











FINAL Water Main Line Replacement and Rehabilitation Master Plan

McKinleyville Community Services District





Executive Summary

Introduction

The Water Main Line Rehabilitation Master Plan (Master Plan) has been prepared to provide a schedule for implementing replacements, rehabilitation, and upgrades to the McKinleyville Community Service District's (MCSD or District) water distribution system main lines and appurtenances (distribution system) for the next 50 years. This Master Plan effort includes an analysis of all of the pipelines, service laterals, blow-off assemblies, and valves (including isolation, air release, and pressure reducing valves) in the District's water distribution system. No analyses of booster stations or storage tanks are provided as a part of this study.

The original water distribution system was constructed in 1973. The average life expectancy of asbestos cement (AC) pipe which constitutes the majority of the original system is 50 to 70 years. Given the current age of the system is 47 years, the District can anticipate increased pipeline failures and leaks in the next five to ten years. As the system continues to age, replacement and rehabilitation of existing infrastructure will be necessary to maintain an effective, functional system. This report serves as the third and final phase of the master planning effort. The work on the various phases culminates in this Final Water Main Line Rehabilitation Master Plan (Final Master Plan). The Final Master Plan will serve as a final planning and budgeting outline to ensure the District is able to continue their high level of service to the community well into the future.

Phase 1 of the Master Plan includes a review and analysis of available information that was used to produce a planning-level long-term replacement plan. The development of a near-term rehabilitation plan was also considered. This near-term plan would include any areas identified as having performance or capacity constraints that need to be resolved in the next ten years; however, there are currently no such cases in the water distribution system. The District does currently have plans and has budgeted for the construction of a new water storage tank, but that planning effort is being done outside the scope of this document.

Phase 1 of the Master Plan provides the following:

- Overview of the existing distribution system
- Summary of previous related studies
- Information on anticipated population growth
- Preliminary needs assessment
- Long-term replacement analysis including cost and scheduling information
- Financial analysis based on the replacement cost estimates
- Conclusions, recommendations, and next steps

Phase 2 of the Master Plan effort builds on the system knowledge obtained in Phase 1 to create more detailed phasing information for the systematic replacement of the water mains.

Phase 2 of the Master Plan provides the following:





- Discussion of appropriate replacement methodologies (e.g. lining, bursting, or direct replacement) with associated construction cost estimates
- Determination of an appropriate yearly project cost based on the Phase 1 system requirements and financial analysis
- Outlining a schedule for the first 50 years of main line replacement for the MCSD water distribution system
- · A financial analysis to forecast rates necessary to fund these replacements

Phase 3 of the master planning effort consists of direct physical assessment of portions of the system to determine the condition of the pipe and update the schedule established under Phase 2 based on physical testing of pipe samples and a risk-based prioritization.

Phase 3 provides the following:

- Determination of pipe condition through physical testing of pipe samples
- Evaluation of the prioritization based on risk considering all of the triple bottom line categories: social, environmental, and financial
- Discussion and comparison of performing construction work in-house or through contract with associated construction cost estimates
- Refinement of the appropriate yearly project cost based on the updated system requirements and updated opinion of probable costs
- Revision of the schedule for the first 50 years of main line replacement for the MCSD sewer collection system based on the risk assessment

Risk Assessment

A Risk Framework was developed and applied to the linear assets in the MCSD sewer system. The Risk Framework considers the Probability of Failure and Consequence of Failure and assigns scores to each pipe. Probability of Failure considers the physical mortality failure and uses condition information from physical testing of sample pipes to assign scores. Consequence of Failure considers Triple Bottom Line categories (social, environmental and financial) and assigns values to each pipe using geospatial analysis and proximity to various data layers; for example, critical customers and sensitive habitats like rivers and waterbodies.

Rehabilitation PrioritizationProbability of Failure and Consequence of Failure scores are then used to calculate the Core Risk and Business Risk Exposure scores. The risk scores are used to prioritize the rehabilitation of the system. Based on the results of the physical testing of sample pipes, it was determined that asbestos cement (AC) pipe with diameter 8-inch and smaller had less remaining wall thickness and therefore should be addressed prior to 10-inch and larger AC pipe. This drives the Probability of Failure score and therefore is a factor in the prioritization.





Conclusions, Recommendations, and Next Steps

This Master Plan presents a Risk Framework for evaluating and assigning priority for the replacement of MCSD's sewer collection system. The District can replace the most critical portions of the MCSD water distribution system in the next 50 years with a reasonable adjustment to user rates by using the risk-based prioritization presented in this master plan.

Following the prioritization presented in this master plan, spending an average of \$1 million (2019 dollars) per year on the system will allow Priority 1 and over half of Priority 2 pipes to be replaced which equates to 18.6 miles of the District's 8-inch or smaller AC pipe in 50 years. This represents 50% of the District's 8-inch or smaller AC pipe, or 22% of the entire system. Replacement activities will help to ensure the continued high quality of service to their customers. Actual construction costs may differ and will depend on pipe conditions. Confirmation of the appropriate replacement method during the design phase of each project.

While there are currently no high-priority, near-term projects required for the distribution system, it is critical that the District begin planning and budgeting for upgrades and replacement of system components. The approved rates from Section 4 were made assuming that MCSD would begin putting aside \$860,000 to \$960,000 for each of the next four years starting in 2019 and then reserving the full \$1 million (2019 dollars) per year after that period. With rate adjustment approved, the project financing is securely in place and it is recommended that MCSD execute the replacement of its water system beginning with the pipe segments identified as Priority 1 followed by Priority 2 and then Priority 3. Within the Priority groups, it is recommended that Business Risk Exposure (BRE) scores be used to prioritize projects. The District should begin the planning and design process for the early proposed projects so construction can begin around 2024.

Asset condition for the risk assessment performed as part of this master plan is largely based on the 3 AC pipes samples collected and physically tested, one segment of ductile iron (DI) pipe CCTV-ed, and one location of DI pipe with ultrasonic thickness testing. Results of physical testing were then extrapolated to subsets of assets based on material and diameter; however, condition within a subset can vary. Additional physical testing could be performed to refine and update the condition of the assets, as well as additional physical testing. As pipes are replaced, condition scores should be updated to reflect the improvements.

This master plan focuses on the District's capital expenditures and using the risk assessment to prioritize capital projects. However, in addition to the capital project recommendations, the District can use the risk assessment results to identify appropriate maintenance activities and intervals for the water distribution system assets depending on the criticality of the pipe segment and appurtenances. Maintenance activities should include flushing of water lines and exercising of valves to ensure best performance and functionality.

Lastly, this master plan and the associated risk model is considered a living plan that should be updated as additional condition information is known or as replacement projects are completed. Condition scores and probability of failure can be updated at the asset level to obtain updated prioritization.





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1. Introduction and Background

The purpose of the McKinleyville Community Services District (MCSD, District) Water Main Line Rehabilitation Master Plan (Master Plan) is to provide a framework for planning, funding, and implementing replacements, rehabilitation, and upgrades to the District's water distribution system main lines and appurtenances (distribution system) for the next 50+ years. This type of master planning helps the District provide orderly, long-term maintenance and replacement of key elements of the distribution system, and to manage the timing of major capital projects to secure revenue needed to achieve District goals.

1.1 Overview of Existing System

MCSD is a special service district providing parks, recreation, water, wastewater, and streetlight services to residents of McKinleyville in Humboldt County, California (see Figure 1: Project Vicinity and Location Map). The MCSD boundary encompasses approximately 19 square miles, ranging from North Bank Road on the south to Patrick Creek on the north.

The original water distribution system was constructed in 1973. MCSD purchases wholesale treated water from the Humboldt Bay Municipal Water District (HBMWD), which diverts water from its one-million-gallon reservoir at the Turbidity Reduction Facility to MCSD's Grant A Ramey Pump Station (Ramey Pump Station) at the intersection of North Bank and Azalea Roads. Water is pumped into the rest of the District's system from the Ramey Pump Station. Water is distributed to the District's approximately 6,448 water services (as of November 2021) through approximately 91 miles of water mains (excluding private laterals). The MCSD water system also includes six storage tanks that provide a total of 5.25 million gallons (MG) of storage.

There are four pressure zones in the system. Pressure Zone 1 (approximately 13% of the system) includes all services west of Highway 101 and is fed from Pressure Zone 2 through four pressure reducing valve (PRV) stations. Pressure Zone 2 (approximately 84% of the system) includes two tanks at the Norton Road tank site (1 MG and 1.5 MG) and two tanks at the Cochran Road tank site (1 MG and 1.5 MG). There is a booster station near the Cochran Road tanks that pumps water up to the two McCluski Hill redwood tanks (0.1 MG and 0.15 MG) which serve the McCluski Hill area (Pressure Zone 3, approximately 3% of the system). Pressure Zone 4, along Blake Road, is a small specialty zone that services approximately 12 customers and is fed by a hydro-pneumatic tank from Pressure Zone 2.

An overview of the District's water system is shown in Figures 2 and 3. Figure 2 symbolizes the water mains with respect to size, and Figure 3 symbolizes the water mains with respect to material.

1.2 Summary of Previous Studies

Elements of the MCSD distribution system have been evaluated since the system was originally constructed. This section presents background information, findings, and recommendations from the following recent documents and studies regarding the MCSD distribution system:





- MCSD Water Distribution System Preliminary Assessment Revision 3, SHN August 2011
- MCSD Water Model Technical Report, North Coast Mapping Solutions July 2012
- McKinleyville Capital Improvement Plan, HSU Student Capstone Project May 2015
- Water and Sewer Capacity Fee Study, Willdan Financial Services September 2011
- Updated Water Rate and Financial Analysis, Willdan Financial Services February 2014
 (Note that the Rate Study was updated during previous phases of the master planning effort
 in 2018 which is described in Chapter 5)

These previous studies are summarized in this report to provide additional context and highlight conclusions that can be drawn from work that has already been done. While more in-depth assessment of the distribution system is a part of this Master Plan effort, synthesizing information provided in previous studies is an appropriate way to begin this effort. Recent assessment of the water distribution system was started with a 2011 study that is summarized in the following section.

1.2.1 MCSD Water Distribution System – Preliminary Assessment – Revision 3, SHN – August 2011

SHN Consulting Engineers & Geologists, Inc. (SHN) prepared a report titled *MCSD Water Distribution System – Preliminary Assessment* (Assessment) in August 2011. The Assessment provides an overview of the current and future MCSD water system and storage requirements to aid in the planning of future additional storage for the system, as well as aid in the development of the MCSD water distribution model, which is summarized in Section 1.2.2. Current water needs were established using data from 2010 and methods outlined in Title 22 California Code of Regulations (CCR) Section 64554(b)(3)(A-D). It was calculated that MCSD has an average daily demand (ADD) of 1.51 million gallons per day (MGD), a max daily demand (MDD) of 3.41 MGD, and a peak hourly demand (PHD) of 0.21 MG.

The California Department of Public Health (CDPH) and CCR 22 CA ADC 64554 require water storage equal to four hours of PHD plus the MDD at all times, which would require MCSD to have 4.25 MG of storage. MCSD desires to achieve a more stringent storage criterion of 5 days of ADD plus storage for fire flows, given the vulnerability of the main water supply transmission line and a lack of redundancy in water supply. Meeting this criterion would require 7.6 MG of storage under current system demands. Currently MCSD has 5.25 MG of available water storage, which is sufficient to meet CDPH standards, but insufficient for meeting MCSD standards.

In addition to the current system demands, the Humboldt County General Plan (General Plan) has proposed high-density housing that will increase the MCSD population by approximately 1,800 equivalent residential units (ERUs). With a demand of 254 gallons/ERU (calculated in the Assessment), this would require an additional 2.3 MG of storage to meet the MCSD storage goals, in addition to the current storage deficit of 2.3 MG. This would mean a total required storage of 9.8 MG, implying the MCSD needs to increase its current water storage by approximately 4.5 MG. The assessment presents conceptual cost estimates for the design and installation of one 4.5-MG tank at \$5,647,460 and for two 2.25-MG tanks at \$8,597,108.





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Additionally, the Assessment outlines other requirements and specifications for the MCSD water system as follows:

- Minimum storage level is approximately 20 feet in each storage tank to account for fire flows and/or minimum pressure requirements.
- Maximum fire hydrant spacing is 500 feet in residential areas and 300 feet in commercial
 areas. A maximum of one hydrant is allowed on 6-inch mains between intersecting lines, and
 a maximum of two hydrants are allowed on 8-inch mains between intersecting lines.
- Minimum operating pressure of 40 pounds per square inch gauge (psig) available to residents with a lowered minimum of 20 psig available during fire flow demands.
- Minimum fire flows are 1,000 gpm and 2,000 gpm over a 2-hour period for residential and commercial areas, respectively. Note that a fire on September 16, 2002 lasted for 10 hours and consumed nearly 1.3 MG of water.

1.2.2 MCSD Water Model Technical Report, North Coast Mapping Solutions – July 2012

The MCSD Water Model Technical Report was prepared by North Coast Mapping Solutions with review and stamped approval by SHN. The report summarizes the District's water system as well as MCSD and State of California water system regulatory criteria and standards as presented in the MCSD Water Distribution System – Preliminary Assessment (see Section 1.2.1). The report then outlines the development of a WaterCAD V8i water model for the District's water distribution system piping, tanks, and booster stations. The report includes a discussion on model limitations and components, rule-based operations used to define the model simulations, how demand was allocated throughout the system, and model calibration. Lastly, the report presents results for various scenarios to determine the system's adequacy for maintaining required flows, pressure, and storage per MCSD and State of California minimum requirements and regulations (see Section 1.2.1). The report presents model results for four scenarios:

- Existing system
- 2. Addition of a 4.5-MG storage tank at the Cochran Road tank site
- 3. Addition of a 4.5-MG tank at the Cochran Road tank site and a 2.5-MG tank at the northeast end of Mather Road (Dows Prairie area)
- 4. Water system requirements to meet the growth projections for MCSD
 - a. This scenario was modeled with the additional 4.5-MG tank at the Cochran Road tank site and a 2.5-MG tank at the end of Mather Road
 - b. This scenario included demands based on population growth projections for years 2020 and 2030 (using a growth rate of 1.8% per year)

Each scenario analysis included the following:

Steady state analysis testing pressures, flows, and fire flow availability





- Extended period simulation (EPS) testing storage capacity and pressures
- Extenuating circumstances testing each scenario under "earthquake" conditions
 - Under this scenario, the assumption is made that a natural disaster isolates MCSD's system from HBMWD's system and causes fires within the MCSD service area. With MCSD no longer connected to HBMWD's system, water is provided solely by the storage in MCSD's tanks.
- Results for a high-density build-out scenario with demands added into the model based on population growth projections in the General Plan

1.2.2.1 Steady State Analysis

The steady state analysis results showed that during peak hour demand plus a 2,000 gpm industrial fire event on Central Avenue, the existing system is able to provide adequate pressure (20 psi or greater) to all service connections except one junction at the end of Mather Road (Dows Prairie area), which is at a high elevation and is known as a low pressure region. With the addition of the 4.5-MG storage tank, all service connections are able to provide adequate pressure under maximum daily demand plus a 2,000 gpm fire event on Central Avenue.

With regard to fire flow, under maximum daily demand, the existing system failed to supply the required residential fire flow of 1,000 gpm to 9 junctions in the high elevation portions of the system, particularly in the Dows Prairie and McCluski Hill areas. The addition of the 4.5-MG storage tank improves fire flows, but there are still 7 junctions that do not receive adequate fire flow under this scenario. With the additional 2.5-MG storage tank, the system fails to provide 1,000 gpm to three junctions, but all are above 920 gpm. Under the year 2020 and year 2030 projected maximum daily demands, the addition of a 2.5-MG tank in the high elevation Dows Prairie area allowed for adequate fire flow above 1,000 gpm at all junctions.

Under all steady state scenarios, flow velocities throughout the system were below 5 ft/sec, and three junctions had pressures exceeding 100 psi. Those junctions are found at low elevations along Patrick Creek Drive and Little River Drive, and the modeled pressures are consistent with District field measurements.

1.2.2.2 Extended Period Simulation (EPS)

As it would be expected, the EPS showed that higher pressures are found in low elevation areas and low pressures are found in high elevation areas, particularly the Dows Prairie area. As the storage tank levels decreased, the number of junctions that failed to provide the minimum pressure of 20 psi of course increased. Under existing conditions, and employing the MCSD protocol minimum tank level of 20 feet, only two junctions failed to provide 20 psi (one in the McCluski Hill area and one at the end of Mather Road in the Dows Prairie area).

To determine the number of days of storage available, the main transmission line from HBMWD was set to closed, tank levels were set to full, and pumps were turned off. A 4-hour commercial fire (2,000 gpm) was set to occur along Central Avenue, and the assumption was made that water consumption was equal to average daily demand. There is less than two days of storage available





in the current system under this scenario. The addition of the 4.5-MG tank increases the available storage to four days, and the addition of the 2.5-MG tank increases the storage to five days.

1.2.2.3 Earthquake Scenario

Similar to the EPS scenarios, the addition of both the 4.5-MG and 2.5-MG storage tanks is necessary to provide the five-day storage of ADD and fire flows under the "earthquake" scenario.

1.2.2.4 High-Density Build-out Scenario

The addition of the 4.5-MG and 2.5-MG tanks only allows for 3.5 days of storage under the Humboldt County high-density build-out scenario. To meet the anticipated population growth projections, a minimum of 10.5 MG and 12 MG of additional storage is required for years 2020 and 2030, respectively. The population increase would also require additional or larger pumps to keep pace with the increase in demand.

1.2.3 McKinleyville Capital Improvement Plan, HSU Student Capstone Project – May 2015

A group of Humboldt State University (HSU) engineering students prepared the McKinleyville *Capital Improvement Plan* as part of a school project. Among other information and analyses, the report provides recommendations for infrastructure upgrades of MCSD's water distribution and sewer collection systems, preliminary designs for specific projects, and a schedule and estimated costs for systematically replacing the entire sanitary sewer collection and water distribution systems, accounting for expansion of each system to accommodate projected population growth. This report also analyzed how the "full buildout" scenario (developed based on potential rezoning and projected population growth per the General Plan) would affect the capacity and performance of each system.

The report developed design parameters for the installation of a new storage tank at the Cochran Road site to meet the MCSD requirement of having five days of storage at average daily demand (negating fire flow considerations). The recommended alternative was one 5-MG pre-stressed concrete tank. The report recommended the tank have 12 in thick walls, an inner diameter of 160 feet, and a height of 35 feet in order to leave 12 inches of freeboard for seismic activity. The tank would require 24, 48-inch structural beams with a 27-foot spacing to serve as both support and baffling. It was also recommended to partially bury the tank 4 feet into the ground to avoid extra pumping costs and excess pressure in the distribution system. The total cost for the storage tank was estimated as \$3,864,000.

The recommended replacement schedule for the entire distribution system was broken into two sections, replacing 8,500 ft/year until 2060 and then 5,500 ft/year until 2096. The total present worth cost for replacement of the water distribution system was given as \$31.5 million.

Under the "full buildout" scenario, model results showed that the system was able to maintain pressures above 20 psi, and that most of the system can generally accommodate buildout. However, the pressure in many mains dropped below 40 psi, and the report notes that any substantial development would require additional analysis to remedy low pressures.





1.2.4 Water and Sewer Capacity Fee Study, Willdan Financial Services – September 2011

Willdan Financial Services (Willdan) prepared a *Water and Sewer Capacity Fee Study* for MCSD in September 2011. Capacity fees are one-time charges that are collected as a condition of establishing a connection to the District's systems. These fees are proportional and related to the capital facility demands of new development. Capacity fees are collected separately from connection fees, which are used to offset the costs associated with the physical connection to the utility. The previous water capacity fee established in 1991 was \$154 per equivalent residential unit (ERU), which is defined as any single-family residential structure. Willdan recommended switching from a water capacity fee based on ERUs to one based on the size of the installed water meter. Table 1 shows the total recommended water capacity fee by water meter size. The total water capacity fee includes storage, discharge, and joint costs per account.

Table 1: Water Capacity Fees for MCSD by Water Meter Size

Water Meter Size	Total Water Capacity Fee
5/8"	\$ 2,616
3/4"	\$ 3,818
1"	\$ 6,221
1 1/2"	\$ 12,231
2"	\$ 19, 442
3"	\$ 36,268
4"	\$ 60,305
6"	\$120,399
8"	\$ 192,511
10"	\$ 276,642

The study notes that recent building code regulations require single-family homes to be sized with a 1-inch meter for fire protection systems. The study recommends all new single-family residential units with meter sizes up to 1 inch be charged the 5/8-inch meter fee to reflect their typical demand on the system.

1.2.5 Updated Water Rate and Financial Analysis, Willdan Financial Services – February 2014

Willdan prepared an Updated Water Rate and Financial Analysis for MCSD in February 2014 which was reviewed as part of the Phase 1 of the Master Plan and is summarized in this section. Note that the rate study was updated in 2018 as part of the master planning effort and is described in Chapter 5. Another update to the rate study is scheduled for 2022. The initial rate study was completed in 2012 to update MCSD's water rates such that the full operation and maintenance of the current system and future upgrades to the system were covered. At the time, the District was running at a net loss. The initial analysis mistakenly failed to include the base cost of water purchased from HBMWD for resale to MCSD customers, leading to a drastic decrease in MSCD's reserves because customers were not paying for the water purchased for their use. To recover the lost revenue, the analysis calls for a pass through charge of \$1.22 per hundred cubic feet (HCF) of





water used by each customer. This pass through charge is then adjusted each year based on the wholesale water charges from HBMWD. Additionally, the analysis recommends a recovery surcharge of \$3.66 per ERU per month through the end of fiscal year 2017. The analysis also includes new recommendations for monthly base charges (Table 2) and variable commodity rates (Table 3) which account for water purchased from HBMWD.

Table 2: Adjusted Monthly Base Charges in 2017 and 2018 for MCSD Customers by Meter Size

Water Meter Size	ERU	2017 Rate	2018 Rate
5/8"	1	\$ 14.57	\$ 15.39
3/4"	1.5	\$ 19.06	\$ 20.13
1"	2.5	\$ 28.03	\$ 29.60
1 1/2"	5	\$ 50.46	\$ 53.29
2"	8	\$ 77.38	\$ 81.72
3"	15	\$ 140.18	\$ 148.05
4"	25	\$ 229.93	\$ 242.81
6"	50	\$ 454.21	\$ 479.70
8"	80	\$ 723.38	\$ 763.98

Table 3: Adjusted Commodity Rates in 2017 and 2018 for MCSD Customers as a Volume Charged in Dollars per HCF Consumed

Tier	HCF	2017 Rate	2018 Rate
1	8-0	\$ 1.39	\$ 1.47
2	8.01 +	\$ 3.46	\$ 3.66

1.3 Anticipated Growth

It is important to consider future demand when planning future rehabilitation and replacement of water main pipelines. Water demand increases as population grows, which requires more water to be conveyed through the mains in the system. Appropriate growth considerations can be used to determine if a pipe should be replaced in kind, or if the size should be increased to provide additional capacity.

The 2002 McKinleyville Community Plan (a subsection of the General Plan) notes that the most probable growth projection for McKinleyville was 1.8%, based on the growth trends at the time. The McKinleyville Community Plan has since not been updated.

McKinleyville had a population of 13,599 in 2000 (based on the 2000 census) and 15,177 in 2010 (based on the 2010 census). Based on data from the American Community Survey (ACS) 5-year estimate performed by the United States Census Bureau, McKinleyville had a population of 16,291 in 2015 and 16,262 in the 2020 census. Using these figures, population growth from 2000 to 2015 was approximately 1.21% per annum, growth from 2010 to 2015 was approximately 1.43% per







annum, and growth of 0% from 2015 to 2020. The District has indicated that they would consider using a rate of 1% per annum for growth projections when considering future development potential.

The only major subdivision development that has occurred since 2010 was the Central Estates Subdivision. Any population increase that resulted from this subdivision likely would have been captured in the 2015 ACS 5-year estimate, and the demands from this subdivision were also included in the water modeling that was performed by North Coast Mapping Solutions (NCMS) in 2012. Additionally, the General Plan has not been updated since the water modeling was performed in 2012.

NCMS ran model scenarios for the years 2020 and 2030 using a growth rate of 1.8%, which is conservative when considering the recent population growth trends described above. The water modeling also included demands from high-density housing proposed in the General Plan.

1.4 Overview of Master Planning Effort

This Master Plan effort includes an analysis of all of the pipelines, blow-off assemblies, and valves (including isolation, air vacuum/release, and pressure reducing valves) in the District's water distribution system. While booster stations and storage tanks are mentioned in this report, they are discussed in the context of the overall water system, and no analyses of booster stations or storage tanks are provided as a part of this study.

The overall Master Plan is developed through multiple major phases of effort and culminates in the development of this Final Water Main Line Rehabilitation Master Plan (Final Master Plan). The three phases of the master planning effort are:

- Phase 1: High-level overview of water distribution main lines
- Phase 2: More detailed cost analysis and phasing of the systematic replacement of water distribution main lines
- Phase 3: Physical assessment of some water distribution main lines, risk evaluation, and update of the phase 2 schedule based on risk.

The Phase 1 effort included the results of the high-level assessment of the District's distribution system for use in initial planning for replacement, rehabilitation, and upgrades. The Phase 1 effort helped to quantify the overall nature, scope, and magnitude of long-term main line maintenance and replacement.

The Phase 1 study focused on the following:

- General overview of MCSD and the existing distribution system
- Summary of previous related studies and findings that pertain to rate structure, capacity,
 maintenance and repair requirements, and other identified limitations of system components
- Description of the anticipated growth for the McKinleyville area
- Discussion on areas of the system that have pressure and fire flow issues
- Summary of MCSD's existing distribution system main lines, including information pertaining to size, age, material, and condition





- Discussion on considerations for replacement of the distribution system main lines
- Long-term replacement analysis with associated costs for systematically replacing the entire distribution system
- Financial analysis to assess the rate impacts to pay for the long-term systematic replacement of
 the entire system. It is important to note that we are not recommending the rate increases
 presented in the financial analysis section of the Phase 1 document, but merely assessing what
 it would cost to systematically replace the entire distribution system over a period of time.
- Conclusions, recommendations, and a summary of the next steps in the Master Plan process

Phase 2 of the Master Plan effort builds on the system knowledge presented in Phase 1 to develop more detailed phasing information for the systematic replacement of the water mains.

Based on planning with District staff, Phase 2 effort focuses on the following:

- Discussion of appropriate replacement methodologies (e.g. lining, bursting, or direct replacement) with associated construction cost estimates
- Determination of an appropriate yearly project cost based on the Phase 1 system requirements and financial analysis
- Development of a schedule for the first 50 years of main line replacement for the MCSD water distribution system
- Costs for these projects for the next 100 years, and a financial analysis to forecast rates necessary to fund these replacements.

Phase 3 of the effort consists of direct physical assessment of portions of the system to determine the condition of the pipe and revision of the schedule established under Phase 2 based on risk assessment. Phase 3 of the Master Plan provides the following:

- Determination of pipe condition through physical testing of pipe samples
- Evaluation of prioritization based on risk considering all of the triple bottom line categories: social, environmental, and financial
- Discussion and comparison of performing construction work in-house or through contract with associated construction cost estimates
- Refinement of the appropriate yearly project cost based on the updated system requirements and financial analysis
- Revision of the schedule for the first 50 years of main line replacement for the MCSD water distribution system based on the risk assessment

1.5 Key Points from the Phase 1 Report

The system is generally in good condition with no identifiable near-term problems or areas of concern. There are some minor issues with low pressure and inadequate fire flow in higher elevation areas, and high pressure in lower elevation areas, that the District has plans to address





outside of the scope of this Master Plan. The principal issue is that a majority of the system piping is approaching design life expectancies, meaning pipe failures will likely become an issue in the next 10 to 30 years if the District does not begin the process of replacing system main lines.

The original water distribution system was constructed in 1973, making it 50 years old in 2023. The original piping comprises 55% of the current total distribution system piping and is 90% asbestos cement (AC) pipe and 10% ductile iron (DI) pipe. With an AC pipe design life of 50-70 years and a DI pipe design life of 75-100 years, the original system piping will require replacement in the relatively near future. The remaining 45% of the system consists of some AC pipe, but is mostly polyvinyl chloride piping (PVC), installed since 1980, which has a design life of 50-100 years.

The total construction cost estimate for replacing the entire water distribution system is \$142 million in today's dollars. The multi-year pro forma analysis on the MCSD water system found that MCSD could not afford replacement of the water distribution without an increase in rates. Using a phased-in approach of rate increases, it is projected that replacing the entire system over 50, 75, or 100 years would require annual rate increases of 6.25%, 5.00%, or 4.10%, respectively.

1.6 Key Points from the Phase 2 Report

Phase 2 of this Water Main Line Rehabilitation Master Plan (Master Plan) was prepared to provide preliminary priorities and schedule for implementing replacements, rehabilitation, and upgrades to the McKinleyville Community Service District's (MCSD or District) water distribution system main lines and appurtenances (distribution system) for the next 50 years. This Master Plan effort includes an analysis of all of the pipelines, service laterals, blow-off assemblies, and valves (including isolation, air release, and pressure reducing valves) in the District's water distribution system. No analyses of booster stations or storage tanks are provided as a part of this study.

Given the current age of the system is over 45 years, the District can anticipate increased pipeline failures and leaks in the next five to ten years. As the system continues to age, replacement and rehabilitation of existing infrastructure will be necessary to maintain an effective, functional system. To ameliorate these coming failures, the District can replace all critical portions of the MCSD water distribution system in the next 50 years with a reasonable adjustment to user rates. Spending an average of \$1 million (2019 dollars) per year on the system will allow replacement of 97% of 10-inch or larger AC pipe, 85% of 8-inch AC pipe, and 100% of DI pipe in 50 years. Priority was based on replacing largest diameter pipes first, so no 6-inch or smaller AC pipe was included in the schedule for replacement during Phase 2.

Phase 1 of the Master Plan included a review and analysis of available information that was used to produce a planning-level long-term replacement plan in Phase 2. The development of a near-term rehabilitation plan was also considered. This near-term plan would include any areas identified as having performance or capacity constraints that need to be resolved in the next ten years; however, there are currently no such cases in the water distribution system. The District does currently have plans and has budgeted for the construction of a new water storage tank, but that planning effort is being done outside the scope of this document.

While there are currently no high-priority, near-term projects required for the distribution system, it is critical that the District begin planning and budgeting for upgrades and replacement of system components. The approved rates from Section 5 (completed as part of Phase 2 in 2019) were made

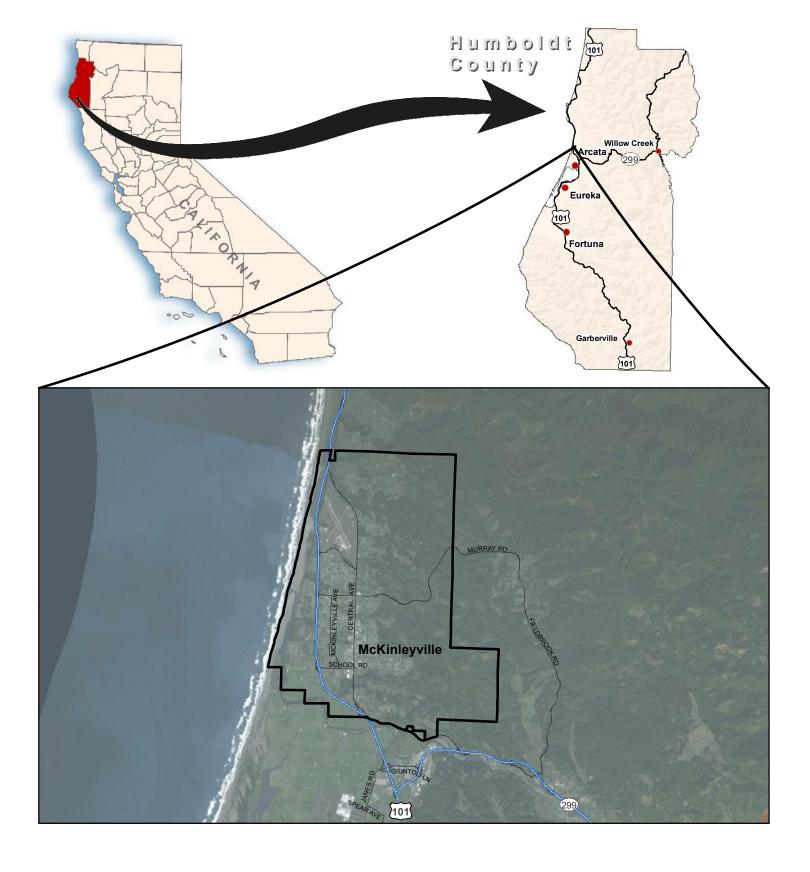






assuming that MCSD would begin putting aside \$860,000 to \$960,000 for each of the following four years and then reserving the full \$1 million (2019 dollars) per year after that period. With rate adjustment approved, the project financing is securely in place and MCSD can begin the planning and design process for the early proposed projects so construction can begin in 2023 four years after the completion of the Phase 2 report).

A major unknown following completion of Phase 2 is the condition of the DI pipe the runs from Humboldt Bay Municipal Water District, beneath the Mad River, to the intersection of Sutter Road and Central Avenue. This pipeline is the main source of water for MCSD. There is no cathodic protection on that piping, it has never been inspected, and it is possible it may require replacement sooner than anticipated. It was recommended during Phase 2 that this critical section of pipeline be physically assessed in Phase 3 to ensure it is replaced at an appropriate time. It should be noted that a Hazard Mitigation Grant, Notice of Interest was submitted in 2018, 2020 and 2021 for the replacement of the river crossing. As of the writing of this Master Plan, the District has not heard whether this project was approved for grant funding.



McKinleyville Community Services District Boundary





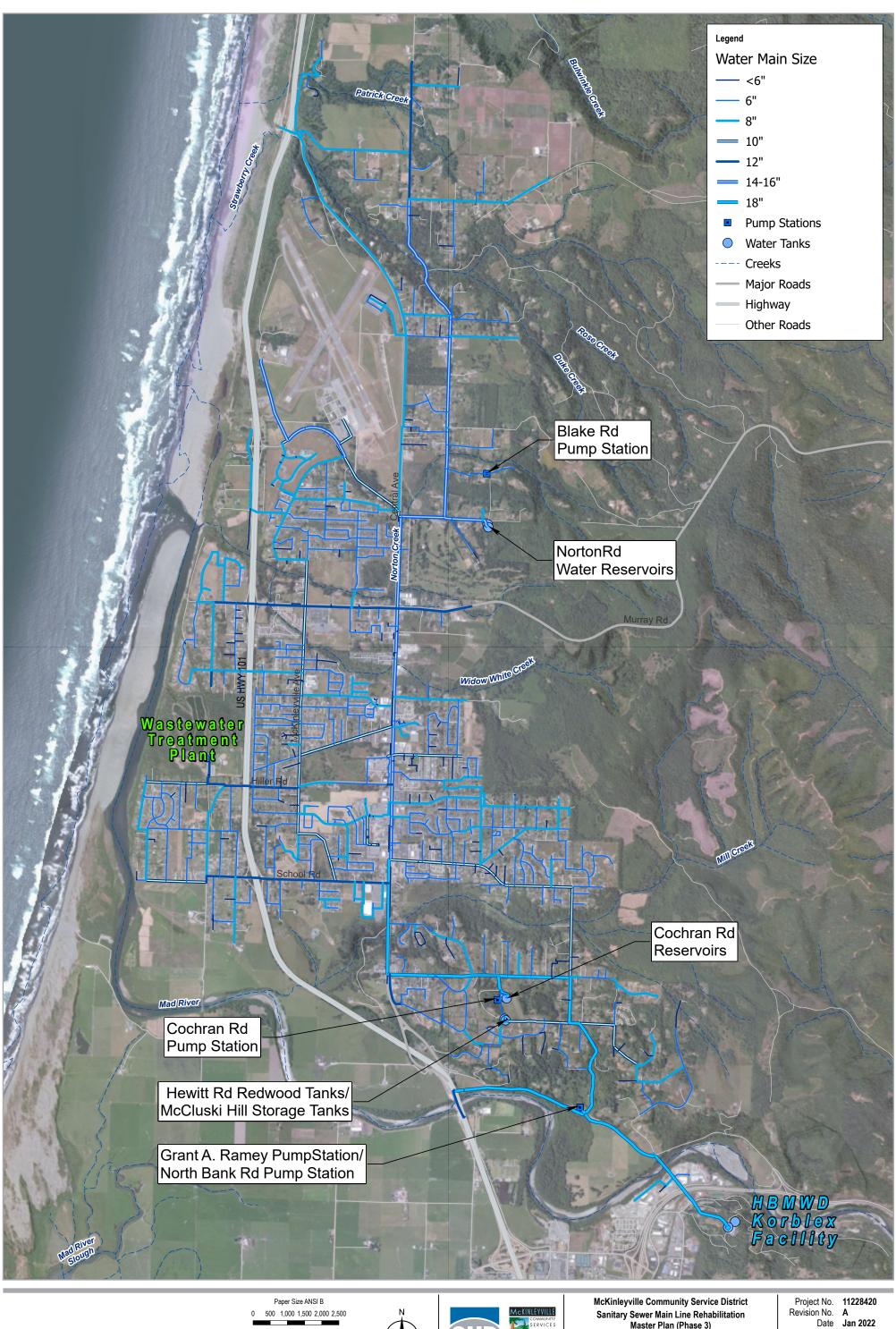


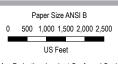


McKinleyville Community Services District Water Main Line Rehabilitation Master Plan (Phase 1) Job Number | 11125090.04 Revision | 1 Date | 17 Oct 2017

Project Vicinity and Location Map

Figure 1





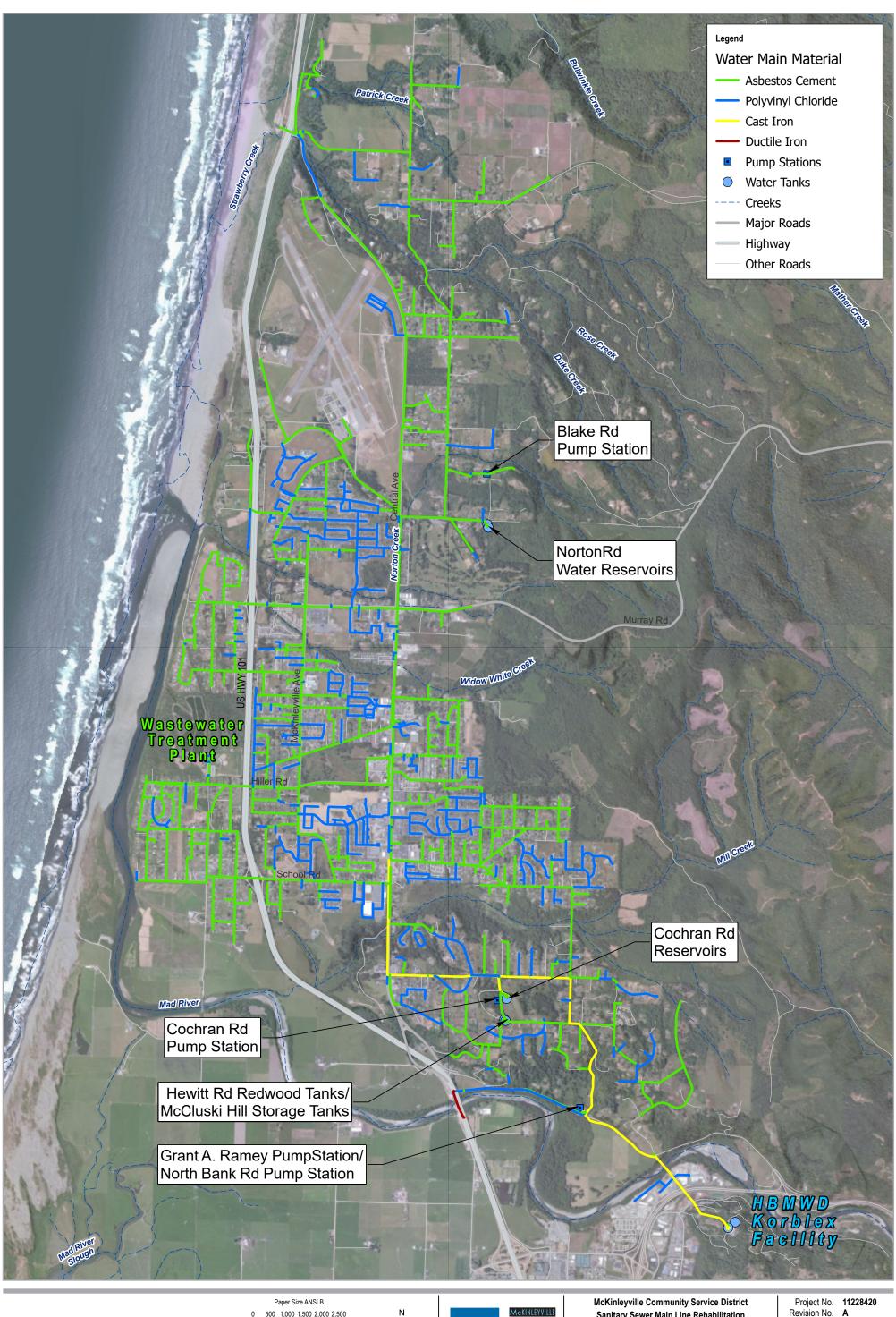
Map Projection: Lambert Conformal Conic Horizontal Datum: North American 1983 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

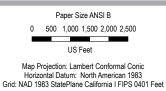




Sanitary Sewer Main Line Rehabilitation Master Plan (Phase 3)

Water System Overview by Pipe Size





eet





Sanitary Sewer Main Line Rehabilitation
Master Plan (Phase 3)

Revision No. A

Date Jan 2022

Water System Overview by Pipe Material





2. Risk Assessment and Prioritization Process

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During Phase 3 of the master planning effort, GHD and the District developed a Risk Framework that was applied to all the water pipes in order to update the rehabilitation prioritization approach from Phase 2 that was based on material and diameter. This section describes the risk assessment methodology and prioritization of rehabilitation of the water distribution system.

2.1 Physical Testing

As part of Phase 3, soil sampling was conducted to support the assessment and development of an Engineer's opinion of present-day pipeline condition within the water (as well as sewer) system with respect to the proposed schedule for the District's future replacement. Twenty-one (21) soil samples were obtained by GHD staff on December 2,3 and 5, 2019 and sent to an independent California certified laboratory for analysis. MCSD provided equipment and labor related to excavation.

Based on soil sample results, a pipe sample collection plan was prepared, and three (3) pipe samples obtained by GHD on April 14, 15 and 17, 2020 with excavation equipment and labor provided by MCSD. The pipe samples obtained were delivered to an independent analytical laboratory for analysis. AC pipe samples were analyzed for the following characteristics: interior and exterior hardness; pH profile; and crush strength.

Based on the laboratory evaluation of the AC pipe samples, it was concluded that:

- 1. Based on dimensional measurements obtained as a part of the laboratory testing, the AC pipe tested is likely pressure Class 150.
- 2. Internal degradation, not external degradation, of AC pipe is the limiting factor in AC pipe fitness for continued service
 - a) The exterior depth of loss of alkalinity is nominal
 - b) The exterior loss of hardness is nominal
 - c) The interior depth of loss of alkalinity, greater than 50% of total pipeline wall thickness of Sample AC3, is significant.
 - d) The interior loss of hardness of all samples tested is significant.
- 3. The crushing strength of the three samples varied significantly and relates, as expected, to pipeline wall thickness. The measured crushing strength relationship with respect to the design crushing strength, as itemized in Table 7, is related to pipeline wall thickness. Wall thickness increases as pipeline diameter increases. Based on the data available, pipes with nominal wall thickness of 0.635 inches or less, corresponding to pipeline diameters of 8-inches or less, have experienced significant reduction in residual crushing strength; and pipes with nominal wall thickness of 1.040 inches or more, corresponding to pipeline diameters of 12-inches or greater, have not experienced significant reduction in residual crushing strength. Although there is presently no laboratory data for crushing strength on 10-inch diameter (0.910 inch wall thickness pipe), 10-inch pipe is considered to have likely retained much of the design crushing strength and is classified along with AC pipe of larger diameters.







The establishment of, and broad delineation based on, risk categories is a result of the destructive analysis of three (3) pipe samples. The extent of laboratory analysis was limited and the resulting classifications are therefore limited. Additional destructive evaluation, specifically of pipeline crushing strength, may result in a resolution of data facilitating development of additional risk categories and/or revision to the risk categories presented herein.

In addition to the destructive sampling of AC pipe, non-destructive assessment of DI pipe was performed at two (2) locations. Ultrasonic thickness (UT) testing was performed at one location on the 18-inch water main near N. Bank Road and Hunts Drive by the Mad River Crossing. This location was selected, in part, based on the corrosivity of soils identified. Pipeline wall thickness was measured at twelve (12) circumferential locations. The UT measurement of pipeline wall thickness identified substantial remaining wall thickness and minor loss of wall thickness. CCTV was performed on a segment of sewer pipe, approximately 212 linear feet, at the middle crossing on Highway 101 near Thiel Road and Hiller East Field. CCTV footage was reviewed by a qualified engineer. Internal lining degradation of DI pipe was identified, and with respect to the extremely limited nature of the sample size, may be indicative of mortar lining performance of similar vintage and time in service.

For additional information on the physical testing and laboratory results, refer to the *Phase 3b:*Water and Sewer Mainline Replacement and Rehabilitation Master Plans Letter Report dated July 6, 2020 which is included in Appendix A.

2.2 Probability of Failure

Probability of Failure (PoF) of an asset is the chance that the asset will fail to serve it's intended purpose and is directly related to its failure mode. Failure may include physical failure (i.e. break, fracture, or collapse), hydraulic capacity failure, level of service failures such as odor issues or not meeting regulations, or efficiency failures when operational costs exceed alternative actions. The probability of physical breakdown and the probability of capacity reduction for a particular asset may not be similar. Asset failure modes are explained in the following subsection.

2.2.1 Modes of Failure

An important component of asset management is to identify and manage the imminent and dominant failure modes of an individual asset. From an asset management perspective, assets can fail in one of four ways shown in Table 4.







Table 4: Modes of Failure Description

Failure Mode	Definition	Tactical Aspects	Management Strategies
Physical Mortality	Consumption of asset reduces performance below acceptable level	Physical deterioration due to age, usage, and acts of nature	O&M optimization, renewal or replacement
Capacity	Demand exceeds capacity	Growth, evolving usage, climate change	Redesign or replacement
Level of Service	Functional requirements not met	Regulations, codes, permits, safety, noise, etc.	O&M optimization, renewal or replacement
Efficiency	Operation costs exceed that of feasible alternatives	Pay-back period for alternatives	Replacement

Understanding the <u>imminent failure mode</u> of an asset allows an organization to apply the right strategy option in order to maximize the service benefit per cost spent. Each failure mode, where appropriate, has a time period associated with it. For example, an asset could have 20 years remaining before physical failure, five years before level of service failure, and 10 years before financial failure, but two years remaining before capacity failure. In this scenario, the remaining useful life of the asset would be two years, and the appropriate strategy might be to increase the capacity of the asset through redesign.

The **dominant failure mode** for an asset is the failure mode that results in the greatest consequence of failure. Generally, the dominant failure mode is physical mortality.

The risk framework was developed to evaluate MCSD's water system and prioritize known pipe deficiencies identified in earlier phases of the master planning effort and physical mortality deficiencies based on condition assumptions from the physical testing described in Section 2.1 above.

2.2.2 PoF Scoring Criteria

Each linear asset was assigned a score of 1-5, with 1 being very good condition and 5 being very poor condition. The score for each asset is provided in the asset register in Appendix B. The Probability of Failure scores for each pipe were assigned as follows for consistency with scoring across systems, i.e. the water and sewer collection systems:

- Pipes identified as having hydraulic capacity deficiencies in previous phases of the master planning effort were given a score of 5 (i.e. if they fell in CIP years 1-10). For the water system, no deficiencies were identified and therefore no pipes received a score of 5 for PoF.
- 2. From Phase 3 physical testing:
 - i) AC pipes with diameter of 8-inches or less were given a score of 4
 - ii) AC pipes with diameter greater than 8-inches were given a score of 3
 - iii) DI pipes were given a score of 2
 - iv) All other pipes (predominantly PVC) were given a score of 1







2.3 Consequence of Failure

The consequence of failure (CoF) for an asset is determined by first setting the context of a potential failure that can be expressed in Triple Bottom Line (TBL) categories as shown in Table 5 below.

Table 5: Consequence of Failure Triple Bottom Line Elements

Category	Associated Elements
Social / Community	Health & Safety, Loss of Service
Financial	Cost of Failure
Environmental/Regulatory	Regulatory (Permit) Compliance

2.3.1 CoF Scoring Criteria

Table 6 shows CoF scoring table developed for the MCSD water system. The table includes CoF elements associated with each TBL category and the associated value definitions for CoF scores of 1 to 5, with 1 indicating a low consequence and 5 indicating a high consequence. When determining thresholds for scores, it is best to begin with threshold that results in a score of 4. As an asset moves from a score of 3 to a score of 4, the asset crosses the tolerable threshold to the intolerable. The orange shading of scores 4 and 5 indicates intolerable thresholds.







Table 6: Consequence of Failure Scoring Table - Water Distribution System

Social / Community						
Health & safety	The direct or indirect impact on individual(s)' health & safety (including employees) as a result of the failure. This is measured in terms of the potential for detrimental impacts on individual(s) health and safety.	No impact	No impact	No impact	Potential for low impact	Potential for severe impact
Loss of service	The maximum time an asset can be out of service due to external or internal drivers.	No impact	Asset can be out of service for extended period	Asset needs to restored within a week	Asset needs to be restored within a day	Critical - asset cannot be out of service
	Definition	1	2	3	4	5
Financial						
Cost of failure	The total direct and indirect cost (including labor, equipment, fines etc.) to restore the service as a result of the failure. This is not the replacement cost of a failed asset.	<=\$5,000	\$5,001- \$20,000	\$20,001- \$50,000	\$50,001- \$100,000	\$100,000+
	Definition	1	2	3	4	5
Environment / Regulatory						
Regulatory (permit) compliance	Regulatory permit compliance by Mandatory Minimum Penalty (MMP)	No impact	Potential MMP	MMP	Multiple MMP	Cease and Desist
	Definition	1	2	3	4	5





2.3.2 CoF Score Assignment

Proximity analysis using geospatial data is used to assign consequence of failure scores. Different attributes that help measure the impact associated with each of the elements shown in Table 7. In the case of buried assets (e.g., pipes), attributes shown in Table 7 can be used to estimate the consequence of failure ratings for each of the elements shown in Table 6. Not every pipe attribute applies to every element and the relationship (when exists) between the attributes and the elements are shown with an "X" in Table 7. GHD reviewed data available in the GIS database for the water distribution system, as well as data available online for the consequence of failure analysis. The findings and data availability of key layers are summarized in Table 8. The GIS data layers used for the proximity analysis are shown in Figure 6 at the end of this Chapter.

Table 7: Consequence of Failure Scoring Element Attribute

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Attributes	Consequ	ence of	Failure	Elements
	Public Health & Safety	Loss of Service	Cost of Failure	Regulatory Compliance
Critical Customers (hospitals, schools, fire stations, etc)		X		
Proximity to other utilities (stormwater)	X		Х	X
Proximity to roads (and type of road)	Χ		Х	
Proximity to environmentally sensitive areas (rivers, streams, open water)	X		X	X
Proximity to buildings	X	Х	Х	
Repair costs (material, diameter, depth)			X	
Zoning and land use		Х		

As part of the risk-based prioritization approach, each asset in water distribution system is scored using geospatial proximity analysis and the scoring criteria defined in the Risk Framework. All CoF scores for each pipe are provided in the asset register in Appendix B.







Table 8: Consequence of Failure Element Attribute Data Sources

Attributes	Source	Data Availability
Date of installation	GIS	No - Water - 1973 No - Sewer - 1976
Material	GIS	Yes
Size/Diameter	GIS	Yes
Length	GIS	Yes
Proximity to roads	GIS online	Yes
Proximity to other utilities	ArcGIS Online – Humboldt County Public Works	"McKinleyville Storm Drain 180918"
Proximity to environmentally sensitive areas (e.g., wetlands, open water)	GIS online	Yes
Critical customers (hospital, schools, fire stations, etc)	Create	None exist but could be created Fire Stations - https://humboldtgov.org/276/GIS- Data-Download
Proximity to other buildings	Remote sensing data online	Web layer created via remote sensing, many need verification

2.3.3 Dominant CoF Score

Assets are assigned scores from 1 to 5 for each of the four elements. The highest individual score across these elements for each asset is the Dominant CoF score. Dominant CoF score range from 1 to 5.

2.3.4 Triple Bottom Line CoF Score

TBL CoF score also uses the score from 1 to 5 for each of the four CoF elements, but instead of taking the highest individual CoF score, TBL adds together the highest score in each of the three triple bottom line categories, social/community, financial, and environmental/regulatory. TBL CoF score ranges from 3 to 15.

2.4 Risk and Rehabilitation Prioritization

The Business Risk Exposure (BRE) framework provides a process by which risk can be categorized, and activities to mitigate risk can be prioritized (i.e. rehabilitation and renewal) which helps management teams focus on high-risk assets. A BRE framework provides a set of rules for







determining the direct and indirect consequences of the failure of an asset and facilitates the prioritization of assets for targeted renewal, rehabilitation, and inspection investment with available capital funds. For this project, GHD performed a risk assessment that considers Probability of Failure (PoF) and Consequence of Failure (CoF) of an asset. The probability of failure component of the risk assessment is a function of asset condition, which incorporates physical mortality (physical life), levels of service (service life; efficiency), and capacity (capacity life) related issues. Any available risk mitigation is also considered.

This section describes how Core Risk and Business Risk Exposure are calculated from the Probability of Failure and Consequence of Failure scores described in the preceding Section 3.3 and how the risk scores are used to prioritize rehabilitation of the water distribution system. All risk scores and priority ranking are provided for each pipe in the asset register in Appendix B.

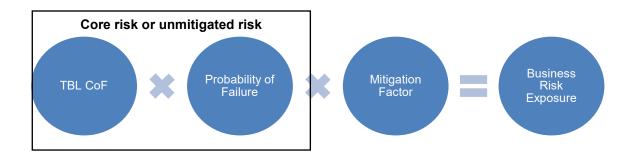
2.4.1 Core Risk Score

The product of the probability of failure and consequence of failure is defined as the core risk. The core risk rating assigned to the assets can be used to drive O&M activities and decisions. The dominant CoF score is used to calculate the dominant core risk score.



2.4.2 BRE Score

Unlike the core risk score, the BRE score uses the TBL CoF score instead of the dominant CoF score and the mitigation factor. The main mitigation factor considered is available, either installed or spare, asset redundancy. Other mitigation factors of note would be actions such as the development of emergency response plans, setting up contracts with external parties in order to facilitate faster reaction or implementing a standard operating procedure for manual operations. For linear assets, the mitigation factor is 1. When identifying management strategies, agencies might consider emergency response plans or monitoring in SCADA as a strategy to reduce risk.









2.4.3 Risk Zones

Once the non-tolerable risk is identified, a BRE chart can be plotted with the unmitigated consequence of failure on the x-axis and the probability of failure on the y-axis. The BRE chart can be segmented into management zones based on what a utility's threshold is for acceptable risk. BRE chart is then used to identify assets that fall into each management zone, including those that are in non-tolerable zones, i.e., those assets that would results in unacceptable impact on service delivery upon failure. Figure 4 shows the BRE chart as a result of the assessment of MCSD's water system and the different management strategies for each of the zones. The BRE zones are described as follows:

Zone 5: Non-tolerable risk zone that contains assets that their failure can impose significant risk to the organization. In general, these assets are approaching the end of their useful life and upon failure, may cause significant social, financial, and environmental impacts. Assets in this zone need to be addressed immediately. Appropriate management strategies must be carried out so that the number of assets in Zone 5 are minimized.

Zone 4: Contains assets that have high consequence of failure but have not deteriorated enough to be included in the non-tolerable risk zone (Zone 5). Increased visual and/or predictive condition assessments (thermal scanning, oil analysis, etc.) may be justified as their condition deteriorates and as they move vertically in the graph approaching Zone 5 over time.

Zone 3: Contains assets that would experience failure consequences that can be made tolerable through designed redundancy and operational mitigation such as spares and condition monitoring. Zone 3 assets can also migrate into Zone 5 over time and as such require additional focus by management.

Zones 2 & 1: Contains assets with lower consequences of failure. Applicable management strategies to consider for these assets may be run to fail and maintenance optimization.









Figure 4: Business Risk Exposure Plot¹

Notes:

1. Bubble size and number correspond to the length of pipe with that combination of LOF and Dominant COF (in miles of pipe).

2.4.4 Prioritization

Risk Zone is calculated from unmitigated CoF and Core Risk scores. There are five risk zones; Risk Zone 5 is the highest risk, Risk Zone 1 the lowest. In the plot shown in Figure 4:

Risk Zone 5: Core Risk score greater than or equal to 16

Risk Zone 4: CoF score greater than or equal to 4

Risk Zone 3: CoF score greater than or equal to 3

Risk Zone 2: CoF score great than or equal to 2

Risk Zone 1: CoF less than 2

Assets are organized into four 'priority buckets' based on risk zone and condition. Assets that do not meet the requirements below are not assigned to a priority bucket. Figure 5 shows the priority buckets on the BRE Chart.

Priority Bucket 1: Risk Zone 5

Priority Bucket 2: Risk Zone 3 or 4 AND Condition greater than or equal to 4

Priority Bucket 3: Risk Zone 2 AND Condition greater than or equal to 4

Priority Bucket 4: Risk Zone 1 AND Condition equal to 5







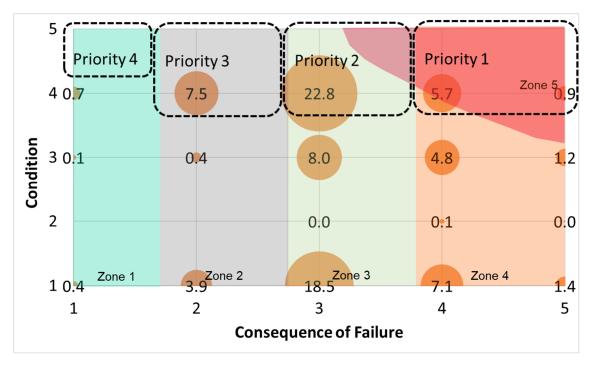
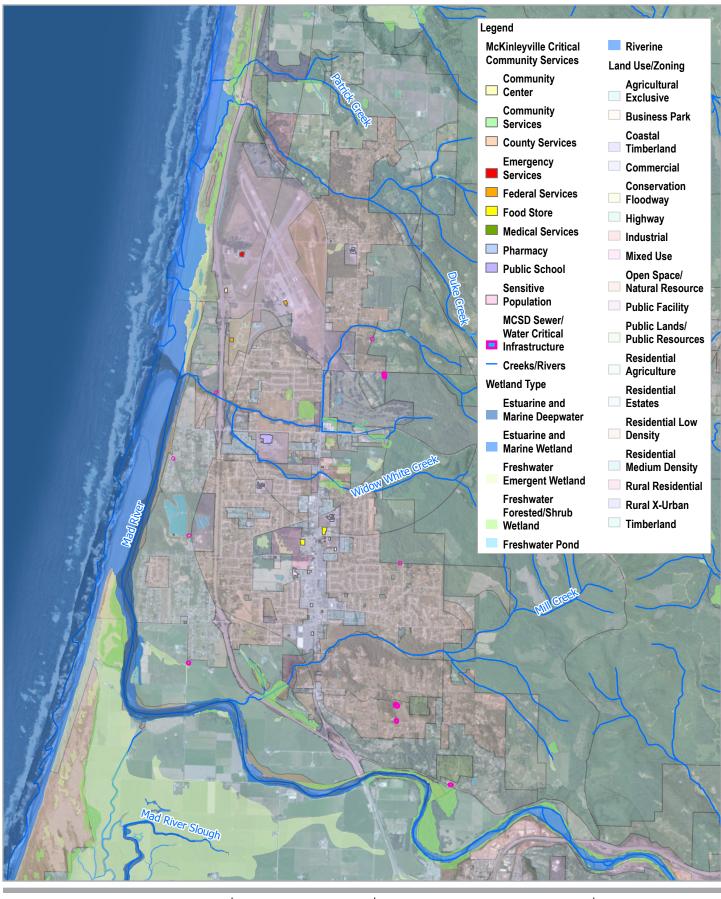
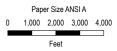


Figure 5: BRE Plot with Priority Buckets

Within each priority bucket, the BRE score is used to prioritize replacement. The BRE score considers all triple bottom line categories, effectively prioritizing pipes with higher combined score across all categories and not the single highest, i.e. could have social, financial and environmental consequences.





Map Projection: Lambert Conformal Conic Horizontal Datum: North American 1983 Grid: NAD 1983 StatePlane California I FIPS 0401 Feet





McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

> Proximity Analysis Attribute Layers

Project No. 11218420 Revision No. -Date Dec 2021





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3. Replacement Methods and Costs

This section describes two replacement methods that were assessed for the MCSD water system rehabilitation plan, direct replacement and pipe bursting. Pipe lining was also considered initially, but the process was determined to be cost prohibitive for water distribution systems.

3.1 Opinions of Probable Cost

The opinions of probable cost for each asset is included in the asset register in Appendix B and should be considered as order-of-magnitude estimates for planning purposes only. The total project cost consists of the construction cost, design and technical effort, construction management effort, and a contingency fund. Land acquisition and/or District degradation fees are not included. Construction costs are based on a Class 5 (planning-level) estimate of probable cost as defined by the Association for the Advancement of Cost Engineering, International (AACE). AACE defines the "Class 5" estimate as follows:

Generally prepared on very limited information, where little more than proposed plan type, its location, and the capacity are known, and for strategic planning purposes such as but not limited to market studies, assessment of viability, evaluation of alternate schemes, project screening, location and evaluation of resource needs and budgeting, long-range capital planning, etc. Some examples of estimating methods used would include cost/capacity curves and factors, scale-up factors, and parametric and modeling techniques. Typically, very little time is expended in the development of this estimate. The typical expected accuracy ranges for this class estimate are -20% to -50% on the low side and +30% to +100% on the high side.

Construction costs are based on the July 2021 Engineering News Record Construction Cost Index (ENR CCI) for San Francisco, CA (13,762.01).

3.2 Direct Replacement

Direct replacement is the most traditional pipe replacement method. It involves digging a trench along the entire length of pipe to be replaced, installing a new parallel pipeline, connecting the new pipeline to the existing laterals, removing or abandoning the existing piping in place, backfilling the trench, and repaving the street. Trenching for direct replacement of piping in roadways interrupts normal traffic flow in the project area more than trenchless methods. Cutting into or removing the AC pipe also requires special handling and disposal due to the presence of asbestos, which also increases costs. Additionally, the large amount of earth movement required for trenching can add significant cost to this method as opposed to trenchless methods. Due to the higher associated costs, direct replacement costs were estimated in Phase 1 to allow for conservative scenario budgeting in the preliminary Master Planning financial analysis.

Values from the overall long-term replacement cost estimate from Phase 1 were used to develop per linear foot costs to apply to individual projects for Phase 3. There are construction costs associated with replacing MCSD main lines that would generally be represented as a percentage of the material and installation (which includes excavation and backfill) cost. The first step was determining an industry standard percentage of material and installation costs for these base cost







items. Through experience working with clients across California, GHD compiled the following assumptions for various construction activities as shown in Table 9 below.

Table 9: Assumptions for construction costs as a percent of pipe material and install cost.

Item	Description	Cost
1	General Conditions, including: Mobilization/Demobilization Construction Staking Temporary Traffic Control Bypass Pumping Stormwater Pollution Prevention Plan (SWPPP)	20% (Construction Subtotal)
2	Contingency (10% change order, 15% estimating allowance)	25% (Construction Subtotal)
3	Design / Survey / Geotechnical / Environmental Review / Permitting	25% (Construction)
4	Inspection / Construction Management / Engineering Services During Construction (ESDC)	20% (Construction)

Construction subtotal percentages are applied to the material and installation unit costs for pipes (\$/If) and manholes (\$/manhole based on depth) to form the construction subtotal to which the construction percentages are then applied. The material, installation, excavation, backfill and paving costs for direct replacement are summarized in Table 10.

Table 10: Direct replacement cost per linear foot by pipe size.

Size (in)	Pipe & Install (\$/lf)	Excavation/ Backfill (\$/If)	Paving (\$/If)	Total Cost (\$/If)
2	185	42	23	250
4	185	42	23	250
6	185	42	23	250
8	229	42	29	300
10	279	42	29	350
12	304	42	29	375
14	309	57	34	400
16	334	57	34	425
18	384	57	34	475

3.3 Pipe Bursting

Pipe bursting is a trenchless pipe replacement method. The process involves digging an access pit on both ends of the pipe to be replaced. Then, most typically, a pneumatic system with a pipe bursting tool breaks up the existing pipe as the new pipe is pulled into place behind the pipe bursting tool. Lastly, the access pit areas are backfilled and repaved. For this method the existing pipe is left broken up in the ground around the new pipe. This is particularly helpful in reducing







construction risk when replacing old AC pipe, which is a brittle material that is difficult to excavate around. Furthermore, this method requires approximately 80% less digging than traditional direct replacement. This significant reduction in earth movement is the reason why pipe bursting tends to cost between 15 to 35% less than direct replacement. The large variation in savings is due to variation in location, soil types, pipe depth, contractor schedules, etc. Pipe bursting costs (Table 11) were obtained from recent bid comparisons for northern California construction projects and the result is 8-31% less than the Phase 3 calculated direct replacement costs shown in Table 10.

Table 11: Pipe bursting cost per linear foot by pipe size.

Size (in)	Total Cost (\$/lf)
21	204
4	204
6	204
8	207
10	251
12	345
14	345
16	345
18	444

¹ Typically replaced with 4-inch pipe in pipe bursting operations







4. Replacement Plan

This section presents the prioritized replacement plan for systematic replacement of the District's water distribution system. The goal of the replacement plan is to include replacement of all the critical portions of the system. Replacement of AC pipe was prioritized given that half of the system is AC pipe that will be 51 years old at the proposed start of the replacement schedule in 2024 and physical testing of sample portions indicated that smaller diameter AC pipes had less wall thickness.

Rehabilitation methods presented in this master plan are used to estimate opinion of probable construction cost. For purposing of financial planning for the replacement of water mains, pipe bursting is assumed to be the replacement method if the pipe segment is less than 750 linear and not DI. For any pipe with length greater than 750 feet, or of DI material, direct replacement is assumed, The actual rehabilitation method will depend on the condition of the pipe and site conditions and therefore should be determined in the design phase. Rehabilitation method for AC pipe, which the majority of the system is, will also be impacted by the District's preferred method of handling asbestos containing pipe, i.e. pipe bursting and leaving in ground or direct replacement and removal of the asbestos containing pipe.

4.1 Yearly Budget

A yearly budget for the replacement plan was determined in discussions with District staff and approved by the MCSD Board of Directors during Phase 2. Based on the Phase 1 financial analysis, the initial desire was to replace the system over 100 years to minimize rate adjustments to users. The Phase 1 analysis also determined that the District does not need to replace the entire distribution system. There are sections where it would be much more cost effective to repair the occasional leak rather than replace the whole section of main line, particularly in less densely populated areas with smaller pipes. An analysis of the existing system revealed the following:

- 15% of the system is PVC that is less than 20 years old, and
- 16% of the water main lines serve 10 or fewer users.

These portions of the system were deemed less critical for replacement, per District staff recommendation the MCSD Board of Directors decided to budget for 80% system replacement over the 100-year replacement plan to reduce the total project cost. Based on the Phase 1 cost estimate, this replacement would require spending an average of \$1 million per year (in 2019 dollars).

4.2 Replacement Schedule

Figure 7 shows the replacement plan for all priority assets, while Figures 7.1-7.5 show the replacement plan by priority bucket, with Priority 2 further broken down into three groups based on replacing pipes with the highest BRE scores first. The costs for replacing each group are summarized in Table 12. Note that the specific ordering and grouping pipes into capital projects will be done by the District with the Priority and BRE scores as guides. The costs presented below assume each pipe segment is treated as a separate project; therefore, costs are conservative. The Asset Register is in Appendix B prioritized by descending Priority bucket and BRE score.





Table 12: Priority Buckets based on Priority and BRE Score

Priority	BRE Score	Length (If)	Cost (\$)
1	All	34,677	17.4M
2	>30	63,546	32.5M
2	25-30	21,128	10.7M
2	<25	35,602	18.1M
3	All	39,586	20.4M
	Total	194,539	99.1M

As no near-term projects were identified in Phase 1, the replacement schedule begins with the general replacement based on risk and the prioritization approach outlined in Section 2. The plan assumes that pipe-bursting is a suitable replacement method if the material is not DI and is not greater than 750 linear feet in length. Note that no DI pipe is prioritized for replacement in this plan. Pipe and site conditions will need to be evaluated prior to the design of each project to confirm replacement method. The first section chosen for replacement is aligned with the required near-term replacement of the damaged sewer line on Central Avenue to minimize road disturbance. The only deviation from this prioritization is the replacement of the water system pipes in Grace Park, Wavecrest Avenue and the area of Fernwood Drive and Parkside Drive. The water system in these areas of McKinleyville are identified as areas of concern and are therefore prioritized by the District and placed in group 2.1.

The 18-inch DI pipe from the Humboldt Bay Municipal Water District is a very critical segment of the system. The condition of the segment of pipe was assessed via ultrasonic thickness testing as part of Phase 3 of this master plan, it is recommended that the condition of the pipe be monitored every 5 years because of its criticality. There is no cathodic protection on that piping and no additional engineered measures for external corrosion control is presently recommended. It should also be noted that a Hazard Mitigation Grant, Notice of Interest was submitted in 2018, 2020 and 2021 for the replacement of the river crossing. As of the writing of this Master Plan, the District has not heard whether this project was approved for grant funding.

With the proposed replacement prioritization, 98% of the District's 8-inch or smaller AC pipe, will be replaced.

4.3 In-House vs Contracting Construction Projects

It was suggested in Phase 2 that completing the replacement projects in-house could reduce project construction costs by approximately 10 to 15%. The District is interested in further evaluation of the costs and feasibility of performing the construction work in-house. This section aims to summarize the factors that MCSD should consider when making this decision. These considerations include: staffing and equipment, replacement project schedule and budget.

4.3.1 Staffing and Equipment

Potential crew costs per year were calculated using MCSD provided cost of \$45/hour which includes salary, retirement, and health insurance. With 260 calendar days in a year, a 6-person crew would cost approximately \$562,000/year, which is a significant portion of the annual







replacement budget. Although the productivity of a specific crew is difficult to estimate, a motivated and efficient 6-person contracted crew might complete roughly 400 feet of pipe per day. If \$562,000 is spent on labor costs, the balance of the \$1 million (2019 dollars) per year allocation could be dedicated to material. Assuming 8-inch pipe including foundation, bedding, trench zone material, and repair zone (asphalt) material at \$170/lf, the material budget would allow purchase of approximately 2,500 feet of pipe. If the crew can install approximately 400 feet per day, the installation might take two weeks. Allowing a couple of weeks at the start for layout and utility markout and a couple of weeks at the end for services and restoration would mean a six to seven-week project.

Excluding the percentage assumptions in Table 5 for general conditions and contingencies; assuming the same percentage of project cost applies for design, survey, geotechnical, environmental review and permitting (25%); and approximately half for inspection, construction management, engineering services during construction (ESDC) (10%); the annual cost for a crew working full time and having the materials for the work, is \$1.38M. It should be noted that smaller projects that District Staff could do and wouldn't require bidding, would have little to no Engineering, Survey, Geotech, CM etc. Costs associated with them and this overall cost may come in closer to \$1M per year. However, this cost does not include personnel management, training, equipment procurement, or operational and maintenance costs. Balancing the available funding in a given year while keeping the crew busy with materials available can be a challenge for the District. This amount exceeds the annual budget of \$1M per year for water rehabilitation. The District could consider cross training the crew for sewer system rehabilitation work, thereby splitting the labor cost between the sewer and water system budgets.

If only half of the crew cost was allocated to the annual water project, the \$1M budget would then also cover the design, survey, geotechnical, environmental review, permitting, materials testing, and project management costs associated with installation of approximately 2,500 feet of pipe. Similarly, for the sewer line installation, the crew should be able to install the annual length of pipe in less than three months. Any potential cost savings associated with using in-house staff, is lost because the crew is only productive for roughly half of the year.

Additionally, some projects require specialized skills and equipment which, assuming not all staff have the same skills, could present project delays with a particular crew members absence for training, vacation, sick leave, or other leave. Additional cost uncertainties that make construction efforts potentially risky are equipment costs. Typical equipment would include an excavator, a backhoe, material transport vehicles, a loader, pick-up trucks, shoring, dewatering pumps, and various accessories and smaller tools. A failed piece of equipment or damaged material can cause costly delays for an in-house crew while a contractor will likely have resources available for spare equipment or materials. Relationships with local suppliers will be essential for an in-house crew.

4.3.2 Project Schedule and Budget

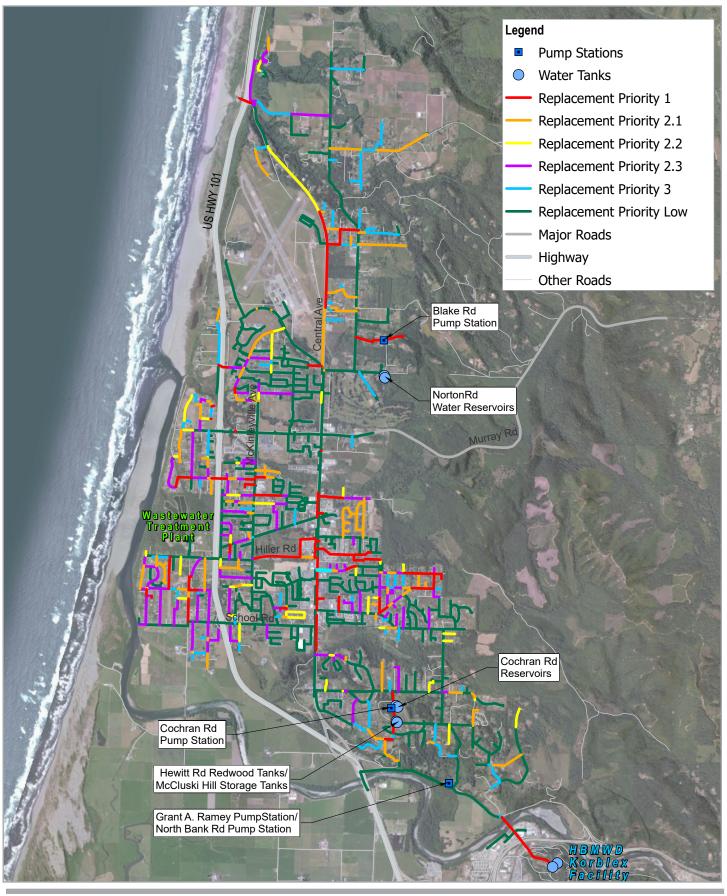
Flexibility can be reduced when a utility has an in-house crew performing work. Projects with special circumstances may pose a challenge or risk to the in-house crew, or special equipment or training may be necessary in any given future year and may require contracting out the work. Staff costs and associated materials to maintain production are not easily reduced to accommodate special circumstances or unique projects that require specialized skills.

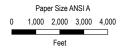






Note that the project schedule for the water system does not identify any projects with special circumstances; however, they may arise due to site and pipe conditions. The sewer system master plan noted a number of priority projects in the first 8 years which vary in character and require different equipment and skills. Because of the specialized skills needed and the variability, the early sewer replacement program is not well suited for completing with a small dedicated in-house team. Therefore, an in-house crew would be limited to water system projects in the near term, negating any savings from cross training crews in sewer and water projects during this period. The District could evaluate performing the construction in-house after the first 8 years of CIP projects when the sewer work becomes less varied. Sharing a crew with another near-by district might be a means of reducing labor costs and avoiding either inefficient production or idle time.





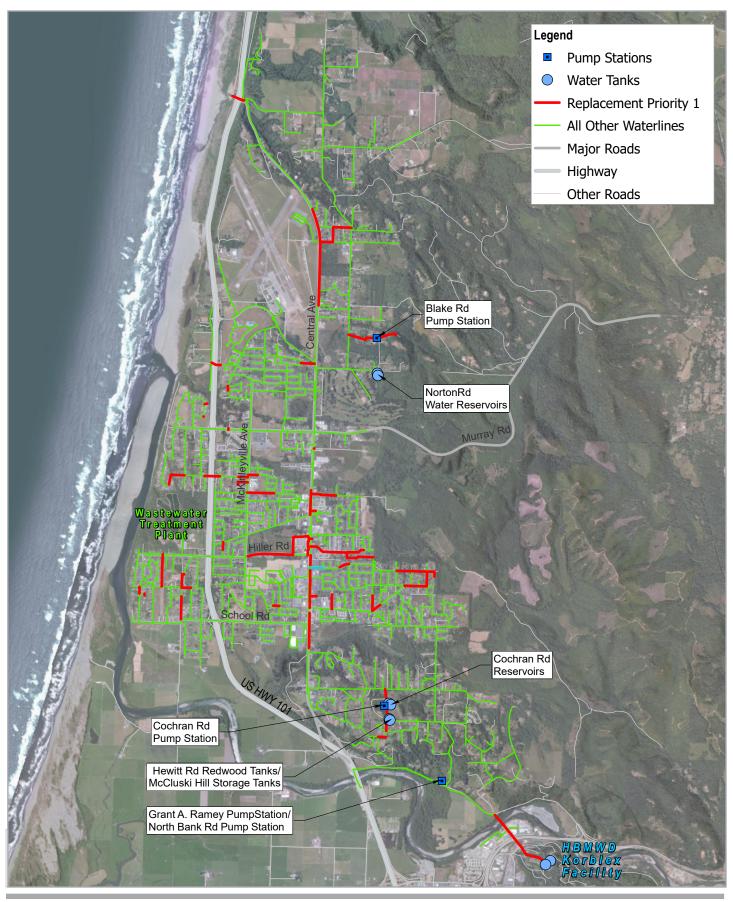




McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis All Priority Rankings Project No. 11218420 Revision No. A Date Dec 2021

FIGURE 7





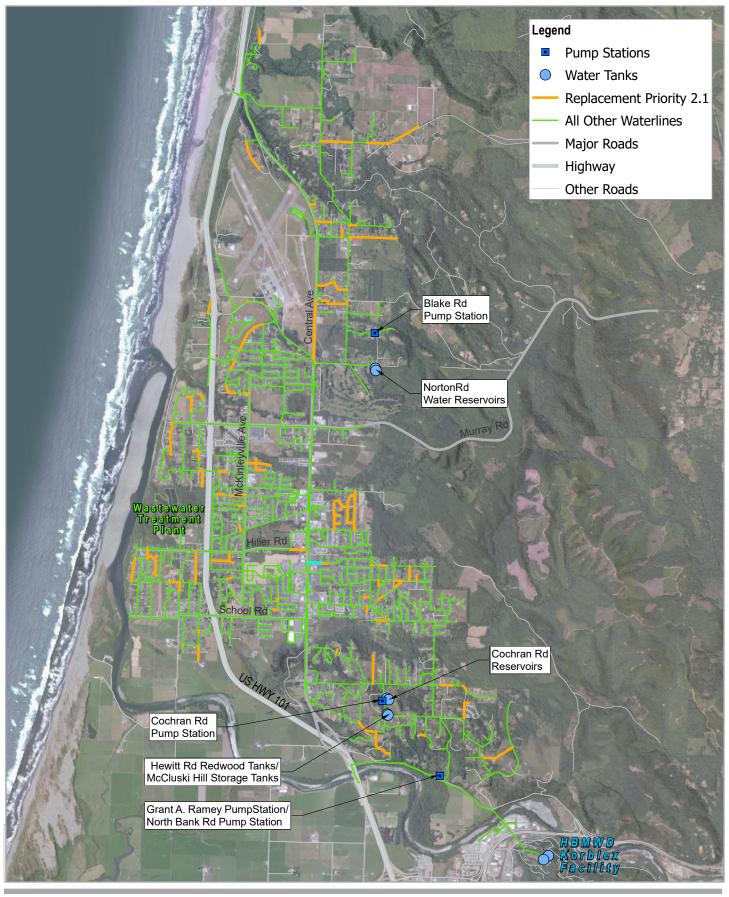


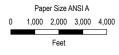


McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis
Priority 1

Project No. 11218420 Revision No. A Date Dec 2021



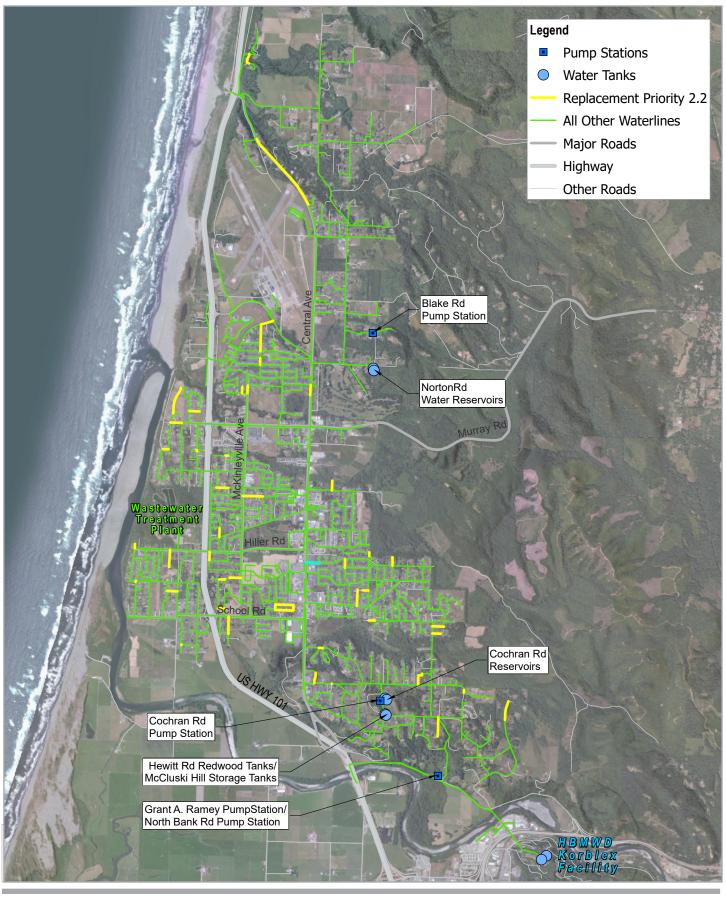






McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis Priority 2.1 BRE > 30 Project No. 11218420 Revision No. A Date Dec 2021



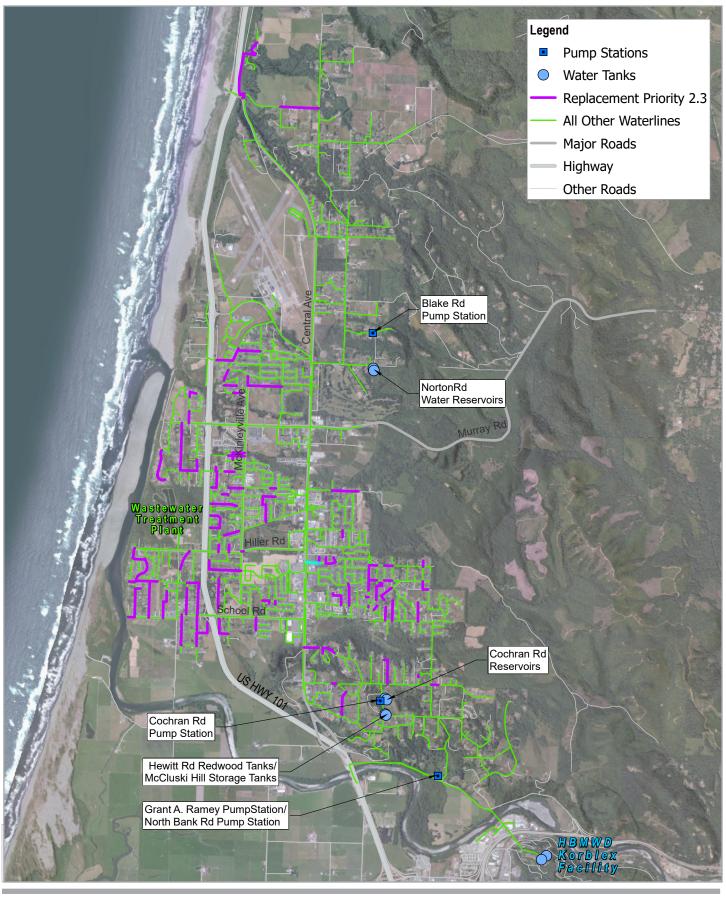


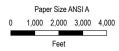




McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis Priority 2.2 BRE 25-30 Project No. 11218420 Revision No. A Date Dec 2021



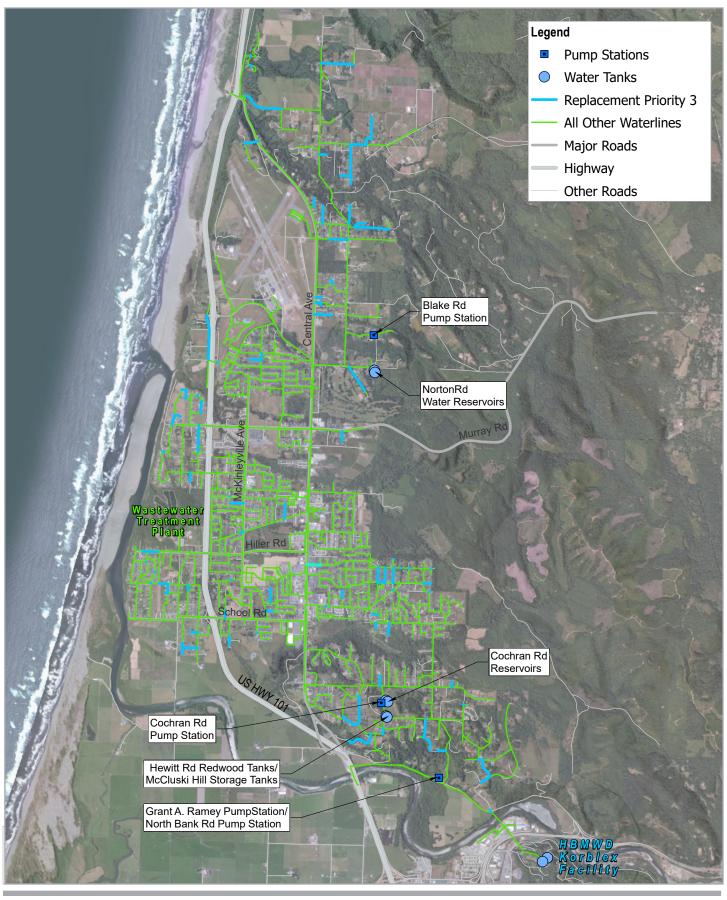


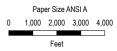




McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis Priority 2.3 BRE < 25 Project No. 11218420 Revision No. A Date Dec 2021









McKinleyville Community Service District Water Main Line Rehabilitation Master Plan (Phase 3)

Water Replacement Analysis Priority 3 Project No. 11218420 Revision No. A Date Dec 2021







5. Financial Analysis

Willdan Financial Services (Willdan) was retained by the District to develop a multi-year pro forma analysis for the water system reflecting the potential financial impact of the long-term systematic replacement of the entire distribution system as discussed in Phase 1 of this Master Plan. The results of that analysis and the total projected project cost were used to determine a reasonable yearly budget of \$1 million (2019 dollars) for the replacement of the MCSD water system main lines over 100 years. For Phase 2 of this Master Plan, Willdan was retained to prepare a rate study to see how MCSD ratepayers will be affected by the replacement of the water distribution system main lines.

The rate study consisted of three main steps: a revenue requirement analysis, cost of service analysis, and a rate design analysis. The first step, revenue requirement analysis, provides a five-year plan comparing the utility revenues to expenses in order to determine the overall rate adjustment required to maintain the system. The second step, cost of service analysis, allots the revenue requirements established in the first step as functional components distributed to customers based upon usage. The final step is to apply the revenue allotments to propose a new rate structure that covers MCSD water system costs in both the near and long term.

Willdan produced a report that has been included as Appendix C. The report provides the following:

- The general approach of the analysis and the assumptions that were made
- Projected revenues and expenses
- Required rate adjustments to achieve a positive net income
- Distribution of expenditures with existing and proposed rates
- Proposed water rates

The rates proposed by Willdan were approved by the MCSD Board of Directors at their November 2018 meeting. A summary of the approved rates is provided in Table 13. With these rates MCSD can begin building adequate reserves to support the long-term replacement of the water system with \$1 million per year (in 2019 dollars).

Table 13: Approved Water Rate Structure

	2019			2020		2021		2022		2023	
Monthly Base Charge:											
5/8 inch	\$	16.47	\$	17.62	\$	18.68	\$	19.80	\$	20.39	
3/4 inch	\$	22.23	\$	24.49	\$	26.71	\$	29.11	\$	30.59	
1.0 inch	\$	33.60	\$	38.06	\$	42.59	\$	47.52	\$	50.98	
1.5 inch	\$	62.09	\$	71.89	\$	82.01	\$	93.06	\$	101.95	
2.0 inch	\$	96.35	\$	112.59	\$	129.45	\$	147.91	\$	163.12	







		2019		2020	2021		2022	2023
3.0 inch	\$	179.52	\$	214.61	\$	251.43	\$ 291.85	\$ 326.24
4.0 inch	\$	290.53	\$	343.59	\$	399.00	\$ 459.76	\$ 509.75
6.0 inch	\$	575.46	\$	682.07	\$	793.53	\$ 915.75	\$ 1,019.50
8.0 inch	\$	917.71	\$	1,088.92	\$	1,268.00	\$ 1,464.41	\$ 1,631.20
Volumetric Per 100 Cub	oic Fe	et (CCF):						
Block 1 – 0 to 8 CCF	\$	1.57	\$	1.68	\$	1.78	\$ 1.89	\$ 1.95
Block 2 – All over 8 CCF	\$	3.93	\$	4.20	\$	4.45	\$ 4.73	\$ 4.88
Pass-through Charge (P/CCF)	\$	1.58	\$	1.64	\$	1.71	\$ 1.78	\$ 1.85

A bar graph comparing the approved rate structure to other rates in the local region for a residential customer using 800 cubic feet per month in fiscal year 2018-2019 is provided in Figure 8. The approved MCSD water rate structure has a residential customer paying slightly above average compared to the local region.

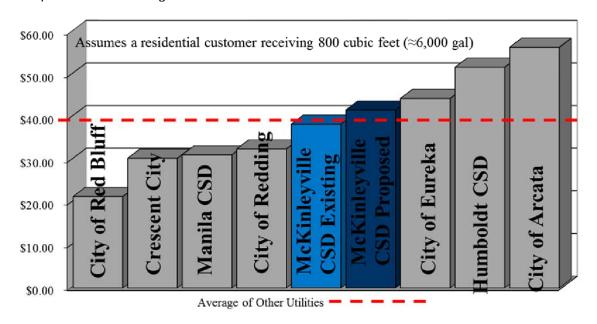


Figure 8: Residential Customer Regional Rate Comparison (800 Cubic Feet)







6. Conclusions, Recommendations, and Next Steps

This document presents a summary of all 3 phases of the MCSD Water Main Line Replacement and Rehabilitation Master Plan, a high-level assessment of the District's water distribution system for use in initial planning for rehabilitation and upgrades to the system.

Phase 3 has provided the following:

- Highlights of the Phase 1 system analysis
- Highlights of the Phase 2 information on viable replacement methods and financial analysis based on the Phase 2 proposed spending plan
- Discussion of in-house or contracting of construction work and comparison of costs
- · Summary of physical testing results
- · Risk Framework for evaluating the District's system
- Updated replacement plan using a risk-based prioritization approach

This final section presents conclusions, recommendations, and information on the next steps in the overall process.

6.1 Conclusions

This Master Plan presents a Risk Framework for evaluating and assigning priority for the replacement of MCSD's water distribution system. The District can replace the most critical portions of the MCSD water distribution system in the next 50 years with a reasonable adjustment to user rates by using the risk-based prioritization presented in this master plan.

Following the prioritization presented in this master plan, spending an average of \$1 million (2019 dollars) per year on the system will allow Priority 1 and over half of Priority 2 pipes to be replaced which equates to 18.6 miles of the District's 8-inch or smaller AC pipe in 50 years. This represents 50% of the District's 8-inch or smaller AC pipe, or 22% of the entire system. Replacement activities will help to ensure the continued high quality of service to their customers. Actual construction costs may differ and will depend on pipe conditions. Confirmation of the appropriate replacement method during the design phase of each project.

6.2 Recommendations and Next Steps

While there are currently no high-priority, near-term projects required for the distribution system, it is critical that the District begin planning and budgeting for upgrades and replacement of system components. The approved rates from Section 4 were made assuming that MCSD would begin putting aside \$860,000 to \$960,000 for each of the next four years starting in 2019 and then reserving the full \$1 million (2019 dollars) per year after that period. With rate adjustment approved, the project financing is securely in place and it is recommended that MCSD execute the replacement of its water system beginning with the pipe segments identified as Priority 1 followed by Priority 2 and then Priority 3. Within the Priority groups, it is recommended that BRE scores be







used to prioritize projects. The District should begin the planning and design process for the early proposed projects so construction can begin around 2024.

Asset condition for the risk assessment performed as part of this master plan is largely based on the 3 AC pipes samples collected and physically tested, one segment of DI pipe CCTV-ed, and one location of DI pipe with ultrasonic thickness testing. Results of physical testing were then extrapolated to subsets of assets based on material and diameter; however, condition within a subset can vary. Additional physical testing could be performed to refine and update the condition of the assets, as well as additional physical testing. As pipes are replaced, condition scores should be updated to reflect the improvements.

As for the feasibility of hiring more District staff and creating an in-house crew, versus a contracted crew, it can be argued both ways. For smaller projects, that don't require extensive equipment, hiring 1 or 2 more employees and utilizing part of the existing staff for a few weeks per year would be more feasible than hiring a contracted crew. It would require the District to purchase a few pieces of equipment that can also be utilized in other areas of the day-to-day operations. You could complete more of the smaller projects per year, as it would cut down on the Engineering, Survey, Geotech etc. and wouldn't require the bidding process. The 1 or 2 additional staff members would stay employed year-round and would help catch up on the work that was postponed during the month of construction.

A contracted crew would be more specialized and would have the equipment needed to complete the required replacement/rehabilitation along with the personnel trained on operating the specialized equipment. This would be ideal for bigger jobs in paved roads, with a lot of traffic that might require any method other than the trenching and replacing method. A contracted crew can also pull in more employees as needed, for flagging in busy streets etc. A potential cost savings for the District would also be to develop a list of approved Contractors and as the design of each job is completed, they could solicit costs from Contractors on the list, rather than doing a detailed bid process.

This master plan focuses on the District's capital expenditures and using the risk assessment to prioritize capital projects. However, in addition to the capital project recommendations, the District can use the risk assessment results to identify appropriate maintenance activities and intervals for the water distribution system assets depending on the criticality of the pipe segment and appurtenances. Maintenance activities should include flushing of water lines and exercising of valves to ensure best performance and functionality.

Lastly, this master plan and the associated risk model is considered a living plan that should be updated as additional condition information is known or as replacement projects are completed. Condition scores and probability of failure can be updated at the asset level to obtain updated prioritization.







Appendices







Appendix A – Phase 3b: Water and Sewer Mainline Replacement and Rehabilitation Master Plans Letter Report



July 6, 2020

Patrick Kaspari, PE General Manager McKinleyville Community Services District P. O. Box 2037 1656 Sutter Rd McKinleyville, CA 95519

Re: Phase 3b: Water & Sewer Mainline Replacement & Rehabilitation Master Plans Letter Report

Ref: 11125090

Dear Mr. Kaspari,

GHD respectfully submits this summary to the McKinleyville Community Services District (MCSD) of the subphase, Phase 3b, of assessment related to fitness of MCSD's water and sewer systems. The overarching goal of the assessments is to develop an Engineer's opinion of present-day pipeline condition within the water and sewer systems with respect to the proposed schedule for the District's future replacement. Phase 3b is directly linked to the previous project sub-phase, Phase 3a, which included: 1) desktop analysis related to pipeline performance in environmental exposures and assessment of comparable documented pipeline performance based on environment, material, and time of exposure; 2) development of a soil sampling plan; soil sampling; laboratory analysis; corrosivity analysis of laboratory results; and 3) provision of recommendations related to scoping a destructive and non-destructive test plan for deployment in a subsequent project phase.

The Phase 3b work is focused on the assessment related to developing an Engineer's opinion of present-day pipeline condition within the water and sewer systems. In this context, "condition" is used to represent estimation of the risk of future failure based on the data available. The Phase 3b scope includes assessment of the water main under the Mad River as well as the other ductile iron (DI) and asbestos cement (AC) pipe in the water system and in the sewer collection system. Phase 3b includes: 1) the development of a destructive and non-destructive test plan for the pipe; 2) the collection and analysis of pipe samples and the non-destructive assessment of segments of pipe; and 3) the analysis and reporting of the destructive and non-destructive sample results and recommendations to review, revisit and/or revise the schedule and priorities for time-based pipeline replacement, if applicable.

Project Overview

The scope includes assessment of the Ductile Iron¹ water main in the vicinity of the Mad River crossing, forcemains from the Letz, Kelly, Fischer, and B Street lift stations, as well as the other ductile iron (DI) and asbestos cement (AC) pipe in the water and sewer systems. Attachment A and Attachment C includes a System Site Plan that includes pipe material designations. The majority of project piping is AC with a much

¹ Record Drawings reference the pipe material as "Ductile Cast Iron".

lower percentage of DI and PVC piping presently in service. Based on available Record Drawings, sewer system piping was installed in 1976 and water system piping was installed in 1973, and has been in service since installation.

The findings and conclusions from the Phase 3a assessment found that the soil environment identified per the laboratory analysis is negligibly corrosive with respect to ductile iron pipe. GHD's experience, based on direct assessment of ductile iron pipe in similar soil environments over similar time of exposure scenarios, is that external corrosion-related degradation in terms of pipeline wall thickness loss, is typically nominal. However, the soil environment identified per the laboratory analysis is generally highly aggressive with respect to asbestos-cement pipe in various areas within the District boundary. The pH of the boring samples tested ranged from 4.5 to 7.8. Based on AC pipeline installation in the 1970s, the time of exposure to the soil environment is greater than 40 years. Degradation of AC pipe resulting in a reduction of pipeline strength was identified as a possible risk and destructive laboratory evaluation of AC pipe samples was recommended in order to quantify the AC pipe degradation-to-date. The focus of Phase 3b including quantification of the present-day condition of selected piping. The Phase 3b tasks included:

- Three (3) AC pipe samples were obtained and underwent destructive laboratory evaluation. The
 results of the laboratory evaluation are summarized in Table 2. The laboratory evaluation included the
 following parameters:
 - a. Cross sectional hardness assessment was performed on the interior and the exterior of each pipeline cross section at 0.10 inch increments using a shore D durometer. The shore D durometer test results in an empirical number from 0 to 100: the higher the number the harder the material. The intent of this testing was to estimate the depth of the softer/weaker material on both the interior and exterior surfaces of each AC pipe sample.
 - b. Cross sectional pH evaluation was conducted on the entire cross section of each AC pipe sample at eight (8) locations per sample evenly spaced around the pipe circumference. The intent of this testing was to identify locations and quantify depths, on both the interior and exterior surfaces of each AC pipe sample, where the alkalinity has been reduced.
 - c. Crushing strength testing was conducted in accordance with ASTM C 500 Standard Test Methods for Asbestos-Cement Pipe. The intent of this testing was to identify the present-day residual strength of the AC piping.
- 2. Ultrasonic thickness (UT) testing of ductile iron pipe was conducted at one (1) location that was selected, in part, based on consideration of the corrosivity of soils identified as a part of Phase 3a. UT data is summarized and presented in Table 3. Pipeline wall thickness was measured at twelve (12) circumferential locations.
- CCTV was deployed on one selected ductile iron pipe runs of approximately 212 linear feet. CCTV footage was reviewed by a qualified engineer².

² Parastou Hooshialsadat, PE, NASSCO PACP (Pipeline Assessment Certification Program), GHD

Introduction

Asbestos cement (AC) pipe was a popular pipe material alternative for various installations in the mid-20th century. It is estimated that more than 12% of water mains presently in service within the United States are AC pipe³. Asbestos Cement (AC) is a mixture of asbestos fibers, which serves as a reinforcing element, and cement paste, which serves as a binding agent. The conditions that lead to AC degradation may be present in the conveyed substance (internal degradation) or the surrounding soil environment (external degradation). AC pipe degrades primarily as a result of chemical reactions with the soil environment, thus degradation of AC pipe is primarily a function of the aggressiveness of the environment of exposure and the time of exposure⁴.

External degradation of AC is generally caused by acid or sulfate attack. Sulfate contained in the soil environment can react with hydrated calcium aluminate creating ettringite that expands and leads to the destruction of the cementitious portion of AC pipe. Internal degradation of AC is generally caused by leaching of the cementitious matrix by soft water; or sulfuric acid in the case of wastewater pipelines. Hydrogen sulfide in wastewater reacts with moisture to form sulfuric acid on the pipe wall which results in leaching of calcium, causing softening and loss of mechanical strength⁵. The free lime that maintains the strength of the cement matrix can be leached from the cement by liquids in contact with the pipe surface. External AC degradation, internal AC degradation, or the combination of internal and external degradation may result in a reduction in the structural integrity of the pipe cross section, which could lead to pipe failure. For the purpose of the subject assessment, the aggressiveness of the soil environment with respect to AC pipe is categorized primarily based on quantification on the sulfate ion content of the soil, reported in parts per million (ppm) and the pH of the soil. When pH increases above 7.0 (the neutral value) the conditions become increasingly more alkaline. Lower pH (more acidic) environments represent increased corrosivity with respect to buried metallic structures.

GHD developed a pipe sampling plan with the objective of obtaining and testing three (3) representative AC pipe samples. Two pipe samples, AC1 and AC2, were selected from locations with nearby available soil laboratory data, from Phase 3a, identifying the soil as highly aggressive with respect to AC pipe. Pipe sample AC3 was selected from a location where the adjacent soil data did not demonstrate highly aggressive soil. MCSD provided equipment and labor related to excavation. The three (3) pipe samples were obtained on April 14, 15, and 17 at the approximate locations depicted in Attachment B "Water Pipe Sampling Plan" and Attachment D "Sewer Pipe Sampling Plan". GHD's Daily Logs related to pipe sampling operations are included as Attachment E.

³ Ghirmay, Abiy Melles "Asbestos Cement Pipe Condition Assessment and Remaining Service Life Prediction", University of Arkansas, Favetteville, August 2016

⁴ Denison, Irving A. and Romanoff, Melvin "Effect of Exposure to Soils on the Properties of Asbestos-Cement Pipe", Journal of Research of the National Bureau of Standards, November 1951

⁵ Bowker, Colin, "Corrosion of an Asbestos Cement Sewer Rising Main due to Hydrogen Sulphide", 75th Annual Victorian Water Industry Engineers & Operators Conference, September 2012

The pipe samples obtained were delivered to an independent analytical laboratory for analysis. AC pipe samples were analyzed for the following characteristics: interior and exterior hardness; pH profile; and crush strength. The report with the laboratory analysis results are included in Attachment F "Voss Laboratory Analysis Report dated April 29, 2020".

Ultrasonic Thickness (UT) testing was used to measure pipeline wall thickness at one exposed section of ductile iron pipe in the vicinity of The Mad River Crossing in the general vicinity of pipeline Station 30+85 per Record Drawings date 1972. UT testing was conducted by GHD on April 17, 2020. Pipe wall thickness was measured using an Olympus 38 DL Plus Ultrasonic Thickness Gage Dual Transducer and glycerin couplant. The Olympus 38 DL Plus Ultrasonic Thickness Gage is factory-calibrated a minimum of one time per year; is shop-calibrated before each continuous multi-day use or approximately once every two weeks; and is field-calibrated using calibration blocks each day prior to testing. The standard resolution of the Olympus 38 DL Plus Ultrasonic Thickness Gage is one (1) mil (.001 inches). Test locations were cleaned and prepared for assessment by removing soil, contaminants and corrosion product, where appropriate. Six (6) wall thickness measurements were recorded at each of the twelve (12) test locations, which were used to determine the average thickness at each assessed location. The results of the UT testing are summarized in Table 5.

Closed Caption Television (CCTV) inspection was deployed by MCSD on one selected run of Ductile Iron Pipe of approximately 212 linear feet and provided to GHD for review. CCTV footage titled "10 Ductile Iron From Hiller Marsh to Thiel_Mh 5-3-Mh 5—562" was reviewed in general conformance with NASSCO (National Association of Sewer Service Companies) recommended best practices. The results of the engineer's review of the CCTV inspection footage is summarized in Table 6.

Findings:

Tables 1, 2, 3 and 4 summarize the laboratory findings based on the destructives testing performed on the three (3) selected AC pipe samples.

Table 1 AC Pipe Sample Identification

Pipe Sample ID	Sample Location	As- Received Sample Length (in.)	Sample Average Internal Diameter (in.)	Sample Average Wall Thickness (in.)	
AC 1	Murray Road	13.0	9.93	1.07	
AC 2	Lycoming Road	12.0	6.08	0.53	
AC 3	School Road	12.75	8.00	0.63	

Table 2 Pipe Sample Interior and Exterior Hardness

Pipe Sample ID	Interior Hardness Depth ⁶ (in.)	Exterior Hardness Depth ⁷ (in.)
AC 1	0.20	N/A
AC 2	0.10	N/A
AC 3	0.20	N/A

Table 3 Pipe Sample pH Profile Testing

Pipe Sample ID	Average Wall Thickness (in.)	Maximum Interior Degraded Depth ⁸ (in.)	Maximum Exterior Degraded Depth ^s (in.)
AC 1	1.07	0.30	0.02
AC 2	0.53	0.22	0.04
AC 3	0.63	0.36	0.03

Table 4 Pipe Sample Crush Strength Testing

Pipe Sample ID	Internal Diameter (in.)	Average Wall Thickness (in.)	Tested Pipe Length (in.)	th Ultimate Load (lbs.)		
AC 1	9.93	1.07	11.9	11,300		
AC 2	6.08	0.53	11.3	3,200		
AC 3	8.00	0.63	11.2	2,400		

UT testing was conducted at 12 locations corresponding approximately to the hours of a clock. The baseline orientation was established as west-facing.

⁶ The depth to which the Hardness Value is less than 85 Shore D.

⁷ The depth to which the Hardness Value is less than 85 Shore D; N/A indicates that values were greater than 85 Shore D.

⁸ The depth to which the measured pH is less than 9.5.

 $^{^{9}}$ The depth to which the measured pH is less than 9.5.

Table 5 12" Diameter Ductile Iron Pipe Ultrasonic Thickness Testing Results¹⁰

No.	12 O'c	1 O'c	2 O'c	3 O'c	4 O'c	5 O'c	6 O'c	7 O'c	8 O'c	9 O'c	10 O'c	11 O'c
1	0.403	0.423	0.408	0.401	0.393	0.397	0.368	0.402	0.408	0.413	0.407	0.403
2	0.402	0.422	0.409	0.401	0.408	0.393	0.372	0.401	0.409	0.412	0.414	0.404
3	0.404	0.426	0.410	0.399	0.408	0.395	0.369	0.401	0.408	0.415	0.416	0.408
4	0.404	0.431	0.410	0.398	0.408	0.395	0.371	0.401	0.410	0.416	0.417	0.406
5	0.405	0.438	0.410	0.379	0.405	0.393	0.407	0.400	0.409	0.417	0.415	0.395
6	0.406	0.437	0.407	0.380	0.412	0.404	0.406	0.400	0.408	0.416	0.415	0.404
Avg.	0.404	0.429	0.409	0.393	0.406	0.396	0.382	0.401	0.409	0.415	0.414	0.403

CCTV footage was assessed by a NASSCO accredited engineer. It was noted that the CCTV was not performed per NASSCO standards; primarily based on the level of the lighting. Video Internal pipeline defects/damage noted based on review of CCTV footage is characterized as a combination of minimal, moderate and significant damage scenarios as summarized in Table 6. The significant damage locations to the pipeline lining are noted along the pipeline invert from 104 ft. to 123 ft. General degradation and surface damage including erosion were noted in the vicinity of the flow line for the majority of the pipeline run. Lining damage in the vicinity of the pipeline crown, suspected due to hydrogen sulfide (H₂S) attack, was noted along the length of the pipe run. Aside from the defects itemized; the following pipeline characteristics were noted:

- No lateral connection
- No crack, fracture or hole
- No joint displacement/offset
- No infiltration
- No root intrusion
- No coating/lining
- No material or size change

¹⁰ Adjusted data based on calibration and velocity factors

Table 6 Summary of CCTV Inspection Review: 10-inch Ductile Iron Pipe

Upstream Manhole	Downstream Manhole	Pipe Diameter (inches)	Assessed Pipe Length (ft.)	Defects Noted
MH5-2 at 2280 Thiel Avenue	MH5-3 at Hiller East Field	10	214	1. Minor deposits at pipe joints at: 54.6 ft., 147.9 ft. and 211.2 ft.
				2. Minor surface deterioration at: 90.3 ft. and 200.4 ft.
				3. Continuous erosion at invert from: 104 ft. to 123 ft.

Discussion

The soil environment identified per the laboratory analysis of Phase 3a identified various zones of soil based on aggressiveness with respect to asbestos cement pipe. The majority of the soil data obtained within the MCSD service area can be generalized as highly aggressive with respect to AC pipe and negligibly aggressive with respect to ductile iron pipe. Based on AC pipeline installation in the 1970s and the time of exposure to the soil environment the lifespan is expected to be greater than 40 years. External degradation of AC pipe resulting in a reduction of pipeline strength is expected. GHD's experience, based on direct assessment of ductile iron pipe in similar soil environments over similar time of exposure scenarios, is that external corrosion-related degradation in terms of pipeline wall thickness loss, is typically nominal. However, anomalous conditions may exist which include concentrations of corrosive soils or DC current pickup from foreign sources and related current discharge.

The previous project phase, Phase 3a, quantified soil aggressiveness throughout MCSD's water and sewer system with respect to ductile iron pipe and asbestos cement pipe; based on the hypothesis that a correlation existed between soil composition and external pipe condition; i.e., that pipes located in highly aggressive soil conditions may have experienced a greater degree of external corrosion-related degradation to-date than pipelines in less aggressive or negligibly aggressive soil environments. Phase 3a was limited to evaluation of noted factors related to external pipeline corrosion-related degradation; internal pipeline degradation was not included in the scope of the evaluation. In general, the soil was determined to be negligibly aggressive to DIP and highly aggressive to AC pipe.

A key objective of Phase 3b was to quantify the present day condition of selected samples of DIP and AC pipe; an ancillary objective of which was to investigate the hypothesized correlation between soil aggressiveness and pipe condition. A sampling and test plan was developed which was subsequently scaled back, based on directive from MCSD, to include, as noted: CCTV of a limited run of DIP; UT testing of wall thickness at one exposed section of DIP; and destructive laboratory evaluation of three AC pipe

samples; two from areas identified as having highly aggressive soil conditions. Based on the results of the laboratory evaluation, the key metric available to serve as a leading indicator of risk of AC pipeline failure is the loss of crushing strength as evidenced by the present-day crushing strength of samples analyzed versus the design crushing strength. A correlation between soil environment and AC pipeline condition, as evidenced in loss of pipeline external alkalinity and/or loss of external hardness, was not established based on the limited data available as the internal degradation of each of the AC pipe samples analyzed was significantly more advanced than the external degradation. Table 2 reports the interior and exterior hardness of each of the three samples based on the depth to which the hardness is less than an established value (0.85 Shore D). The interior depth ranges from 0.1 inch to 0.2 inch; the exterior depth is reported as "N/A" indicating that it was not less than the established value at any depth tested. The anticipated, nominal, internal and external value for new AC pipe is "N/A". Table 3 reports the interior and exterior depth to which the measured pH of each of the three samples is less than an established value (9.5). The interior depth ranges from 0.22 inch to 0.36 inch; the exterior depth ranges from 0.02 inch to 0.04 inch. The anticipated, nominal, internal and external value for new AC pipe is "N/A".

Laboratory analysis revealed a direct correlation between crushing strength, or loss of crushing strength, and wall thickness. As AC pipeline wall thickness increases, crushing strength increases. As AC pipeline wall thickness decreases, crushing strength decreases. Furthermore; there is a direct correlation between AC pipeline wall thickness and pipe diameter. Two categories of AC pipe, Category 1 and Category 2, were developed in order to represent the risk of pipeline failure based on the destructive laboratory analysis performed. The risk of failure of the Category 1 Pipe (8-inch diameter and less) is significantly greater than Category 2 Pipe (10-inch diameter and greater) based on consideration of the crushing strength (only). The existing in-service AC pipe may be categorized according to wall thickness based on the following two categories: 1) pipelines with 8-inch diameter or less; and 2) pipelines with 10-inch diameter or greater. There is approximately 131,965 linear feet of Category 1 piping in MCSD's sewer system which composes 34.1% of the total sewer system pipe and 67,264 linear feet of Category 2 piping which composes 17.4% of the sewer system pipe. There is approximately 215,930 linear feet of Category 1 piping in MCSD's water system which composed 45.3% of MCSD's water system pipe and 87,154 linear feet of Category 2 piping which composes 18.1% of MCSD's water system pipe. The establishment of, and broad delineation based on, risk categories is a result of the destructive analysis of three (3) pipe samples. The extent of laboratory analysis was limited and the resulting classifications are therefore limited. Additional destructive evaluation, specifically of pipeline crushing strength, may result in a resolution of data facilitating development of additional risk categories and/or revision to the two risk categories presented herein.

Conclusions

<u>Asbestos Cement Pipe</u>: The extent of internal degradation of both asbestos-cement pipe and ductile iron pipe was previously unknown; and in both cases it was assumed that external degradation is the controlling factor in pipeline degradation. The findings, based on the laboratory evaluation of AC pipe, include:

- 1. Based on dimensional measurements obtained as a part of the laboratory testing, the AC pipe tested is likely pressure Class 150¹¹.
- 2. Internal degradation, not external degradation, of AC pipe is the limiting factor in AC pipe fitness for continued service
 - a. The exterior depth of loss of alkalinity is nominal
 - b. The exterior loss of hardness is nominal
 - c. The interior depth of loss of alkalinity, greater than 50% of total pipeline wall thickness of Sample AC3, is significant.
 - d. The interior loss of hardness of all samples tested is significant.
- 3. The crushing strength of the three samples varied significantly and relates, as expected, to pipeline wall thickness. The measured crushing strength relationship with respect to the design crushing strength, as itemized in Table 7, is related to pipeline wall thickness. Wall thickness increases as pipeline diameter increases. Based on the data available, pipes with nominal wall thickness of 0.635 inches or less, corresponding to pipeline diameters of 8-inches or less, have experienced significant reduction in residual crushing strength; and pipes with nominal wall thickness of 1.040 inches or more, corresponding to pipeline diameters of 12-inches or greater, have not experienced significant reduction in residual crushing strength. Although there is presently no laboratory data for crushing strength on 10-inch diameter (0.910 inch wall thickness pipe), 10-inch pipe is considered to have likely retained much of the design crushing strength and is classified along with AC pipe of larger diameters.

Table 7 Pipe Sample Crush Strength vs. Design Crush Strength¹²

Pipe Sample ID	Internal Diameter (in.)	Average Wall Thickness (in.)	Ultimate Load (lbs.)	Design Load (lbs.)	Percent (%) of Design Load
AC 1	9.93	1.07	11,300	7,600	149%
AC 2	6.08	0.53	3,200	5,400	59%
AC 3	8.00	0.63	2,400	5,400	44%

¹¹ AWWA C400-03 "Asbestos-Cement Pressure Pipe, 4 In. Through 16 In. (100 mm Through 400 mm), for Water Distribution Systems

¹² AWWA C400-03, Table 2 "Design internal pressure and design external load"

<u>Ductile Iron Pipe</u>: Internal lining degradation of ductile iron pipe was identified, and with respect to the extremely limited nature of the sample size, may be assumed to be indicative of mortar lining performance of similar vintages and time in service. The UT measurement of pipeline wall thickness identified substantial remaining wall thickness and minor loss of wall thickness.

Recommendations

Asbestos Cement Pipe: The results of the Phase 3b efforts have established a direct relationship between crushing strength and nominal wall thickness. A risk of pipe failure, based on residual crushing strength, is thus considered to have an inverse relationship to nominal pipe diameter as discussed; which lead to development of Category 1 and Category 2; based on presumed risk of failure. Category 1 and Category 2 piping is depicted in Attachment B. GHD recommends that the subsequent project phase, Phase 3c, establish multiple classifications, numerical or otherwise, in order to quantify the consequence of AC pipe failure. The Consequence of Failure may be based on a number of factors including: 1) number, quantity and regularity of service outages; 2) environment impact including contamination; 3) increased cost; 4) access for repair; 5) legal penalties based on non-compliance; and 6) other collateral damage. The ASCE-published paper "Consequence-of-Failure Model for Risk-Based Asset Management of Wastewater Pipes Using AHP"13 "presents a consequence-of-failure model using a weighted-sum multi-criteria decision-making method to evaluate the economic, social, and environmental consequences of wastewater pipe failure. The model incorporates 14 factors consisting of pipe characteristics and demographic parameters arranged into a hierarchical model to determine one final consequence-of-failure score". There are many such studies available on the topic; a multi-criteria model such as that mentioned in the referenced study is recommended. The quantification of consequence of failure should be applied to both Category 1 and Category 2 piping. The remaining useful service life, and inversely the time-based phasing of replacement, of asbestos cement pipe throughout the greater MCSD service area, may be prioritized according to the risk of failure (Category 1 or Category 2) weighted according to the Consequence of Failure. The existing timephased plan for AC pipeline replacement may then be reviewed in parallel with the priority rankings sorted by the two wall thickness/residual crushing strength categories to determine if modifications to the replacement scheduling are prudent.

<u>Ductile Iron Pipe</u>: Based on the time in service of the ductile iron pipe, 48 years at the time of this memorandum, additional engineered measures for external corrosion control of ductile iron pipe are not presently recommended. Repair or remediation of lining and internal surfaces should be investigated and lining repair work initiated prior to widespread lining failure.

¹³ ASCE Technical Papers, Greta J. Vladeanu, Ph.D., A.M.ASCE; and John C. Matthews, Ph.D., A.M.ASCE

GHD appreciates the opportunity to provide corrosion engineering services. Should you have any questions, comments, please do not hesitate to contact us directly.

Patrick Sullivan, P.E.

Project Manager

Respectfully submitted,

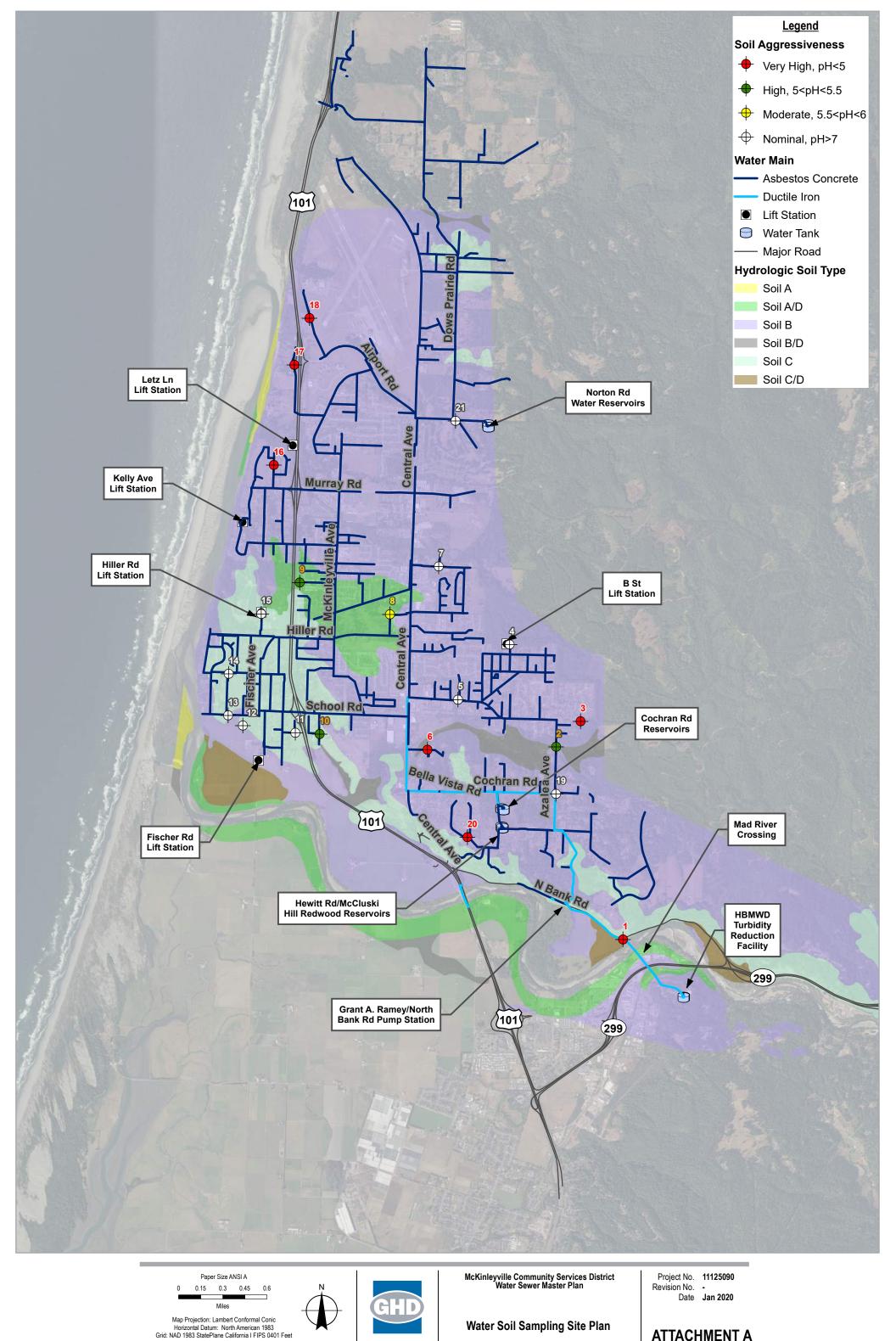
GHD Inc.

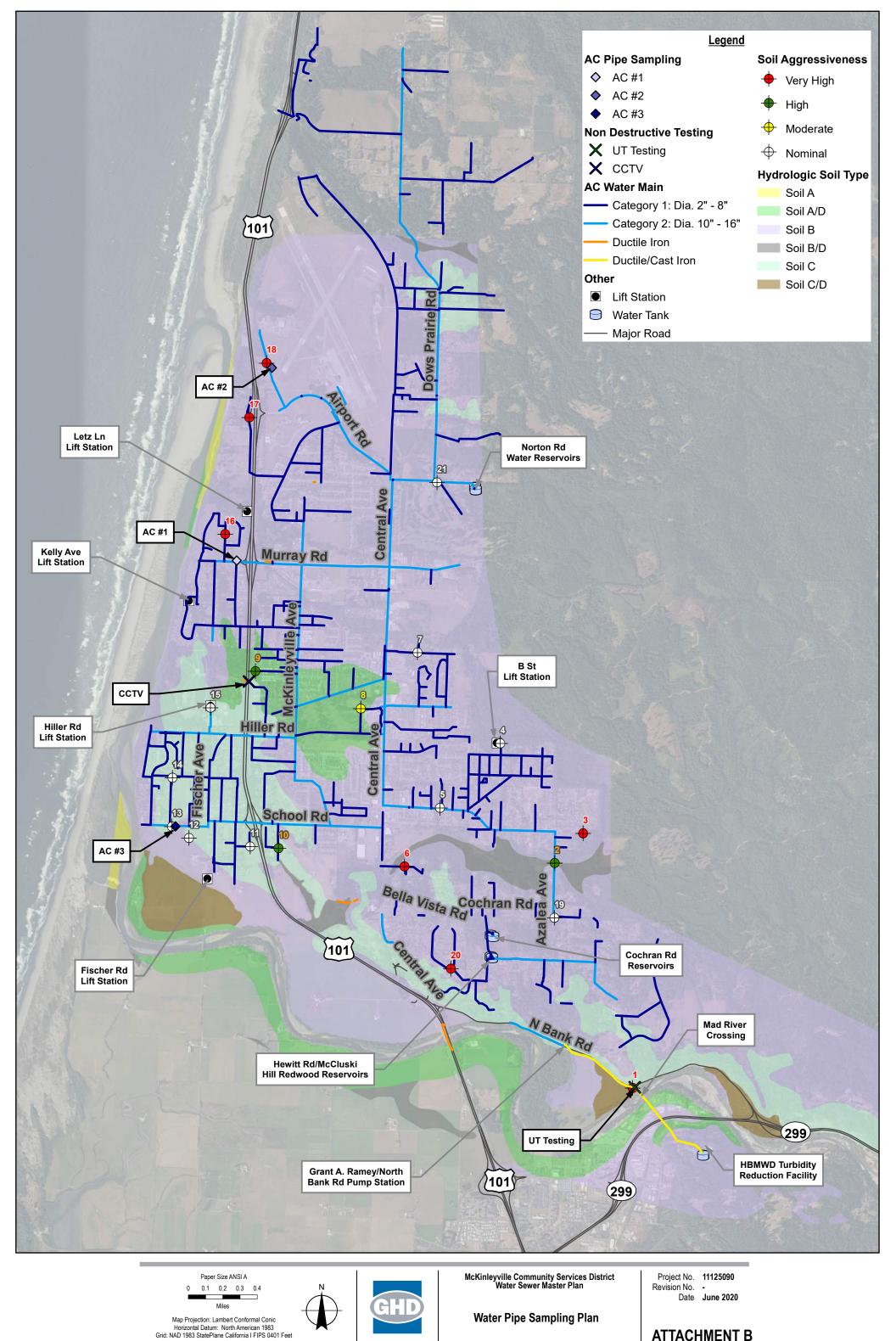
Jeff Knauer, PE, NACE Specialist Senior Corrosion Engineer

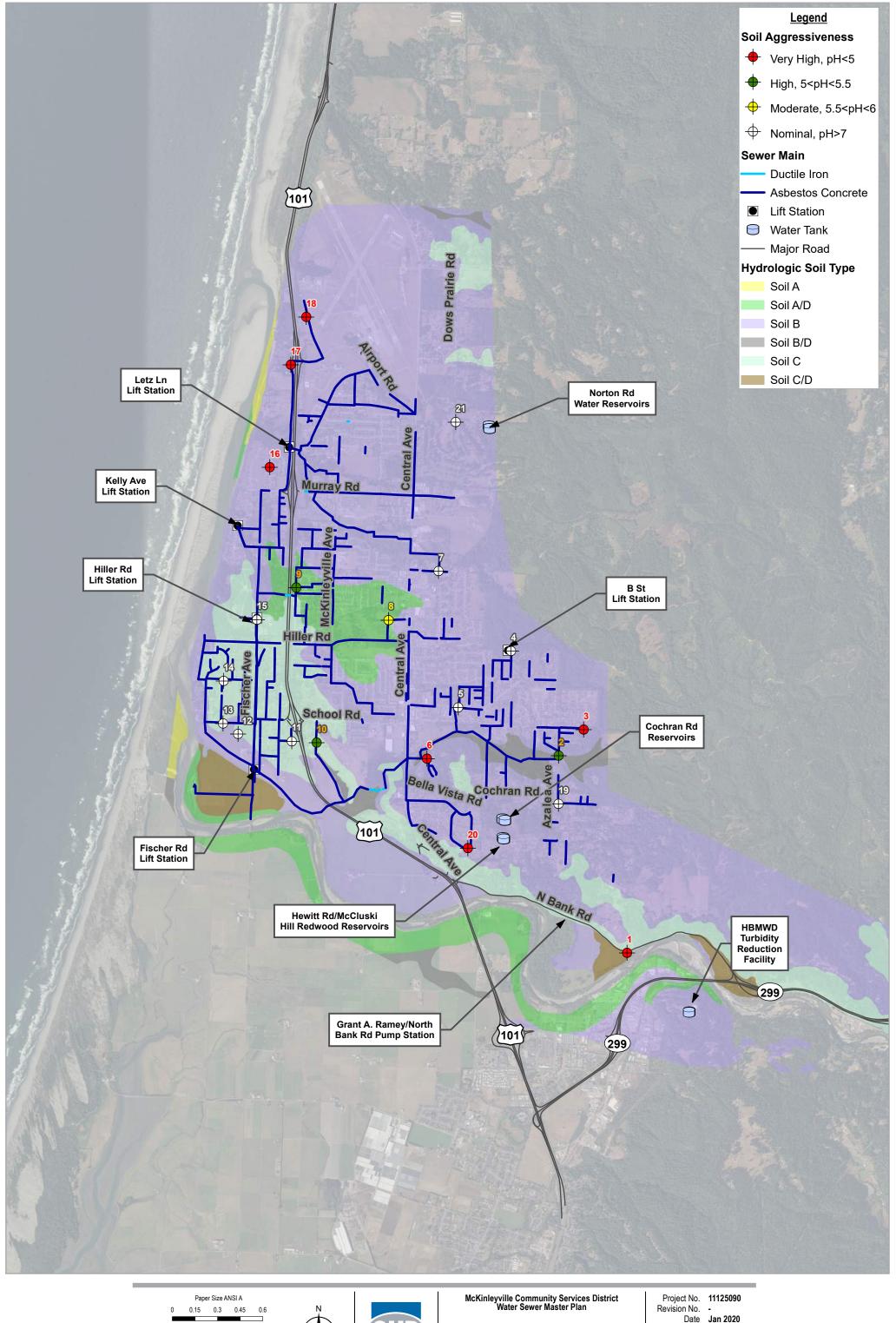
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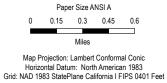
Attachment A: Water Soil Sampling Plan
Attachment B: Water Pipe Sampling Plan
Attachment C: Sewer Soil Sampling Plan
Attachment D: Sewer Pipe Sampling Plan
Attachment E: Daily Observation Logs

Attachment F: Voss Laboratory Analysis Report dated April 29, 2020





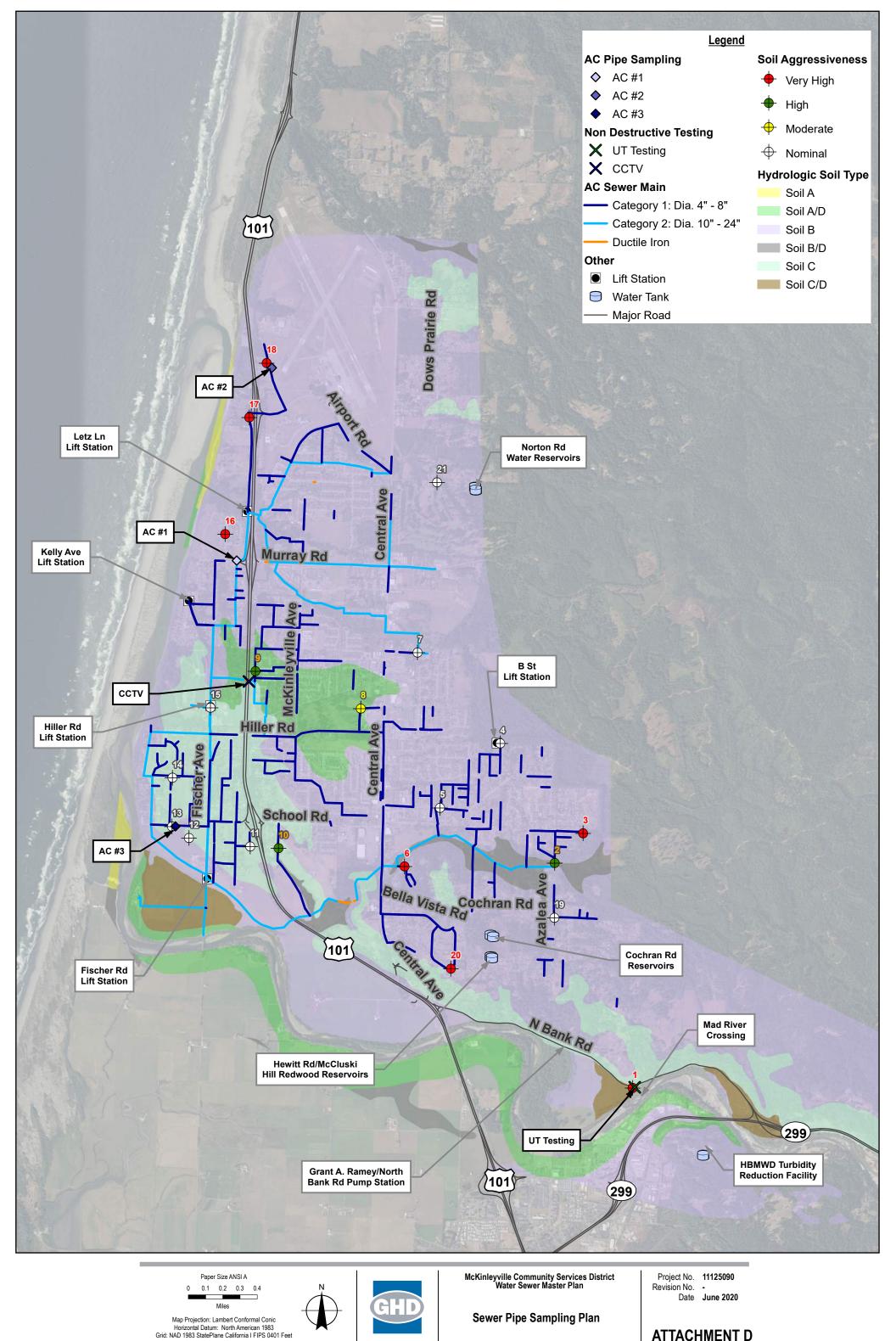






Date Jan 2020

Sewer Soil Sampling Site Plan



DAILY OBSERVATION REPORT

TITLE AN	ib Loon								DATE:				
MCSD – Work Plan Phase 3B 4/14/20													
			YES	NO	IF NO, V	VHY NOT	ī:						
, <u>,</u>	.Wo	ORKING?	Х										
Status													
Sta		HER CONDITIONS						SITE OBSERVATION HOURS:					
		FOG RAIN			EAR EAR			10:40 – 12:30					
					YES	NO	REMARKS:						
SUPERINTENDENT ON SITE?						Х							
nts	ANY SL	JBCONTRACTOF	RS ON SIT	E?		Х							
Points	EQUIP	MENT ONSITE?			Х	X (1) MCSD F-250, (1) MCSD F-250 W/TRAILER, BACK HOE 580 SUPER-M, (1) MCSD VAC TRUCK							
Check	VISITO	RS ONSITE?				X							
S S		LTS CURRENT?					NA NA						
FOR ONGOING WORK?													
	MEETIN	NGS HELD?			Χ		QUICK UPDATE	ON WHAT WAS DONE BEFORE	E I ARRIVED AND WHAT THE PLAN IS				
WORK O	BSERVE	D/DEFICIENCIES	S NOTED/	SAFETY I	ISSUES D	ISCUSSI	ED/MATERIAL TESTS A	AND RESULTS:					
Sche Activity N													
10:	40 ARRIVED AT AC #3 ON SCHOOL ROAD. SETH, CHRIS, CHRIS, AND LANCE ON-SITE. PIPE IS READY FOR SNAPPING/CRUSHING AS THE TRENCH IS DUG OUT AND SHORED.												
10:	50	SOIL SAMPLE COLLECTED FROM EXCAVATED PILE FROM DIGGING UP TRENCH. SOIL SAMPLE STORED IN ZIP-LOCK AND LABELED AC #3, SCHOOL ROAD, 4/14/2020 10:50AM.											
10:	50	SETH AND CHRIS PLUG THE UPSTREAM PIPE WITH A PRESSURIZED AIR PLUG VALVE.											
11:	00	UPSTREAM PIPE IS PLUGGED, AND THE DOWNSTREAM PIPE IS READY TO BE SNAPPED.											
11:	00		۱ HTIV	JSING	THIS	TOC	L, AS THE TF	THE PIPE WITH A MANNU RENCH WAS NOT WIDE E	JAL PIPE SNAP CUTTER. NOUGH TO EXPAND AND				
11:	10	CHRIS O	FF-SI7	TE TO	RETF	RIEVE	THE HYDRA	ULIC PIPE SNAP CUTTER	₹.				
11:	30	CHRIS BA	ACK C	N-SIT	E, AN	D ST.	ARTING TO S	ET UP THE HYDRAULIC F	PIPE SNAP CUTTER.				
12:	00	PIPE SUC SCHOOL					D. PIPE BAG	GED AND DUCT TAPED W	V/ LABEL STATING: AC #3				
12:	30	MALIA OF	F-SIT	E									
		IA GONZA	ALES					4/14/2 DATE	2020				

DAILY OBSERVATION REPORT

TITLE AN	ND LOCA	TION:		MCS	D – W	ork P	lan Phase 3B		DATE: 4/15/20				
			YES	NO	IF NO, V	VHY NOT	Ī:						
40	.We	ORKING?	X										
Status								1					
Sta	WEATH	IER CONDITION	S:					SITE OBSERVATION HOURS:					
		FOG RAIN			LEAR			9:00 - 10:30					
	PM:	FOG RAIN	I OV	C CI	LEAR								
					YES	NO	REMARKS:						
ıts		JBCONTRACTOR		r=2		X							
Check Points		MENT ONSITE?	10011011	ı L:	X		(2) MCSD F-250), (1) MCSD F-250 W/TRAILER					
ᇫ		RS ONSITE?				X	,						
)ec	AS-BUI	LTS CURRENT?					NA						
ਹ		TTALS APPROVE					NA	NA					
		NGS HELD?	•		Х		QUICK UPDATE	E ON WHAT WAS DONE BEFORE	E I ARRIVED AND WHAT THE PLAN IS				
WORK C	BSERVE	D/DEFICIENCIE	S NOTED	/SAFETY	ISSUES D	ISCUSSI	ED/MATERIAL TESTS	AND RESULTS:					
Sche	edule	OBSERVATION											
	9:00 ARRIVED AT AC #2 ON LYCOMING AVE. SETH, CHRIS, AND LANCE ON-SITE. PIPE IS READY FOR SNAPPING/CRUSHING AS THE TRENCH IS DUG OUT AND SHORED.												
9:	15	SOIL SAN	MPLE	COLL	ECTE	D AR	OUND PIPE. :	STORED IN ZIP-LOCK BAC	G AND LABELED: AC#2,				
	LYCOMING AVENUE, 4/15/2020 9:15 AM.								N. I.O. V.A.I. V.E.				
9:	25												
9:								OWNSTREAM PIPE IS REA					
9:4	45								JLIC PIPE SNAP CUTTER.				
10:	:00	LYCOMIN						GED AND DUCT TAPED W	W LABEL STATING: AC #2				
10:	:30	MALIA OF	FF-SIT	Έ									
		IA GONZ	ALES					4/15/2	2020				
I	SITE O	BSERVER		· <u></u>				DATE	_				

DAILY OBSERVATION REPORT

TITLE AND LOCATION: MCSD – Work Plan Phase 3B								DATE: 4/16/20 & 4/17/2020	
			YES	NO	IF NO, WHY NOT:				
Status	.We	ORKING?	Х						
	WEATH	WEATHER CONDITIONS:					\$	SITE OBSERVATION HOURS:	
0,	AM:	FOG RAIN	OVO	C CI	EAR			4/16: 1:30 – 2:00 PM	
	PM:	FOG RAIN	OVO	C CI	LEAR			4/17: 5:30 – 7:45 AM	
					YES NO REMARKS:				
	SUPER	SUPERINTENDENT ON SITE?							
nts	ANY SU	ANY SUBCONTRACTORS ON SITE?				Х			
Points	EQUIP	EQUIPMENT ONSITE?					(2) MCSD F-250; (1) MCSD F-250 W/PORTABLE LIGHT GENERATOR TRAILOR; (1) PRIVATE VEHICLE		
	VISITO	SITORS ONSITE?				Х			
Check	AS-BUI	BUILTS CURRENT?					NA		
ပ		UBMITTALS APPROVED FOR OR ONGOING WORK?					NA		
		EETINGS HELD?					QUICK UPDATE	ON WHAT WAS DONE BEFOR	E I ARRIVED AND WHAT THE PLAN IS
MEETINGS HELD? X QUICK UPDATE ON WHAT WAS DONE BEFORE I ARRIVED AND WHAT THE WORK OBSERVED/DEFICIENCIES NOTED/SAFETY ISSUES DISCUSSED/MATERIAL TESTS AND RESULTS:									
Schedule OBSERVATIONS/LOCATIONS:									
ACTIVITY NO/Time ARRIVATED AT AC #1 ON MURRAY ROAD. LANCE ON-SITE. TRENCH AND SHORE DONE. PIPE									AND SHORE DONE PIPE IS
4/16/2020 EXPOSED. NO CUTTING TODAY SINCE TOOK ALL DAY TO FIND PIPE - TRENCHED IN MU									
		LOCATIONS TO FIND THE PIPE.							
		SOIL SAMPLE COLLECTED FROM EXCAVATED PILE. STORED IN ZIP-LOCK BAG AND LABELED: AC							
4/16/		#1, MURRAY ROAD, 4/16/2020 1:30 PM.							
2:00		MALIA OFF-SITE							
4/17/	2020	ARRIVED AT AC #1 ON MURRAY AVE. ERIK, CHRIS, AND LANCE ON-SITE. HYDRAULIC PIPE SNAP							
6:00 AM		CUTTER ALREADY WRAPPED AROUND PIPE AND READY FOR SNAPPING/CRUSHING.							
4/17/ 6:10		ERIK CONTACTED SETH AND CHRIS TO TURN PUMPS OFF AT LETZ LANE LIFT STATION.							
4/17/2020		JAMES ON-SITE							
6:20									
		LANCE AND CHRIS IN TRENCH. PIPE SUCCESSFULLY SNAPPED BY THE HYDRAULIC PIPE SNAP							
6:30 AM CUTTER. 4/17/2020 AND CUER AND CUE							NICAL COLIDINA ADADTED		
7:00 AM LANCE AND CHRIS INSTALLING NEW PVC PIPE AND STEI						IPE AND STEEL MECHAI	NICAL COUPLING ADAPTER.		
4/17/		PIPE SUCESSFULLY PUT BACK TOGETHER.							
7:15 AM A/47/2020									
7:30		PIPE BAC	GGED	AND DUCT TAPED W/ LABEL STATING: AC #1 MURRAY ROAD, 4/17 6:30 AM.					
4/17/2020 MALIA OFF-SITE. STOPPING BY MCSD OFFICE TO COLLECT SOQ FOR 4.5MG RESERV							OR 4.5MG RESERVOIR		
7:45 AM PROJECT.									
MALIA CONZALEO									
MALIA GONZALES 4/17/2020								2020	
SITE OBSERVER DATE									



April 29, 2019

VL Project No. 20017

Mr. Jeff Knauer GHD 6001 Shellound Street, Suite 850 Emeryville, CA 94608

Re: Laboratory Testing of AC Pipe Samples

McKinleyville, California

Dear Mr. Knauer:

Voss Laboratories, Inc. has completed laboratory testing of materials from the above referenced project. The purpose of the testing was to determine material properties and provide this information to assist future remedial work, etc. This report includes a description of laboratory procedures and test results.

LABORATORY TESTING

Visual Examination/ Dimensional Measurement of Samples

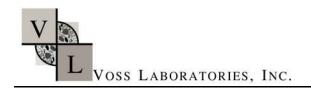
The following examination and/or measurements were performed on each AC sample:

- i) Visual inspection of pipe section for defects, deposits, and other visible anomalies. Each sample was photographed in the as-received condition.
- ii) Measurement of the length and inside diameter of the AC samples. Wall thickness measurements were made at 8 locations evenly spaced around the circumference.

A summary sheet containing photographs and pertinent data is compiled for each AC pipe sample and included in Appendix A. A summary of measurements is shown in Table 1.

Cross Sectional Hardness Assessment

At eight locations evenly spaced around the circumference a series hardness tests were performed from the interior to the exterior of the pipeline cross section. Testing was performed at 0.10 inch increments. A shore D durometer was used for these measurements. The intent of this testing is to estimate the depth of the softer/weaker material on both the interior and exterior surfaces of each pipe sample. The test gives an empirical number from 0 to 100. The higher the number the harder the material. Degraded area was classified of having a hardness value less than 85. A summary of results is shown in Table 2.



VL Project No. 20017 April 29, 2020 PAGE 2

pH Cross Sectional Evaluation

A section of pipeline is trimmed to create a smooth surface for staining. The entire cross section of the pipe sample was stained. At eight locations evenly spaced around the circumference the areas with pH lower than 9.5 were measured at the interior and exterior of the pipe surfaces at each of the eight locations. Results are summarized in Table 3 with complete tabulated results shown in Appendix B. Photos of stained samples are shown in the Appendix A summary sheets.

Crushing Strength of AC Samples

The crushing strength testing on the submitted samples was determined in accordance with ASTM C 500 – *Standard Test Methods for Asbestos-Cement Pipe*. A section of pipe is place in a saddle and loaded along the length to determine the crushing strength. The test method specifies a 12-inch-long section of pipe to be used. Some pipe sections that were submitted for testing were shorter than 12 inches. Short samples were tested using the same test method. Results are summarized in Table 4.

If you have any questions, please call.

Very truly yours,

VOSS LABORATORIES, INC.

Thomas A. Voss. Civil Engineer

Thom A. Vos



VL Project No. 20017 April 29, 2020 PAGE 3

	TABLE 1: AC PIPE SAMPLE DIMENSIONAL MEASUREMENTS											
Sample ID	Location											
AC 1	MURRAY ROAD	13.0	9.93	1.07								
AC 2	LYCOMING	12.0	6.08	0.53								
AC 3	SCHOOL ROAD	12.75	8.00	0.63								

	TABLE 2: AC PIPE SAMPLE HARDNESS												
Sample ID	Location	Average Wall Thickness (in.)	Interior Hardness Depth (<85 Shore D Reading) (in.)	Exterior Hardness Depth (<85 Shore D Reading) (in.)									
AC 1	MURRAY ROAD	1.07	0.20	N/A									
AC 2	LYCOMING	0.53	0.10	N/A									
AC 3	SCHOOL ROAD	0.63	0.20	N/A									

^{*} Exterior hardness measurements were consistently greater than 85 Shore D



VL Project No. 20017 April 29, 2020 PAGE 4

	TABLE 3: AC PIPE SAMPLE pH TESTING												
Sample ID	Location	Average Wall Thickness (in.)	Max. Interior Degraded Depth (in.)	Max. Exterior Degraded Depth (in.)									
AC 1	MURRAY ROAD	1.07	0.30	0.02									
AC 2	LYCOMING	0.53	0.22	0.04									
AC 3	SCHOOL ROAD	0.63	0.36	0.03									

	TABLE 4: AC PIPE SAMPLE CRUSH STRENGTH TESTING											
Sample ID	Location	Internal Diameter (in.)	Average Wall Thickness (in.)	Tested Pipe Length (in.)	Ultimate Load (lbs)							
AC 1	MURRAY ROAD	9.93	1.07	11.9	11,300							
AC 2	LYCOMING	6.08	0.53	11.3	3,200							
AC 3	SCHOOL ROAD	8.00	0.63	11.2	2,400							

^{*}Test results from pipe sections shorter than 12 inches are not in accordance with ASTM C500



Appendices

- A. Visual Examination Sheets
- B. pH Cross-Section Tabulated Results



VL Project No. 20017 April 29, 2020 Page A-1

Appendix A

Visual Examination Sheets



AC Pipe Data Sheet

Client: GHD Internal Dia. 9.93" Pipe Length (in.): 13.0"

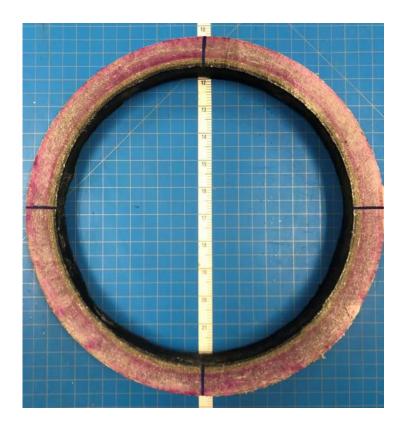
Date: 4/29/20 Wall Thick. 1.07"

Pipe ID: #1 Ext. Corrosion 0.02" Int. Corrosion 0.30"

Location Murray Road Crush Test Length 11.9" Crushing Strength 11,300lbs







The sample ends were fractured as received. The ends were sawcut and stained.



AC Pipe Data Sheet

Client: GHD Internal Dia. 6.08" Pipe Length (in.): 12.0"

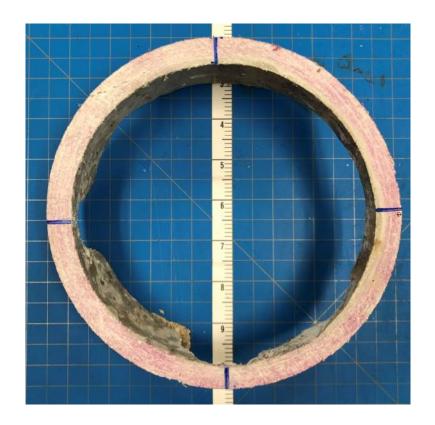
Date: 4/29/20 Wall Thick. 0.53"

Pipe ID: #2 Ext. Corrosion 0.04" Int. Corrosion 0.22"

Location Lycoming Road Crush Test Length 11.3" Crushing Strength 3,200lbs







The sample ends were fractured as received. The ends were sawcut and stained.



AC Pipe Data Sheet

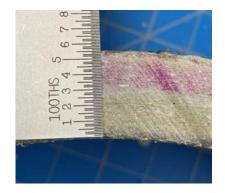
Client: GHD Internal Dia. 8.00" Pipe Length (in.): 12.8"

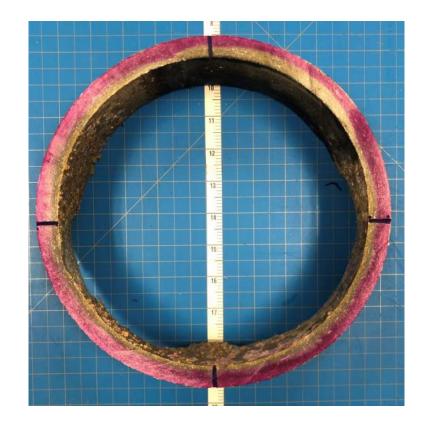
Date: 4/29/20 Wall Thick. 0.63"

Pipe ID: #3 Ext. Corrosion 0.03" Int. Corrosion 0.36"

Location School Road Crush Test Length 11.2" Crushing Strength 2,400lbs







The sample ends were fractured as received. The ends were sawcut and stained.



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Appendix B

pH Cross-Section Tabulated Results

					pH Cross Sectional Inner/Outer (in)																
VL Sample #	PIPE DIAMETER	LOCATION	Length of pipe (in)																		
				12	:00	1:	30	3:	00	4:	30	6:	00	7:	30	9:	00	10	:30	Max Interior	Max Exterior
1	10	Murray Road	13.0	0.30	0.00	0.24	0.01	0.26	0.02	0.24	0.00	0.28	0.00	0.22	0.00	0.26	0.01	0.28	0.00	0.30	0.02
2	6	Lycoming Road	12.0	0.22	0.01	0.14	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.01	0.12	0.00	0.22	0.04
3	8	School Road	12.8	0.20	0.01	0.15	0.03	0.23	0.00	0.24	0.00	0.30	0.00	0.36	0.03	0.25	0.00	0.24	0.00	0.36	0.03





Appendix B – Asset Register)

UniqueID Length (t) Dia (in) Material method Laterals Off Valves Instalt Cost (\$) (\$) Type Customer Type of Critical Customer	ProxToRoad (ft) RoadType Count Building ains (ft) Storm Ditch Storm Feature Prox To ESA	Critical Customers Proximity to and Types of Roads Proximity to Other Utilian SA Type of ESA CO2 CO1 CO3 CO1 CO3 CO1 CO3 CO5	ties Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs Land Use	CO1 CO2 CO3 CO5 Health Loss of Cost of Regulator Dominant Ambiguitor Risk Souther Service Gallary & Import COE LIFE Core Reliferator Toron Bloomy TRI CAE REE
Unique D Length (E) Dia (in) Material method Laterials Off Valves Install Cost (S) (S) Type Customers Type of Critical Customer Laterials Off Valves Install Cost (S) (S) Type Customers Type of Critical Customer Laterials Off Valves Install Cost (S) (S) Type Customers Type of Critical Customer Laterials Off Valves Type Customers Type of Critical Customer Laterials Cost (S) Cost	0 Local 50 11.7352555 0 10000 10000 10 148.862066 Local 50 0 10000 10000 10000 10	257 Jype de 257 252 252 252 252 252 252 252 252 252	2 1 1 1 2 3 4 0 1 1 1 1 3 4 4 0 1 1 1 1 1 3 4 4 0	
86 366.8346046 8 ACP HDD 1 0 1 #NNA \$ 385,946.20 RL 10000 No Critical Facility within 250 Fe 136 114.5252655 8 ACP Burst 0 0 0 \$ 23,707.56 \$ 49,845.15 RL 0 Valsef-Scillies 546 68.73326252 8 ACP Burst 1 1 1 \$ 2,582.75 \$ \$ 45,003.21 RL 10000 No Critical Facility within 250 Fe	et. 0 Highway 50 10.95357323 0 10000 10000 10 106.0752931 Local 50 0 10000 10000 10 st. 0 Local 50 3.019253678 0 10000 10000 10	10000 N/A 1 4 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 2 3 4 0 1 1 1 1 3 4 4 0 2 1 1 1 3 4 4 0 2 1 1 1 3 4 4 0	Proximity to and Types of Roads, Proximity to 2 4 3 4 2 4 4 16 1 5 1 10 40 Buildings 2 3 5 4 1 5 4 20 1 5 1 10 40 Critical Customers 2 3 4 4 2 4 4 16 1 5 1 10 40 Critical Customers 4 2 3 4 4 2 4 4 16 1 5 1 10 40 Proximity to Buildings
779 97.76269012 B ACP Burst 2 0 2 \$ 93.506.75 \$ 196.602.14 CS 10000 N Critical Facility within 250 F o 79 227.23180348 B ACP HDD 2 0 1 #WA \$ 35.504.620 PF 10000 N C Critical Facility within 250 F o 95 195.6551203 B ACP Burst 1 0 2 \$ 51.099.82 \$ 107.457.37 RL 10000 N C Critical Facility within 250 F o 155.4620.4499844 B ACP Burst 0 1 1 \$ 90.033.15 \$ 50.611.469 PF	et. 0 Highway 50 27.62780106 0 37.70331408 38.282433 10 et. 3.9500128 Local 50 17.72848154 0 21.25353037 21.2870086 10	10000 N/A	2 1 1 1 2 3 4 0 2 1 1 1 2 2 3 0 2 1 1 1 1 2 3 4 0	4 3 4 4 2 4 4 16 1 5 1 10 40 Proximity to Buildings, Land Use 3 4 3 3 2 4 4 16 1 5 1 9 36 Proximity to Buildings, Land Use 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Proximity to Buildings
155 420.4499844 8 ACP Burst 0 1 1 \$ 96.033.15 \$ 206.114.69 PF 10000 No Critical Facility within 250 Fe 190 863.8759922 6 ACP Dixect 3 0 \$ \$22.7190.0 \$ 48.692.169 CS 125.510138 Fire Station 250 Fe 227 750.7100827 6 ACP Burst 0 0 3 \$ 164.064.68 \$ 344.464.53 RL 100000 No Critical Facility within 250 Fe 280 761.6614999 6 ACP Burst 1 0 1 \$ 160.955.55 \$ 33.820.089 RL 100000 No Critical Facility within 250 Fe	0 Local 50 18.19473664 0 0 1.725957072 10 st. 0 Local 50 0 0 173.2496306 173.2380753 10	0000 N/A 4 1 1 3 3 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1	2 1 1 1 2 2 3 0 2 1 1 1 3 4 3 0 1 1 1 2 2 3 0	3 4 3 3 2 4 4 16 1 5 1 9 36 Proximal to and Types of Roads 4 3 4 3 2 4 4 16 1 5 1 9 36 Critical Roads, and Use 4 3 4 3 2 4 4 16 1 5 1 9 36 Proximal to Buildings 2 2 5 3 1 5 4 20 1 5 1 9 36 Proximal to Buildings 3 1 5 4 20 1 5 1 9 36 Critical Roads
329 553-68132 8 ACP Burst 7 0 3 \$ 150,948.90 \$ 317,37007 RL 10000 No Critical Facility within 250 Fe 381 394,7878503 6 ACP Burst 1 0 0 1 \$ 86,136.72 \$ 181,102.46 RE 10000 No Critical Facility within 250 Fe 389 770,5361634 6 ACP Burst 19 0 6 \$ 198,699.78 \$ 417,577.06 CS 97,26430823 Community Center	Ht. 0 Local 50 18.88218727 0 10000 10000 10 Ht. 0 Local 50 1.48269917 0 10000 10000 10 0 Local 50 8.493823805 8.566075911 0 18.826974515 10	0000 N/A 1 1 1 3 1 1 1 0000 N/A 1 1 1 3 3 1 1 1 1 1 3 1 1 1 1 1 3 3 1 1 1 1 1 1 3 3 1 1 1 1 1 1 1 3 3 3 1 1 1 1 1 1 1 3 3 3 1	2 1 1 1 2 3 4 0 2 1 1 1 3 4 3 0 2 1 1 1 2 2 3 0	2 3 3 4 2 4 4 16 1 5 1 9 36 Proximity to Buildings 2 2 3 4 3 2 4 4 16 1 5 1 9 36 Proximity to Buildings 4 3 4 3 2 4 4 16 1 5 1 9 36 Proximity to Buildings 5 6 Childial Costomers, Land Use
990 1540.644162 8 ACP Burst 14 0 3 \$ 500.913.4 \$ 632.6713.9 RL 10000 No Critical Facility within 250 Fe 409 6886.269931 8 ACP Burst 1 1 0 2 \$ 153.352.7 \$ 322.423.7 RL 237.0414168 School 427 570.2344811 8 ACP Burst 12 0 1 \$ 130.237.9 \$ 273.852.2 RL 10000 No Critical Facility within 250 Fe 438 56.05972233 6 ACP Burst 5 0 1 \$ 21.270.3 \$ 447.203.9 (0 Local 50 32.26293494 0 0 9.076979765 10 at. 0 Local 50 22.9305985 0 0 31.6536303 10	10000 N/A	2 1 1 1 2 3 4 U 2 1 1 1 2 2 3 0 2 1 1 1 1 2 3 4 0 2 1 1 1 2 3 4 0	2 3 3 4 2 4 4 16 1 5 1 9 36 Prolimpt by Buildings 2 3 3 4 3 2 4 4 16 1 5 1 9 36 Chicisi Customers 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Prolimpt by Buildings 4 3 4 3 2 4 4 16 1 5 1 9 36 Prolimpt buildings
576 398.293524 8 ACP Burst 21 0 1 \$ 100.046.76 \$ 210.348.31 RL 184.9797339 School Burst 3 0 1 \$ 103.725.11 \$ 210.004.5 RM 62.075882 Food Bank/Family Services 699 763.7635030 8 ACP Burst 0 0 1 \$ 184.132.75 \$ 345.088.73 C 346.088.73 C 346.08	7.946281629 Local 50 13.33880393 7.591214154 29.59367067 196.7161727 10 25.13150288 Local 50 47.31060655 41.05700967 0 4.702324395 10 14.05449283 Local 50 28.39855339 11.49394836 0 37.16904256 10	0000 N/A 4 1 1 2 1 0000 N/A 4 1 1 3 3 3 0000 N/A 4 1 1 3 3 3	1 1 1 1 1 2 3 4 0 2 1 1 1 1 1 2 0 2 1 1 1 2 2 3 0	2 2 4 4 1 4 16 1 5 1 9 36 Criticial Customers, Proximity to Buildings 2 3 4 3 2 4 4 16 1 5 1 9 36 Criticial Customers 3 3 6 Criticial Customers 4 3 4 3 2 4 4 16 1 5 1 9 36 Criticial Customers 4 3 4 3 2 4 4 16 1 5 1 9 36 Criticial Customers, Land Use
618 312.4739867 6 ACP Burst 0 0 1 \$ 68.744.69 \$ 144.555.71 RL 10000 NO Critical Facility within 250 Fe 630 288.5845789 6 ACP Burst 2 0 1 \$ 67.111.25 \$ 141.101.41 RL 28.408881 School 675 645.610449 8 ACP Burst 1 0 1 \$ 139.241.47 \$ 222.755.18 RE 10000 NO Critical Facility within 250 Fe 707 2789.1711345 8 ACP Burst 0 0 1 \$ 56.8496.7 \$ 123.310.52 RL 10000 NO Critical Facility within 250 Fe	0 Local 50 34.51399969 0 0 10000 10 st. 0 Local 50 20.19054145 0 10000 10000 10	10000 N/A	2 1 1 1 3 4 3 0 2 1 1 1 1 1 2 0 2 1 1 1 1 2 3 4 0	2 3 4 3 2 4 4 16 1 5 1 9 36 Prointly to Buildings 2 3 4 3 2 4 4 16 1 5 1 9 36 Prointly to Buildings 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Prointly to Buildings 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Prointly to Buildings 3 4 5 4 4 16 1 5 1 9 36 Prointly to Buildings 3 4 5 4 5 1 9 36 Prointly to Buildings 3 4 5 1 9 36 Prointly to Buildings 3 4 5 1 9 36 Prointly to Buildings 3 5 1 9 36 Prointly to Buildings 3 4 5 1 9 36 Prointly to Buildings 3 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1
707 256 177 1-30 5 APP Burst 4 0 2 \$ 144,188.14 \$ 3,005,155.56 RL 100,000 No Circled Facility within 250 Fe 770 6 410.440051 8 ACP Burst 5 0 1 \$ 92,961.09 \$ 156,450.09 RL 100,000 No Circled Facility within 250 Fe 762 266,8555521 8 ACP Burst 2 0 1 \$ 82,261.09 \$ 156,450.09 RL 100,000 No Circled Facility within 250 Fe 762 266,8555521 8 ACP Burst 2 0 1 \$ 82,473.88 \$ 1727.44.87 RL 10000 No Circled Facility within 250 Fe	at. 0 Local 50 23.1666454 0 10000 10000 10 at. 0 Local 50 9.900876477 0 10000 10000 10	0000 N/A 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 2 3 4 0 2 1 1 1 2 3 4 0 1 1 1 2 3 4 0	2
765 271.3614378 8 ACP Burst 6 0 0 \$ 59.773.06 \$ 125.672.86 RL 10000 No Critical Facility within 250 Fe 877 0 371.632231 6 ACP Burst 3 1 1 \$ 88,612.98 \$ 186,308.78 CS 10000 No Critical Facility within 250 Fe 807 418.8838018 6 ACP Burst 1 0 0 3 \$ 102.3296 \$ 2 215,144.08 RL 10000 No Critical Facility within 250 Fe	et. 0 Local 50 7.875783007 0 10000 10000 10 et. 7.886558402 Local 50 22.11265556 7.279810656 0 4.812420751 10	0000 N/A 1 1 1 3 2 0000 N/A 1 1 1 3 1 0000 N/A 1 1 1 3 3	2 1 1 1 2 3 4 0 2 1 1 1 2 2 3 0 2 1 1 1 2 3 4	2 3 3 4 2 4 4 16 1 5 1 9 36 Proximity to Buildings 4 3 4 3 2 4 4 16 1 5 1 9 36 Land Use 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Proximity to Buildings
897 188.345525 6 ACP Burst 6 0 2 \$ 52.254.9 \$ 108,805.19 RL 21,37800569 Waterfacilities 939.424.0137503 4 ACP Burst 0 1 0 \$ 92,498.81 \$ 194,476.74 CS 10000 No Critical Facility within 259 Fe 1013 600.65600517 4 ACP Burst 3 0 1 \$ 129,334.65 \$ 271,592.51 CS 10000 No Critical Facility within 259 Fe 1027 566.6278316 8 ACP Burst 18 0 1 \$ 133,091.65 \$ 278,925.55 RL 00000 No Critical Facility within 259 Fe	et. 9.868114559 Local 10 48.89185095 26.70965433 0.791007036 13.81052736 10 et. 0 Local 10 33.89574718 3.487444976 0 6.744074107 10	10000 N/A	1 1 1 1 2 2 3 U 2 1 1 1 1 1 2 0 2 1 1 1 1 1 2 0 2 1 1 1 2 3 4 0	2 2 5 3 1 5 4 20 1 5 1 9 36 Chicial Customers 4 3 4 3 2 4 4 16 1 5 1 9 36 Land Use 4 3 4 3 2 4 4 16 1 5 1 9 36 Land Use 2 3 3 4 2 4 4 16 1 5 1 9 36 Land Use 2 3 3 6 70 cm/pt V 5 Usidings
1038 704.2829758 6 ACP Burst 0 0 1 \$ 148,73.73 \$ 312,586.51 CS 0.855/5840/G Grocery 1042 1371,545388 6 ACP Direct 2 1 2 \$ 360,086.35 \$ 757,081.54 RA 8,965309878 WaterFacilities 1096 977,6226641 8 ACP Burst 4 0 2 \$ \$214,777.89 \$ 451,546.94 RE 10000 No Critical Facility within 250 Fe	0 Local 50 0.850443994 0 0 2.006419266 10 0 Local 50 20.73007331 10000 10000 10000 168.7091 et. 0 Local 50 16.86587496 0 10000 10000 101	0000 N/A 2 1 1 3 3 3 11558 Permanent River 5 1 1 1 1 1 1 10000 N/A 1 1 1 1 3 1 1	2 1 1 1 1 3 4 3 0 1 1 1 1 2 2 3 0 2 1 1 1 2 3 4 0	4 3 4 3 2 4 4 16 1 5 1 9 36 Proximity to Buildings, Land Use 1 2 5 3 1 5 4 20 1 5 1 9 36 Proximity to Buildings Land Use 2 3 3 3 4 2 4 4 16 1 5 1 9 36 Proximity to Buildings
1114 148 2026533 6 ACP Burst 13 0 1 \$ 43,237.34 \$ 9,0,90.51 FM 231,0236308 School 1129 1467,067532 4 ACP Direct 0 2 2 \$ 388,766.88 \$ 187,1738.237 CS 1064,711593 Convenience 1202 339.4194342 8 ACP Burst 1 0 1 \$ 75,59.92 \$ 159,495.26 RL 10000 No Critical Facility within 250 Fe 1228 35,42699098 2 ACP Burst 0 0 1 \$ 12,227.45 \$ 25,70.62 PF 0 Fe Station	30.18031131 Local 10 36.69530947 0 0 3.737606405 10 at. 0 Local 50 17.71237697 0 10000 6.520533934 10	0000 N/A 4 1 1 3 2 0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 1 3 2 0000 N/A 5 1 1 2 1	2 1 1 1 2 2 3 0 2 1 1 1 1 1 2 0 2 1 1 1 1 2 3 4 0	2 3 4 3 2 4 4 16 1 5 1 9 36 critical Customers 4 4 3 4 3 2 4 4 16 1 5 1 9 36 critical Customers 2 2 3 3 4 2 4 4 16 1 5 1 9 36 Formity to Buildings 3 3 3 5 3 1 5 4 20 1 5 1 9 36 Critical Customers
129 186.4973275 8 ACP Burst 0 0 0 \$ 38,604.95 \$ 81,166.90 IG 10000 No Critical Facility within 250 Fe 142 513.4991915 6 ACP Burst 2 0 1 \$ 110,945.67 \$ 233,263.28 RL 485279444 Child Care 158 683,3714668 8 ACP Burst 5 0 2 \$ 145,346.98 \$ 305,588.15 IG 140,04408 Child Care	et. 0 Local 50 44.34721829 84.33469922 10000 10000 10 10.72898467 Local 50 44.82777563 90.28261396 10000 10000 10 0 Local 50 47.68858204 87.09888569 10000 10000 10	0000 N/A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 3 0 1 1 1 1 1 1 2 0 1 1 1 1 1 2 2 3 0	3
159 746 58/03054 8 ACP Burst 4 0 1 \$ 161,932.25 \$ 340,508.70 IG 10000 No Critical Facility within 250 Fe 200 760,0800435 8 ACP Burst 10 0 1 \$ 168,336.57 \$ 333,327.64 RL 10000 No Critical Facility within 250 Fe 264 \$16,8620625 6 ACP Burst 0 0 1 \$ 70,053.98 \$ 147,288.49 RL 100000 No Critical Facility within 250 Fe	at. 1.224468527 Local 50 17.67257605 10000 10000 10000 10 at. 10000 N/A 50 2.026493284 10000 10000 10000 10	0000 N/A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 3 0 1 1 1 1 2 3 4 0 1 1 1 1 3 4 3 0	4 2 4 3 1 4 4 16 1 5 1 8 32 Land Use 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 3 4 3 1 4 4 16 1 5 1 8 32 Proximity to Buildings
653 500.74(27294 8 ACP Burst 2 0 3 \$ 119,853.24 \$ 251,991.43 RL 10000 No Critical Facility within 250 Fe 678 956.812354 8 ACP Burst 0 0 2 \$ 207,646.16 \$ 486,576.05 RE 67,2068466 Grocey 1 693 69,44984071 4 ACP Burst 6 1 0 \$ 23,767.77 \$ 489,571.37 RE 10000 No Critical Facility within 250 Fe 736 514.4619479 8 ACP Burst 0 1 1 \$ 17,478.93 C \$ 2 47,070.33 4 RL 10000 No Critical Facility within 250 Fe	1.284672541 Local 50 17.85452894 6.787840764 16.97349301 16.989576 10 st. 1.504357478 Local 10 2.214386988 5.397459995 10000 10000 10	0000 N/A 1 1 1 2 1 0000 N/A 1 1 1 2 2 0000 N/A 1 1 1 2 2 0000 N/A 1 1 1 2 1 0000 N/A 1 1 1 2 1	1 1 1 1 2 3 4 U 1 1 1 1 2 3 4 0 1 1 1 1 3 4 3 0 1 1 1 1 2 3 4 0	2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 3 2 3 4 3 1 4 4 16 1 5 1 8 32 Proximity to Buildings 4 3 1 4 4 16 1 5 1 8 32 Proximity to Buildings 5 2 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 6 3 Proximity to Buildings 6 1 8 3 Proximity to Buildings 7 8 9 Proximity to Buildings 8 1 8 9 Proximity to Buildings 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
738 613.6470788 8 ACP Burst 2 0 2 \$ 138.224.94 \$ 290.17.05 FL 10000 No Critical Facility within 250 Fe 745 300.3191778 8 ACP Burst 1 0 0 \$ 82.756.07 \$ 133,965.66 RL 10000 No Critical Facility within 250 Fe 746 276.6706168 8 ACP Burst 1 0 1 \$ 63,224.82 \$ 133.065.33 RL 10000 No Critical Facility within 250 Fe	kt. 3.785103033 Local 50 20.71705788 11.88846602 10000 110.8112728 10 kt. 7.759734397 Local 50 11.92003503 9.605187347 10000 228.7294867 10 kt. 0 Local 50 21.45889841 9.983912317 10000 10000 10	0000 N/A 1 1 1 2 1 0000 N/A 1 1 1 1 2 1 0000 N/A 1 1 1 1 2 1 1 0000 N/A 1 1 1 2 1	1 1 1 1 2 3 4 0 1 1 1 1 2 3 4 0 1 1 1 1 2 3 4 0	2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings
990 26:51314114 6 ACP Burst 12 0 1 \$ 17,606.68 \$ 37,022.57 BL 33,64029734 Walerf-ceillies 1003 275,6586060 5 ACP Burst 5 0 0 \$ 60,123.32 \$ 128,246.02.29 RE 10000 No Critical Facility within 250 Fe 1007 7276,2100775 6 ACP Burst 0 1 2 \$ 72,346.88 \$ 152,109.26 CS 10000 No Critical Facility within 250 Fe 1081 822,7533724 6 ACP Burst 2 0 2 \$ 189,245.37 \$ 22,763.39 RL	xt. 10.93749249 Local 50 19.45575872 9.691260918 34.45613375 40.7229649 10 xt. 39.9077152 Local 50 14.51584931 6.959616331 17.00652766 17.00455916 10	0000 N/A 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 2 0 1 1 1 1 2 3 4 0 1 1 1 1 1 2 2 3 0	2 1 5 2 1 5 4 20 1 5 1 8 32 Chitical Containers 2 2 2 3 4 1 4 4 16 1 5 1 8 32 Land Use Buildings 4 2 4 3 1 4 4 16 1 5 1 8 32 Land Use 2 3 4 3 1 4 4 16 1 5 1 8 32 Land Use 2 3 4 3 1 4 4 16 1 5 1 8 32 Land Use 4 3 Chitagon Chitago
1113 S94 6883755 6 ACP Burst 33 0 3 \$ 155,114.63 \$ 328,234.79 CS 18,75817855 Grocery 1179 268,2432686 5 ACP Burst 1 0 2 \$ 66,127.60 \$ 139,033.28 RL 10000 No Critical Facility within 250 Fe 1194 245,6901288 8 ACP Burst 0 0 1 \$ 55,575.85 \$ 17,441.14 RL 10000 No Critical Facility within 250 Fe	11.43986852 Local 50 18.75831211 20.21959269 7.419240111 10.57392504 10 kt. 0 local 50 24.09992969 8.3127976 88.89021911 86.89021911 61 kt. 6.369033124 Local 50 22.19123871 9.327203836 217.6810769 2177.26593 10	0000 N/A 2 1 1 2 2 0000 N/A 1 1 1 2 1 0000 N/A 1 1 1 2 1	1 1 1 1 2 2 3 0 1 1 1 1 1 2 3 4 0 1 1 1 1 2 3 4 0	4 2 4 3 1 4 4 16 1 5 1 8 32 Land Use 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings 2 2 3 4 1 4 4 16 1 5 1 8 32 Proximity to Buildings
1222 555-4053912 4 ACP Burst 0 1 1 \$ 120,227.0 \$ 252,768.2 3 LL 17,3647028 School 181 6,960241983 6 ACP Burst 0 0 0 5 1,828.2 6 \$ 3,344.391 RA 64,7662804 Wasterfacilities 886 127,147644 6 ACP Burst 0 0 1 \$ 30,383.12 \$ 65,047.39 RL 84,64200248 Wasterfacilities 1010 30,302027177 8 ACP Burst 0 0 2 \$ 80,0214.98 \$ 168,655.196 IG 10000 No Critical Facility with 250 Fe	0 Local 10 35.11534328 0 31.36952851 107.458208 10 42.85328405 Local 50 67.5130552 10000 10000 10000 10000 19.16674595 Local 50 84.64293729 10000 10000 10000 10	0000 N/A 4 1 1 3 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 1 2 0 1 1 1 1 1 0 1 1 1 1 1 0	2 3 4 2 2 4 4 16 1 5 1 8 32 DTIGIS CONSTITIES 1 1 5 1 1 5 4 20 1 5 1 7 28 DTIGIS CONSTITIES 2 1 5 1 1 5 4 20 1 5 1 7 28 DTIGIS CONSTITIES 4 1 4 2 1 4 4 16 1 5 1 7 28 DTIGIS CONSTITIES 4 1 4 2 1 4 4 16 1 5 1 7 28 Land Use
1010 3582/11 7 A APP Burst 5 0 1 \$ 100,877.26 2 1 100,087.26 1 100,000 100 100 100 100 100 100 100 1	0 Local 50 60.8881368 10000 10000 10000 10 st. 20.1216467 Major 50 164.7538232 83.26232479 10000 10000 10	0000 N/A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 0	4
281 389.45488655 6 ACP Burst 0 0 0 0 \$ 75.38.79 \$ 158,462.26 RL 185.4985561 WaterFacillies 544 3.28955719 6 ACP Burst 3 0 0 \$ 2.471.03 \$ 5.195.34 CR 10000 No Critical Facility within 250 Fe 607 17.41243817 6 ACP Burst 6 1 1 \$ 18,152.14 \$ 38,164.87 CS 10000 No Critical Facility within 250 Fe	at. 12.46961827 Local 50 107.8038371 150.894712 10000 10000 10 at. 4.619615619 Local 50 111.7765225 19.83362661 10000 10000 10	0000 N/A 4 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 0 1 1 1 1 1 1 0 1 1 1 1 1 1	2 2 4 1 1 4 4 16 1 5 1 6 24 Cincial Customers 4 1 4 1 1 4 4 16 1 5 1 6 24 Land Use 4 2 4 1 1 4 4 16 1 5 1 6 24 Land Use
654 3.489822428 6 ACP Burst 1 0 \$ 1,311.92 \$ 2,758.32 CS 10000 No Critical Facility with 250 Fe 4 25.556,045527 6 ACP Burst 7 0 3 \$ 130,045.17 \$ 2,772.72 F7 RL 10000 No Critical Facility with 250 Fe 90 53.57977099 6 ACP Burst 0 0 2 \$ 2,039,027 \$ 44,005.09 RL 10000 No Critical Facility with 250 Fe 94 51.7051633 6 ACP Burst 1 0 1 \$ 110,918.5 \$ 2,316.783.7 RL 10000 No Critical Facility with 250 Fe	xt. 0 Local 50 22.93139765 0 0 2.084001659 10 xt. 0 Local 50 38.87028098 0 0 34.4628996 10	10000 N/A	1 1 1 1 1 1 0 1 2 2 3 0 2 1 1 1 1 1 1 2 0 0 2 1 1 1 1 1 1 2 0 0 2 1 1 1 1	4 2 4 1 1 4 4 16 1 5 1 6 24 Land Use 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities 2 3 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities
96 277.41993177 6 ACP Burst 4 0 1 \$ 63,993.67 \$ 134,546.68 RE 10000 No Critical Facility within 250 Fe 108 241.4921588 8 ACP Burst 5 0 1 \$ 57,988.88 \$ 121,921.61 RL 10000 No Critical Facility within 250 Fe 113 1713,586073 6 ACP Direct 18 0 4 \$ 459,185.25 \$ 656,460.88 RL 10000 No Critical Facility within 250 Fe	et. 0 Local 50 21.27668149 0 10000 10000 10 tt. 0 Local 50 27.54212497 14.3940289 0 9.154199933 10 tt. 0 Local 50 11.02390879 0 10000 10000 10	0000 N/A 1 1 1 3 1 1 1 0000 N/A 1 1 1 1 3 3 1 1 1 1 1 1 3 3 1 1 1 1 1	2 1 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Childred, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Child Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings
115 239.447598 6 ACP Burst 1 0 2 \$ 59.44730 \$ 124.987595 RL 10000 No Critical Facility within 250 Fe 119 253.5533577 8 ACP Burst 4 0 1 \$ 59.8855 \$ 125.98359 RL 10000 No Critical Facility within 250 Fe 122 616.204715 6 ACP Burst 8 0 3 \$ 145.505.76 \$ 305.925.86 RL 10000 No Critical Facility within 250 Fe	at. 0 Local 50 26.16797344 0 118.2015093 122.9670637 10	0000 N/A 1 1 1 3 3 1 1 1 1 3 3 1 1 1 1 3 3 1 1 1 1 3 3 1 1 1 1 1 3 3 1 1 1 1 1 1 3 3 1	2 1 1 1 1 1 2 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to ther Utilities Proximity to Buildings Proximity to The Utilities, Proximity to Buildings Proximity to The Utilities, Proximity to Buildings Proximity to Table 1 3 2 8 3 2 Proximity to Start Proximity to Start Proximity to Start Proximity and Start Proximity Proximi
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225 SE2.8133555 6 ACP Burst 0 0 1 \$ 119.813.93 \$ 25,908.79 RL 10000 No Critical Facility within 250 Fe 239 207.2825801 6 ACP Burst 2 0 1 \$ 48,481.57 \$ 101,932.50 RL 10000 No Critical Facility within 250 Fe 240 258.6267899 6 ACP Burst 2 0 2 \$ 63,999.87 \$ 134,475.62 RL 10000 No Critical Facility within 250 Fe	st. 9.412636487 Local 50 11.51195774 0 31.50374667 71.21388775 10 st. 0 Local 50 34.47940039 0 0 4.483034346 10 st. 0 Local 50 20.82746061 25.26556482 0 1.388766907 10	0000 N/A 1 1 1 3 1 0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 3 3	2 1 1 1 2 2 3 0 2 1 1 1 1 1 2 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Cliner Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Cliner Utilities 2 2 3 2 3 4 12 1 3 2 8 32 Proximity to Cliner Utilities.
244 657 9007867 6 ACP Burst 4 0 1 \$ 141,511.76 \$ 227,738.73 RL 10000 N O Critical Facility within 250 Fe 249 273,7322896 6 ACP Burst 1 1 1 \$ 67,441.39 \$ 141,756.52 AE 10000 N O Critical Facility within 250 Fe 290 228,1783231 8 ACP Burst 1 0 4 \$ 67,418.91 \$ 141,764.52 RL 10000 N O Critical Facility within 250 Fe 292 188,0705688 6 ACP Burst 1 1 0 \$ 45,259.96 \$ 50,524.17 RL 10000 N O Critical Facility within 250 Fe	H. 10.03589124 Local 50 44.43893458 9.895767214 0 1.523747705 155.3717 H. 1.254724085 Local 50 27.88599516 6.754035333 0 20.63732907 10	0000 N/A 1 1 1 3 3 3 10000 N/A 1 1 1 1 3 3 3 10000 N/A 1 1 1 1 3 3 10000 N/A 1 1 1 1 3 3 3 10000 N/A 1 1 1 1 3 3 3 10000 N/A 1 1 1 1 3 3 3 10000 N/A 1 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 1 1 2 2 3 0 2 1 1 1 1 1 2 0 2 1 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Distributions, Proximity and Proximity and Proximity to Distributions, Proximity and Pr
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358 1190.205041 6 ACP Direct 14 0 2 \$ 308.451.28 \$ 648,518.77 RL 10000 No Critical Facility within 250 Fe 371 550.268462 8 ACP Burst 8 0 1 \$ 123,705.58 \$ 20,800,905.98 RE 10000 No Critical Facility within 250 Fe 374 32.08149575 6 ACP Burst 0 0 1 \$ 11,726.23 \$ 24,655.59 RE 100,000 No Critical Facility within 250 Fe 377 1269.2828574 6 ACP Direct 18 0 1 \$ 331,007.14 \$ 656,942.52 RE 246,2361971 Grocept 246,	at. 0 Local 50 27.5240175 0 10000 10000 10 at. 0 Local 50 21.11100222 0 182.4031847 210.3500269 10	0000 N/A 1 1 1 3 1 0000 N/A 1 1 1 3 3	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 3 2 9 2 9 2 9 2 9 2 9 2 9 2 9 2 9 2 9 2
379 1230 215943 6 ACP Direct 14 0 1 \$ 33,107.11 \$ 05.5545.22 RE 20000 No Critical Facility within 250 Fe 390 287 8000087 6 ACP Burst 2 0 1 \$ 60.8328 \$ 127,901.07 RE 10000 No Critical Facility within 250 Fe 383 1097 81541 6 ACP Direct 16 0 1 \$ 290,903.85 \$ 077,357.37 RE 10000 No Critical Facility within 250 Fe	et. 0 Local 50 10.60265971 0 10000 10000 10 et. 0 Local 50 21.16347183 0 10000 10000 10	0000 N/A 1 1 1 3 1 1 1 1 1 3 1 1 1 1 1 3 1 1 1 1 1 1 3 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0 2 1 1 1 1 1 2 0	2
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448 409.5285926 8 ACP Burst 0 0 0 \$ 84,772.42 \$ 178,234.01 RL 10000 No Critical Facility within 250 Fe 454 431.8628897 8 ACP Burst 5 0 1 \$ 97,395.62 \$ 204,774.29 RE 10000 No Critical Facility within 250 Fe	et. 0 Local 50 35.14603921 7.477851873 0 8.915781607 10 et. 1.462371253 Local 50 38.08245903 0 0 5.236748702 10	0000 N/A 1 1 1 3 1 0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 1 3 3 0000 N/A 1 1 1 1 3 3 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Promitty to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Promitty to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Promitty to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Promitty to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Promitty to Buildings 3 2 Pointly to Other Utilities, Promitty to Other Utilities, Promi
467 273 1309329 8 ACP Burst 18 0 1 \$ 72,338.10 \$ 152,090.86 RE 10000 No Critical Facility within 250 Fe 468 387 GM51655 6 ACP Burst 0 0 1 \$ 80,978.35 \$ 170,256.58 RE 10000 No Critical Facility within 250 Fe 471 1469.43468 6 ACP Direct 17 1 0 \$ 391,085.67 \$ 822,200.86 RE 10000 No Critical Facility within 250 Fe 476 102,0312961 8 ACP Burst 6 0 1 \$ 29,379.87 \$ 622,204.8 RL 100000 No Critical Facility within 250 Fe	et. 2.83297108 Local 50 23.26814473 3.948800434 10000 10000 10 et. 0 Local 50 41.11620924 0 147.7836308 147.7823693 10	0000 N/A 1 1 1 3 1 1 1 0000 N/A 1 1 1 1 3 1 1 1 1 3 1 1 1 1 1 3 1 1 1 1 1 1 3 1	2 1 1 1 1 2 2 3 0 2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Poolmity to Dittle. Plittles, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Chirt Littles, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Chirt Littles, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Chirt Littles, Proximity to Buildings
477 462.851173 8 ACP Burst 8 0 4 \$ 120.81.01 \$ 253.562.95 RL 10000 No Critical Facility within 250 Fe 479 476.7201699 8 ACP Burst 0 0 1 \$ 103.881.07 \$ 27.7898.46 RL 10000 No Critical Facility within 250 Fe 481 481.64569855 4 ACP Burst 2 0 3 \$ 114.455.78 \$ 240,642.28 RL 10000 No Critical Facility within 250 Fe 492 749.2918192 6 ACP Burst 0 0 1 \$ 175,735.53 \$ 313,891.25 RL 10000 No Critical Facility within 250 Fe	et. 0 Local 50 38.54327187 7.347758843 0 8.195837823 10 et. 0 Local 10 27.46303915 0 0 71.52156249 10	0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 1 3 3 0000 N/A 1 1 1 1 3 3 3	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 1 2 2 0 2 1 1 1 1 1 2 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Dire Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities
494 498.1862064 6 ACP Burst 2 0 4 \$ 122,829.99 \$ 258,250.05 RL 10000 No Critical Facility within 250 Fe 495 132,3290346 6 ACP Burst 0 1 1 \$ 37,958.12 \$ 79,798.47 5 RL 10000 No Critical Facility within 250 Fe 498 315,3751555 6 ACP Burst 9 0 2 \$ 79,785.53 \$ 167,640.68 RL 10000 No Critical Facility within 250 Fe	xt. 0 Local 50 28.6161863 0 0 3.181673457 10 xt. 0 Local 50 23.69735372 0 0 76.9245424 10 xt. 0 Local 50 22.66546799 0 0 3.3978141099 10	0000 N/A 1 1 1 3 3 0000 N/A 1 1 1 1 3 3 0000 N/A 1 1 1 3 3	2 1 1 1 1 1 2 0 2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings
524 273.1288519 8 ACP Burst 1 0 0 \$ 57,137.67 \$ 120,131.96 RL 10000 No Critical Facility within 250 Fe 529 22.23456069 8 ACP Burst 10 0 2 \$ 20,602.55 \$ 43,316.87 RL 10000 No Critical Facility within 250 Fe	xt. 0.465797221 Local 50 46.06168837 0 10.62122678 10.62122678 10 xt. 7.878857297 Local 50 48.01907382 0 26.8234631 133.2439293 10	0000 N/A 1 1 1 3 1 0000 N/A 1 1 1 3 2 0000 N/A 1 1 1 3 2 0000 N/A 1 1 1 3 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Stulities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Distributilies, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Chier Utilities, Proximity to Buildings
534 95.125084 8 ACP Burst 16 0 2 \$ 217.310.98 \$ 456,896.15 RL 10000 NO Critical Facility within 250 Fe 543 445.1556019 8 ACP Burst 1 0 1 \$ 105,199.21 \$ 22,181.34 RL 10000 NO Critical Facility within 250 Fe 548 445.912109 8 ACP Burst 0 0 2 \$ 102,303.82 \$ 215,083.78 RL 10000 NO Critical Facility within 250 Fe 554 646.8882229 8 ACP Burst 1 0 2 \$ 147,510.86 \$ 310,351.84 RE	at. 0 Local 50 38.42945374 0 0 4.953072187 10 at. 0 Local 50 31.23840588 0 10000 10000 10	0000 N/A 1 1 1 3 3 3 0000 N/A 1 1 1 3 3 1 0000 N/A 1 1 1 3 3 1 0000 N/A 1 1 1 3 1 1 3 1 1 1 3 1 1 1 3 1 1 1 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Intelliges, Proximity to Buildings 3 2 8 32 Proximity to Buildings 3 2 8 8 32 Prox
575 189.2546256 6 ACP Burst 1 1 1 \$ \$0,207.94 \$ 105,582.20 RL 10000 No Critical Facility within 220 Fe 527 675,9297357 6 ACP Burst 1 0 2 \$ 148,489.67 \$ 312,199.52 RL 10000 No Critical Facility within 220 Fe 582 923,222875 6 ACP Burst 3 0 2 \$ 200,137.47 \$ 420,789.02 RM 100000 No Critical Facility within 250 Fe	Ht. 0 Local 50 18.08050967 0 86.89021911 86.89021911 10 Ht. 0 Local 50 39.48217779 0 0 15.42659883 10 Ht. 0 Local 50 22.3409888 0 0 7.29006861 10	0000 N/A 1 1 1 3 1 1 1 0000 N/A 1 1 1 1 3 3 3 0000 N/A 1 1 1 1 3 3 3	2 1 1 1 2 2 3 0 2 1 1 1 1 1 2 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 7 3 2 2 3 2 2 3 2 2 3 3 4 12 1 3 2 8 32 Proximity to Other Utilities 2 3 2 2 3 2 2 3 2 2 3 2 2 3 3 4 12 1 3 2 2 8 32 Proximity to Other Utilities 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 2 2 3 3 4 2 2 3 2 2
589 186.6503/09 6 ACP Burst 0 1 \$4,307/06 \$9,95,712 RL 10000 No Critical Facility with 250 Fe 591 581,962579 6 ACP Burst 1 0 3 51,43244.5 82,224.17.15 RL 10000 No Critical Facility with 250 Fe 592 288,481922 6 ACP Burst 6 0 2 5 72,854.31 8 152,756.69 RL 10000 No Critical Facility with 250 Fe 605 110,198499 8 ACP Burst 2 1 2 52,756.08 8 16,172.48 RL 10000 No Critical Facility with 250 Fe	et. 0 Local 50 17.2695756 8.674713675 0 3.84116491 107.4838 et. 0 Local 50 8.717155931 3.154136301 11.53494139 11.53494139 173.5633	10000 N/A	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilities, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 32 Proximity to Date Utilizes, Proximity to Buildings 3 2 8 8 32
610 69.5386226 8 ACP Burst 1 0 1 \$ 19,994.49 \$ 42,038.43 RM 10000 No Critical Facility within 250 Fe 616 934,7503394 6 ACP Burst 1 0 2 \$ 91,125.07 \$ 191,588.67 RL 10000 No Critical Facility within 250 Fe 617 308 1004886 6 ACP Burst 0 0 1 \$ 67,852.50 \$ 142,659.88 RL 10000 No Critical Facility within 250 Fe	kt. 0 Local 50 61.09712376 0 0 51.69651366 10 kt. 0 Local 50 13.97330923 0 91.12080658 91.0 kt. 0 Local 50 14.43227902 0 10000 10000 10	0000 N/A 1 1 1 3 3 3 0000 N/A 1 1 1 3 3 1 0000 N/A 1 1 1 3 1 3 1 0000 N/A 1 1 1 3 1 1 3 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings 2 3 2 3 4 12 1 3 2 8 32 Proximity to Other Utilities, Proximity to Buildings
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660 480,7807919 6 ACP Burst 0 0 2 \$ 108,079,228 \$ 227,258,69 RL 10000 No Critical Facility with 250 Fe 661 568,2326403 6 ACP Burst 0 1 \$ 108,291,17 \$ 227,268,17 RL 10000 No Critical Facility with 250 Fe 662 168,5350599 4 ACP Burst 1 1 \$ 51,381,35 \$ 108,029,30 RL 10000 No Critical Facility with 250 Fe 670 272,236802 3 ACP Burst 5 0 1 \$ 64,35302 \$ 181,530,223 RL	et. 0 Local 50 31.20643169 0 0 8.426240193 10 et. 8.568265293 Local 10 20.6118418 2.391244302 4.317045147 4.316469741 10	0000 N/A 1 1 1 3 3 3 10000 N/A 1 1 1 1 3 3 3	2 1 1 1 1 1 2 0 2 1 1 1 1 1 2 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities 4 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Pointly to Buildings 2 3 2 3 2 3 4 12 1 3 2 8 32 Pointly to Other Utilities, Pointly to Buildings
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Replacement Service Blow Ph 3 Material & Final Const Cost Use Critical Information Internal Information Internal Cost (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	Customer Powrity to a Prooffice Promity to a Prooffice of the Prooffity to a prooffice of the Prooffity to a prooffice of the Prooffity to a see (ft).	Critical Customers Proximity to and Types of Roads Proximity to Other Utilities	Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs Land Use	CO1 CO2 CO3 CO5 Health and Loss of Cost of Regulator Dominions A Software Control Cost of Regulator Dominions A Software Cos	TRI CAE BRE COE CAN
881 28.6144481 4 ACP Burst 3 0 1 \$ 10,429.5 \$ 21,927.70 RE 10000 No Critic Biology Company Com	## Common Post Post	CO2	CO1	Safety Sarvice Fallus Impact DOT	18th Coli 18th 18th Colin
1999 1977,729987 8 ACP		1	3	3	Proximity to Environmentally Sensitive Areas, Land of Sensitive Areas, Land Office Areas, Land of Sensitive Areas, Land Office Areas, Land
669 278 67272783 A ACP Burst 1 1 1 1 5 7, 68,123.44 S 177,099.54 Pt. 10000 No Crinic 669 278 678 7170 0755000 A ACP Burst 1 1 1 1 5 7, 68,123.42 S 173,051.2 Pt. 10000 No Crinic 679 7170 0755000 A ACP Burst 1 1 1 1 5 7, 68,123.42 S 173,051.2 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 1 1 5 7, 68,123.42 S 173,051.2 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 1 1 5 7, 68,173.52 S 173,051.2 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 1 1 5 7, 67,173.5 S 174,173.2 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 1 1 2 5 7, 67,173.5 S 174,173.60 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 1 1 2 5 7, 71,143.3 S 12, 71,143.3 B 1, 10000 No Crinic 7170 A ACP Burst 1 1 1 1 2 5 7, 71,143.3 S 1, 71,143.3 B 1, 10000 No Crinic 7170 A ACP Burst 1 1 1 1 2 5 7, 71,143.3 S 1, 71,143.3 B 1, 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,052.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 2 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 0 1 1 5 7, 71,143.3 S 1, 143,053.9 Pt. 10000 No Crinic 7170 A ACP Burst 1 1 0 1 1 5 7, 71,143.3 S 1 5 7, 71,143.3 S 1,	1000 1000			3	2 7 28 Processly to Other Utilities 3 7 28 Processly to Other Utilities 4 7 28 Processly to Other Utilities 5 8 Processly to Other Utilities 5 9 28 Processly to Other Utilities

Replacement Service Blow Ph 3 Material & Final Const Cost Use Critical UniqueID Length (t) Dia (in) Material method Laterals Off Valves Install Cost (S) (S) Type Critical Customer Type of Critical Customer	ProxToRoad (t) RoadType Count Building ains (t) Storm Ditch Storm Feature Prox To ESA Type of ESA	Critical Customers Proximity to and Types of Roads Proximity to Other Utilities CO2 CO1 CO3 CO1 CO3 CO4	Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs CO1 CO3 CO4 CO1 CO2 CO3 CO3	Land Use C01 C02 C03 C05 Health C02 C03 C05	COF Driver
Description Description	10.92121379 Local 10 14.93518949 10000 10000 10000 10000 MA 0 Local 50 21.50652832 108.3526382 10000 10000 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 3 (1 1 1 1 1 2 2 3 1 1 1 1 1 1 2 2 3 (1 1 1 1 1 1 1 2 2 3 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 1 1 2 2 3 3 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 2 2 2 3 1 3 4 12 1 3 2 6 0 2 2 2 3 1 3 4 12 1 3 2 6 0 0 2 2 2 2 3 1 3 4 12 1 3 2 6 0 0 2 2 2 2 3 1 3 4 12 1 3 2 6 0 0 2 2 2 2 3 1 3 4 12 1 3 2 6 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 0 2 2 2 3 3 1 3 4 12 1 3 2 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings
901 720.4278407 6 ACP Burst 0 0 2 \$ 156,972.28 \$ 33.00,23.71 RE 10000 No Critical Facility within 250 Feet. 916 1091.024768 8 ACP Burst 3 0 3 \$ 242,842.13 \$ 510,155.07 RL 10000 No Critical Facility within 250 Feet. 928 357,3800774 8 ACP Burst 1 0 1 \$ 79,577.68 \$ 167,312.06 RL 10000 No Critical Facility within 250 Feet.	0 Local 50 10.3337952 10000 10000 10000 10000 10000 NA 0 Local 50 36.01078412 7.551735242 222.6842377 222.7711337 10000 N/A 3.467389253 Local 50 32.06413322 6.474246928 9.622719266 9.522719266 10000 N/A	1 1 1 1 1 1 1 1 2 1 1 1 1 2 2	1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0	24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings
978 142.854497 8 ACP Burst 0 0 2 \$ 39,570.87 \$ 8,197.76 RL 10000 No Critical Facility within 259 Feet. 987 217.5219913 8 ACP Burst 7 0 1 \$ 542.259.87 \$ 11.012.20 RL 10000 No Critical Facility within 259 Feet. 1001 1888.102337 8 ACP Direct 4 1 2 \$ 584,830.70 \$ 1.229,605.55 RL 10000 No Critical Facility within 259 Feet. 1014 747.435588 8 ACP Burst 0 0 2 \$ 164,700.12 \$ 346,222.00 RL 10000 No Critical Facility within 259 Feet.	0 Local 50 80.28876899 0 10000 10000 10000 N/A 0 Local 50 37.83709464 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 3 1 1 1 1 1 1	1 1 1 1 2 2 3 0 2 1 1 1 1 1 1 1 1 1 1 2 2 3 0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	24 Proximity to Buildings 24 Proximity to Other Utilities 24 Proximity to Buildings 24 Proximity to Buildings
1016 282.9422343 8 ACP Burst 7 0 1 \$ 67,769.04 \$ 142,484.1 RL 10000 No Critical Facility within 250 Feet. 1020 13.19909521 6 ACP Burst 1 0 0 \$ 3,282.44 \$ 6,90.557 RL 10000 No Critical Facility within 250 Feet. 1023 133,355291 6 ACP Burst 0 1 0 \$ 3,369.84 \$ 70,766.168 RL 10000 No Critical Facility within 250 Feet.	12.13758317 Local 50 27.19730026 100.530224 10000 10000 10000 N/A 5.133210847 Local 50 50.49745702 4.425657863 171.6832836 171.7233338 10000 N/A 0 Local 50 16.88766356 11.81340673 160.7187965 10000 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 2 2 2 3 1 3 4 12 1 3 2 6 0 2 3 2 1 2 3 4 12 1 3 2 6 0 0 2 2 2 2 3 1 3 4 12 1 3 2 6	24 Proximity to Buildings 24 Proximity to Other Utilities 24 Proximity to Buildings
1044 1928.514908 B ACP Burst 0 0 3 \$ 414,405.75 8 77,296.11 PF 10000 No Critical Facility within 25P Eest. 1047 273.148516 B ACP Burst 0 0 2 \$ 66,714.89 \$ 114,033.42 E PL 10000 No Critical Facility within 25P Eest. 1069 510.6104943 B ACP Burst 3 1 1 \$ 16,894.54 \$ 245,917.95 PK 10000 No Critical Facility within 25P Eest. 10600 352.5197922 4 ACP Burst 0 1 1 \$ 82,848.76 \$ 174,189.51 PK 10000 No Critical Facility within 25P Eest.		1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 3 3 3 1 2 3 4 12 1 3 2 6 0 1 2 2 2 3 1 3 4 12 1 3 2 6 0 1 2 2 3 1 3 4 12 1 3 2 6 0 1 2 2 3 1 3 4 12 1 3 2 6	24 Proximity to Other Utilities, Land Use 24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings
1085 472.551787 6 ACP Burst 2 0 2 \$ 107.556.76 \$ 226,144.0 RL 10000 No Critical Facility within 250 Feet. 1188 272.2238999 8 ACP Burst 0 0 1 1 4 48,931.27 \$ 102.678.00 RM 10000 No Critical Facility within 250 Feet. 1188 272.2238999 8 ACP Burst 0 0 1 1 4 48,931.27 \$ 102.678.00 RM 10000 No Critical Facility within 250 Feet.	0 Local 50 21.23186856 85.88957795 10000 10000 10000 N/A 6.767310388 Local 50 22.79300505 10000 10000 10000 N/A 0 Local 50 44.78075103 8.74233481 176.0260797 176.0260797 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 2 1	1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0 1 1 1 1 1 1 2 2 3 1 0 1 1 1 1 1 1 2 2 3 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 2 2 2 3 1 3 4 12 1 3 2 6 0 2 2 2 3 1 3 4 12 1 3 2 6 0 2 2 2 3 1 3 4 12 1 3 2 6	24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings
1175 200.5769751 2 ACP Burst 2 1 0 \$ 48,117.70 \$ 101,167.47 RL 100000 No Critical Facility within 259 Feet. 1226 652.4472675 6 ACP Burst 0 1 1 \$ 14,068.82 \$ 30,02967.37 RL 100000 No Critical Facility within 259 Feet. 82 0.102736533 8 ACP Burst 0 0 0 \$ 2,127 \$ 44.72 RE 100000 No Critical Facility within 259 Feet. 129 551 (0.0287808 6 ACP) Burst 2 0 1 \$ 118,069.89 \$ 24,037.730 ML 10000 No Critical Facility within 259 Feet.	1.386774799 Local 50 17.04359265 7.764756661 10000 10000 10000 N/A 10.20145538 Local 50 32.28384205 12.1863771 10000 10000 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 1 2 1	1 1 1 1 2 2 3 0 1 1 1 1 2 2 3 0 1 1 1 1 1 2 2 3 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	24 Proximity to Buildings 24 Proximity to Buildings 24 Proximity to Buildings 20 Land Use
269 474.3246862 8 ACP Burst 2 1 1 \$ 110,385.21 \$ 232,084.00 PF 10000 No Critical Facility within 250 Feet. 506 14.0739237 6 ACP Burst 9 0 1 \$ 13,271.08 \$ 27,902.45 PF 10000 No Critical Facility within 250 Feet. 507 12,69379593 6 ACP Burst 2 0 0 \$ 3,768.53 \$ 7,967.50 PF 10000 No Critical Facility within 250 Feet.	0 Local 50 10000 24.4480172 10000 10000 10000 10000 N/A 0 Local 50 100.8191707 200.8431762 10000 10000 143.8837515 Permanent River 35.98169212 Local 50 10000 10000 10000 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1 1 1 1 1		0	20 Land Use 20 Land Use 20 Land Use
988 14.82651472 6 ACP Burst 2 0 0 \$ 4.224.61 \$ 8.882.24 FF 10000 No Critical Facility within 250 Feet. 395 8,98627677 8 ACP Burst 2 0 0 5 3.246.53 \$ 6,830.03 FF 10000 No Critical Facility within 250 Feet. 229 0.089654698 6 ACP Burst 0 0 0 0 5 18.35 \$ 38.58 RX 10000 No Critical Facility within 250 Feet.	13.83509495 Local 50 10000 18.97582474 10000 10000 10000 N/A	1 1 1 1 1 1 1 2 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 3 1 3 1 1 3 4 12 1 3 2 5 0 3 2 3 1 1 3 3 4 12 1 3 2 5 0 1 2 1 2 2 2 4 8 1 2 3 6	20 Land Use 20 Land Use 24 Proximity to Environmentally Sensitive Areas Proximity to and Types of Roads, Proximity to
75 472.8178664 6 ACP Burst 3 0 1 \$ 103.254.84 \$ 217.093.31 RX 10000 No Critical Facility within 250 Feet. 91 108.3034537 6 ACP Burst 0 0 2 \$ 32.093.90 \$ 67.477.43 RL 10000 No Critical Facility within 250 Feet.		1 2 1 1 1 1 1 1 2 2	1 1 1 1 1 1 2 (1 1 1 1 1 1 2 (0 1 2 1 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Buildings Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
118 224 9883864 6 ACP Burst 2 0 1 \$ \$2,097.83 \$ 109,535.27 FL 10000 No Critical Facility within 250 Feet. 125 73.08597201 6 ACP Burst 1 0 1 \$ 20,509.54 \$ 43,121.30 RL 10000 No Critical Facility within 250 Feet.	0 Local 50 35.59573759 12.97278077 248.8335291 10000 10000 N/A 1.804865951 Local 50 83.1382833 8.606030968 19.51305702 19.78494641 10000 N/A	1 1 1 2 1 1 1 1 2 2	1 1 1 1 1 1 2 ($ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use 20 Proximity to Other Utilities, Land Use Proximity to Other Utilities, Proximity to Buildings,
138 7.765878576 G ACP Burst 0 0 0 \$ 1,564.24 \$ 3,330.86 RL 10000 No Critical Facility within 250 Feet. 144 398.3750002 4 ACP Burst 7 1 0 \$ 83,512.50 \$ 175,585.04 RL 10000 No Critical Facility within 250 Feet. 174 564.656266 8 ACP Burst 5 0 0 \$ 119,882.71 \$ 25,055.51 RL 10000 No Critical Facility within 250 Feet.	0.285760611 Local 10 40.39867966 10000 10000 10000 10000 N/A 0 Local 50 55.93044399 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	20 Land Use 20 Proximity to Buildings, Land Use 20 Proximity to Buildings, Land Use
176 905.9915561 G ACP Direct 12 1 1 \$ 244,997.89 \$ 514,477.31 RL 10000 No Critical Facility within 259 Feet. 177 7.998171699 G ACP Burst 0 0 0 \$ 1,631.63 \$ 3,430.50 RL 10000 No Critical Facility within 250 Feet.			1 1 1 1 1 2 0	0	Proximity to Buildings, Land Use Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
186 38.7283082 6 ACP Burst 0 0 1 \$ 12,900.57 \$ 27,123.46 RL 10000 No Critical Facility within 250 Feet. 211 323.8083104 6 ACP Burst 8 0 3 \$ 85,858.90 \$ 180,514.12 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
226 15.8623008 6 ACP Burst 0 0 1 1 \$ 8,235.91 \$ 17,316.00 RE 10000 No Critical Facility within 250 Feet. 245 134.0569702 6 ACP Burst 0 0 1 1 \$ 32,347.62 \$ 68,010.88 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1 1 1 1 2 2	1 1 1 1 1 2 (0	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
267 336,9439598 6 ACP Burst 2 1 1 \$ 80,936.57 \$ 170,169.13 RL 10000 No Critical Facility within 250 Feet. 285 177.761899 8 ACP Burst 1 0 0 \$ 37,396.71 \$ 78,626.58 RE 10000 No Critical Facility within 250 Feet.	6.288372093 Local 50 27.17389124 6.093080558 10000 10000 10000 N/A 2.431855201 Local 50 59.0768896 10000 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use 20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
310 395.9017137 6 ACP Burst 1 1 1 1 \$ 92,363.95 \$ 194,195.20 RM 10000 No Critical Facility within 250 Feet. 325 14.21875837 8 ACP Burst 0 0 1 \$ 7,943.28 \$ 16,700.75 RL 10000 No Critical Facility within 250 Feet.	0 Local 50 34.66794131 11.75129216 119.1491247 119.1519757 10000 N/A 0 Local 50 52.65141879 5.032934734 171.8832836 171.7233338 10000 N/A	1 1 1 2 1	1 1 1 1 1 2 (1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
331 618.1210836 6 ACP Burst 5 0 1 \$ 134.096.70 \$ 281,938.31 RL 10000 No Critical Facility within 250 Feet. 348 273.9509994 6 ACP Burst 2 0 2 \$ 67,086.00 \$ 141,048.31 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 0	0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
373 147.1442596 4 ACP Burst 0 1 0 \$ 36,017.43 \$ 75,726.64 RE 10000 No Critical Facility within 250 Feet.	4.194925802 Local 10 32.66696208 5.84128436 205.2396739 242.8495344 10000 N/A	1 1 1 2 1	1 1 1 1 1 2	0 2 2 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings,
375 627.4462629 6 ACP Burst 8 0 1 \$ 137,799.04 \$ 288,722.48 RE 10000 No Critical Facility within 250 Feet. 378 387.5970001 6 ACP Burst 3 0 3 \$ 95,869.79 \$ 201,566.23 RE 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 6	0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
382 385899783 6 ACP Burst 4 0 1 \$ 86,122.98 \$ 181,073.57 RE 10000 No Critical Facility within 250 Feet. 392 1061,283986 6 ACP Direct 5 0 2 \$ 278,323.50 \$ \$85,175.15 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1 1 1 2 1	1 1 1 1 1 1 2 (1 1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
393 2565654971 6 ACP Burst 1 0 2 \$ 62,938,95 \$ 132,329,15 RL 10000 No Critical Facility within 250 Feet. 414 135,7281351 6 ACP Burst 4 0 0 \$ 30,088,54 \$ 63,261,15 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2	0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
415 225.6395384 6 ACP Burst 2 0 1 \$ 52,230.47 \$ 109,814.55 RL 10000 No Critical Facility within 250 Feet.	17.5586741 Local 50 31.83855644 11.20462526 10000 10000 10000 N/A	1 1 1 2 1	1 1 1 1 1 2	0 2 2 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings,
453 176.8836198 6 ACP Burst 2 1 1 \$ 48,243.46 \$ 101,431.87 RE 10000 No Critical Facility within 250 Feet. 461 231.3280214 6 ACP Burst 5 0 0 \$ 50,190.92 \$ 105,526.40 RE 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 6	0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
462 127.142424 6 ACP Burst 1 0 0 \$ 26,537.43 \$ 55,794.94 RE 10000 No Critical Facility within 250 Feet. 463 326.5073653 6 ACP Burst 1 0 0 \$ 67,207.50 \$ 141,303.77 RE 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (1 1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
464 221.5789525 6 ACP Burst 3 0 1 \$ \$2,002.31 \$ 109,334.86 RE 10000 No Critical Facility within 250 Feet. 473 442.7872615 6 ACP Burst 8 0 1 \$ 100,128.60 \$ 210,520.38 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2	0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
474 0.153053258 8 ACP Burst 1 0 0 \$ 631.68 \$ 1,328.11 PL 10000 No Critical Facility within 250 Feet. 489 216.6017406 6 ACP Burst 4 0 1 \$ 51,586.76 \$ 108.461.15 RL 10000 No Critical Facility within 250 Feet.	18.31452175 Local 50 50.57867098 10.69223189 241.1908058 248.8408626 10000 N/A	1 1 1 2 1 1 1 1 1 1	1 1 1 1 1 1 2 (1 1 1 1 2 1 1 1 1 1 1 1 1	0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 1 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use 20 Proximity to Buildings, Land Use
496 96.52895557 6 ACP Burst 13 1 0 \$ 33.491.91 \$ 70.416.73 RE 10000 No Critical Facility within 250 Feet. 503 252.2466538 4 ACP Burst 13 1 1 \$ 70.258.31 \$ 147.718.10 RL 10000 No Critical Facility within 250 Feet. 504 120.5160962 2 ACP Burst 0 1 1 \$ 35.555.28 \$ 74.818.05 RL 10000 No Critical Facility within 250 Feet.	0 Local 10 28.72707034 84.56265162 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use 20 Proximity to Buildings, Land Use 20 Proximity to Buildings, Land Use
530 1.92289642 6 ACP Burst 16 0 0 \$ 9,992.27 \$ 21,008.75 RL 10000 No Critical Facility within 250 Feet.	4.081151343 Local 50 49.16768595 7.48393887 37.70331408 38.2218316 10000 N/A	1 1 1 2 1	1 1 1 1 1 2	0 2 2 2 2 1 2 4 8 1 2 3 5	Proximity to Other Ütilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings,
536 277.268282 6 ACP Burst 1 0 2 \$ 67,162.73 \$ 141,209.64 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 2	1 1 1 1 1 2 0	0 2 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
550 203.357271 6 ACP Burst 8 0 1 \$ 51,284.88 \$ 107,826.47 RE 10000 No Critical Facility within 250 Feet. 557 465,7413912 4 ACP Burst 0 1 1 \$ 106,011.24 \$ 222,888.64 RE 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
566 388.1098848 6 ACP Burst 2 1 1 \$ 91.374.42 \$ 152,114.71 RE 10000 No Critical Facility within 250 Feet. 621 598.8231599 6 ACP Burst 2 0 0 \$ 123,359.92 \$ 259,364.24 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
648 431.445617 6 ACP Burst 2 1 1 \$ 100,214.91 \$ 210,701.84 RE 10000 No Critical Facility within 250 Feet.	6.813150453 Local 50 30.98355781 8.843539066 10000 10000 141.4310564 Temporary River	1 1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings,
656 185.9767859 6 ACP Burst 0 0 2 \$ 43.859.26 \$ 92.214.10 RL 10000 No Critical Facility within 250 Feet.	1.394880706 Local 50 33.32238839 9.473907358 230.0366966 230.0379844 10000 N/A	1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
880 2813027175 4 ACP Burst 3 1 0 \$ 65,185.75 \$ 137,053.05 RE 10000 No Critical Facility within 250 Feet. 688 1.124090726 6 ACP Burst 4 0 0 \$ 2,269.31 \$ 5,528.13 RL 10000 No Critical Facility within 250 Feet. 691 282.8338905 4 ACP Burst 2 1 1 \$ 71,030.27 \$ 140,341.14 RE 10000 No Critical Facility within 250 Feet.	18.96993139 Local 50 30.66780635 29.27528449 109.7744375 109.8285448 10000 N/A	1 1 1 2 1 1 1 1 1	1 1 1 1 1 2 ($\begin{array}{cccccccccccccccccccccccccccccccccccc$	20 Land Use 20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
991 288.5859605 4 ACP Burst 2 1 1 3 71,09127 \$ 149,341.14 KE 10000 No Critical Facility within 250 Feet. 705 618.7967047 6 ACP Burst 1 1 1 \$ 137,834.53 \$ 289,797.09 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
721 390.2997757 6 ACP Burst 3 1 1 \$ 92,421.15 \$ 194,315.48 RL 10000 No Critical Facility within 250 Feet. 734 8.355397662 6 ACP Burst 2 1 0 \$ 8,900.42 \$ 18,713.14 RL 10000 No Critical Facility within 250 Feet.	0 Local 50 28.51577669 7.356928233 10000 10000 10000 10000 NA 6.686331423 Local 50 49.83773312 6.115197768 10000 10000 10000 NA	1 1 1 2 1 1 1 1 2 1	1 1 1 1 1 2 (0	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
739 14.28523446 6 ACP Burst 0 1 2 \$ 18,904.19 \$ 39,746.06 RL 10000 No Critical Facility within 250 Feet. 751 305.3021836 6 ACP Burst 2 0 1 \$ 68,481.65 \$ 143,982.66 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 0	0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
752 9.999918106 4 ACP Burst 1 0 0 \$ 2,639.98 \$ 5,550.56 RL 10000 No Critical Facility within 250 Feet.	0 Local 10 41.08510342 8.339848057 147.1760831 147.1760831 10000 N/A	1 1 2 1	1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings,
774 288.6034078 6 ACP Burst 5 1 0 \$ 67.875.10 \$ 142.707.39 FL 10000 No Critical Facility within 250 Feet. 797 218.3454983 4 ACP Burst 3 1 1 \$ 57.342.48 \$ 120.582.56 FL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1 1 1 2 1	1 1 1 1 1 2 (1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 1 2 4 8 1 2 3 5	Land Use Proximity to Other Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
802 615.13134 6 ACP Burst 4 0 2 \$ 137,886.79 \$ 289,906.98 RL 10000 No Critical Facility within 250 Feet. 803 616.9590623 6 ACP Burst 1 0 4 \$ 146,459.65 \$ 307,931.41 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1 1 1 1 2 1	1 1 1 1 1 2 0 1 1 1 1 1 2 0	0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 2 2 2 1 2 4 8 1 2 3 5	20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
811 236,7709134 6 ACP Burst 4 1 1 \$ 61,701.27 \$ 129,726.91 RL 10000 No Critical Facility within 250 Feet. 848 425.2938453 6 ACP Burst 2 1 1 \$ 98,959.94 \$ 208,063.28 RL 10000 No Critical Facility within 250 Feet.	0 Local 50 28.66041718 11.36787242 17.14438471 10000 10000 N/A 0 Local 50 34.89581335 52.16908879 10000 10000 10000 N/A	1 1 1 2 2 1 1 1 1 1 1	1 1 1 1 1 1 2 (1 1 1 1 1 1 2 (0 2 2 2 2 1 2 4 8 1 2 3 5 0 2 1 2 2 1 2 4 8 1 2 3 5	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use 20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
863 241.2447062 6 ACP Burst 6 1 1 \$ 63,813.92 \$ 134,168.77 RL 10000 No Critical Facility within 250 Feet. 872 331.0732232 6 ACP Burst 1 1 1 \$ 79,138.94 \$ 165,388.62 RE 10000 No Critical Facility within 250 Feet. 874 40.98718507 8 ACP Burst 0 0 2 \$ 2.863.85.30 \$ 0.863.82 AE 10000 No Critical Facility within 250 Feet.	0 Local 50 35.57054952 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1 1 2 2 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0 1 1 1 1 1 1 1 0	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	20 Land Use 20 Proximity to Buildings, Land Use 20 Proximity to and Types of Roads
883 805.2523108 6 ACP Direct 0 0 1 \$ 206.313.08 \$ 433,773.25 RE 10000 No Critical Facility within 250 Feet. 882 249.5808154 8 ACP Burst 10 0 1 \$ 62,683.23 \$ 131,749.44 RL 10000 No Critical Facility within 250 Feet.		1 1 1 2 1	1 1 1 1 1 2 (0	Proximity to Other Utilities, Proximity to Buildings, 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
892 245-3000 F39	0 Local 50 33.92219191 10000 10000 10000 10000 N/A	1 1 1 1 1	1 1 1 1 1 2	0	20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings, 20 Land Use
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Replacement Service Blow Ph 3 Material & Final Const Cost Use Critical	Customer Proximity to a Prox7oSewerM Proximity to a Proximity to a	Critical Customers Proximity to and Types of Roads Proximity to Other Utilities	Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs Land Use	CO1	Risk
UniqueID Length (t) Dia (in) Material method Laterals Off Valves Install Cost (S) S) Type Customers Type of Critical Customer 977 4.28588652 6 ACP Burst 0 0 \$ 862.18 \$ 1,812.73 RL 10000 No Critical Facility within 250 Feet	ProxToRoad (th) RoadType Count Building ains (th) Storm Ditch Storm Feature Prox. To ESA Type of ESA	1 1 1 2 2	CO1	Safety Service Failure y Impact COF LOF Core Risk Factor 2 2 2 1 2 4 8 1	Priority TBL CoF BRE COF Driver
981 15.08999522 2 ACP Burst 0 0 2 \$ 13.074.28 \$ 27.488.67 RM 10000 No Critical Facility within 250 Feet 1011 200.8649925 6 ACP Burst 2 1 1 \$ 53.176.46 \$ 111,803.50 RL 10000 No Critical Facility within 250 Feet	. 9.45322528 Major 10 42.30042867 10.72134654 10000 10000 10000 N/A . 10.92734947 Local 50 44.51185714 10000 10000 10000 10000 N/A	1 2 1 2 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Proximity to and Types of Roads, Proximity to Other 2 3 5 20 Utilities, Proximity to Bulldings, Land Use 2 3 5 20 Proximity to Bulldings, Land Use
1021 1.35319553 6 ACP Burst 7 0 0 \$ 4.476.05 \$ 9.410.90 RL 10000 No Critical Facility within 259 Feet 1028 420.2897091 4 ACP Burst 2 1 1 \$ 97,839.10 \$ 205,916.96 RL 10000 No Critical Facility within 250 Feet	. 8.529416333 Local 50 41.89710686 6.736988367 10000 10000 10000 N/A 0 Local 10 36.59649898 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Proximity to Other Utilities, Proximity to Buildings, 2 3 5 20 Land Use 2 3 5 20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
1029 724.709726 6 ACP Burst 0 0 1 \$ 152,840.78 \$ 321,347.75 RL 10000 No Critical Facility within 250 Feet 1046 522.4769344 6 ACP Burst 0 1 2 \$ 122,585.29 \$ 257,735.58 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 0 1 \$ 74,747.35 \$ 12,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 0 1 \$ 74,747.35 \$ 12,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 0 1 \$ 74,747.35 \$ 12,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 12,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within 250 Feet 1049 257,045118 6 ACP Burst 0 1 \$ 15,076.02 RL 10000 No Critical Facility within	. 0 Local 50 29.7330151 8.130802287 10000 10000 10000 N/A 0 Local 50 30.22735451 10000 10000 10000 10000 N/A 0 Local 50 47.355228 10000 10000 10000 10000 N/A	1 1 1 2 1	1 1 1 1 1 2 0	2 2 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1	2 3 5 20 Land Use 2 3 5 20 Proximity to Buildings, Land Use 2 3 5 20 Proximity to Buildings, Land Use 5 20 Proximity to Buildings, Land Use
1494 257 A4951 16 0 ALP Burst 0 0 1 \$ 3 5/A37.3 \$ 120/ECLE X 10000 No Clinical Fedility within 250 Fedil 1494 1915 1227316 6 ACP Burst 0 0 0 \$ 38,985.05 4 \$ 38,980.05 RL 10000 No Clinical Fedility within 250 Fedility 1695 027866814 6 ACP Burst 0 0 0 \$ 562.4 \$ 118.24 RL 10000 No Clinical Fedility within 250 Fedility 1697 1597 1597 1597 1597 1597 1597 1597 15	. 0 Local 50 33.88512714 10000 10000 10000 10000 N/A . 3.489465187 Local 50 33.6132379 10000 10000 10000 10000 N/A		1 1 1 1 1 2 0 1 1 1 1 1 2 0 1 1 1 1 1 2 0	2 1 2 2 1 2 4 0 1 2 1 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1	2 3 5 20 Proximity to Buldings, Land Use 2 3 5 20 Proximity to Buldings, Land Use 2 3 5 20 Proximity to Buldings, Land Use 2 3 5 20 Proximity to Buldings, Land Use
1071 1310-046900 0 FMCP	. 0 Local 50 32.06913441 10000 10000 10000 10000 N/A . 0 Local 50 32.46318661 10000 10000 10000 10000 N/A		1 1 1 1 2 0	2 1 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1	2 3 5 20 Proximity to Buildings, Land Use 2 3 5 20 Proximity to Buildings, Land Use 2 3 5 20 Proximity to Buildings, Land Use
1079 05-00000312 4 AUF burst 2 0 0 5 2-315/00 5 5-55-00 Pc 10000 NO Clinical Facility within 250 Feet 1079 755-0000447 6 ACP Direct 0 1 1 \$ 199,826.61 \$ 240,138.4 \$ RL 10000 NO Clinical Facility within 250 Feet 1082 255.028246 6 ACP Burst 10 0 1 \$ 71,184.66 \$ 149,685.74 RL 10000 NO Clinical Facility within 250 Feet	. 0 Local 50 36.23196284 10000 10000 10000 10000 N/A		1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	2 1 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1 2 1 2 2 1 2 4 8 1	2 3 5 20 Proximity to Buildings, Land Use 2 3 5 20 Proximity to Buildings, Land Use
1084 688.4551447 4 ACP Burst 9 1 1 \$ 156,844.85 \$ 329,766.30 RL 10000 No Critical Facility within 250 Feet 1109 298.6659184 6 ACP Burst 2 1 1 \$ 73,189.05 \$ 153,879.97 RL 10000 No Critical Facility within 250 Feet	. 0 Major 10 44.2590453 40.29253385 10000 10000 10000 N/A . 9.028327613 Local 50 26.8048216 11.68846602 10000 110.974638 10000 N/A	1 2 1 1 1	1 1 1 1 1 2 0	2 2 2 2 1 2 4 8 1	Proximity to and Types of Roads, Proximity to 2 3 5 20 Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings, 2 3 5 20 Land Use
1146 2.950168336 6 ACP Burst 1 0 0 \$ 1.201.83 \$ 2.558.86 RL 10000 No Critical Facility within 250 Feet	. 8.87880624 Local 50 34.98227401 6.14493199 10000 10000 10000 N/A	1 1 1 2 1	1 1 1 1 1 2 0	2 2 2 2 1 2 4 8 1	2 3 5 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 2 3 5 20 Land Use Proximity to Other Utilities, Proximity to Buildings.
1174 288.0823064 8 ACP Burst 2 0 2 \$ 66.693.04 \$ 140,222.11 RE 10000 No Critical Facility within 250 Feet 1176 34.82323468 6 ACP Burst 0 0 0 \$ 7,103.94 \$ 14,936.03 RL 10000 No Critical Facility within 250 Feet	. 0 Local 50 71.30963095 6.330512041 10000 10000 10000 N/A 27.06675574 Local 50 28.52991246 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1	1 1 1 1 1 1 2 0 1 1 1 1 1 1 2 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2 3 5 20 Land Use 2 3 5 20 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
1233 31.35307746 6 ACP Burst 0 0 0 \$ 6.366.03 \$ 13,447.65 RL 10000 No Critical Facility within 250 Feet 1235 583.6627945 4 ACP Burst 0 1 0 \$ 125,073.33 \$ 262,966.68 RL 10000 No Critical Facility within 250 Feet	. 4.780707765 Local 50 36.99514898 14.31172804 188.7981176 188.7981185 10000 N/A . 3.60555217 Local 10 25.45912911 14.84312132 144.252616 145.4480563 121.5487242 Permanent River	1 1 1 2 1	1 1 1 1 1 2 0	2 2 2 2 1 2 4 8 1	2 3 5 20 Land Use Proximity to Other Utilities, Proximity to Buildings, 2 3 5 20 Land Use
187 0.88500046 8 ACP Burst 0 0 \$ 17.91 \$ 37.65 RL 10000 No Critical Facility within 250 Feet 37 402.914509 8 ACP Burst 2 0 2 \$ 94,603.30 \$ 198,903.45 RE 10000 No Critical Facility within 250 Feet	. 18.31101446 Local 50 50.58405725 10.89786705 241.1091151 248.7690032 10000 N/A 0 Local 50 92.2448151 9.175861932 10000 10000 10000 N/A	1 1 1 2 1	1 1 1 1 1 2 0	2 2 2 2 1 2 4 8 1 2 2 2 1 1 2 4 8 6	Proximity to Other Utilities, Proximity to Buildings, 2 3 5 20 Land Use 2 3 4 16 Proximity to Other Utilities, Land Use
141 445.8843715 6 ACP Bust 3 0 1 \$ 101.391.61 \$ 213.175.86 RL 10000 No Clinical Facility within 220 Feet 150 389.3189371 8 ACP Bust 3 0 1 \$ 87.389.02 \$ 183.735.41 RA 10000 No Clinical Facility within 220 Feet 152 670.385908 8 ACP Bust 3 0 1 \$ 145.599.88 \$ 30.60,608.80 PR		1 1 1 1 1	1 1 1 1 1 0 1 1 1 1 1 2 0	2 1 2 1 1 2 4 8 1 1 1 1 2 1 2 4 8 1 2 1 2 1 1 2 4 8 1	2 3 4 16 Land Use
162 75.16233102 6 ACP Bust 1 0 0 \$ 15,933.12 \$ 33,499.38 RX 10000 No Citical Facility within 250 Feet 169 922.7126724 8 ACP Direct 8 0 2 \$ 291,613.03 \$ 613,118.02 RA 10000 No Citical Facility within 250 Feet 179 11,004(1111 6 ACP Bust 1 0 0 \$ 2.544.82 \$ 5.981.23 RL	. 0 Local 50 40.99962613 10000 10000 10000 10000 N/A . 0 Local 50 51.80316338 10000 10000 10000 10000 N/A		1 1 1 1 2 0	1 1 1 2 1 2 4 8 1 1 1 1 2 1 2 4 8 1	2 3 4 16 Proximity to Buildings 2 3 4 16 Proximity to Buildings 2 3 4 16 Land Use
179 11.0420.032907 6 ACP Direct 12 0 2 \$ 37.7102.32 \$ 7.915.16.055 RL 10000 No Clinical Facility within 250 Feet 268 1013.197825 8 ACP Burst 7 0 4 \$ 233.931.95 \$ 491,941.93 RE 10000 No Clinical Facility within 250 Feet 268 1013.197825 8 ACP Burst 0 0 0 \$ 3.315.625 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.316.765 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.2571635 6 ACP Burst 0 0 0 \$ 3.3167.65 \$ 6.702.03 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet 335.156.25 RL 10000 No Clinical Facility within 250 Feet	. 0 Local 50 53.171271 10000 10000 10000 10000 N/A . 0 Local 50 10000 15.2694213 10000 10000 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 0	2 1 2 1 1 2 4 8 1 2 2 2 2 1 1 2 4 8 1 2 2 2 2 1 1 2 4 8 1	2 3 4 16 Land Use 2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Proximity to Other Utilities, Land Use
351 1002/100 1 APP Bust 7 0 1 \$ 11,179.10 \$ 2,394.05 RE 10000 No Clinical Facility within 250 Feet 673 221,8552796 6 ACP Bust 5 0 0 \$ 48,188.52 \$ 101,253.28 RE 10000 No Clinical Facility within 250 Feet 749 2,475231447 6 ACP Bust 0 0 0 \$ 501.28 \$ 10,053.28 RE 10000 No Clinical Facility within 250 Feet 749 2,475231447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,475231447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,475231447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 \$ 501.28 \$ 1,053.39 RE 10000 No Clinical Facility within 250 Feet 749 2,47531447 6 ACP Bust 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	. 0.381654524 Local 50 95.97036601 9.127659363 10000 10000 10000 N/A . 17.30952425 Local 50 72.85101677 7.570339699 10000 10000 10000 N/A	1 1 2 1	1 1 1 1 1 0	2 2 2 1 1 2 4 8 1 2 2 2 1 1 2 4 8 1	2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Proximity to Other Utilities, Land Use 4 16 Proximity to Other Utilities, Land Use
978 243-243-2144	. 0 Local 50 50.11801551 10000 10000 10000 10000 N/A		1 1 1 1 1 0	2 1 2 1 1 2 4 8 1 2 1 2 1 1 2 4 8 1	2 3 4 16 Land Use
064 057 2001 995 0 ALP Burst 0 1 1 8 149,182.99 \$ 305,266.27 Rc 10000 No Clinical Facility within 20 Feet 947 7,767194617 6 ACP Burst 0 0 0 \$ 1,584.51 \$ 3,331.42 RL 10000 No Clinical Facility within 20 Feet 1051 200.1256 5 4 ACP Burst 0 1 1 \$ 6,065.57 \$ 13,489.03 RL 10000 No Clinical Facility within 20 Feet 1051 200.1256 5 4 ACP Burst 0 1 1 \$ 6,065.57 \$ 13,489.03 RL 10000 No Clinical Facility within 20 Feet	. 10000 N/A 50 180.4560521 10000 10000 10000 10000 N/A		1 1 1 1 1 0	2 1 2 1 1 2 4 8 1 2 1 2 1 1 2 4 8 1	2 3 4 16 Land Use
1003 79,64389156 2 ACP Burst 14 0 0 \$ 24,647.35 \$ 51,821.06 RX 10000 No Citical Facility within 250 Feet 1167 1158,257137 6 ACP Direct 2 0 2 \$ 300,754.28 \$ 632,359.51 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 10000 No Citical Facility within 250 Feet 1117 383,402891 8 ACP Burst 14 0 1 \$ 94,834.40 \$ 19,938.32 RE 100,938.32 RE 10	. 13.66283065 Local 10 36.09930192 10000 10000 10000 211.3719779 Artificial Path . 0 Local 50 50.18109242 10000 10000 10000 10000 N/A		1 1 1 1 2 0	1 1 1 2 1 2 4 8 1 2 1 2 4 8 1 2 2 1 2 2 4 8 1 2 2 1 1 2 2 4 8 1 2 2 2 4 8 1 2 2 2 4 8 1 2 2 2 4 8 1 2 2 2 4 8 1 2 2 2 4 8 1 2 2 2 4 8 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 3 4 16 Proximity to Buildings 2 3 4 16 Land Use 2 3 4 16 Proximity to Other Itilities Land Use
1133 3701480926 4 ACP Bust 0 0 0 \$ 755.10 \$ 1,597.60 RL 10000 No Citical Facility within 220 Feet 1132 4,304355614 6 ACP Bust 0 0 0 \$ 878.09 \$ 1,846.18 RL 10000 No Citical Facility within 220 Feet 1142 74.1235554 6 ACP Bust 0 0 0 \$ 878.09 \$ 1,846.18 RL 10000 No Citical Facility within 220 Feet 1144 74.1235554 6 ACP Bust 0 0 0 \$ 15,233.12 \$ 3.73,69.37 RE		1 1 2 1	1 1 1 1 1 0 1 1 1 1 1 1 0	2 2 2 1 1 2 4 8 1 2 2 2 1 1 2 4 8 1 2 1 2 1 1 2 4 8 1	2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Proximity to Other Utilities, Land Use 2 3 4 16 Land Use 4 16 Land Use
485 691.2283141 16 ACP Burst 0 0 2 \$ 248,473.08 \$ 522,414.65 CS 10000 No Critical Facility within 250 Feet 424 442.1742425 16 ACP Burst 3 0 1 \$ 173,338.41 \$ 364,439.81 CS 39.78922405 Fire Station 140 195.8952043 16 ACP Burst 2 0 1 \$ 73,783.85 \$ 155,305.4 RE 2.55,305.4	. O Local 100 11.99767051 0 0 5.037070263 0 Permanent River 0 Local 100 23.92691951 0 0 23.9143492 10000 N/A 7.12562 Local 100 27.99518425 10000 10000 10000 10000 N/O	1 2 1 3 3 5 5 2 1 3 3 5 5 2 1 1 1 1 1	2 3 3 4 4 4 5 0 2 1 1 1 4 4 5 0 1 1 1 5 5 5 0	4 4 4 5 4 5 3 15 1 4 4 5 5 2 5 3 15 1 2 5 5 5 1 5 3 15 .	4 Low 13 39 Proximity to Buildings 4 Low 12 36 Critical Customers, Proximity to Buildings 4 Low 11 33 Critical Customers, Proximity to Buildings
422 1110.960576 16 ACP Burst 3 0 0 \$ 385.081.40 \$ 809,633.64 CS 71.20193647 Dump 689 65.1002483 16 ACP Burst 12 0 0 \$ 29,699.59 \$ 62,359.26 RL 3.690455861 WaterFacilities	7.578237796 Local 100 56.96471802 0 0 1.125355819 0 Permanent River 10000 N/A 100 3.693410418 10000 10000 10000 10000 N/A	1 2 1 3 3 :	2 3 3 4 2 2 3 0 1 1 1 5 5 5 0	4 3 4 3 4 4 3 12 1 2 5 5 5 5 1 5 3 15 ·	Proximity to Environmentally Sensitive Areas, Land 4 Low 11 33 Use 4 Low 11 33 Citicial Customers, Proximity to Buildings
1057 685.7582225 10 ACP Burst 3 1 0 \$ 179.924.81 \$ 378.291.92 PF 0 Alronot 1279 26.8061064 18 ACP Burst 0 0 2 \$ 51,151.08 \$ 107,945.14 RE 10.61976146161616 89 99.592021318 16 ACP Burst 0 0 0 \$ \$ 24,2402.47 \$ 6.182.60 PL 10.000 No.Critical-facility within 250 Feet	0 Local 50 0 0 10000 10000 10000 NA 47.9588002 Local 100 10.61357549 10000 10000 10000 NA 46.55333655 Major 100 87.59567 12.45859488 10000 10000 34.3733277 Permanent River	5 1 1 3 1 2 5 1 1 1 1 1 1 1 3 3 2 1	2 1 1 1 1 3 4 4 0 1 1 1 1 4 4 5 0 1 3 3 4 2 2 2 0	3 3 5 4 2 5 3 15 1 2 4 5 5 1 5 3 15 1 2 3 2 3 4 4 3 12	4 Low 11 33 Criticial Customers 4 Low 11 33 Criticial Customers, Proximity to Buildings 4 Low 10 30 Proximity to Environmentally Sensitive Areas
101 1144 628892 10 ACP Burst 0 0 1 \$ 292,301.85 \$ 614,564.64 PF 156.2227609 School 106 678.9013106 16 ACP Burst 5 0 1 \$ 242,220.95 \$ 509,269.55 CS 100,000 No. Chicial Facility within 250 Feet 182 1116,962044 16 ACP Burst 1 0 1 \$ 390,951.91 \$ 821,976.38 PF 100,000 No. Chical Facility within 250 Feet	0 Local 50 39.83724389 0 0 1.390036378 0 Permanent River . 0 Local 100 17.19272933 11.9634890 71.10344489 71.33844723 96.70679561 Temporary River	4 1 1 3 3 1 1 2 1 2 1 1 2 1 1 1	2 3 3 3 2 2 3 0 1 1 1 1 4 4 5 0 1 3 3 4 3 2 3 0	3 3 4 3 3 4 3 12 1 4 4 4 5 1 5 3 15 1 3 3 3 3 3 4 4 3 12	4 Low 10 30 Criticial Customers 4 Low 10 30 Proximity to Buildings 4 Low 10 30 Proximity to Environmentally Sensitive Areas
183 221.741725 16 ACP Burst 1 0 1 \$ 82,100.90 \$ 172,617.14 RL 10000 No Critical Facility within 250 Feet 246 694 2396142 12 ACP Direct 4 0 3 \$ 266,488.73 \$ 311,100.58 RL 10000 No Critical Facility within 250 Feet 277 1083.810(211 01 ACP Burst 2 0 1 \$ 278,235.85 \$ \$548,991.58 FIL 45,50249276 Waterfacilities	. 0 Local 100 16.05033838 10000 10000 10000 10000 NA 0 Highway 100 42.2817752 3.359162747 10000 10000 10000 NA 0 Local 50 41.5158051 0 10000 10000 NA	1 2 1 1 1 1 4 4 3 1 5 1 1 3 1	1 1 1 1 4 4 5 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 4 4 5 1 5 3 15 1 2 4 2 4 2 4 3 12 1 2 3 5 3 2 5 3 15	4 Low 10 30 Proximity to Buildings 4 Low 10 30 Proximity to and Types of Roads 4 Low 10 30 Critical Customers
278 14.87268786 10 ACP Burst 0 0 1 \$ 8.722.89 \$ 18,360.91 RL	119.3320907 Local 50 0 10000 10000 10000 10000 NA 76.01847085 Local 50 8.796390311 10000 10000 10000 10000 N/A 18.32189962 Local 50 18.43945666 212.314445 10000 10000 10000 N/A	5 1 1 1 1 5 5 1 1 1 1 1 5 5 1 1 1 1 1 1	1 1 1 1 3 4 4 0 1 1 1 1 2 3 4 0 1 1 1 1 2 3 4 0	2 3 5 4 1 5 3 15 1 2 2 5 4 1 5 3 15 1 2 2 5 4 1 5 3 15 1	4 Low 10 30 Criticial Customers 4 Low 10 30 Criticial Customers 4 Low 10 30 Criticial Customers
449 196.2880923 12 ACP Burst 2 0 0 \$ 68.919.39 \$ 144.90.02 CS 10000 No Critical Facility within 250 Feet 484 782.828814 16 ACP Burst 3 0 1 \$ 276.876.31 \$ 582,132.44 RL 10000 No Critical Facility within 250 Feet 511 815.4854558 16 ACP Burst 1 0 1 \$ 289.942.48 \$ 603.296.57 RL 10000 No Critical Facility within 250 Feet	. 18.6885655 Local 100 43.49048557 45.7595255 0 6.626994905 0 Permanent River 40.79877671 Major 100 90.94477756 12.0695836 10000 10000 31.52266576 Permanent River 0 Local 100 94.26899027 12.52720049 10000 10000 34.32528271 Permanent River	1 1 1 3 3 1 1 3 3 2 1 1 2 1 2 1	2 3 3 3 2 2 3 0 1 3 3 4 2 2 2 0 1 3 3 4 2 2 2 0	4 3 4 3 3 4 3 12 1 2 3 2 3 4 4 3 12 1 2 3 2 3 4 4 3 12 1	4 Low 10 30 Land Use 4 Low 10 30 Proximity to Environmentally Sensitive Areas 4 Low 10 30 Proximity to Environmentally Sensitive Areas
885 43,24556555 10 ACP Burst 0 0 1 \$ 15,654.14 \$ 33,333.32 RL 10,08897524 WaterFacilities 886 0,508536822 10 ACP Burst 7 0 0 \$ 4,352.74 \$ 9,151.64 RL 18.43955977 WaterFacilities 927 1334,40578 10 ACP Burst 3 0 2 \$ 346,736.10 \$ 726,012.65 RL 191,0035391 School	76.01847085 Local 50 10.08909128 10000 10000 10000 10000 N/A 76.01651593 Local 50 18.43945666 10000 10000 10000 10000 N/A 0 Local 50 35.3469779 0 10000 10000 0 Permanent River	5 1 1 1 1 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 3 4 0 1 1 1 1 2 3 4 0 2 3 3 3 2 2 3 0	2 2 5 4 1 5 3 15 1 2 2 5 4 1 5 3 15 1 2 3 4 3 12 f	4 Low 10 30 Criticial Customers 4 Low 10 30 Criticial Customers 4 Low 10 30 Criticial Customers
1039 387.9009672 10 ACP Burst 0 0 1 \$ 102.383.14 \$ 215.218.51 CS 10000 No Critical Facility within 250 Feet 1074 964.1772238 12 ACP Burst 4 0 1 \$ 340.041.14 \$ 714,936.50 RA 10000 No Critical Facility within 250 Feet	. 0 Local 50 23.56348993 0 15.43860254 20.09451805 10000 N/A . 0 Local 100 16.99409327 10000 10000 10000 0 Long Term River	1 1 1 3 2 1	2 1 1 1 2 3 4 0 1 3 3 3 3 3 4 0	4 3 4 4 2 4 3 12 1 1 3 3 4 3 4 3 12 1	4 Low 10 30 Proximity to Buildings, Land Use 4 Low 10 30 Proximity to Buildings Proximity to Other Utilities, Proximity to
99 358.4598744 12 ACP Direct 0 0 3 \$ 149,422.45 \$ 311,100.58 PF 10000 No Critical Facility within 250 Feet 102 213.8248603 10 ACP Burst 0 0 2 \$ 63,670.04 \$ 133,866.26 RL 17.3647928 School 103 99.42051199 10 ACP Burst 0 0 1 \$ 29,994.55 \$ 62,979.44 RL 194397338 School	0 Local 50 28.52571674 0 29.59367067 107.4650271 10000 N/A 0 Local 50 34.8331523 0 28.44075269 10000 10000 N/A	1 1 1 3 1 2 4 1 1 3 1 3 4 1 1 3 1	2 3 3 3 2 2 2 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	3 3 3 3 3 3 3 9 1 1 2 3 4 3 12 1 2 3 4 3 2 4 3 12 7	3 Low 9 27 Environmentally Sensitive Areas, Land Use 4 Low 9 27 Criticial Customers 4 Low 9 27 Criticial Customers
104 557.3352688 12 ACP Burst 0 0 2 \$ 202,280,55 \$ 425,295,66 PF 160,072611 School 107 841.7532689 16 ACP Burst 4 0 1 \$ 297,804.88 \$ 626,134.76 CS 10000 No Critical Facility within 250 Feet	26.62238157 Local 100 81.62001489 36.74434313 0 6.387216373 10000 N/A 0 Local 100 37.36539528 0 0 1.701801775 10000 N/A	4 1 1 3 3 1 1 2 1 3 3 3	2 1 1 1 2 2 0 2 1 1 1 3 2 3 0	3 3 4 3 2 4 3 12 1 4 3 4 3 2 4 3 12 1	4 Low 9 27 Criticial Customers 4 Low 9 27 Land Use Proximity to Environmentally Sensitive Areas,
149 2429.738331 14 ACP Burst 12 0 1 \$ 859.489.72 \$ 1.788.0915.7 R. 10000 No. Critical Facility within 250 Feet 189 61.7820388 10 ACP Burst 0 0 1 \$ 2.5673.1 \$ 43.116.61 CS 10000 No. Critical Facility within 250 Feet 191 65.66518916 10 ACP Burst 0 0 1 \$ 21.461.96 \$ 45.165.81 CS 170.2200718 [Fee Station 21.16196] ACP Burst 0 0 1 \$ 7.7574.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.5774.77 \$ 5.7574.77 \$	0 Local 50 74.62620844 0 3.30728184 24.15637731 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 3 3 3 2 2 3 U 2 1 1 1 2 2 3 0 2 1 1 1 2 2 2 0	2 3 2 3 3 3 3 9 1 4 3 4 3 2 4 3 12 1 4 3 4 3 2 4 3 12 1	3 Low 9 27 Proximity to Buildings 4 Low 9 27 Land Use 4 Low 9 27 Criticial Customers, Land Use
321 488.382896 16 ACP Burst 0 0 4 \$ 187.795.20 \$ 394.839.40 CS 152.6076154 Convenience 322 440.9949344 16 ACP Burst 0 0 0 \$ 152.143.25 \$ 319.881.19 CS 10000 No Critical Facility within 250 Feet	. 0 Local 50 23.65435903 0 0 19.05626281 10000 NA 0 10.0562631 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1 1 1 3 3 1 1 2 1 3 3 1 1 1 1 3 3 3 1 1 1 1	2 1 1 1 2 3 4 U 2 1 1 1 3 2 3 0 2 1 1 1 3 2 3 0	2 3 3 4 2 4 3 12 1 4 3 4 3 2 4 3 12 1 4 3 4 3 2 4 3 12 1	4 Low 9 27 Proximity to Buildings 4 Low 9 27 Land Use 4 Low 9 27 Land Use 4 Low 9 27 Proximity to Buildings
397 165.5590033 10 ACP Burst 6 0 1 \$ 55,123.08 \$ 115,896.27 RM 10000 No Critical Facility within 250 Feet 424 493,803,92476 16 ACP Burst 1 0 1 \$ 175,962.12 \$ 39,990.36 CS 170.152417 Fe Sations 426 527,087656 16 ACP Burst 7 0 1 \$ 191,045.24 \$ 401,672.63 CS 10000 No Critical Facility within 250 Feet 434 422,2165223 10 ACP Burst 1 0 2 \$ 119,045.24 \$ 401,672.63 CS 10000 No Critical Facility within 250 Feet 434 422,2165223 10 ACP Burst 1 0 2 \$ 119,045.24 \$ 401,672.63 CS 10000 No Critical Facility within 250 Feet	. 0 Local 50 12.9019717 0 37.47760345 37.72344251 10000 N/A 0 Local 100 50.48179222 8.939750547 0 0 11203354 10000 N/A 0 Local 100 56.40481602 0 0 6.00289179 10000 N/A 5.47146723 Local 50 25.1018988 12.03914224 0 0.707165178 10000 N/A	4 2 1 3 3 1 2 1 3 3 3	2 1 1 1 2 3 4 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	4 3 4 3 2 4 3 12 1 4 3 4 3 2 4 3 12 1	4 Low 9 27 Proximity to Buildings 4 Low 9 27 Critical Customers, Land Use 4 Low 9 27 Land Use 4 Low 9 27 Critical Customers
568 507.9069529 12 ACP Burst 5 0 1 \$ 183,227.90 \$ 385,236.66 CS 10000 No Critical Facility within 250 Feet 612 249.4263911 10 ACP Burst 5 0 1 \$ 70,606.02 \$ 148,449.17 RL 10000 No Critical Facility within 250 Feet	. 0 Local 100 38.94989726 0 11.06954655 12.68863733 116.333785 Permanent River . 0 Local 50 21.8317903 0 32.53869793 32.53869793 10000 N/A	1 1 1 3 2	2 1 1 1 2 2 3 0 0 2 1 1 1 2 3 4 0	4 3 4 3 2 4 3 12 1 2 3 3 4 2 4 3 12 1	4 Low 9 27 Land Use 4 Low 9 27 Proximity to Buildings
672 162.5400162 12 ACP Burst 4 0 0 \$ 58,478.31 \$ 12.29.64.3 RE 45.55525546 Goosery 697 169.5399914 1 2 ACP Burst 1 0 2 \$ 69,09.09 \$ 14.2543.80 CS 170 1274.5646562 10 ACP Burst 1 0 3 \$ 84,515.9 \$ 177,984.2 RL 10000 No Critical Facility within 250 Feet 712 363.34796 10 ACP Burst 5 0 1 \$ 99,300.74 \$ 20,877,800 RL 10000 No Critical Facility within 250 Feet	. 0.762547008 Local 100 50.72142412 9.253617761 0 28.22346474 10000 N/A . 0 Local 50 20.30015972 2.305788364 0 8.722372701 10000 N/A	1 1 1 3 3 1	2 1 1 1 2 2 2 0 2 1 1 1 2 3 4 0 2 1 1 1 2 3 4 0	4 3 4 3 2 4 3 12 1 2 3 3 4 2 4 3 12 1 2 3 3 4 2 4 3 12 1	4 Low 9 27 Proximity to Buildings 4 Low 9 27 Land Use 4 Low 9 27 Proximity to Buildings 4 Low 9 27 Proximity to Buildings
720 2012/120901 12 ACP Bust 2 0 2 \$ 80,618.17 \$ 169,499.70 RE 69,06669267 Glockery 771 324,1706209 10 ACP Bust 5 0 0 \$ 84,366.88 \$ 177,381.36 CS 10000 No. Critical Facility within 250 Feet 772 477,869151 10 ACP Bust 3 0 2 \$ 131,768.94 \$ 277,704.420 CS 170,062344 Convenience	0 Local 100 18.28033418 0 0 31.85037242 10000 N/A	1 1 2 2 3 1	2 1 1 1 3 3 4 0 2 1 1 1 2 2 3 0	2 3 3 4 2 4 3 12 1 4 3 4 3 2 4 3 12 1	4 Low 9 27 Proximity to Buildings 4 Low 9 27 Land Use 4 Low 9 27 Land Use
778 412.8579626 16 ACP Burst 0 0 1 \$ 147.436.00 \$ 309.984.18 CS 246.4689443 Social/Medical	0 Local 100 47.44073986 0 0 6.392749587 10000 N/A	4 2 1 3 3	2 1 1 1 3 2 3 0	4 3 4 3 2 4 3 12 1	4 Low 9 27 Criticial Customers, Land Use Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to
838 840,9390381 10 ACP Burst 3 0 3 \$ 227,875.70 \$ 479,108.66 RL 10000 No Critical Facility within 250 Feet 87 328,935797 10 ACP Burst 0 0 2 \$ 92,582.88 \$ 194,613.46 RL 10000 No Critical Facility within 250 Feet 101 5 12 \$ 95,05,815.88 \$ 1,062,522.73 HW 27,06130303 Waterfacilities	. O Local 50 35.95902669 0 10000 10000 0 Permanent River - O Local 50 23.82681689 0 10000 10000 10000 10000 - O Major 100 27.08125432 10000 10000 10000 200.223088 Long Term River	1 1 1 3 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	2 3 3 3 2 2 3 0 2 1 1 1 1 2 3 4 0 1 1 1 2 2 3 0	2 3 2 3 3 3 9 1 2 3 3 4 2 4 3 12 1 4 2 5 3 1 5 3 15 1	3 Low 9 27 Buildings 4 Low 9 27 Proximity to Buildings 4 Low 9 27 Criticial Customers
1025 701.741723 14 ACP Burst 0 0 1 \$ 247,100.89 \$ 519,528.63 RL 10000 No Critical Facility within 250 Feet 1033 916,8046066 10 ACP Burst 6 0 7 \$ 289,717.96 \$ 564,972.50 CS 31,69543995 Goocery 1035 154,8259823 12 ACP Burst 0 0 1 \$ 15,154.65 \$ 16,390.85 CS 31,69543995 Goocery	. 0 Local 100 25.03431981 10000 10000 10000 0 Permanent River 0 Local 50 31.32085173 7.316890831 0 5.719014031 10000 NA	1 1 1 1 1 1 2 2 1 1 3 3 3 2	1 3 3 3 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 3 3 3 9 1 4 3 4 3 2 4 3 12 f	Proximity to Environmentally Sensitive Areas, 3 Low 9 27 Proximity to Buildings 4 Low 9 27 Land Use
1035 134.8250823 12 ACP Burst 0 0 1 \$ 51,514.85 \$ 108,306.95 CS 100000 No Critical Facility within 250 Feet 1037 107.8799116 10 ACP Burst 0 0 0 \$ 27,077.86 \$ 56,831.20 CS 1919.062277 Fire Station 1055 595.6812555 12 ACP Burst 5 1 1 \$ 200.085.03 \$ 433,230.71 10000 No Critical Facility within 250 Feet	. 0 Local 100 65.54818794 0 0 10000 10000 N/A 0 Local 50 84.41582926 34.72663657 0 60.81443152 10000 N/A	1 1 1 3 3 1 4 1 1 3 3 1 1 1 1 1 1	2 1 1 1 2 2 2 0 2 1 1 1 1 2 2 0 1 3 3 3 1 2 2 0	4 3 4 3 2 4 3 12 1 4 3 4 3 2 4 3 12 1 1 3 2 3 3 3 3 9 1	4 Low 9 27 Land Use 4 Low 9 27 Criticial Customers, Land Use 3 Low 9 27 Proximity to Environmentally Sensitive Areas
1237 869.028559 12 ACP Direct 0 1 1 \$ 336.883.95 \$ 708.296.50 RE 10000 No Critical Facility within 250 Feet 85 61.00085294 10 ACP Burst 0 0 1 \$ 20,311.21 \$ 42,704.33 RL 10000 No Critical Facility within 250 Feet	. 0 Local 100 82.85276066 0 10000 10000 0 Long Term River . 0 Local 50 61.09712376 0 4.596425049 20.48173937 10000 NA	1 1 1 3 1 1 1 1 3 3 1 1	2 3 3 3 1 2 2 0 2 1 1 1 2 2 2 0	2 3 2 3 3 3 3 9 1 2 3 2 3 2 3 3 9 1	Proximity to Other Utilities, Proximity to 3 Low 9 27 Environmentally Sensitive Areas 3 Low 8 24 Proximity to Other Utilities
116 759.3381477 12 ACP Burst 4 0 3 \$ 279,302.66 \$ 587,233.84 PF 94.0338147 School 114 278.696867 10 ACP Burst 4 0 1 \$ 77,346.09 \$ 182,620.16 RL 10000 No Critical Facility within 250 Feet 116 384.7564107 10 ACP Burst 1 0 1 \$ 102,173.86 \$ 214,820.54 RL 10000 No Critical Facility within 250 Feet	. 9.679568239 Local 50 45.70180271 9.214968799 0 6.499172022 10000 N/A	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 0 2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	3 1 5 2 1 5 3 15 1 2 3 2 3 2 3 3 9 1 2 3 2 3 2 3 3 9 1	4 Low 8 24 Criticial Customers 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
139 879 580666 16 ACP Burst 8 0 0 \$ 308,385.53 \$ 648,380.58 RL 147.5566172 WaterFacilities 168 16.89211222 14 ACP Burst 0 0 0 \$ 5,827.78 \$ 12,252.90 CS 100000 No Critical Facility within 250 Feet	0 Local 100 56.96278429 10000 10000 10000 10000 N/A . 28.5091566 Local 100 10000 0 10000 10000 10000 N/A	4 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 3 0 2 1 1 1 2 2 2 0	2 2 4 3 1 4 3 12 1 4 3 4 2 2 4 3 12 1	4 Low 8 24 Criticial Customers 4 Low 8 24 Land Use Proximity to Other Utilities, Proximity to Buildings,
197 182.1796964 12 ACP Burst 2 1 3 \$ 85,082.0 \$ 178,2128 PF 10000 No Critical Facility within 250 Feet 212 548.1079652 10 ACP Burst 5 0 1 \$ 145,575.10 \$ 306,071.65 RL 10000 No Critical Facility within 250 Feet 213 213.1396/12 10 ACP Burst 0 0 1 \$ \$ 58,497.91 \$ 122,991.65 RL 10000 No Critical Facility within 250 Feet	. 0 Local 50 30.847938 0 0 7.854003777 10000 N/A . 0 Local 50 33.30860315 0 30.11082327 149.2602378 10000 N/A	1 1 1 3 1 1 1 1 3 3 1 1 1 1 1 1 3 1 1 1 1 1 3 1 1 1 1 1 3 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 Low 8 24 Land Use 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
247 368.6707901 12 ACP Burst 9 0 0 \$ 132,59142 \$ 278,773.47 RL 10000 No Critical Facility within 250 Feet 250 585.409364 10 ACP Burst 3 0 1 \$ 153,737.75 \$ 323,233.62 AE 100000 No Critical Facility within 250 Feet 284 462.1000047 10 ACP Burst 2 0 0 \$ 117,207.38 \$ 246,428.52 RL 10000 No Critical Facility within 250 Feet	. 0 Local 100 36.09553349 0 10000 10000 10000 NA . 9.912511571 Local 50 40.10182851 0 25.32717508 30.26472652 10000 N/A . 0 Local 50 31.42525227 0 10000 10000 10000 N/A	1 1 1 3 1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1	2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
305 275.74839399 10 ACP Burst 1 0 2 \$ 79,813.08 \$ 167,807.01 RL 10000 No Critical Facility within 250 Feet 308 145,72541 10 ACP Burst 0 0 0 \$ 36,287.71 \$ 70,294.91 RL 10000 No Critical Facility within 250 Feet 323 114.8833373 10 ACP Burst 1 0 0 \$ 29,438.23 \$ 61,838.37 CS 10000 No Critical Facility within 250 Feet	. 0 Local 50 35.70782267 0 10000 10000 10000 N/A . 0 Major 50 37.20708287 9.543276278 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 3 1 1 1 2 2 2 2 1 1 1 1	1 1 1 1 2 3 4 0 2 1 1 1 2 2 3 0 1 1 1 2 2 3 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4 Low 8 24 Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 4 Low 8 24 Land Use
324 384 8663774 10 ACP Burst 5 0 1 \$ 95,551 46 \$ 209,370 02 CS 10000 No Critical Facility within 250 Feet 341 183.4281113 12 ACP Burst 2 0 0 \$ 64,482.70 \$ 135,574.87 RE 10000 No Critical Facility within 250 Feet 342.454.358651 12 ACP Burst 7 0 1 \$ 165,935.56 \$ 348,679.51 RE 10000 No Critical Facility within 250 Feet	. 0 Local 50 31,24914977 6.266531695 93.21642283 93.68780567 10000 N/A 7.763581824 Local 100 31.76858511 2.686786035 19.8520018 32.01692302 10000 N/A 0 Local 100 30.2596565 0 0 5.559204921 10000 N/A	1 1 1 2 1 1 1 1 3 2 1 1 1 1 1 3 3 2 1 1 1 1	1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	4 2 4 3 1 4 3 12 1 2 3 2 3 2 3 3 9 1 2 3 2 3 2 3 3 9 1	4 Low 8 24 Land Use 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
346 486.4378651 12 ACP Burst 1 0 1 \$ 187.556.08 \$ 352.286.62 RL 10000 No Critical Facility within 250 Feet 347 515.0687523 12 ACP Burst 1 0 1 \$ 183.295.27 \$ 385.378.30 RL 10000 No Critical Facility within 250 Feet 351 513.7906855 10 ACP Burst 2 0 2 \$ 140,161.46 \$ 294.689.47 RL 100000 No Critical Facility within 250 Feet	. 0 Local 100 40.28725522 0 10000 10000 10000 N/A . 7.102306966 Local 100 36.80791117 3.087638771 10000 10000 10000 N/A . 0 Local 50 32.75179408 0 7.241698212 11.98233579 10000 N/A	1 1 1 3 1 1 1 1 3 1 1 1 1 1 1 3 1 1 1 1	2 1 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
355 561 A453125 2 ACP Burst 6 0 0 \$ 197,436.83 \$ 415,116.25 RL 10000 No Critical Facility within 250 Feet 353 287,7078258 2 10 ACP Burst 2 0 1 \$ 8,076.89 \$ 169,12.39 RL 10000 No Critical Facility within 250 Feet 388 152,8307928 10 ACP Burst 0 1 2 \$ 54,385.83 \$ 114,345.78 RL 10000 No Critical Facility within 250 Feet	. 0 Local 50 25.80749557 0 148.5874431 148.5874431 10000 N/A	1 1 1 3 3 1 1 1 1 3 1 1 1 1 1 3 1 1 1 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 2 3 2 3 3 9 1 2 3 2 3 2 3 3 9 1 2 3 2 3 2 3 3 9 1	3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
394 613.4921744 12 ACP Burst 8 0 2 \$ 228,454,80 \$ 475,212.27 EE 10000 No Critical Facility within 250 Feet 395 102.05 103.07 18.324,84.5 \$ 82,222.8 CS 10000 No Critical Facility within 250 Feet 419 56.88432841 12 ACP Burst 7 0 0 \$ 23,825.09 \$ 50,092.25 RL 10000 No Critical Facility within 250 Feet	. 0 Local 50 38.38986595 8.368997128 34.09429805 36.0505298 10000 N/A . 0 Local 100 42.91667238 0 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1	1 1 1 3 3 4 0 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0	2 3 3 4 1 4 3 12 1 4 2 4 3 1 4 3 12 1 2 3 2 3 2 3 2 3 9 7	4 Low 8 24 Proximity to Buildings 4 Low 8 24 Land Use 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings
420 522.7907724 12 ACP Burst 1 0 1 \$ 185,962.82 \$ 309,986.82 RL 10000 No Critical Facility within 250 Feet 421 492.505617 1 0 ACP Burst 0 0 2 \$ 133,555.20 \$ 290,946.97 RL 10000 No Critical Facility within 250 Feet 425 365,967,9324 16 ACP Burst 2 0 0 \$ 127,458.94 \$ 267,982.41 CS 10000 No Critical Facility within 250 Feet	. 14.90055909 Local 50 32.30924074 0 0 15.49139928 10000 N/A . 24.98529591 Local 100 64.27749082 11.41575026 25.22423792 25.22332315 10000 N/A	1 1 1 3 3 1 1 1 1 3 3 1 1 2 1 2 1	2 1 1 1 2 2 3 0 2 1 1 1 2 2 3 0 1 1 1 2 2 3 0	2 3 2 3 2 3 3 9 1 2 3 2 3 2 3 3 9 1 4 2 4 3 1 4 3 12 f	3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 3 Low 8 24 Proximity to Other Utilities, Proximity to Buildings 4 Low 8 24 Land Use
431 289.5987691 16 ACP Burst 0 0 0 \$ 99,911.58 \$ 210,064.09 IG 84.77050254 Dump	0 Local 100 51.97472627 18.35199368 10000 10000 10000 N/A	1 2 1 2 1	1 1 1 2 2 3 0	4 2 4 3 1 4 3 12 1	4 Low 8 24 Land Use

Replacement Service Blow Ph 3 Material & Final Const Cost Use	Proximity to	Customer Proximity to a ProxToSewerM Proximity to a Proximity to a	Critical Customers Proximity to and Types of Roads Proximity to 0	Other Utilities Proximity to 8	o Environmentally Sensitive Areas Proximity to Bu	dings Repair Costs Land	Use CO1 CO2 CO3 Health and Loss of Cost of	CO5	Mitigation Risk	
UniqueID Length (t) Dia (in) Material method Laterals Off Valves Install Cost (\$) (\$) Type 434 248.4096401 12 ACP Burst 0 0 1 \$ 90,701.33 \$ 190,699.58 RL 435 21.25570724 10 ACP Burst 2 0 1 \$ 11.535.18 \$ 24,252.72 RL	Customers Type of Critical Customer ProxToRoad (ft) RoadType 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local	Count Building ains (t) Storm Ditch Storm Feature Prox. To ESA Type of ESA 100 49.58221272 0 5.983681484 10000 N/A 50 45.91686558 0 36.02055608 36.38423543 10000 N/A	CO2 CO1 CO3 CO1 CO3 1 1 1 3 1 1 1 3	3 CO4 CO1 3 2 1 1 2 1	CO3 CO4 CO1 CO2 1 1 1 2 2 1 1 1 2 2	3 0 3 0	Safety Service Failure 2 3 2 2 3 2	y Impact COF LOF 3 2 3 3 3 2 3 3		Norman TBL Cof BRE COF Driver Low 8 24 Proximity to Other Utilities, Proximity to Buildings Low 8 24 Proximity to Other Utilities, Proximity to Buildings
437 138.6865209 10 ACP Burst 3 0 0 \$ 36,153.50 \$ 76,012.73 RL 440 224.7776125 10 ACP Burst 9 0 1 \$ 69,329.18 \$ 145,754.60 RL 456 315,780,0565 12 ACP Burst 2 0 2 \$ 120,339.8 \$ 225,294.31 RE 549 460,239.901 12 ACP Burst 5 1 1 \$ 172,246.28 \$ 383,406.27 RE	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 1.791917393 Local	50 34.6570683 0 28.44075269 172.6157532 10000 N/A 50 48.18351448 0 30.82844958 42.81971692 173.6333131 Permanent River 100 34.64387591 0 10000 10000 10000 N/A 100 24.68915649 10.10228829 10.000 10000 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	1 2 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 3 2 2 3 2 2 3 2	3 2 3 3 3 2 3 3 3 2 3 3	9 1 3 L 9 1 3 L	cow 8 24 Proximity to Other Utilities, Proximity to Buildings cow 8 24 Proximity to Other Utilities, Proximity to Buildings cow 8 24 Proximity to Other Utilities, Proximity to Buildings cow 8 24 Proximity to Buildings
555 450.847318 10 ACP Burst 1 0 0 \$ 113,762.88 \$ 239,186.03 RE 593 300.7857671 10 ACP Burst 0 0 0 \$ 75,497.23 \$ 158,722.92 KB 597 309,2732685 12 ACP Burst 8 0 1 \$ 116,499.28 \$ 244,393.73 RL	10000 No Critical Facility within 250 Feet.	50 38.08463313 2.369759695 10000 10000 10000 10000 NA 50 40.99404507 3.975203467 36.14831001 36.28609691 10000 NA 100 48.73320446 0 244.3448967 245.6038539 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	1 2 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2	3 0 3 0 3 0	2 3 2 2 2 2 3 2 2 3 2 2 3 2 3 2 3 2 3 2	2 3 3 3 2 3 3 3 2 3 3	9 1 3L 9 1 3L 9 1 3L	.ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Proximity to Other Utilities, Proximity to Buildings
606 160,9826146 16 ACP Burst 3 0 1 \$ 62,339,00 \$ 131,067.75 IG 611 221,9533764 10 ACP Burst 7 0 2 \$ 69,910.30 \$ 146,986.40 RL 644 304,3743983 10 ACP Burst 0 0 1 \$ 81,397.97 \$ 171,139,24 RL	47.31387023 Dump 26.54815985 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 8.863187631 Local	100 47,3139508 16,94482805 134,3367961 134,3489318 162,5001311 Permanent River 50 30,12806443 0 4,584706424 10000 NA 50 30,05016305 8,368997128 0 4,249258885 10000 NA	1 1 1 2 1 1 1 3 1 1 1 3	1 1 1 3 2 1 3 2 1	1 1 1 3 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	4 3 4 2 3 2 2 3 2 3 2	3 1 4 3 3 2 3 3 3 2 3 3	12 1 4 L 9 1 3 L 9 1 3 L	.ow 8 24 Land Use .ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Proximity to Other Utilities, Proximity to Buildings
702 532.6398167 10 ACP Burst 0 0 1 \$ 138,692.59 \$ 291,601.6 RL 719 4604.395799 12 ACP Burst 1 0 1 \$ 184,449.62 \$ 345,755.33 RL 769 282.7302999 10 ACP Burst 3 0 2 \$ 82,765.30 \$ 174,014.0 RL 776 282.65869089 16 ACP Burst 1 0 1 \$ 17,054.00 \$ 248,020.99 CS	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 10 Local 10000 No Critical Facility within 250 Feet. 14.78803151 Local	50 31,059069 2.305789384 6 6.31691251 10000 N/A 100 38,00991623 0 214,586145 214,9808357 10000 N/A 50 33,50427608 0 4,079550713 10000 N/A 101 07,225662399 6,57044538 30,63232466 33,58573027 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3 1 2 1 2	3 2 1 3 2 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 3 2 2 3 2 2 3 2 4 2 4	2 3 3 3 2 3 3 3 2 3 3	9 1 3 L	ow 8 24 Proximity to Other Utilities, Proximity to Buildings
794 113.1235584 10 ACP Burst 2 0 0 \$ 29,594.01 \$ 62,221.41 RL 795 39,5690462 10 ACP Burst 7 0 0 \$ 94,451.83 \$ 198,584.97 RL 799 29,7785201 10 ACP Burst 3 0 1 \$ 72,004.41 \$ 151,389.27 RL	10000 No Critical Facility within 250 Feet. 2.967330675 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 13.53985652 Local	50 48.65458861 0 241.6786299 10000 10000 N/A 50 51.25574992 0 0 26.05926406 10000 N/A 50 20.07084817 14.88040143 10000 10000 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 2	1 2 1 3 2 1 1 1 1	1 1 1 2 2 1 1 1 1 2 3 1 1 1 2 3	3 0 2 0 4 0	2 3 2 2 3 2 2 2 3	2 3 3 3 2 3 3 1 1 4 3	9 1 3 L 9 1 3 L 12 1 4 L	.ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Proximity to Other Utilities .ow 8 24 Proximity to Buildings
815 172.5794455 10 ACP Burst 0 0 0 \$ 43,317.44 \$ 91,074.22 FL 816 2414943825 10 ACP Burst 2 0 3 \$ 76,927.86 \$ 161,740.83 FL 817 104,757566 10 ACP Burst 2 0 4 \$ 47,944.15 \$ 98,655.45 FL 824 509,0328421 10 ACP Burst 1 0 3 \$ 143,455.01 \$ 301,572.12 FL	10000 No Critical Facility within 250 Feet. 17.97926836 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0.370731471 Local 10000 No Critical Facility within 250 Feet. 0 Local	50 41.07514373 9.082763888 2 27.219868677 10000 N/A 50 87.57866805 3.622426101 30.44599865 30.62296678 10000 N/A 50 36.67133391 4.080079976 30.44599865 31.88215441 10000 N/A 50 35.38944402 2.598528531 0 4.099555128 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	3 2 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 3 2 2 3 2 2 3 2	3 2 3 3 3 2 3 3 3 2 3 3	9 1 3L 9 1 3L 9 1 3L 9 1 3L	.ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Proximity to Other Utilities, Proximity to Buildings
906 452.1714327 12 ACP Burst 6 0 1 \$ 164.599.14 \$ 346,068.70 CS 915 1546.685652 10 ACP Burst 9 0 2 \$ 400,618.10 \$ 846,07.05 RL 1056 383.8546289 14 ACP Burst 0 0 1 \$ 137,429.85 \$ 288,046.25 CS	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 32.15300238 13.06817037 10000 10000 10000 N/A 50 25.48913713 0 10000 10000 10000 N/A 100 205.5247292 0 10000 10000 N/A	1 1 1 2 1 1 1 3 1 1 1 3	1 1 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2	3 0 3 0 2 0	4 2 4 2 3 2 4 3 4	1 4 3 3 2 3 3 2 2 4 3	12 1 4 L 9 1 3 L 12 1 4 L	.ow 8 24 Land Use .ow 8 24 Proximity to Other Utilities, Proximity to Buildings .ow 8 24 Land Use
1239 370.1131257 12 ACP Burst 0 0 1 \$ 132.689.03 \$ 278,978.68 RL 1240 546.5194557 12 ACP Burst 0 0 3 \$ 233,549.22 \$ 427,962.24 RL 1162.65.95163434 18 DI Direct 4 0 1 \$ 38,727.03 \$ 614.232.37 PE 1173 473.0207464 12 DI	191.0036351 School 12.46737994 Local 10000 No Ortical Facility within 250 Feet. 0 Local 10000 No Ortical Facility within 250 Feet. 0 Highway 10000 No Ortical Facility within 250 Feet. 0 Highway	100 45.53731879 49.31162854 10000 10000 10000 10000 10000 100000 NA 100 34.04945377 0 71.10344489 19.54883786 96.70679561 Temporary River 100 10000 10000 10000 100000 100000 NA 100 228.323554 10000 10000 10000 0 Long Term River	4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 2 2 1 1 1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 2 0	2 2 4 2 3 2 3 5 3	3 1 4 3 3 2 3 3 5 1 5 2 1 3 4 2	9 1 3 L	ow 11 22 Proximity to and Types of Roads
131 0.25026307 10 ACP Burst 0 0 0 \$ 62.82 \$ 132.07 CS 165 6.718533647 14 ACP Burst 0 0 0 \$ 2,317.91 \$ 4,873.41 MB 166 365,9951516 10 ACP Burst 0 0 1 \$ 96.864.78 \$ 203,658.21 CS	170.2026374 Fire Station 3.143089793 Local 10000 No Critical Facility within 250 Feet. 35.66158744 Local 10000 No Critical Facility within 250 Feet. 8.918938383 Local	50 74.54806395 8.697579436 23.27495502 23.9143492 10000 N/A 100 229.5772434 3.110112214 111.9275696 111.9275696 10000 N/A 50 242.1188773 0 10000 10000 10000 N/A	4 1 1 2 1 1 1 3 1 1 1 3	2 1 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 1 1	2 0 2 0 1 0	4 2 4 3 3 4 3 4	2 1 4 3 2 2 3 3 1 2 4 3	12 1 4 L 9 1 3 L 12 1 4 L	.ow 7 21 Critical Customers, Land Use 7 21 Proximity to Other Utilities, Land Use .ow 7 21 Land Use
252 S806228816 10 ACP Burst 3 0 0 \$ 147,585.95 \$ 3101,586.94 E 287 162,7089599 10 ACP Burst 0 0 1 \$ 45,839.95 \$ 98,378.49 RE 288 419,9494953 10 ACP Burst 3 0 0 \$ 107,207.22 \$ 225,403.49 RL 30.6 \$ 137,751.61 RL 0 1 \$ 6,406.05 \$ 13,751.61 RL	59.67266387 Grocery 0 Local 10000 No Critical Facility within 250 Feet. 7.288429361 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 5.790499787 Local	50 58.57658962 4.55882573.2 20.50924734 71.85151378 10000 N/A 50 99.07125066 0.019397775 10000 10000 10000 N/A 50 81.589226541 0 10000 10000 10000 N/A 50 67.18268553 2.595828531 32.75073399 43.10463137 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	2 2 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 1 2 1 1 1 1 1 2 1 1 1 1	2 0 2 0 2 0 2 0	1 3 2 2 3 2 2 3 2 2 3 2	2 2 3 3 2 2 3 3 2 2 3 3 2 2 3 3	9 1 3L 9 1 3L 9 1 3L 9 1 3L	.ow 7 21 Proximity to Other Utilities .ow 7 21 Proximity to Other Utilities
343 17.74841695 12 ACP Burst 0 0 0 \$ 6,123.20 \$ 12,874.04 RE 344 817.4580379 12 ACP Burst 4 0 3 \$ 299,423.02 \$ 311,100.58 PF 350 1.356112854 10 ACP Burst 0 0 1 \$ 5,340.38 \$ 11,226.16 RL	10000 No Critical Facility within 250 Feet. 8.941204802 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 4.157872805 Local	100 66.43905524 4.720008097 16.49644696 17.8963549 10000 N/A 100 54.55148373 0 17.31711499 17.38653204 10000 N/A 50 70.27142874 1.560304291 12.63796136 51.01717974 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	2 2 1 2 2 1 2 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2	2 0 2 0 2 0	2 3 2 3 3 3 3 3 2 3 2	2 2 3 3 2 2 3 3 2 2 3 3	9 1 3 L	.ow 7 21 Proximity to Other Utilities, Land Use .ow 7 21 Proximity to Other Utilities
354 434.3078915 12 ACP Burst 6 0 2 \$ 183,436.22 \$ 343,624.66 CS 355 261.2144589 12 ACP Burst 3 0 2 \$ 101,915.84 \$ 2 14,283.95 RL 432 49.12282156 16 ACP Burst 0 0 5 16,947.37 \$ 3,553.18 CS 441 127.6248091 10 ACP Burst 4 0 1 \$ 39,433.83 \$ 82,999.62 CS	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0.386888855 Local 10000 No Critical Facility within 250 Feet. 4.683762473 Local 10000 No Critical Facility within 250 Feet. 13.39770984 Local	100 52.10253372 9.232275919 49.88888752 49.58720215 10000 N/A 100 15.95269215 0 21.31555199 21.31554963 10000 N/A 100 122.6097906 19.83362861 10000 10000 10000 N/A 50 50.04797454 0 33.012249 33.31775008 107.6139989 Permanent River	1 1 1 2 1 1 1 3 1 2 1 2 1 1 1 3	1 1 1 1 2 2 1 1 1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	2 0 2 0 2 0 2 0	4 2 4 2 3 2 4 2 4 3 3 3	2 1 4 3 2 2 3 3 2 1 4 3 2 2 3 3	9 1 3 L 12 1 4 L	
472 283,9453739 12 ACP Burst 1 0 3 \$ 113,561.15 \$ 238,762.33 RE 562 264,7364484 12 ACP Burst 1 0 0 \$ 91,934.07 \$ 193,291.39 RE 821 170,5623932 10 ACP Burst 4 0 2 \$ 55,211.16 \$ 116,081.47 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 5.793152027 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 51.6399932 0 10000 10000 10000 N/A 100 64.35239922 0 10000 10000 10000 N/A 50 56.75708438 2.694048988 38.84352488 47.91701862 10000 N/A	1 1 1 3 1 1 1 3 1 1 1 3	1 2 1 1 2 1 1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2	2 0 2 0 2 0	2 3 2 2 2 3 2 2 2 3 2	2 2 3 3 2 2 3 3 2 2 3 3	9 1 3 L 9 1 3 L 9 1 3 L	.ow 7 21 Proximity to Other Utilities .ow 7 21 Proximity to Other Utilities .ow 7 21 Proximity to Other Utilities
835 43.39221371 10 ACP Burst 0 0 1 \$ 15,814.5 \$ 33.41.75 RL 870 790,8168644 1 0 ACP Burst 1 0 2 \$ 290,955.48 \$ 439,623.25 RL 943 2500,539484 14 ACP Burst 0 0 1 \$ 867,720.62 \$ 1,824,382.61 PF	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 3.330862844 Local 227.0886501 Animal Shelter 0 Major	50 91.97113765 0 10000 10000 10000 N/A 50 75.59478592 0 10000 10000 10000 N/A 100 185.6077458 0 121.2660215 121.2660215 10000 N/A	1 1 1 3	1 2 1	1 1 1 2 2	2 0	2 3 2 2 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 3 3 2 2 3 3 2 2 3 3	9 1 3L 9 1 3L 9 1 3L	ow 7 21 Proximity to Other Utilities Proximity to and Types of Roads, Proximity to Other
1193 3.498412538 10 ACP Burst 0 0 1 \$ 5.777.50 \$ 12.3575 FR L 1197 84.8985032 10 ACP Burst 1 0 1 \$ 26,902.85 \$ 56,577.99 CS 76 173,0545902 10 ACP Burst 1 0 0 \$ 44,036.70 \$ 92,587.16 PF 86 877.551757 10 ACP Burst 8 0 1 \$ 179,865.00 \$ 78,167.20 PL	10000 No Critical Facility within 250 Feet. 5.790499787 Local 10000 No Critical Facility within 250 Feet. 14.39683773 Local 10000 No Critical Facility within 250 Feet. 3.610402226 Local 10000 No Critical Facility within 250 Feet. 2.909172045 Local	50 70 68753789 2.598328531 29.21937781 40.57716173 10000 N/A 50 70 29.543487 12.72803712 38.2741675 37.07448956 10000 N/A 50 73.7555388 16.17219164 10000 10000 216.0719527 Permanent River 50 31.517569333 6.049697979 34.28952261 42.42670434 10000 N/A	1 1 1 3 1 1 1 2 1 1 1 2	1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 1 2 2 1 1 1 1 1 1 2 1 2 1 1 1 1 1 1 1 2 1 2 1	2 0 2 0 2 0 3	2 3 2 4 2 4 3 2 3	2 2 3 3 2 1 4 3 2 1 3 3		.ow 7 21 Proximity to Other Utilities .ow 7 21 Land Use .ow 6 18 Land Use
87 156.2544967 10 ACP Burst 1 0 0 \$ 39,819.88 \$ 83,721.29 RE 111 127.3194368 10 ACP Burst 0 0 1 \$ 36,957.18 \$ 77,702.47 RL 120 356.4821049 10 ACP Burst 1 0 0 \$ 86,057.01 \$ 178,832.36 RL	10000 No Critical Facility within 250 Feet. 13.19742421 Local 10000 No Critical Facility within 250 Feet. 2.559088919 Local 10000 No Critical Facility within 250 Feet. 2.357261057 Local	50 38.55864227 8.044090127 10000 10000 10000 N/A 50 30.14446323 7.683.10842 10000 10000 10000 N/A 50 34.01593734 6.660608089 10000 10000 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 2 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 3 1 3 3	9 1 3L 9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings
123 415.0540713 10 ACP Burst 3 0 0 \$ 105,778.57 \$ 222,819.58 RE 130 \$23,175577 14 ACP Burst 0 0 2 \$ 28,049.58 \$ 58,974.19 RL 132 1418.700694 14 ACP Burst 6 0 1 \$ 498,980.74 \$ 1,047,874 RL 146 908.228844 12 ACP Burst 6 0 1 \$ 408,980.74 \$ 1,047,874 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local	50 44.8570837 5.741885228 10000 10000 10000 N/A 100 41.77416893 10000 10000 10000 10000 N/A 100 35.73284069 10000 10000 10000 10000 N/A 100 45.10396417 10000 10000 10000 10000 N/A	1 1 2 1 1 1 1 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 3 1 3 3	9 1 3 L 9 1 3 L 9 1 3 L	.ow 6 18 Proximity to Buildings
163 619_245505	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 24.26194881 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 10000 10000 10000 10000 10000 10000 NA 100 23.6429815 9.741100522 116.8928826 116.8928826 10000 N/A 50 10000 9.269371527 10000 10000 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 1 1	2 0 2 0 1 0	3 2 3 3 3 4 2 4	2 1 3 3 2 1 3 3 1 1 4 3	9 1 3 L 9 1 3 L 12 1 4 L	.ow 6 18 Land Use .ow 6 18 Land Use .ow 6 18 Land Use
201 105.7096655 14 ACP Burst 0 0 1 \$ 41,468.45 \$ 67,1674.2 RL 202 483,9717954 14 ACP Burst 5 0 0 \$ 169,970.27 \$ 357,362.49 RL 204 2161.091715 14 ACP Burst 6 0 3 \$ 764,768.45 \$ 1,606,681.39 RL 205 486,0794061 14 ACP Burst 5 0 0 \$ 183,452.40 \$ 343,658.66 RL	10000 No Critical Facility within 250 Feet. 1.192715972 Local 10000 No Critical Facility within 250 Feet. 1.791581616 Local 10000 No Critical Facility within 250 Feet. 6.091077031 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 37.69627117 10000 10000 10000 10000 NA 100 33.35638201 10000 10000 10000 10000 10000 NA 100 28.47251267 10000 10000 10000 10000 NA 100 29.53691983 10000 10000 10000 10000 NA	1 1 1 1 1 1 1 1 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 3 1 3 3	9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings
206 123.2318967 14 ACP Burst 2 0 0 \$ 43.715.00 \$ 91.910.80 RL 207 374.2777459 14 ACP Burst 10 0 1 \$ 140,125.82 \$ 294,614.54 RL 248 238.0114865 12 ACP Burst 5 0 0 \$ 85,113.96 \$ 178,952.11 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 2.354867742 Local 10000 No Critical Facility within 250 Feet. 19.16547628 Local	100 36,69621068 10000 10000 10000 10000 N/A 100 26,7783651 10000 10000 10000 10000 N/A 100 42,34227859 17,4976905 10000 10000 10000 N/A	1 1 1 1 1 1 1 1 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 3 3 3 1 3 3 3 1 3 3	9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings
251 595.5422097 10 ACP Burst 4 0 1 \$ 156.881.09 \$ 323.842.50 AE 265.551670758 14 ACP Burst 0 0 0 \$ 1.239.13 \$ 2.605.26 PF 309 121.3445917 10 ACP Burst 0 0 0 \$ 3.047.49 \$ 64.093.68 RL 395.168.64055883 10 ACP Burst 3 0 0 \$ 44.091.89 \$ 92.703.20 RM	10000 No Critical Facility within 250 Feet. 12.1724598 Local 10000 No Critical Facility within 250 Feet. 35.6857495 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local	50 42.43706599 7.8621652 10000 10000 10000 N/A 100 233.6428915 9.741100522 1168.928266 116.8928826 10000 N/A 50 39.35665412 9.60943354 77.20729353 77.96766906 10000 N/A 50 41.55165127 9.002001189 87.7407994 99.3850216 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 2 0 3 0	1 2 2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 3 3 2 1 3 3 3 1 3 3	9 1 3 L	ow 6 18 Land Use
396 81.69846865 10 ACP Burst 0 0 1 \$ 25,506.32 \$ 53,627.03 RM 438 112.223093 10 ACP Burst 0 0 0 \$ 26,168.00 \$ 59,223.21 RL 439 56,75439981 10 ACP Burst 0 0 0 \$ 14,245.35 \$ 9,990.86 RL	10000 No Critical Facility within 250 Feet. 11.66224088 Local 10000 No Critical Facility within 250 Feet. 8.86521823 Local 10000 No Critical Facility within 250 Feet. 11.38303933 Local	50 43.11606581 11.03670929 38.63810392 38.63775809 10000 N/A 50 37.11431261 9.348268425 28.45287515 40.11255259 10000 N/A 50 37.39462816 9.038234853 30.10872858 30.20090852 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 3 1 3 3	9 1 3L 9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings
457 308.6007482 10 ACP Burst 3 0 1 \$ 84,258.79 \$ 177,154.10 RE 458 312,5517237 10 ACP Burst 0 0 1 \$ 83,450.48 \$ 175,454.64 RE 499 188.896623 10 ACP Burst 4 0 2 \$ 59,311.08 \$ 124,701.50 FP 553 550,5737265 10 ACP Burst 5 0 1 \$ 164,194.01 \$ 307,372.90 RE	10000 No Critical Facility within 250 Feet. 13.21009318 Local 10000 No Critical Facility within 250 Feet. 13.220601 Local 10000 No Critical Facility within 250 Feet. 41.16180715 Local 10000 No Critical Facility within 250 Feet. 13.66571729 Local	50 32.49660433 9.583084622 10000 10000 10000 NA 50 34.7691222 11.18647882 10000 10000 10000 NA 50 178.1682696 0 87.34481374 87.36541704 10000 NA 50 38.75252298 8.030421623 10000 10000 10000 NA	1 1 1 2 1 1 1 2 1 1 1 3	1 1 1 1 1 1 2 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 1 1 1	3 0 3 0 1 0	2 2 2 2 2 3 3 3 3 2 2 2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 1 2 3 3 3 1 3 3	9 1 3L 9 1 3L 9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Other Utilities, Land Use
567 373.0851371 12 ACP Burst 0 0 3 \$ 143,714.37 \$ 302,159.47 RE 613 136.1817726 12 ACP Burst 15 0 1 \$ 60,982.71 \$ 128,216.15 RL 645 222.7681191 10 ACP Burst 4 0 2 \$ 63,314.80 \$ 143,631.86 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 20.01284955 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 33.0967746 9.127659363 10000 10000 10000 N/A 100 43.77359407 11.20462526 10000 10000 10000 N/A 50 47.24884145 11.47755575 10000 10000 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 2	1 1 1 1 1 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2	1 3 3 3 1 3 3 3 1 3 3	9 1 3 L 9 1 3 L 9 1 3 L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings
767 232.7455925 10 ACP Burst 2 0 1 \$ 64,618.64 \$ 155,806.09 RL 78 89.44457682 10 ACP Burst 2 0 3 \$ 33,643.16 \$ 81,247.24 RL 798 158,0921788 10 ACP Burst 16 0 0 \$ 49,484.45 \$ 10,401.05 RL 83 30 0.1594603 10 ACP Burst 3 0 2 \$ 87,140.02 \$ 183,211.09 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 16.97571534 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 5.352638792 Local	50 30.25743515 11.12653412 10000 10000 10000 N/A 50 33.04704467 10.33492483 186.4259638 186.2492489 10000 N/A 50 47.15172171 6.682270436 10000 10000 10000 N/A 50 40.25800579 5.123983877 20.45050721 21.2041753 10000 N/A	1 1 1 2 1 1 1 2 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 3 0 3 0	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	3 1 3 3 3 1 3 3 3 1 3 3 3 1 3 3	9 1 3L 9 1 3L 9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings
836 125.8912597 10 ACP Burst 1 0 0 \$ 32,198.71 \$ 67,697.76 RL 840 445,3129159 10 ACP Burst 1 0 0 \$ 112,373.54 \$ 296,268.37 RL 873 51,68390063 16 ACP Burst 3 0 1 \$ 24,630.95 \$ 51,786.56 PF	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 9.001358234 Local 10000 No Critical Facility within 250 Feet. 36.47084218 Local	50 49.72202664 11.21908302 10000 10000 10000 NA 50 41.4784657 12.56372837 10000 10000 10000 NA 100 10000 10000 10000 10000 10000 10000 NA	1 1 1 2 1 1 1 2 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 1 2 3	3 0 3 0 2 0	2 2 2 2 2 2 3 3 2 3 3 2 3 3 2 3 3 3 3 3	3 1 3 3 3 1 3 3 2 1 3 3	9 1 3L 9 1 3L 9 1 3L	.ow 6 18 Proximity to Buildings .ow 6 18 Proximity to Buildings .ow 6 18 Land Use
971 179 6938638 12 ACP Burst 1 0 0 \$ 62,594.38 \$ 131,604.69 RL 1206 62,945.98913 10 ACP Burst 1 0 1 \$ 21,396.29 \$ 44,992.02 PF 1041 152,7170469 16 ACP Burst 4 0 1 \$ 12,494.88 \$ 26,596.37 PF 1058 7,560625238 10 ACP Burst 0 0 0 \$ 1,897.79 \$ 3,990.11 CS	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Major 10000 No Critical Facility within 250 Feet. 5.46594707 Local 10000 No Critical Facility within 250 Feet. 24.71936451 Local	100 37.23300015 15.11889521 10000 10000 10000 NA 50 96.0942244 198.2216491 10000 164.1500985 Permanent River 100 100.8191707 196.2125115 10000 1000 150.5532923 Permanent River 50 10000 161.77260524 10000 10000 10000 NA	1 1 1 2 1 2 2 1 1 2 1 1 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 1 2 1 1 1 1 2 1 1 1 1 1	3 0 2 0 2 0	2 2 2 3 3 3 4 1 4	3 1 3 3 2 1 3 3 2 1 3 3 1 1 4 3	9 1 3 L 9 1 3 L 9 1 3 L 12 1 4 L	.ow 6 18 Land Use .ow 6 18 Land Use
1059 453 5353525 14 ACP Burst 4 0 1 \$ 167.354.20 \$ 351,862.20 PF 1088 28.62406334 10 ACP Burst 0 0 1 \$ 12,184.64 \$ 25,6182.10 PF 1101 18.4294062 10 ACP Burst 11 0 2 \$ 21,25.78 \$ 44,627.20 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 3.610402226 Local 10000 No Critical Facility within 250 Feet. 10.73483762 Local	100 10000 10.04785075 10000 10000 10000 NA 50 63.5894519 16.17219164 10000 10000 10000 NA 50 47.76012968 13.16412591 10000 10000 NA	1 1 1 2 1 1 1 2 1 1 1 2	1 1 1	1 1 1 2 2 1 1 1 1 2 2 1 1 1 2 2	2 0 2 0 3 0	3 2 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 1 3 3 2 1 3 3 3 1 3 3	9 1 3 L	.ow 6 18 Land Use .ow 6 18 Proximity to Buildings
1102 275.8272843 10 ACP Burst 0 0 1 \$ 74,232.78 \$ 156,074.48 RL 124 94,02369377 10 ACP Burst 0 0 0 \$ 2,384.51 \$ 971.38 RL 134 156,1409925 12 ACP Burst 0 0 0 \$ 53,686.64 \$ 113,258.62 TA 147 221,538242 144 ACP Burst 1 0 0 2 \$ 67,035.69 \$ 182,982.03 RA	10000 No Critical Facility within 250 Feet. 2.723106872 Local 10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 5.96071325 Local 10000 No Critical Facility within 250 Feet. 12.76219796 Local	50 29.58787163 7.409349347 10000 10000 10000 N/A 50 85.6108416 224.094222 10000 10000 10000 10000 N/A 100 63.01433959 10000 10000 10000 10000 N/A 100 76.48111342 10000 10000 10000 10000 N/A	1 1 1 2 1 1 1 1 1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 2 2 1 1 1 2 2 1 1 1 2 2	3 0 2 0 2 0 2 0	2 2 2 2 2 2 1 2 2 1 2 2	3 1 3 3 2 1 2 3 2 1 2 3 2 1 2 3	9 1 3 L 6 1 2 L 6 1 2 L 6 1 2 L	ow 5 15 Proximity to Buildings, Land Use
148 257.9995929 14 ACP Burst 1 0 0 \$ 89,609.86 \$ 188,404.73 RA 203 36.87507063 14 ACP Burst 0 0 0 \$ 12,721.90 \$ 26,747.79 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 0 Local	100 112.4187776 10000 10000 10000 10000 N/A 100 58.6468768 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 2 2 1 1 1 2 2	2 0 0	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 1 2 3	6 1 2 L 6 1 2 L	.ow 5 15 Proximity to Buildingsow 5 15 Proximity to Buildings , Land Use Proximity to Other Utilities, Proximity to Buildings,
345 1831350884 12 ACP Burst 0 0 0 \$ 63,161.61 \$ 132,839.33 RL 451 387.5748133 12 ACP Burst 12 0 0 \$ 140,913.31 \$ 296,270.24 RE	10000 No Critical Facility within 250 Feet. 9.559884423 Local 10000 No Critical Facility within 250 Feet. 20.51814891 Local	100 58.75810828 12.52064255 248.8535291 10000 10000 N/A 100 84.84831941 11.45248796 10000 10000 10000 N/A	1 1 1 2	1 1 1	1 1 1 2 2	2 0	2 2 2 2	2 1 2 3	6 1 2 L 6 1 2 L	Proximity to Other Utilities, Proximity to Buildings,
452 178 1224788 12 ACP Burst 5 0 0 \$ 64,452.26 \$ 135,510,67 RE 491 12.1595111 10 ACP Burst 2 0 0 \$ 4,252.04 \$ 8,339.91 PF	10000 No Critical Facility within 250 Feet. 21.92551738 Local 10000 No Critical Facility within 250 Feet. 37.76773417 Local	100 84.08189724 10.69101861 10000 10000 10000 N/A 50 179.4476961 61.07526903 97.89011843 97.92230543 10000 N/A	1 1 1 2 1 1	1 1 1	1 1 1 1 2	2 0 1 0	2 2 2 3 3 1 3	2 1 2 3	6 1 2 L 9 1 3 L	.ow 5 15 Land Use 5 15 Land Use Froximity to Other Utilities, Proximity to Buildings,
561 20.57280721 12 ACP Burst 0 0 1 \$ 12,097.62 \$ 25,435.24 RE 796 14.27756872 10 ACP Burst 2 0 0 \$ 4,783.67 \$ 10,057.67 RL	10000 No Critical Facility within 250 Feet. 13.95236113 Local 10000 No Critical Facility within 250 Feet. 4.806252277 Local	100 61.4838346 15.31835322 10000 10000 10000 N/A 50 53.82150439 6.48621136 63.47137696 65.16444969 10000 N/A	1 1 1 2	1 1 1	1 1 1 2 2	2 0	2 2 2 2	2 1 2 3 2 1 2 3	6 1 2 L	Proximity to Other Utilities, Proximity to Buildings,
861 551.3157192 10 ACP Burst 0 0 1 \$ 143,380.25 \$ 301,456.97 RL 1163 77.84186012 18 DI Direct 4 0 0 \$ 39,374.88 \$ 82,785.69 AE	10000 No Critical Facility within 250 Feet. 5.716366564 Local 10000 No Critical Facility within 250 Feet. 10.79041518 Major	50 55.35067084 9.977564533 48.14945766 53.63862642 10000 N/A 100 197.676729 10000 10000 10000 10000 N/A	1 1 1 2 1 3 3 1	1 1 1	1 1 1 2 2 1 1 1 2 2	2 0	2 2 2 1	2 1 2 3 3 1 3 2	6 1 2 L 6 1 3 L	.ow 5 15 Land Use .ow 7 14 Proximity to and Types of Roads Criticial Customers, Proximity to and Types of Roads,
74 2.725783824 8 ACP Burst 0 0 0 \$ 564.24 \$ 1,196.31 AE 98 4.033828128 12 ACP Burst 0 0 0 \$ 1,391.67 \$ 2,925.99 RE	10000 No Critical Facility within 250 Feet. 9.897182555 Local 10000 No Critical Facility within 250 Feet. 21.84048276 Local	50 160.7735012 10000 10000 10000 10000 N/A 100 178.4209043 10.67368486 10000 10000 10000 N/A	1 1 1 1 1 1 1 2	1 1 1	1 1 1 1 1 1 1	1 0	1 1 1 1 2 2 2 2	1 1 1 4	4 1 1 L 6 1 2 L	Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to Low 3 12 Buildings, Land Use Low 4 12 Proximity to Other Utilities, Land Use
171 4.75733067 8 ACP Burst 0 0 1 \$ 5,984.77 \$ 12,582.97 RX	10000 No Critical Facility within 250 Feet. 8.093460466 Local	50 207.5006411 10000 10000 10000 N/A	1 1 1 1	1 1	1 1 1 1 1	1 0	1 1 1	1 1 1 4	4 1 1L	Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to ow 3 12 Buildings, Land Use
1/1 4.79/53/00/ O ALP Buist 6 0 \$ 4.378.79 \$ 9.208.40 RX	10000 No Critical Facility within 250 Feet. 4.843214765 Local	50 65.82938243 10000 10000 10000 N/A		1 1 1	1 1 1 1 1					Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to
			1 1 1			. 0		1 4		Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to
878 1173.598557 6 ACP Direct 4 0 2 \$ 305,798.64 \$ 642,943.74 RA 913 13.27120199 10 ACP Burst 0 0 1 \$ 8,331.07 \$ 17.516.08 RL	10000 No Critical Facility within 250 Feet. 0 Local 10000 No Critical Facility within 250 Feet. 8.505420328 Local	50 144.8720303 10000 10000 10000 10000 NA 50 231.132008 13.70497698 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1	1 0	1 1 1 2 2 2	1 1 4	4 1 1 L 6 1 2 L	
1006 35 20176552 6 ACP Burst 1 1 1 \$ 18,761.16 \$ 39,467,39 AE	10000 No Critical Facility within 250 Feet. 26.56327051 Local	50 183.0657809 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1 1	1 0	1 1 1	1 1 4	4 1 1 L	
1060 0.059441065 6 ACP Burst 2 0 0 \$ 1,212.13 \$ 2,548.49 RX	10000 No Critical Facility within 250 Feet. 13.04885891 Local	50 64.51769246 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1 1	1 0	1 1 1	1 1 1 4	4 1 1 L	
1065 38.55842019 2 ACP Burst 3 1 0 \$ 15,665.92 \$ 32,937.59 RX	10000 No Critical Facility within 250 Feet. 90.33773293 Local	10 61.31676895 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1 1	1 0	1 1 1	1 1 1 4	4 1 1 L	.ow 3 12 Buildings, Land Use Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
1072 35.77477765 8 ACP Burst 6 1 0 \$ 17,005.38 \$ 35,753.81 AE	10000 No Critical Facility within 250 Feet. 10.23263518 Local	50 162.2702162 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1	1 0	1 1 1	1 1 1 4	4 1 1 L	Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
1073 388.9893462 6 ACP Burst 2 1 1 \$ 91,549.75 \$ 192,483.34 RA	10000 No Critical Facility within 250 Feet. 11.82258088 Local	50 65.53570109 10000 10000 10000 10000 N/A	1 1 1 1	1 1 1	1 1 1 1	1 0	1 1 1	1 1 1 4	4 1 1 L	Environmentally Sensitive Areas, Proximity to 3 12 Buildings, Land Use

	0		Di-	Ph 3 Material &	Land Final Const Cost Use	Proximity to Critical		Cuture Durinking Durinking Durinking		Critical Customers Proximity	to and Types of Roads	Proximity to Other Utilities	Proximity to Environments	tally Sensitive Areas	Proximity to Buildings	Repair Costs Land L	Use CO1 Health	CO2 CO3	CO5		Million Co.		
UniqueID Length (ft) Dia	(in) Material met	ethod Service Laterals	Off Valves	Install Cost (\$)	(\$) Use	Customers Type of Critical Customer	ProxToRoad (ft) RoadType	Customer Proximity to a Count Building ProxToSewerM Proximity to a Storm Ditch Prox To ESA	Type of ESA	CO2 CO1	CO3 (CO1 CO3 CO4	CO1 CO3	CO4	CO1 CO2 CO3	CO3 CO2	Safety	Service Failure	/ Impact COF	LOF Core	Risk Factor Zo	one Priority TBL CoF B	COF Driver Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
1141 12.23100951	6 ACP Burn	ırst 15	0	0 \$ 11,495.13	\$ 24,168.50 AE	10000 No Critical Facility within 250 Feet.	0 Local	50 64.94886854 10000 10000 10000 10000	100 N/A	1	1 1	1 1	1 1	1 1	1 1 1	0	1 1	1 1	1	1 4	4 1	1 Low 3	Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use Critical Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
1142 13.18637895	6 ACP Burn	irst (0	0 \$ 2,690.02	\$ 5,655.77 AE	10000 No Critical Facility within 250 Feet.	4.416635438 Local	50 111.2946753 10000 10000 10000 10000	000 N/A	1	1 1	1 1	1 1	1 1	1 1 1	0	1 1	1 1	1	1 4	4 1	1 Low 3	Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use Criticial Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
1215 418.7727189	6 ACP Bur	irst (0	1 \$ 90,429.63	\$ 190,128.31 RA	10000 No Critical Facility within 250 Feet.	0 Local	50 121.336819 10000 10000 10000 10000	100 N/A	1	1 1	1 1	1 1	1 1	1 1 1	0	1 1	1 1	1	1 4	4 1	1 Low 3	Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use Criticial Customers, Proximity to and Types of Roads,
1216 557.178893	6 ACP Burn	ırst (0	1 \$ 118,664.49	\$ 249,492.10 RA	10000 No Critical Facility within 250 Feet.	0 Local	50 163.3565131 10000 10000 10000 10000	100 N/A	1	1 1	1 1	1 1	1 1	1 1 1	0	1 1	1 1	1	1 4	4 1	1 Low 3	Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use Criticial Customers, Proximity to and Types of Roads,
1217 994.206687	6 ACP Dire	rect (0	1 \$ 253,551.67	\$ 533,092.39 RA	10000 No Critical Facility within 250 Feet.	0 Local	50 92.68236199 10000 10000 10000 10000	100 N/A	1	1 1	1 1	1 1	1 1	1 1 1	0	1 1	1 1	1	1 4	4 1	1 Low 3	Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use Criticial Customers, Proximity to and Types of Roads,
1226 6.337445695 470 1.839529802	2 ACP Bur 12 ACP Bur	rst (1 \$ 18,892.84 1 \$ 5,634.64	\$ 11,846.83 RE	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	247.920113 Local 14.83733421 Local	100 107.7371495 7.371429855 10000 10000 1000	IS8 Long Term River IO0 N/A	1 1	1 1	1 1 2	1 1	1 1 1	1 1 1	0	1 1 2 2	1 1 2 1	1 1	1 4 2 3	4 1 6 1	1 Low 3 2 Low 4	Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to 12 Buildings, Land Use 12 Criticial Customers
194 31.48558295 234 32.55720488 1031 2324.656065 29 202.6793169	18 CIP Bun 18 CIP Bun 18 CIP Bun 4 PVC Bun	irst (rst :	0	0 \$ 13,979.60 0 \$ 14,455.40 3 \$ 1,047,747.29 0 \$ 41,346.58	\$ 30,392.48 RL \$ 2,202,888.68 AE \$ 86,931.19 PF	1.000300085 WaterFacilities 3.388825258 WaterFacilities 0 WaterFacilities 31.84017698 Community Center	44.86035861 Local 10000 N/A 0 Major 92.04612122 Local	100 3.388827833 10000 10000 10000 1000 100 0 10000 10000 10000 1000 10 31.84019252 91.8465367 0 6.53200395 1000	100 N/A 100 N/A 100 N/A 100 N/A	5 5 5 5	1 1 1 1 3 3 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 2 1	1 1 1 1 1 1	5 5 5 5 5 5 5 5 5 1 1 2	0 0 0	2 5 2 5 1 5 3 3	5 5 5 5 5 5 5 3	1 1 1 2	5 1 5 1 5 1 5 1	5 1 5 1 5 1 5 1	4 Low 11 4 Low 11 4 Low 11 4 Low 10	11 Criticial Customers, Proximity to Buildings 11 Criticial Customers, Proximity to Buildings 11 Criticial Customers, Proximity to Buildings 10 Criticial Customers
30 329.2128034 31 69.01068874 235 314.111595 319 1427.159825	4 PVC Bun 4 PVC Bun 8 PVC Bun 18 CIP Bun	rst (4 \$ 93,759.41 0 \$ 14,078.18 1 \$ 70,021.10 1 \$ 640,458.96	\$ 29,599.37 PF \$ 147,219.36 RM	0.373946599 Community Center 8.045108488 Community Center 42.09693766 Retirement Home 10000 No Critical Facility within 250 Feet.	230.8039234 Local 91.19377957 Local 0 Local	10 8.045255159 90.68204661 0 1.81725359 1000 50 42.09686722 0 0 53.3692908 1000	100 N/A 100 N/A 100 N/A 0 Permanent River	5 5 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1 1 1 1 1 1 1 1 1	3 4 3 2 2 3 2 2 3	0	3 3 3 3 2 3	5 3 5 3 5 3	2 2 2	5 1 5 1 5 1	5 1 5 1 5 1	4 Low 10 4 Low 10 4 Low 10	10 Criticial Customers 10 Criticial Customers 10 Criticial Customers 10 Proximity to Environmentally Sensitive Areas
950 1007.753221 952 523.6556206 995 242.6294115	18 CIP Bun 8 PVC Dire 8 PVC Bun 8 PVC Bun	rect (0	1 \$ 640,458.96 2 \$ 312,325.97 2 \$ 118,396.71 2 \$ 60,824.29	\$ 656,665.34 CS \$ 248,929.09 CS	10000 No Critical Facility within 250 Feet. 11.15238069 Convenience 10000 No Critical Facility within 250 Feet. 69.3823198 Retirement Home	0 Local 0 Local 0 Local 0 Local	50 11.15231925 4.100401729 123.3825464 123.3837027 1000 50 12.8709324 0 10000 10000 10000	100 N/A 100 N/A 100 N/A 100 N/A	1 3 1	2 1 1 1 1 1	3 1 3 3 1 3	2 3 2 1 2 1	3 4 1 1 1 1	2 2 2 2 3 4 2 3 4	0	4 3 4 3	2 3 4 4 4 4	2 2	4 1 4 1 4 1	4 1 4 1	4 Low 10 4 Low 10 4 Low 10 4 Low 10	10 Proximity to Environmentally Sensitive Areas 10 Proximity to Buildings, Land Use 10 Proximity to Buildings, Land Use 10 Criticial Customers
1030 1156.843539 1168 517.2971955 1231 45.49897534	18 CIP HDI 8 PVC Bun 4 PVC Bun	DD 8	0	5 #N/A	\$ 2,523,596.31 RE \$ 267,186.79 PF	09.3625196 retulerment nome 10000 No Critical Facility within 250 Feet. 15.57170466 School 60.33759876 School	0 Local 0 Local 0 Local 0 Local	100 59.23296859 10000 10000 10000 50 15.57175888 16.03287182 38.73392965 38.74581396 1000	0 Long Term River 100 N/A 100 N/A	1 5 5	2 1 1 1 1	3 3 1 2 1 3 3 3	2 1 1 3 1 1 2 1	3 4 1 1 1 1	2 2 3 2 2 3 2 3 4 1 1 2	0	2 3 3 2 2 3	2 3 5 4 5 3	1 2	5 1 5 1 5 1	4 1 5 1 5 1	4 Low 10 4 Low 10 4 Low 10 4 Low 10	10 Critical Customers 10 Proximity to Environmentally Sensitive Areas 10 Critical Customers 10 Critical Customers
7 137.7834186 35 607.140967 49 35.8483411	6 PVC Bun 6 PVC Bun 2 PVC Bun	rst (rst 8 rst (0	1 \$ 39,107.82 3 \$ 143,656.76 1 \$ 12,313.06	\$ 302,038.33 RL \$ 25,888.21 CS	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local	50 29.18806244 0 0 17.34293092 1000 50 0 8.272006271 0 9.145011306 1000 10 53.28084606 0 0 58.10378684 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1 1 1 1 1	3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1 1 1	1 1 2 3 4 3 1 1 1	0 0 0	4 3 2 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Proximity to Buildings 9 Land Use
55 28.32112789 61 30.29511561 66 212.6399905	2 PVC Bun 2 PVC Bun 6 PVC Bun	rst (0	1 \$ 11,377.51 1 \$ 11,180.20 3 \$ 64,378.56 3 \$ 244.633.66	\$ 23,506.38 RM \$ 135,355.92 RM	212.5611821 School 116.4607439 School 116.1343264 School	0 Local 6.644640961 Local 0 Local	10 8.096958569 0 10000 10000 1000 50 6.036803142 0 169.9649122 169.97104 1000	100 N/A 100 N/A 100 N/A 100 N/A	4 4 4	1 1	3 1 2 3 1 2 3 1	2 1 2 1 2 1	1 1 1 1	2 2 3 2 2 3 2 2 3	0	2 3 2 3 2 3	4 3 4 3 4 3	2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Criticial Customers 9 Criticial Customers 9 Criticial Customers
126 892.1346361 128 164.1315164	6 PVC Dire 10 PVC Burn			3 \$ 244,633.66 0 \$ 42,397.01		166.4677407 Retirement Home 236.1800395 Convenience	0 Local 14.64816535 Local		IOU N/A IOO N/A	1	1 1	3 3	2 1 2 1	1 1	1 1 2 2 2	0	4 3	4 3	2	4 1	4 1	4 Low 9 4 Low 9	Criticial Customers Land Use Critical Customers, Proximity to and Types of Roads, Proximity to Other Utilities, Proximity to
145 450.5537522 161 1294.683011 215 120.5742163	12 ACP Burn 8 PVC Dire 10 PVC Burn	rect :	0	3 \$ 404,004.90 2 \$ 40,864.13	\$ 85,916.83 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Major 12.79688897 Local	50 7.170903268 10000 10000 10000 50 21.54851547 11.56185125 0 4.597734863 1000	03 Permanent River 0 Permanent River 100 N/A	1 1 1	1 1 2 2 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 3 2 1	1 1 3 2 1 1	1 1 1 2 3 4 2 3 4	0 0 0	1 1 2 3 2 3	1 1 3 4 3 4	1 2 2	1 3 4 1 4 1	3 1 4 1 4 1	1 Low 3 4 Low 9 4 Low 9	Environmentally Sensitive Areas, Proximity to 9 Buildings, Land Use 9 Proximity to Buildings 9 Proximity to Buildings
221 74.20952451 222 55.53566986 230 196.7999899	10 PVC Bun 10 PVC Bun 8 PVC Bun	rst 2 rst (0	1 \$ 23,626.59 3 \$ 30,139.45 2 \$ 50,737.60	\$ 106,675.80 RL	10000 No Critical Facility within 250 Feet. 208.4587359 Convenience 10000 No Critical Facility within 250 Feet.	11.56103355 Local 14.34864025 Local 10.28486614 Local	50 46.69705938 12.52083461 0 5.336132606 1000 50 17.9641029 0 110.5177959 111.0038289 1000	00 N/A 100 N/A 100 N/A	1 1 1	1 1 1 1 1 1 1	3 3 3 3 3 1	2 1 2 1 2 1	1 1 1	2 2 3 2 2 3 2 3 4	0	4 3 4 3 2 3	4 3 4 3 3 4	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Land Use 9 Proximity to Buildings
231 650.2816286 232 256.4671586 233 67.10824557 253 33.47474873	6 PVC Bun 18 CIP Bun 18 CIP Bun 6 PVC Bun	rst (0	1 \$ 143,657.45 0 \$ 113,871.42 0 \$ 29,796.06 1 \$ 11.828.85	\$ 239,414.66 RL \$ 62,646.22 RL	211.1804709 Retirement Home 39.79862932 WaterFacilities 33.30845193 WaterFacilities 212.7131553 Convenience	2.885604923 Local 19.16674595 Local 10000 N/A 0 Local	100 33.80834289 10000 10000 10000 1000 100 33.30847745 10000 10000 10000 10000	100 N/A 100 N/A 100 N/A 100 N/A	4 5 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 3 1 1 1 1 1 3 3	2 1 1 1 1 1 2 1	1 1 1	1 1 2 3 3 3 3 3 3 1 1 2	0	2 3 2 3 2 3 4 3	4 3 5 3 5 3 4 3	1 1 2	4 1 5 1 5 1 4 1	4 1 5 1 5 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Criticial Customers 9 Criticial Customers 9 Criticial Customers 9 Land Use
254 33.50986727 255 33.42823693 256 30.27385405	2 PVC Burn 6 PVC Burn 2 PVC Burn	rst (rst (0	1 \$ 11,836.01 1 \$ 11,819.36 1 \$ 11,175.87	\$ 24,885.22 CS \$ 24,850.21 CS \$ 23,497.26 CS	211.5052043 Convenience 235.9734962 Convenience 241.5099377 Convenience	0 Local 0 Local 0 Local	10 46.9243913 33.13195021 0 12.58235895 1000 50 50.41518554 0 0 33.85496521 1000 10 54.59951746 0 0 42.85225974 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1	3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1 1	1 1 2 1 1 1 1 1	0	4 3 4 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Land Use 9 Land Use
263 262.9967757 275 358.243964 307 284.8995418	8 PVC Bun 8 PVC Bun 8 PVC Bun	rst f	1 0	0 \$ 54,440.33 1 \$ 85,756.50 1 \$ 65,774.21	\$ 138,290.27 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local	50 26.20002752 6.62376833 0 2.85895236 1000 50 20.94784038 0 25.75827348 32.93031768 1000	00 N/A 100 N/A 100 N/A	1 1 1	1 1	3 1 3 3 3 1	2 1 2 1 2 1	1 1 1	2 2 3 2 2 3 2 3 4	0	4 3 4 3 2 3	4 3 4 3 3 4	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Land Use 9 Proximity to Buildings
313 445.7207169 317 748.26765 318 1128.823588 335 78.09110731	8 PVC Bun 18 CIP Bun 18 CIP Bun 2 PVC Bun	rst 5	0	2 \$ 104,064.19 1 \$ 340,230.84 0 \$ 502,397.67 2 \$ 33.130.59	\$ 715,335.33 CS \$ 1,056,291.11 CS	10000 No Critical Facility within 250 Feet. 129.160049 Convenience 60.24049856 Convenience 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local 26.42313351 Local	100 39.61743601 0 10.48317814 12.34857611 100 100 60.24035883 0 0 19.64778328 1000	100 N/A 100 N/A 100 N/A 100 N/A	1 1 2	1 1 2 1 2 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1	2 3 4 3 3 3 2 2 3 1 1 1	0	4 3 4 3 4 3	3 4 4 3 4 3	2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Proximity to Buildings 9 Land Use 9 Land Use 9 Land Use
336 63.35679682 338 143.82836 339 158.2682125	6 PVC Bun 8 PVC Bun 8 PVC Bun	rst (0	3 \$ 27,924.79 1 \$ 35,972.47 2 \$ 42,761.52	\$ 58,711.86 CS \$ 75,632.12 CS	10000 No Critical Facility within 250 Feet. 113.0322294 Retirement Home 70.14664842 Retirement Home	0 Local 0 Local 2.338553349 Local	50 68.81808281 0 1.723093475 168.9635609 1000 50 41.80530404 0 0 38.00939427 1000	100 N/A 100 N/A 100 N/A	1 4 5	1 1	3 3 3 3 3 2	2 1 2 1 1 1	1 1	1 1 1 2 2 3 2 2 3	0	4 3 4 3 2 2	4 3 4 3 5 3	2 2	4 1 4 1 5 1	4 1 4 1 5 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Criticial Customers, Land Use 9 Criticial Customers
399 190.9351614 564 109.2263349 594 63.46744341	4 PVC Bun 2 PVC Bun 2 PVC Bun	rst (0	2 \$ 55,550.77 1 \$ 27,282.17 1 \$ 26,947.36	\$ 56,656.82 CS	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local	10 0 0 10000 10000 1000 10 74.30898428 0 122.2277176 122.2277176 80.893638;	I00 N/A I00 N/A I31 Permanent River	1 1 1	1 1 1 1 1 1	3 3 1 3 1	2 1 2 1 2 2	1 1 1 1 3 2	2 2 3 3 4 3 1 1 1	0 0 0	4 3 2 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Proximity to Buildings 9 Land Use
628 385.3632061 722 900.77142 723 689.2614018 729 699.9927902	8 PVC Bun 8 PVC Dire 2 PVC Bun 8 PVC Bun	rect 1	0	1 \$ 85,970.18 1 \$ 275,831.43 2 \$ 158,409.33 3 \$ 161.698.51	\$ 579,935.57 CS \$ 333,055.61 CS	10000 No Critical Facility within 250 Feet. 165.6995656 Social/Medical 86.73195696 Convenience 10000 No Critical Facility within 250 Feet.	9.868114559 Local 0 Local 0 Local 0 Local	50 25.08591115 0 0 8.349452897 1000 10 48.90581733 9.637554919 0 2.164812841 1000	100 N/A 100 N/A 100 N/A 100 N/A	1 4 2	1 1	2 2 3 3 3 3 3 3	1 1 2 1 2 1	1 1 1 1 1 1 1 1 1	2 3 4 2 2 3 1 1 2 2 3 4	0	4 2 4 3 4 3	4 4 4 3 4 3	2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Proximity to Buildings, Land Use 9 Criticial Customers, Land Use 9 Land Use 9 Proximity to Buildings
777 394.5202451 788 307.9445186 789 162.2055522	8 PVC Bun 8 PVC Bun 8 PVC Bun	rst 1	0	2 \$ 92,265.69 2 \$ 73,744.52 1 \$ 41,576.55	\$ 193,988.61 CS \$ 155,047.84 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local	50 27.6551575 0 0 6.977750503 1000 50 22.21737277 0 0 23.07024424 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1	2 2 3 2 3 4 2 3 4	0	4 3 2 3 2 3	4 3 3 4 3 4	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Proximity to Buildings 9 Proximity to Buildings
791 412.6202376 810 1558.382884 910 496.7817231	6 PVC Bun 6 PVC Dire 8 PVC Bun	rect 11		1 \$ 92,774.53 10 \$ 446,195.72 2 \$ 112,833.82	\$ 237,233.10 CS	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0.410815787 Local	50 0 0 0 0 0.686155675 1000 50 102.3923102 8.02478862 0 4.027002848 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1 1 1 1 1	3 1 3 3 3 3	2 1 2 1 2 1	1 1 1 1	3 4 3 3 4 3 1 1 1	0 0 0	2 3 2 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Proximity to Buildings 9 Proximity to Buildings 9 Land Use
941 374.9498954 953 270.1774017 954 498.509956 956 135.7630008	8 PVC Bun 8 PVC Bun 8 PVC Bun 8 PVC Bun	rst (1 \$ 82,614.63 1 \$ 60,926.72 2 \$ 113,191.56 1 \$ 33,102.94	\$ 128,098.43 CS \$ 237,985.26 CS	10000 No Critical Facility within 250 Feet. 58.18036627 Community Center 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	6.560532852 Local 0 Local 0 Local 1.168809044 Local	50 48.38707943 0 116.2771712 116.2932899 1000 50 11.77589142 9.941474886 45.2090152 45.20806024 1000	100 N/A 100 N/A 100 N/A 100 N/A	1 4 1	1 1	3 3 1 3 1 2 1	2 1 2 1 1 1	1 1 1 1 1 1 1 1 1	2 3 4 2 2 3 2 3 4	0	2 3 4 3 4 2 4 3	3 4 4 3 4 4	2 1	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Proximity to Buildings 9 Criticial Customers, Land Use 9 Proximity to Buildings, Land Use 9 Land Use
962 20.33365402 963 20.30290071 964 20.17858303	6 PVC Bun 2 PVC Bun 6 PVC Bun	rst (0	1 \$ 9,148.07 1 \$ 9,141.79 1 \$ 9,116.43	\$ 19,233.81 CS \$ 19,220.62 CS	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 0 Local	50 30.92773501 0 0 127.4868104 1000 10 30.81499872 0 0 138.6681552 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1	1 1 2 1 1 2 1 1 2	0	4 3 4 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Land Use 9 Land Use
965 20.20700684 966 50.17449491 967 49.86916914	2 PVC Bun 6 PVC Bun 2 PVC Bun	rst f	0	1 \$ 9,122.23 1 \$ 15,835.60 1 \$ 18,173.31	\$ 38,209.39 CS	10000 No Critical Facility within 250 Feet. 169.2915722 Retirement Home 173.6525033 Retirement Home	0 Local 0 Local 0 Local	50 58.02089625 51.2683366 0 13.46173683 1000 10 57.98607917 55.23131222 0 17.76759396 1000	100 N/A 100 N/A 100 N/A	1 4 4	1 1 1 1 1 1	3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1 1 1	1 1 2 1 1 1 1 1 1	0 0 0	4 3 4 3 4 3	4 3 4 3 4 3	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Criticial Customers, Land Use 9 Criticial Customers, Land Use
983 395.8097421 997 21.12931661 998 20.18085998 1032 1170.054729	10 PVC Bun 2 PVC Bun 6 PVC Bun 18 CIP Bun	rst 18 rst (0	2 \$ 110,548.25 1 \$ 20,110.38 1 \$ 9,116.90 2 \$ 529,504.30	\$ 42,282.08 CS	112.8766368 Retirement Home 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 32.39542556 WaterFacilities	9.479972469 Local 0 Local 0 Local 1.827641074 Local	10 21.70200634 0 0 20.61551384 1000 50 21.89126679 0 0 27.29213957 1000	100 N/A 100 N/A 100 N/A 100 N/A	4 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 3 3 3 3 3	1 1 2 1 2 1	1 1 1 1 1 1 1 1 1	2 3 4 2 2 3 2 2 3	0	2 2 4 3 4 3	4 4 4 3 4 3	2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Criticial Customers, Proximity to Buildings 9 Land Use 9 Land Use 9 Criticial Customers
1032 1770.034729 1036 352.3833364 1040 525.2041007 1090 335.048415	2 PVC Bun 8 PVC Bun 8 PVC Bun	rst (\$ 174,268.24 CS \$ 254,649.02 RL	192.692399 Fire Station 10000 No Critical Facility within 250 Feet. 132.4743963 WaterFacilities	7.122278545 Local 0 Local 0 Local	10 70.35534434 57.56090319 0.856741706 66.53785936 1000 50 16.11141114 0 0 5.949075336 1000	100 N/A 100 N/A 100 N/A	4 1 4	1 1 1	3 3 3	1 1 2 1 2 1 1 1	1 1	1 1 1 2 3 4 2 3 4	0	4 3 2 3 2 2	4 3 3 4 4 4	2 2	4 1 4 1 4 1	4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Criticial Customers, Land Use Proximity to Buildings Criticial Customers, Proximity to Buildings
1107 267.583646 1123 265.2120877 1124 373.251379	8 PVC Bun 2 PVC Bun 8 PVC Bun	rst (2 \$ 65,389.81 1 \$ 65,703.27 5 \$ 102,863.04	\$ 137,482.09 RL \$ 138,141.12 RL	166.4677407 Retirement Home 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 5.655252559 Local 0 Local	50 38.63463957 0 0 9.637156532 1000 10 4.657060801 0 158.8220786 159.8298774 1000	100 N/A 100 N/A 100 N/A	4 1 1	1 1 1	3 3 3 3 1 3 3 1	2 1 2 1 2 1	1 1 1 1	2 2 3 3 4 3 2 3 4	0	2 3 2 3 2 3	4 3 4 3 3 4	2 2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9	9 Criticial Customers 9 Proximity to Buildings 9 Proximity to Buildings
1135 255.4520662 1167 506.0857748 1169 221.3423181	6 PVC Bun 18 PVC Bun 8 PVC Bun 8 PVC Bun	rst 2	0	3 \$ 67,112.22 1 \$ 230,902.08 1 \$ 51,417.86 3 \$ 86,246.88	\$ 485,471.63 AE \$ 108,106.05 PF	10000 No Critical Facility within 250 Feet. 41.68778972 WaterFacilities 30.16396773 School 39.4669029 School	0 Local 0 Major 0 Local	100 41.68779086 10000 10000 10000 1000 50 30.16395221 197.4141811 10000 10000 1000	100 N/A 100 N/A 100 N/A 100 N/A	1 5 5	1 1 3 3 1 1	3 1 1 1 1 1 1	2 1 1 1 1 1	1 1 1 1 1 1 1	2 2 3 3 3 3 2 2 3	0	4 3 1 3 3 2	4 3 5 3 5 3	1 1	4 1 5 1 5 1	4 1 5 1 5 1	4 Low 9 4 Low 9 4 Low 9	9 Land Use 9 Criticial Customers 9 Criticial Customers 9 Criticial Customers
1172 315.2023212 1190 59.85806273 1201 179.5401814 1218 1493.266762	4 PVC Bun 8 PVC Bun 6 PVC Dire	rst 8 rst 0	0	2 \$ 27,011.04 1 \$ 42,164.82 10 \$ 428,116.69	\$ 56,790.72 PF \$ 88,651.53 RM	68.99322844 Community Center 10000 No Critical Facility within 250 Feet. 143.6280844 Retirement Home	139.4446395 Local 0 Local 8.744814476 Local 0 Local	10 68.99315641 0 0 29.96821743 1000 50 24.36526284 0 0 9.469014958 1000	100 N/A 100 N/A 100 N/A	4 1 4	1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1 1 2 1 2 1 2 1	1 1 1	2 2 3 1 1 1 2 3 4 2 2 3	0	3 3 2 3 2 3	4 3 3 4 4 3	2 2	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 9 4 Low 9 4 Low 9 4 Low 9	9 Critical Customers 9 Critical Customers 9 Proximity to Buildings 9 Critical Customers
4 1007.9749 6 279.5388394 10 686.3874021	6 PVC Dire 8 PVC Bun 8 PVC Bun	rect 19 rst f rst 6	0 0 1	2 \$ 273,393.73 2 \$ 68,464.54 1 \$ 156,682.19	\$ 574,810.31 RL \$ 143,946.69 IG \$ 329,424.31 RL	10000 No Critical Facility within 250 Feet. 140.47264 Child Care 10000 No Critical Facility within 250 Feet.	0 Local 0 Major 0 Local	50 17.4951173 0 0 9.900869225 1000 50 94.15062289 0 10000 10000 1000 50 31.99529094 0 10000 10000 1000	100 N/A 100 N/A 100 N/A	1 4 1	1 1 2 2 1 1	3 3 3 3 1 3 3 1	2 1 2 1 2 1	1 1 1 1 1 1	2 2 3 1 1 1 2 2 3	0	2 3 4 3 2 3	2 3 4 2 2 3	2 2 2	3 1 4 1 3 1	3 1 4 1 3 1	3 Low 8 4 Low 8 3 Low 8	Proximity to Other Utilities, Proximity to Buildings Criticial Customers, Land Use Proximity to Other Utilities, Proximity to Buildings
13 352.2337891 14 15.24214188	6 PVC Bun 2 PVC Bun			2 \$ 84,255.69 1 \$ 8,109.40	\$ 177,147.59 RM \$ 17,050.01 RM	10000 No Critical Facility within 250 Feet. 206.1201074 School	0 Local 3.806012396 Local		100 N/A 100 N/A	1 4	1 1	3 1 2	2 1 1 1	1 1	2 2 3 3 4 3	0	2 3 2 3	2 3 4 3	1	3 1 4 1	3 1 4 1	3 Low 8 4 Low 8	Proximity to Other Utilities, Proximity to Buildings Critical Customers, Proximity to Buildings Proximity to Other Utilities, Proximity to Environmentally Sensitive Areas, Proximity to
15 874.8789337 19 474.0192418 21 230.5766835 22 167.7789098	6 PVC Dire 6 PVC Bun 8 PVC Bun 6 PVC Bun	rst 8 rst 1	0	1 \$ 232,719.73 1 \$ 106,499.93 1 \$ 53,329.37 1 \$ 40,426.90	\$ 223,916.09 RL \$ 112,125.01 RL \$ 84,997.55 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 4.998247607 Local 15.24786518 Local	50 48.50597908 0 0 5.435887318 1000 50 66.51778739 3.146444925 0 8.157385501 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1 1 1 1 1 1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 2 2 1 2 1 2 1	3 2 1 1 1 1 1 1	2 2 3 1 1 2 2 2 3 1 1 1	0 0 0	2 3 2 3 2 3 2 3	2 3 2 3 2 3 2 3	2 2 2 2	3 1 3 1 3 1 3 1	3 1 3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8 3 Low 8	Buildings Proximity to Other Utilities Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities
23 136.7106037 24 178.1670972 26 137.7217972	6 PVC Bun 4 PVC Bun 8 PVC Bun	rst 4	1	1 \$ 41,288.96 1 \$ 48,546.09 0 \$ 29,108.41	\$ 86,810.05 RL \$ 102,068.15 RL \$ 61,200.44 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0.465897609 Local 0 Local 0 Local	50 17.57301314 10.85574569 0 13.47032226 1000 10 12.8329525 0 15.68808388 24.44927914 1000 50 35.49131687 0 15.35881888 15.41466402 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1 1 1 1 1	3 3 2 3 2 3	2 1 2 1 2 1	1 1 1 1 1 1	2 2 3 2 2 3 2 2 3	0	2 3 2 3 2 3	2 3 2 3 2 3	2 2 2	3 1 3 1 3 1	3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8	Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings
34 237.2990825 39 383.9578615 41 65.57569298	6 PVC Bun 6 PVC Bun 6 PVC Bun	rst 2 rst (0	3 \$ 73,009.01 2 \$ 89,527.40 1 \$ 18,377.44	\$ 188,231.37 RL \$ 38,638.57 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	7.686055804 Local 6.046046754 Local 0 Local	50 26.82949695 8.318787064 0 1.137680488 1000 50 30.55739544 0 0 4.176170201 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1	3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1	1 1 2 1 1 2 1 1 2	0	2 3 2 3 2 3	2 3 2 3 2 3	2 2 2	3 1 3 1 3 1	3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8	8 Proximity to Other Utilities 8 Proximity to Other Utilities 8 Proximity to Other Utilities
46 461.2508146 47 458.614204 48 430.0306807 50 891.5102085	8 PVC Bun 8 PVC Bun 8 PVC Bun 6 PVC Dire	rst 4	1 1	1 \$ 111,878.92 1 \$ 108,333.14 3 \$ 112,416.35 2 \$ 241,877.55	\$ 227,770.43 RL \$ 236,355.38 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	2.064002681 Local 2.338802718 Local 0 Local 0 Local	50 35.33328742 9.621940734 0 10.91439734 1000 50 29.7123256 0 0 10.69030656 134.122928	100 N/A 100 N/A 185 Permanent River 100 N/A	1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2 2 3 2 2 3 2 2 3 2 2 3	0	2 3 2 3 2 3 2 2	2 3 2 3 2 3	2 2 2	3 1 3 1 3 1	3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8 3 Low 8	Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings
56 29.45499104 58 3.96244393 59 3.962443931	2 PVC Bun 2 PVC Bun 2 PVC Bun	rst (0	2 \$ 241,877.55 1 \$ 11,008.82 0 \$ 808.34 0 \$ 808.34	\$ 23,146.04 RM \$ 1,699.53 RM \$ 1,699.53 RM	186.015331 School 148.9374859 School 146.6459941 School	0 Local 0 Local 27.69000642 Local 24.88283233 Local	10 25.75982217 0 166.8358392 166.8423732 1000 10 10.4752929 21.41436107 10000 10000 1000 10 13.42365312 18.88709245 10000 10000 10000	100 N/A 100 N/A 100 N/A	4 4 4	1 1	3 1 2 2 1 2 1	2 1 1 1 1 1	1 1 1	1 1 2 2 2 3 2 2 3	0	2 3 2 2 2 2	4 2 4 3 4 3	1 1	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 8 4 Low 8 4 Low 8	8 Criticial Customers 8 Criticial Customers 8 Criticial Customers
60 4.914156239 62 3.962362573 63 3.962248379	2 PVC Bun 2 PVC Bun 2 PVC Bun	irst (irst (0	0 \$ 1,002.49 0 \$ 808.32 0 \$ 808.30	\$ 2,107.73 RM \$ 1,699.50 RM \$ 1,699.45 RM	146.6065927 School 105.9100385 School 103.0753524 School	25.26003849 Local 22.42399459 Local 24.34764083 Local	10 11.50769783 19.0137363 10000 10000 1000 10 0 19.29368793 10000 10000 1000 10 0 22.11524199 10000 10000 10000	100 N/A 100 N/A 100 N/A	4 4 4	1 1 1	2 1 2 1 2 1	1 1 1 1	1 1 1 1 1 1	2 2 3 3 4 3 3 4 3	0	2 2 2 3 2 3	4 3 4 3 4 3	1 1	4 1 4 1 4 1	4 1 4 1 4 1	4 Low 8 4 Low 8 4 Low 8	8 Criticial Customers 8 Criticial Customers, Proximity to Buildings 8 Criticial Customers, Proximity to Buildings
64 3.824727079 65 22.26097312 72 469.1783533 79 926.319478	2 PVC Bun 2 PVC Bun 6 PVC Bun 6 PVC Dire	rst (0	0 \$ 780.24 1 \$ 9,541.24 3 \$ 116,712.38 2 \$ 245,179.87	\$ 20,060.45 RM \$ 245,387.79 RL	103.9139286 School 105.3410092 School 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	22.57322726 Local 7.738984013 Local 0 Local 0 Local	10 0 11.25828376 10000 10000 1000 50 31.04336295 9.293275378 0 31.3787195 1000	000 N/A 100 N/A 100 N/A 100 N/A	4 4 1	1 1 1 1 1 1 1 1 1 1 1	2 1 2 1 3 3 3	1 1 1 1 2 1	1 1 1 1 1 1 1 1	3 4 3 3 4 3 1 1 2	0	2 3 2 3 2 3	4 3 4 3 2 3	1 2 2	4 1 4 1 3 1	4 1 4 1 3 1	4 Low 8 4 Low 8 3 Low 8 3 Low 8	8 Criticial Customers, Proximity to Buildings 8 Criticial Customers, Proximity to Buildings 8 Proximity to Other Utilities 8 Proximity to Other Utilities, Proximity to Buildings
80 342.1016794 83 68.70222047 88 134.597855	8 PVC Bun 6 PVC Bun 6 PVC Bun	irst 1 irst 0 irst 5	0	2 \$ 81,415.05 0 \$ 14,015.25 1 \$ 35,457.96	\$ 171,175.14 RL \$ 29,467.07 RL \$ 74,550.37 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 33.14849451 Local 0 Local	50 28.97735383 0 0 5.580385961 1000 50 20.27462292 0 0 3.939918033 1000 50 27.19732222 0 0 29.99106066 1000	100 N/A 100 N/A 100 N/A	1 1 1	1 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	2 1 2 1 2 1	1 1 1	2 2 3 2 2 3 1 1 2	0 0	2 3 2 3 2 3	2 3 2 3 2 3	2 2 2	3 1 3 1 3 1	3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8	Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities, Proximity to Buildings Proximity to Other Utilities
110 417.479727 117 487.5231113	6 PVC Bun 6 PVC Bun	irst 6 irst 8	0	2 \$ 98,765.86 3 \$ 119,254.71	\$ 207,655.23 RL \$ 250,733.04 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	1.54145642 Local 7.402372857 Local 9.406058332 Major	50 34.13138563 0 4.288299548 30.83590625 1006 50 19.67453683 8.840128022 0 3.417803257 1006	100 N/A 100 N/A 101 Permanent River	1	1 1 1	3 3 3	2 1 2 1	1 1 1	1 1 2 2 3	0	2 3 2 3	2 3 2 3	2 2	3 1 3 1	3 1 3 1	3 Low 8 3 Low 8	8 Proximity to Other Utilities 8 Proximity to Other Utilities, Proximity to Buildings Proximity to Environmentally Sensitive Areas, Land 8 Use
154 150.947563 184 100.1674906 220 162.0470966 257 168.0346639	8 PVC Bun 6 PVC Bun 10 PVC Bun 8 PVC Bun	rst :	0	0 \$ 31,246.15 0 \$ 21,034.17 1 \$ 45,673.82 2 \$ 45,983.18	\$ 44,224.34 RL \$ 96,029.21 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	9.406058332 Major 5.464690566 Local 7.883438749 Local 0 Local	50 40.77707276 5.912141045 0 18.5158422 1000 50 29.89252291 11.76161439 0 5.185846493 1000	601 Permanent River 100 N/A 100 N/A 100 N/A	1 1 1	2 2 1 1 1 1 1 1	1 1 3 3 3 3 3 3	3 2 1 2 1 2 1	3 2 1 1 1 1 1 1	1 1 1 1 1 2 2 2 3 2 2 3	0 0 0	3 3 2 3 2 3 2 3	3 3 2 3 2 3 2 3	2 2 2 2	3 1 3 1 3 1	3 1 3 1 3 1	3 Low 8 3 Low 8 3 Low 8 3 Low 8	8 Proximity to Other Utilities 8 Proximity to Other Utilities, Proximity to Buildings 8 Proximity to Other Utilities, Proximity to Buildings
271 297.5041075 272 374.7339172	8 PVC Bun				\$ 156,390.99 MB \$ 190,423.26 MB	121.6025006 US District Court 10000 No Critical Facility within 250 Feet.	0 Local 3.930617813 Local	50 121.602401 0 0 10.82605982 1000	000 N/A	3	1 1	3 3 :	2 1 2 1	1 1	1 1 1	0	3 3	3 3	2 2	3 1	3 1	3 Low 8 3 Low 8	Criticial Customers, Proximity to Other Utilities, Land 8 Use Proximity to Other Utilities, Proximity to Buildings, 8 Land Use
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Replacement Service Blow Ph 3 Material & Final Const Cost Use Critical	Customer Proximity to a ProxToSewerM Proximity to a Proximity to a	Critical Customers Proximity to and Types of Roads Proximity to Other Utilities	Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs Land Use	CO1	
Unique D Length (t) Dia (in) Material method Laterals Off Valves Install Cost (5) S Type Customer Type of Critical Customer	Prox/ToRoad (ft) RoadType Count Building ains (ft) Storm Ditch Storm Feature Prox. To ESA Type of ESA 4.223443887 Local 50 33.12871287 6.037161567 0 10.69656864 10000 NVA	CO2 CO1 CO3 CO1 CO3 CO4 3 1 1 3 3 2	co1 c03 c04 c01 c02 c03 c03 c02 2 1 1 1 2 2 3 0	Safety Service Failure y Impact COF LOF Core Risk Factor Zone 3 3 3 3 2 3 1 3 1	COF Driver Criticial Customers, Proximity to Other Utilities, 3 Low 8 8 Proximity to Buildings, Land Use
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UniqueID Length (t) Dia (in) Material imethod Laterals Off Valves Install Cost (5) (5) Type of Critical Customer	Customer Proxinity to a Proxinity to	Critical Customers Proximity to and Types of Roads Proximity to Other Utilities	Proximity to Environmentally Sensitive Areas Proximity to Buildings Repair Costs Land Use	CC1 CC2 CC3 CC5 Health and Loss of Cost of Regulator Detrinant Costs of Cost of Regulator Detrinant Costs of Co	COS Diver
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				Land	I Proximity to				Critical Customers	Proximity to and Types of Roads	Proximity to Other Utilities	Proximity to Environmentally Sensitive Are	as Proximity to Buildings Repair Cost				
UniqueID Length (ft) Dia (in)	Replacement Material method	Service Blow Laterals Off	Ph 3 Material Valves Install Cost (\$	(\$) Type	Critical Customers Type of Critical Customer	ProxToRoad (ft) RoadType		. To ESA Type of ESA	CO2	CO1 CO3	CO1 CO3 CO4	CO1 CO3 CO4	CO1 CO2 CO3 CO3	Health and Loss of Cost of Regulator Dominant CO2 Safety Service Failure y Impact COF	it LOF Core Risk Factor	gation Risk for Zone Priority TBL CoF BRE	COF Driver
1140 641.6883684	4 PVC Burst 6 PVC Burst 4 PVC Burst	7 0	2 \$ 145,10	9.85 \$ 275,784.62 IG 44.43 \$ 305,082.06 IG 6.14 \$ 55,666.08 MB	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 199.711429 US District Court	10000 N/A 10000 N/A 36.1733752 Local	10 10000 42.23509915 10000 10000 50 10000 40.62542763 10000 10000 10 199.7127 205.356669 10.21290021 14.73784008	10000 N/A 10000 N/A 10000 N/A		1 1 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1	1 1 1 1	0 4 1 4 1 1 0 4 1 1 1 0 0 3 2 3 2 1	4 1 4 4 4 3 1 3	1 4 Low 6 1 4 Low 6 1 3 Low 6	6 Land Use 6 Land Use 6 Criticial Customers, Land Use
1151 228.2204556	6 PVC Burst 8 PVC Burst	0 1	1 \$ 57,55 2 \$ 151,21	6.97 \$ 121,013.54 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	50 123.978809 0 10000 10000 50 40.90428272 7.053732501 10000 10000	10000 N/A 10000 N/A		1 1	1 3 1	2 1 1	1 1 1 1 1 1 1 2 2 3	0 2 3 2 1 2 0 2 2 2 3 1	3 1 3 3 3 1 3	1 3 Low 6 1 3 Low 6	6 Proximity to Other Utilities 6 Proximity to Buildings
1160 284.7166889	8 PVC Burst 8 PVC Burst	0 0	0 \$ 58,93		10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0.729088739 Local 10000 N/A	50 37.35125486 10.71998728 10000 10000 50 10000 7.750326893 10000 10000	10000 N/A 10000 N/A		1 1 1 1	1 2 1 1 2 1	1 1 1	1 2 2 3 1 1 1 1	0 2 2 2 3 1 0 4 2 4 1 1	3 1 3 4 1 4	1 3 Low 6 1 4 Low 6	6 Proximity to Buildings 6 Land Use
1166 26.33597179 1	8 PVC Burst 18 PVC Burst 8 PVC Burst	0 0 9 0 5 0	1 \$ 24,69 0 \$ 17,09 2 \$ 40,44	3.17 \$ 35,938.39 PF	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 124.3775298 School	10000 N/A 19.65897619 Local 6.887032109 Local	50 10000 9.515652103 10000 10000 100 10000 10000 10000 10000 50 93.16069668 93.45234041 183.886596 183.8865843	10000 N/A 10000 N/A 10000 N/A		1 1 1 2 4 1	1 2 1 1 1 1 1 1 1	1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 4 2 4 1 1 0 3 2 3 2 1 0 3 1 4 1 1	4 1 4 3 1 3 4 1 4	1 4 Low 6 1 3 Low 6 1 4 Low 6	6 Land Use 6 Land Use 6 Criticial Customers
1180 17.62702081 1191 99.96762238	8 PVC Burst 4 PVC Burst	2 0 3 0	1 \$ 9,84 1 \$ 27,19	18.79 \$ 20,707.09 IG 13.39 \$ 57,174.11 PF	10000 No Critical Facility within 250 Feet. 109.8904363 Community Center	0 Local 10000 N/A	50 10000 189.2418972 10000 10000 10 109.8905852 10000 66.48395333 76.52899414	10000 N/A 10000 N/A		1 1 4 1	1 1 1	1 1 1	1 1 1	0 4 1 4 1 1 0 3 1 4 1 1	4 1 4 4 1 4	1 4 Low 6 1 4 Low 6	6 Land Use 6 Criticial Customers
1212 1274.777494	8 PVC Burst 8 PVC Direct	1 0	2 \$ 398,43		10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	50 38.34373673 10.34312135 18.70095397 18.69914371 50 40.10578859 7.383592132 10000 10000	10000 N/A 10000 N/A		1 1 1 1	1 2 2 1 2 1	1 1 1	1 2 2 3 1 2 2 3	0 2 2 2 3 1 0 2 2 2 3 1	3 1 3 3 1 3	1 3 Low 6 1 3 Low 6	6 Proximity to Buildings 6 Proximity to Buildings
1230 34.32437443	6 PVC Burst 4 PVC Burst 8 PVC Burst	7 0 0 1	1 \$ 18,00	9.44 \$ 77,539.02 RM 12.17 \$ 37,849.57 CS 10.80 \$ 57.820.44 RM	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local 3,270315221 Local	50 15.36677635 14.49006994 194.786335 194.786335 10 112.7570591 35.49161158 10000 10000 50 36.15913744 11.53746694 138.6422573 138.6422573	10000 N/A 10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 2 2 3	0 2 2 2 3 1 0 4 1 4 1 1	3 1 3	1 3 Low 6 1 4 Low 6 1 3 Low 6	6 Proximity to Buildings 6 Land Use 6 Proximity to Other Utilities
	6 PVC Burst	5 1	1 \$ 37,70		10000 No Critical Facility within 250 Feet.	4.159956135 Local	50 26.54224213 11.67095559 54.40889782 54.40889782	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	6 PVC Burst	5 0	1 \$ 65,83	15.28 \$ 138,418.68 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 40.72205929 10.65765996 10.84097078 10.84496018	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
40 75.95668717	6 PVC Burst	0 0	1 \$ 20,49	15.16 \$ 43,091.08 RL	10000 No Critical Facility within 250 Feet.	17.57669033 Local	50 31.90595222 7.722997655 18.15801653 31.99847207	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
52 180.2810485	6 PVC Burst	10 1	1 \$ 53,77	7.33 \$ 113,066.84 RL	10000 No Critical Facility within 250 Feet.	0.352443682 Local	50 29.47374175 7.877130973 7.453047345 34.73973827	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 6 PVC Burst	1 1 0 0		14.79 \$ 75,468.80 RL 15.97 \$ 180.74 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	2.861879275 Local 9.403094143 Local	50 39.98681051 10.02700702 10000 10000 50 72.46590919 10.07919177 6.949972574 18.98183313	10000 N/A 10000 N/A		1 1 1 1	1 2 1 1 2 2	1 1 1	1 1 1 2 1	0 2 2 2 2 1 0 2 2 2 2 1	2 1 2 2 1 2	1 2 Low 5 1 2 Low 5	5 Land Use 5 Proximity to Other Utilities, Land Use
100 273.9269048	6 PVC Burst	1 0	2 \$ 66,48	11.09 \$ 139,776.49 RL	10000 No Critical Facility within 250 Feet.	9.959009753 Local	50 30.97355123 21.29322713 15.12736793 24.68602723	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	4 PVC Burst 8 PVC Burst	0 0		8.47 \$ 20,727.43 RL 8.42 \$ 2,015.08 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	15.05929772 Local 6.97767594 Local	10 35.18262025 16.22761539 10000 10000 50 62.74422049 85.68315541 153.759414 153.7621367	10000 N/A 10000 N/A		1 1 1 1	1 2 1 1 1 1	1 1 1 1 1 1	1 1 1 2 1 1 1 2	0 2 2 2 2 1 0 2 1 2 2 1	2 1 2 2 1 2	1 2 Low 5 1 2 Low 5	5 Land Use 5 Proximity to Buildings, Land Use
185 109.9775956	6 PVC Burst	0 0	2 \$ 32,43	15.43 \$ 68,195.49 RL	10000 No Critical Facility within 250 Feet.	14.14075591 Local	50 30.25138845 9.244735917 34.40053648 34.71217963	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
193 6.00246009	6 PVC Burst	0 0	0 \$ 1,22	2,574.52 RL	10000 No Critical Facility within 250 Feet.	15.79594669 Local	50 28.6329247 11.09427536 101.8001579 103.7856298	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	0 0		11.62 \$ 18,694.63 RL	10000 No Critical Facility within 250 Feet.	19.15318251 Local	50 31.55536582 9.660744785 15.34497324 15.82459322	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 8 PVC Burst	0 0		11.90 \$ 2,085.47 RL 13.08 \$ 144,616.43 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	2.464357781 Local 0 Local	50 47.0224785 6.551959581 179.2123108 179.2123108 50 57.23411609 9.700998654 158.1430306 158.1457388	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	18 CIP Burst	0 0		15.49 \$ 242,471.85 RL	10000 No Critical Facility within 250 Feet.	10.50526681 Local	50 57.23411609 9.700998654 158.1430306 158.1457388 100 134.9929008 10.05268462 10000 10000	10000 N/A		1 2	1 2 1	1 1 1	1 2 2 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to and Types of Roads, Proximity to Other 5 Utilities, Proximity to Buildings, Land Use
299 316.9917227	2 PVC Burst	0 0		6.31 \$ 146,473.42 RL	10000 No Critical Facility within 250 Feet.	3.0383191 Local	10 30.29539239 9.463551027 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
312 12.31981684	6 PVC Burst	0 0	0 \$ 2,51	3.24 \$ 5,284.09 RL	10000 No Critical Facility within 250 Feet.	16.13074896 Local	50 28.74590848 11.09427536 107.7842906 109.748783	10000 N/A		1 1	1 2 1	1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
326 320.3809752	6 PVC Burst	1 0	3 \$ 80,95	7.72 \$ 170,213.60 RL	10000 No Critical Facility within 250 Feet.	3.211005332 Local	50 29.93917417 11.5172158 21.53904816 21.53913105	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	1 0		14.17 \$ 138,626.59 RL	10000 No Critical Facility within 250 Feet.	11.2853377 Local	50 31.85772345 8.353387446 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	2 PVC Burst 6 PVC Burst	12 0		0.20 \$ 12,699.52 RL 55.19 \$ 140.352.79 RL	10000 No Critical Facility within 250 Feet.	9.731790041 Local 15.65577964 Local	10 44.62151694 9.428428205 10000 10000 50 29.35154289 24.60194902 57.15414942 57.15414942	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	6 PVC Burst	1 0		1.22 \$ 17,684.59 RL	10000 No Critical Facility within 250 Feet.	9.700986033 Local	50 33.55288795 6.456120792 43.73696518 55.09781363	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
482 46.11627364	6 PVC Burst	3 1	0 \$ 17,20	17.72 \$ 36,179.23 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 44.23685923 7.572274516 19.2391076 19.23790629	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
486 205.8068242	6 PVC Burst	0 0	1 \$ 46,98	14.59 \$ 98,785.10 RL	10000 No Critical Facility within 250 Feet.	11.83852803 Local	50 30.34467045 14.26966806 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
514 570.5204052	6 PVC Burst	2 0	3 \$ 132,58	86.16 \$ 278,762.41 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 29.62925136 11.06599391 27.1398557 31.17144613	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	2 0			10000 No Critical Facility within 250 Feet.	14.3322256 Local	50 28.55502119 9.621220533 27.1398557 30.89151728	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	2 PVC Burst 6 PVC Burst	8 1		4.10 \$ 87,998.24 RL H.22 \$ 81.138.05 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 8.497509109 Local	10 30.8607741 9.822531842 192.4519275 194.6620791 50 38.66066492 7.67526147 26.81625532 131.9188169	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	6 PVC Burst	3 0			10000 No Critical Facility within 250 Feet.	11.37399223 Local	50 28.76801975 9.268039979 136.6090943 139.0037833	10000 N/A		 1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
580 484.1429181	6 PVC Burst	3 0	4 \$ 120,56	5.16 \$ 253,488.24 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 34.31690994 10.4639936 47.80886165 48.83746638	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
583 101.5779172	6 PVC Burst	5 1	1 \$ 34,72	1.90 \$ 73,002.78 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 47.11503248 9.610649573 14.38280065 22.52867024	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	5 0	1 \$ 57,66	5.20 \$ 121,241.08 RL	10000 No Critical Facility within 250 Feet.	15.65577964 Local	50 28.35214677 24.60124918 91.12080658 91.12080658	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 6 PVC Burst	3 0		11.95 \$ 84,692.79 RL 18.33 \$ 74,929.60 RL	10000 No Critical Facility within 250 Feet.	3.568094224 Local 1.991890086 Local	50 43.27034222 8.6200611 163.1450837 163.1473281 50 40.53501915 10.91329599 227.0896211 227.0896211	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	4 PVC Burst	4 1		12.66 \$ 88.710.06 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	18.30192444 Local	10 31.73071853 11.39724425 230.2963661 230.2963661	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
703 364.760623	6 PVC Burst	0 0		1.17 \$ 177,474.48 RL	10000 No Critical Facility within 250 Feet.	4.058803449 Local	50 25.5510037 9.45622847 34.95110176 35.16577047	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
716 173.7954379	6 PVC Burst	3 1	1 \$ 48,25	4.27 \$ 101,454.60 RL	10000 No Critical Facility within 250 Feet.	0 Local	50 29.52886822 10.00483815 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	3 0		9.26 \$ 226,584.87 RL	10000 No Critical Facility within 250 Feet.	7.330465538 Local	50 31.28549594 8.187187309 32.10210449 63.48577836	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	4 PVC Burst	5 1		3.71 \$ 133,411.43 RL	10000 No Critical Facility within 250 Feet.	10.71794989 Local	10 30.62488371 10.08934229 10000 10000	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 6 PVC Burst	1 0		9.17 \$ 144,881.54 RL 9.16 \$ 146,962.99 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 3.415343409 Local	50 28.43121498 9.798861563 10000 10000 50 35.10027095 9.650298876 39.82474156 39.85411602	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	6 PVC Burst	2 1	1 \$ 31,84		10000 No Critical Facility within 250 Feet.	14.30772436 Local	50 39.28087293 18.30367598 230.4714942 230.4684995	10000 N/A		 1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
783 685.623601	6 PVC Burst	1 0	3 \$ 155,46	7.21 \$ 326,869.82 RL	10000 No Critical Facility within 250 Feet.	11.97504789 Local	50 27.31814538 7.591130503 25.42443422 34.54687173	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
786 258.414859	6 PVC Burst	1 1	2 \$ 69,31	6.63 \$ 145,738.22 RL	10000 No Critical Facility within 250 Feet.	6.617702803 Local	50 31.26686006 9.798879131 24.85114092 24.851661	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	1 0		10.71 \$ 264,285.73 RM	10000 No Critical Facility within 250 Feet.	0.109886813 Local	50 29.49021381 8.232874116 208.4726767 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 6 PVC Burst	4 0	3 \$ 93,88 1 \$ 30,80		10000 No Critical Facility within 250 Feet.	0.370731471 Local	50 29.02716739 6.473728623 32.74841928 51.79450192 50 41.02351209 10.09470125 20.61854378 20.61854378	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst	4 0	2 \$ 69,89		10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 9.329348548 Local	50 41.02351209 10.09470125 20.61634376 20.61634376 50 29.4728582 9.344815014 16.37260012 16.37320878	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	18 CIP Burst	5 0			10000 No Critical Facility within 250 Feet.	0 Local	100 159.2793486 9.912797677 10000 10000	10000 N/A		1 2	1 2 1	1 1 1	1 2 2 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to and Types of Roads, Proximity to Other 5 Utilities, Proximity to Buildings, Land Use
849 77.40681907 1	18 CIP Burst	3 0	1 \$ 41,16	88.63 \$ 86,557.04 RL	10000 No Critical Facility within 250 Feet.	0.778197866 Local	100 150.0576424 9.851656869 10000 10000	10000 N/A		1 2	1 2 1	1 1 1	1 2 2 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to and Types of Roads, Proximity to Other 5 Utilities, Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst		1 \$ 137,02		10000 No Critical Facility within 250 Feet.	0 Local	50 34.83626668 6.044961574 158.5542543 158.5456736	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 4 PVC Burst		2 \$ 147,29		10000 No Critical Facility within 250 Feet.	2.184176092 Local	50 49.61690739 7.928589902 10000 10000 10 38.22747773 8.00874601 10000 10000	10000 N/A 10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	4 PVC Burst 6 PVC Burst		1 \$ 67,32 2 \$ 70,88	0.82 \$ 141,542.01 RL 87.08 \$ 149,040.09 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	11.5793512 Local 2.489185871 Local	10 38.22747773 8.00874601 10000 10000 50 48.92357063 7.61285941 17.57047651 18.73148288	10000 N/A 10000 N/A			. 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	6 PVC Burst	6 0	0 \$ 3,75	7,900.24 RL	10000 No Critical Facility within 250 Feet.	4.408642504 Local	50 42.83123033 6.40928597 6.691138797 26.04785679	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
	8 PVC Burst 2 PVC Burst	7 2		0.99 \$ 262,436.13 RL 13.76 \$ 112,113.21 RE	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 18.55995168 Local	50 55.40430755 11.81340673 58.78436059 59.24388018 10 28.64353705 10000 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use 5 Proximity to Buildings, Land Use
1005 22.87814605	2 PVC Burst	2 0	1 \$ 10,86	7.14 \$ 22,848.17 RM	10000 No Critical Facility within 250 Feet.	35.47530922 Local	10 36.94258414 42.09225131 92.36612323 92.36979817	10000 N/A 10000 N/A		i i	i i i	i i i	1 1 1 2	0 2 1 2 2 1	2 1 2	1 2 Low 5 1 2 Low 5	5 Proximity to Buildings, Land Use Proximity to Other Utilities, Proximity to Buildings,
	4 PVC Burst			12.83 \$ 150,334.70 RE	10000 No Critical Facility within 250 Feet.	5.888785973 Local	10 40.84008356 5.564620338 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings,
	6 PVC Burst 6 PVC Burst	4 1		3.53 \$ 114,803.93 RL 4.18 \$ 111,462.32 RM	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	8.038280472 Local 0 Local	50 40.31314901 9.149954797 10000 10000 50 48.95551533 6.069915948 24.77151807 42.89681445	10000 N/A 10000 N/A		1 1	1 2 9	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	5 Land Use Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
1045 265.6257644	6 PVC Burst 6 PVC Birect	1 1	1 \$ 65,78	17.66 \$ 138,318.55 RE 16.64 \$ 523,221.08 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	50 26.26221083 10000 10000 10000	10000 N/A 10000 N/A 128.4723976 Permanent River		1 1 1 1	1 1 1 1 1 1	1 1 1	1 1 1 2	0 2 1 2 2 1 0 2 1 2 2 1	2 1 2 2 1 2	1 2 Low 5 1 2 Low 5 1 2 Low 5	5 Proximity to Buildings, Land Use 5 Proximity to Buildings, Land Use
	6 PVC Burst	1 1		1.67 \$ 137,317.78 RL	10000 No Critical Facility within 250 Feet.	2.125929144 Local	50 36.7127414 9.128690358 138.0769722 138.0769722	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
1111 150.150289	4 PVC Burst	2 1	0 \$ 37,83	10.66 \$ 79,538.96 RL	10000 No Critical Facility within 250 Feet.	17.49334195 Local	10 28.07401552 10.19461801 10000 10000	10000 N/A		1 1	1 2 1	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use Proximity to Other Utilities, Proximity to Buildings.
1127 282.1682282 1187 9.153463416	6 PVC Burst 4 PVC Burst	0 0	1 \$ 62,56 1 \$ 6,86	12.32 \$ 131,537.27 RM 17.31 \$ 14,438.51 RM	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	3.81878806 Local 25.40846861 Local	50 37.70544038 9.301101752 7.598644804 86.41217197 10 37.55221816 39.17298141 143.4962285 143.48819	10000 N/A 10000 N/A		1 1 1 1	1 2 2 1 1 1	1 1 1 1 1 1	1 1 1 2 1 1 1 2	0 2 2 2 2 1 0 2 1 2 2 1	2 1 2 2 1 2	1 2 Low 5 1 2 Low 5	5 Land Use 5 Proximity to Buildings, Land Use
	6 PVC Burst 6 PVC Burst	2 0	1 \$ 10,68		10000 No Critical Facility within 250 Feet.	0 Local 15.39363771 Local	50 45.09156408 11.92489109 19.42230413 22.86562078	10000 N/A		1 1	1 2 2	1 1 1	1 1 1 2	0 2 2 2 2 1	2 1 2	1 2 Low 5	Proximity to Other Utilities, Proximity to Buildings, 5 Land Use
32 535.8895656 68 127.2003754	6 PVC Burst 6 PVC Burst	0 1 0 1 2 1	1 \$ 120,32 1 \$ 38,14	8.88 \$ 80,208.01 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	15.39363771 Local 10.11148964 Local 1.96128726 Local	50 102.6291297 7.9662296 34.60624388 75.68252942 50 114.85938 10000 10000 10000 50 110.3374296 105.6582884 10000 10000	10000 N/A 10000 N/A 10000 N/A		. ! 1 1 1 1	. 2 1 1 1 1 1 1 1	1 1 1 1 1 1	1 1 1 1	0 2 1 2 1 1 0 2 1 2 1 1	2 1 2 2 2 1 2	1 2 Low 4 1 2 Low 4 1 2 Low 4	4 Proximity to Other Utilities, Land Use 4 Land Use 4 Land Use
69 127.2844965 156 830.1374765	6 PVC Burst 6 PVC Direct	2 1 2 0	1 \$ 38,16 1 \$ 213,73	6.04 \$ 80,244.09 RL 44.37 \$ 449,376.51 RR	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	50 101.5558001 105.142417 10000 10000 50 37.61547897 10000 10000 10000	10000 N/A 10000 N/A		1 1 1 1	1 1 1	1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2	0 2 1 2 1 1 0 1 1 1 2 1	2 1 2 2 2	1 2 Low 4 1 2 Low 4	4 Land Use 4 Proximity to Buildings
196 108.9182108	6 PVC Burst 6 PVC Burst 8 PVC Burst	1 1 1 1	1 \$ 33,81	8.64 \$ 34,373.02 RL 9.31 \$ 71,105.11 RL 97.78 \$ 13,577.49 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	11.04845158 Local 0 Local 14.84505162 Local	50 86.65448665 10000 10000 10000 50 71.82377436 212.0277217 10000 10000 50 77.12253938 5.10537592 35.39491348 56.30234881	10000 N/A 10000 N/A 10000 N/A		1 1 1 1 1 1	1 1 1 1 1 1 1 2 1	1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	U 2 1 2 1 1 0 2 1 2 1 1 0 2 2 2 1 1	2 1 2 2 1 2 2 1 2	1 2 Low 4 1 2 Low 4 1 2 Low 4	4 Land Use 4 Land Use 4 Proximity to Other Utilities, Land Use
283 362.4541609 493 216.2775774	6 PVC Burst 2 PVC Burst	1 0 5 1	1 \$ 79,54 1 \$ 58,12	0.65 \$ 167,234.21 RL 0.63 \$ 122,198.62 RE	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	50 50.86222997 13.79862289 10000 10000 10 59.41419157 11.95316421 27.95261391 28.02471108 1	10000 N/A 49.5102151 Permanent River		1 1 1 1	1 2 1 1 2 1	1 1 1	1 1 1 1	0 2 2 2 1 1 0 2 2 2 1 1	2 1 2 2 2 2	1 2 Low 4 1 2 Low 4	4 Proximity to Other Utilities, Land Use 4 Proximity to Other Utilities, Land Use
	2 PVC Burst 6 PVC Burst			2.09 \$ 38,585.26 RE 6.75 \$ 65,443.99 RL	10000 No Critical Facility within 250 Feet. 10000 No Critical Facility within 250 Feet.	0 Local 0 Local	10 66.32067478 15.91000602 10000 10000 50 50.98194019 9.646702419 27.14866455 27.14804355	10000 N/A 10000 N/A		1 1 1 1	1 2 1 1 2 1	1 1 1 1 1 1	1 1 1 1	0 2 2 2 1 1 0 2 2 2 1 1	2 1 2 2 1 2	1 2 Low 4 1 2 Low 4	Proximity to Other Utilities, Land Use Proximity to Other Utilities, Land Use

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									602	CO1	000				001	000	004			CO3	GO2	Safety	service Hai			LOF	Core Ri	K Hactor Zo		I BE COF E	
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52 214.8046797 6 PVC Burst		10000 No Critical Facility within 250 Feet.	0 Local	50 56.49920088 9.15		10000	10000	10000 N/A		1	1	1	2	1 1	1	1	1	!!	1 1	!	0	2 2	2	1	1	2	1	2 1	2 Low	4.	4 Proximity to Other Utilities, Land Use
55 26.5774682 6 PVC Burst		10000 No Critical Facility within 250 Feet.	19.9562841 Local	50 80.28876899 10.8		10000	10000	10000 N/A		1	1	1	2	1 1	1	1	1	!!	1 1	!	0	2 2	2	1	1	2	1	2 1	2 Low	4.	4 Proximity to Other Utilities, Land Use
80 503.8012119 4 PVC Burst 91 26.90628953 6 PVC Burst		10000 No Critical Facility within 250 Feet.	2.926403596 Local 10.66429879 Local	10 50.29222456	10000	10000	10000	10000 N/A 10000 N/A		1	1	1	1	1 1	1	1	1	!!	1 1	!	0	2 1	2	1	1	2	1	2 1	2 Low	4.	4 Land Use 4 Proximity to Other Utilities, Land Use
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25 1.469795316 6 PVC Burst 40 319 7059295 2 PVC Burst		10000 No Critical Facility within 250 Feet.	15.30382205 Local	50 58.0046637 10.3			17144613	10000 N/A 10000 N/A		1	1	1	2	1 1	1	1	1	!!	1 1	!	0	2 2	2	1	1	2	1	2 1	2 Low 2 Low	4.	4 Proximity to Other Utilities, Land Use
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93 38.88550813 8 PVC Burst		10000 No Critical Facility within 250 Feet.	26.19238215 Local	50 221.5699214 13.3		10000	10000	10000 N/A		1	1	1	2	1 1	1	1	1	!!	1 1	!	0	2 2	2	1	1	2	1	2 1	2 Low	4.	4 Proximity to Other Utilities, Land Use
54 360.4312754 2 PVC Burst		10000 No Critical Facility within 250 Feet.	0 Local	10 42.77850623	10000			7613959 Artificial Path		1	1	1	1	1 1	1	1	1	1 1	1 2	2	0	1 1	1	2	1	2	1	2 1	2 Low	4	4 Proximity to Buildings
6 10.46627095 6 PVC Burst		10000 No Critical Facility within 250 Feet.	0 Local	50 10000	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1		0	2 1	2	1	1	2	1	2 1	2 Low	4	4 Land Use
9 94.76220946 4 PVC Burst		10000 No Critical Facility within 250 Feet.	15.30568227 Major	10 75.12094056 189.		10000		7108179 Permanent River		1	2	1	1	1 1	1	1	1	1 1	1 1		0	2 2	2	1	1	2	1	2 1	2 Low	4	4 Proximity to and Types of Roads, Land Use
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261.5059903 6 PVC Burst		10000 No Critical Facility within 250 Feet.	4.665676273 Local	50 122.0322091 9.80		10000	10000	10000 N/A		1	1	1	2	1 1	1	1	1	1 1	1 1	1	0	2 2	2	1	1	2	1	2 1	2 Low	4	4 Proximity to Other Utilities, Land Use
58.57163464 8 PVC Burst		10000 No Critical Facility within 250 Feet.	0 Local	50 85.83897663 59.9		10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	2 1	2	1	1	2	1	2 1	2 Low	4	4 Land Use
194.2509715 2 PVC Burst	t 2 1 1 \$ 51,827.20 \$ 108,966.68 RE	10000 No Critical Facility within 250 Feet.	11.77154175 Local	10 91.74893678	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	2 1	2	1	1	2	1	2 1	2 Low	4	4 Land Use
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0.267276787 2 PVC Burst	t 0 0 0 \$ 54.52 \$ 114.64 AE	10000 No Critical Facility within 250 Feet.	9.89800001 Local	10 160.5467461	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	1 1	1	1	1	1	1	1 1	1 Low	3	3 Buildings, Land Use
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4.566761625 6 PVC Burst	0 0 0 \$ 931.62 \$ 1.958.73 RR	10000 No Critical Facility within 250 Feet.	17.11528724 Local	50 137.5425804	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	1 1	1	1	1	1	1	1 1	1 Low	3	3 Buildings, Land Use
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684.4683083 6 PVC Burst	3 1 1 \$ 152.431.53 \$ 320.487.30 RA	10000 No Critical Facility within 250 Feet.	0 Local	50 107 6765479	10000	10000	10000	10000 N/A		1	1	- 1	1	1 1	1	- 1		1 1	1 1		0	1 1	1	1	1	1	1	1 1	1 Low	3	3 Buildings, Land Use
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3 597.0435277 6 PVC Burst	1 1 0 \$ 128.396.88 \$ 269.954.44 RA	10000 No Critical Facility within 250 Feet.	0 Local	50 69 6380386	10000	10000	10000	10000 N/A		4	4	4	4	4 4	4	4		1 1			0		4	4	4	4	4	1 1	1.100	2	3 Buildings, Land Use
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2 4.146417696 6 PVC Burst	0 0 0 \$ 845.87 \$ 1,778.44 RR	10000 No Critical Facility within 250 Feet.	17 11528724 I ocal	50 137.5316643	10000	10000	10000	10000 N/A										1 1			_								1 Low	_	3 Buildings, Land Use
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38.85222266 6 PVC Burst	1 0 2 \$ 18,525.85 \$ 38,950.61 AE	10000 No Critical Facility within 250 Feet.	10.23263518 Local	50 147.6321729	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	1 1	1	1	1	1	1	1 1	1 Low	3	3 Buildings, Land Use
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71 548.3744481 2 PVC Burst	t 4 1 1 \$ 125,268.39 \$ 263,376.78 AE	10000 No Critical Facility within 250 Feet.	0 Local	10 73.70091308	10000	10000	10000	10000 N/A		1	1	1	1	1 1	1	1	1	1 1	1 1	1	0	1 1	1	1	1	1	1	1 1	1 Low	3	3 Buildings, Land Use







Appendix C – MCSD Water & Wastewater Rate Study (Willdan Financial Services, 2018)

McKINLEYVILLE COMMUNITY SERVICE DISTRICT



Water & Wastewater Rate Study

SEPTEMBER 2018

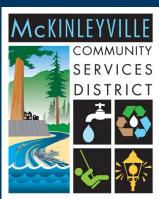




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Introduction

In 2018, McKinleyville Community Services District ("MCSD" or the "District") commissioned Willdan Financial Services ("Willdan") to perform a water and wastewater rate analysis and financial plan. This analysis provides financial recommendations that focus on two key objectives consisting of: 1) short and long-run financial health and stability for MCSD water and wastewater operations; and, 2) equitable cost-of-service rates that reflect the benefit provided while maintaining Proposition 218 compliance.

Based on the analyses performed for this study, MCSD's existing rates will not generate sufficient revenue to fund existing and projected expenditures (operations, maintenance, and capital) and reserve targets (e.g. the \$1 million annual capital reserve transfer for each system). While MCSD currently maintains moderate reserve levels, the existing rates are not sustainable as both utilities are not generating sufficient revenues and are subsequently running net losses.

MCSD purchases its wholesale water supply from the Humboldt Bay Municipal Water MCSD, which diverts water from its million-gallon tank on Essex Hill, under the Mad River, to MCSD's Grant A. Ramey Pump Station at North Bank and Azalea Roads. Water is then pumped to storage tanks at McCluski Hill, Cochran Road and Norton Road; MCSD's six storage tanks have a combined capacity of 5.25 million gallons, approximately a 36-hour supply for its 6,705 customers.

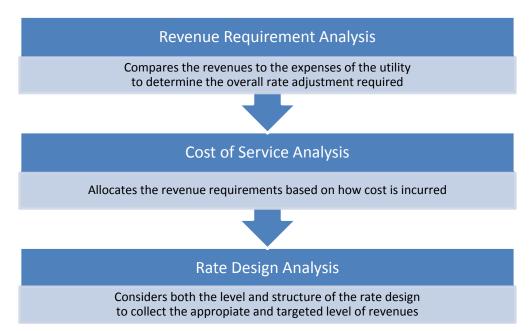
All sewage for MCSD's customers is treated at the wastewater Management Facility at Hiller Park. MCSD maintains approximately 65 miles of wastewater mains. MCSD recycles treated wastewater for agricultural irrigation at the Fischer Irrigation Site and at Hiller Park. MCSD is committed to maintaining its sewage collection, treatment and disposal systems as a model for other communities.

This report details the methodology, approach, and results of this analysis. Based on discussion with MCSD staff, guidance and direction from the MCSD Board throughout the process, this report presents the recommended revenue adjustments and the corresponding rate impacts.

Overview of the Rate Setting Process

The scope of this study included the development of cost-based water and wastewater user charges through a comprehensive cost of service and rate design analysis. Utility rates must be set at a level where a utility's operating and capital expenses are met with the revenues received from customers. This is a significant point, as failure to achieve this level could lead to a situation where insufficient funds are available to adequately maintain the system. A comprehensive rate study typically consists of following three interrelated analyses.

- I. *Financial Planning/Revenue Requirement Analysis*: Creation of a five-year plan to support a financially prudent program of on-going maintenance and operating costs, capital improvement and replacement activities, debt financing, and retirement of any outstanding debt. In addition, the long-term plan should fund and maintain reserve balances to adequate levels based on industry standards and MCSD fiscal policies.
- II. *Cost of Service Analysis*: Identifies and apportions annual revenue requirements to customers based on their demand on the utility system.
- III. *Rate Design:* Develops an equitable and proportionate fixed/variable schedule of rates to recover the costs of the utilities. This is also where other policy objectives can be achieved, such as discouraging wasteful water use. The policy objectives are harmonized with cost of service objectives to achieve the delicate balance of equity, financial stability and resource conservation goals.



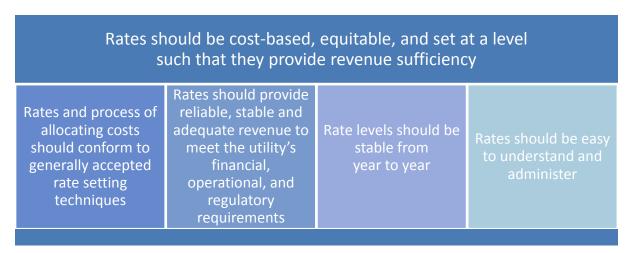
Rate Setting Principles

The primary objective when conducting this comprehensive rate and financial analysis was to determine the adequacy of the existing rates (pricing, structure, and revenue sufficiency) and provide the basis for any necessary adjustments to meet the MCSD's operating and capital needs and policy objectives. MCSD desires a rate structure that fully funds operations, maintenance, and capital costs while providing long term funding of reserves.

Financial Management, Policies and Rates

A financial plan revolves around the development of a proper long and short-term balance of revenues and expenditures. The following provides an outline of MCSD's financial targets and policies, and the financial foundation of the cost of service and rate analysis. Over the past years, many generally accepted principles or guidelines have been established to assist in developing utility rates. The purpose of this section of the report is to provide a general background of the methodology and guidelines used for setting cost-based utility rates, in order to provide a higher-level understanding of the rate setting approach detailed later in this report.

As a practical matter, there should be a general set of principles used to guide the development of water and wastewater rates. For water rates, the American Water Works Association (AWWA) establishes these principles in the M1 Manual – *Principles of Water Rates, Fees and Charges.* For wastewater rate setting, the Water Environment Federation (WEF) establishes similar guidelines. These guiding principles help to ensure there is a consistent global approach that is employed by all utilities in the development of their rates (water and water-related utilities, including wastewater and reclaimed water). Below is a summary listing the established guidelines, which public utilities should consider when setting their rates. These closely reflect MCSD's specified objectives.



These guidelines, along with the MCSD's objectives, have been utilized within this study as a framework to help develop utility rates that are cost-based and equitable.

Overview of Rate Setting Environment, Objectives & Process

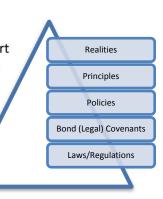
Rate analyses are typically performed every five years to ensure that revenues from rates are adequately funding utility operations, maintenance, and future capital needs. In California, rate analyses also require compliance with the cost-of-service principles imposed by Proposition 218 to ensure that rates correlate to how costs are incurred. Beyond the laws, regulations, and guiding principles, the rates ultimately need to be approved and implemented by the MCSD Board.

Considerations in Setting Revenue Requirements

There are a multitude of considerations, ranging from financial to political to legal, which must be analyzed or discussed during the revenue requirements process of a rate analysis. This section, along with the accompanying graphic, provides an overview of the considerations that are reviewed during this process.

Capital Budgeting and Financing

Capital needs are defined by MCSD's Capital Improvement Plan ("CIP"). As part of its budget and planning process, MCSD identifies capital improvements that are necessary for the continued delivery of clean, safe, drinking water and treatment of wastewater in accordance with increasingly stringent wastewater standards. The CIP is funded by a variety of sources including water and wastewater rates, connection (impact) fees, and capital reserves. Recent economic realities, including slower than anticipated growth and usage, have reduced funding and/or delayed funding of critical system improvements.



Capital Funding: Debt vs. PAYGO

The selection of the most appropriate funding strategy for capital projects is primarily a policy decision between use of cash ("Pay-as-you-go financing" aka PAYGO), the issuance of debt (bonding), or a combination thereof. PAYGO is the use or build-up of cash to fund capital improvements. With debt financing, capital improvements are paid for with borrowed funds (usually through the issuance of bonds) with the obligation of repayment, typically with interest, in future years. Each funding mechanism has a different impact on water rates in the short and long run, different net present values, risks, and legal obligations. Due to the borrowing costs associated with debt, cash funding can be cheaper; however, debt typically ensures greater generational equity for larger and longer lasting capital projects.

Willdan's review of MCSD's CIP revealed that the utility system does not have sufficient funds on hand to meet its planned capital investments without an increase to rates.

Our recommendation, which is consistent with the MCSD funding policy of MCSD, is that MCSD continues to balance the use of all financing options by using debt in the near-term to mitigate the impact on rates, and cash funding in the long-term for ongoing replacement projects.

Revenue Requirements

The method used by most public utilities to establish their revenue requirements is called the "cash basis" approach of setting rates. As the name implies, a public utility combines its cash expenditures over a period to determine their required revenues from rates and other forms of income. Figure 1-1 below presents the "cash basis" methodology.

Figure 1: Overview of the "Cash Basis" Design

- + Operation and Maintenance Expenses
- + Debt Service (Principal and Interest)
- + Capital Additions Funded with Rate Revenue
- = Total Revenue Requirements

Based on the revenue requirement analysis, the utility can determine the level of revenues needed to meet the overall expenditures.

MCSD Expenditures - Water & Wastewater

To achieve long-term financial health, a utility's revenues must be sufficient to meet total expenditures or cash-flow obligations. This "required revenue" includes all incurred costs related to operation and maintenance, capital improvement programs, and principal and interest payments on existing or anticipated debt.

As demonstrated in Figure 2, Water & Wastewater Fund expenditures were categorized into five major classifications: (1) Operation; (2) Purchased Water; (3) Salaries & Benefits; (4) Debt Service; (5) Capital Projects (PAYGO). The pie chart below demonstrates the relative size of the various expense categories for the study test year of FY 2019.

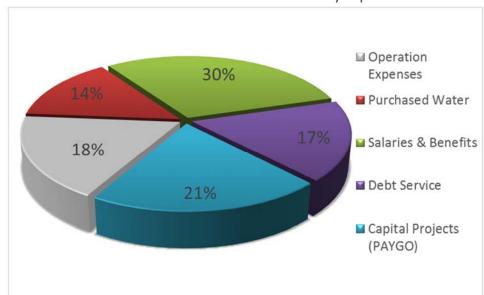


Figure 2: Water & Wastewater Fund - Cost Distribution by Expenditure Classification

Through the study period, debt service (principal and interest) represents a large percentage of the total expenditures (21%). Revenues must be targeted to ensure MCSD meets its debt service coverage requirements of 1.25 times on its existing and future debt service.

In addition, in an effort to establish a reserve fund specifically for funding ongoing renewal and replacement (R&R) projects, MCSD has set a goal to reserve transfer of \$1 million per year for each utility system. This reserve will be utilized to support PAGO funded capital as well as long-term Repair and Replacement (R&R).

Financial Planning

In the development of the revenue requirements, certain assumptions are utilized to project future expenditures, growth in customers and consumption, and necessary revenue adjustments. MCSD's budget documents are used as the baseline and are then projected over a five-year planning period to account for assumed changes in costs from year to year, as well as adjustments to debt service payments.

Reasonable growth assumptions and prudent financial planning are fundamental in rates that will generate adequate rate revenue to meet the needs of the system. The developed financial model considers the MCSD's existing debt service coverage ratio and operating cash balances (cash on hand). In addition, as part of the financial planning, municipal bond financing is incorporated into the model to fund necessary capital improvements. As debt is redeemed, additional bonds may be utilized to fund additional capital improvements required due to aging infrastructure.

Rate Setting Principles Summary

In meeting the objectives of MCSD, the rate design must also conform to the State Constitution and the State's Water Code. More specifically, Proposition 218 requires that property related fees and charges, such as water and wastewater rates, not exceed the reasonable cost of providing the service associated with the fee or charge and shall also not exceed the proportional cost of the service attributable to the parcel that is subject to the fee or charge.

In conjunction with Proposition 218, Article X (2) of the State Constitution institutes the need to preserve the State's water supplies and discourage the wasteful or unreasonable use of water by encouraging conservation. Article X (2) is broad in its declarations; however, the Water Code provides guidance to its application for developing water rates. Section 106 declares that the highest use of water is for domestic purposes, and irrigation is secondary. In connection with meeting the objectives of Article X, Water Code Sections 370 (AB2882) and 375 authorize a water purveyor to utilize its water rate design to incentivize the efficient use of water; or stated differently, to encourage conservation.

Although incentives to conserve water could be provided by implementing a higher rate for water as consumption increases, a nexus between rates and cost incurred to provide water at those rates must be developed to achieve compliance with Proposition 218. Therefore, in our analysis, when developing a tiered rate structure, we analyzed the consumption and peaking characteristics of each defined tier to determine the proportional share of cost incurred by each tier. The cost is then divided by consumption to derive a rate per unit of water for each tier. Doing so synchronizes the objectives of Article X (2) and Article XIIID (6) in developing a cost of service tiered rate structure.

Besides ensuring compliance with State law, another key principle for a comprehensive rate study is found in economic theory, which suggests that the price of a commodity must roughly equal its cost or value if equity among customers is to be maintained – i.e. cost-based. For example, capacity-related costs are usually incurred by a water utility to meet peak use requirements. Consequently, the customers causing peak demands should pay for the demand-related facilities in proportion to their contribution to maximum demands.

Through refinement of costing and pricing techniques, consumers of a product are given a more accurate price point, representative of what the commodity costs to produce and deliver, to meet their needs, in this case, for water use. The above fundamentals have considerable foundation in economic literature and correlate to the cost of service principles of Proposition 218. This "price-equals-cost" theory provides the basis for much of the subsequent analysis and comment. This theory is particularly important as the proposed rate structure has been developed to encourage the efficient use of water while maintaining economic and cost of service principles.

Rate Design

The final element, the rate design process, applies the results from the revenue requirements to develop rates that achieve the general guidelines, policies and objectives of MCSD, and compliance with the provisions of law. These objectives are achieved through the development of cost-based rates but may also account for adjustments to expenditures or the level of cash reserves to balance rate shock, continuity of past rate philosophy, conservation objectives, ease of administration, and legal requirements. This section of the report incorporates the general principles, techniques, and economic theory used to set utility rates. These principles, techniques, and economic theory were the starting point for this rate study and the groundwork used to meet MCSD's key objectives in analyzing and redesigning their utility rates.

This rate study is performed to allocate the costs of providing service to users with rates that are equitable and in compliance with Proposition 218 requirements. The total cost of serving MCSD customers is determined by distributing each of the utility cost components based upon the service demands placed on the MCSD by its customers. Therefore, a cost of service rate study enables a utility to adopt rates based on the costs incurred to serve its customers and corresponding accounts. The purposes of this cost of service study include defining the proportional allocation of the costs of service to users and deriving unit costs to support the development of rates.

Water Rate Analysis

Water Consumption and User Characteristics

Willdan examined multiple years of historical billing data to identify various customer classes and applicable growth trends within each class. Based on the data, MCSD currently provides water to approximately 7,140 customer accounts. The billing data was used to determine seasonal demand patterns and overall consumption characteristics. The consumption analysis revealed that MCSD customers have a lower than average use of water, when compared to similar California agencies, which is likely due to its coastal climate.

Existing Water Revenues

The water utility derives revenue from a variety of sources. Annually, MCSD expects nearly 92% of the Water Fund's revenue to be generated from rate revenues (monthly user rates). In Fiscal Year 2017-2018, MCSD generated nearly \$3.3 million in operating rate revenue, compared with \$280 thousand in non-operating revenue, such as miscellaneous service charges, interest income and capacity fees.

Existing Water Expenditures

To achieve long-term financial health, a utility's revenues must be sufficient to meet total expenditures or cash obligations. All incurred costs related to operation and maintenance, debt service, and capital costs must be funded. MSCD estimates approximately \$3.8 million in total system expenditures.

Figures 3 provides the Baseline Scenario for the Water Funds. This represents current and projected financial conditions of the water utility <u>excluding any rate/revenue adjustments over the next 5 years</u>. As the figure illustrates, existing revenue levels are not sufficient to meet the projected expenditures.

Projected For Fiscal Year Ending June 30: Existing Description 2021 2023 Rates 2019 2020 2022 Revenues: User Rate Revenues \$ 3,301,951 \$ 3,309,788 \$ 3,388,683 \$ 3,474,574 \$ 3,562,649 \$ 3,654,076 Other Revenues 280,758 280,758 294,493 308,856 324,077 339,989 Total Revenues \$ 3,582,709 \$ 3,590,546 \$ 3,683,176 \$ 3,783,430 \$ 3,886,726 \$ 3,994,065 0.00% 0.00% 0.00% 0.00% 0.00% Percentage Rate Adjustment System Expenditures: O&M Costs \$ 2,459,940 \$ 2,459,940 \$ 2,577,596 \$ 2,693,922 \$ 2,821,799 \$ 2,957,276 Debt Service (P&I) 263,724 486,928 740,245 812,927 263,724 686,122 R&R Transfer 1,000,000 1,000,000 1,000,000 1,000,000 1,000,000 1,000,000 \$ 4,380,044 Total Operating & Non-Operating \$ 3,723,664 \$ 3,723,664 \$ 4,064,524 \$ 4,562,043 \$ 4,770,203 Revenue Excess (Deficiency) \$ (140,955) \$ (133,118) \$ (381,348) \$ (596,614) \$ (675,317) \$ (776,138) 4.26 4.29 2.27 1.28 **Debt Service Coverage** 1.59 1.44

Figure 3: Water Fund - Baseline Financial Scenario

Projected Operating Results

Given the existing financial condition of the utility, without near term revenue adjustments, MCSD's water fund will not be able to meet its targeted objectives without rate adjustments. As such, Willdan worked with MCSD staff for the development of a financial plan and rate structure that provides gradual adjustment to provide continued financial stability throughout the study period. Numerous financial scenarios were analyzed and presented over the course of the study. The results and recommendations provided in the analysis were presented in August 2018 and account holders were subsequently mailed a Proposition 218 Noticed in September. The recommended financial scenario was developed and analyzed to achieve a positive net income within the five-year study period and to maintain compliance with the MCSD's Debt Coverage Ratio.

Figure 4 provides a summary of the projected operating results for the water system and the corresponding impact of the proposed rate adjustments.

Figure 4: Water - Projected Operating Results

Deganintien	Projected For Fiscal Year Ending June 30:														
Description	2019	2020	2021	2022	2023										
Revenues:															
User Rate Revenues	\$ 3,394,078	\$ 3,650,743	\$ 3,917,744	\$ 4,190,549	\$ 4,434,226										
Other Revenues	295,758	310,243	325,393	341,442	358,222										
Total Revenues	\$ 3,689,836	\$ 3,960,986	\$ 4,243,137	\$ 4,531,990	\$ 4,792,447										
Percentage Rate Adjustment	7.00%	7.00%	6.00%	6.00%	3.00%										
System Expenditures:															
O&M Costs	\$ 2,459,940	\$ 2,577,596	\$ 2,693,922	\$ 2,821,799	\$ 2,957,276										
Debt Service (P&I)	263,724	486,928	686,122	740,245	812,927										
R&R Transfer	960,000	890,000	860,000	960,000	1,000,000										
Total Operating & Non-Operating	\$ 3,683,664	\$ 3,954,524	\$ 4,240,044	\$ 4,522,043	\$ 4,770,203										
Revenue Excess (Deficiency)	\$ 6,172	\$ 6,462	\$ 3,094	\$ 9,947	\$ 22,244										
Debt Service Coverage	4.66	2.84	2.26	2.31	2.26										

Cost of Service Analysis

Following the consumption and revenue requirement analysis, the next stage was to distribute costs (revenue requirements) to functional components, and ultimately, to customers. The cost of service analysis is a systematic process by which revenue requirements are allocated by function to generate a classification of equitable costs in proportion to the service received by each account. The cost of services analysis combines the Water Consumption and Usage Characteristics analysis with the Revenue Requirements and expenditure analyses. This section of the report discusses the methodology of allocating expenditures to the functional cost components.

Cost Allocation by Function

To equitably allocate the cost to customers in proportion to their usage and peaking demands, costs first need to be allocated to functional cost components. The cost of service allocation completed in this study is established on the base-extra capacity method endorsed by the American Water Works Association (AWWA). Under the base-extra capacity method, revenue requirements are allocated based on the demand placed on the water system. Allocations to functional cost components are established on average day (base) usage, maximum day (peak) usage, meters and services, and billing and collection. Use of this methodology results in an AWWA-accepted cost distribution to customers and a means of calculating and designing rates to proportionately recover those costs.

A water system COS analysis is a detailed study that allocates the Revenue Requirements of the system to individual customer classes. This process involves four basic steps as follows:

- Revenue Requirement The revenue requirement determines the costs to be supported by
 monthly user rates. The amount is developed based on a projection of expenses for FY 2019 (the
 Test Year) as developed by utility staff. Sources for the financial projections include the currently
 budgeted expenditures for operations and capital improvements. Projections for customer
 growth, operation and maintenance costs, and capital paid from current earnings are based on
 information provided by MCSD.
- **Cost Functionalization** The cost functionalization process categorizes the revenue requirement by basic utility function and service. In this analysis, the water costs separated into Supply/Treatment, Transmission, Distribution, Administration and Customer functions.
- Classification Once functionalized, the costs are classified into the fundamental cost categories
 that directly influence the nature and type of cost. For MCSD, costs are classified into based
 demand-related (fixed costs), systemwide max-day, distribution specific max-day and customerrelated costs.
- *Allocation* Based on these cost classifications, costs are then allocated to the individual customer classes based on their usage characteristics. For example, since the max-day costs are variable in nature, they are allocated to the various customer classes based on billable flows.

Current Budget and Revenue

The determination of the monthly user rates and charges to be applied to water customers is based upon the estimated revenue requirements of the system. Revenue requirements consist of the operating, maintenance, debt service, capital and other monetary expenditures necessary to provide, maintain and perpetuate quality services to meet the goals and objectives of the utility system.

Methodology

The rate analysis performed herein utilizes the projected water system budget for fiscal year 2018/19 (the "Water Budget" for fiscal year ending June 30, 2019) as the basis for developing the revenue requirements to be recovered from user rates. The Water Budget, as prepared by MCSD, has certain expenditures that are allocated between identifiable functional components, as well as expenditures that are associated with the combined system operations. In developing the rate analysis, certain adjustments are made such that the expenditures are categorized into either Operating and Maintenance (O&M) expenses or Non-Operating expenses (e.g. debt service, capital reserves, general fund transfer, etc.).

Classification of Costs

The allocation of functionalized water system costs to service characteristics follows the base-extra capacity cost allocation method included in AWWA Manual M-1. Applying this methodology, costs are classified into the following categories:

Base capital costs and O&M expenses associated with service to customers under average demand conditions. This category does not include any costs attributable to variations in water use resulting from peaks in demand. Base costs tend to vary directly with the total quantity of water used.

Max Day (Extra Capacity) costs attributable to facilities that are designed to meet peaking requirements. These costs include capital and operating costs for additional plant and system capacity beyond that required for average usage. For the purpose of this analysis, the max/extra capacity costs are further separated into systemwide facilities and distribution facilities. Such a separation is done to provide a basis to exclude the allocation of distribution costs from wholesale customers that operate their own distribution facilities for their customers.

Humboldt Bay Municipal Water MCSD costs which are attributable to the direct and indirect costs of purchased water.

Customer Service costs include those related to the maintenance and servicing of customer accounts, and meter service related costs. Customer account costs are uniform to all customers and include such costs as meter reading, billing, accounting, and administration. Meter service costs include maintenance and capital costs associated with meters and services related costs.

Figure 5 shows a summary distribution of the utility's expenditures for the test year of the study period. To generate this data, MCSD's budget was analyzed line-item by line-item and expenditures were distributed based on a variety of demand factors: average day (base), maximum day (peak) usage, meters and services, and customer accounts.

Figure 5: Distribution of Expenditure by Function

Degavintion	Costs	Projected	Differ	ence
Description	2019	Revenues	\$ Amount	Percent
Total Cost of Service: Base Max Day/Extra Capacity	\$ 926,235 672,263			
Sub-Total Non Customer Customer	\$ 1,598,498 981,499			
Total	\$ 2,579,997			
EXISTING RATES				
Customer Class:				
Residential	\$ 1,776,493	\$ 1,641,030	\$ (135,463)	-8%
Multifamily	495,357	537,280	41,923	8%
Nonresidential	308,148	245,200	(62,948)	-20%
Total	\$ 2,579,998	\$ 2,423,510	\$ (156,488)	-6%
PROPOSED RATES				
Customer Class:				
Residential	\$ 1,773,678	\$ 1,699,940	\$ (73,738)	-4%
Multifamily	493,410	556,050	62,640	13%
Nonresidential	312,909	257,650	(55,259)	-18%
Total	\$ 2,579,997	\$ 2,513,640	\$ (66,357)	-3%

Once the system cost causation analysis is complete, the next step is to design the most equitable and appropriate rate structure to recover those revenues.

Rate Design Analysis

In an effort to meet the objectives of establishing rates that are administratively efficient, equitable and based upon the cost of service provided, the analysis developed herein includes a review of the existing rate structure. In reviewing the rate structure, primary consideration is given to the overall equity of the rate structure as it applies to various customers and customer classes. Consideration is also given to administrative efficiency, water conservation goals, the comparativeness of the rate structure with other regional utility systems, as well as common industry standards for water utility rates. Upon review, certain rate structure modifications are proposed. A general description of the proposed rate structure revisions is provided in the following discussions.

Criteria and Considerations

In determining the appropriate rate level and structure, Willdan, in conjunction with MCSD staff, analyzed various generated financial scenarios concerning the proposed adjustments and the implications attributed to those decisions.

A simplified list of some of the rate design considerations that were reviewed is listed:

- Clear and understandable
- Easily administered
- Cost of service principles
- Revenue stability
- Prudent financial planning
- Capital Funding Options
- Equity
- Comply with legal and regulatory requirements

Every consideration has merit and plays an important role in a comprehensive rate study. When developing MCSD's proposed rates, all the criteria were taken into consideration, in addition to the objective of minimizing rate shock. Determining the appropriate balance is crucial, as some of the criteria sometimes conflict with one another, i.e. the conservation measures and cost-based. In designing rates, there will always be a goal of achieving balance between the various objectives as well as policy decisions made by the MCSD Board.

Existing Rate Structure

The existing rate structure has a two-tier rate structure for residential and non-residential customers. The structure is comprised of the following cost components.

Base Charge: Charge is per month and is based on the size of water meter. This component of the water rate reflects the cost of metering support, customer service, and maintaining the account.

Commodity Charge: Charge is \$1.47 for the first 800 cubic feet (CF) used per month; \$3.66 for anything over 800 CF. This supports the variable cost of the system that brings the water to homes or businesses.

Humboldt Bay Pass-through: The pass-through rate recovers cost increases outside the control of MCSD, such as increased cost of purchased water, pursuant to Government Code Section 53756. The current pass-through rate is \$1.40 per 100 CF.

Proposed Rate Structure

Since the existing rates are not expected to generate adequate revenue to support the MCSDs expenditure needs, Willdan recommends certain modifications to the existing rates and rate structure. Below are the proposed components of the recommended rate structure.

Base Charge: Although MCSD applies a practice of incrementing the base monthly charges for larger connections, the incrementing equivalency factors are not consistent with industry standards. As such, it is proposed that MCSD revise the current methodology related to the equivalency factors for the various meter sizes. The proposed methodology for incrementing the monthly availability charge is based upon standardized meter/capacity criteria established by the American Water Works Association (AWWA) relative to the size of the water meter. The AWWA equivalent meter capacity criteria are commonly used to establish a standard unit of measure for customers referred to as an Equivalent Residential Unit (ERU). Based upon the established standards, an ERU is equal to one single-family residential connection with a 5/8x3/4-inch water meter. The applicable ERU factors for larger water meters are based upon the incremental increase in potential capacity of those meters as compared to the standard meter size. These factors are derived from actual flow testing results as performed and defined by the AWWA, and commonly utilized by the water and wastewater utility industry. In fact, many state public service commissions have adopted the AWWA meter equivalency basis as the required structure for ratemaking by the private utility systems within their regulatory jurisdiction. Similar to the current practice utilized by MCSD, the AWWA equivalency factors can be applied to the monthly base charge for a 5/8x3/4-inch meter in order to calculate the applicable base charges for each meter size.

Commodity Charge: Charge is applied to all units of water used per month and split between two tiers. Starting in January 2019, all users will be charge \$1.57 cents for the first 800 CF and \$3.93 for anything over 800 CF.

Humboldt Bay Pass-through: The pass-through rate will be adjusted annually to reflect and recover cost increases outside the control of MCSD, such as increased cost of purchased water, pursuant to Government Code Section 53756. This will ensure appropriate cost recovery without the possibility of overcharging customers for assumed increases. The water adjustment charge will be calculated as necessary to reflect cost increases implemented by HBMWD. The pass-through rate starting in January 2019 will be \$1.58 per 100 CF.

Recommended Water Charges

The proposed revenue adjustments as a percentage do not equal or necessary correlate to an equivalent percentage increase to rates or monthly bills. The results of the cost-of-service analysis and rate redesign will affect users differently, based on meter size and water consumed.

Base Charge

In accordance with the existing rate structure, the base charges are applied by the size of the water meter for residential and nonresidential customers. For multi-family customers, the base charges are billed by the number of dwelling units. Figure 6 provides a breakdown of the projected water customer accounts/units by customer class.

Figure 6: Total Water Accounts/Units

Description	Estimated		Projected For	Fiscal Year Endin	g June 30:	
Description	2018	2019	2020	2021	2022	2023
WATER SYSTEM						
Accounts - Inside:						
Residential	4,860	4,872	4,884	4,897	4,910	4,924
Multi-Family	1,965	1,971	1,977	1,983	1,989	1,998
Nonresidential	295	295	295	295	295	295
Subtotal	7,120	7,138	7,156	7,175	7,194	7,217
Accounts - Outside:						
Residential	6	6	6	6	6	6
Multi-Family	0	0	0	0	0	0
Nonresidential	20	20	20	20	20	20
Subtotal	26	26	26	26	26	26
Accounts - Combined:						
Residential	4,866	4,878	4,890	4,903	4,916	4,930
Multi-Family	1,965	1,971	1,977	1,983	1,989	1,998
Nonresidential	315	315	315	315	315	315
Total	7,146	7,164	7,182	7,201	7,220	7,243

The projected base charge revenue related is approximately \$1.4 million dollars for fiscal year 2019. Figure 7 provides the projected base charge revenue by customer class for the projection period.

Figure 7: Projected Base Charge Revenue

Description	Pro	posed Rates		Projected For Fiscal Year Ending June 30:								
Description		2019		2020		2021		2022		2023		
				-								
WATER REVENUES												
Monthly Base Charges - Inside:												
Residential	\$	951,760	\$	1,024,280	\$	1,097,410	\$	1,170,670	\$	1,230,520		
Multi-Family		376,790		404,380		431,910		459,220		481,800		
Nonresidential		84,040		96,600		109,970		124,150		137,330		
Total	\$	1,412,590	\$	1,525,260	\$	1,639,290	\$	1,754,040	\$	1,849,650		
Monthly Base Charges - Outside:												
Residential	\$	1,580	\$	1,750	\$	1,930	\$	2,100	\$	2,260		
Multi-Family		0		0		0		0		0		
Nonresidential		9,910		11,370		12,930		14,570		16,090		
Total	\$	11,490	\$	13,120	\$	14,860	\$	16,670	\$	18,350		
Monthly Base Charges - Combined:												
Residential	\$	953,340	\$	1,026,030	\$	1,099,340	\$	1,172,770	\$	1,232,780		
Multi-Family		376,790		404,380		431,910		459,220		481,800		
Nonresidential		93,950		107,970		122,900		138,720		153,420		
Total	\$	1,424,080	\$	1,538,380	\$	1,654,150	\$	1,770,710	\$	1,868,000		

Rates related to Meters and Services are distributed on an equivalent meter factor, as endorsed by the AWWA. Larger meters place a higher demand on the utility due to a higher capacity and total flow rate, which in turn cause higher maintenance costs.

Estimated revenue related to the volumetric charges is approximately around \$1.9 million dollars for fiscal year ending 2019. Figure 8, highlights volumetric, pass-through and bulk water rate revenue through 2024.

Figure 8: Projected Volumetric Revenues

Description	Pro	posed Rates	Pr	oject	ed For Fiscal	Yea	r Ending June	30:	
Description		2019	2020		2021		2022		2023
	-								
WATER REVENUES									
Volumetric Rates - Inside:									
Residential	\$	742,100	\$ 810,770	\$	881,330	\$	954,880	\$	1,020,640
Multi-Family		179,260	192,220		205,170		218,220		229,270
Nonresidential		155,160	166,180		176,840		187,690		196,490
Pass-through Charge		855,990	902,960		957,010		1,012,640		1,070,290
Bulk Water		17,528	19,103		20,914		22,859		24,946
Total	\$	1,950,038	\$ 2,091,233	\$	2,241,264	\$	2,396,289	\$	2,541,636
Volumetric Rates - Outside:									
Residential	\$	4,500	\$ 4,820	\$	5,130	\$	5,440	\$	5,700
Multi-Family		0	0		0		0		0
Nonresidential		8,540	9,140		9,720		10,320		10,800
Pass-through Charge		6,920	7,170		7,480		7,790		8,090
Total	\$	19,960	\$ 21,130	\$	22,330	\$	23,550	\$	24,590
Total Volumetric Combined:									
Residential	\$	746,600	\$ 815,590	\$	886,460	\$	960,320	\$	1,026,340
Multi-Family		179,260	192,220		205,170		218,220		229,270
Nonresidential		163,700	175,320		186,560		198,010		207,290
Pass-through Charge		862,910	910,130		964,490		1,020,430		1,078,380
Bulk Water		17,528	19,103		20,914		22,859		24,946
Total	\$	1,969,998	\$ 2,112,363	\$	2,263,594	\$	2,419,839	\$	2,566,226

Figure 9 provides the proposed base charges, volumetric rates and pass-through rate. The pass through will be adjusted as necessary to reflect the adjustments in the wholesale water charges established by HBWMD. This mechanism enables MCSD to only pass-through the actual costs of purchased water; while providing an increase in financial stability and certainty to MCSD.

Figure 9: Proposed Rates

TABLE 1 PROPOSED RATES - WATER

Description	Year 2019		Y	Year 2020		Year 2021		Year 2022		ear 2023
Monthly Base Charge:										
5/8 Inch	\$	16.47	\$	17.62	\$	18.68	\$	19.80	\$	20.39
3/4 Inch	\$	22.23	\$	24.49	\$	26.71	\$	29.11	\$	30.59
1.0 Inch	\$	33.60	\$	38.06	\$	42.59	\$	47.52	\$	50.98
1.5 Inch	\$	62.09	\$	71.89	\$	82.01	\$	93.06	\$	101.95
2.0 Inch	\$	96.35	\$	112.59	\$	129.45	\$	147.91	\$	163.12
3.0 Inch	\$	179.52	\$	214.61	\$	251.43	\$	291.85	\$	326.24
4.0 Inch	\$	290.53	\$	343.59	\$	399.00	\$	459.76	\$	509.75
6.0 Inch	\$	575.46	\$	682.07	\$	793.53	\$	915.75	\$	1,019.50
8.0 Inch	\$	917.71	\$	1,088.92	\$	1,268.00	\$	1,464.41	\$	1,631.20
Volumetric Per 100 CF:										
Block 1 - 0 to 8 CCF	\$	1.57	\$	1.68	\$	1.78	\$	1.89	\$	1.95
Block 2 - All Over 8 CCF	\$	3.93	\$	4.20	\$	4.45	\$	4.73	\$	4.88
Pass-through Charge (P/HCF)	\$	1.58	\$	1.64	\$	1.71	\$	1.78	\$	1.85

Rate Comparison

While the cost structure and facilities vary greatly between water utilities, rate comparisons provide stakeholders a barometer of its rates in relation to surrounding communities. For increased application, the figure below compares agencies where HBMWD is the wholesale service provider. Figure 10 provides the estimated monthly bill for a typical residential customer (800 CF). As the figure demonstrates, holding rates level, the Proposed FY 2018-19 rates will still be among the average in the region.

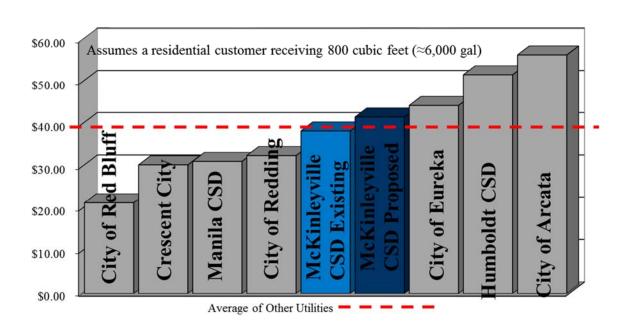


Figure 10: Single Family Regional Rate Comparison (800 Cubic Feet)

Wastewater Rate Analysis

The wastewater utility is in a similar financial position when compared to the water fund. Although starting with higher reserves, the Wastewater Fund is facing significant future capital expenditures and increased costs related to operations and a need to repair and replace aging infrastructure. This section of the report outlines the details of the analysis and the approach to developing the recommendations.

Wastewater Discharge and User Characteristics

As wastewater usage (discharge) is not metered, an examination of seasonal water consumption plays a critical role in ensuring equitable and revenue sufficient rates. Willdan examined multiple years of historical billing data to identify various customer classes and applicable growth trends within each class. Furthermore, billing data was analyzed to determine seasonal demand patterns and overall consumption characteristics. These discharge assumptions were cross-analyzed against treatment plant information (gallons treated) to confirm the appropriateness of the user discharge analysis.

Customer Statistics

During the Fiscal Year 2017, an analysis of the wastewater data identified service to an estimated 6,253 accounts across 26 different customer land use classifications and discharging an estimated 429,000 CF of wastewater. A projection of customers and flows is necessary in the development of rates.

Existing Wastewater Revenues

Like water, the Wastewater Fund receives a majority of its revenues from rates. In Fiscal Year ending 2017, the Wastewater Fund yielded \$3.3 million in operating rate revenue, compared with \$196 thousand in non-operating revenue.

Existing Wastewater Expenditures

To achieve long-term financial health, a utility's revenues must be sufficient to meet total expenditures or cash obligations. This "required revenue" includes all incurred costs related to operation and maintenance, debt service, and capital costs. MSCD estimates approximately \$3.8 million in total system expenditures.

Figures 12 demonstrates the Baseline Scenario for the Wastewater Fund. This represents current and projected financial conditions of the water utility <u>excluding any revenue adjustment (increases) over the next 5 years</u>.

Figure 12: Wastewater Fund - Baseline Financial Scenario

Description	Existing	Projected For Fiscal Year Ending June 30:									
Description	Rates	2019	2020	2021	2022	2023					
Revenues:											
User Rate Revenues	\$ 3,303,500	\$ 3,303,390	\$ 3,348,770	\$ 3,394,720	\$ 3,443,480	\$ 3,492,970					
Other Revenues	181,164	181,164	187,686	194,443	201,443	208,695					
Total Revenues	\$ 3,484,664	\$ 3,484,554	\$ 3,536,456	\$ 3,589,163	\$ 3,644,923	\$ 3,701,665					
Percentage Rate Adjustment		0.00%	0.00%	0.00%	0.00%	0.00%					
System Expenditures:											
O&M Costs	\$ 1,858,870	\$ 1,858,870	\$ 1,935,682	\$ 2,009,794	\$ 2,087,439	\$ 2,171,401					
Debt Service (P&I)	947,439	947,439	1,233,749	1,266,129	1,262,129	1,256,023					
R&R Transfer	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000					
Total Operating & Non-Operating	\$ 3,806,309	\$ 3,806,309	\$ 4,169,431	\$ 4,275,923	\$ 4,349,568	\$ 4,427,424					
Revenue Excess (Deficiency)	\$ (321,645)	\$ (321,755)	\$ (632,975)	\$ (686,761)	\$ (704,645)	\$ (725,760)					
Debt Service Coverage	1.72	1.72	1.30	1.25	1.23	1.22					

Projected Operating Results

Given the existing financial condition of the utility, without near term revenue adjustments, MCSD's water fund will not be able to meet its targeted objectives without increases in the future. As such, Willdan worked with MCSD staff to seek input for the development a financial plan and rate structure that provides gradual adjustment to provide continued financial stability throughout the study period. Numerous financial scenarios were analyzed and presented over the course of the study. The results and recommendations provided in the analysis were presented in August 2018 and stakeholders were subsequently mailed a Proposition 218 Noticed in September. The recommended financial scenario was structured and analyzed to achieve a positive net income within the five-year study period and to maintain be incompliance with the MCSD's Debt Coverage Ratio.

Figure 13 provides a summary of the projected operating results for the wastewater system and the corresponding impact of the proposed rate adjustments.

Figure 13: Wastewater - Projected Operating Results

Description	Existing	Projected For Fiscal Year Ending June 30:									
Description	Rates	2019	2020	2021	2022	2023					
Revenues:											
User Rate Revenues	\$ 3,303,500	\$ 3,419,690	\$ 3,835,860	\$ 4,004,460	\$ 4,181,750	\$ 4,371,210					
Other Revenues	196,164	196,164	203,226	210,542	218,122	225,974					
Total Revenues	\$ 3,499,664	\$ 3,615,854	\$ 4,039,086	\$ 4,215,002	\$ 4,399,872	\$ 4,597,184					
Percentage Rate Adjustment		7.00%	7.00%	3.00%	3.00%	3.00%					
System Expenditures:											
O&M Costs	\$ 1,858,870	\$ 1,858,870	\$ 1,935,682	\$ 2,009,794	\$ 2,087,439	\$ 2,171,401					
Debt Service (P&I)	947,439	947,439	1,233,749	1,266,129	1,262,129	1,256,023					
R&R Transfer	800,000	800,000	860,000	930,000	1,000,000	1,000,000					
Total Operating & Non-Operating	\$ 3,606,309	\$ 3,606,309	\$ 4,029,431	\$ 4,205,923	\$ 4,349,568	\$ 4,427,424					
Revenue Excess (Deficiency)	\$ (106,645)	\$ 9,545	\$ 9,655	\$ 9,079	\$ 50,304	\$ 169,760					
Debt Service Coverage	1.73	1.85	1.70	1.74	1.83	1.93					

 $^{{\}bf *Note\ revenue\ projections\ may\ slightly\ increase\ assuming\ the\ "Brewery"\ land\ use\ class\ is\ implemented.}$

Cost of Service Analysis

Following the discharge and revenue requirement analysis, the next stage is to distribute costs (revenue requirements) to functional components, and ultimately, to each customer class. The cost of service analysis is a systematic process by which revenue requirements are allocated by function to generate a classification of equitable costs in proportion to the service received for each user class.

This section of the report discusses the allocation of operating and capital costs to the applicable Flow, parameters, the determination of unit rates, and the calculation of user class cost responsibility. Similar to water, a wastewater system COS analysis is a detailed study that allocates the Revenue Requirements of the system to individual customer classes. This process involves three basic steps as follows:

- Revenue Requirement The revenue requirement determines the costs to be supported by
 monthly user rates. The amount is developed based on a projection of expenses for FY 2019 (the
 Test Year). Sources for the financial projections include the currently budgeted expenditures for
 operations and capital improvements. Projections for customer growth, operation and
 maintenance costs, and capital paid from current earnings are based on information provided by
 MCSD.
- **Cost Functionalization** The cost functionalization process categorizes the revenue requirement by basic utility function and service. In this analysis, the wastewater costs separated into Treatment, Collection, Administration and Customer functions.
- *Allocation* Based on these cost functionalization, costs are then allocated to the individual customer classes based on their usage characteristics.

Current Budget and Revenue

The determination of the monthly user rates and charges to be applied to wastewater customers is based upon the estimated revenue requirements of the system. Revenue requirements consist of the operating, maintenance, debt service, capital and other monetary expenditures necessary to provide, maintain and perpetuate quality services to meet the goals and objectives of the utility system.

Methodology

The rate analysis performed herein utilizes the projected wastewater system budget for fiscal year 2018/19 (the "Wastewater Budget" for fiscal year ending June 30, 2019) as the basis for developing the revenue requirements to be recovered from user rates. The Wastewater Budget, as prepared by MCSD, has certain expenditures that are allocated between identifiable functional components, as well as expenditures that are associated with the combined system operations. In developing the rate analysis, certain adjustments are made such that the expenditures are categorized into either Operating and Maintenance (O&M) expenses or Non-Operating expenses (e.g. debt service, capital reserves, general fund transfer, etc.).

Cost Allocation by Function

The cost of service allocation conducted in this study is established on the flow and strength characteristics method, which is endorsed by the Water Environmental Federation (WEF). Under this method, revenue requirements are allocated to the different user classes proportionate to their use of the wastewater system. Allocations are based on customers and flow volume, and components of treatment, collection, administration and customer costs. Use of this methodology results in a generally accepted cost distribution among customer classes and a means of calculating and designing rates to proportionately recover those costs.

Figure 14 presents the allocated costs by function and customer class. This analysis is important in order to determine an equitable means of allocating costs to utility demand.

Figure 14: Distribution of Expenditure by Function

Description	Costs		P	rojected	Difference			
Description		2019	R	Revenues	\$	Amount	Percent	
T . 10 . 10 .								
Total Cost of Service:	Φ.	1 151 201						
Treatment	\$	1,151,281						
Collection		825,547						
Sub-Total Non Customer	\$	1,976,828						
Customer		1,613,318						
Total	\$	3,590,146						
PROPOSED RATES								
Customer Class:								
2 sewer Units/Commercial	\$	2,663	\$	2,810	\$	147	5.52%	
Apartment/Multi Unit (Each)		804,258		816,700		12,442	1.55%	
Bakery		3,157		2,030		(1,127)	-35.70%	
Barber/Beauty Shop		3,034		3,020		(14)	-0.46%	
Car Wash		3,883		3,100		(783)	-20.16%	
Church & Residence		894		950		56	6.26%	
Churches		11,581		9,820		(1,761)	-15.21%	
Coast Guard Station/Airport		40,169		25,150		(15,019)	-37.39%	
Dialysis Clinic		9,997		6,050		(3,947)	-39.48%	
Fire Station/School		9,791		7,380		(2,411)	-24.62%	
Gas Stations (No Market)		4,084		4,090		6	0.15%	
Laundromats		15,241		10,220		(5,021)	-32.94%	
Market		43,986		26,620		(17,366)	-39.48%	
Metered Septage Vault		20,190		12,880		(7,310)	-36.21%	
Moblie Homes (Each)		19,360		18,400		(960)	-4.96%	
Motels/Hotels		30,626		18,790		(11,836)	-38.65%	
Office Building/Post Office		42,059		46,900		4,841	11.51%	
Restaurant/Tavern		135,590		82,540		(53,050)	-39.13%	
Retail/Banks/Theater/Other		43,436		34,920		(8,516)	-19.61%	
Round Table/Market		5,276		3,540		(1,736)	-32.90%	
Sewer Only Accounts		11,182		15,560		4,378	39.15%	
Sewer Units - Commercial		819		900		81	9.89%	
Single Family Residential		2,322,809		2,261,240		(61,569)	-2.65%	
Two Sewer Units/Business		4,947		5,000		53	1.07%	
Two Sewer Units/Daycare		1,115		1,080		(35)	-3.14%	
Total	\$	3,590,147	\$	3,419,690	\$	(170,457)	-4.75%	

The separation of costs into these functional components provides the means for further allocation to the customer classes based upon their respective demand of each function. The resulting distribution percentages are utilized to allocate annual required revenue to each customer class based on the class' respective demand on the system

Once the system cost causation analysis is complete, the next step is to design an equitable rate structure to recover the revenues.

Rate Design Analysis

The final step of the rate study is the design of the wastewater rates to collect the desired level of revenue determined in the revenue requirement analysis. During this analysis, consideration is given to the levels of the rates. This section reviews the proposed wastewater rate design for the MCSD.

Criteria and Considerations

In determining the appropriate rate level and structure, Willdan, in conjunction with MCSD staff, analyzed various generated financial scenarios concerning the proposed adjustments and the implications attributed to those decisions.

Listed below is a simplified list of the design considerations that were reviewed:

- Consideration of the customer's ability to pay
- Clear and understandable rates
- Easily administered
- Outdoor water usage
- Revenue stability
- Efficient allocation of resources
- Capital Funding Options
- Equity
- Comply with legal and regulatory requirements

When developing the proposed rates all of the criteria were taken into consideration. Determining the appropriate balance is crucial, as some of the criteria occasionally conflict with one another, i.e. the customer's ability to pay and cost-based rates. In designing rates, there will always be concessions between the various objectives; however, the proposed rates meet all of the leading objectives of MCSD as discussed with staff and the Board.

Existing Rate Structure

The existing rate structure is a three-tiered rate structure for residential and two-tier rate structure for non-residential classes, both of which, also includes a base monthly rate. The structure is comprised of the following cost components.

Base Charge is per month and is of the same for each customer class regardless of connection size. This component of the wastewater rate reflects a portion of operations, customer service, and maintaining the accounts.

Commodity Charge This charge reflects the cost of service related to the projected discharge and discharge characteristics for all remaining classes.

Proposed Rate Structure

Willdan recommends that some components of the rate structure be modified to reflect the current analysis and allocation of the costs incurred. Below are the proposed components of the recommended rate structure – while each customer class' rate(s) is comprised of these charges, the specific rates may differ based on land use category.

Base Charge: A fixed and uniform rate, applied per month, regardless of customer class or connection size. This component of the wastewater rate reflects a portion of operations, customer service, and maintaining the account.

Commodity Charge: Charge has been updated to reflect the cost of service related to discharge strengths based on land use category. The proposed rate for the Single Family Residential land use class is \$2.55 per 100 CF. The rates for all other identified land use categories are based on loading standards developed by the California State Water Resources Control Board.

Recommended Wastewater Charges

The proposed revenue adjustments as a percentage do not equal or necessarily correlate to an equivalent percentage increase to rates or monthly bills. The results of the cost-of-service analysis and rate redesign will affect users differently, at both the customer class and account level.

Base Charge

In accordance with the existing rate structure, the base charges are the same for all land use classes. Figure 15 provides a breakdown of the projected wastewater customer accounts by land use category.

Figure 15: Total Wastewater Accounts

Degazintian	Estimated		Projected F	or Fiscal Year End	al Year Ending June 30:				
Description	2018	2019	2020	2021	2022	2023			
WASTEWATER SYSTEM									
Accounts:									
2 sewer Units/Commercial	6	6	6	6	6	6			
Apartment/Multi Unit (Each)	1,652	1,672	1,692	1,712	1,736	1,760			
Bakery	1	1	1	1	1	1			
Barber/Beauty Shop	6	6	6	6	6	6			
Car Wash	3	3	3	3	3	3			
Church & Residence	2	2	2	2	2	2			
Churches	14	14	14	14	14	14			
Coast Guard Station/Airport	4	4	4	4	4	4			
Dialysis Clinic	1	1	1	1	1	1			
Fire Station/School	7	7	7	7	7	7			
Gas Stations (No Market)	8	8	8	8	8	8			
Laundromats	5	5	5	5	5	5			
Market	3	3	3	3	3	3			
Metered Septage Vault	1	1	1	1	1	1			
Moblie Homes (Each)	34	34	34	34	34	34			
Motels/Hotels	2	2	2	2	2	2			
Office Building/Post Office	108	108	108	108	108	108			
Restaurant/Tavern	20	20	20	20	20	20			
Retail/Banks/Theater/Other	43	43	43	43	43	43			
Round Table/Market	2	2	2	2	2	2			
Sewer Only Accounts	44	44	44	44	44	44			
Sewer Units - Commercial	2	2	2	2	2	2			
Single Family Residential	4,273	4,348	4,424	4,501	4,580	4,660			
Two Sewer Units/Business	10	10	10	10	10	10			
Two Sewer Units/Daycare	2	2	2	2	2	2			
Subtotal	6,253	6,348	6,444	6,541	6,644	6,748			

The projected base charge revenue related is approximately \$2.2 million dollars for fiscal year 2019. Figure 16, provides the projected base charge revenue for the projection period.

Figure 16: Projected Wastewater Base Charge Revenue

	Prop	osed Rates	Pro	oiecte	d For Fiscal	Year	Ending June	30:_	
Description	Trop	2019	2020	Jeere	2021	Tear	2022	<i>5</i> 0.	2023
WASTEWATER REVENUES									
Monthly Base Charges:									
2 sewer Units/Commercial	\$	2,120	\$ 2,350	\$	2,420	\$	2,490	\$	2,570
Apartment/Multi Unit (Each)		591,390	661,910		689,870		720,580		752,510
Bakery		350	390		400		420		430
Barber/Beauty Shop		2,120	2,350		2,420		2,490		2,570
Car Wash		1,060	1,170		1,210		1,250		1,280
Church & Residence		710	780		810		830		860
Churches		4,950	5,480		5,640		5,810		5,990
Coast Guard Station/Airport		1,410	1,560		1,610		1,660		1,710
Dialysis Clinic		350	390		400		420		430
Fire Station/School		2,480	2,740		2,820		2,910		2,990
Gas Stations (No Market)		2,830	3,130		3,220		3,320		3,420
Laundromats		1,770	1,960		2,010		2,080		2,140
Market		1,060	1,170		1,210		1,250		1,280
Metered Septage Vault		350	390		400		420		430
Moblie Homes (Each)		12,030	13,300		13,700		14,110		14,540
Motels/Hotels		710	780		810		830		860
Office Building/Post Office		38,200	42,250		43,520		44,830		46,180
Restaurant/Tavern		7,070	7,820		8,060		8,300		8,550
Retail/Banks/Theater/Other		15,210	16,820		17,330		17,850		18,390
Round Table/Market		710	780		810		830		860
Sewer Only Accounts		15,560	17,210		17,730		18,260		18,810
Sewer Units - Commercial		710	780		810		830		860
Single Family Residential		1,537,890	1,730,670		1,813,720		1,901,070		1,992,430
Two Sewer Units/Business		3,540	3,910		4,030		4,150		4,280
Two Sewer Units/Daycare		710	780		810		830		860
Total	\$	2,245,290	\$ 2,520,870	\$	2,635,770	\$	2,757,820	\$	2,885,230

^{*}Note projected revenues do not account for the proposed "Brewery" land use class. Additional revenue for the "Brewery" class will be minimal.

The projected revenue from volumetric rates is approximately \$1.1 million dollars for fiscal year 2019. Figure 17, provides the projected wastewater volumetric rate revenue for the projection period.

Figure 17: Projected Wastewater Volumetric Rate Revenues

Projected For Fiscal Year Ending June 30: Proposed Rates **Description** 2019 2021 2020 2022 2023 WASTEWATER REVENUES Volumetric Rates: 2 sewer Units/Commercial \$ 690 \$ 730 \$ 730 \$ 730 \$ 730 Apartment/Multi Unit (Each) 225,310 249,640 257,030 264,990 273,860 Bakery 1,680 2,020 2,190 2,360 2,550 Barber/Beauty Shop 900 980 1,000 1,020 1,050 Car Wash 2,040 1,630 1,230 800 360 Church & Residence 240 230 180 210 160 Churches 4,870 5,060 4,980 4,880 4,800 Coast Guard Station/Airport 23,740 24,690 24,290 23,820 23,430 Dialysis Clinic 7,990 5,700 6,690 7,170 7,610 4,900 Fire Station/School 4,950 4,770 4,580 4,510 Gas Stations (No Market) 1,170 1,030 1,260 1,240 1,100 Laundromats 8,450 8,700 8,430 8,840 8,550 Market 25,560 28,640 29,710 30,720 31,670 Metered Septage Vault 12,530 11,590 10,360 9,050 8,320 Moblie Homes (Each) 6,370 7,050 7,260 7,460 7,700 Motels/Hotels 18,080 20,020 20,790 21,600 22,560 Office Building/Post Office 8,700 9,500 9,710 9,880 10,190 Restaurant/Tavern 75,470 90,650 98,340 106,190 114,570 Retail/Banks/Theater/Other 19,710 20,500 20,170 19,780 19,450 Round Table/Market 2,830 3,140 3,230 3,320 3,420 Sewer Only Accounts 0 0 0 0 0 Sewer Units - Commercial 190 190 180 170 160 Single Family Residential 723,350 815,110 853,600 893,310 937,220 Two Sewer Units/Business 1,520 1,490 1,460 1,440 1,460 Two Sewer Units/Daycare 370 380 380 370 380 1,174,400 \$ 1,314,990 \$ 1,368,690 \$ 1,423,930 1,485,980

^{*}Note projected revenues do not account for the proposed "Brewery" land use class. Additional revenue for the "Brewery" class will be minimal.

Figure 18 provides the proposed base charges, volumetric rates based on land use class for the wastewater system.

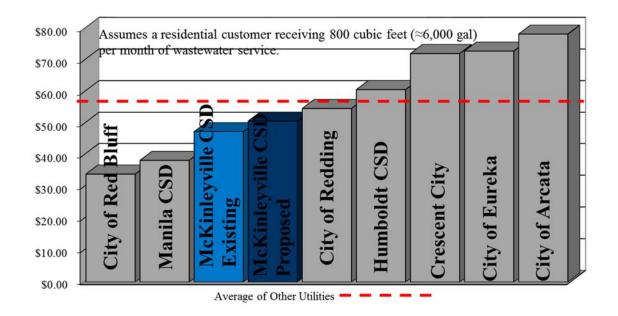
Figure 18: Proposed Wastewater Rates

FIE	gure .	18: Propo	Jseu	wastew	ater	Rates				
				LE 2						
Pl	ROP	OSED RA	ATE	S - WAS'	rev	VATER				
Description	F	FY 2019		FY 2020		FY 2021		Y 2022	F	Y 2023
Monthly Base Charge:										
All Customers	\$	30.47	\$	32.60	\$	33.58	\$	34.59	\$	35.63
Volumetric Per 100 CF:										
2 sewer Units/Commercial	\$	3.06	\$	3.14	\$	3.09	\$	3.03	\$	2.98
Apartment/Multi Unit (Each)	\$	2.55	\$	2.73	\$	2.81	\$	2.89	\$	2.98
Bakery	\$	10.43	\$	11.79	\$	12.79	\$	13.81	\$	14.90
Barber/Beauty Shop	\$	2.63	\$	2.78	\$	2.84	\$	2.89	\$	2.98
Car Wash	\$	1.58	\$	1.34	\$	1.01	\$	0.66	\$	0.30
Church & Residence	\$	4.39	\$	4.20	\$	3.82	\$	3.41	\$	2.98
Churches	\$	3.06	\$	3.14	\$	3.09	\$	3.03	\$	2.98
Coast Guard Station/Airport	\$	3.06	\$	3.14	\$	3.09	\$	3.03	\$	2.98
Coming Attractions	\$	2.63	\$	2.78	\$	2.84	\$	2.89	\$	2.98
Dialysis Clinic	\$	2.98	\$	3.28	\$	3.46	\$	3.61	\$	3.73
Fire Station/School	\$	2.12	\$	2.13	\$	2.05	\$	1.97	\$	1.94
Gas Stations (No Market)	\$	3.29	\$	3.25	\$	3.06	\$	2.86	\$	2.68
Laundromats	\$	2.32	\$	2.38	\$	2.33	\$	2.28	\$	2.24
Market	\$	10.00	\$	10.78	\$	11.18	\$	11.56	\$	11.92
Metered Septage Vault	\$	4.39	\$	4.15	\$	3.71	\$	3.24	\$	2.98
Moblie Homes (Each)	\$	2.55	\$	2.73	\$	2.81	\$	2.89	\$	2.98
Motels/Hotels	\$	6.96	\$	7.29	\$	7.33	\$	7.37	\$	7.45
Office Building/Post Office	\$	2.63	\$	2.78	\$	2.84	\$	2.89	\$	2.98
Restaurant/Tavern	\$	10.43	\$	11.79	\$	12.79	\$	13.81	\$	14.90
Retail/Banks/Theater/Other	\$	3.06	\$	3.14	\$	3.09	\$	3.03	\$	2.98
Round Table/Market	\$	8.52	\$	9.12	\$	9.39	\$	9.65	\$	9.95
Sewer Only Accounts	\$	0.00	\$	0.00	\$	0.00	\$	0.00	\$	0.00
Sewer Units - Commercial	\$	3.29	\$	3.25	\$	3.06	\$	2.86	\$	2.68
Single Family Residential	\$	2.55	\$	2.73	\$	2.81	\$	2.89	\$	2.98
Two Sewer Units/Business	\$	3.06	\$	3.14	\$	3.09	\$	3.03	\$	2.98
Two Sewer Units/Daycare	\$	2.96	\$	3.03	\$	2.98	\$	2.92	\$	2.98
Brewery	\$	5.10	\$	10.92	\$	16.86	\$	23.12	\$	29.80
÷										

Rate Comparison

While the cost structure and facilities vary greatly between wastewater utilities, rate comparisons provide stakeholders a barometer of the MCSD rates in relation to surrounding or similar communities. Figure 19 provides the estimated monthly bill for a typical single-family customer (800 CF).

Figure 19: Single-Family Regional Wastewater Rate Comparison



Customer Impacts

The proposed rates will provide MCSD with the necessary revenue to provide continue quality service without a significant impact on the average ratepayer. The figure below provides a combined water and wastewater sample bill for a variety of single-family consumption levels.

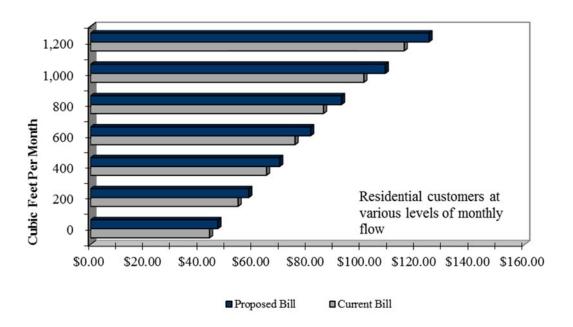


Figure 20: Single-Family Monthly Bill Comparison

Operating Results

The projection of the combined operating results for both water & wastewater trend positive from the base year 2019 through the analysis year of 2023. Figure 21 provides a graphical illustration of the projected operating results and trends for both enterprises, as well as for the combined enterprise system.

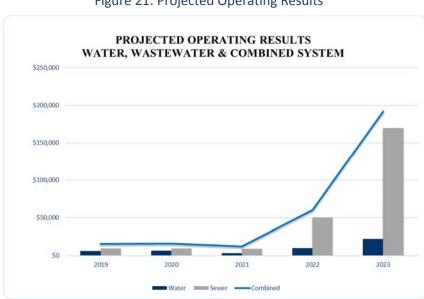


Figure 21: Projected Operating Results

Conclusions and Recommendations

Conclusions

- Projected operating revenues and operating expenses for the forecast period are developed by, and/or in consultation with, MCSD staff, and are based upon applicable assumptions;
- The projected CIP costs have been developed by MCSD staff to address the water and wastewater system renewal and replacement needs;
- Willdan is of the opinion that the financial projections presented here demonstrate the Utility's ability to meet its obligations with regard to:
 - Operating expenses;
 - Non-operating expenses (including debt service);
 - Capital project costs; and
 - Key financial policies, including debt service coverage and maintenance of at least 6 months
 of operating fund reserve balances.
- The proposed rates presented here are in conformance with industry standard rate-making practices, Proposition 218 and/or MCSD's rate policies with respect to:
 - The equitable recovery of costs through its water and wastewater rates;
 - Setting rates based upon the proportionate cost of providing utility services; and
 - Generating sufficient revenue to fully recover system expenditure and reserve requirements.

Recommendations

- It is recommended that MCSD implement the proposed rates presented in this Report for FY 2018-19 through FY 2022-23.
- It is recommended that MCSD update the Revenue Sufficiency Analysis portion of this study each
 year to ensure projected revenues are sufficient to fund projected expenses going forward as
 assumptions made during this analysis may change and have a material impact upon the analysis.