

PRELIMINARY ENGINEERING REPORT

for

SANITARY SEWER COLLECTION SYSTEM EVALUATION

Prepared for the:

**GARDNER PUBLIC IMPROVEMENT
DISTRICT
c/o HUERFANO COUNTY**

**GMS, Inc.,
Consulting Engineers**

PRELIMINARY ENGINEERING REPORT
FOR
SANITARY SEWER COLLECTION SYSTEM EVALUATION

PROJECT NO. 2020-070.150

MARCH 2022

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EXECUTIVE SUMMARY

The purpose of this report is to present the findings of a comprehensive evaluation of the Gardner Public Improvement District's (GPID) sanitary sewer collection system. Details of recommended improvements are presented in this report in order to upgrade and improve the collection system to enable it to provide an acceptable level of service to the District's constituents. The District's finances are also reviewed in this report.

Most components of the District's existing sanitary sewer collection system have not been replaced or upgraded since the original construction date of the system. In the District's existing system, wastewater generated by residents of the District is conveyed through a gravity-fed collection system to the wastewater treatment facility located on the east side of the District. The existing collection system is comprised of approximately 11,130 linear feet of 8-inch diameter Armco Truss pipe that was installed in the late 1970's. Additionally, the collection system contains 42 structures, which are comprised of 40 concrete manholes and two clean-outs.

Field assessment of the collection system includes closed-circuit internal pipeline televising inspection, manhole inspection, and pipeline size and slope survey. The findings in this report suggest that the collection system is not conveying wastewater adequately due to a multitude of pipeline deficiencies, such as pipeline sags, flat and back-pitched pipelines, heavy debris accumulation throughout, manhole degradation and manhole flow channel defects. The pipeline sags, along with flat and back-pitched slopes, are causing the heavy debris accumulation. This accumulation is in turn causing hydrogen sulfide generation within the collection system. The presence of hydrogen sulfide in the collection system is causing the manhole concrete materials to deteriorate, such as the manhole walls, benches and flow channels. The deteriorated benches and flow channels result in exposed, jagged concrete aggregate which catches the wastewater debris. This compounding debris accumulation promotes a continuous cycle of hydrogen sulfide generation, attack, and damage to the collection system components. Due to the severity of pipeline sags and accumulated debris, the internal pipeline televising inspection was unable to access and televise approximately 21% of the collection system piping.

Rehabilitation of the collection system begins with eliminating the hydrogen sulfide causing blockages by replacing the pipeline sags, flat and back-pitched pipes and deteriorated structures. There are currently 41 pipeline segments between structures, in which 12 segments have flat or

back-pitched slopes. In order to replace the flat and back-pitched pipelines with minimum slope (0.40% for 8-inch diameter pipe), additional upstream pipeline replacement was required to attain revised pipeline elevations and slopes which can maintain proper sewage conveyance.

Nearly all of the existing sewer pipeline segments along State Highway 69 are recommended to be replaced in order to achieve proper slopes throughout and eliminate existing sags. Nearly all of the existing sewer segments that lie along the County roadways are recommended to be replaced in order to eliminate existing sags. Recommended improvements are categorized into higher priority (Priority One) and lower priority (Priority Two and Priority Three) improvements. The priority ranking is provided in order to maintain affordability of an improvement project while still addressing the most critical needs of the District as soon as possible.

Priority One Improvements were highly recommended for the District based on the existing state of their collection system. It also included the needed wastewater treatment facility effluent discharge pipe relocation, which will preclude significant plant upgrades based on the forthcoming discharge permit renewal. These improvements include:

- Replace sanitary sewer pipelines and structures that lie within State Highway 69 right-of-way
- Install new wastewater treatment facility effluent discharge piping extension to the Huerfano River

Priority Two Improvements were highly recommended for the District based on the existing state of their collection system. These improvements include:

- Replace sanitary sewer pipelines and structures that lie outside State Highway 69 right-of-way

Priority Three Improvements were recommended for the District based on the existing collection system components that were not known or identified during the initial assessment. These improvements include:

- Expose and televise additional pipeline segments that lie outside State Highway 69 right-of-way

In total, Priority One Improvements were estimated at a project cost of \$1,528,100; Priority Two Improvements were estimated at a project cost of \$529,000; and Priority Three Improvements were estimated at a project cost of \$10,580.

A project consisting of Priority One Improvements only has been recommended for the District. Funding of the needed improvements is recommended to be pursued using a combination of Community Development Block grant funds available through the Colorado Department of Local Affairs, and Water Pollution Control Revolving Fund loan and loan forgiveness funds available through the Colorado Resources and Power Development Authority as administered by the Colorado Department of Public Health and Environment.

A tentative plan of action was proposed to construct the improvements recommended in this report. This plan of action would entail the project going out to bid in July 2023, the initiation of construction in September 2023, and the completion of construction in February 2024.

SECTION I INTRODUCTION

A. PURPOSE AND SCOPE

This Preliminary Engineering Report (PER) has been prepared to evaluate the Gardner Public Improvement District's (GPID) sanitary sewer collection system. The purpose of this report is to present the findings of a comprehensive evaluation of the collection system that included system-wide manhole inspections, the establishment of accurate distances between manholes, manhole invert elevations and corresponding sewer slopes between manholes. The PER includes a review of internal sanitary sewer televising data conducted by the County. During the process of evaluating the sanitary sewer system, the GPID Wastewater Treatment Facility (WWTF) discharge permit was evaluated by the CDPHE. As a result, the discharge permit for the WWTF will be altered with this project. Included is a financial review of the GPID's sewer fund. Details of recommended improvements are presented in this report in order to upgrade and improve the collection system to enable it to provide an acceptable level of service to the District's constituents.

B. PLANNING AREA

Gardner is an unincorporated community in northwestern Huerfano County. It is located on the north side of the Huerfano River between the Wet Mountains and the Sangre de Cristo Mountains and is bisected by State Highway 69. The upper Huerfano Valley was settled in the late 1850s along the Taos Trail leading to the San Luis Valley to the west. Gardner was established along the stage line between Westcliffe and Walsenburg, which was very busy in the 1870s during the Westcliffe and Silver Cliff silver boom. The community is located in southern Colorado, approximately 24 miles northwest of Walsenburg and 29 miles southeast of Westcliffe. The location of Gardner and communities within the region are shown on Figure 1. This figure has been created from an excerpt taken from the USGS mapping of the State of Colorado at a scale of 1-inch equals approximately 8 miles.

Central water service was originally made available through the creation of the Gardner Water Association, a nonprofit organization created in 1968. In 1976, a wastewater

collection system and treatment facility were constructed serving the community. It was around this time that the Association became a Title 32 Special District named the Gardner Water and Sanitation District (GWSD). Beginning in 2005, the GWSD received multiple Enforcement Orders from the Colorado Department of Public Health and Environment (CDPHE) for failure to comply with the Colorado Primary Drinking Water Regulations (CPDWR) to monitor water quality. In November 2010, the residents within the boundaries of the GWSD voted to create a Public Improvement District to be operated by Huerfano County to replace the GWSD. For this and other reasons in 2010, the Huerfano County Board of Commissioners dissolved the GWSD and assumed operations under the control of the County. Currently, the water and sewer services are provided by the Gardner Public Improvement District (GPID or District) under the management and operation of Huerfano County.

The configuration of the GPID's service area is shown on Figure 2, which has been compiled from USGS quadrangle maps covering the Gardner area. The map highlights street configurations, building locations, general topography, drainage locations, the Huerfano River and State Highway 69, and their relationship to the community of Gardner. The figure has been annotated to show the location of the District's service area, water storage tank, and wastewater treatment facility.

The community's roots lie in agriculture, ranching and coal mining. In the late 1960s, the area was home to an artisan community. Area gas development has also provided limited employment opportunities within the area. A few business activities are still actively functioning within Gardner. The area's major employer is the Gardner Valley School, which is governed by the Colorado League of Charter Schools. Most residents of the community commute to Walsenburg for employment. The majority of the community is residential in nature.

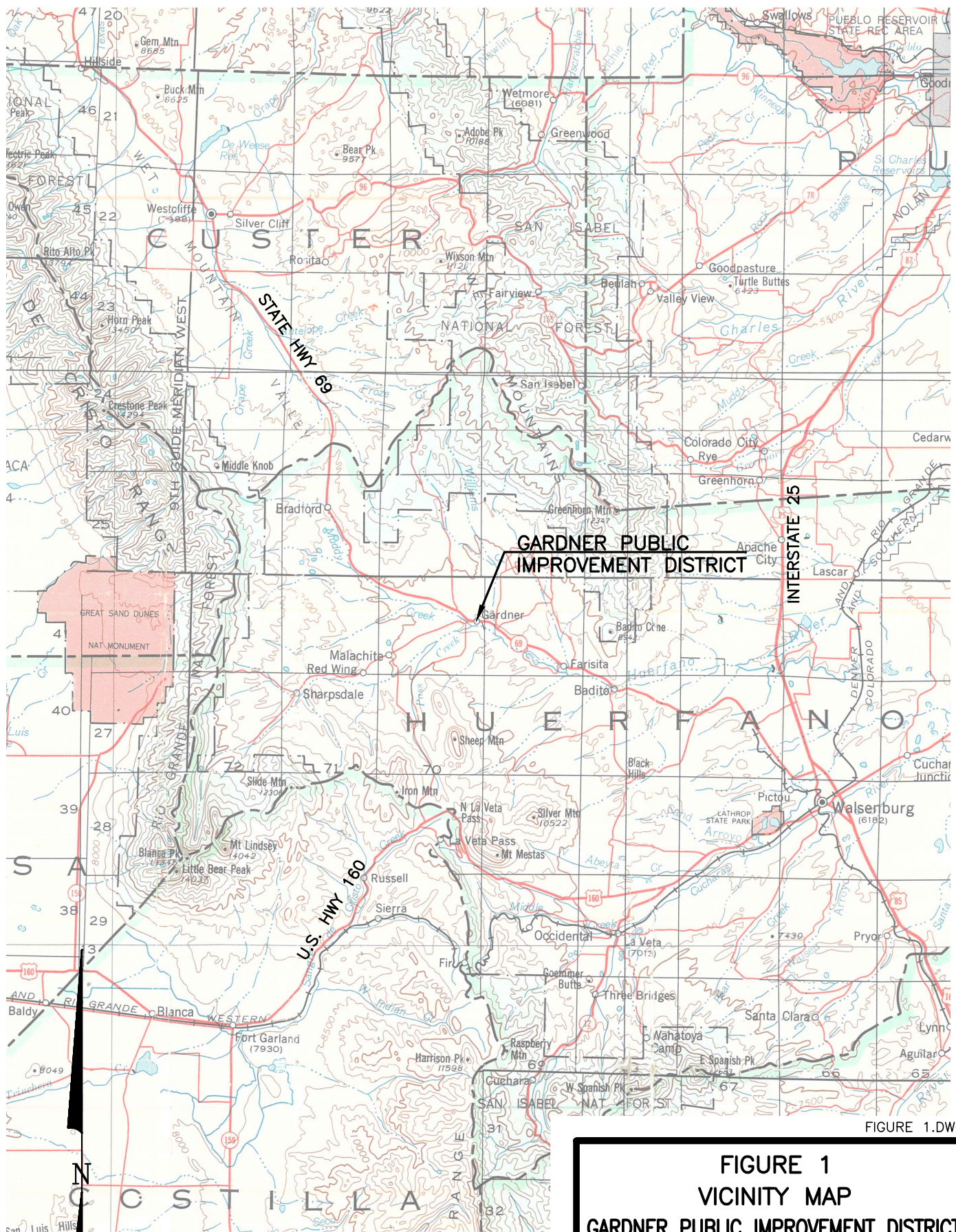


FIGURE 1.DWG

FIGURE 1
VICINITY MAP
GARDNER PUBLIC IMPROVEMENT DISTRICT

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MARCH 2022

SCALE: 1" = 8miles
(approximate)

SOURCE: USGS MAP OF COLORADO

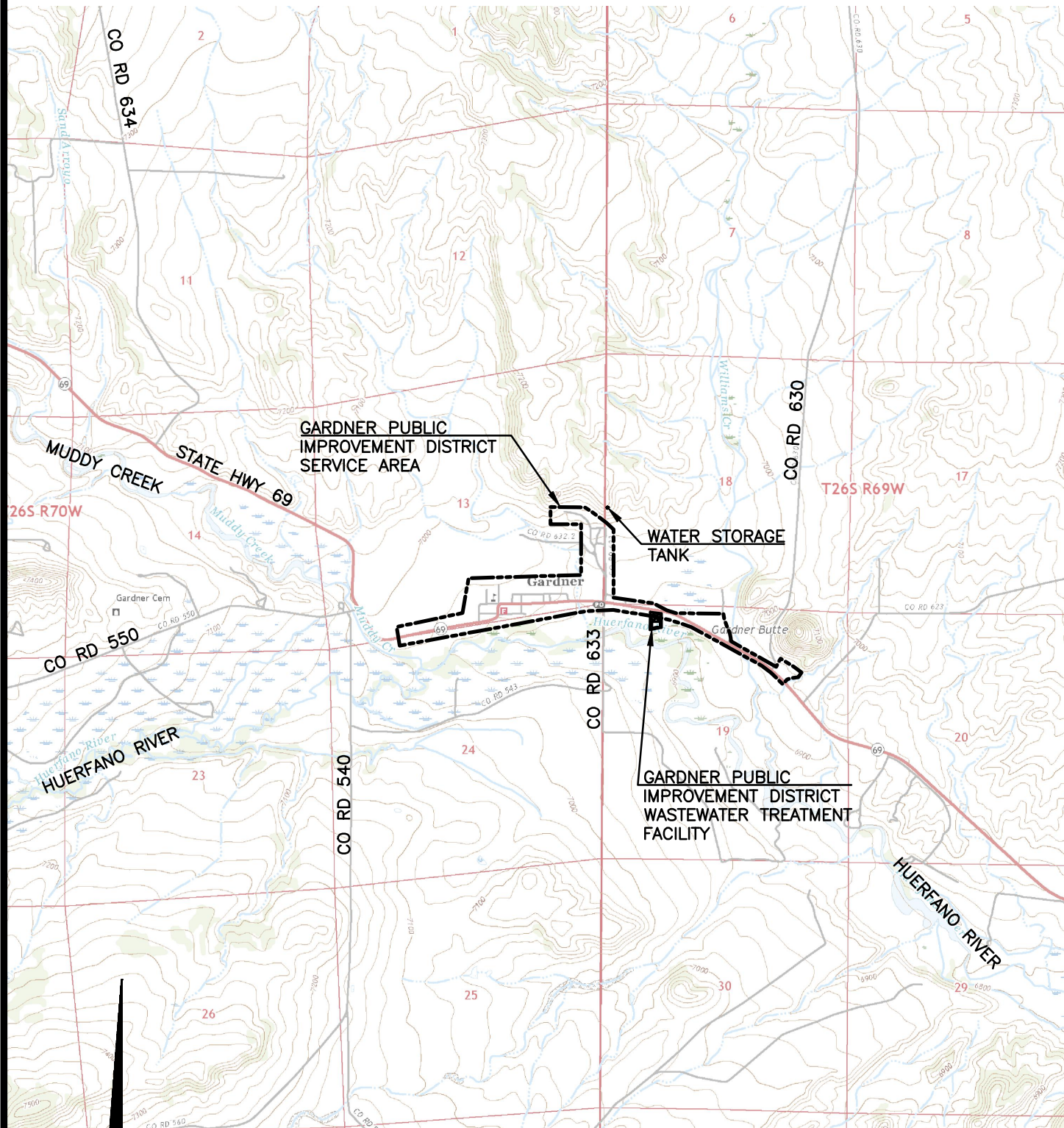


FIGURE 2.DWG

FIGURE 2
LOCATION MAP
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SCALE: 1" = 3,000'

SOURCE: GARDNER, FARISITA, BADITO CONE AND
LITTLE SHEEP MOUNTAIN USGS QUAD MAPS

Additional future loadings on the District's wastewater system will be brought about as a result of infilling within the original unincorporated town, as well as the District's defined service area, potential adjacent development around the periphery of the unincorporated town, the occupancy of existing vacant houses, and potential added development in the outlying portions of the service area. The majority of the GPID's service area lies within Section 13, Township 26 South, Range 70 West of the 6th Principal Meridian. The WWTF lies within Section 19, Township 26 South, Range 69 West of the 6th Principal Meridian. Figure 3 has been prepared to depict the 3-mile radius around the unincorporated town and to compile environmental conditions and potential project impacts.

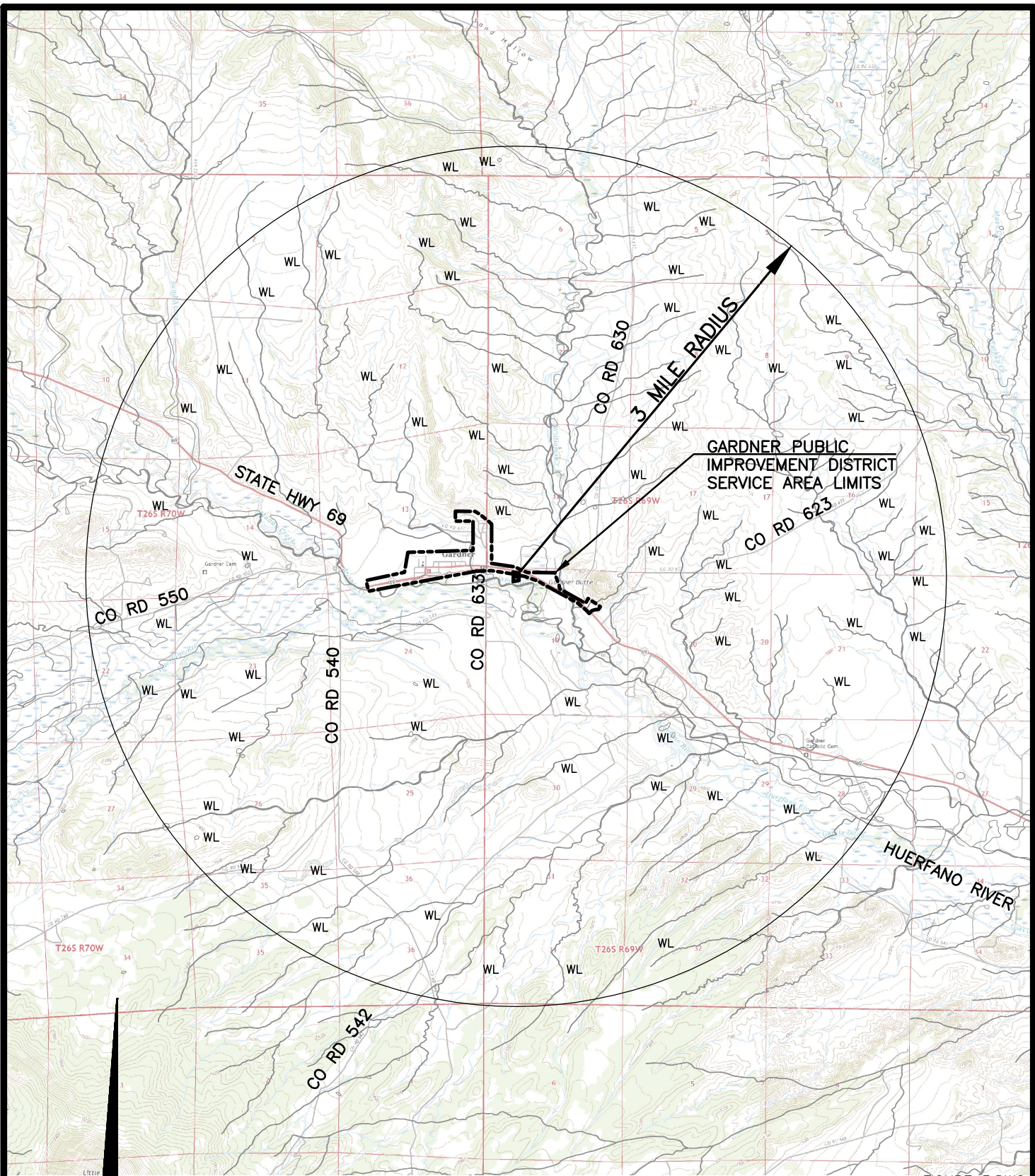





FIGURE 3.DWG

SCALE: 1" = 5,000'

-  = WETLAND DRAINAGE AREAS
-  = WETLAND AREAS
-  = 100 YEAR FLOOD PLAIN (NO DATA AVAILABLE)

SOURCE: GARDNER, FARISITA, BADITO CONE AND
LITTLE SHEEP MOUNTAIN USGS QUAD MAPS

FIGURE 3 3 MILE RADIUS MAP GARDNER PUBLIC IMPROVEMENT DISTRICT

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SECTION II EXISTING SETTING

A. LOCATION

The GPID and its service area are located in Huerfano County. The small community of Badito lies approximately 10 miles to the southwest of Gardner, while the City of Walsenburg, the county seat of Huerfano County, lies approximately 24 miles to the southeast. State Highway 69 runs through Gardner in a northwest/southeast direction. Interstate Highway 25 is the major north/south transportation corridor in the region and is approximately 25 miles southeast of Gardner.

B. WATER RESOURCES

The GPID provides potable water services as well as central sanitary sewer collection and treatment services. A few of the District's water customers rely on individual sewage disposal systems (ISDS) for wastewater treatment. Also, a few of the District's wastewater customers rely on private wells for their potable water supply.

Gardner lies within the Huerfano River basin, which is tributary to the Arkansas River basin. As shown on Figure 2, runoff from the service area is to the south toward the Huerfano River.

Surface water quality of the Huerfano River is regulated by the Water Quality Control Commission's Regulation 32 "Classifications and Standards for the Arkansas River Basin". This segment of the river has been designated as Segment 12 of the Middle Arkansas River being designated as the main stem of the Huerfano River from the confluence with Muddy Creek near Gardner to the confluence with the Arkansas River.

The following classifications have been assigned to this segment of the river system.

- Use: Protected
- Aquatic Life: Class 2 (warm)

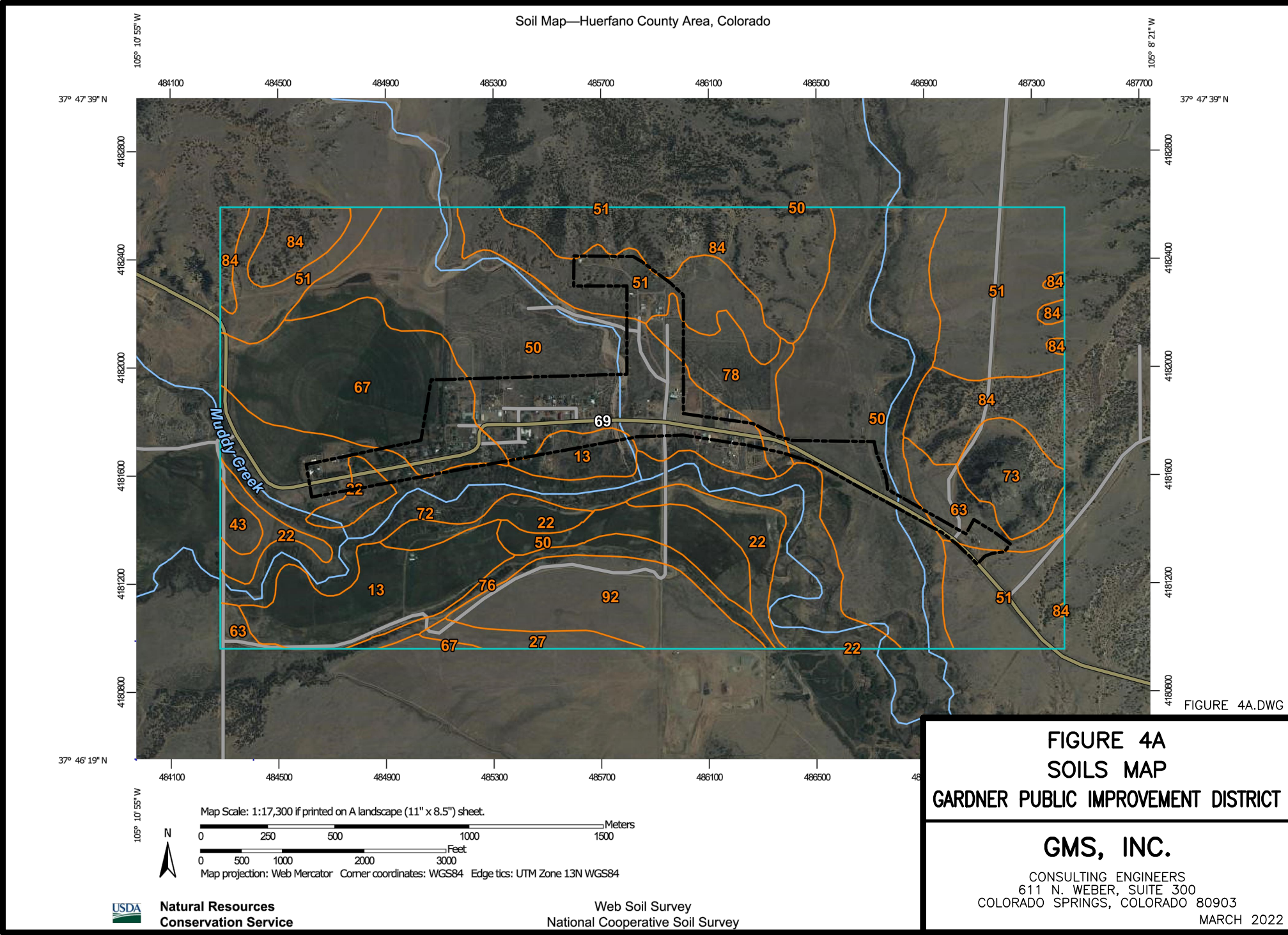
- Recreation: Class E
- Agriculture

The CDPHE Water Quality Control Division is currently in the process of renewing the discharge permit for GPID WWTF. Due to the current WWTF effluent discharge into wetlands adjacent to the Huerfano River, the CDPHE determined the WWTF will be required to meet a more stringent discharge permit. Thus, the WWTF effluent discharge point will be modified. This is discussed further in Section V.

C. PHYSIOGRAPHY, TOPOGRAPHY AND SOILS

Huerfano County falls within the physiographic province of the Southern Rocky Mountains. The Huerfano Valley extends west from Interstate 25. Within this area, the valley is bounded by the Wet Mountains and the Sangre de Cristo range on the west and south to the Huerfano River. The river extends easterly to the Plains and continues northeast to the confluence with the Cucharas River, east of Interstate 25. The highest elevation within the District's service area is to the north with an elevation of approximately 7,000 feet. The lower elevations occur on the east end of the service area where elevations approach a low of 6,940 feet. The water distribution system's storage tank lies approximately 2,100 feet north of State Highway 69 (as shown on Figure 2) at a ground elevation of 7,117 feet. All drainage within the service area is directed south to the Huerfano River, which flows easterly through the community.

The U.S. Department of Agriculture through the Natural Resources Conservation Service (NRCS), in cooperation with the Colorado Agricultural Experiment Station and the U.S. Department of Interior, Bureau of Land Management, has compiled detailed soil survey information for Huerfano County. This data is available on the NRCS's soil service website. Figure 4a has been compiled from the NRCS website mapping tool and depicts the soils present within the boundaries of the District's service area. Following Figure 4a is a map legend on Figure 4b, while Figure 4c contains a summary table of the soil types, names and coverage areas within and surrounding the GPID's service area. The soil type information is relevant as it relates to residential development and the constructability of water and sewer mains within the area. The following soils have been identified in the NRCS mapping for the



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Crooked Creek silty clay loam	74.0	5.8%
22	Glenberg sandy loam, 0 to 2 percent slopes, rarely flooded	56.2	4.4%
27	Kim-Cascajo complex, 1 to 12 percent slopes	12.2	1.0%
43	Manzano loam	6.5	0.5%
50	Neville fine sandy loam, 1 to 3 percent slopes	371.5	29.2%
51	Neville fine sandy loam, 3 to 9 percent slopes	191.9	15.1%
63	Otero fine sandy loam, 1 to 9 percent slopes	28.3	2.2%
67	Potts sandy loam, 1 to 8 percent slopes	103.5	8.1%
72	Riverwash-Las Animas complex	150.2	11.8%
73	Rock outcrop	28.1	2.2%
76	Schamber gravelly sandy loam, 3 to 15 percent slopes	21.1	1.7%
78	Tisworth sandy loam, 2 to 8 percent slopes	31.2	2.5%
84	Ustic Torriorthents-Rock outcrop complex, 5 to 40 percent slopes	134.2	10.6%
92	Willowman gravelly sandy loam, 3 to 8 percent slopes	62.8	4.9%
Totals for Area of Interest		1,271.8	100.0%

FIGURE 4C.DWG

FIGURE 4C SOILS MAP UNIT LEGEND GARDNER PUBLIC IMPROVEMENT DISTRICT

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MARCH 2022



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

area. The following provides general information in terms of the characteristics of these different soil classifications.

1. Soil Group 50 and 51 - Neville Fine Sandy Loam, 1% - 3% Slopes and 3% - 9% Slopes

These are the most prominent soil groups within the service area, located within the eastern and central portions of the service area. It extends north from the river wash complex associated with the Huerfano River to the rock outcrop complex north of Gardner. These two soil groups consist of fine sandy loams to depths greater than six feet. These soils are well drained, non-saline and have a high permeability. They are primarily associated with alluvial fans and drainage ways.

2. Soil Group 67 - Potts Sandy Loam, 1% - 8% Slopes

This is the predominant soil group of the western portion of the service area. It extends north of State Highway 69. These sandy loam soils are deep, well drained and have a moderately high permeability. The soils are associated with alluvial fans and fan remnants.

3. Soil Group 13 - Crooked Creek Silty Clay Loam

This silty clay loam soil is found south of Gardner, adjacent to the river wash complex associated with the Huerfano River. These soils consist of silty clay loams and are associated with river terraces and floodplains.

4. Soil Group 72 - River Wash - Las Animas Complex

These soils located along the Huerfano River are associated with floodplains and stream terraces and consist primarily of sandy loam and stratified loamy sand. They are typically deep and have a high to very high permeability.

5. Soil Group 22 - Glenberg Sandy Loam, 2% - 2% Slopes

This soil type is located within a small portion of the western end of the service area. These soils are deep, somewhat excessively drained, and have a high permeability. The soils are associated with floodplains and floodplain steps.

6. Soil Group 78 - Tisworth Sandy Loam, 2% - 8% Slopes

This soil type is located within a small portion of the eastern end of the service area. These soils are deep, well drained, and have a low permeability. The soils are associated with fan remnants.

7. Soil Group 63 - Otero Fine Sandy Loam, 1% - 9% Slopes

This soil type is located within the eastern edge of the service area. These soils are deep, somewhat excessively drained, and have a high permeability. The soils are associated with plains.

D. PRECIPITATION, TEMPERATURE AND PREVAILING WINDS

Data pertaining to these factors has been obtained from the National Weather Service, the Climatic Atlas of the United States prepared by the Department of Commerce and information from the Colorado Climate Center located at Colorado State University. The climate of Huerfano County is typically mild; however, the area is subject to rapid changes in weather.

Summers are characterized by hot days and cool evenings. Winter seasons have cold to very cold temperatures. The valley bottom along the Huerfano River tends to be colder as a result of cold air drainage along the valley, as opposed to the lower slopes of the adjacent mountain ranges. Based upon data obtained from the National Weather Service, NOAA through the Colorado Climate Center, the nearest active weather station is located in Rye, Colorado; however, Rye lies on the east side of the Wet Mountains making that data base less applicable. The Walsenburg weather station (Station 58781) is more likely to be representative of the climatic conditions in Gardner. That station is sited approximately 23

miles southeast of the District. The average annual daily temperature reported at that station is 66.9°F in the daytime and 37.1°F at night. The lowest average daily temperature occurs in February with a high averaging 49°F. The highest average temperature occurs in July and is 87.4°F.

Temperatures in Gardner would be slightly lower due to its elevation and location when compared to the City of Walsenburg. Precipitation for the period from 1970 through 2021 averaged 16.74 inches annually at the Walsenburg weather station. Precipitation has been below average since 2000 with the exception of 2003 through 2005, 2014, 2015, 2017, and 2021. Average snow fall is 89.1 inches per year. The Gardner weather station (Station 53222) was active from 1937 through 1971. At this station, the average annual rainfall for this period averaged 11.83 inches per year. Lake evaporation in this area based on the Climatic Atlas of the United States averages 38 inches per year. Annual lake evaporation data from the Trinidad reservoir located 55 miles to the southeast, indicates an annual pan evaporation rate of approximately 64.44 inches per year for the period from 1989 through 2005. Using a lake evaporation coefficient of 0.69, the annual lake evaporation rate equates to 44.46 inches per year. This evaporation data includes only the months of April through December. Approximately 3.0 inches of evaporation is assumed for the months of January through March for a total annual evaporation of 47.46 inches. This lake evaporation rate is what would be expected to be experienced at a wastewater lagoon. Winds prevail from the west to the southwest. Sun shines approximately 80% of the time in the summer and 75% of the time in the winter.

E. FLOODPLAIN

A flood hazard boundary map was prepared for Huerfano County by the Department of Housing and Urban Development. This generalized flood map of the County is dated November 22, 1977, and is presented on the following Figure 5. It does not show any specific floodplain details of the Huerfano River. Flood insurance rate maps prepared by the Federal Emergency Management Agency (FEMA) have not been prepared for the County. The GWSD 1986 Water System Improvements project as-built drawings indicate that the maximum flood crest recorded by the USGS on the Huerfano River was 9.2 feet measured 1.5 miles below Gardner (the actual distance appears to be 8.8 miles based on a review of

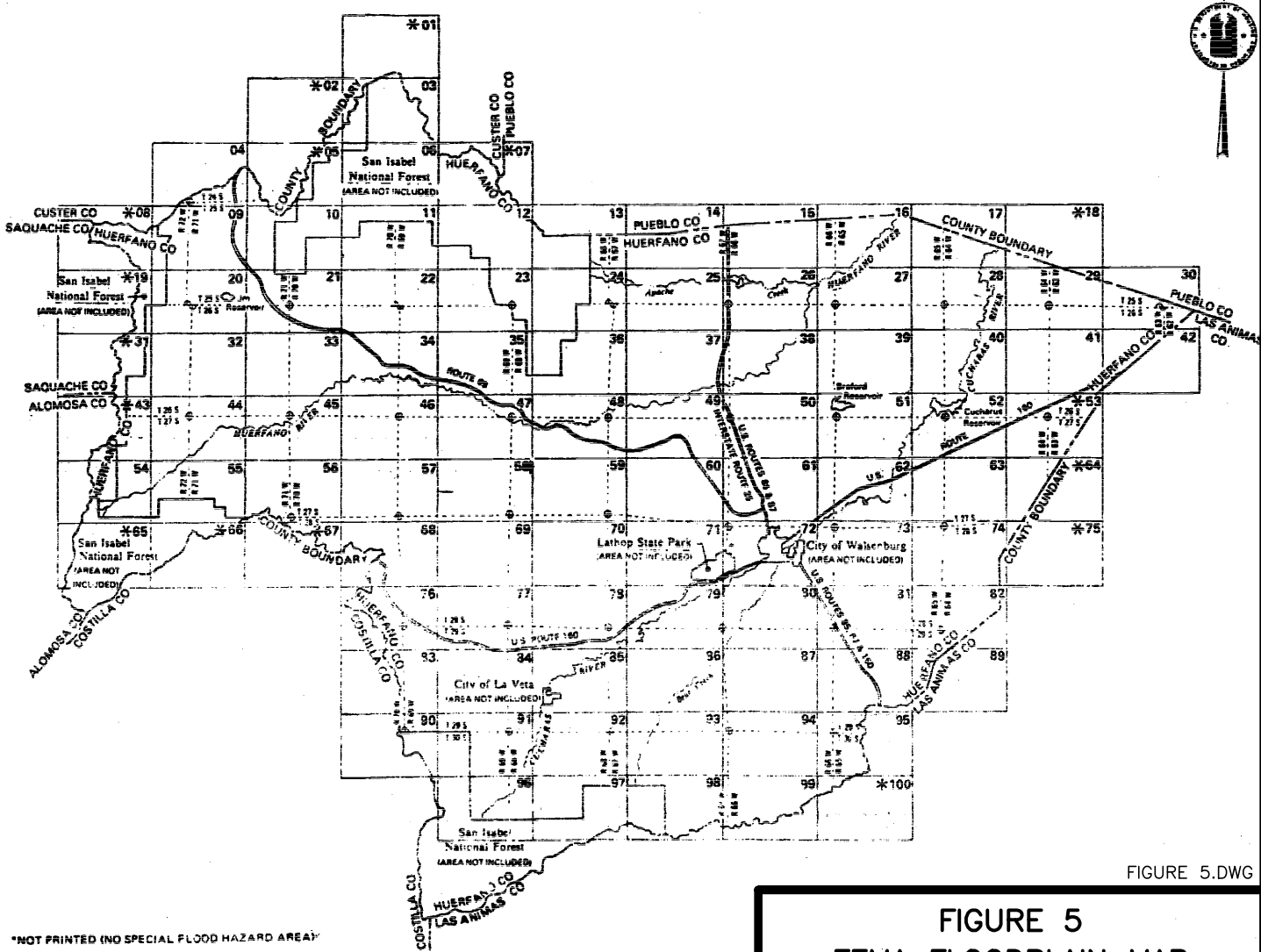
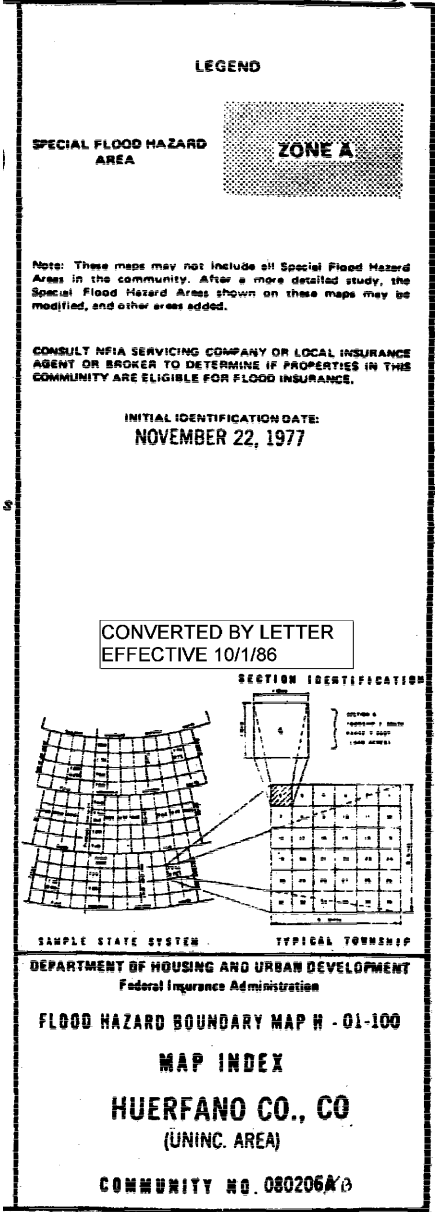


FIGURE 5.DWG

FIGURE 5
FEMA FLOODPLAIN MAP
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MARCH 2022

PER FEMA WEB SITE, NO DATA
AVAILABLE/UNMAPPED

the USGS stream gauging station locations). As part of a WWTF improvement study completed in 2011 for the community, an estimate of the potential floodplain of the Huerfano River was conducted. The 100-year flood flow rates were estimated from the Colorado Water Conservation Board's "Guidelines for Determining 100-year Flood Flows for Approximate Floodplains in Colorado". The estimated 100-year flood flow rate for the Huerfano River, including Muddy Creek at Gardner, is 30,700 cubic feet per second (cfs). Using the topography presented on the USGS base maps of the area, the river is flowing 9.1 feet deep under 100-year runoff conditions at a point near the center of the District. This equates to the floodplain being approximately 280 feet wide. In general, the lowest point in the District's service area lies approximately 15 feet above the river bed. Therefore, the District's service area lies outside of the estimated 100-year floodplain of the Huerfano River.

F. VEGETATION

Gardner is situated adjacent to the streambed of the Huerfano River in the valley bottom and adjacent to the foothills of the Wet Mountains. Vegetation of the area is influenced by the climate and soils. These factors limit the nature of the vegetation community within the area. The area can be best characterized as semi-arid, containing native grasses and scattered areas with clusters of pinion and juniper. Cottonwoods and willows line the banks of the Huerfano River. Native grasses generally include varieties of Blue Grama, Western wheat grass, Needle and Thread, Scribner needle grass, Sideoats Grama, together with limited amounts of Mountain Mahogany and Gamble Oak. Only limited lawns are contained within the community as a result of poor soil conditions, the semi-arid nature of the area and the cost of potable water.

G. WILDLIFE

A combination of the magnitude of development within the community, together with the local topography, impacts available habitat for wildlife, to a degree. Local drainage bottoms provide enhanced habitat for area wildlife. The area is frequented by cottontail and jack rabbits, turkeys, band-tailed pigeons, mourning doves and a host of a smaller variety of songbirds common to the foothills of Colorado. Mule deer, elk, and bear can be found within

the area, as well as coyotes and to a lesser degree, red fox. There are no rare or endangered species known to exist within the planning area.

H. WETLANDS

The US Fish and Wildlife Service National Wetlands Inventory Mapping was reviewed to determine the types and locations of wetlands within the planning area. That data is shown on the following Figure 6. The mapping indicates wetland classifications within and adjacent to the District. These consist of Freshwater Emergent Wetland and Freshwater Forested/Shrub Wetland. Any construction required within wetland areas will be conducted under a Section 404 Nationwide Permit No. 58 for utility line activities for water and other substances. The effluent discharge pipe will be relocated and will impact wetlands. The wetland area will be restored with no permanent wetland impacts. The US Army Corps of Engineers will be consulted during the design phase of any project resulting from this study if there is the potential for work within jurisdictional wetlands.

I. AIR QUALITY AND NOISE

Gardner is a rural community with primarily residential land uses located in Huerfano County. The closest State air quality monitoring station is sited in Colorado Springs. However, there is a monitoring station at the Windy SL Ranch in Huerfano County. Air quality in the Gardner area is generally viewed as good. Air quality is typical of a small rural community with good quality. This is envisioned to continue into the foreseeable future at acceptable levels.

The noise generated within the community is limited to those normal domestic activities that occur within a rural residential community with limited commercial activities. The community is traversed by Colorado Highway 69 with County roads extending outward. State Highway 69 is the transportation corridor between Westcliffe and Walsenburg. The County roads and State Highway 69 generate limited associated noise and air quality impacts. Overall Gardner does not contain any noise or air quality problems nor are any anticipated in the future.



U.S. Fish and Wildlife Service

National Wetlands Inventory

Gardner



September 28, 2021

- Wetlands**

 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
- Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
- Lake
 - Other
 - Riverine

FIGURE 6

WETLANDS MAP

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J. GROWTH AREAS AND POPULATION TRENDS

1. Historic Population

In general, population numbers in the majority of the mountain counties of Colorado have seen steady to explosive historical population growth since the 1960s. The State saw a 14.8% rate of population growth between 2010 and 2020. The mountain counties and surrounding communities have continued to experience healthy population increases, particularly the mountain counties west of Denver served by the Interstate 70 corridor. The southern mountain counties of Fremont and Custer Counties have seen growth from 2010 to 2020 at rates of 4.52% and 10.55%, respectively. The Gardner Public Improvement District is located in Huerfano County. Huerfano County had a 2010 population of 6,711, which increased to 6,820 in 2020, an increase of 1.62%, which is modest compared to the rest of the State.

The following data represents the previous eight census periods for Huerfano County, the City of Walsenburg and the unincorporated portion of the County. Population data for the unincorporated portion of the County is included in this table to demonstrate trends within the County's rural population, which the Gardner Community more closely represents.

TABLE 1
GARDNER PUBLIC IMPROVEMENT DISTRICT
HISTORIC POPULATION

Year	Huerfano County	City of Walsenburg	Unincorporated Areas of Huerfano County ¹⁾
1950	10,549	5,596	4,252
1960	7,867	5,071	2,164
1970	6,590	4,329	1,672
1980	6,440	3,945	1,884
1990	6,009	3,300	1,983
2000	7,862	4,182	2,756
2010	6,711	3,068	2,843
2020	6,820	3,049	2,964

1) Excludes incorporated City of Walsenburg and Town of La Veta

A review of the historic population data shows a significant rise in numbers within the County occurring in the 1990s leading up to the 2000 US Census, including the City of Walsenburg and the unincorporated areas of the County. An offset to that population spike is reflected in the 2010 census count with a 14.6% drop for the entire County and a 26% drop for the City of Walsenburg. Between 2010 and 2020, the County experienced a 1.6% growth while Walsenburg saw a decrease of 0.6%. However, the unincorporated portion of the County has seen an increase in population since 1970, with a 4.26% increase in population over the last decade. This reflects the relatively stable population base of rural Huerfano County.

Population data for the GPID's service area is not available. The District currently has a total of 78 customer accounts, 69 of which are sewer accounts. All sewer services are charged for service whether they are active or not. The 2020 census data indicates that the average household population in Huerfano County was 2.03 people. Thus, the current sewer service area population of the District is approximately 138 people.

2. Population Projections

The State Demographer's office compiles population projections for both counties and regions. They do not compile any statistical projections for individual communities or unincorporated portions of individual counties. Population projections are based on regional statistical data for births, deaths, and migration into and out of an area. The most recent population projection data available from the State Demographer's office dated October 2021 reflects a decreasing population trend for the County. The population for Huerfano County over the 20-year planning period from 2020 through 2040 is projected to decrease by a total of 17.3%, or on average, 0.9% per year.

The larger communities in rural Colorado that provide general community services tend to increase their population bases at a greater rate than rural areas. Growth within the GPID's service area is limited primarily due to the lack of economic opportunities in the immediate area; however, the community does offer an attractive retirement setting.

Future growth for the service area could remain stagnant. Countywide population declines are not expected to impact the District's service area. Overall, growth within the District is expected to be modest.

The District's population was assumed to increase at a modest annual rate of 0.3% for the purposes of population projections made in this report. At this rate, the current estimated population of 138 people would increase to 147 by 2040. As indicated previously, the 2020 census data indicates an average density of 2.03 people per household for owner occupied homes. Using this factor, the District could potentially see four additional sewer services by 2040.

TABLE 2
GARDNER PUBLIC IMPROVEMENT DISTRICT
POPULATION PROJECTION ESTIMATES ¹⁾

Year	Estimated Water Service Area Population ²⁾	Estimated Wastewater Service Area Population
2020	128	138
2030	132	142
2040	136	147

1) Based on a modest 0.3% per year growth rate

2) Gardner average household size (2.03 occupants per home) from 2020 census data

K. LAND USE AND DEVELOPMENT

The unincorporated Town of Gardner reflects the land use patterns typical of small, non-resort mountain communities. Commercial activities are limited. Current land use practices are anticipated to continue into the future with no major departures envisioned from the current land use patterns. Overall, the prime economic driving forces within the area are those activities associated with the agricultural, ranching and energy recovery industries.

L. PUBLIC FACILITIES AND SERVICES

Gardner is not an incorporated town. Potable water service and sanitary sewer collection and treatment services are provided by the Gardner Public Improvement District, which was established in 2010. The original Gardner Water Association was established in 1968. Prior to that time and the construction of the water system infrastructure, potable water was made

available by private wells and cisterns. Private organizations provide the remainder of the services within the District's service area. Electricity is provided by the San Isabel Rural Electric Association. Natural gas for home heating is not available within the area. Residential heating is provided with propane. Telephone and internet service is provided by Century Link Communications.

M. EQUIVALENT RESIDENTIAL USERS

The GPID meters all users on the water system and all sewer customers are charged for service whether active or not. The following is a summary of the District's sewer service accounts.

TABLE 3
GARDNER PUBLIC IMPROVEMENT DISTRICT
EQUIVALENT RESIDENTIAL USER EVALUATION

Sewer Service	Number of Accounts
Total Accounts (2021)	69
Residential/Commercial	68
School	1

An equivalent residential user (EQR) evaluation determination of sewer users is typically conducted to establish an equitable method for analysis and comparison of system usage. The District has established an EQR based sewer rate structure aligning with the approach used on the water system with one (1.0) EQR being equal to the sewer usage of a typical residential customer. Commercial customers are assessed one (1.0) EQR since the businesses in this area are small. The only large sewer customer in the District is the Gardner Valley School. The District currently assesses the school two (2.0) EQRs. Thus, the current active user EQR count is 70.

SECTION III

EVALUATION OF EXISTING SANITARY SEWAGE COLLECTION SYSTEM

A. BACKGROUND

The community has been served by the central sanitary sewage collection system since 1976. Based on the original design drawings for the collection system, the piping was designed to be vitrified clay pipe (VCP) with polyvinylchloride (PVC) pipe and asbestos cement pipe as acceptable alternative materials. The actual piping installed was Armco Truss Pipe. The Armco Truss Pipe entered the sewer pipe market in the early 1970's as an alternative to the historically used VCP and the then evolving PVC pipe industry. It was marketed extensively at that time, but was used less frequently in the late 1970's as PVC pipe became more prevalent. Within the original collection system design, the piping was designed to be laid at varying grades ranging from 0.40% to 4.5%. The minimum allowable slope for an 8-inch diameter public sewer line is 0.40% based on current design criteria established by the CDPHE. A slope of that magnitude is required to promote a minimum velocity of two feet per second in order to minimize solids deposition in the mains. The depth of cover on the piping is typically 6 to 8 feet; however, in some areas the depth of cover is as much as 11 feet and as little as 2 feet.

B. FIELD INVENTORY

An extensive inventory of the existing sanitary sewage collection system has been undertaken by the consultant in conjunction with District staff. Recoverable manholes throughout the system were exposed by the District staff to facilitate access by the consultant. The manholes have been reviewed in the field and photographic records taken of exposed manholes. This field reconnaissance included a detailed survey establishing horizontal distances between manholes, rim elevations, measure downs on all manholes to establish invert elevations, and identification of pipe type and size.

Vertical information was compiled throughout the collection system on all recoverable manholes as a result of the field surveying activities. Invert and rim elevations were established throughout the entire collection system. The field reconnaissance efforts were

undertaken in the later part 2021. Inlet and outlet piping of manholes were identified within the field reconnaissance in terms of material type, diameter and invert elevations, and distances were determined between manholes. From that data, the slopes between manholes were calculated for the collection system pipelines. The results of this extensive effort are illustrated on Figure 7, which depicts this data on the existing sanitary sewage collection system map. Figure 7 is contained in the back of this report. Figure 7 also provides the alphanumeric manhole designations and their relative location within the collection system. A select number of pipeline segments which are dead-end segments terminate within either a manhole or a cleanout.

C. SANITARY SEWER COLLECTION SYSTEM OPERATION AND MAINTENANCE ACTIVITIES

Beginning in 2019, the GPID has begun annual collection system cleaning as precautionary maintenance. Prior to 2019, only reactionary maintenance was performed for issues discovered within the collection system. On October 16 and 17, 2019, Direct Discharge Consulting, LLC was contracted by the GPID to initiate the sanitary sewer cleaning and manhole inspection services. At that time, the GPID went through the rigorous task of exposing and opening the various buried collection system manhole rims that had not been exposed in decades. The performed sewer cleaning and manhole inspection work included recommendations for additional sewer cleaning due to a multitude of pipeline “bellies”, or sags, causing excessive accumulation of solids and grit throughout the collection system. Internal pipe televising was recommended in order to determine the location of the pipeline bellies and sources of root intrusion. Manhole repair recommendations were also provided due to internal damage caused by root intrusion and hydrogen sulfide attack. The presence of hydrogen sulfide throughout the collection system is a result of impaired sewer pipeline flow velocities. The reduced sewer pipeline flow velocities are directly related to pipeline blockages, as well as debris and grit accumulation, due to the pipeline bellies and insufficient slopes.

On August 16 through 18, 2021, the GPID contracted DRC Construction Services, Inc. to conduct internal sanitary sewer televising throughout the collection system, which included partial cleaning of the pipeline segments. Due to heavy debris accumulation and associated pipe bellies, the televising equipment was unable to successfully enter and televise certain

sections of the sewer pipelines. Approximately 21% of the collection system was unable to be televised during these efforts. DRC Construction Services, Inc. provided the televising video and work reports to the District, which were utilized by GMS, Inc. in the evaluation of the collection system.

Many communities conduct a program wherein a given percentage, typically 20% or more, of the collection system is cleaned annually on a rotational basis. This approach enables the entire collection system to be cleaned within a few years. For example, the system would be completely cleaned at 5-year intervals in the event 20% cleaning is conducted each year. Problematic areas are typically addressed annually to ensure adequate performance and pre-empt potential pipeline issues. In discussing the approach used by the GPID's operational staff with respect to collection system routine maintenance, the input received was that an annual cleaning program is in place. The problems within the collection system, primarily consisting of backups that create issues for customers, are addressed by the GPID on an as-needed basis.

D. SANITARY SEWER COLLECTION SYSTEM EVALUATION

On September 30, 2021, GMS, Inc. conducted internal manhole inspections and pipeline surveys at all exposed sanitary sewer manholes throughout the collection system. As previously described, this field reconnaissance produced a vast database on the collection system components. This data, in conjunction with the data collected by DRC Construction Services, Inc., was also utilized by GMS, Inc. to evaluate the collection system rehabilitation.

Review of the accumulated data on the collection system's components indicated that 8-inch diameter Truss Pipe has been used on a widespread basis throughout the entire system. For the dead-end lines that exist within the system, several contain cleanouts rather than manholes at the termination points. This significantly restricts the GPID maintenance personnel's access to the mains for proper maintenance.

Construction techniques appear to have historically been problematic. Based upon review of the collection system televising videos, the multitude of pipe bellies indicate that appropriate pipeline bedding and compaction techniques were not used during the installation of the sewer system. Over time, these conditions lead to the issues being

recognized now, such as pipe sags along pipeline alignments, general pipe failures, joint displacements and pipe distortions. These issues are evident to varying degrees in the majority of the collection system pipelines. These conditions result in elevated maintenance requirements, increased potential for infiltration, debris accumulation and blockage related issues.

Access to collection system manholes is also an item of concern. Nearly half of the existing manholes (18 out of 41) of the collection system have their ring and cover buried and are not easily located. The ring and cover of these manholes are either buried beneath the gravel surfaced county roadways, beneath the asphalt roadway and/or grass and gravel shoulder of State Highway 69, or beneath grass near residential properties. The depth of the buried manhole frames ranges from 2-inches deep to 15-inches deep. Typically, ring and covers in hardscape and roadways are ¼-inch to ½-inch below the finished surface and visible. In gravel surfacing, they are approximately 6-inches below the surface to provide protection from damage during grading activities. Similarly, off-road areas are typically providing 6-inches of cover for protection and vandalism prevention. Another consideration is that as buried ring and covers are exposed and opened, it is common for surface material to slough into the manhole, especially in the excessively deep buried ring and covers. This slough material gets into the pipes and can contribute to the debris and grit accumulation within the collection system.

A review of the televising videos readily validates the pipe deficiencies. For these segments with bellies or sags throughout the pipeline, they appear severe enough that it is difficult to sufficiently flush and clean the pipe to eliminate sludge and debris accumulations. Such will ultimately lead to more frequent blockages.

The field review of the manholes found that a significant number of the manhole benches and flow channels are deteriorated due to hydrogen sulfide attack. The televising videos confirmed this observation. The deteriorated benches and flow channels cause the concrete material to spall and flake away, which exposes the rough concrete aggregate underneath. This process also contributes more concrete material to the debris that is accumulating within the pipelines. The resulting exposed rough surface of the manhole benches and flow channels compounds this deficiency cycle by catching debris and slowing down the flow velocity, thus creating more hydrogen sulfide to further attack and degrade

the manholes. In general, the issues with the pipelines impact the manhole integrity which compound and increase the severity of the issues.

Manholes should be constructed in such a manner that they are readily accessible to the GPID's staff for maintenance. Such includes: installation of appropriate manhole steps; limiting the number of grade rings allowed within the construction of the manhole; providing for appropriate fillets and flow channels within the base of the manhole; having manhole ring and covers set at the appropriate grade. Also important is providing for either internal or external drops in piping that enters the manhole at a significantly higher elevation than that of the invert elevations of the lowest lines.

A small number of manholes in the system were found to have improper internal drops within the structure. Whether it be an 8-inch main line or 4-inch service line, protruding pipes were in the range of 1.7-feet to 8-feet above the base, simply allowing for the free fall of the wastewater into the manhole. This creates a significant issue with debris and splatter within the structure, which compounds the effects of corrosion and concrete deterioration. This also precludes any activity on the GPID staff's part with respect to accessing and maintenance work on the interior of the manhole. Sanitary sewer service lines should not be allowed to be tapped into manholes, but should be appropriately interconnected into the collection system's piping.

E. INFILTRATION/INFLOW CONSIDERATIONS

The internal sewer televising video did not show signs of active infiltration, however, the work was completed in August, a time of year which typically represents low groundwater levels and minimal infiltration and inflow potential. The televising video did capture many of the pipeline bell and spigot joints that have noticeable joint separation, which can lead to active infiltration during times of high groundwater. Additionally, the televising video did capture staining along the bottom portion of certain pipe joints, which does indicate that infiltration was active at some point in the past. These locations of staining are considered to be active infiltration areas during times of high groundwater. Given the alignment of the Huerfano River, Muddy Creek and an additional unnamed flow channel through the community as can be seen on Figure 2, a seasonally high groundwater table can adversely impact the collection system. Special care should be taken both in the maintenance and

construction of pipelines and manholes to ensure that all joints and penetrations are watertight.

SECTION IV RECOMMENDATIONS

A. GENERAL COLLECTION SYSTEM STANDARDS FOR CONSTRUCTION AND MAINTENANCE RELATED ISSUES

The GPID should adopt and maintain a consistent set of design requirements and construction standards pertaining to any work conducted on the sanitary sewage collection system. Upon reviewing the condition of the system, the following specific recommendations with respect to standards and construction activities are offered:

- All new and replacement sanitary sewage collection system mains should continue to be a minimum of 8 inches in diameter. The pipe should be SDR35 PVC unless a structural pipe is required or other site specific conditions warrant a different pipe class or pipe material.
- The minimum allowable slopes required for sanitary sewer mains shall produce an adequate velocity of no less than 2 feet per second in order to maintain proper solids suspension.
- All piping should be adequately bedded from 4 inches below the pipe to 12 inches above the pipe with acceptable bedding material and thoroughly compacted in accordance with the District's requirements.
- All manhole construction should be undertaken such that the backfill around the manhole is thoroughly compacted in accordance with the District's requirements to preclude settlement.
- Manholes should be constructed utilizing precast bases, barrel sections and cones. Their installation should include the appropriate joint sealants, joint wraps and damp-proofing as necessary to properly mitigate inflow and infiltration. Field poured bases should be limited in use to better ensure water tight construction.

- Piping penetrating the barrel section of a manhole that is in excess of 12 inches above the lowest invert in the manhole should be installed with either an internal or external drop pipe to smoothly and cleanly direct flow through the manhole. This will properly facilitate maintenance activities of the manhole.
- Service lines should never be allowed to discharge directly in the manholes. All service lines should be appropriately tapped and interconnected in the upper quadrant to the sanitary sewage collection system piping.
- All penetrations into the manholes should be undertaken in such a manner that appropriate pipe boots and non-shrink grout are installed to insure watertight connections.
- All manhole ring and covers should be set with a limited number of grade rings (not to exceed 8 inches in total height) to achieve the appropriate rim elevation. Manholes installed in asphalt should be set $\frac{1}{2}$ inch below the asphalt surface. Manholes in off road areas should be set to 4 inches above grade. Manholes in gravel roads should be set to a depth of 6 inches below grade.
- Manholes should be installed with grout fillets that produce a flow channel that is the full height of the largest pipe through the manhole. They should be installed in such a manner to provide a smooth transition of the flow through the manhole. The top bench surface of the fillets should be sloped to the flow channel at a minimum of 1 inch per foot.
- Manholes should be required on the end of each line to facilitate access and maintenance.
- Manhole spacings should not exceed 400 feet.

With respect to maintenance related activities in regard to the sanitary sewage collection system, the following is recommended:

- The system should be consistently cleaned and inspected in such a manner that, as a minimum, every five years the entire system has been covered. Typically, a rotation of cleaning and inspection work can be completed each year on approximately $\frac{1}{5}$, or 20%, of the system to achieve this frequency. This approach should provide for thoroughly cleaning and flushing the system to preclude the buildup of solids over time within the system and produce record documentation, such as log/summary sheets and video footage, of pipe conditions.
- To the extent possible, the inspection of the system should be completed during periods of high groundwater table to visually inspect the pipe condition and groundwater infiltration experienced by the pipelines.
- Rings and covers that are displaced or damaged should be promptly repaired or replaced in order to eliminate safety related issues and to preclude inflow, dirt and debris from entering the manholes.
- Manholes that were not located within the extensive field reconnaissance effort should be a high priority for the District maintenance staff to recover and bring to appropriate grade to provide for ongoing maintenance activities.
- During regular inspections, GPID staff should note locations of pipelines and manholes that are problematic and require more frequent inspection and cleaning activities. Appropriate video inspections and follow up repairs or replacements should be conducted to eliminate the problems.

SECTION V

RECOMMENDED COLLECTION SYSTEM IMPROVEMENTS

A. SYSTEM-WIDE CLEANING

Based upon the field reconnaissance conducted of the system and the recommended activities that are to occur as a result of this study, a regularly scheduled cycle of cleaning and flushing of sanitary sewer pipelines should be implemented following completion of the overall project. This activity should be initiated on the upper reaches of the system proceeding downstream. This effort will focus on the pipeline segments which are not programmed for replacement in the recommended system improvements. Particularly, those pipeline segments located outside of the highway right-of-way. It is recommended that cleaning activities and debris generated are closely monitored, such that the debris generated can be caught and removed in the downstream manholes and transferred to the wastewater treatment facility to preclude plugging downstream pipe sections. A thorough system cleaning will eliminate blockages and the sludge accumulations that have developed over time in the existing pipelines which are to remain in service. This will allow the District to move forward in a comprehensive manner with maintaining the system through annual flushing knowing that the system at the onset is in good operating condition.

B. RECOMMENDED PHYSICAL IMPROVEMENTS

The recommendations for actions included in this section of the report are built upon the previous sections of the report describing the deficiencies and needs of the gravity collection system. The physical condition of the system components was evaluated through the video inspection records provided by the District. The goal of this effort was to define deficient pipeline segments containing pipe failures, severe bellies (low spots and reverse grades) within individual line segments, inflow and infiltration issues and improperly bedded pipe. There are a significant number of deficiencies to be addressed throughout the system. As the scope and cost of repairs to rehabilitate those deficiencies grew, the recommended work items were prioritized in order to maintain feasibility and affordability of accomplishing the recommended work items. The prioritizations separated the work items into three priority levels. Those priority levels are described in the following paragraphs.

In conjunction with these assessment and recommendation efforts, a thorough review was conducted of all of the information amassed from the manhole inspections conducted throughout the system. The manhole inspection information coupled with the field survey data, enabled the percent slopes of the line segments to be established. A review of Figure 7, the existing sanitary sewer system layout, depicts the distances between manholes and the corresponding slopes, if found or known. Twelve sections of the collection system were defined as having slopes that are less than the minimum criteria. Unacceptable flat slopes are problematic in that the flow's velocity through these segments falls undesirable levels, which allows for the deposition of solids to occur, ultimately creating line blockages. All flat sloped (less than 0.40%) and back-pitched segments that are identified on Figure 7 are proposed to be replaced with a minimum pipe slope of 0.40%. There is one section of the collection system that is defined to have a manhole-to-manhole length of 624-feet, which exceeds the maximum recommended length of 400-feet between manholes. The proposed sewer replacement will include an additional manhole to maintain a maximum of 400-feet between manholes.

Due to the deterioration observed for the manhole interiors and ring and frame, it is more cost effective to remove and replace each manhole structure as part of the sewer pipeline replacement than to try and salvage and rehabilitate the existing manholes. The manhole structures are proposed for installation to the appropriate grade, depending on the surrounding ground or roadway surface type. The overall proposed sewer replacement plan for the collection system, which is comprised of Priority List No. 1 and No. 2, is depicted on Figure 8. Figure 8 is contained in the back of this report.

Priority No. 1 work items include replacement of the sanitary sewer collection system components that lay within the Colorado Highway 69 right-of-way and have been noted as critical repair items. These critical items have issues that have a direct impact on the conveyance capability and/or the capacity of the collection system. These critical items may also have deficiencies that are noted for having a potential for failure in the near future, if not properly addressed. All sanitary sewer pipelines that are located within the Colorado Highway 69 Right-of-Way are in need of replacement due to excessively flat or back-pitched pipe slopes, a multitude of pipe bellies, blockages due to protruding service tap connections, and excessive grit and debris accumulation throughout. All sanitary sewer manholes that

are located on those pipe segments within the Colorado Highway 69 Right-of-Way are in need of replacement due to structural deficiencies and excessive degradation of the manhole concrete and/or flow channel concrete caused by hydrogen sulfide attack.

The majority of the existing sanitary sewer pipelines and manhole structures that are located within the Colorado Highway 69 right-of-way are located in close proximity to, or within, the paved travel lanes of the highway. In compiling the recommendations for replacement of these sanitary sewer pipelines and manholes, consideration was given to alternate horizontal locations which provide larger areas of separation from the highway travel lanes. The proposed recommendations include replacement sanitary sewer pipelines and manholes being located with their centerlines a minimum distance of four feet from the existing highway edge of pavement. Relocating the replacement sewer pipelines with a larger separation from the highway travel lanes will facilitate safer operations of routine system maintenance and inspection activities. This would include regular activities associated with cleaning, flushing and televising of the sanitary sewer collection pipelines. Locating the pipelines outside of the traveled highway lanes will also avoid the requirement for excessive traffic control and Colorado Department of Transportation (CDOT) lane closure requirements for such maintenance activities. In addition, the total area of paved travel lanes requiring removal and replacement during the construction of improvements will be greatly reduced by relocating the new pipelines further outside the paved roadway. The reduction in area of existing highway pavement removal and replacement will result in a significant reduction in total construction cost, as well as a reduction in cost and effort associated with CDOT permitting and traffic control requirements during construction.

In addition to the collection system work recommendations described above for Priority No. 1, the GPID WWTF effluent discharge pipe is recommended for extension to the Huerfano River as part of the Priority No. 1 scope of work. The extension of the WWTF effluent pipe is a result of recent communications with CDPHE representatives on the discharge permit certification renewal for the GPID WWTF. The WWTF is currently operating under Discharge Permit Certification No. COG588134. This certification allows discharge from the WWTF under the CDPS General Permit No. COG59000 (previously General Permit No. COG588000) Domestic Wastewater Treatment Plants that Discharge to Receiving Waters with a Chronic Low Flow: Design Flow Ratio of 100:1 or greater. The GPID is currently operating the facility under an administrative extension of its existing discharge certification,

which expired on May 31, 2018, in accordance with a letter issued by the WQCD Permits Section to the GPID dated July 11, 2017.

In late 2021, the WQCD initiated a review of the permit renewal application. In their initial renewal work on the discharge permit certification, WQCD representatives contacted the GPID regarding the WWTF effluent discharge point. The existing discharge point is off of the south side of the WWTF property to a wetlands type area adjacent to the Huerfano River channel. WQCD representatives indicated that the current discharge point does not qualify the GPID for the discharge certification under General Permit No. COG590000. The General Permit No. COG590000 is only applicable to those facilities which have a ratio of chronic low flow in the receiving stream to design facility flow of 100:1 or greater. With the current discharge point in a wetlands area, WQCD representatives believed there is zero dilution of the WWTF effluent at that location. Therefore, they indicated that in order to maintain the 100:1 dilution ratio status for the discharge permit certification renewal, the effluent pipeline must be extended to discharge into the river channel in order to attain that dilution ratio.

Based on the above-described information, the GPID began the pursuit of extending the WWTF effluent pipe to the river channel in order to maintain the 100:1 dilution ratio status. In subsequent communication with WQCD representatives, the GPID was told that the current stream flow data for the Huerfano River near the WWTF suggests a river chronic low flow value which does not support the 100:1 dilution ratio. On behalf of the GPID, the consultant researched historical data and documentation, including stream flow data for the Huerfano River near the WWTF discharge, to verify whether or not the chronic low flow stream value would support the 100:1 dilution ratio. Based on that research, it appears that the Huerfano River chronic low flow value does not support the 100:1 dilution ratio. Therefore, the WQCD will pursue the GPID discharge permit certification renewal under the General Permit No. COG591000.

Although the discharge permit certification is proceeding under the General Permit No. COG591000 (without a 100:1 dilution ratio), the effluent pipe discharge point must be relocated to the Huerfano River channel in order to qualify for the available dilution ratio based on the current chronic low flow value for the river channel. The effluent limitations determined under the General Permit No. COG591000 are based on the dilution ratio of the

receiving stream chronic low flow value to the facilities rated discharge flow volume. The effluent limitations are determined on a “sliding scale” relative to the dilution ratio, for dilution ratios from 100:1. Generally speaking, the lower the dilution ratio, the lower the effluent limit will be, and the higher the dilution ratio, the higher the effluent limit will be. Therefore, at the current discharge point, the WWTF would be subject to much more stringent effluent limitations due to a zero dilution ratio afforded by the wetlands area. By extending the effluent pipe discharge point to the river channel, the WWTF will be able to take advantage of the available dilution ratio, which will result in higher effluent limits in the renewed discharge permit certification.

By completing the extension of the WWTF effluent discharge pipe to the river channel, the GPID will be able to claim the “credit” in the discharge permit certification renewal. In the previous correspondence with WQCD representatives, it indicated that their calculations showed a preliminary dilution ratio of 50:1. Based on that dilution ratio, we investigated the potential effluent limitations which may be set by the discharge permit certification renewal under General Permit No. COG591000. The main effluent constituents of concern included ammonia, total residual chlorine (TRC) and E. coli. Regarding ammonia, the current discharge permit certification indicates a 30-day average effluent limitation of 50 milligrams per liter for every month of the year. Based on a 50:1 dilution ratio for the upcoming certification renewal, the monthly chronic (30-day average) total ammonia quality-based effluent limit from General Permit No. COG591000 would vary every month throughout the year, with the lowest month being February at a 26 milligram per liter limit. In researching previous year DMR records for the GPID WWTF, particularly for the years 2016 and 2017, the effluent ammonia concentrations did not exceed 16 milligrams per liter. This indicates that the facility is capable of operating regularly below the potential new effluent ammonia limits under General Permit No. COG591000. Conversely, at a zero dilution ratio, effluent limits would range between 1.9 milligrams per liter and 3.5 milligrams per liter. For effluent limitations at levels that low, the existing WWTF would require substantial upgrades in order to consistently be in compliance with those effluent limitations. Therefore, extending the WWTF effluent pipe discharge point to the river channel would attain the higher dilution ratio and therefore the higher effluent limitations, in order to avoid significant process upgrades to the WWTF.

Regarding TRC and E. coli, a similar estimation of potential new effluent limitations was conducted. However, for these two parameters, the effluent limitation is determined not only by the dilution ratio, but also the ambient upstream water quality. Knowing the general vicinity around the Huerfano River near the GPID WWTF, general assumptions were made for the ambient upstream water quality with regards to TRC concentration and E. coli levels. For TRC, assuming a 50:1 dilution ratio and a 0.005 milligram per liter ambient upstream concentration, the potential new chronic TRC water quality-based effluent limit would be 0.311 milligrams per liter. This is less than the current 30-day average limitation of 0.5 milligrams per liter. Looking back at the same DMR records mentioned above, the majority of the effluent TRC concentrations were below 0.2 milligrams per liter. With very few values over 0.2 milligrams per liter, it would appear that those instances are anomalies from normal operations. The possibility remains that the operations or facility processes may require modification following the issuance of the renewed discharge certification. That will not be a certainty until the discharge permit certification permit is issued by the WQCD with final effluent limitations indicated.

Regarding the E. coli parameter, similar assumptions were made for this parameter as were made for the TRC parameter. Assuming a 50:1 dilution ratio and an ambient upstream water quality of 90 CFU/100 mL, the potential new chronic (30-day average) water quality-based effluent limit for E. coli would be 1,926 CFU/100 mL. This is only fractionally lower than the current effluent limit of 2,000 CFU/100 mL and therefore does not pose an issue to the WWTF.

Based on the evaluation of the ammonia, TRC and E. coli parameters as given above, it can be seen that the effluent pipe extension to discharge to the river channel is beneficial. It will achieve a dilution ratio which results in effluent limitations that are within reasonable levels in order to avoid substantial and significant improvements to the WWTF. Based on conversations with WQCD representatives, the effluent pipe extension will require WQCD review and approval through the site location approval amendment and design review processes. Due to the length of the review time required by the WQCD for each of those two processes, it does not appear feasible to complete those processes and then bid and construct the effluent pipe extension prior to the anticipated date of the discharge permit certification renewal. Therefore, the path forward will likely see the discharge permit certification renewal be completed under the premise of the effluent pipe discharge point

remaining in the wetland area adjacent to the Huerfano River, which affords a zero dilution ratio. The new lower effluent limitations contained in that renewal will be accompanied by compliance schedules in accordance with CDPHE regulations, which will provide time for the GPID to complete the pipeline extension to the river channel to achieve the required dilution ratio. Once the pipeline extension is complete, a permit modification application will be required by the WQCD to modify the permit and the effluent limitations to those applicable to the dilution ratio attained with the effluent discharge point being at the river channel. With the permit modification application, including the documentation to show completion of the effluent pipe extension to the river channel, the WQCD will be able to approve the application and issue a modified permit with the appropriately higher effluent limitations. Table 4 below summarizes the Project Cost Estimate for the Priority No. 1 work items.

Priority No. 2 work items include replacement of the sanitary sewer collection system that lies outside of Colorado Highway 69 Right-of-Way. These items address the same critical issues as the Priority No. 1 work items including: excessively flat or back-pitched pipe slopes; a multitude of pipe bellies; blockages due to protruding service tap connections; and excessive grit and debris accumulation throughout. Table 5 summarizes the Project Cost Estimate for the Priority No. 2 work items.

Priority No. 3 work items include locating, exposing and televising two sewer segments that were not initially video inspected due to unknown structure locations. This list includes structure field-locating and sewer televising to identify any potential remaining rehabilitation items not included on the previous two lists. Table 6 summarizes the Project Cost Estimate for the Priority No. 3 work items. Additional rehabilitation may be required after these work items have been completed.

TABLE 4
GARDNER PUBLIC IMPROVEMENT DISTRICT
PRIORITY NO. 1 COST ESTIMATE

Description		Unit	Unit Price	Total Cost
A.	Sanitary Sewer Replacement and Rehabilitation			
1.	Replace Sewer Segments along Hwy. 69 R.O.W. (MH-1 to Meter MH, MH-SW to MH-13, MH-H11 to MH-H12)			
a.	Remove and replace existing 8" PVC sanitary sewer main	7,144 LF	\$75	\$535,800
b.	Remove and replace existing bridge suspended 8" PVC sanitary sewer main	270 LF	\$150	\$40,500
c.	Remove and replace 4-foot I.D. precast sanitary sewer manhole. Reinstall existing ring and cover.	23 EA	\$6,000	\$138,000
d.	Install new 4-foot I.D. precast sanitary sewer manhole w/ ring and cover	2 EA	\$5,000	\$10,000
e.	8"x4" PVC service wye fitting with 10 L.F. of 4" PVC service line reconnection	63 EA	\$700	\$44,100
f.	16" steel sewer casing pipe at four (4) Highway Crossings	180 LF	\$250	\$45,000
g.	8" HMA asphalt removal and replacement	560 SY	\$90	\$50,400
h.	CDOT traffic control, maintenance and permitting	1 LS	\$85,000	\$85,000
j.	Seeding	2.15 ac	\$10,000	\$21,500
Subtotal				\$970,300
B.	WWTF Outfall Extension			
1.	WWTF Outfall to Huerfano River			
a.	Install new 8" PVC effluent pipe extension	260 LF	\$75	\$19,500
b.	Install new 4-foot I.D. precast sanitary sewer manhole with ring and cover	3 EA	\$5,000	\$15,000
c.	Install outlet structure with rip-rap protection	1 EA	\$10,000	\$10,000
d.	Clearing and grubbing	1 LS	\$10,000	\$10,000
e.	Erosion/sediment control	1 LS	\$2,000	\$2,000
f.	Seeding	0.25 ac	\$10,000	\$2,500
g.	Soil retention blanket	222 SY	\$10	\$2,220
Subtotal				\$61,220
Subtotal preliminary cost				\$1,031,520
Project contingencies (15%)				\$155,039
Engineering design/contract administration				\$100,900
Construction observation based on 120 calendar days				\$120,000
Other engineering ¹⁾				\$109,500
Administrative expenses (advertising, legal counsel, bond counsel, etc.)				\$11,141
Total preliminary construction cost estimate				\$1,528,100

1) Other engineering related fees related to this scope of work only include: CDPHE submittals, geotechnical, Environmental Report, Project Needs Assessment, funding administration, Process Design Report, reproduction, CDOT permits, County permits, and easement/ROW/property ownership research.

TABLE 5
GARDNER PUBLIC IMPROVEMENT DISTRICT
PRIORITY NO. 2 COST ESTIMATE

Description			Unit	Unit Price	Total Cost
A.	Sanitary Sewer Replacement and Rehabilitation				
1.	Replace Sewer Segments along non-highway R.O.W. (MH-NW to MH-SW, MH-14B to MH-14A, MH-H2 to MH-H4, MH-H5 to MH-H7, MH-H7A to MH-H7, MH-H8 to MH-H11)				
	a.	Remove and replace existing 8" PVC sanitary sewer main	2,626 LF	\$75	\$196,950
	b.	Remove and replace 4-foot I.D. precast sanitary sewer manhole. Reinstall existing ring and cover.	12 EA	\$6,000	\$72,000
	c.	8"x4" PVC service wye fitting with 10 L.F. of 4" PVC service line reconnection	19 EA	\$700	\$13,300
	d.	4" HMA asphalt removal and replacement	100 SY	\$65	\$6,500
	e.	Traffic control and maintenance	1 LS	\$25,000	\$25,000
	f.	Easements	1 LS	\$10,000	\$10,000
	g.	Seeding	1.14 ac	\$10,000	\$11,400
Subtotal					\$335,150
2.	Replace Dead-End Sewer Main Structures with New Manholes (MH-H1, MH-13.B1, and MH-6A)				
	a.	Remove and replace existing 8" PVC sanitary sewer main	15 LF	\$75	\$1,125
	b.	Install new 4-foot I.D. precast sanitary sewer manhole onto existing main. Include new ring and cover.	3 EA	\$5,000	\$15,000
	c.	8"x4" PVC service wye fitting with 10 LF of 4" PVC service line reconnection	2 EA	\$700	\$1,400
	d.	Seeding	0.05 ac	\$10,000	\$500
Subtotal					\$18,025
3.	Maintenance Related Repairs (MH-6A to MH-6)				
	a.	Remove service connection and replace with 3 LF of 8" PVC, 8"x4" PVC service wye fitting and 10 LF of 4" PVC service line reconnection.	1 EA	\$3,000	\$3,000
	b.	Seeding	0.02 ac	\$10,000	\$200
Subtotal					\$3,200
Subtotal preliminary cost					\$356,375
Project contingencies (15%)					\$54,225
Engineering design/contract administration					\$38,900
Construction observation based on 90 calendar days					\$30,000
Other engineering ¹⁾					\$43,000
Administrative expenses (advertising, legal counsel, bond counsel, etc.)					\$6,500
Total preliminary construction cost estimate					\$529,000

1) Other engineering related fees related to this scope of work only include: geotechnical, O&M Manual, reproduction, ROW permits, funding administration, CDOT permits, Environmental Report, Project Needs Assessment, and County permits

TABLE 6
GARDNER PUBLIC IMPROVEMENT DISTRICT
PRIORITY NO. 3 COST ESTIMATE

Description		Unit	Unit Price	Total Cost
A.	Locate, Expose and Televiser Sanitary Sewer Segments			
	1.	MH-6A to MH-6		
	a.	Locate and expose upstream structure	1 EA	\$2,000
	b.	Clean and televiser sewer pipeline ¹⁾	200 LF	\$8
		Subtotal		\$3,600
	2.	MH-NW to MH-SW		
	a.	Locate and expose structures	2 EA	\$2,000
	b.	Clean and televiser sewer pipeline ¹⁾	200 LF	\$8
		Subtotal		\$5,600
	Subtotal preliminary cost			\$9,200
	Project contingencies (15%)			\$1,380
	Total preliminary cost estimate			\$10,580

1) Sewer length is estimated

SECTION VI

EXISTING FINANCIAL STATUS

The Gardner Public Improvement District (GPID) is a propriety fund of Huerfano County. The GPID operates both the water and sanitary sewer services for the unincorporated area known as Gardner. GPID was previously operated as a Title 32 Special District. However, due to mismanagement of the district, the County dissolved the District and took over ownership in May of 2010. The residents within the boundaries of the service area voted to create a Public Improvement District to be operated by Huerfano County in November 2010. Thus, all financial operations of the GPID are facilitated through Huerfano County. Financial summaries of GPID were provided by Huerfano County. The GPID does not track revenue and expenditures separately for the water and sewer funds.

As a propriety fund of Huerfano County, the GPID does not receive any property tax or sales tax as a revenue source. The GPID has adopted Rules and Regulations which were updated in 2018. The Rules and Regulations provide the tap fee schedule as well as the user fee schedule. Furthermore, the GPID assesses a monthly sewer use and a plant investment fee. Currently, the GPID does not charge for inactive connections to the sewer system.

The following table recaps the current rate structure for the GPID's sewer rates and fees.

TABLE 7
GARDNER PUBLIC IMPROVEMENT DISTRICT
SEWER RATES AND FEES

Rate and Fee Descriptions	Rate or Fee
Sewer Availability Fee	\$25 per user per month
Plant Investment Fee	\$3 per user per month
Gardner Elementary School	\$50 per month

The GPID's sewer tap fee is \$3,000 for a residential unit and \$5,000 for a commercial unit. The cost of the sewer tap fee excludes any and all costs of construction and installation from the main to the building connection.

The GPID is tracked independently as a proprietary fund of Huerfano County; the revenues and expenditures for water and sewer are combined in the annual audit. The annual budgets track sewer and water revenue separately; however, the expenditures are combined. There are no other public services provided to the community by the GPID. To assess the overall financial health of the sewer fund, a review is required of both the revenues generated within the fund as well as associated expenditures. Huerfano County staff provided information on allocation of each expenditure to either water or sewer fund, or a combination. The following table provides documentation on revenues for the years 2018 through 2021 from the Huerfano County budgets.

TABLE 8
GARDNER PUBLIC IMPROVEMENT DISTRICT
SEWER DEPARTMENT REVENUES

Year	Sewer User Charges	GPID Plant Investment Fee	Late Fees ⁵⁾	Total Operating Revenues
2018 ¹⁾	\$24,499	\$1,037	\$840	\$26,376
2019 ²⁾	\$24,427	\$2,639	\$840	\$27,906
2020 ³⁾	\$21,921	\$2,554	\$790	\$25,265
2021 ⁴⁾	\$25,000	\$2,500	\$750	\$28,250
2022 ⁴⁾	\$25,000	\$2,500	\$750	\$28,250

1) 2018 actual value from 2020 Budget

2) 2019 actual value from 2021 Budget

3) Audit value from 2022 Budget

4) From 2022 Budget, 2021 and 2022 Budget values

5) Late fee revenue is split evenly between water and sewer

Upon review of the revenue table for the sewer fund, revenues generated from sewer sales have remained fairly steady during the period of review. A review of expenditures is necessary to establish the overall viability of the current sewer user charge system. The following table of expenditures covers the same period of time as that for revenues. The expenditures of the water and sewer system are combined. Huerfano County representatives were contacted and indicated the general percentage split of each expenditure category. Most of the operational expenses for GPID are attributable to the water system whereas other administrative expenses were split evenly. The table summarizes expenditure categories as shown in the review of 2020-2022 budget years.

TABLE 9
GARDNER PUBLIC IMPROVEMENT DISTRICT
SEWER DEPARTMENT EXPENDITURES

Year	Salaries	Operating and Administrative	Contract Services	Insurance	Repair and Maintenance	Utilities	Misc.	Total Operating Expenditures
2018 ¹⁾	\$2,525	\$1,996	\$1,607	-	\$1,055	\$7,411	\$35	\$14,629
2019 ²⁾	\$2,555	\$1,738	\$1,638	-	\$8,342	\$7,891	\$326	\$22,490
2020 ³⁾	\$2,634	\$3,452	\$901	\$849	\$3,340	\$8,142	\$905	\$20,223
2021 ⁴⁾	\$2,714	\$2,178	\$3,637	-	\$5,000	\$8,142	\$850	\$22,521
2022 ⁴⁾	\$1,498	\$4,978	\$1,137	-	\$10,500	\$10,916	\$853	\$29,882

1) 2018 Actual Value from 2020 Budget

2) 2019 Actual Value from 2021 Budget

3) Audit Value from 2022 Budget

4) From 2022 Budget, 2021 and 2022 Budget values

Several observations and trends can be identified when comparing the prior tables. Revenues remained fairly constant during the period of review. Based on the estimated expenditure split between the sewer and water system, the sewer system has an annual surplus with the only exception being the budget year for 2022.

The Colorado Department of Local Affairs reports that in 2020, the median monthly sewer bill in the State of Colorado, was \$36.06 per month. The GPID sewer user charge is \$25 per month plus \$3 per month for a plant investment fee totaling \$28 per user per month. The GPID sewer rate is below the state median; however, the median household income of the GPID is also less than the state average of \$72,331. The estimated expenditures for the water system as shown are greater than the projected water revenues. As such, it is likely that sewer fees are being used to support the water system's operations. The GPID would need to track revenues and expenditures separately for water and sewer to determine this more accurately.

The proposed sanitary sewer collection system improvements as recommended within this report will have a positive impact on the overall operations and maintenance costs associated with the GPID sewer system. The positive impact will be derived from the elimination of the majority of problematic areas in the collection system. The cost savings are not considered to be significant, but will be positive and will prevent costly emergency repairs of the sewer collection system.

SECTION VII

FINANCIAL IMPACTS OF THE RECOMMENDED IMPROVEMENTS

The wastewater system improvements recommended in this study represent needed replacements and repairs to the GPID's sanitary sewage collection system and the change in the discharge location for the WWTF. A variety of improvements ranging from ring and cover grate adjustments through manhole replacements through entire collection system segment replacements is included in the project. The total estimated project cost for the Priority No. 1 improvements is \$1,528,000. Priority No. 2 improvements are not recommended at this time as including these improvements is not affordable for the community.

Given the number of users associated with the GPID's wastewater system, projects of this magnitude cannot be undertaken by the GPID without sizeable grant and loan assistance through state and/or federal organizations. Funding for such projects has historically been available through: the USDA Office of Rural Development; the Community Development Block Grant (CDBG) program; and the State of Colorado's Energy/Mineral Impact Assistance Fund (EIAF) program. The WQCD in conjunction with the Colorado Water Resources and Power Development Authority (CWR&PDA) administer the Water Pollution Control Revolving Fund (WPCRF) that historically has provided loan funds only, but has also incorporated loan forgiveness funds for design and engineering related expenditures as a component of their package for those communities being designated as a Disadvantaged Community. These programs all base their funding not only on the viability of the project, but also on other factors such as median household income, the need for the project, the debt burden of the community, the percentage of population in the low to moderate income category and the community's existing sewer rates.

The USDA Rural Development Rural Utility Program has been used extensively throughout Colorado for small water and wastewater system improvement projects, especially for non-governmental entities. However, given their 40-year loan amortization schedule and current corresponding interest rates, limited grant availability, coupled with extensive frontend expenditures, this funding sources has fallen out of favor. Since GPID is operated and managed by Huerfano County, GPID has access to other state related programs.

Several other funding programs exist which have proven recently to be much more attractive to communities for the implementation of their infrastructure improvement projects. The following details these other programs.

The most viable loan and grant funding source is the use of the CWR&PDA's WPCRF program, specifically the Disadvantaged Communities (DAC) Program. The program typically provides primarily loan funds; however, for those communities falling in the DAC category, a portion of the funding based upon frontend non-construction engineering and planning related expenses with a cap of \$300,000 is available. This comes in the form of loan forgiveness (grant) funds. The State has allocated a portion of its funding to function as loan forgiveness to offset loan proceeds.

In order for a community to be designated as a Disadvantaged Community (DAC), the community must meet at least two of the three scenarios. The first item pertains to the communities' median household income; the second factor reviews the communities' median home value (MHV); and the third item examines the County's unemployment numbers or job loss numbers within the community itself. As long as the community meets two of these three factors, the community will be characterized as a DAC. Once a community has been designated as a DAC, a portion of the funding will be available in the form of a Design and Engineering Grant. The total amount for this is up to \$300,000. The specific amount is ultimately determined by the CDPHE after the Project Needs Assessment has been submitted and reviewed.

Two eligibility categories have been established for the DAC program. Category One is for communities with a population of less than 10,000 with a median household income between 80% and 61% of the Colorado statewide median household income (includes metropolitan areas). The most recent data shows the state median household income level at \$72,331. Thus, Category One represents income levels between \$43,399 and \$57,865. Eligible entities in this category can now obtain 30-year loans for sewer projects of up to \$3,000,000 with an interest rate of 1.5%. Category Two is for similar size communities with a median household income of less than \$43,399 and offers a 0.5% loan rate. The community of Gardner is not in a designated place, census tract, or block group as defined by census data; therefore, it is difficult to determine which DAC category the GPID will fall within. If history has any indication of future

designations, Gardner would be considered a DAC from the previous wastewater treatment facility project.

There are other factors which are evaluated to determine if an applicant falls into the Category One or Category Two. DOLA will not indicate which Category a community falls within until the community is well into the loan process. Given the County information, it does appear that GPID would qualify as a DAC; however, demographic data is unavailable for the specific area known as Gardner. Therefore, the determination is not possible if the GPID will qualify as a Category One or Category Two.

One of the current criteria established within the loan covenants for this funding source is that the GPID sewer rate structure be established such that a minimum of 10% of excess revenues exist over and above the actual loan payment amount. The unique administrative related costs with this funding source include bond counsel, legal counsel and preparation of a Project Needs Assessment (PNA), which is a combination of this PER and a Technical, Managerial and Financial Capacity Assessment (TMF) report. These costs have been included within the project cost estimate.

There are various steps required in the application process for the WPCRF program. An applicant is required to submit a Prequalification Form to the Water Quality Control Division. A preapplication meeting is conducted with the Owner, the Owner's consultant and the State Revolving Fund Agency personnel who review the prequalification form. If the prequalification form is deemed by the Revolving Fund agency representatives to be adequate, then a PNA is required.

The PNA requires technical related information that must be completed by a professional engineer. This portion of the application process also includes environmental related information together with a Technical, Managerial and Financial Capacity Assessment. Upon the submission of this information, the WQCD and CWR&PDA may provide funds to cover design and engineering related costs that would occur prior to construction in the form of loan forgiveness funds (grant) if the applicant is a DAC. A public hearing is required. Any outstanding issues from an environmental standpoint must also be resolved. Final plans and specifications may be submitted in advance of, or at the time of, the loan application.

The third step is the actual loan application. During the loan application process, the community will also be considered for principal forgiveness. Historically, there have been limited funds available through the WPCRF with very little availability of principal forgiveness; typically, this has been more available for drinking water projects. With the new Infrastructure Investment and Jobs Act (IIJA), this has further increased the probability of additional principal forgiveness funds being available. The IIJA will infuse grant money into this fund increasing the likelihood of principal forgiveness through the WPCRF program than what has been historically available. The potential amount of the loan forgiveness is unable to be calculated in advance, but would be known prior to the loan closing. Upon loan approval, the closing will not occur until such time as the plans and specifications are fully approved by the Division. The applicant's consultant may provide a self-certification of the plans and specifications or request a streamlined design review, if applicable. With the approval of the plans and specifications fully in place, the loan may be executed and the project may proceed into bidding.

This multistep process lengthens the overall application process, but provides for the ability of the Water Quality Control Division and the Colorado Water Resources and Power Development Authority to have their funds quickly utilized during the construction phase of the project in accordance with EPA's criteria.

As mentioned, the IIJA was signed into law on November 15, 2021. The IIJA allocation to Colorado for drinking water and clean water (wastewater and stormwater) will be through the State Revolving Fund (SRF). Thus, there will be supplemental money through the SRF. The EPA has placed an emphasis on small, underserved, and disadvantaged communities in the IIJA. The final ruling and funding allocation to the State of Colorado are still underway; however, preliminarily the SRF anticipates receiving at least \$14 million a year for clean water projects for the next five years. Of these potential funds, half of these funds need to be allocated in grant funding. The final determination of how communities can access these funds is still underway. The consultant will continue to monitor this and advocate for the GPID. Due to the estimated project cost for Priority No. 1 improvements, the assumption is made that the highest possible principal forgiveness would be granted, which is 80% of the loan request. If this is not granted, the scope will need to be adjusted to ensure the project is affordable for the GPID.

Given the Federal government's directives that occurred in 2008, 2014 and 2021, the SRF program requires Davis-Bacon wages and conformity to America Iron and Steel (AIS) and Build America, Buy America (BABA). AIS and BABA require the acquisition of American manufactured steel, iron, and manufactured products. The impact of Davis-Bacon wages has been integrated into the cost estimates prepared for this project. The BABA was included in the IIJA was signed into law in November of 2021 and is similar to the previous AIS Act. The full extent of the ruling and its requirements are still being determined; however, it will require all products to be manufactured in the United States, not just iron and steel. This new Build America, Buy America Act will have cost implications to projects. These cost impacts have not been included in the cost estimate, because the impacts are not yet known how they will impact material prices.

Another federal program is the American Rescue Plan Act (ARPA) also known as the COVID-19 Stimulus Package was signed into law on March 11, 2021. ARPA is providing funding to state and local governments. The purpose of ARPA is to provide resources to help governments respond to the pandemic and its economic effects and replace revenue lost during the pandemic. The ARPA funds can be utilized for helping with the economic impacts of the pandemic to businesses, provide premium pay to eligible workers, provide government services that have been impacted by lower revenue, and lastly to make necessary investments in water, sewer, or broadband infrastructure. Most rural communities were not greatly impacted by the pandemic as it relates to the first three eligible categories. Therefore, the only remaining eligible expense is for investment in water, sewer, or broadband infrastructure. The ARPA allocation was split into two payments and requires the monies to be spent by the end of 2026. Since Gardner is not an incorporated town, it did not receive any ARPA allotment. However, Huerfano County was allocated approximately \$1,340,000. If the County has funding available after distributing money to the first three eligible categories, the County could consider utilizing some of the ARPA allotment towards the GPID.

DOLA in their administration of the Community Development Block Grant (CDBG) program and the Energy/Mineral Impact Assistance Fund (EIAF) program utilize different funding guidelines. The State does not utilize average water rates as a firm guideline around which additional debt burden has to be incurred. The following highlights the general criteria of the state programs.

The CDBG Public Facilities program, based on federal guidelines, requires that more than 51% of the community fall within the low to moderate income category to be eligible for this funding source. The GPID service area falls in Block Group 9609-3, which didn't qualify the community for CDBG. However, the State Demographer completed additional analysis using the Gardner Census County Division (CCD); using this data 53.9% of the households have low to moderate income. The Gardner CCD encompasses the northern third of Huerfano County. The CDBG program director has accepted this as sufficient data for program eligibility. An income survey completed in 2013, which is no longer valid due to the time limitations, yielded 78.6% percent of the households with low to moderate income. The current maximum CDBG award is \$600,000. Added funding administration costs typically apply to this source of funds given the magnitude of administration that must occur during the course of the project, followed by a comprehensive field audit upon completion of the project. It should be given consideration for the potential grant funding within the implementation of the improvements. The single submittal deadline for this funding source is in mid-February. An application was submitted in mid-February 2022.

Another DOLA administered program is the Energy/Mineral Impact Assistance Fund (EIAF). This program is utilized for grant funding although loan funds available at an interest rate of 5% with a 20-year amortization schedule. Competition for this funding is statewide. Applications run on a cyclical basis. The current maximum grant amounts on this form of assistance have recently been increased from \$600,000 to \$750,000. This fund historically offered a maximum of \$2,000,000 grants; however, the programs funds are generated from oil, gas, and mineral extraction severance tax within the State of Colorado. Given the decline in oil and gas production and the subsequent reduction in mineral and severance tax revenues to this fund, there are limited funds available.

The EIAF program has two funding tiers. Tier I is established for requests under \$200,000. Decisions on Tier I projects are made by the DOLA staff. Tier II consists of a funding bracket beginning at \$200,000 to \$750,000; in the calendar year of 2021 the upper limit was \$600,000. DOLA is hopeful that the upper limit will remain at \$750,000 in the next year or two but this is difficult to predict. A 50% local match is required; the local match can be in form of a loan. Administration requirements associated with this funding source are minimal. DOLA will not typically process and award funds for both the CDBG and EIAF programs on the same project. EIAF funding cycles in the 2022 calendar year will be March 2022 and likely again in September 2022. It is recommended that the project be as close to construction as possible to score higher

in the readiness to go category. If GPID is unsuccessful in receiving the CDBG grant then an EIAF grant application shall be submitted. DOLA will only consider one EIAF application for the County; therefore, GPID would need to be prioritized over other County projects.

The CDPHE Small Community Grants (SCG) program was funded in 2015 and again in 2021 when \$4,000,000 was allocated for SCG eligible projects which included both water and wastewater projects. The submittal deadline was March 2021. GPID submitted an application for water system improvements but did not receive an award. The CDPHE received an abundance of applications. This grant is not expected to be funded in the near future as the funding is sourced from severance tax from oil, gas, and minerals extraction.

The CDPHE Water Quality Improvement Fund (WQIF) is a grant program that is funded by water quality violations. There are typically three award categories including stormwater management training, projects that improve water quality in the community impacted by a water quality violation, and stormwater or domestic wastewater treatment facility for planning, design, construction, or repair purposes. This grant was only available for stormwater management training for 2022. It is unknown when this will be funded again for wastewater projects; therefore, this has not been included in the cost estimate. This PER was funded in part through the WQIF program.

The following table has been developed as a potential scenario for implementation of the recommended improvements. The scenario shown is also based on a DOLA CDBG grant, a WPCRF Design and Engineering Grant, and a WPCRF direct loan administered by the Colorado Water Resources and Power Development Authority at the current loan rate of 0.5% for the remaining needed funds.

TABLE 10
GARDNER PUBLIC IMPROVEMENT DISTRICT
RECOMMENDED WASTEWATER SYSTEM IMPROVEMENTS
POTENTIAL PROJECT FINANCING SCENARIO

Component	Priority No. 1
Project Cost ¹⁾	\$1,528,000
DOLA CDBG Grant ²⁾	\$600,000
WPCRF DAC D&E Grant ³⁾	\$180,000
WPCRF Principal Forgiveness ⁴⁾	\$595,000
WPCRF Loan ⁵⁾	\$153,000
Current O&M Expense (customer/mo.) ⁶⁾	\$26.81
New Debt Service (customer/mo.) ⁷⁾	\$6.56
Added Reserve Requirement (customer/mo.) ⁸⁾	\$0.66
Needed Average Monthly Bill (customer/mo.) ⁹⁾	\$34.03
Current Average Revenue (customer/mo.) ¹⁰⁾	\$28.00
Estimated Required Rate Increase ¹¹⁾	\$6.03

- 1) Total estimated project cost
- 2) Estimated Community Development Block Grant award
- 3) Disadvantaged Community Design and Engineering Grant award of \$180,000
- 4) DWRF Principal Forgiveness, granted after the loan application is submitted, via IIJA. This is considering 80% loan forgiveness which is the maximum.
- 5) Water Pollution Control Revolving Fund (WPCRF) loan assumed at 0.5% for 30-year term
- 6) Based on 2021 sewer operating expenses of \$22,520 divided by 70 EQR and 12 months
- 7) Debt Service is based on annual loan payments of \$5,505 divided by 70 EQR and 12 months
- 8) Required 10% reserve requirement on debt service
- 9) The total of monthly expenses, new debt service, and reserve requirement
- 10) Based on the current user charge of \$28 per month (\$25 sewer availability fee and \$3 for Plant Investment Fee)
- 11) Estimated required rate increase

The projections in the above table are based on a 0.5%, 30-year loan by CWR&PDA in the amount of \$153,000, a \$600,000 DOLA CDBG grant, a Design and Engineering (D&E) Grant of \$180,000, and a \$595,000 WPCRF Principal Forgiveness. Based on the 2021 sewer operating expenses for the sewer fund, the expenses per EQR are \$26.81.

The above funding scenario is dependent upon Huerfano County through the GPID to receive 80% forgiveness of the submitted loan application of \$748,000. If this level of forgiveness is not received, then the project scope will need to be reconsidered. The current Priority No. 1 improvements include the replacement of the sanitary sewer line in State Highway 69. Ideally, it would be best to include all sanitary sewer replacement in this right-of-way due to the cost of traffic control and permits.

The current rate structure has a base user charge of \$25 per user per month plus a plant investment fee of \$3 per month per user for a total charge of \$28 per user per month. Based on the assumed 2021 sewer operating expenses, the current expenditures are \$26.81 per user per month. The anticipated debt service and required 10% reserve requirement is \$7.22 per user per month. This would require the monthly sewer user charge to increase to \$34.03. As mentioned earlier, the Colorado State median sewer user charge is \$33.06.

The above funding figures are projections only. The actual loan amount will depend upon the amount of loan the GPID desires to pursue. Through the use of available funding sources, the project can be made a reality. The consultant in providing this information does not claim to be a financial consultant representing any financial products or the issuance of any municipal or government securities.

SECTION VIII PLAN OF ACTION

A plan of action and schedule has been developed for the Sanitary Sewer Collection System Improvements recommended herein. The following table has been developed based upon the normal progression of a project of this nature. The table is based on project funding using a combination of a DOLA CDBG grant, WPCRF Design and Engineering Grant, and a WPCRF/DAC loan.

TABLE 11
GARDNER PUBLIC IMPROVEMENT DISTRICT
PLAN OF ACTION AND IMPLEMENTATION SCHEDULE

Scheduled Event	Date
Submit DOLA CDBG funding application	February 2022
Submit Preliminary Engineering Report to GPID and discuss with funding agencies	March 2022
Authorize design	April 2022
Submit Site Application Amendment	May 2022
Obtain DOLA CDBG grant determination	June 2022
Initiate WPCRF process	April 2022
Submit final design to CDPHE	February 2023
Submit WPCRF loan application	February 2023
Obtain CWR&PDA funding commitment	April 2023
Obtain CDPHE approval of final design	April 2023
Loan and grants executed	June 2023
Advertise project for bid	July 2023
Bid opening	August 2023
Project award	August 2023
Initiate construction	September 2023
Complete improvements	February 2024

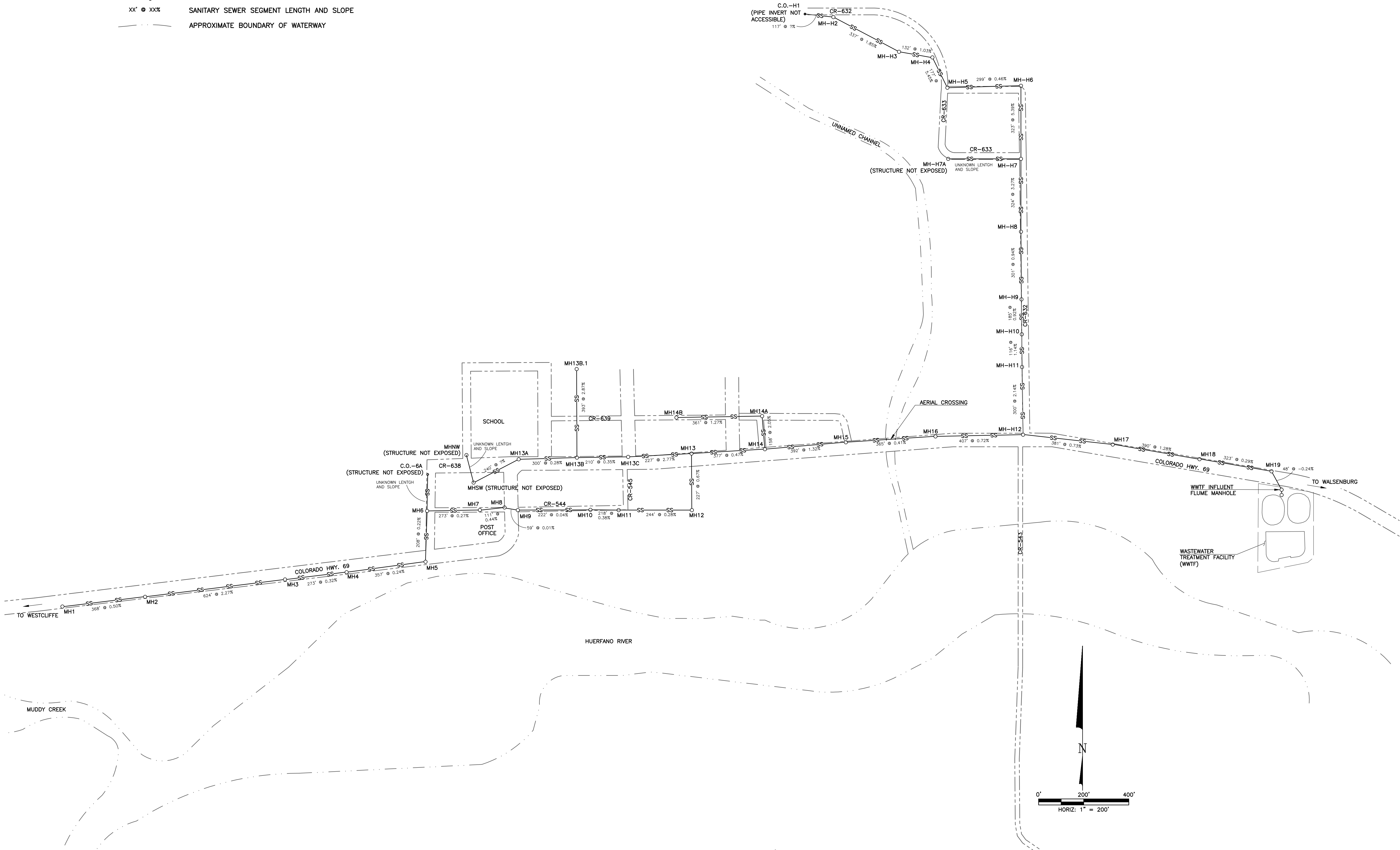
The above schedule realistically represents the required timeline for implementation of the recommended improvements. Significant activity must occur prior to the initiation of design and

construction. This activity focuses on securing the necessary funds together with completing the required environmental related requirements associated with the funding agencies and the various regulatory agencies.

This plan of action and schedule are dynamic activities that will require modifications and refinements as the project evolves. A delay in one activity will result in subsequent delays in following activities. Securing adequate funding in a timely manner will be crucial not only to maintaining the schedule, but ultimately in implementing the needed improvements.

LEGEND OF EXISTING SANITARY SEWER SYSTEM

- SS SANITARY SEWER COLLECTION SYSTEM MAIN (8" DIAMETER TRUSS PIPE)
- MH1 MANHOLE WITH DESIGNATION
- C.O.-1 CLEANOUT (C.O.) WITH DESIGNATION
- XX' @ XX% SANITARY SEWER SEGMENT LENGTH AND SLOPE
- APPROXIMATE BOUNDARY OF WATERWAY



SCALE VERIFICATION

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FIGURE 7

EXISTING WASTEWATER COLLECTION SYSTEM MAP

GARDNER PUBLIC IMPROVEMENT DISTRICT

GMS, INC.

CONSULTING ENGINEERS

611 N. WEBER, SUITE 300

COLORADO SPRINGS, COLORADO 80903

DRAWN	SKC
DESIGNED	RDC
CHECKED	RDC
DATE	MARCH 2022
PROJECT NO.	2020-070.150
GMS FILE NO.	2994

SHEET

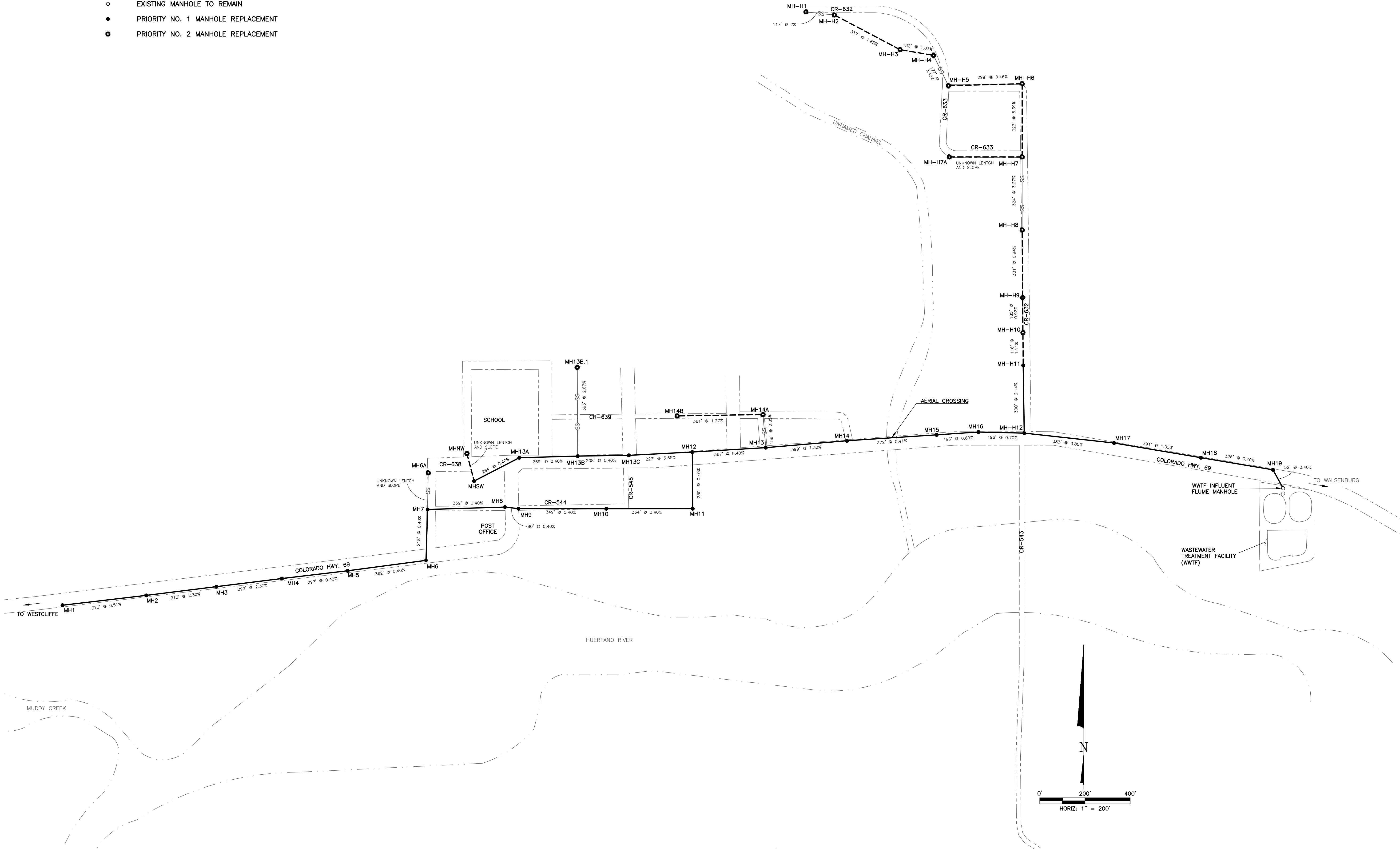
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OF

1

LEGEND

- SS— EXISTING SEWER TO REMAIN
- PRIORITY NO. 1 SEWER REPLACEMENT
- - - PRIORITY NO. 2 SEWER REPLACEMENT
- EXISTING MANHOLE TO REMAIN
- PRIORITY NO. 1 MANHOLE REPLACEMENT
- PRIORITY NO. 2 MANHOLE REPLACEMENT



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FIGURE 8

PROPOSED SANITARY SEWER SYSTEM IMPROVEMENTS

GARDNER PUBLIC IMPROVEMENT DISTRICT

GMS, INC.

CONSULTING ENGINEERS

611 N. WEBER, SUITE 300

COLORADO SPRINGS, COLORADO 80903

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