000 LF of line exists in this sub-area.

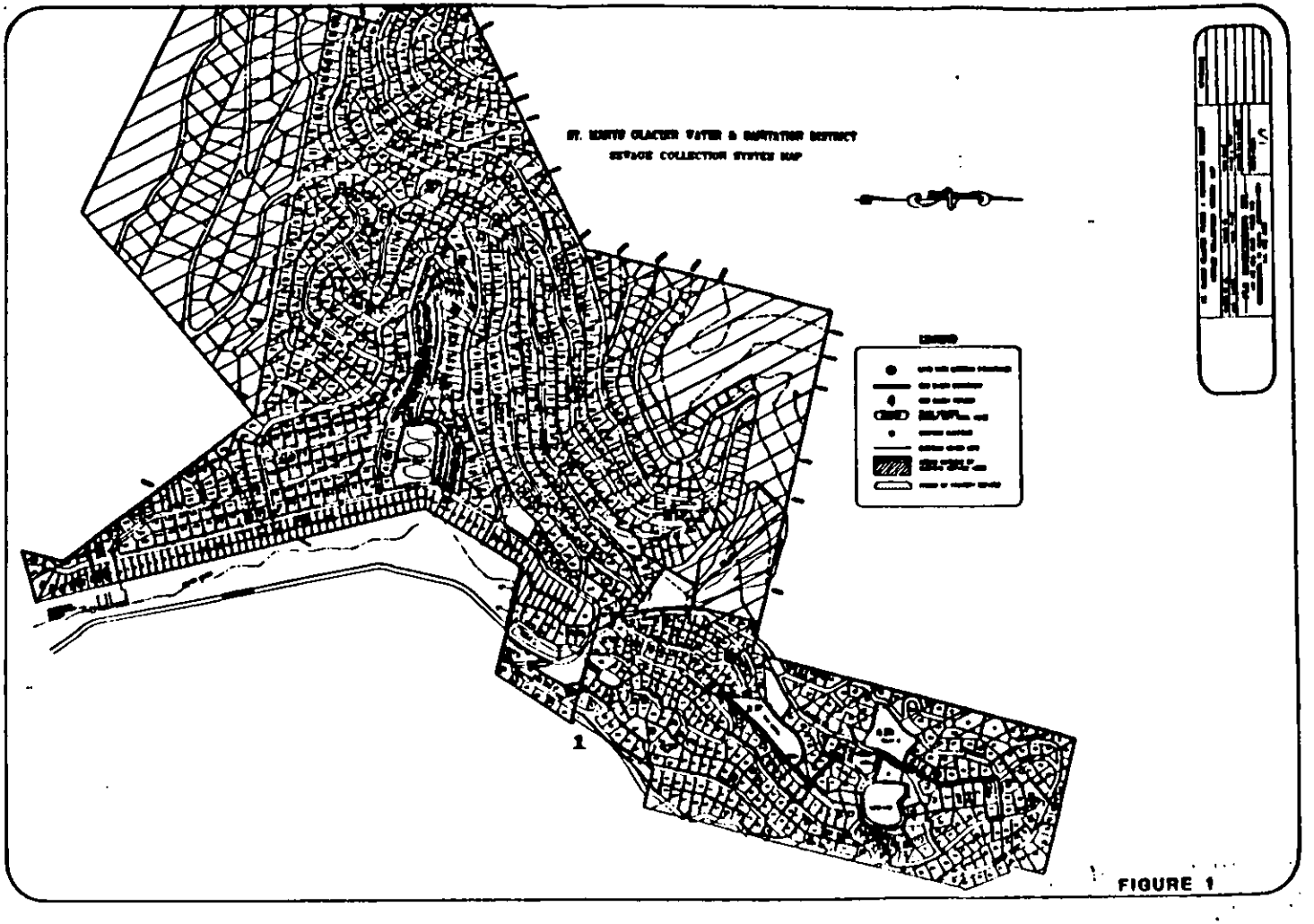

ST. HELENS GLACIER WATER & SANITATION DISTRICT
SEWAGE COLLECTION SYSTEM MAP

FIGURE 1

Service Area 2: Service Area 2 includes the north part of Harris Drive together with Texas Circle. The area is well above the valley floor and therefore has no real I & I problem. From the previous flow monitoring, it was estimated the area could contribute approximately 500 GPD. This inflow is small enough at this time that this area can be eliminated from future flow monitoring. Approximately 3200 LF of line are included in this sub-area.

Service Area 3: Service Area 3 includes the northern half of Texas Drive. This area is also well above the valley floor and does not appear to have any major I & I problems associated with it. I & I estimates for this area are approximately 1000 GPD. Approximately 2000 LF of line are included in this sub-area.

Service Area 4: Service Area 4 includes the area contiguous to the southwest half of Nebraska and Harris Drives together with the area abutting Little Creek Road and the portion of Beaver Road north of Aspen Road. The area contains a mix of single family lots along with trailer houses. This area contributes high I & I flows to the system. Specific sections of lines in Beaver Road from Silver Creek road to Little Creek Road were found to contribute approximately 43,000 GPD from the I & I studies done. Several ponds are located in this area which were excavated in the early 1980s to provide material for filling the Glory Hole Mine, adjacent to Alice Road. In addition, numerous springs exist in this area. Inflow from the ponds and springs coupled with the numerous services and types of connections associated with trailer risers are believed to be the main infiltration problems. An additional 5000 GPD was monitored from the sewer lines in Little Creek Road and above. Approximately 8,500 LF of line are included in the sub-area.

Service Area 5: Service Area 5 consists of the area bounded by Aspen Road, Forest Road and Eva Road. The area is located on higher ground with a small section being adjacent to the ponds that were excavated for the filling of the mine. The flow monitoring done for this section shows that the area contributes approximately 5000 GPD. Approximately 4800 LF of line is included in this section.

Service Area 6: Service Area 6 consists of areas feeding the main line along Silver Creek Road, and areas along Elk Road and the east portion of Lower Forest Road. Flows from this area were not previously monitored with the exception of subtracting other monitored sub-areas from plant flows. Using this information it was determined that 25,000 gallons/day of infiltration flows through this section minus any usage, which was ignored to simplify the review. The area adjacent to Elk Road and Lower Forest Road is dry and therefore is believed to contribute little to the I & I problem. The main line in Silver Creek Road is lower in elevation than the other areas and could be contributing 20,000 gallons/day. Approximately 8400 LF of line exists in this sub-area.

C. Treatment Facility

The existing treatment facility consists of 2 lagoons. The primary aeration lagoon has a volume of 0.35 million gallons with approximate dimensions of 110' x 110' x 5' deep and 3:1 side slopes. The polishing lagoon has a volume of 0.27 million gallons with approximate dimensions of 100' x 100' x 5' deep and 3:1 side slopes. One aerator exists in the pond area. Chlorination/dechlorination has been added to the system in 1991. The chlorination/dechlorination building provides for hypochlorination with a 30-minute contact period through a series of baffles with dechlorination consisting of the addition of sodium metabisulfate at the effluent pipe. Chlorination and dechlorination is fed by means of mechanical metering pumps.

BOD_5 and TSS removal have generally met permit guidelines even with the increased flows due to I & I. Fecal coliform counts however, have been exceeded during the wintertime and during spring runoff. The chlorination/dechlorination facility should eliminate any future fecal coliform problems.

Present capacities for the treatment system is 30,000 gallons per day which is based on a single aerated lagoon, a 10-day detention period and the 345,000 gallon capacity of the aerated lagoon.

IV. PRELIMINARY ALTERNATIVES AND RECOMMENDATIONS

To meet the District's requirements for compliance regarding its Wastewater Discharge Permit, five alternatives will be reviewed. They are:

Alternative 1 - Major collection system repairs

Alternative 2 - Partial collection system repair/existing lagoon expansion

Alternative 3 - Partial collection system repair/new lagoon construction

Alternative 4 - Expand treatment facility to match peak system flows

Alternative 5 - Partial collection system repair/package wastewater treatment plant installation

Alternative 1 - Major Collection System Repairs

Fixing the major infiltration problems include the replacement of the line in Lake Quivira, sliplining the Alice Drive sewer line, replacing 3-4 manholes between Lake Quivira and Silver Lake, replacing the section of line in north Beaver Road and finally, spot repairs and sliplining of the main line in Silver Creek Road. The areas of sewer line leakage in Silver Creek Road will need to be defined more precisely. To accomplish this, a detailed I & I study will need to be done in the spring time. Estimated costs for the repair and/or replacement of lines outlined in this category are estimated to be from $220,000 - $240,000. Detailed costs can be found in Appendix A.

Alternative 2 - Partial Collection System Repair/Existing Lagoon Expansion

This alternative would include fixing two to three areas of the collection system along with expanding the existing lagoon system to a capacity of 50,000 gallons/day. Targeted for this would be sliplining through the Alice Drive/Lake Quivira sewer line and replacement of Line in north Beaver Road. The expansion to the existing lagoon would be accomplished by adding an aerator to the main lagoon and dividing the polishing lagoon to include partial aeration. Estimated costs for this option are approximately $150,000 for collection system repairs and $50,000 for lagoon expansion.

Alternative 3 - Partial Collection System Repair/New Lagoon Construction

This alternative includes making partial repairs to the collection system along with expanding the treatment system to include an additional 0.1 MGD capacity. The addition of the new lagoon would include new piping, aerators, the lining of the new lagoon along with retrofitting connections to the existing system. Projected costs for this alternative would include approximately $150,000 for collection system improvements along with $180,000 for expansion of the treatment system for a total improvements estimate of $330,000. This alternative would allow for increased user capacity for the district, eliminate

the known major infiltration problems and allow for additional capacity which may be needed with the continual deterioration associated with the system while not exceeding the District's effluent limitations. All of the alternatives, will require additional maintenance budgeting to counter the continued deterioration of the system.

Alternative 4 - Expand the Treatment Facility to Match Peak System Flows

This option would require establishing a peak flow for the system. With a variation of flows from the average peaks around 0.2 MGD to the high peak of 0.95 MGD which occurred this May, this alternative would be cost prohibitive.

Alternative 5 - Partial Collection System Repair/Package Wastewater Treatment Plant (WWTP) Installation

This alternative would involve the installation of a package wastewater treatment plant. The WWTP would be used in conjunction with the existing lagoons by using the lagoons as flow equalization for the plant. The WWTP size would range from 70,000 GPD to 100,000 GPD. The plant installation would eliminate the past problems of the lagoons from going anaerobic in wintertime due to weather and icing. In addition to the package WWTP, partial collection system repairs would be done to ensure that the flow equalization from the lagoons could handle peak system flows. Estimated costs for this option are $150,000 for collection system repairs and $580,000 for the treatment facility totaling $730,000.

Preferred Alternative

From the analysis it is recommended that the District proceed with a combination of two of the alternatives; Alternatives 2 and 3. From a financial prospective, the District should assume that Alternative 3 would be required to bring the system into compliance with the Discharge Permit. From a construction and phasing perspective, it

would make sense to construct Alternative 2 first, review the success of this alternative and proceed, if necessary, with the construction of an additional lagoon. This option minimizes the money spent and would allow for the inclusion of additional improvements that may be identified as a result of the I & I analysis being proposed this spring.

V. IMPLEMENTATION SCHEDULE

A. Financial Implementation

To implement the plan, the financial capability of the District to pay for and manage the facilities and will be the key to success. This report will not attempt to outline options for obtaining grant assistance, bonding or low interest loans. The District is pursuing this portion of the plan implementation.

B. Implementation for Design

To implement the proposed improvements, it will be necessary to conduct a more detailed I & I analysis during the peak spring runoff. Specific improvements can be designed and less cost-effective improvements abandoned. The I & I monitoring system that will be outlined includes both continuous and random monitoring locations and anticipated length of time for monitoring. From the I & I analysis done in 1989 and 1990, the system has been broken up into the 6 areas with Area 1 being broken up into 7 sub-areas. Continuous monitoring locations should be done at the following three locations:

1) Permanent monitoring installation in Silver Creek Road (Area 6)
2) Manhole above intersection of Silver Creek Road & north Beaver Road (Area 4)
3) Manhole below Lake Quivira (Sub-area 1F)

Random monitoring would occur throughout the system with portable weirs. The intent for the random monitoring would be to pinpoint the specific line sections that have problems, identify peak flows in these sections and document period of leakage. It is anticipated that the majority of monitoring would occur in Areas 1, 4 and 6 with verifications of past flow data for Areas 2, 3 and 5. A minimum of 20 days of monitoring have been assumed.

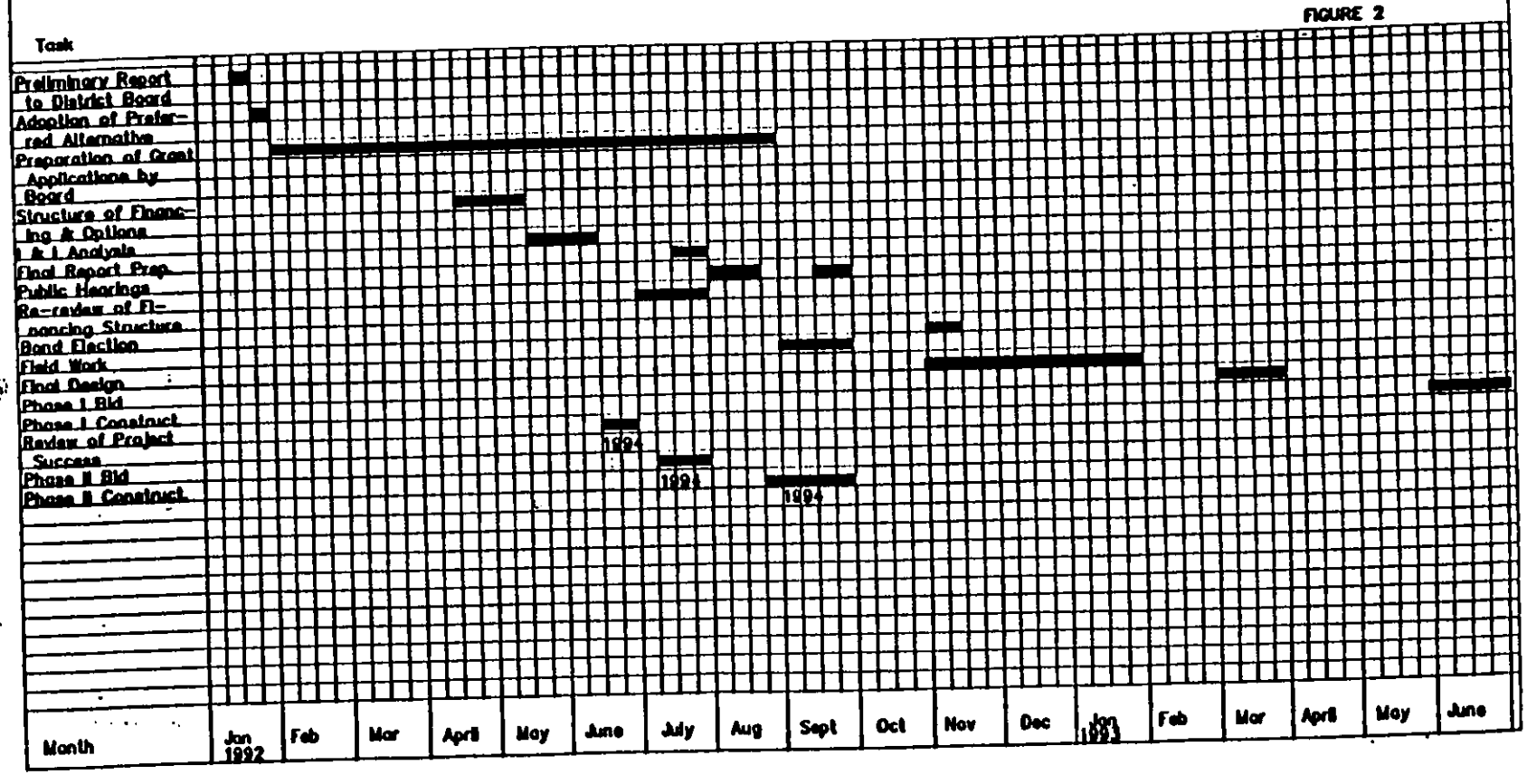
C. Schedule

A preliminary schedule for the project improvements can be found on

Figure 2. The schedule outlines design, administration and construction schedules for completion of the preferred alternative.

St. Marys Glacier Water & Sanitation District
Preliminary Schedule for System Improvements

FIGURE 2



APPENDIX A

PRIORITY AREAS FOR
REPAIRS AND/OR REPLACEMENT
ALTERNATIVE NO. 1

Area 1A - Alice Drive from Glacier Road to Fox Paseo
(Length: 800 LF)

Method of Repair: Sliplining	
1600 LF @ $20.00/LF	$32,000
Excavation & Retap @ LS	1,500
Additional Excavation & Repairs @ LS	2,500
Subtotal	$36,000

Areas 1B & 1F - Lake Quivira
(Length: 1800 LF)

Complete Replacement	
1800 LF @ $45/LF	$81,000
6 Manholes @ $1800/EA	10,800
7 Service line reconnects @ $750/EA	5,250
Miscellaneous	$ 2,950
Subtotal	$100,000

Area 4 - Beaver Road from Silver Creek Road to Little Creek Road
(Length: 950 LF)

It is unknown at this time as to contribution of service line leakage from individual trailers (assume 4 repairs)

950 LF @ $40/LF	$38,000
4 Manholes @ $1800/EA	7,200
8 Service line connections @ $500/EA	4,000
4 Service line repairs @ $1,000/EA	4,000
Miscellaneous	$ 3,800
Subtotal	$57,000

Area 5 - Silver Creek Road

8 Manhole Repairs @ $500/EA	$ 4,000
700 LF Sliplining @ $25/LF	17,500
Miscellaneous	$ 4,500
Subtotal	$26,000
Total (1-4)	$219,000
Contingency ± 10%	21,000
TOTAL	$240,000

* Alternatives 2, 3 & 5 assume constructing improvements to Areas 1A, 1B & 1F, and Area 4

PRELIMINARY COSTS FOR
NEW LAGOON OF 100,000 GPD
ALTERNATIVE 3

New pond volume: 1,0000,000 Gal. (2 Cells)
Depth: 5 - 8 Feet

Excavation:	7000 CY @ $5/CY		$ 35,000
Fill:	1000 CY @ $10/CY		10,000
Lining:	3500 SY @ $20/SY		70,000
Piping:	Lump Sum		4,000
Aerators:	Lump Sum		30,000
Fencing:			$ 15,000
		Subtotal	$164,000
		Contingency ± 10%	16,000
			$180,000

WASTEWATER TREATMENT FACILITY
PACKAGE PLANT
ALTERNATIVE 5

Mechanical Bar Screen & Grit		$ 20,000
Removal		25,000
Site Work		20,000
Piping		250,000
Package WWTP		
Installation & Building Housing 150,000		20,000
Electrical		20,000
Fencing		
	Subtotal	$505,000
	Contingency ± 10%	50,000
		$555,000

Smith & Loveless Model 30R100 Package Plant with Covered Dome (partially buried)

EXHIBIT C

PRELIMINARY
WATER FACILITIES
REVIEW

ST. MARYS GLACIER
WATER & SANITATION DISTRICT

February, 1992
Revised April, 1992

Prepared For: St. Marys Glacier Water & Sanitation District

Prepared By: FLO Engineering, Inc.
P.O. Box 1659
Breckenridge, CO 80424

I. INTRODUCTION

A. Purpose

The purpose of this preliminary report is to review the existing conditions of the St. Marys Glacier Water and Sanitation District's (SMGWSD) water facilities and make recommendations for proceeding with a plan to make improvements to the facility. The need for this review is based on the past problems with freezing and line breaks, the increased flows that the system has shown, and the pressure problems throughout the system.

B. Background

The increased demand on the water system along with the small population presently using the system is creating an unwarranted expense to the District's operation and maintenance (O & M) budget. The increased growth of the area will further complicate the system. This fact along with the possibility of the system continuing to deteriorate shows an immediate need for fixing the system problems.

The water system and District area has been broken into 6 pressure zones. They are:

Zone 1 - Intersection of Glacier Road and Silver Creek Road, north to the intersection of Alice Drive and Fox Paseo.

Zone 2 - Intersection of Lower Forest Road and Silver Creek, north to the intersection of Glacier and Silver Creek Road.

Zone 3 - South of the intersection of Lower Forest and Silver Creek Road.

Zone 4 - Booster Pump #1 zone on Hillside Roads and Nebraska Drive.

Zone 5 - Booster Pump #2 zone on Crest Drive.

Zone 6 - Booster Pump #3 zone on Fox Paseo Road and Upper Mine Road at Glacier Vista.

Figure 1 outlines the existing District and individual zones.

II. SERVICE AREA

A. Location

The St. Marys Water and Sanitation District is located at the foot of St. Marys Glacier, near the Fall River Road exit of I-70, Idaho Springs, Colorado. The District's elevation ranges from 10,000 feet to 10,900 feet. It is located in the NW 1/4, NE 1/2, Sec 11, Township 3S, Range 74W, 6th P.M.

The area's climate is characterized by cold winters, mild summers and a wide daily and seasonal variation in temperature. The majority of precipitation is in the form of snow. Most of the water resources are the result of snowpack. The cold temperatures impact the water system facilities operation including water line freezing and water usage increase due to bleeding.

B. Hydrologic

Hydrologic features in the District include Silver Creek which feeds from St. Marys Glacier through the District into Fall River, and two lakes, Silver Lake and Lake Quivira, which are located in the subdivision.

C. Population

Population figures for SMGWSD have been formulated by tabulating the number of existing private and commercial units presently on the system. Total lot build-out has also been included in the analysis. The population includes permanent residents along with second home residents. Commercial facilities have minimal impact on the population estimate due to the small number of commercial establishments.

Existing population for the area peaks in the spring, summer and fall months to 240 people which approximately doubles the winter population (120 full-time residents).

Approximately 200 units exist in the District with an ultimate build-out of approximately 1000 units. The population and unit estimates are only to be used as a tool for forecasting the ultimate facility requirements. Table 2.1 outlines the unit and populations of the area based on the individual pressure zones outlined for the system.

Assumptions - Ultimate and year 2010 population figures have been obtained by multiplying the ultimate units by 3.5. This number represents the population at full occupancy. Ultimate projections are based on the lots in the platted areas. Population projections for the year 2010 were based on a population increase of 10-20 people per year based on 5-7 homes being built on an annual basis.

Table 2.1 - Population Estimates, St. Marys Glacier Water & Sanitation District

Pressure Zone	Existing		Year 2010		Build-out Population	
	Residences	Population	Residences	Population	Residences	Population
1	86		120	420	397	1390
2	88		123	430	277	969
3	13		30	105	73	255
4	9		20	70	172	602
5	4		15	52	46	161
6	3		15	52	35	122
Totals	203	Perm. 120 2nd Home 120	323	1129	1000	3499

Future population figures based on: 3.5 persons per unit

III. EXISTING SYSTEM REVIEW

The SMGWSD water system consists of two water supply sources and a distribution system serving six separate pressure zones. Figure 1 outlines the individual zones. Zones 1 through 3 are separated by pressured reducing valves (PRV). Water from Zone 1 flows through the PRV to Zone 2 which flows to a dead-end distribution system at Zone 3. Zones 4 through 6 pump water from the individual pressure zones. Zone 4 pumps water from Zone 2. Zone 5 also pumps water from Zone 2 while Zone 6 pumps water from Zone 1. A brief description of individual facilities follows:

Water Supply Facilities - The present sources of water for the District are wells. Three wells exist in the system. These wells supply approximately 60-70 GPM to the system. Treatment is limited to chlorination. Well No. 1 is located adjacent to Silver Lake in the Winterland area at an elevation of approximately 10,400 ft. It is estimated to be 150' deep. It produces around 33 Gallons/Minute (GPM). This well is used as the main source for the system. Well No. 3, located at an elevation of approximately 10,300 ft, produces around 30 GPM. Well No. 2 produces an unknown quantity of water but is substantially less than Well Nos. 1 and 3. It is rarely used in normal operation of the system.

Water Distribution Facility - Water distribution facilities consist of water lines ranging from 4 to 10 inches in diameter. Lines have been constructed of cast iron pipe. In addition, three booster pump stations, three pressure reducing valves, a recirculating pump and a vault make up the distribution facility.

Storage Facilities - No storage facilities exist for the water system. All demands are supplied by the wells and booster pumps.

Usage - The existing system presently uses from 40,000 to 45,000 gallons/day. Peak usage for the system which usually occurs in the winter months peaks to around 80,000 gallons/day. Comparing this to the theoretical usage in Table 4.1 shows that water usage on the average exceeds daily usage estimates by a factor of 3 to 6 times, comparing it to permanent and summer months populations. There appears to be 2 main reasons for the usage. They are:

- System Leakage
- Winter-time line bleeding

To be able to correlate the two usage factors, well metering information was compared to sewage effluent flows, during the winter when infiltration is at its lowest.

At pumping rates of 80,000 GPD, sewage effluent flows are averaging 35,000 GPD. Since winter-time population is small and infiltration is at its lowest, it is conceivable that half of the sewage effluent flows could be caused by bleeding. This would be an average flow rate of 12 GPM. Taking a rate of 0.5 GPM/Unit yields approximately 24 units bleeding water in their respective residences. The remaining flow difference between the water system usage and sewage effluent (45,000 GPD) would be in part from some system leakage. This equates to an average flow rate of 31 GPM. This amount could be the result of main line leakage or service line leakage.

Pressure and Flow Problems - Pressure and flow problems exist in various locations in the system. Leakage has a major part in pressure problems. The other reason for pressure problems is the fact that the system has one feed source. The units farther away and higher than the pumping facilities will be affected the most.

IV. WATER REQUIREMENTS

A. General

Water requirements for the SMGWSD affect supply distribution and storage facilities for the District. This section will review water requirements as they relate to pumping requirements and proposed storage requirements. No attempt has been made to quantify flows through the distribution system. Fire flows for the area are addressed as they relate to storage.

Assumptions made in the water requirements analysis are as follows.

- Average daily flow for single family residential equivalent (EQR) = 350 Gallons/Day
- Peak daily flow = 150 percent of average daily flow

Table 4.1 - Pumping Facilities Requirements

	Entire District	Zone 4	Zone 5	Zone 6
Existing Population	240	–	–	–
Average Daily, GPM	17	–	–	–
Peak Day, GPM	25	–	–	–
2010 Population	1129	70	52	52
Average Daily, GPM	78	7	4	4
Peak Day, GPM	118	11	6	6
Ultimate Population	3499	802	161	122
Average Daily, GPM	243	42	11	8
Peak Day, GPM	364	63	17	13

Table 4.2 - Existing Pumping Facilities

Existing Pumping Facilities	
Well #1	33 GPM
Well #2	Not Available
Well #3	30 GPM
Zone 4	Not Available
Zone 5	Not Available
Zone 6	Not Available

Fire Flows - Fire flows for the District using present Insurance Services Offices (ISO) requirements for a single family home will be around 750 Gallons/Minute (GPM). Duration for this flow is 2 hours. This equates to a storage requirement of 90,000 gallons. To provide fire flows the District would need to install hydrants throughout the system.

Storage Requirements - Storage requirements are based on a single peak day flow along with fire flows. Table 4.3 outlines storage facility requirements for the District.

Storage Facilities Requirements Based on Peak Day Flows and
Fire Flow Requirements

St. Marys Glacier Water and Sanitation District

Table 4.3

	Peak Daily Flow GPD	Fire Flows (GAL)	Total Storage (GAL)
Existing Population	36,000	90,000	126,000
2010 Population	170,000	90,000	260,000
Ultimate Population	524,000	90,000	614,000

V. RECOMMENDED SYSTEM IMPROVEMENTS

Recommended improvements to the system include the addition of storage and improvements to the distribution facility. A brief review of each follows.

Storage - Storage facilities for the District provide a number of benefits.

- Provide water for the system in case of a supply problem
- Provide second point of source for even system flow and pressure distribution
- Provide storage for fire protection

Due to the District's potential population being so much greater than the existing population, it is difficult to recommend a storage size. The expense of providing theoretical storage would not make sense, but neither would providing for today's demand. Based on These facts, the recommended storage for the District should be a minimum of 100,00 gallons (35' diam. x 15'). This will provide more storage than needed at the present time and will marginally allow for growth in the District for the next 10 to 20 years. It also provides an option for the District to include fire protection for the area.

The tank could be an above-ground concrete or steel tank or a buried underground tank. A good location for the tank site would be on Hilltop Road. The tank would be fed by booster pump No. 1. Some up-sizing and modifications to this station would be required to provide additional pumping capacity to the tank.

Estimated cost for the tank would be $160,000 - $180,000.

The short term recommendations for storage include the incorporation of storage for Zones 4 and 5. The main problem with these areas is the fact that during high demands, whether the demands are caused by bleeders, usage or leaks, pressures and flows to the area drop dramatically. To provide make-up flows to these areas, a 5000 gallon storage reservoir would provide storage for approximately an average day's usage. The precast concrete tanks would be installed adjacent to the existing booster pump stations. Intake piping from the booster pump would be connected to the tank. Operation of the tank would be via a float switch which would operate a shutoff valve. Approximate cost of each installation would be $7,000.00.

Distribution System - The recommendations for the distribution system mainly deal with the problem of leaks. A program needs to be designed which not only eliminates the system's existing leaks, but also allows for the excess flows to be accounted for at a future date.

The existing water system was constructed in the early 1970's using cast iron pipe. The material tends to be brittle; cast iron has been replaced with ductile iron pipe as the standard. Comments from the District staff concerning previous repairs to the distribution system indicate that very little care was taken during construction. It is apparent that system breaks will continue to occur throughout the system due to these facts.

An isolation program would require the following.

- Installation of water meters at the existing pressure reducing valve vaults
- Installation of water meters at the booster pumps

This first step would break the system down into 6 distinct areas. To further isolate sections of the system, the system needs to be methodically valved off for a short period of time to again check the meters. By using the District's present isolation plan, the system would be further broken down in the following manner.

Zone 1 - 5 Areas
Zone 2 - 7 Areas
Zone 3 - 2 Areas
Zone 4 - 1 Area
Zone 5 - 1 Area
Zone 6 - 1 Area

To further break down the system, individual sections would be isolated. After this point, leak detection equipment would need to be brought in. Very preliminary costs for this program range from $10,000 to $15,000.

Other improvements to the distribution system would include the modifications to booster pump No. 1 and construction of a transmission line to the proposed storage tank site.

The modifications to booster pump No. 1 include the up-sizing of the pump and installation of a pressure reducing valve vault and telemetry controls for tank. The

transmission line would include construction of a buried ductile iron line and a telemetry line.

Estimated costs for these items are: $172,000. Preliminary costs for the recommended improvements follow.

Cost Estimate

St. Marys Glacier Water & Sanitation District

Storage Reservoir - 100,000 Gallon Tank

1)	Steel Tank		$ 70,000
2)	Tank Insulation		20,000
3)	Site Work		10,000
4)	Foundation & Valve Vault		15,000
5)	Piping		15,000
6)	Electrical & Controls		8,000
7)	Land		10,000
		Subtotal	$148,000
		Contingency 1 10%	$ 15,000
		Total	$163,000

Cost Estimate

St. Marys Glacier Water & Sanitation District

Leak Isolation Program

1)	Meter Installation	
	6 @ $75/EA	$ 4,500
2)	Isolation & Monitoring (By District)	--
3)	Leak Detection	
	3 Days @ $1000/Day	3,000
4)	5 Repairs @ $1000/EA	5,000
	Total	$12,500

Preliminary Cost Estimate

St. Marys Glacier Water & Sanitation District

Booster Pump No. 1 Modification

1)	Pump Up-Sizing	$ 2,500
2)	Repiping	500
3)	PRV Installation	15,000
4)	Miscellaneous Controls	2,000
	Subtotal	$20,000
	Contingency 1 10%	2,000
	Total	$22,000

Preliminary Cost Estimate

St. Marys Glacier Water & Sanitation District

Transmission Line

1)	3000 LF of Transmission Line @ $40/LF	$120,000
2)	Valves and Fittings @ 1 15%	18,000
	Subtotal	$138,000
	Contingency 1 10%	12,000
	Total	$150,000

Cost Estimate

St. Marys Glacier Water & Sanitation District

5000 Gallon Storage Resevoir

1)	5000 Gallon Tank		$ 5,000
2)	Miscellaneous Piping		600
3)	Miscellaneous Valving		500
4)	Electrical		300
		Subtotal	$6,400
		Contingency	$ 600
		Total	$7,000
2 Installations, Zones 4 and 5		Total	$14,000

St. Mary's Glacier Water and Sanitation District

EXHIBIT D

NOVEMBER 15, 1991
BUDGET FOR JANUARY 1, 1992 TO DECEMBER 31, 1992

ASSESSED VALUATION: $2,181,540.00

	1990 (Actual)	1991 (Est.)	1992 (Budget)
Beginning Cash Balance	$10,992	22,048	32,878
REVENUES:			
Ad Valorem Taxes	12,015	12,989	12,515
Spec. Owner/Delinquent Taxes			1,000
Water & Sewer Fees	53,363	50,800	53,100
Readiness to Serve	152	38	0
Interest Income	532	1,260	1,250
Tap Fees	0	1,500	0
Other Revenue	1,226	825	800
TOTAL REVENUES:	67,288	67,412	68,665
EXPENDITURES:			
Bond Payments	0	0	0
Long Term Debt	1,000	1,000	1,000
Management	16,551	16,551	16,551
Maintenance - Water & Sewer	7,991	7,900	10,000
Water Fee	5,000	5,000	5,000
Utilities	7,674	9,140	9,500
Legal fees	3,802	3,910	4,000
Auditing	3,500	0	0
Bookkeeping	0	0	600
Secretarial	600	475	600
Meetings & Publications	552	230	350
Truck	3,328	780	1,000
Insurance & Bonds	5,061	5,882	5,900
Office Supplies	298	130	250
Construction & Engineering	0	4,000	2,000
Misc. & Contingencies	625	346	6,749
County Treasurer Fee	219	250	250
Election Expense	31	0	250
Capital Improvements	0	909	9,500
Rent	0	80	0
TOTAL EXPENDITURES	56,232	56,582	73,500
Excess Expenditures over Revenues	(11,056)	(10,830)	4,835
Beginning Cash	10,992	22,048	32,878
Ending Cash	22,048	32,878	28,043

EXHIBIT E

CAPITAL EXPENDITURES

I. Wastewater Facilities.

A. Major Wastewater Collection System Repairs. Includes upgrading the system and repairing the major infiltration problems.

$240,000

B. Increase wastewater treatment capacity by construction of a new 100,000 gpd capacity lagoon.

$180,000

C. Engineering costs plus additional 10% contingency.

$ 40,000

SUBTOTAL: $460,000

II. Water Facilities

A. Upgrade water distribution through leak isolation program.

$ 15,000

B. Install 5000 gallon storage tank reservoirs at two booster pump stations. ($15,000 per station.) $ 30,000

C. Loop several dead end water lines.

$ 30,000

D. Engineering costs plus additional 10% contingency.

$ 8,000

SUBTOTAL: $83,000

III. Financial

Bond issuance cost, legal fees and other miscellaneous costs.

$107,000

SUBTOTAL: $107,000

TOTAL: $650,000

Year	Assessed Value	Mill Levy	Total Tax Revenue	Water Revenue	Total Revenue	Projected Debt Service	Ending Balance	Debt Service Coverage
1993	2,181,540	32	$69,809	0	$69,809	$67,000	$2,809	1.04
1994	2,181,540	32	69,809	0	69,809	65,800	4,009	1.06
1995	2,181,540	32	69,809	0	69,809	64,600	5,209	1.08
1996	2,181,540	32	69,809	0	69,809	68,400	1,409	1.02
1997	2,181,540	32	69,809	0	69,809	66,800	3,009	1.05
1998	2,181,540	32	69,809	0	69,809	65,200	4,609	1.07
1999	2,181,540	32	69,809	0	69,809	63,600	6,209	1.10
2000	2,181,540	32	69,809	0	69,809	67,000	2,809	1.04
2001	2,181,540	32	69,809	0	69,809	65,000	4,809	1.07
2002	2,181,540	32	69,809	0	69,809	68,000	1,809	1.03
2003	2,181,540	32	69,809	0	69,809	65,600	4,209	1.06
2004	2,181,540	32	69,809	0	69,809	68,200	1,609	1.02
2005	2,181,540	32	69,809	0	69,809	65,400	4,409	1.07
2006	2,181,540	32	69,809	0	69,809	67,600	2,209	1.03
2007	2,181,540	32	69,809	0	69,809	64,400	5,409	1.08
2008	2,181,540	32	69,809	0	69,809	66,200	3,609	1.05
2009	2,181,540	32	69,809	0	69,809	67,600	2,209	1.03
2010	2,181,540	32	69,809	0	69,809	68,600	1,209	1.02
2011	2,181,540	32	69,809	0	69,809	64,200	5,609	1.09
2012	2,181,540	32	69,809	0	69,809	64,800	5,009	1.08
Total			1,396,186	0	1,396,186	1,324,000		

EXHIBIT F

Year	Assessed Value	Mill Levy	Total Tax Revenue	Water Revenue	Total Revenue	Projected Debt Service	Ending Balance	Debt Service Coverage
1993	2,181,540	18	$39,268	$33,000	$72,268	$67,000	$5,268	1.08
1994	2,181,540	18	39,268	33,000	72,268	65,800	6,468	1.10
1995	2,181,540	18	39,268	33,000	72,268	64,600	7,668	1.12
1996	2,181,540	18	39,268	33,000	72,268	68,400	3,868	1.06
1997	2,181,540	18	39,268	33,000	72,268	66,800	5,468	1.08
1998	2,181,540	18	39,268	33,000	72,268	65,200	7,068	1.11
1999	2,181,540	18	39,268	33,000	72,268	63,600	8,668	1.14
2000	2,181,540	18	39,268	33,000	72,268	67,000	5,268	1.08
2001	2,181,540	18	39,268	33,000	72,268	65,000	7,268	1.11
2002	2,181,540	18	39,268	33,000	72,268	68,000	4,268	1.06
2003	2,181,540	18	39,268	33,000	72,268	65,600	6,668	1.10
2004	2,181,540	18	39,268	33,000	72,268	68,200	4,068	1.06
2005	2,181,540	18	39,268	33,000	72,268	65,400	6,868	1.11
2006	2,181,540	18	39,268	33,000	72,268	67,600	4,668	1.07
2007	2,181,540	18	39,268	33,000	72,268	64,400	7,868	1.12
2008	2,181,540	18	39,268	33,000	72,268	66,200	6,068	1.09
2009	2,181,540	18	39,268	33,000	72,268	67,600	4,668	1.07
2010	2,181,540	18	39,268	33,000	72,268	68,600	3,668	1.05
2011	2,181,540	18	39,268	33,000	72,268	64,200	8,068	1.13
2012	2,181,540	18	39,268	33,000	72,268	64,800	7,468	1.12
Total			785,354	660,000	1,445,354	1,324,000		

BOND DEBT SERVICE

Clear Creek County
St. Mary's Water & Sanitation District, Ser. 1992
20-Year Maturity @ 8%

Period Ending	Principal	Coupon	Interest	Debt Service	Annual Debt Service
Jun 1, 1993	-	-	26,000.00	26,000.00	-
Dec 1, 1993	15,000.00	8.000%	26,000.00	41,000.00	67,000.00
Jun 1, 1994	-	-	25,400.00	25,400.00	-
Dec 1, 1994	15,000.00	8.000%	25,400.00	40,400.00	65,800.00
Jun 1, 1995	-	-	24,800.00	24,800.00	-
Dec 1, 1995	15,000.00	8.000%	24,800.00	39,800.00	64,600.00
Jun 1, 1996	-	-	24,200.00	24,200.00	-
Dec 1, 1996	20,000.00	8.000%	24,200.00	44,200.00	68,400.00
Jun 1, 1997	-	-	23,400.00	23,400.00	-
Dec 1, 1997	20,000.00	8.000%	23,400.00	43,400.00	66,800.00
Jun 1, 1998	-	-	22,600.00	22,600.00	-
Dec 1, 1998	20,000.00	8.000%	22,600.00	42,600.00	65,200.00
Jun 1, 1999	-	-	21,800.00	21,800.00	-
Dec 1, 1999	20,000.00	8.000%	21,800.00	41,800.00	63,600.00
Jun 1, 2000	-	-	21,000.00	21,000.00	-
Dec 1, 2000	25,000.00	8.000%	21,000.00	46,000.00	67,000.00
Jun 1, 2001	-	-	20,000.00	20,000.00	-
Dec 1, 2001	25,000.00	8.000%	20,000.00	45,000.00	65,000.00
Jun 1, 2002	-	-	19,000.00	19,000.00	-
Dec 1, 2002	30,000.00	8.000%	19,000.00	49,000.00	68,000.00
Jun 1, 2003	-	-	17,800.00	17,800.00	-
Dec 1, 2003	30,000.00	8.000%	17,800.00	47,800.00	65,600.00
Jun 1, 2004	-	-	16,600.00	16,600.00	-
Dec 1, 2004	35,000.00	8.000%	16,600.00	51,600.00	68,200.00
Jun 1, 2005	-	-	15,200.00	15,200.00	-
Dec 1, 2005	35,000.00	8.000%	15,200.00	50,200.00	65,400.00
Jun 1, 2006	-	-	13,800.00	13,800.00	-
Dec 1, 2006	40,000.00	8.000%	13,800.00	53,800.00	67,600.00
Jun 1, 2007	-	-	12,200.00	12,200.00	-
Dec 1, 2007	40,000.00	8.000%	12,200.00	52,200.00	64,400.00
Jun 1, 2008	-	-	10,600.00	10,600.00	-
Dec 1, 2008	45,000.00	8.000%	10,600.00	55,600.00	66,200.00
Jun 1, 2009	-	-	8,800.00	8,800.00	-
Dec 1, 2009	50,000.00	8.000%	8,800.00	58,800.00	67,600.00
Jun 1, 2010	-	-	6,800.00	6,800.00	-
Dec 1, 2010	55,000.00	8.000%	6,800.00	61,800.00	68,600.00
Jun 1, 2011	-	-	4,600.00	4,600.00	-
Dec 1, 2011	55,000.00	8.000%	4,600.00	59,600.00	64,200.00
Jun 1, 2012	-	-	2,400.00	2,400.00	-
Dec 1, 2012	60,000.00	8.000%	2,400.00	62,400.00	64,800.00
	650,000.00		674,000.00	1,324,000.00	1,324,000.00

12-16-011

Clear Creek County

POST OFFICE BOX 2000
GEORGETOWN, COLORADO 80444
TELEPHONE: (303) 569-3251 • (303) 679-2300

October 20, 2010

RECEIVED
OCT 21 2010
DIV. OF LOCAL GOVERNMENT

Margaret Vigil
General Professional III
Department of Local Affairs
1313 Sherman Street, Suite 521
Denver, CO 80203

Re: Status of St. Mary's Glacier Water and Sanitation District's Amendment to the Modified Service Plan

Dear Ms. Vigil:

This replies to your October 12 inquiry. Unfortunately, I cannot check one of your form letter's proposed responses.

The District filed a proposed Amendment to the Modified Service Plan on September 1, 1992. According to the minutes of the Board of County Commissioners, on September 14, 1992, it set the public hearing to be held October 12. The hearing was opened on October 12 and continued to October 19. By that continuance date, the District submitted an amendment to its Amendment, requesting, in the alternative, authority (a) to issue $650,000 debt for system improvements or (b) to issue $300,000 debt for infiltration and inflow repairs. A week before the Board hearing commenced, an election in the District approved issuing $650,000 debt for improvements to the water and wastewater systems (apparently reflecting alternative (a)); a copy of the Certificate of Result of Election is enclosed.

At the conclusion of the continued hearing on October 19, a motion was passed by the Board of Commissioners to "conditionally approve" an Amendment to the Modified Service Plan to adopt alternative (b), subject to the Board receiving and approving a resolution to that effect. There is no record of such a resolution being presented to or approved by the Board, or of the Board addressing the proposed Amendment to the Modified Service Plan again.

We are informed by the District that after this hearing it issued (in 1995) approximately $500,000 debt pursuant to authority given it by the election, did the work, and paid off the debt (2009). The District also has no record of our Board of Commissioners having adopted a resolution reflecting the results of the public hearing.

After 18 years, we can say with assurance the Amendment to the Modified Service Plan proposed in August 1992 is not pending. The information we have tells us the issue is moot now.

Very truly yours,

Pam Phipps

Pam Phipps
Clerk & Recorder
Clear Creek County

cc: Frederick Huff
Attorney for St. Mary's Water and Sanitation District
1350 17th Street, Ste. 100
Denver, CO 80202

CERTIFICATE OF RESULT OF ELECTION

ST. MARY'S GLACIER WATER AND SANITATION DISTRICT
CLEAR CREEK COUNTY, COLORADO
OCTOBER 6, 1992

Each of the undersigned hereby certifies that the following is a true and correct statement of the result of the special election held for St. Mary's Glacier Water and Sanitation District, Clear Creek County, Colorado, on Tuesday, October 6, 1992, at which there was submitted to the electors of the District the following questions:

QUESTION NO. 1 (Authorizing the District to Incur General Obligation Indebtedness to Provide Improvements to the Wastewater Collection System and Treatment Facility, and to Impose General, Ad Valorem Tax Levies in Payment thereof)

SHALL ST. MARY'S GLACIER WATER AND SANITATION DISTRICT, IN THE COUNTY OF CLEAR CREEK, STATE OF COLORADO, DEBT BE INCREASED $517,000, WITH A REPAYMENT COST OF $1,384,480, or so much thereof as may be necessary, with such debt to be evidenced by certificates, notes, debentures, contracts or general obligation bonds, for the purpose of construction, completion, installation and provision of improvements, modifications, and repairs to the District's wastewater collection system and treatment facility which includes but is not limited to the interceptor, trunk and collection sewer lines, and lagoons, and all necessary and appurtenant improvements, land, easements and facilities, each indebtedness bearing interest at a net effective interest rate not exceeding twelve percent (12.0%) per annum, maturing serially commencing not later than three (3) years and extending not more than twenty (20) years from their date or dates, payable from annual, general (ad valorem) tax levies, without limitation as to rate or amount as is necessary for the repayment cost, and to be issued and sold at one time, or from time to time, in such manner, upon such terms and conditions, with such covenants and agreements, and with such other detail as the Board of Directors may determine; including at its option provisions for redemption prior to maturity without or with the payment of a premium not exceeding three percent (3%) of the principal amount thereof?

	FOR THE INDEBTEDNESS	AGAINST THE INDEBTEDNESS
Ballots cast:	81	69

RECEIVED
OCT 2 1 2010
DIV. OF LOCAL GOVERNMENT

QUESTION NO. 2 (Authorizing the District to Incur General Obligation Indebtedness to Provide Improvements to the Water Supply, Storage, and Distribution System, and to Impose General, Ad Valorem Tax Levies in Payment thereof)

SHALL ST. MARY'S GLACIER WATER AND SANITATION DISTRICT, IN THE COUNTY OF CLEAR CREEK, STATE OF COLORADO, DEBT BE INCREASED $133,000, WITH A REPAYMENT COST OF $355,600, or so much thereof as may be necessary, with such debt evidenced by certificates, notes, debentures, contracts or general obligation bonds, for the purpose of construction, completion, installation and provision of improvements, modifications, and repairs to the District's water supply, storage, and distribution system, and all necessary and appurtenant improvements, land, easements and facilities, each indebtedness bearing interest at a net effective interest rate not exceeding twelve percent (12.0%) per annum, maturing serially commencing not later than three (3) years and extending not more than twenty (20) years from their date or dates, payable from annual, general (ad valorem) tax levies, without limitation as to rate or amount as is necessary for repayment cost, and to be issued and sold at one time, or from time to time, in such manner, upon such terms and conditions, with such covenants and agreements, and with such other detail as the Board of Directors may determine; including at its option provisions for redemption prior to maturity without or with the payment of a premium not exceeding three percent (3%) of the principal amount thereof?

	FOR THE INDEBTEDNESS	AGAINST THE INDEBTEDNESS
Ballots cast:	85	67

IN WITNESS WHEREOF, the Board of Directors of St. Mary's Glacier Water and Sanitation District has caused this Certificate to be signed by the Chairman and President of the Board of Directors, attested by the Secretary to the Board of Directors, and sealed with the seal of the District, this 6th day of October, 1992.

(S E A L)

President and Chairman

ATTEST:

Assistant Secretary

CONTACT PERSON FOR DISTRICT

Robert L. Kirby
Calkins, Kramer, Grimshaw & Harring, P.C.
1700 Lincoln Street, Suite 3800
Denver, Colorado 80203

Telephone: (303) 839-3800