City of Ridgecrest

Sewer System Management Plan

Original Prepared by Papros Inc. July 2009

Updated by Michael K. Nunley & Associates, Inc. September 2022

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List of Acronyms

BMP	Best Management Practice
Cal OES	California Governor's Office of Emergency Services
CCTV	Closed Circuit Television
CDFW	California Department of Fish and Wildlife
CIP	Capital Improvement Plan
CITY	City of Ridgecrest or its Delegate(s)
CIWQS	California Integrated Water Quality System
CWEA	California Water Environment Association
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
GIS	Geographic Information System
GWDR	General Waste Discharge Requirement
HMA	High Maintenance Area
HPLC	High Priority Line Cleaning
I/I	Inflow & Infiltration
LRO	Legally Responsible Official
MGD	Million Gallons per Day
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NASSCO	National Association of Sewer Service Companies
NAWS	Naval Air Weapons Station China Lake
NOV	Notice of Violation
NPDES	National Pollution Discharge Elimination System
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
OIT	Operator-In-Training
O&M	Operations and Maintenance
PACP	Pipeline Assessment Certification Program
RWQCB	Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOR	Sanitary Sewer Overflow Report
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
WWTF	Wastewater Treatment Facility

INTRODUCTION

This section provides background information regarding the purpose and organization of this Sewer System Management Plan (SSMP) and provides a brief overview of the City of Ridgecrest's (City) sewer service area and collection system.

City Service Area and Sewer System

The City is located in the southern portion of the Indian Wells Valley and in the northeast corner of Kern County. Four mountain ranges surround the City, which are the Sierra Nevada on the west, the Cosos on the north, the Argus Range on the east, and the El Paso Mountains on the south. The City operates wastewater collection, treatment, and disposal facilities within city limits and within the boundaries of China Lake Naval Air Weapons Station (NAWS). The City's municipal sanitary sewer system serves a service area of approximately 6,400 acres with a population of approximately 29,000. Land uses within the City's sewer service area include residential, commercial, industrial, and institutional developments.

The sewer collection system consists of approximately 124 miles of sewer mains and trunk lines ranging in size from 4 to 36 inches in diameter. The system contains approximately 10,197 sewer service laterals, the maintenance of which is the responsibility of the customer. The collection system does not require force mains or pumping facilities as the topography allows for flow by gravity. The average daily dry weather flow is approximately 2.25 million gallons per day (MGD), with a peak daily wet weather flow of approximately 2.75 MGD.

Sewer System Management Plan Requirement Background

On May 2, 2006, The State Water Resources Control Board (SWRCB) adopted Water Quality Order No. 2006-0003, requiring all public wastewater collection system agencies in California with greater than one mile of sewers to be regulated under General Waste Discharge Requirements (GWDRs). The SWRCB action mandates the development of an SSMP and the reporting of Sanitary Sewer Overflows (SSOs) using an electronic reporting system. An audit of the plan is required every two years to identify the effectiveness of the SSMP, and an overall update of the SSMP (using the audits to identify the sections and content of the SSMP to update) is required every five years from the date the original document was approved and certified.

On July 30, 2013, Attachment A to the Order was promulgated and became effective on September 9, 2013 and is known as Attachment A, SWRCB Order No. WQO 2013-0058-EXEC, amending the Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (together these documents constitute the "SSS WDR").

Document Organization

This SSMP is intended to meet the requirements of both the Regional Water Quality Control Board (RWQCB) and the Statewide GWDR. The SSMP includes eleven elements:

1. Goals
2. Organization
3. Legal Authority
4. Operation and Maintenance
5. Design and Performance Standards
6. Overflow Emergency Response Plan
7. Fats, Oils, and Grease Control Program
8. System Evaluation and Capacity Assurance Plan
9. Monitoring, Measurement, and Program Modifications
10. Sewer System Management Plan Audits
11. Communication Plan

Plan & Schedule Regulatory Requirement:

Both the SSMP and the program to implement the SSMP must be certified by the City's Legally Responsible Official (LRO) to be in compliance with the requirements set forth above and must be presented to the City Council for approval at a public meeting. The City's first SSMP was completed by Papros Inc. and approved/certified in July 2009. The 2021 SSMP serves as the first SSMP update. The City will complete a two-year SSMP Audit two years after the certification and implementation of this 2021 SSMP update.

ELEMENT 1 GOALS

1.1 Purpose of Report

The City's objectives for this SSMP are to clearly define practices that will help prevent, effectively clean up, and report SSOs. This element identifies goals the City has set for the management, operation, and maintenance of the sewer system and discusses the role of the SSMP in supporting these goals. These goals provide focus for City staff as they continue to perform high-quality work and to implement improvements in the management of the City's wastewater collection system.

1.2 Regulatory Requirements

The summarized requirements for the Goals element of the SSMP are as follows:

RWQCB Requirement

The collection system agency must develop goals to manage and maintain all parts of the collections system. The goals address the provisions of adequate capacity to convey peak wastewater flows, as well as a reduction in the frequency of SSOs and the mitigation of their impacts.

SWRCB Requirement

The collection system agency must develop goals to properly manage, operate, and maintain all parts of its wastewater collection system in order to reduce and prevent SSOs, as well as to mitigate any SSOs that occur.

No appendices related to Element 1 are included in this SSMP.

1.3 Goals Discussion

The City of Ridgecrest will, at all times, properly fund, manage, operate and maintain all parts of the sewage collection system owned and/or operated by the City of Ridgecrest with adequately trained staff and/or highly knowledgeable contractors as demonstrated through a validated program. This document outlines responsibilities within the City's Wastewater Division and provides procedures and guidelines for sewer system maintenance and cleaning activities. The Public Works Department has developed the following goals for the operation and maintenance of its sewer system.

1. Minimize SSOs.
2. Identify all components of the collection system.
3. Update the maintenance and rehabilitation programs.
4. Predict SSO potential and prevent public health hazards.
5. Improve operation and maintenance for the entire collection system.
6. Minimize inconveniences by responsibly handling interruptions in service.
7. Protect the large investment in collection systems by maintaining adequate flow capacity to convey peak flows and extending useful life.
8. Prevent unnecessary damage to public and private property.
9. Maintain proper financial planning and use funds available for sewer operations in the most efficient manner.
10. Perform public education and outreach efforts to prevent unintentional illicit discharges and protect the sewer collection system.
11. Convey wastewater to the treatment facility with a minimum of infiltration, inflow, and exfiltration.
12. Perform all operations in a safe manner to avoid personal injury and property damage.
13. Comply with Regional and State Water Resources Control Board requirements in this regard.

ELEMENT 2 ORGNIZATION

This section identifies City staff who are responsible for implementing this SSMP, responding to SSO events, and meeting the SSO reporting requirements. This section also includes the designation of the LRO to meet SWRCB requirements for completing and certifying spill reports.

2.1 Regulatory Requirements

The summarized requirements for the Organization element of the SSMP are as follows:

RWQCB Requirement

The collection system agency's SSMP must identify staff responsible for implementing measures outlined in the SSMP, including management, administration, and maintenance positions. Identify the chain of communication for reporting and responding to SSOs.

SWRCB Requirement

The collection system agency's SSMP must identify:

- The name of the responsible and authorized representative;
- The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. Include lines of authority as shown in an organization chart or similar documents with a narrative explanation; and
- The chain of communication for reporting SSOs, from receipt of a complaint or other information, including persons responsible for reporting SSOs to the State and RWQCB and other agencies if applicable (such as County Health Officers, County Environmental Health Agency, RWQCB, California Department of Fish and Wildlife (CDFW), Coast Guard, and/or State Office of Emergency Services).

2.1.1 Element 2 – Organization Appendix A

Supporting information for Element 2 is included in Appendix A which contains the following documents:

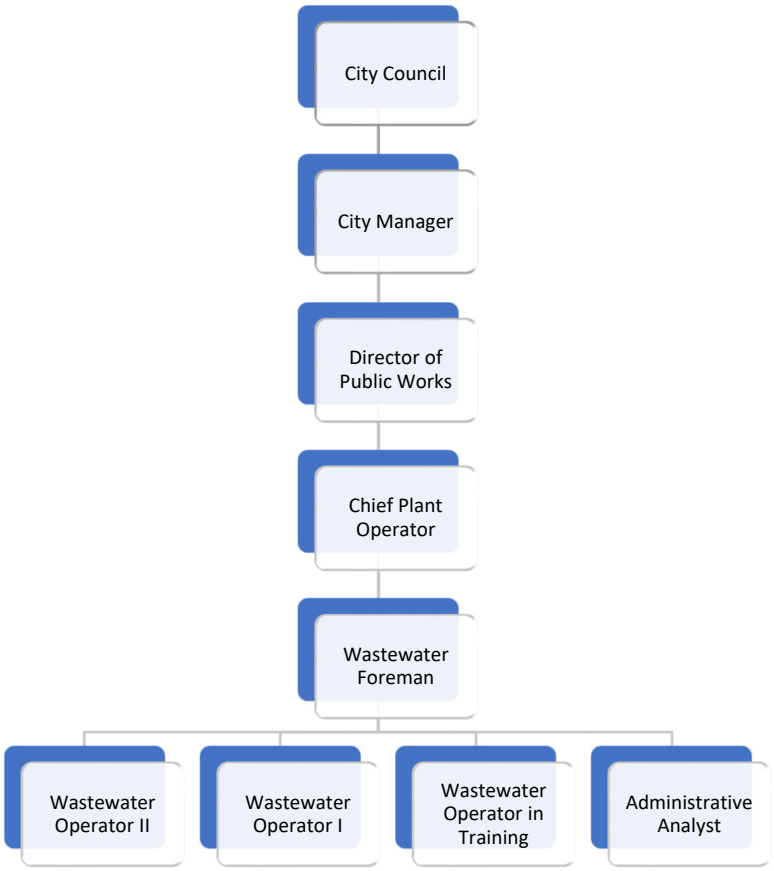
- Current List of City Council Members and Wastewater Division Staff
- Agency Notification List for SSOs

2.2 City Organization

The City of Ridgecrest is governed by a five-member Council. The City Council makes decisions, establishes policies, and enacts laws on behalf of the voters for the betterment of the City of Ridgecrest. Additionally, two council members are appointed by the Mayor, with the advice and consent of the Council, to serve on an Infrastructure Committee with two Planning Commissioners.

Daily management of the wastewater system is carried out by the Director of Public Works, the Chief Plant Operator, Wastewater Foreman, and Wastewater Operators, as shown in **Figure 2-1**. The Director of Public Works reports directly to the City Manager. The Chief Plant Operator is the LRO and/or authorized representative responsible for implementation of the SSMP. The Chief Plant Operator is also the designated staff member who is responsible for all wastewater collection operations. Operations staff are on-call during non-business hours. A list of City council members and Wastewater Division staff, with contact information, is provided in **Appendix A**.

Figure 2-1: City of Ridgecrest Public Works Organizational Chart



2.3 Description of General Responsibilities

This section includes a brief description of the job title, authority, and respective responsibilities associated with each position.

Director of Public Works: Under administrative direction, plans, organizes, manages, and directs the activities of the Public Works Department; including engineering, streets, sewers, storm drains, equipment maintenance, and wastewater activities for small project design, design consultant liaison, consultant inspections, construction administration, and design review; serves as a member of the City's management team; assumes additional responsibilities as assigned; performs related duties as required.

Chief Plant Operator: Under limited supervision, plans, supervises, and reviews the work of staff performing operational duties involved in the operation and maintenance of the wastewater collection, treatment, disposal and related facilities; performs related work as assigned.

Wastewater Foreman: Under the general direction of the Chief Plant Operator, performs advanced skilled assignments; provides supervision to personnel assigned to the Wastewater Treatment Facility (WWTF) and collections system; assists in the planning and organizing of the WWTF; and performs other duties as assigned.

Wastewater Operator II: Under general supervision, operates and performs routine maintenance on a variety of plant equipment in connection with the continuous operation of wastewater facilities including treatment, storage, irrigation,

disposal, pumping, roadways, power supplies, controls, and other related equipment; performs work as assigned. This is the journey-level classification in this series.

Wastewater Operator I: Under general supervision, operates and performs routine maintenance on a variety of plant equipment in connection with the continuous operation of wastewater facilities including treatment, storage, irrigation, disposal, pumping, roadways, power supplies, controls, and other related equipment; performs work as assigned. This is the entry level class in this series.

Wastewater Operator in Training: Under general supervision, operates and performs routine maintenance on a variety of plant equipment in connection with the continuous operation of wastewater facilities including treatment, storage, irrigation, disposal, pumping, roadways, power supplies, controls, and other related equipment; performs work as assigned. This is the trainee level class in this series. Incumbents in this class have no prior experience in treatment plant operations and do not possess an operator's certificate.

Administrative Analyst: Performs a wide variety of administrative and analytical support duties for the Wastewater Division; participates in administrative processes, procedures, and programs; and provides information and assistance to the public regarding assigned programs and services.

2.4 Authorized Representative

The City's LRO, also known as the authorized representative, for all wastewater collection system matters is the Chief Plant Operator. The Chief Plant Operator is authorized to certify electronic spill reports submitted to the SWRCB. The Director of Public Works is authorized to act in the Chief Plant Operator's absence. The Chief Plant Operator is authorized to submit Sanitary Sewer Overflow Reports (SSORs) to the appropriate government agencies.

2.5 Responsibility for SSMP Implementation

The Chief Plant Operator is responsible for implementing and maintaining all elements of this SSMP.

Responsibility for Element 1 – Goals

The Chief Plant Operator is responsible for leading staff in the implementation of the City's goals.

Responsibility for Element 2 – Organization

The Chief Plant Operator is responsible for updating the organizational structure, SSMP implementation assignments, and SSO response and reporting chain of communication, as needed.

Responsibility for Element 3 – Legal Authority

The Chief Plant Operator is responsible for upholding the City Sanitary Code and for drafting new ordinances, as needed.

Responsibility for Element 4 – Operations and Maintenance

The Chief Plant Operator is responsible for 1) resources and budget, 2) outreach to plumbers and building contractors, 3) prioritizing preventative maintenance, 4) purchasing contingency equipment and replacement inventories, 5) training for staff, 6) updating the collection systems map, and 7) scheduling inspections and condition assessment.

Responsibility for Element 5 – Design & Performance Standards

The Public Works Director is responsible for reviewing design and construction documents to ensure that all construction projects meet the City standards. This position is responsible for updating standards for installation, rehabilitation and repair, as needed. This position is also responsible for the inspection of construction projects to ensure City standards have been followed.

Responsibility for Element 6– Overflow Emergency Response Plan

The Chief Plant Operator is responsible for implementation of the Overflow Emergency Response Plan (OERP), including revisions to the plan and annual training for maintenance crew members and staff.

Responsibility for Element 7 – Fats, Oils and Grease Control Program

The Chief Plant Operator is responsible for identifying grease high maintenance areas (HMAs) and maintaining an effective cleaning program for problematic grease-prone sewers. City staff is responsible for inspecting grease traps/interceptors that have been installed at non-residential locations and for enforcing discharge regulations.

Responsibility for Element 8 – System Evaluation and Capacity Assurance Plan

The Chief Plant Operator is responsible for establishing and assessing capacity requirements for the City's trunk lines and for preparing and implementing the System Evaluation and Capacity Assurance Plan.

Responsibility for Element 9 – Monitoring, Measurement and Program Modification

The Chief Plant Operator is responsible for monitoring the implementation of and assessing success of the overall SSMP program elements, with the assistance of various staff. This position is responsible for identifying trends in SSO occurrences and providing recommendations to the City Council.

Responsibility for Element 10 – SSMP Audits

The Chief Plant Operator is responsible for overseeing the SSMP audits.

Responsibility for Element 11 – Communication Plan

The Chief Plant Operator is responsible for communicating with the public and regulatory agencies regarding the status of the City's SSMP.

2.6 Chain of Communication for Responding to and Reporting About a SSO

The public may report a sewer spill by calling the WWTF at 760-446-4631 or the Public Works Department at 760-499-5080. After hours reporting should be directed to the Ridgecrest Police Department at 760-499-5100.

Once a report has been submitted, the Chief Plant Operator (760-446-4631) or the WWTF Duty phone (760-608-7660) is contacted and a field verification of the SSO is performed. The first responder is responsible for assessing the spill and filling out a SSOR. The first responder is responsible for contacting the appropriate agencies as soon as the spill is under control and/or assistance has arrived. The applicable agencies that may be contacted include:

1. Kern County Health Department
    a. Environmental Health Division (661-862-8740)
    b. Emergency Response (661-549-9927)
2. Lahontan California Regional Water Quality Control Board
    a. Victorville Office (760-241-6583)
3. Kern County Office of Emergency Services
    a. Emergency Operations Center (661-873-2602)
    b. Emergency Communication Center (661-324-6551)
4. California Office of Emergency Services
    a. Warning Center (916-845-8911)
5. California Department of Fish & Wildlife
    a. Central Region (559-243-4005)

Upon completion of SSO correction, containment, and clean-up, the Chief Plant Operator will use the SSOR to complete the final spill reports to the SWRCB California Integrated Water Quality System (CIWQS) database, the Lahontan RWQCB, California Governor's Office of Emergency Services (Cal OES), the Kern County Office of Emergency Services, CDFW, and the Kern County Environmental Health Department, as needed. Refer to Element 6 (Overflow Emergency Response Plan) for figures and additional details of the City's chain of communications for responding to and reporting a SSO.

Additionally, the City is developing a new feature on their website to provide the public with another means of reporting an observed sewer spill. This new feature will be a "report a spill button" that will immediately report an overflow to all the appropriate City staff and emergency personnel.

ELEMENT 3 LEGAL AUTHORITY

This element includes legal authority, through sewer use ordinances, service agreements or other legally binding procedures, to prevent illicit discharges into the sanitary sewer system. It also addresses the legal authority in place to ensure proper design and construction of any additions or repairs to the sewer system.

3.1 Regulatory Requirements

The summarized requirements for the Legal Authority element of the SSMP are as follows:

SWRCB Requirement

The City will demonstrate, through its sanitary sewer system use ordinances, service agreements, or other legally binding procedures, that it possesses the necessary legal authority to:

- Prevent illicit discharges into its sanitary sewer system (examples may include Inflow & Infiltration (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);
- Require that sewers and connections be properly designed and constructed;
- Ensure access for maintenance, inspection, or repairs for portions of the sewer system owned or maintained by the City;
- Limit the discharge of fats, oils, and grease (FOG) and other debris that may cause blockages; and
- Enforce any violation of its sewer ordinances.

No appendices related to Element 3 are included in this SSMP. Reference will be made to the following documents:

- City of Ridgecrest Municipal Code
- Uniform Plumbing Code
- City of Ridgecrest Standard Drawings and Specifications

3.2 Prevent Illicit Discharges

The sections of the City's legal authority to prevent illicit discharges into the sewer system including I/I from laterals, storm water, unauthorized debris, etc. can be found in the City of Ridgecrest Municipal Code at:

Part I, Chapter 16, Article II, Division 4

Sec. 16-112 General usage

Sec. 16-113 Prohibited discharges and wastes

Sec. 16-114 Discharges requiring special permits; general

Sec. 16-115 Industrial wastes; limitations

Sec. 16-116 Protective measures; general

3.3 Design and Construction

The following sections in the City of Ridgecrest Municipal code address the design and construction of the sewer system:

Part I, Chapter 16, Article II, Division 3

Sec. 16-81 Design and construction standards; general

Sec. 16-82 Design and construction standards; lateral connection to a trunk sewer

Sec. 16-83 Design and construction standards; collector connections to a trunk sewer

Sec. 16-84 Design and construction standards; additional requirements for industrial waste connections

Part I, Chapter 16, Article II, Division 4

Sec. 16-118 National Categorical Pretreatment Standards

Sec. 16-119 Pretreatment compliance schedule

Sec. 16-120 Reporting requirements for permittee

Sec. 16-122 State requirements

Sec. 16-123 More stringent limitations

All work must be completed based upon the Uniform Plumbing Code (UPC) and City of Ridgecrest Engineering Design Standards. Any alterations to these must be approved by the Chief Plant Operator and Director of Public Works.

3.4 Ensure Access for Maintenance, Inspection, and Repairs

The City's Municipal Code requires the proper maintenance, inspection, and repairs of all sewer service laterals. The construction and inspection of new sewers and connections is legally enforced through the City's connection permit program. Inspection and testing of new system connections is governed by the permit and related construction standards. City Ordinances do not require testing or inspection of sewer service laterals upon remodeling, renovations, and/or transfer of property.

3.5 FOG Control

Legal authority for control and inspection of FOG from Food Services Establishments (FSEs) was established after 2000 when the modifications to the Ordinance covering sewer code modifications was passed and adopted by the City of Ridgecrest's Governing Council. The FOG Ordinance was effective commencing thereafter.

Part I, Chapter 16, Article II, Division 4, Section 115 of the Municipal Code prohibits the discharge of Fats, Oils and Grease, exceeding a certain limit, into the sewer system. Element 7, Fats, Oils, and Grease Control Program, provides further details on the City's FOG Control efforts.

3.6 Enforcement of its Sewer Ordinance

It is essential to protect the WWTF from illegal discharges that may interfere with the proper functioning of the treatment plant. It is also crucial to protect the public and the City's collection system assets from SSO events related to illicit discharges. A notice of violation (NOV) and enforcement action is taken for users which are not in compliance with the sewer codes and ordinances set forth in the City's Municipal Code.

ELEMENT 4 OPERATIONS AND MAINTENANCE

This element discusses the activities and control measures employed by the City in identifying trouble spots or HMAs, developing cleaning schedules and maintenance and repair or replacement projects for the overall improvement of the collection system. Special emphasis is placed on preventative maintenance and methods used to minimize SSOs.

4.1 Regulatory Requirements

The summarized requirements for the Operations and Maintenance element of the SSMP are as follows:

SWRCB Requirement

The City will evaluate its service area to determine measures and activities that shall be taken to evaluate the overall collection system and make repairs as a preventative maintenance measure. The City will complete the following measures and activities:

- Maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities;
- Describe routine preventative operation and maintenance activities by staff and contractors; including a system for scheduling regular maintenance and cleaning of the sanitary sewer system with more frequent cleaning and maintenance targeted at known HMAs. The preventative maintenance program should have a system to document scheduled and conducted activities, such as work orders;
- Develop rehabilitation and replacement plan to identify and prioritize system deficiencies as well as implement short-term and long-term rehabilitation actions to address each deficiency. The program should include regular visual and TV inspections of manholes and sewer pipes and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan (CIP) that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long term plans plus a schedule for developing the funds needed for the CIP;
- Provide training on a regular basis for staff and contractors (when applicable) in sanitary sewer system operations and maintenance; and
- Provide equipment and replacement part inventories, including identification of critical replacement parts.

4.1.1 Element 4 - Operations and Maintenance Appendix B

Supporting information for Element 4 is included in Appendix B which contains the following documents:

- Sanitary Sewer System Map
- Equipment Inventory
- Sewer Line, Replacement, Lining, Program Engineering Report by Willdan Engineering

4.2 Collection System Map and Description of Existing Facilities

The sanitary sewer collection system consists of approximately 124 miles of sewer mains and trunks. The predominant pipe material is vitrified clay, with the remainder constructed of PVC. Maintenance access to the sewers is provided by way of manholes and cleanouts. The collected wastewater flows by gravity to the City's WWTF for treatment, recycling, and disposal. The sewer collection system serves a population of approximately 29,000 and conveys an average daily dry weather wastewater flow of 2.25 MGD. A map of the City's sanitary sewer system is included in **Appendix B**.

The sewer collection system is mapped in the City's Geographic Information Systems (GIS) database. Updates to the City's sewer collection system GIS occur on an on-going basis. The GIS database contains gravity sewer pipelines, manholes, drop manholes, cleanouts, plugs, grade breaks, and parcels. Each facility type has its own symbol.

A map of the entire City of Ridgecrest sanitary sewer collection system is available in hardcopy format at the City Engineering Department. Information on the maps includes pipe size, segment number, length, slope, and manhole locations. Tract numbers indicating when the tract was built are also available on the maps. As-built plans can be retrieved for further investigative purposes.

The City's sewer collection system map is up to date. There are zero backlogs in both improvement plan and discrepancy reports to date. This is an on-going task based on the improvement plans and discrepancy reports the City of Ridgecrest's GIS/Infrastructure Section receives. Reporting discrepancies to the City secretary is encouraged. A marked-up copy of the map showing discrepancy locations and an explanation of the reason for the correction should be included in the report.

4.3 Preventative Maintenance

The City of Ridgecrest has an on-going Operations and Maintenance (O&M) Plan in place. The Wastewater Division currently performs approximately 6,000 linear feet of sewer line maintenance each month. The division hires a third-party contractor to inspect using Closed Circuit Television (CCTV), clean, and grade defects for the entire system on a five-year cycle. CCTV and defect grading is done following the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) standards.

As part of the O&M plan process, observations related to grease build-up are reported to the Source Control Division. The Source Control Division is then responsible for further investigations to determine the cause of the identified grease build-ups, as further addressed in Element 7 (Fats, Oil, and Grease Control Program). Pipe segments with a history of maintenance concerns are deemed HMAs and are cleaned every three months. The high priority line cleaning (HPLC) list was derived from data and field crew experience of areas with a history of stoppages due to root intrusions, debris, and FOG.

Additionally, a pre-treatment branch of the division was recently established to ensure compliance of non-domestic users to the pre-treatment program. This specialized branch will help prevent illicit discharges that are potentially harmful and destructive to the sewer system.

4.4 Rehabilitation and Replacement Plan

The City understands that as sewer collection systems age, the risk for deterioration, blockages, and collapse increase considerably. In an effort to mitigate those risks, the City performs regular visual and CCTV inspections of the manholes and sewer pipes within the collection system, as discussed above. The City completes engineering reviews and assessments on the information obtained from the inspections to identify and prioritize repair of identified system deficiencies. The City recently hired a third-party consultant, Willdan Engineering, to develop a rehabilitation and replacement plan for their sewer collection system. The report assesses pipeline and manhole conditions, provides a summary of identified deficiencies, methods for rehabilitation and repair, and preliminary opinion of construction costs. The City has already begun implementing the recommendations provided by Willdan Engineering and is currently in Phase II of the plan. The report, titled "Sewer Line, Replacement, Lining Program Engineering Report," is provided in **Appendix B.**

4.5 Training

Until recently, the City of Ridgecrest Wastewater Division was severely understaffed. The City has begun hiring new staff to better manage the sewer collection system. Training for new Operators-In-Training (OIT's) will begin with licensing through the SWRCB Wastewater Operator Certification Program. Once OIT's are certified through the SWRCB, additional training and certification through the California Water Environment Association (CWEA) or similar program is anticipated. Current training for all OIT's consists of on-the-job training by experienced staff.

4.6 Equipment and Parts Inventory

The City of Ridgecrest owns equipment dedicated to the maintenance of the sewer collection system. Information on this equipment can be found in **Appendix B**. The City works hard to ensure that each piece of equipment is functioning properly and safely. Replacement of equipment and purchase of spare parts for emergencies are included in Division budgeting.

Additional equipment is leased on an as-needed basis or obtained as part of outsourcing to contractors. Utilizing contracted services for the components which comprise the O&M and Rehabilitation and Replacement plans eliminates the need for the City to maintain additional inventoried parts and equipment for the repair and replacement of system components. The contracted activities performed by the area contractors are inclusive of all equipment and parts necessary for the full execution of the work. Implementing an inspection program that identifies and prioritizes required rehabilitation actions proactively allows for the development of contract documents which incorporate such equipment and parts, allowing these items to be supplied by the contractor executing the work. In the event of an emergency, local retailers are available to supply needed equipment and parts at short notice.

Desert Industrial Supply and DJ Pipeline Supply are local retailers that provide the City with additional equipment and parts on an as-needed basis. Each retailer is located in the City of Ridgecrest and have the majority of items required for the repair and replacement of the sewer collection system stocked and available for immediate purchase.

ELEMENT 5 DESIGN AND PERFORMANCE STANDARDS

This section fulfills the Design and Construction requirements for both the RWQCB and SWRCB. The City is responsible for reviewing design and construction documents to ensure that all construction projects meet the City standards. The City is responsible for updating standards for installation, rehabilitation and repair, as needed. The City retains the responsibility for inspections of construction projects to ensure City standards have been followed.

5.1 Regulatory Requirements

The summarized requirements for the Design and Performance Standards element of the SSMP are as follows:

SWRCB Requirement

The SSMP must identify:

- Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and
- Procedures and standards for inspection and testing the installation of new sewers, pumps, and other appurtenances and for rehabilitation and repair projects.

No appendices related to Element 5 are included in this SSMP. Reference will be made to the following documents:

- City of Ridgecrest Municipal Code
- City of Ridgecrest Standard Drawings and Specifications
- Kern County Public Works Standards and Specifications
- Green Book of Standard Public Works Construction

5.2 Design and Construction Standards

The purpose of the Standards and Specifications is to provide minimum standards for the design, kinds and uses of materials, and the preparation of plans for construction, repair, or alteration of City sewer facilities.

City of Ridgecrest Engineering Design Standards and Details (2022) includes:

- Specifications for the materials used to construct sewers
- Specifications and standards for the design of new sewers and laterals
- Specifications and standards for the repair and rehabilitation of existing sewers
- Specifications and standards for pipe cover and clearance
- Specifications and standards for pipe size
- Specifications and standards for the design of manholes and clean outs
- Specifications and standards for velocity, capacity, and flow calculations

Part I, Chapter 16, Article II, Division 3 of the City of Ridgecrest Municipal Code includes:

- Design and construction standards; general (Sec. 16-81)
- Design and construction standards; lateral connection to a trunk sewer (Sec. 16-82)
- Design and construction standards; collector connections to a trunk sewer (Sec. 16-83)
  Design and construction standards; additional requirements for industrial waste connections (16-84)

All work must be completed based upon the UPC and the above standards. Any alterations to this must be approved by the Chief Plant Operator and Director of Public Works. The City is in the process of reviewing and updating its construction standard details and specifications. The process is anticipated to be completed by the two year SSMP Audit in 2023. If it is ever determined that the City's adopted Standards and Specifications are insufficient, the standards and

specifications used will be obtained from Kern County Public Works, the State of California, or Green Book of Standard Public Works Construction.

5.3 Inspection Standards

The City's standard public works procedure requires work to be placed into service only after it is accepted by the Director of Public Works following satisfactory inspection and testing. The City provides continuous inspection during the construction of sewer facilities and believes that proper installation is the key to ensuring proper operation and maximum life expectancy.

ELEMENT 6 OVERFLOW EMERGENCY RESPONSE PLAN

This section outlines the steps taken in an emergency to respond to, contain, and mitigate sewer system overflows. This section also details the procedure for notification of the various agencies, including both State and local.

6.1 Regulatory Requirements

City will implement an OERP agreement that identifies measures to protect public health and the environment. At a minimum, the plan includes:

- Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
- A program to ensure appropriate response to all overflows;
- Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g., health agencies, regional water boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program (MRP). All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board GWDR or National Pollution Discharge Elimination System (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;
- Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the OERP and are appropriately trained;
- Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
- A program to ensure that all reasonable steps are taken to contain untreated wastewater and prevent discharge of untreated wastewater to waters of the United States and minimize or correct any adverse impact on the environment resulting from the SSO, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

6.1.1 Element 6 - OERP Appendix C

Supporting information for Element 6 shall be included in Appendix C which consists of the following documents:

- Overflow Emergency Response Plan
- Sample SSOR Form

6.2 Overflow Emergency Response Plan Discussion

The OERP is summarized below and is included in Appendix C. The OERP can be used as a field manual and addresses several issues such as spill detection, spill response, mitigation, clean-up, investigation, documentation, and reporting.

6.3 Sewer System Overflow Detection

The OERP covers spill detection, including the procedures for dispatching the first responder to the site of a potential SSO. The City of Ridgecrest WWTF (760-446-4631) and/or Public Works Department (760-499-5080) receives telephone calls during business hours and the Ridgecrest Police Department (760-499-5100) receives emergencies after hours. The City of Ridgecrest publishes the telephone numbers on the City website http://www.ridgecrest-ca.gov

When City staff members notice a SSO during their regular activities, they are instructed to call in, notify the Chief Plant Operator, and begin responding to the situation immediately.

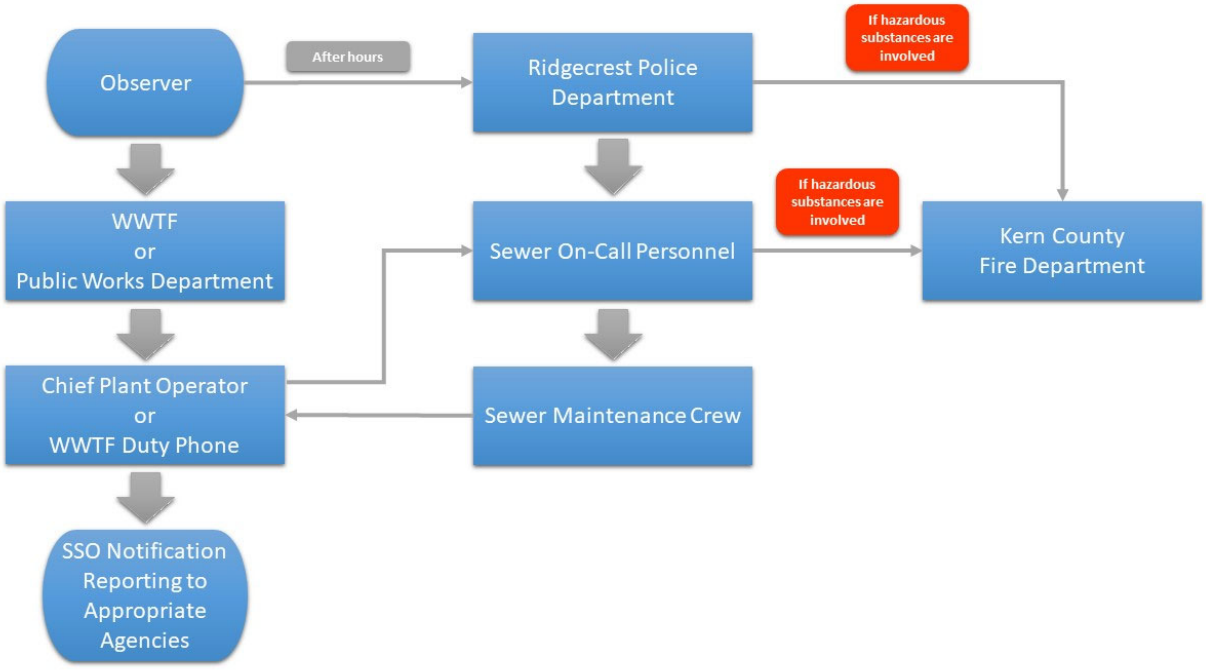
If the event occurs during non-office hours, the City of Ridgecrest Police Department's emergency dispatch will contact the Chief Plant Operator or the delegated wastewater staff on standby. The Chief Plant Operator and wastewater staff are aware of low manholes and areas that may have the highest risk of overflow.

6.4 Sewer System Overflow Response

The OERP incorporates spill response measures including response priorities, safety, and initial containment measures. During regular business hours, City office staff initiate wastewater staff to respond to a potential SSO notification. The City's goal for responding to an SSO during business hours is immediately after receipt of a notification call. During non-business hours, an emergency dispatch calls the standby Operations Staff to respond to a potential SSO. The City of Ridgecrest's goal for responding to SSOs during non-business hours is 15 minutes. The on-call staff becomes the SSO first responder and is responsible for mitigation, documentation, most reporting, and follow-up. **Figure 6-1** depicts a flowchart of the chain of communication for responding to a SSO.

City policy is to respond to all spills within its collection service area boundary, provide mutual aid outside when requested (whether on public or private property), and to take all steps possible to prevent the spills from reaching storm drains or flood control channels. Element 2 (Organization) addresses the organizational structure of the City and the responsibilities of personnel during an emergency.

Figure 6-1: Chain of Communication for Responding to a SSO



6.5 Sewer System Overflow Reporting

The OERP covers spill reporting, including internal City reporting and external State and local agency reporting. The notification procedures provided below summarize the reporting requirements in the OERP.

Upon completion of SSO correction, containment, and clean-up, the Chief Plant Operator will use the SSOR to complete the final spill reports and submit them to the SWRCB CIWQS database, the Lahontan RWQCB, Cal OES, Kern County Office of Emergency Services, CDFW, and the Kern County Environmental Health Department, as needed.

The City of Ridgecrest is registered with the SWRCB CIWQS electronic sewage spill reporting system. A SSOR will be completed for all reportable spills. The information recorded on the SSOR is entered into CIWQS in accordance with the mandated reporting timelines. Copies of the SSOR will be in the City of Ridgecrest WWTF office.

6.6 Sewer System Overflow Categories and Reporting Timeframes

The SSOR is intended to collect detailed information on specific overflow events. For the purposes of reporting, SSOs fall into one of three categories. Each category is defined by specific criteria and not all may apply to the City. For example, the City of Ridgecrest does not contain any surface water or waters of the United States as mentioned in a Category 1 SSO. The three categories of SSOs and their definitions are:

1. **Category 1** - Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that:

    a. Reach surface water and/or reach a drainage channel tributary to a surface water, or

    b. Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin;

    c. Must be reported to Cal OES within two (2) hours. Reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 SSO must be made to the Online SSO System as soon as possible but no later than three (3) business days after the City is made aware of the SSO. Additional information may be added to the certified report, in the form of an attachment, at any time within the three-day period.

2. **Category 2** - Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

    a. Submit draft report within three (3) business days of becoming aware of the SSO and certify within fifteen (15) calendar days of the SSO end date.

3. **Category 3** - All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.

    a. Submit a certified report within 30 calendar days of the end of month in which the SSO occurred.

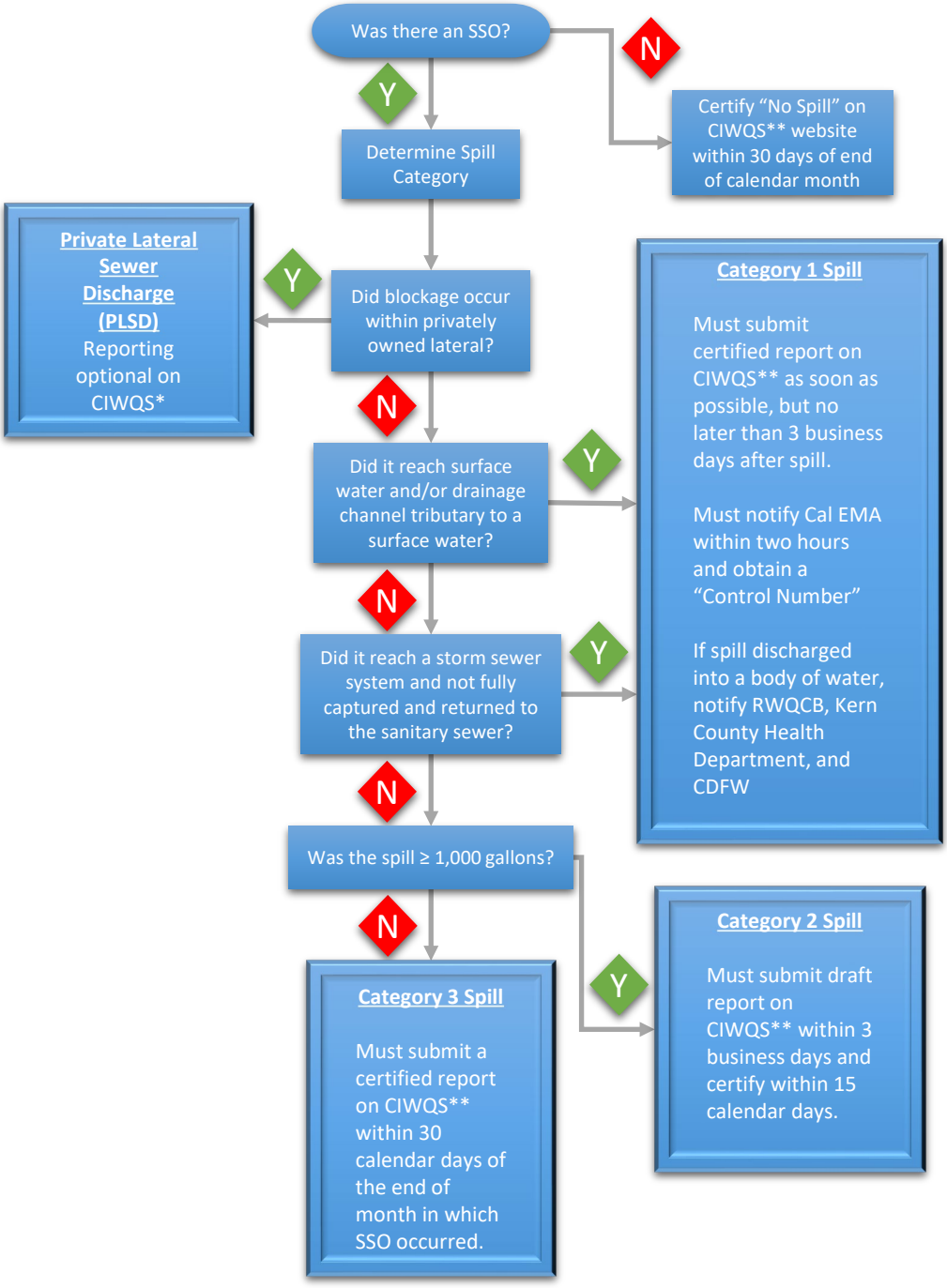
The above reporting requirements do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies, County Health Officers, local Director of Environmental Health, RWQCB, County Office of Emergency Services, or State law. The Environmental Health Department will be notified on an as needed basis.

If there are no SSOs during a calendar month, the City will provide, within 30 days after the end of each calendar month, a statement through the CIWQS database certifying that there were no SSOs for the designated month.

In the event that the CIWQS database is not available, the City must fax or email all required information to the appropriate RWQCB offices in accordance with the time schedules identified above. In such event, the City must also

enter all required information into the CIWQS electronic database as soon as practical. A flowchart for determining a SSO's category type and how to properly report it, is depicted in **Figure 6-2**.

Figure 6-2: SSO Categories and Chain of Communication for Reporting to CIWQS



* These reporting requirements do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies.
** If CIWQS website is not available, you must email or fax all required information to RWQCB and reattempt as soon as possible.

6.7 Training

The City sees the value in proper training of staff for emergency purposes and intends to continue training. The role of each person during an emergency has been established and is clear and concise. City staff that may be called upon to respond are required to have been properly trained.

6.8 Sewer System Overflow Impact Mitigation

The City takes all reasonable steps to contain sewage and prevent sewage discharges to storm drains and minimize or correct any adverse impact on the environment resulting from the SSO, including such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge. Operations staff will use suitable materials, to block catch basin entrances to storm drains and will recover spills that entered the system with a vacuum truck. Portable by-pass pumping operations are used for prolonged sewer line blockages and collapses. SSO sites are thoroughly cleaned with appropriate steps for each unique situation.

ELEMENT 7 FATS, OILS, AND GREASE CONTROL PROGRAM

This section describes the regulatory requirements being placed upon the City and the implementation process to "roll-out" this program in the most economic and feasible method. This Element will also show how the "roll-out" will help the FSEs fully understand the expectations that will be placed upon them to reach and maintain compliance through current industry and water quality standards.

7.1 Regulatory Requirements

The FOG Control Program includes the following as appropriate:

- An implementation plan and schedule for public education outreach program that promotes proper disposal of FOG;
- A plan and schedule for the disposal of FOG generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of FOG generated within a sanitary sewer system service area;
- The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- Requirements to install grease removal devices (such as traps or interceptors) and the development of design standards for such devices, maintenance requirements, Best Management Practice (BMP) requirements, record keeping and reporting requirements;
- Authority to inspect grease producing facilities, enforcement authorities, and whether the City has sufficient staff to inspect and enforce the FOG ordinance;
- An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for identified sections; and
- Development and implementation of source control measures, for all sources of FOG discharged to the sewer system.

7.1.1 Element 7 - FOG Appendix D

Supporting information for Element 7 is included in Appendix D which shall include the following documents:

- List of Food Service Establishments
- Fats, Oils, and Grease Best Management Practice Manual
- CalFOG Grease Hauling & Rendering Companies
- High Priority Line Cleaning List

Reference will be made to the following documents not included in Appendix D:

- City of Ridgecrest Municipal Code

7.2 FOG Control Program Discussion

The City, until recently, was severely understaffed and unable to properly enforce its FOG Control Program. However, with this updated 2021 SSMP, OERP, and recent creation of the pre-treatment branch of the wastewater division, a newly developed FOG Control Program will be implemented in the 2021/2022 fiscal year. This FOG Program defines the goals and objectives of the City in reducing the amount of grease that enters the system from its FSE and residential community. It is the City's goal of the FOG Control Program to inspect and provide education to all FSEs and reduce maintenance costs directed to operations staff from grease related problems. Doing so should reduce the probability of SSOs and improve the longevity of the collection system sewer lines.

The City's planned FOG Control Program meets all the guidelines required by the State and RWQCB and includes the following:

- FSEs are inspected at a minimum of once every year. FSEs may be inspected more frequently as determined by City needs and/or as warranted by current stages of program compliance and history.
- All FSEs are required to obtain a Source Control/FOG permit from the City to remain in compliance.
- All FSEs are required to keep an up-to-date maintenance log. These logs are to be kept on the premises and made available to the City inspectors on request.
- All FSEs are required to use BMPs to reduce grease discharged to the sewer system (e.g., store waste grease in barrels to haul off site, scrape remaining food off plates and into trash receptacle before washing, etc.).
- Any FSE planning a remodel is required to include installation of a grease trap/interceptor.
- All new construction of FSEs will require installation of a City approved grease trap/interceptor regardless of size or value, prior to issuance of the plumbing permits.
- Exemptions or variances shall be available to FSEs that do not generate grease or do not cause grease related sewer blockages.
- Garbage grinders, although not prohibited, are not recommended for use in FSEs.
- Several options regarding program fees will be evaluated annually. Program fees are intended to help alleviate the burden of program costs and assist in facilitating a successful FOG Control Program. The City currently is absorbing the program and inspection costs.

7.3 FOG Control Program Outreach

The City currently does not implement community outreach regarding FOG control, but will begin with this updated 2021 SSMP in the 2021/2022 fiscal year. The City believes that through helping FSEs and the residential community understand the value in reducing the amount of grease in the City's trunk lines, the public can uniformly improve collection system efficiency and the costs associated with grease related overflows.

The City plans to provide each FSE with the following information or assistance:

- FOG BMP Manual;
- Facility training on BMP's;
- Grease Hauler List; and
- Cleaning Record Form.

These items will be available at the City's office and inspectors will have them available when an FSE is inspected. The forms and training offered is at no cost to the customer. The BMP manual, list of grease hauling and rendering companies, and complete list of FSEs in the City, are included in **Appendix D**.

Additionally, a bill insert is planned to be sent to every residential property annually with information on residential practices to reduce the quantity of FOG reaching the sanitary sewer. Sewer crews plan to distribute door hangers in areas near grease blockages as appropriate.

7.4 Identification of Grease Problem Areas and Sewer Cleaning

One objective of the City's FOG Program is the identification of trouble spots, or HMAs, that are likely to have grease accumulation. The City currently identifies potential grease problem areas by tracking locations and causes of dry weather blockages, reduced flows, and SSOs. This is also noted when an area of the sewer system is viewed by CCTV. The specific locations of the areas with restaurants or grease-producing facilities are noted in the O&M program and monitored for changes in cleaning frequency requirements. The current HPLC list for HMAs is included in **Appendix D**.

Additional information about cleaning and maintenance is included in Element 4 (Operations and Maintenance).

7.5 Legal Authority

The City will inspect all FSEs that are located within its jurisdiction. This may include fast food facilities, grocery stores, restaurants, diners, retirement/nursing homes, and schools. Each will be closely evaluated to determine if the FSE complies with the current regulations. Their initial inspection will include determining if the FSE generates grease, checking if a grease trap/interceptor is in place, and reviewing cleaning records for the grease trap/interceptor. In some cases where a facility does not currently maintain a grease trap or interceptor, installation may be required. Staff will also inspect the type of practices used to clean floor mats, vent hoods, and outside areas.

Enforcement actions will be taken against any FSE that does not clean their grease trap/interceptor at the minimum set frequency (monthly for grease traps and quarterly for grease interceptors) or keep three years of cleaning records. Facilities generating grease will be reinspected periodically (every year), depending on the number of areas of concern observed during the inspection. The City currently has approximately 124 FSEs. A complete list of the FSEs found operating in the City is in **Appendix D**, and will be updated throughout the year as new facilities open and existing facilities close.

Please reference Chapter 16, Article III, Division 4 of the City of Ridgecrest's Municipal Code for information on the prohibited waste discharges such as the discharge of FOG into the sewer system.

7.6 Identify HMA

The City's maintenance/operations staff continue to identify sections of the sewer collections system subject to grease blockages and establish cleaning maintenance schedules for each section. The City has compiled a list of HMAs within the community. These areas of concern have been put on an increased cleaning schedule and will be monitored annually for any changes in cleaning frequency. The City has very few SSOs, so the City plans to help monitor program success with the expectation of decreased cleaning frequency for grease related HMA locations.

The City of Ridgecrest is prioritizing its efforts to eliminate HMAs, and ultimately sewer spills, by permitting FSEs, requiring grease removal equipment from FSEs discharging significant amount of FOG and known to be causing or contributing to a HMA, educating FSEs and residents about appropriate FOG control methods, and requiring kitchen BMPs.

7.7 FOG Control Measures

The City will implement FOG control measures for all sources of grease and fats discharged to the sewer system. One of the elements that will be provided to FSEs or interested parties is the FOG BMP manual. This will be distributed to restaurant operators during the inspections, as appropriate, including kitchen practices to minimize the discharge of grease into the sewer system, maintenance tips for grease traps and interceptors, and record keeping requirements. Many of the simple inexpensive procedures can reduce the amount of FOG discharged by up to 90%.

A FOG permit will be issued to all FSEs that discharge FOG into the sewer system in amounts estimated to be above 25 parts per million by weight which is prohibited by the City's Municipal Code. The permit requires the FSE to follow all BMPs and maintain and operate a grease trap or interceptor. It also requires the facility to maintain a cleaning log on the premises and show it to the inspector on request. All FSEs with a FOG Permit will be inspected once a year. If an FSE does not discharge FOG into the sewer system, they will still be inspected once a year to verify the menu has not changed enough to require a FOG Permit.

City staff will determine the requirements for grease traps/interceptors. Building plans for new construction or remodeling of a restaurant or FSE will be reviewed and stamped off with any requirements prior to issuance of the plumbing permits. The plans will be reviewed along with a questionnaire filled out by the restaurant representative to determine necessary requirements for a grease trap/interceptor.

The plan review process will also involve grease trap/interceptor certification. This certification involves the restaurant representative signing an acknowledgment of trap/interceptor requirements. The minimum acceptable cleaning frequency for the type being required, the on-site maintenance of a schedule and instructions for cleaning, and cleaning records, are some of the requirements acknowledged in the certification. The size and type required is determined based upon the facility's potential for discharging grease in the wastewater. The size of the restaurant, the cooking and cleaning equipment installed, and the number of meals served, are some of the factors considered to determine the standard required size. Requirements range from a small grease trap beneath the pot sink to a large in-ground grease interceptor. Approved grease trap sizes are 40, 50, 70, and 100 pounds. Grease interceptors must be a minimum of 1,000 gallons. Inspectors from City of Ridgecrest will verify the installation and connections of the grease trap/interceptor. This is based upon current UPC and the City's Municipal Code. The current UPC is closely followed to determine the type and size of unit that will be required.

7.8 FOG Program Funding

Wastewater revenue is collected through user fees and fees incorporated into property taxes. The City's FOG program will not have a dedicated budget. The program will be funded through the collection system budget.

ELEMENT 8 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

This section discusses the evaluation and capacity enhancement of the collection system. Element 8 also discusses design criteria used and steps taken to correct any deficiencies found in the evaluation.

8.1 Regulatory Requirements

The requirements for the System Evaluation and Capacity Assurance Plan element of the SSMP are summarized below.

- Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to the peak flows associated with overflow events;
- Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified above to establish appropriate design criteria; and
- Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- Schedule: The City will develop a schedule of completion dates for all portions of the capital improvement plan developed in the bullet points above. This schedule shall be reviewed and updated consistent with the SSMP requirements as described by the SWRCB GWDR.

There is no Appendix related to Element 8. Reference will be made to the following documents:

- Sewer Line, Replacement, Lining, Program Engineering Report by Willdan Engineering (2021)
- City of Ridgecrest Wastewater Collection System Master Plan (1981)

8.2 Sewer System Master Plan and Capital Improvement Plan

The City of Ridgecrest's Wastewater Collection System Master Plan (prepared by Willdan Associates) was completed in November of 1981. The City's Master Plan does not reflect the current condition of the collection system and is not used for its CIP. The City is currently updating their CIP. The City previously established a phased multiyear CIP to address identified structural defects and hydraulic deficiencies. The CIP included assessments of pipeline and manhole deficiencies, methods for rehabilitation and repair, preliminary cost estimates, project prioritization, alternatives analysis, and schedules. The previous CIP was prepared by Willdan Engineering and is discussed in Element 4 (Section 4.4).

The City of Ridgecrest has design standards and guidelines to ensure adequate capacity. As mentioned in Section 5.2, these design standards are currently being updated to incorporate more common installation and engineering practices. The City's CIP assures that older facilities are upgraded to ensure adequate capacity. Indications of possible capacity problems seen by the Wastewater Division O&M personnel are brought to the attention of the Engineering Department for further evaluation.

The City of Ridgecrest is not currently experiencing capacity-related problems. The current CIP/Rehabilitation and Replacement Plan has proven to be effective in preventing SSOs related to structural defects and hydraulic deficiencies. The City has had no recorded SSOs since 2018, and previously none since 2014.

ELEMENT 9 MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

This section of the SSMP discusses monitoring, measurement, and program modifications employed by the City. The City may prepare and implement program modifications as appropriate to address deficiencies, or as a preventative measure for improving the overall collection system. This section fulfills the Monitoring, Measurement, and Program Modification requirements for both the RWQCB and SWRCB.

9.1 Regulatory Requirements

The City shall:

- Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
- Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
- Assess the success of the preventive maintenance program;
- Update program elements, as appropriate, based on monitoring or performance evaluations; and
- Identify and illustrate SSO trends, including frequency, locations, and volume.

9.1.1 Element 9 – Monitoring, Measurement & Program Modification Appendix E

Supporting information for Element 9 is included in Appendix E which will contain the following documents:

- SSO Logs and Trend Data (2009-2020)

9.2 Monitoring and Measurement

The City will maintain relevant information to establish and prioritize appropriate SSMP activities (such as the elimination of dry weather overflows or overflows into sensitive waters). The City maintains a sanitary sewer database to better monitor and report SSOs, blockages and backups due to FOG, roots, and other system failures. If an SSO occurs within the City, the data collected, and relevant information is documented. The Chief Plant Operator keeps an annual record of the incidents and assumed causes of the spills. This information is reported monthly to the RWQCB and electronically to the SWRCB CIWQS database. The information is also used to assist in planning activities, programs and policies that help eliminate future SSOs and their causes.

The City's sanitary sewer database is also used to record preventative maintenance activities and document rehabilitation and replacement efforts. The City has a maintenance schedule as discussed in Element 4 (section 4.3). The current preventative maintenance program has proven to be effective with no SSOs recorded since 2018, and previously no SSOs since 2014. SSO trend data from 2009 to 2020 is included in **Appendix E**.

The SSMP will be reviewed every two years to ensure all the provisions are implemented and the effectiveness will be discussed among City staff. The Public Works staff includes the Director of Public Works, Chief Plant Operator, and Wastewater Operator personnel, as required.

9.3 Identifying Trends

The City shall identify and illustrate SSO trends including frequency, location, and volume as part of the SSMP updates. A trend of either frequency or volume could indicate a chronic problem that should be specifically identified within the collection system. Should the City identify an area prone to problems, known as HPLC areas or HMAs, maintenance and inspection services to these areas will be increased. If increased maintenance is not enough, repair or replacement will be considered.

9.4 Program Modifications

The City shall update program elements, as appropriate, based on monitoring or performance evaluations. The SSMP and its elements will be updated in accordance with the results of the monitoring and staff recommendations.

Performance evaluations are ongoing because the daily operation of the City includes most of the elements in this program.

ELEMENT 10 SEWER SYSTEM MANAGEMENT PLAN AUDITS

This section discusses and outlines the procedure for conducting audits of the SSMP. Audits are to be performed every two years.

10.1 Regulatory Requirements

As part of the SSMP, the City shall conduct periodic internal audits, appropriate to the size of the system and number of SSOs. At a minimum, these audits must occur every two years and a report must be prepared and kept on file. This audit shall focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements including identification of any deficiencies in the SSMP and steps to correct them.

10.1.1 Element 10 – Program Audits Appendix F

Supporting information for Element 10 is included in Appendix F which contains the following document:

- Sewer System Management Plan Audit Report Form

10.2 SSMP Program Audits

The City shall perform an audit using the Sewer System Management Plan Audit Report Form (see **Appendix F**) to evaluate its SSMP and its compliance with the SWRCB and RWQCB every two (2) years following the final certification date. To date, the City has prepared the 2009 SSMP report. With the completion of the 2021 SSMP update, the City will begin conducting audits every two (2) years to evaluate the effectiveness of the SSMP.

ELEMENT 11 COMMUNICATION PLAN

This section discusses the communication program employed by the City. It provides multiple opportunities for interested parties to provide the City with input as the SSMP and associated programs are being developed.

11.1 Regulatory Requirements

The City shall communicate on a regular basis with the public regarding the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the City as the program is developed and implemented. The City shall also create a plan of communication with systems that are tributary and/or satellite to the City's sanitary sewer system.

No appendices related to Element 11 are included in this SSMP.

11.2 Communication Program

The City Council meets in regular session on the first and third Wednesday of each month at 6:00 p.m. The Infrastructure Committee meets in regular session on the fourth Thursday of each month at 5:00 p.m. Council meetings are held at the 1st floor City Hall Conference Room B, located at 100 W California Avenue in Ridgecrest, California. In addition to discussion at the public meetings, the SSMP will be posted on the City's website: www.ridgecrest-ca.gov on the Wastewater Division page. The public is welcome and encouraged to comment at any time.

The City of Ridgecrest has developed and implemented a communications program with its contributing satellite agencies. The plan has established a collaborative approach to communicate and work together during the development and implementation of, and future updates, to the SSMP. Subsequent meetings are held each quarter with representatives who are responsible for development and maintenance of the SSMP at each contributing agency. The agenda or topics for quarterly meetings may include master plans, capacity issues, emergency response plans, and capital programs.

Annual reports are generated in January of each year. The annual report refers to the SSMP and any changes that have been made over the last year. These reports are submitted to the RWQCB.

11.3 Staff Training and Communication

Staff will be trained in the use and implementation of the SSMP relative to any major changes that occur. Staff will also be kept informed regarding minor changes (e.g., phone numbers, staff changes, etc.) as they occur via City email or memos. In addition, all new employees will receive SSMP training as part of their orientation. Records will be kept of who received training and when.

Appendix A

Current List of City Council Members, Sewer Staff, and Agency Notification List for SSOs

City of Ridgecrest
Sewer System Management Plan
City Council Members, Sewer Division
Staff, and Agency Notification List

Council Members – 2021	
Eric A. Bruen, Mayor	760-499-5002
Solomon Rajaratnam, Vice Mayor	760-499-5002
Scott Hayman, Mayor Pro Tem	760-499-5002
Kyle Blades, Council Member	760-499-5002
Peggy Breeden, Council Member	760-499-5002
Public Works Wastewater Staff – 2021	
Travis Reed, Director of Public Works	760-499-5081 treed@ ridgecrest-ca.gov
Jim Humphrey, Chief Plant Operator	760-446-4631 jhumphrey@ridgecrest-ca.gov
Randy Jacobson, Wastewater Foreman	760-446-4631
Jamie Graus, Wastewater Operator I	760-446-4631
Shawn Connolly, Wastewater Operator I	760-446-4631
Andrew Garza, Wastewater Operator I	760-446-4631
Adam Freund, Wastewater Operator in Training	760-446-4631
Lovette Alligood, Administrative Analyst	760-499-5083
SSO Reporting	
Wastewater Treatment Facility	760-446-4631
Public Works Department	760-499-5080
SSO Reporting After Hours	
Ridgecrest Police Department	760-499-5100

Agency Notification List for Sanitary Sewer Overflows		
Organization	Department	Phone Number
Kern County Health Department	Environmental Health Division	661-862-8740
	Emergency Response	661-549-9927
CRWQCB Lahontan Region	Victorville Office	760-241-6583
Kern County Office of Emergency Services	Operations Center	661-873-2602
	Communication Center	661-324-6551
California Office of Emergency Services	Warning Center	916-845-8911
California Department of Fish & Wildlife	Central Region	559-243-4005

Appendix B

B1. Sanitary Sewer System Map

B2. Equipment Inventory

B3. Sewer Line, Replacement, Lining, Program Engineering Report

B1. Sanitary Sewer System Map

CITY OF RIDGECREST

SANITARY SEWER SYSTEM MAP

Legend

Sewer Pipes

CityLimits

N
W E
S

0 0.5 1

Miles

December 2021

B2. Equipment Inventory

City of Ridgecrest
Sewer System Management Plan
Equipment Inventory

Equipment Inventory		
Type	Model	Additional Information
Combo Truck	2022 Vactor Model 2103	
Combo Truck	2012 Vactor Model 2105	
Trash Pump	4” Trash Pump	Equipped with 20 feet of suction hose and 500 feet of discharge hose
Trash Pump	6” Trash Pump	Equipped with 20 feet of suction hose and 500 feet of discharge hose
CCTV	2007 CCTV Camera Trailer	Camera needs repair. In budget for replacement in 2022

In the event of an emergency, local retailers are available to supply needed equipment and parts at short notice:

Parts/Equipment Retailer	Address	Phone Number
Desert Industrial Supply	1023 W Graaf Ave Ridgecrest, CA	(760) 446-2511
DJ Pipeline Supply	2233 W Inyokern Rd Ridgecrest, CA	(760) 446-7700

B3. Sewer Line, Replacement, Lining, Program Engineering Report

CITY OF RIDGECREST

California

Sewer Line, Replacement, Lining, Program

Engineering Report

Prepared by

WILLDAN ENGINEERING

2401 E. Katella Avenue, Suite 300

Anaheim, California 92806

714-978-8200

Prepared under the

Supervision of:

April 2021

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Background and Purpose of the Report

During the 2019/20 FY the City of Ridgecrest completed a closed circuit television video (CCTV) investigation of the city's sanitary sewer pipe system. This investigation was performed by the firm of Houston & Harris. The video assessment employed the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) in rating the observed pipe conditions. This system is an acknowledged standardized evaluation and rating practice used in conducting investigation and rating of observed pipe conditions. Condition observations made during the video recording are noted using defined criteria in a summary report as either a structural or maintenance defect in nature. Depending upon the defect type (severity) and related findings within the pipe, a severity grade is assigned based upon the risk of further deterioration. Upon completion of the pipe system inspection time frames are usually planned to address the most critical conditions by maintenance or contract personnel before the defect becomes a higher risk condition.

With differing defect Grades, having been identified throughout the existing sewer system, the focus requested for this report was on the Grade 5 (most significant defect) and Grade 4 (significant defect) pipe segments and the respective manholes on the ends of the respective pipe segment. Utilizing the described video investigation findings, this report identifies and prioritizes the ratings by most significant to less significant. Then it does likewise for the associated manhole structures on each end of the Grade 5 and 4 structurally deficient pipe segments. Utilizing this data, we then prepared recommended replacement/rehabilitation methods and the associated construction cost. Taking each Grade 5 and 4 ranked pipe segment and manhole into account, an annual capital improvement plan (CIP) has been developed based upon the city's budget targets for sewer improvement projects annually.

Methodology

The sewer system investigation provided both video and summary rating records of the observations. The record also contains a structural pipeline rating index (SPRI) of the observed pipe conditions between connecting manholes (herein pipe segments). Those records show the rankings of visual condition findings along each pipe segment. Each PACP code is assigned a condition Grade from 1 to 5. Grades are assigned based on the significance of the defect, extent of damage, percentage of flow restriction, or the amount of wall loss due to deterioration. The standardized Grades are as follows:

Grade	Description
5	Most significant defect grade – indicates prompt attention is required.

Grade	Description
4	Significant defect grade – potential for failure in 5 to 10 years.

3 Moderate defect grade – monitor, continuing deterioration is expected.

2 Minor to moderate defect grade – unlikely to fail for at least 20 years.

1 Minor defect grade – failure unlikely in foreseeable future.

The fact that a segment has a significant number of Grade 5 or Grade 4 defects does not necessarily mean the pipe segment should be immediately rehabilitated. The coding is a means of identifying which pipes need further consideration and to help prioritize that effort. The PACP Condition Grading System alone is not adequate for determining if a pipe segment should be replaced, rehabilitated or monitored for some time. Many other factors in addition to the internal observed condition of the pipe segment should be considered. Pipe segments containing Grade 5 defects may be showing: collapse, deformation, holes, broken with displacement, obstructions, subsidence, root intrusions, deposits or otherwise classed as a significant defect and are an indicator of needing further, but timely assessment.

Pipe segments may also contain multiple defects of the same and lesser Grades which in turn contribute to an overall pipe rating index (RI). This collective index and the frequency of Grade 5 defects, or other defect Grades, are a guiding factor in establishing a ranking of priority for action and method of repair in any given pipe segment. Individual Grade categories can apply to the 'structural defects' and depending upon severity of the condition and the overall rating, a scheduling of corrective action will usually begin with the highest RI number rating first.

Using the observed defect Grades and count, another indicator factor labeled "likelihood of failure" (LoF) was calculated as another guide for ranking and evaluating methods for effective repair, or replacement. By utilizing these indicator factors, options for repair and opinions of cost to construct corrective actions are developed. This information is then used to frame a prioritized multiyear program for sewer line and/or manhole improvements.

Consistent with the scope of services, our designers and pipe rehabilitation specialist utilized the CCTV inspection summary reports for those segments containing Grade 5 and Grade 4 defects as recorded by the CCTV investigator. The locations of Grade 5 and Grade 4 structural within the city sewer system are shown on the maps enclosed as Attachments "A" and "B" respectively. The PACP rating system numbers and descriptors in the reports were viewed to assess the severity of collective defects in each segment to help frame the best method for rehabilitating the pipe segment. A single Grade 5 defect can vary from a small hole in the pipe wall to a substantial collapse of a portion of pipe. Such may warrant a single point repair, but it is the combination of various Grades of defects and the extent of displacement, deformation, brokenness or cracking that will affect the recommended rehabilitation options. To develop the desired asset management program, requires an application of engineering judgement utilizing knowledge of the materials and reported conditions, and use of relevant information to properly assess each situation beyond the singular PACP rating terms. Since various degrees of defects can carry the same numerical value in the PACP coding system, consideration of the mix of factors is crucial to developing the best practice for addressing the respective situations.

To address the City's request for evaluation of the existing manholes on the ends of the respective pipe line segments that contain Grade 5 and Grade 4 defects, we conducted visual observations from the ground surface (no confined space entry) to assess the existing visible conditions and help determine what extent of rehabilitation, if any, may be appropriate. Manhole features such as: depths, diameters, number of inlets/outlets were obtained from the GIS files and combined with the visually observable features from the surface once the cover was removed. Those features included: signs of surcharging, condition of steps (if any), cover, frame, concrete, brick, shaft & cone, base, trough, and observable flow conditions. These parameters were noted in the inventory field sheet during inspection. Results of the manhole inspections were reviewed and ranked by our rehabilitation design staff, and those results are contained in this report. See Attachment "E".

Pipeline Assessment

Per the data extracted from the CCTV inspection summary reports there are 33 Grade 5 structural defect locations in the system. For the Grade 4 defects, there are 937 Grade 4 structural defect locations in the system. These reports show both singular and some multiple defects within individual pipe segments between manholes

Attachments "C" and "D" contain pipeline data extracted from the CCTV inspection summary report files and the GIS files and then sorted in order of the likelihood of failure (LoF) due to collective pipe defects. [This term should not be interrupted as an imminent danger. It is a mathematical value for differentiating more likely to least likely]. These attachments show how many Grade 5's and 4's as well as other recorded defect Grades exist in each pipe segment. They also show the structural pipeline rating index (SPRI) associated with each pipe segment. [This is another mathematical value indicator used in evaluating relative conditions].

Manhole Assessment

Following the methodology outlined above, for the inspection and evaluation of the sewer manholes, our team of two conducted the traffic control/warning and opening and closing and observation notations on 138 manholes in the city. Another 9 manholes listed for inspection were not located or accessible.

Attachment "E" is the table containing data and notations relative to each of the assessed manholes. Depending upon the collective condition notations, a rating was given utilizing the same general description and associated number as was used for the observed pipe condition rating. The resulting table is sorted in order of the rating priority assigned with 5 being the more urgent relative to further actions to be considered.

Methods for Rehabilitation and Repair

For Pipelines: Rehabilitation methods including cured in-place pipe (full length or segments), spot repairs, slip lining, pipe bursting with replacement pipe pulled into place, and any other available and proven techniques can be considered for applicability. Evaluation of these findings and recommended methods must include construction constraints, access to the pipe, utility conflicts, segment lengths, depth of cover, loading, age (where known) and condition of existing facilities, traffic impacts, sewage bypass requirements, roundness of the pipe and capacity impacts.

“Trenchless" rehabilitation methods are an option of "less trench" (surface disruptions), but open cut construction methods may be the best for certain conditions and should not be dismissed.

For Manholes: Available rehabilitation methods include structural grouting, polyurethane or epoxy coating, T-lock liners, and felt/fiberglass liner inserts similar to CIPP lining. Each manhole must be evaluated on a case-by-case basis to determine the most appropriate and cost effective method of rehabilitation. The details of the manhole repairs could then be included in the plans and specifications for the project.

Preliminary Opinion of Construction Costs

Attachments” C”, “D”, and “E” contain our opinions of construction cost for the respective pipe segments and manholes. These cost figures are based upon 2021 data for the region and do not include project contingencies or professional design and construction support services. These can be added when each specific project is being defined.

Summary of Identified Deficiency Findings and Recommendations

Pipeline Segments

Within the Phase 2 – Sewer System Rehabilitation Project there were 4 pipe segments containing 7 identified Grade 5 structural defects, and 26 pipe segments containing 145 identified Grade 4 structural defects. Through the construction processes consisting of pipe replacement, point repairs, and CIPP lining of specified pipe segments the identified deficiencies were eliminated or repaired.

Also, shown in Attachments “C” and “D” respectively are 20 additional pipe segments containing 26 identified Grade 5 structural defects, and 210 additional pipe segments containing 792 identified Grade 4 structural defects. Each attachment contains the recommended type of repair and probable construction cost for the respective pipe segments.

Manholes

Within the recently completed construction contract for the Phase 1 – Sewer System Rehabilitation Project there are 30 existing manholes that have condition features that range from a visual rating of Good to Poor, and with other noted conditions relative to the manhole structure components. The individual manhole visual inspection ratings are recorded on Attachment "G". Through the construction processes some of the manholes are being replaced, repaired by application of an interior protective coating material, and others that rated in a reasonably good condition are being protected-in-place with minor base modifications where a change in connecting pipe size has been specified.

Also, shown on Attachment "G" there are 117 manholes listed, of which 9 could not be located and/or accessed and need to be located (visible) and made accessible. The remaining 108 manholes were rated with condition values ranging from 5 to 1 similar to those utilized on the pipes. Each manhole has a recommended action associated with its condition evaluation and a corresponding probable construction cost.

As each sewer pipe segment is arranged into a project grouping the corresponding manholes located on each end of the pipeline segments can be incorporated into the improvement project scope.

Potential Multiyear Program

Based upon the Grades 5 and 4 defect information evaluated in preparing this report, and taking into consideration the City's proposed annual sewer CIP budget of $500,000, it appears the remaining listed Grade 5 defects could be corrected within a single year. However, based upon some varied condition findings during the recently completed Phase I Sewer System Rehabilitation Project, the City Engineer has recently stated the City intends to have a design consultant and their specialist in pipe rehabilitation conduct a detailed review of the city's existing CCTV videos and reports prior to undertaking the next phase of sewer system rehabilitation projects. A detailed review of the specified pipe segments is a wise action and may result in identifying sewer improvements over multiple years of annual budgets.

The Phase I Sewer System Rehabilitation Project utilized three different methods and materials in replacing/rehabilitating the involved sewer pipeline and manholes. These and others could be utilized in future projects identified by conducting the detailed review of the CCTV video's involving other lesser defect grades and additional manhole assessments in the community. It is possible that during the detailed CCTV review efforts, that additional video logging and investigations may be necessary to develop a sustainable multiyear CIP program to benefit the community.

Recommendations for Phase II Rehabilitation / Reconstruction Projects.
Phase II Budget $360,000

1. The recommended 2017 Phase II Sewer System Rehabilitation Project is to reconstruct the sewer lines in the intersection of Bowman Road and So. Downs St. The extent of anticipated reconstruction is in and around the intersection to correct some substandard construction of pipe and manhole connections. Also, include those remaining sewer pipelines having Grades 5 defects and any of the Grade 4 defects within the corresponding pipe segments. In addition to the actions described below in paragraphs 2, this project will require review of available documents, a field inspection, field design survey, preparation of construction plans, specifications, an engineer's estimate of construction cost, bidding documents, award of a construction contract, and management and inspection during the construction phase.

2. The recommended Evaluation Actions and possible design services during Phase II are to include:
    a. Consultant and pipe rehabilitation specialist review existing 2014/15 CCTV investigation video files for grades 5 and 4 defects and checked against the CCTV investigation summary reports for determining the method and extent of rehabilitation or reconstruction.
    b. Consultant and pipe rehabilitation specialist prepare plans, specifications, cost estimate, bidding documents for rehabilitation or reconstruction of the Bowman Rd. and Downs St. intersection, and the confirmed remaining Grade 5 defects from the 2014/15 CCTV investigation records.
    c. Consultant and pipe rehabilitation specialist conduct new CCTV survey and inspection of manholes for the five pipe segments identified as not having complete video investigations during the 2014/15 survey.
    d. Consultant and pipe rehabilitation specialist review trunk line CCTV investigation records (and supplements if necessary) and conduct inspection of trunk line manholes and prepare investigation summary report with recommendations for rehabilitation or reconstruction with engineers cost estimate.

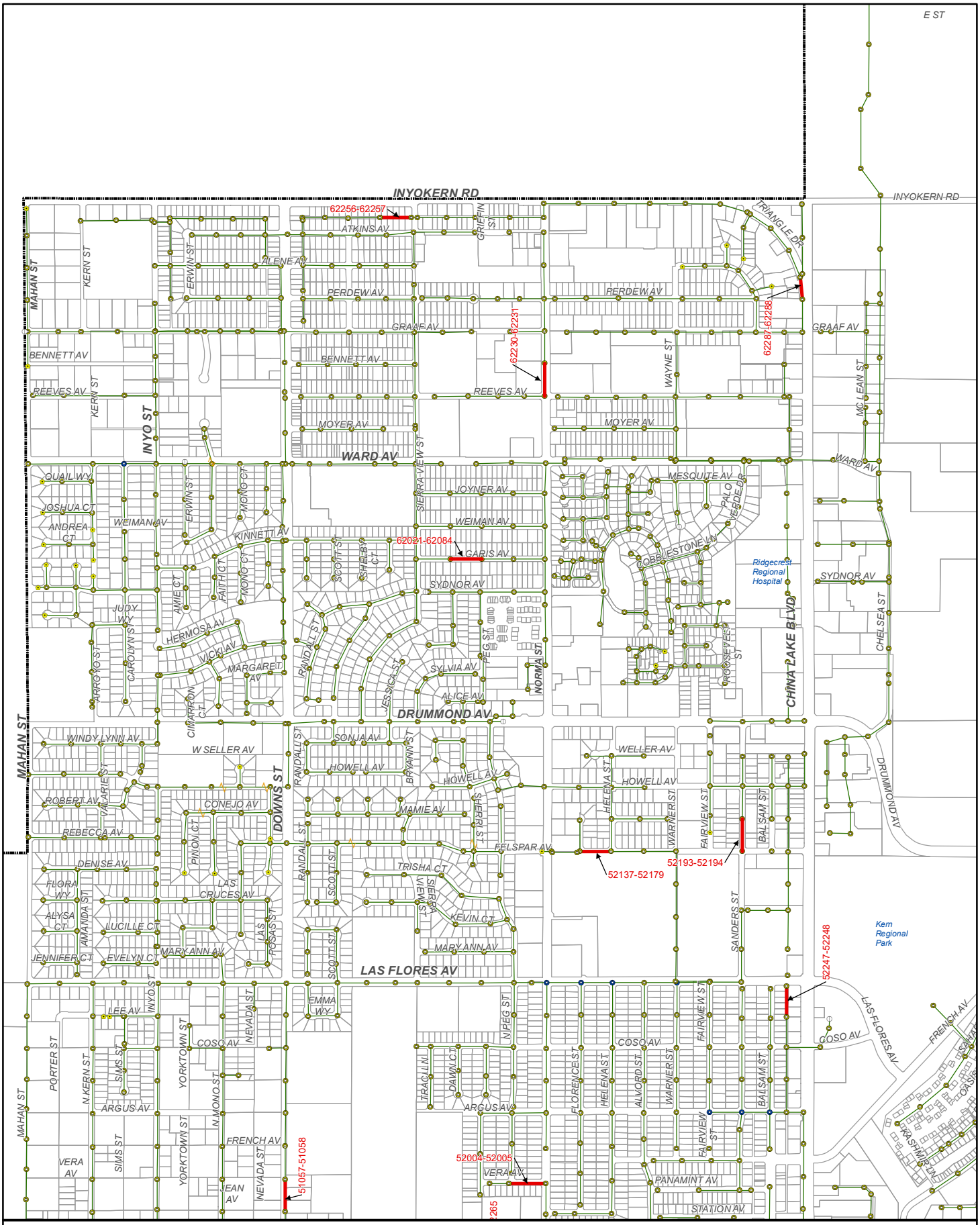
Recommendations for <u>Phase III</u> and subsequent years Rehabilitation / Reconstruction Projects. Phase III and each subsequent year's annual budget may be $250,000

1. Based upon the previous year's evaluation results from 2c. above, consultant and pipe rehabilitation specialist prepare plans, specifications, estimate of construction cost, and bidding documents for rehabilitation / reconstruction of confirmed Grades 5 and 4 defects found in the five pipe segments identified as having incomplete video investigations.
2. Based upon the previous year's evaluation results from 2d. above, consultant and pipe rehabilitation specialist prepare plans, specifications, estimate of construction cost, and bidding documents for rehabilitation / reconstruction of confirmed trunk lines and sewer manholes found with grades 5 and 4 defects.
3. Continue in the rehabilitation / reconstruction of grade 4 defects and any remaining

Grade 5 defects in the sewer system.

Since Phase II involves potential for discovery of new defects in pipes and addition manhole rehabilitation identification, a more definitive annual program and estimate of costs cannot be developed now. However, once the Phase II evaluation and reporting services are completed, a definitive listing of annual projects and their related costs to correct can be provided.

ATTACHMENTS



Pipes with Structural Grade 5 Defects

City Limits

CITY OF RIDGECREST CALIFORNIA — THE KEY TO NEW HORIZONS — INCORPORATED NOVEMBER 29, 1963

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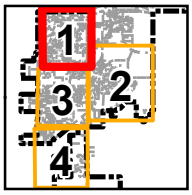

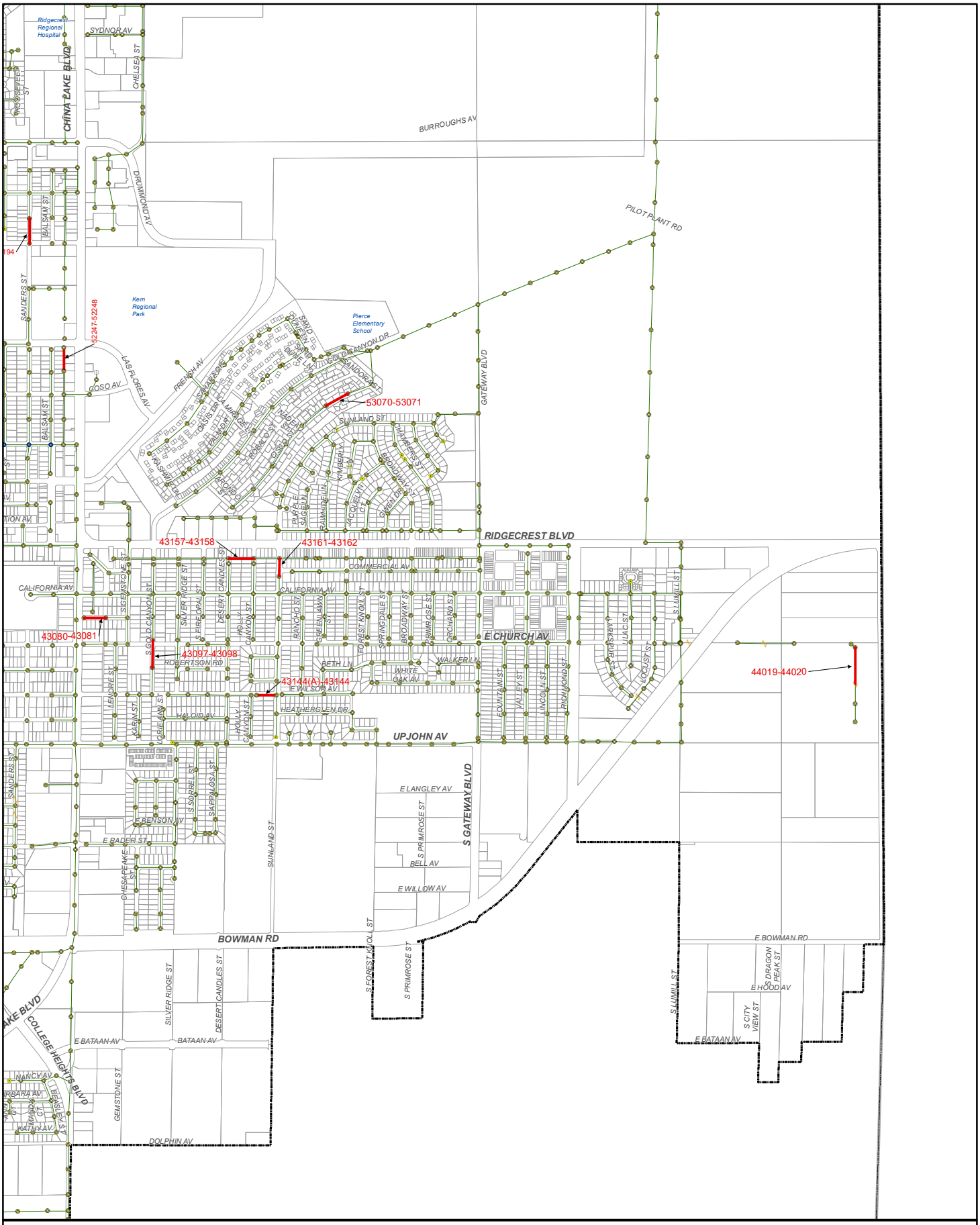

Pipes with Structural Grade 5 Defects

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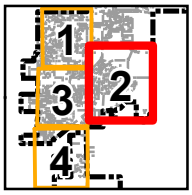


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CHURCH AV
UPJOHN AV
BOWMAN RD
DOLPHIN AV
S MAHAN ST
DOWNS ST
NORMA ST
S CHINA LAKE BLVD
COLLEGE HEIGHTS BLVD
Kern Regional Park
52247-52248
52004-52005
51057-51058
42264-42265
42257-42258
43080-43081
41128-41132
42002-42003
42064-42065
32052-32053
32095-32096
31166-31167
31162-31163
31161-31162
MARY ANN AV
COSO AV
VERA AV
ARGUS AV
FRENCH AV
PANAMINT AV
STATION AV
CALIFORNIA AV
ROBERTSON AV
WILSON AV
HALOID AV
BRIARWOOD AV
PLUM BLOSSOM CT
GINGER AV
IOWA AV
LANGELY AV
ST GEORGE AV
BENSON AV
BOSTON AV
MARIPOSA AV
WILLOW AV
CORONADO AV
DEWALT AV
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MARLENE CT
OLIVE AV
WILDROSE AV
CORAL AV
WASP AV
NANCY AV
BARBARA AV
KATHY AV
VULCAN AV
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PERCH AV
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BURNS AV
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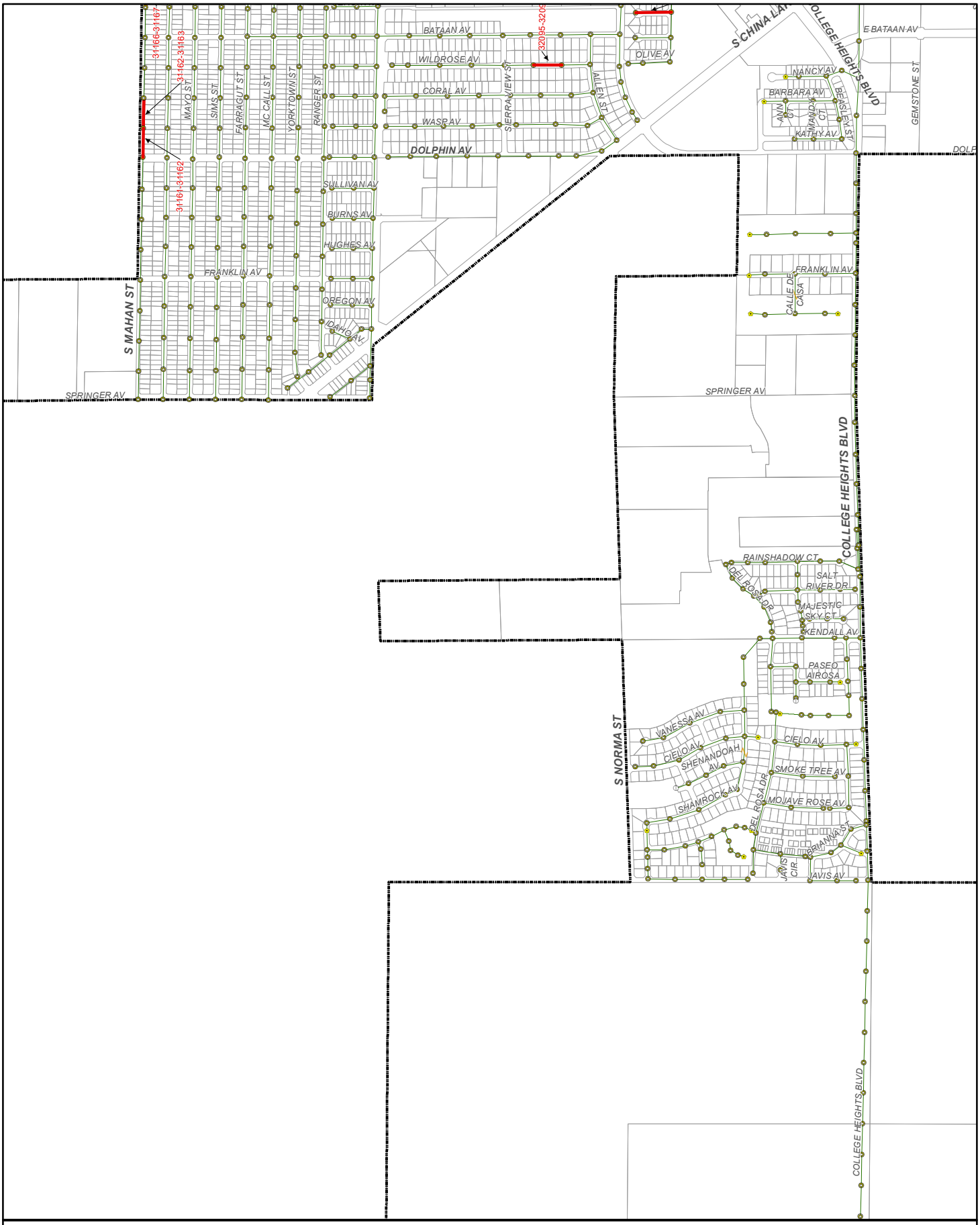

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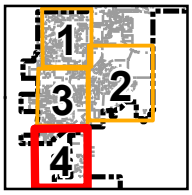

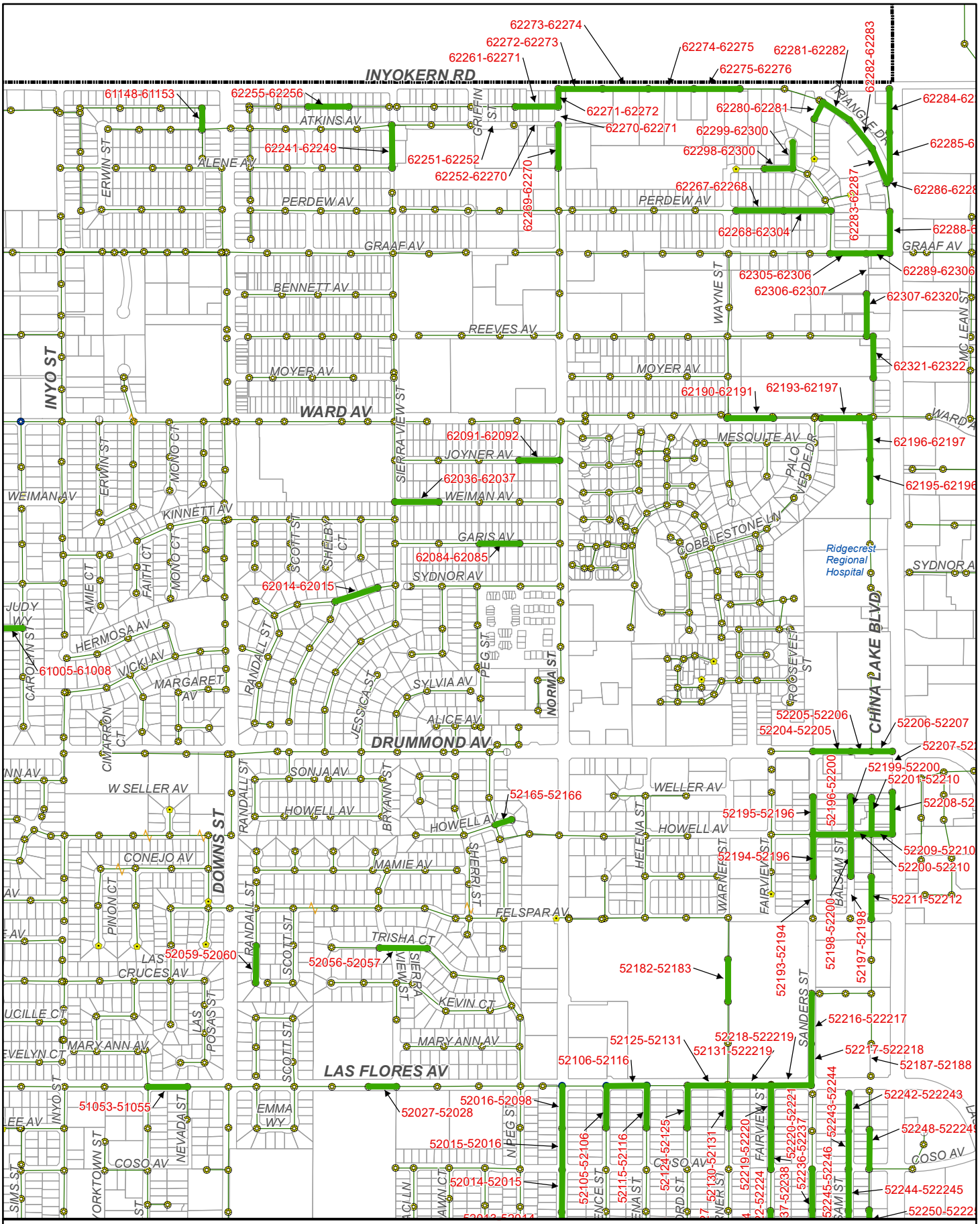

Pipes with Structural Grade 4 Defects

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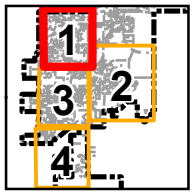

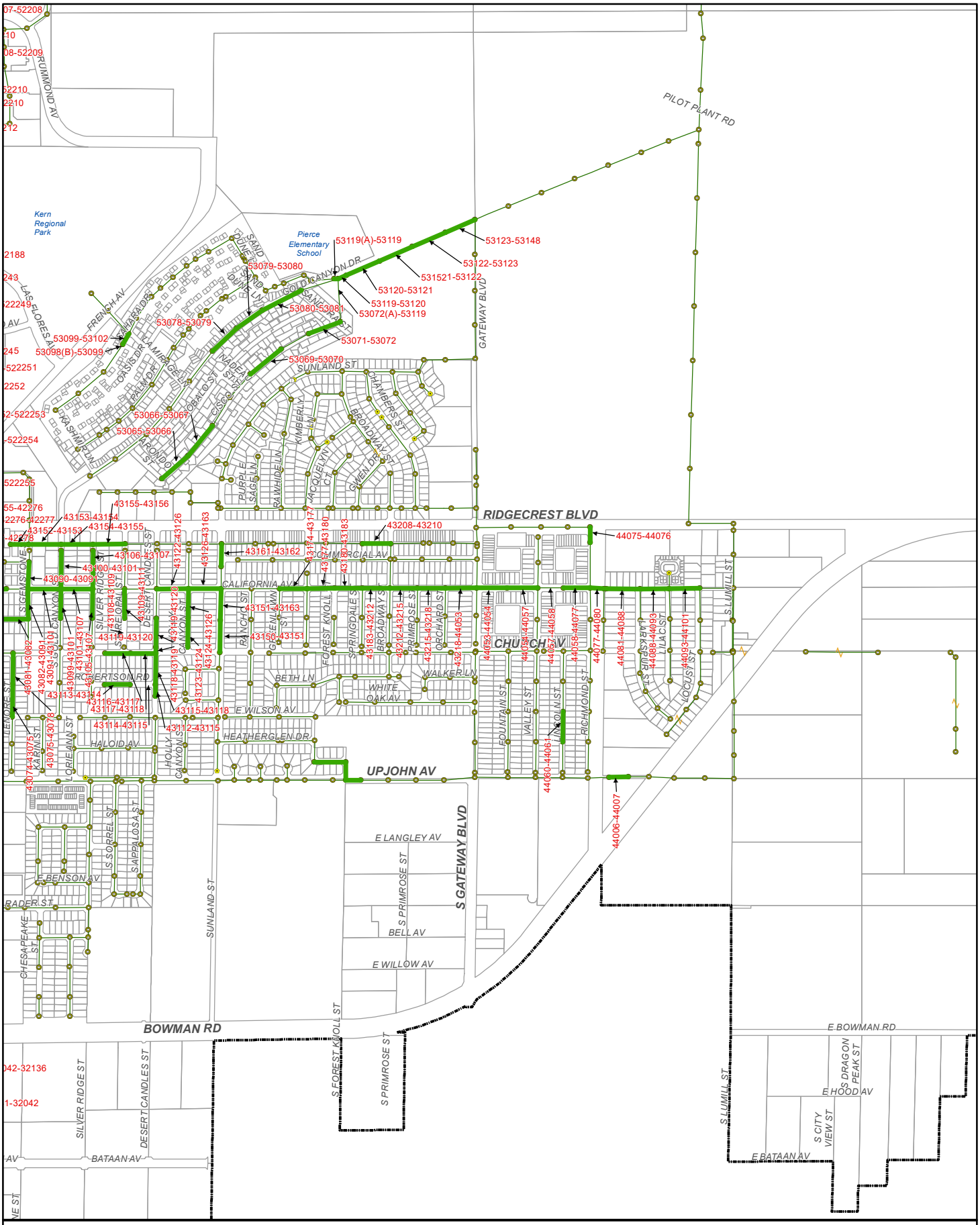
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CHURCH ST
E LANGLEY AV
E WILLOW AV
BELL AV
E HOOD AV
E BATAAN AV
BATAAN AV
HALOID AV
E WILSON AV
HEATHERGLEN DR
WHITE OAK AV
BETH LN
WALKER LN
SUNLAND ST
S PRIMROSE ST
S FOREST KNOLL ST
S LUMILL ST
S CITY VIEW ST
S DRAGON PEAK ST
SILVER RIDGE ST
DESERT CANDLES ST
SUNLAND ST
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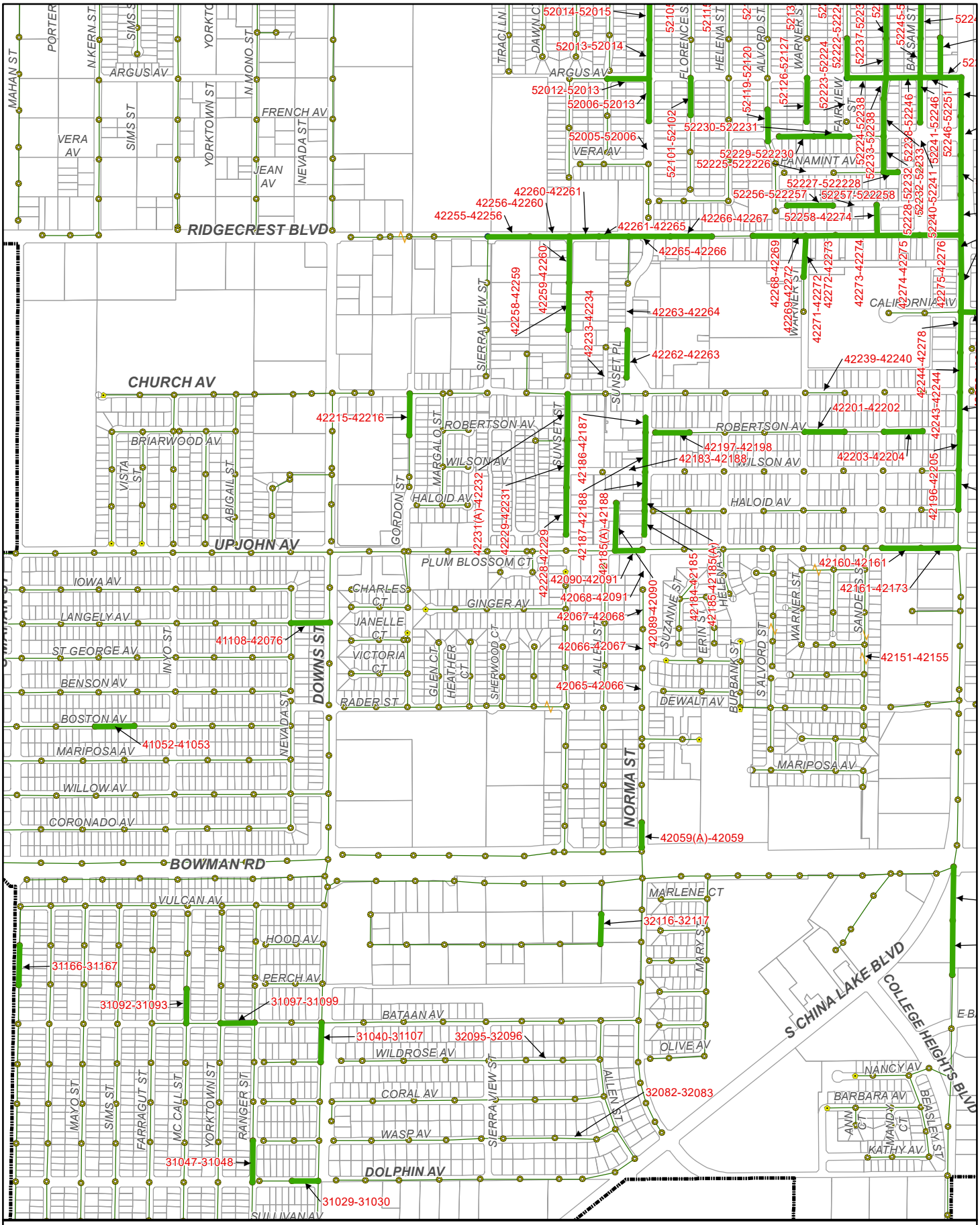

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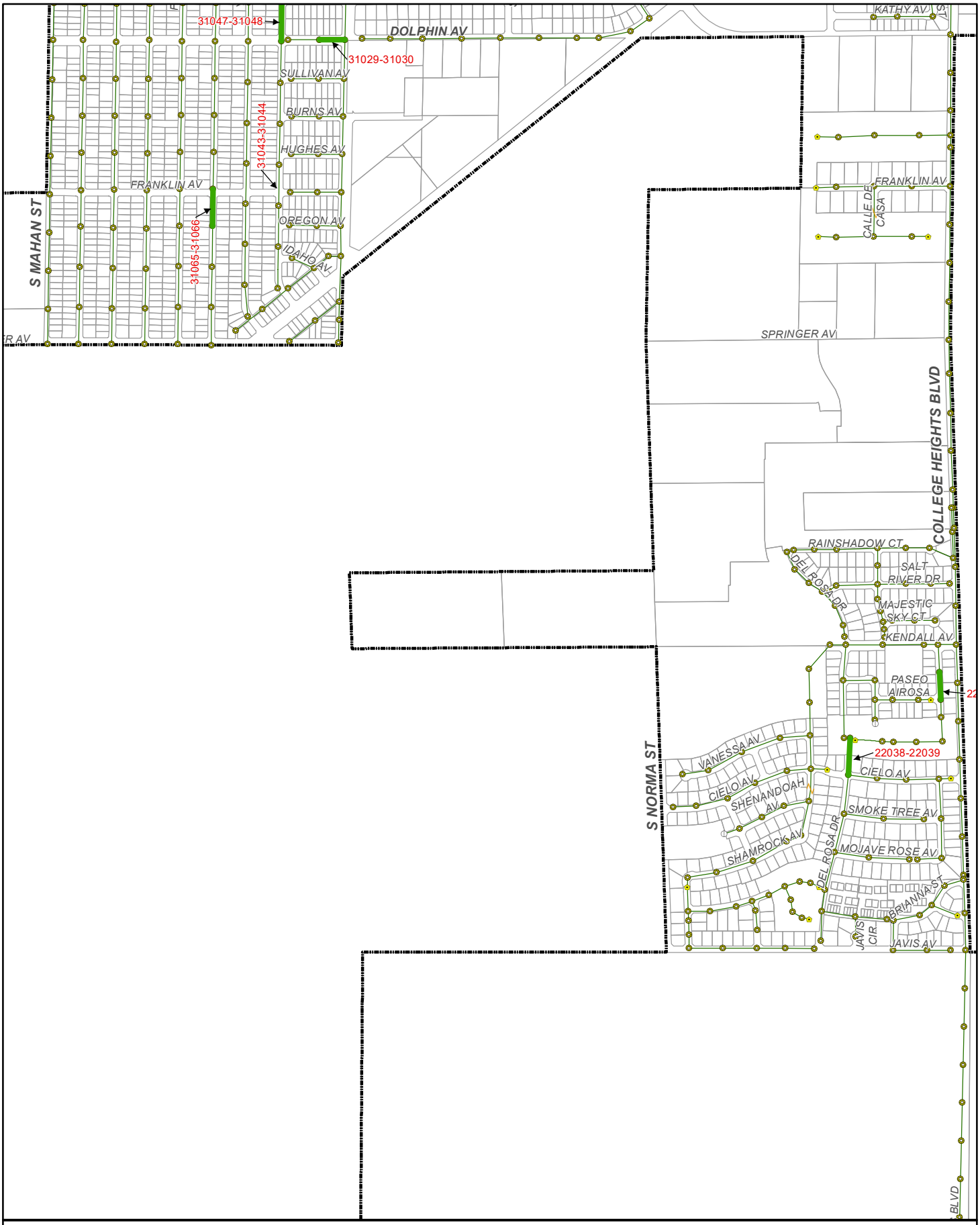

Pipes with Structural Grade 4 Defects

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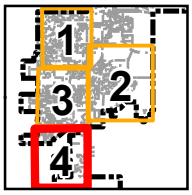

Structural Grade 5 Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe size (inches)	Pipe Material	Defect Description	No. of #5 Defects	Loc. No. 5 defect frm start pt. (ft)	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 5, 4 ONLY ($)	Probable Total Cost of Point Repair 5, 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects
1	Mahan s/o Vulcan Ave	31166-31167	31166-0	31167-330	330	8	VCP	BSV	1	182 BEG 225 END	5100	5	6	$24,750.00	Point Repair	$24,750	$24,750	$0	$36,300	0
2	Mahan St n/o Dolphin Ave	31161-31162	31161-0.0	31162-336	336	8	VCP	BSV	3	124.7	5341	4.4	5.3	$1,650	Point Repair	$6,600	$8,250	$1,650	$36,960	1
3	Mahan St n/o Dolphin Ave	31161-31162	42180-0	31162-336	336	8	VCP	BSV	3	177.2	5341	4.4	5.3	$1,650	Point Repair					
4	Mahan St n/o Dolphin Ave	31161-31162	42180-0	31162-336	336	8	VCP	HSV	3	256.9	5341	4.4	5.3	$1,650	Point Repair					
5	E. Wilson Ave w/o Sunland St	43144(A)-43144	43144(A)-0	43144-265	265	10	VCP	HVV	2	234.1	5200	5	5.2	$1,800	Point Repair	$3,600	$3,600	$0	$34,450	0
6	E. Wilson Ave w/o Sunland St	43144(A)-43144	43144(A)-0	43144-265	265	10	VCP	HVV	2	234.1	5200	5	5.2	$1,800	Point Repair					
7	N. Downs St n/o Las Flores Ave	51057-51058	51058-0	51057-332.1	332.1	8	VCP	HVV	2	267.6	5241	4.7	5.2	$1,650	Point Repair	$4,950	$3,300	$1,650	$36,531	0
8	Sunset St n/o Church Ave	42257-42258	42257-0	42258-390	390	8	VCP	BSV	2	26.6	5241	3.30	5.2	$1,650	Point Repair	$4,950	$8,250	$3,300	$42,900	2
9	Sunset St n/o Church Ave	42257-42258	42257-0	42258-390	390	8	VCP	BSV	2	26.6	5241	3.30	5.2	$1,650	Point Repair					
10	Parkview Dr e/o China Lake Blvd	43080-43081	43081-0	43080-293.1	293.1	8	VCP	BSV	1	57.2	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	-$1,650	$32,241	0
11	Downs St n/o Willow Ave	42002-42003	42003-0	42002-316.2	316.2	8	VCP	BSV	1	38.8	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	-$1,650	$34,782	0
12	Felspar Ave w/o Helena St	52137-52179	52137-0	52179-319.5	319.5	8	VCP	BSV	1	280.5	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	-$1,650	$35,145	0
13	Vera Ave w/o Norma St	52004-52005	52005-0	52004-375	375	6	VCP	BVV	1	136.6	5100	5.00	5.1	$1,200	Point Repair	$1,200	$1,200	$0	$41,250	0
14	Norma St n/o Reeves Ave	62230-62231	62230-333.2	62231-0	333.2	8	VCP	HSV	1	93.6	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	$0	$36,652	0
15	Wildrose Ave e/o Sierraview St	32095-32096	32095-0	32096-319.1	319.1	8	VCP	BVV	1	287.8	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	$0	$35,101	0
16	S. Gold Canyon St s/0 E. church Ave	43097-43098	43097-0	43098-360	360	8	VCP	HSV	1	248.1	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	$0	$39,600	0
17	Mavis e/o Mary St	32052-32053	32052-0	32053-395	395	8	VCP	BSV	1	26.5	5100	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	$0	$43,450	0
18	Briarwood Ave w/o Inyo St	41128-41132	41128-0	41132-260	260	8	VCP	HSV	1	16.4	5200	5.00	5.1	$1,650	Point Repair	$1,650	$1,650	$0	$43,450	0
19	Mahan n/o Dolphin Ave	31162-31163	31162-0	31163-0	330	8	VCP	BSV	1	158.8	5141	4.50	5.1	$1,650	Point Repair	$3,300	$3,300	$0	$36,300	0
20	Sandars St n/o Felspar Ave	52193-52194	52194-0	52193-332.8	332.8	8	VCP	BSV	1	302.7	5143	4.20	5.1	$1,650	Point Repair	$6,600	$6,600	$0	$36,608	0
21	Alley w/o China Lake Blvd s/o Las Flores Ave	52247-52248	52247-0	52248-310.1	310.1	8	VCP	SMW	1	69.7	5147	4.00	5.1	$1,650	Point Repair	$13,200	$14,850	$1,650	$34,111	1
22	China Lake Blvd n/o Perdew Ave	62287-62288	62287-0	62288-217.2	217.2	12	VCP	SMW	1	31.6	514B	3.90	5.1	$1,950	Point Repair	$23,400	$29,250	$5,850	$32,580	3
23	W. Garis Ave e/o Sierra View St	62021-62084	62021-321	62084-0	321	8	VCP	HVV	1	283.8	5132	3.70	5.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$35,310	2
24	Rosstrand s/o Ridgecrest Blvd	42264-42265	42264-394.4	42265-0	394.4	8	VCP	HSV	1	282.4	5148	3.50	5.1	$1,650	Point Repair	$14,850	$29,700	$14,850	$43,384	9
25	Sunland St s/o Ridgecrest Blvd	43161-43162	43161-0	43162-233.3	233.3	8	VCP	HVV	1	158.4	5144	3.30	5.1	$1,650	Point Repair	$8,250	$28,050	$19,800	$25,663	12
26	Lateral off E. Church Ave w/o San Bernardino Blvd to Kern County Animal Control	44019-44020	44019-4801	44020-0	480	10	WSPL	HVV	1	17.3	5131	3.20	5.1	$1,800	Point Repair	$1,800	$3,600	$1,800	$62,400	1
27	Rick Ct. e/o S. Norma St	42064-42065	42064-0	42065-264.9	264.9	10	VCP	HVV	1	125.1	5143	3.20	5.1	$1,800	Point Repair	$7,200	$12,600	$5,400	$34,437	3
28	Alley s/o Ridgecrest Blvd e/o Desert Candles St	43157-43158	43157-0	43158-334.4	334.4	8	VCP	BSV	1	163.4	5142	3.10	5.1	$1,650	Point Repair	$4,950	$9,900	$4,950	$36,784	3
29	Cisco St w/o Sandora St	53070-53071	53070-0	53071-365.3	365.3	8	VCP	BVV	1	60.4	5141	3.10	5.1	$1,650	Point Repair	$3,300	$9,900	$6,600	$40,183	4
30	Alley n/o Atkins Ave w/o Sierraview St	62256-62257	62256-0	62257-323	323	8	VCP	BSV	1	207.3	5133	2.70	5.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$35,530	3
	Total length (feet) of pipes containing Grade 5 structural defects included within the Phase 2 - Sewer System Rehabilitation Project:	1,350												Total probable cost of repairs 5 ONLY:	$73,050	$149,400	$221,850	$70,800	$982,102	
															$33,000	$36,300	$44,550	$8,250	$148,544	
														Phase 2	5 ONLY	5 and 4	5, 4 and 3	3 ONLY	CIPP	

Shading indicates those sewer segments within Phase 2 - Sewer System Rehabilitation Project.

Legends:

- BSV Broken Soil Visible
- BVV Broken Void Visible
- HSV Hole Soil Visible
- HVV Hole Void Visible
- SMW Surface Damage Chemical Missing Wall

Defect Grades & Count are described as follows:

- The number shown is the PACP rater's shorthand way of expressing the number of occurrences for the two highest occuring severity Grades.
- The first character is the hightest severity Grade occurring along the pipe segment length.
- The second character is the total number of occurrences of the highest severity Grade in the pipe segment
- If the total number exceeds 9, then alphabetic characters are used. (e.g A= 10 to 14, B= 15 to 19, C= 20 to 24, etc.)
- The third character is the next highest severity Grade occurring along the pipe segment length.
- The fourth character is the total number of occurrences of the second highest severity Grade occurrences, as derived above.

Ridgecrest

Pipe size (in)	$/ft	Repair	CIPP/ft	R&R/Lf	Real cost
6	400	$1,200	100	280	
8	550	$1,650	110	350	150
10	600	$1,800	130	380	175
12	650	$1,950	150	410	200
15	720	$2,160	170	450	225
18	825	$2,475	185	510	250
21	850	$2,550	195	552.5	260

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
1	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	12.7	4H37	3.8	5.0	$1,950	Point Repair								
2	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	16.8	4H37	3.8	5.0	$1,950	Point Repair								
3	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	21.0	4H37	3.8	5.0	$1,950	Point Repair								
4	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	164.5	4H37	3.8	5.0	$1,950	Point Repair								
5	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	174.0	4H37	3.8	5.0	$1,950	Point Repair								
6	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	182.1	4H37	3.8	5.0	$1,950	Point Repair								
7	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	194.2	4H37	3.8	5.0	$1,950	Point Repair								
8	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	202.0	4H37	3.8	5.0	$1,950	Point Repair								
9	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	206.1	4H37	3.8	5.0	$1,950	Point Repair								
10	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	210.0	4H37	3.8	5.0	$1,950	Point Repair	$39,000	$52,650	$13,650	$49,515	7	$135,341	$88,515	$102,165
11	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	218.0	4H37	3.8	5.0	$1,950	Point Repair								
12	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	245.9	4H37	3.8	5.0	$1,950	Point Repair								
13	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	253.9	4H37	3.8	5.0	$1,950	Point Repair								
14	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	283.3	4H37	3.8	5.0	$1,950	Point Repair								
15	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	287.1	4H37	3.8	5.0	$1,950	Point Repair								
16	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	291.1	4H37	3.8	5.0	$1,950	Point Repair								
17	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	295.1	4H37	3.8	5.0	$1,950	Point Repair								
18	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	299.0	4H37	3.8	5.0	$1,950	Point Repair								
19	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	319.1	4H37	3.8	5.0	$1,950	Point Repair								
20	S. China Lake Blvd s/o Drummond Ave	52207-52208	52207-0	52208-330.1	330.10	12	VCP	FM	20	323.2	4H37	3.8	5.0	$1,950	Point Repair								
21	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	11.7	4C37	3.8	5.0	$1,650	Point Repair								
22	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	14.5	4C37	3.8	5.0	$1,650	Point Repair								
23	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	20.7	4C37	3.8	5.0	$1,650	Point Repair								
24	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	27.3	4C37	3.8	5.0	$1,650	Point Repair								
25	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	34.9	4C37	3.8	5.0	$1,650	Point Repair								
26	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	46.4	4C37	3.8	5.0	$1,650	Point Repair								
27	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	65.3	4C37	3.8	5.0	$1,650	Point Repair	$21,450	$33,000	$11,550	$38,885	7	$123,725	$60,335	$71,885
28	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	80.2	4C37	3.8	5.0	$1,650	Point Repair								
29	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	162.0	4C37	3.8	5.0	$1,650	Point Repair								
30	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	207.6	4C37	3.8	5.0	$1,650	Point Repair								
31	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	210.5	4C37	3.8	5.0	$1,650	Point Repair								
32	Inyokern Rd e/o norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	213.8	4C37	3.8	5.0	$1,650	Point Repair								
33	Inyokern Rd e/o Norma St	62272-62273	62272-353.3	62273-0	353.50	8	VCP	FM	13	304.6	4C37	3.8	5.0	$1,650	Point Repair								
34	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	8.8	4C37	3.8	5.0	$1,650	Point Repair								
35	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	32.7	4C37	3.8	5.0	$1,650	Point Repair								
36	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	38.7	4C37	3.8	5.0	$1,650	Point Repair								
37	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	51.1	4C37	3.8	5.0	$1,650	Point Repair								
38	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	75.5	4C37	3.8	5.0	$1,650	Point Repair								
39	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	114.5	4C37	3.8	5.0	$1,650	Point Repair								
40	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	120.7	4C37	3.8	5.0	$1,650	Point Repair								
41	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	123.8	4C37	3.8	5.0	$1,650	Point Repair								
42	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	126.9	4C37	3.8	5.0	$1,650	Point Repair								
43	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	126.9	4C37	3.8	5.0	$1,650	Point Repair								
44	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	129.9	4C37	3.8	5.0	$1,650	Point Repair	$33,000	$44,550	$11,550	$39,886	7	$126,910	$72,886	$84,436
45	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	129.9	4C37	3.8	5.0	$1,650	Point Repair								
46	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	153.7	4C37	3.8	5.0	$1,650	Point Repair								
47	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	172.2	4C37	3.8	5.0	$1,650	Point Repair								
48	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	187.4	4C37	3.8	5.0	$1,650	Point Repair								
49	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	208.7	4C37	3.8	5.0	$1,650	Point Repair								
50	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	217.4	4C37	3.8	5.0	$1,650	Point Repair								
51	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	229.7	4C37	3.8	5.0	$1,650	Point Repair								
52	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	269.3	4C37	3.8	5.0	$1,650	Point Repair								
53	Inyokern Rd 2p e/o Norma St	62274-62274	62273-0	62274-362.6	362.60	8	VCP	FM	20	347.7	4C37	3.8	5.0	$1,650	Point Repair								
54	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	40.3	4B3A	3.6	5.0	$1,950	Point Repair								
55	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	43.8	4B3A	3.6	5.0	$1,950	Point Repair								
56	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	54.9	4B3A	3.6	5.0	$1,950	Point Repair								
57	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	66.6	4B3A	3.6	5.0	$1,950	Point Repair								
58	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	78.8	4B3A	3.6	5.0	$1,950	Point Repair								
59	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	82.8	4B3A	3.6	5.0	$1,950	Point Repair								
60	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	93.5	4B3A	3.6	5.0	$1,950	Point Repair								
61	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	96.0	4B3A	3.6	5.0	$1,950	Point Repair								
62	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	112.2	4B3A	3.6	5.0	$1,950	Point Repair								
63	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	128.0	4B3A	3.6	5.0	$1,950	Point Repair	$37,050	$58,500	$21,450	$49,650	11	$135,710	$86,700	$108,150
64	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	140.2	4B3A	3.6	5.0	$1,950	Point Repair								
65	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	144.1	4B3A	3.6	5.0	$1,950	Point Repair								
66	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	152.3	4B3A	3.6	5.0	$1,950	Point Repair								
67	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	178.6	4B3A	3.6	5.0	$1,950	Point Repair								
68	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	182.5	4B3A	3.6	5.0	$1,950	Point Repair								
69	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	230.8	4B3A	3.6	5.0	$1,950	Point Repair								
70	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	252.9	4B3A	3.6	5.0	$1,950	Point Repair								
71	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	265.0	4B3A	3.6	5.0	$1,950	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
72	N. Sanders St n/o Las Flores Ave	52217-52218	52217-0	52218-331	331.00	12	VCP	FM	19	289.1	4B3A	3.6	5.0	$1,950	Point Repair								
73	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	27.9	4C35	3.8	5.0	$2,160	Point Repair								
74	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	37.6	4C35	3.8	5.0	$2,160	Point Repair								
75	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	74.2	4C35	3.8	5.0	$2,160	Point Repair								
76	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	90.7	4C35	3.8	5.0	$2,160	Point Repair								
77	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	96.0	4C35	3.8	5.0	$2,160	Point Repair								
78	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	103.9	4C35	3.8	5.0	$2,160	Point Repair								
79	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	136.6	4C35	3.8	5.0	$2,160	Point Repair								
80	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	202.3	4C35	3.8	5.0	$2,160	Point Repair								
81	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	210.2	4C35	3.8	5.0	$2,160	Point Repair								
82	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	218.4	4C35	3.8	5.0	$2,160	Point Repair								
83	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	235.6	4C35	3.8	5.0	$2,160	Point Repair								
84	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	248.0	4C35	3.8	5.0	$2,160	Point Repair								
85	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	252.0	4C35	3.8	5.0	$2,160	Point Repair								
86	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	284.5	4C35	3.8	5.0	$2,160	Point Repair								
87	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	293.7	4C35	3.8	5.0	$2,160	Point Repair								
88	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	297.7	4C35	3.8	5.0	$2,160	Point Repair								
89	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	318.4	4C35	3.8	5.0	$2,160	Point Repair								
90	China Lake Blvd at French Ave	52253-52254	52253-0	52254-332.2	332.20	15	VCP	FM	18	322.2	4C35	3.8	5.0	$2,160	Point Repair								
91	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	10.6	4K23	3.9	5.0	$1,650	Point Repair								
92	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	14.2	4K23	3.9	5.0	$1,650	Point Repair								
93	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	21.2	4K23	3.9	5.0	$1,650	Point Repair								
94	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	24.7	4K23	3.9	5.0	$1,650	Point Repair								
95	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	225.9	4K23	3.9	5.0	$1,650	Point Repair								
96	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	236.1	4K23	3.9	5.0	$1,650	Point Repair								
97	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	239.5	4K23	3.9	5.0	$1,650	Point Repair								
98	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	246.4	4K23	3.9	5.0	$1,650	Point Repair								
99	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	249.9	4K23	3.9	5.0	$1,650	Point Repair	$28,050	$28,050	$0	$39,039	0	$124,215	$67,089	$67,089
100	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	284.0	4K23	3.9	5.0	$1,650	Point Repair								
101	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	291.4	4K23	3.9	5.0	$1,650	Point Repair								
102	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	295.0	4K23	3.9	5.0	$1,650	Point Repair								
103	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	305.5	4K23	3.9	5.0	$1,650	Point Repair								
104	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	316.0	4K23	3.9	5.0	$1,650	Point Repair								
105	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	322.8	4K23	3.9	5.0	$1,650	Point Repair								
106	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	336.6	4K23	3.9	5.0	$1,650	Point Repair								
107	Ridgecrest Blvd at Sunset Pl	42265-42266	42265-0	42266-354.9	354.90	8	VCP	FM	17	340.0	4K23	3.9	5.0	$1,650	Point Repair								
108	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	11.3	4B33	3.8	5.0	$2,160	Point Repair								
109	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	51.9	4B33	3.8	5.0	$2,160	Point Repair								
110	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	56.5	4B33	3.8	5.0	$2,160	Point Repair								
111	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	64.0	4B33	3.8	5.0	$2,160	Point Repair								
112	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	94.7	4B33	3.8	5.0	$2,160	Point Repair								
113	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	108.9	4B33	3.8	5.0	$2,160	Point Repair								
114	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	122.1	4B33	3.8	5.0	$2,160	Point Repair								
115	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	142.4	4B33	3.8	5.0	$2,160	Point Repair								
116	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	154.9	4B33	3.8	5.0	$2,160	Point Repair	$36,720	$43,200	$6,480	$56,117	3	$148,545	$92,837	$99,317
117	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	163.8	4B33	3.8	5.0	$2,160	Point Repair								
118	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	200.6	4B33	3.8	5.0	$2,160	Point Repair								
119	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	220.7	4B33	3.8	5.0	$2,160	Point Repair								
120	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	270.7	4B33	3.8	5.0	$2,160	Point Repair								
121	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	274.5	4B33	3.8	5.0	$2,160	Point Repair								
122	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	278.8	4B33	3.8	5.0	$2,160	Point Repair								
123	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	304.1	4B33	3.8	5.0	$2,160	Point Repair								
124	China Lake Blvd s/o Argus Ave	52252-52253	52252-0	52253-330.1	330.10	15	VCP	FM	17	308.1	4B33	3.8	5.0	$2,160	Point Repair								
125	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	5.2	4B3A	3.6	5.0	$1,950	Point Repair								
126	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	20.8	4B3A	3.6	5.0	$1,950	Point Repair								
127	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	68.2	4B3A	3.6	5.0	$1,950	Point Repair								
128	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	80.1	4B3A	3.6	5.0	$1,950	Point Repair								
129	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	128.3	4B3A	3.6	5.0	$1,950	Point Repair								
130	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	136.4	4B3A	3.6	5.0	$1,950	Point Repair								
131	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	144.7	4B3A	3.6	5.0	$1,950	Point Repair								
132	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	157.2	4B3A	3.6	5.0	$1,950	Point Repair	$31,200	$56,550	$25,350	$47,955	13	$131,077	$79,155	$104,505
133	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	160.8	4B3A	3.6	5.0	$1,950	Point Repair								
134	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	168.9	4B3A	3.6	5.0	$1,950	Point Repair								
135	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	181.1	4B3A	3.6	5.0	$1,950	Point Repair								
136	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	184.8	4B3A	3.6	5.0	$1,950	Point Repair								
137	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	217.0	4B3A	3.6	5.0	$1,950	Point Repair								
138	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	249.8	4B3A	3.6	5.0	$1,950	Point Repair								
139	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	293.5	4B3A	3.6	5.0	$1,950	Point Repair								
140	W. Las Flores Ave w/o Sanders St	52218-52219	52218-0	52219-319.7	319.70	12	VCP	FM	16	301.5	4B3A	3.6	5.0	$1,950	Point Repair								
141	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	5.0	4B3C	3.4	5.0	$2,160	Point Repair								
142	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	10.4	4B3C	3.4	5.0	$2,160	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
143	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	18.2	4B3C	3.4	5.0	$2,160	Point Repair								
144	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	26.4	4B3C	3.4	5.0	$2,160	Point Repair								
145	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	30.3	4B3C	3.4	5.0	$2,160	Point Repair								
146	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	34.5	4B3C	3.4	5.0	$2,160	Point Repair								
147	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	42.7	4B3C	3.4	5.0	$2,160	Point Repair								
148	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	75.3	4B3C	3.4	5.0	$2,160	Point Repair	$34,560	$56,160	$21,600	$56,355	10	$149,175	$90,915	$112,515
149	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	87.2	4B3C	3.4	5.0	$2,160	Point Repair								
150	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	108.7	4B3C	3.4	5.0	$2,160	Point Repair								
151	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	125.1	4B3C	3.4	5.0	$2,160	Point Repair								
152	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	128.7	4B3C	3.4	5.0	$2,160	Point Repair								
153	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	174.5	4B3C	3.4	5.0	$2,160	Point Repair								
154	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	264.8	4B3C	3.4	5.0	$2,160	Point Repair								
155	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	322.7	4B3C	3.4	5.0	$2,160	Point Repair								
156	China Lake Blvd s/o French Ave	52254-52255	52254-0	52255-331.5	331.50	15	VCP	FM	16	327.0	4B3C	3.4	5.0	$2,160	Point Repair								
157	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	47.0	4EOO	4.0	5.0	$2,160	Point Repair								
158	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	63.3	4EOO	4.0	5.0	$2,160	Point Repair								
159	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	83.5	4EOO	4.0	5.0	$2,160	Point Repair								
160	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	99.9	4EOO	4.0	5.0	$2,160	Point Repair								
161	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	103.9	4EOO	4.0	5.0	$2,160	Point Repair								
162	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	116.2	4EOO	4.0	5.0	$2,160	Point Repair								
163	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	136.5	4EOO	4.0	5.0	$2,160	Point Repair								
164	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	149.9	4EOO	4.0	5.0	$2,160	Point Repair	$32,400	$32,400	$0	$56,338	0	$149,130	$88,738	$88,738
165	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	153.5	4EOO	4.0	5.0	$2,160	Point Repair								
166	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	162.0	4EOO	4.0	5.0	$2,160	Point Repair								
167	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	169.9	4EOO	4.0	5.0	$2,160	Point Repair								
168	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	198.0	4EOO	4.0	5.0	$2,160	Point Repair								
169	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	223.1	4EOO	4.0	5.0	$2,160	Point Repair								
170	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	279.2	4EOO	4.0	5.0	$2,160	Point Repair								
171	S. China Lake Blvd s/o Ridgecrest Blvd	42276-42277	42276-0	42277-331.4	331.40	15	VCP	FM	15	327.2	4EOO	4.0	5.0	$2,160	Point Repair								
172	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	45.4	4K00	4.0	5.0	$1,950	Point Repair								
173	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	53.4	4K00	4.0	5.0	$1,950	Point Repair								
174	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	61.1	4K00	4.0	5.0	$1,950	Point Repair								
175	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	69.2	4K00	4.0	5.0	$1,950	Point Repair								
176	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	77.3	4K00	4.0	5.0	$1,950	Point Repair								
177	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	84.9	4K00	4.0	5.0	$1,950	Point Repair								
178	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	285.1	4K00	4.0	5.0	$1,950	Point Repair								
179	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	289.5	4K00	4.0	5.0	$1,950	Point Repair	$29,250	$29,250	$0	$56,474	0	$136,202	$85,724	$85,724
180	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	297.5	4K00	4.0	5.0	$1,950	Point Repair								
181	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	301.4	4K00	4.0	5.0	$1,950	Point Repair								
182	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	305.6	4K00	4.0	5.0	$1,950	Point Repair								
183	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	313.6	4K00	4.0	5.0	$1,950	Point Repair								
184	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	317.7	4K00	4.0	5.0	$1,950	Point Repair								
185	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	321.7	4K00	4.0	5.0	$1,950	Point Repair								
186	S. China Lake Blvd n/o Howell Ave	52208-52209	52208-0	52209-332.2	332.20	12	VCP	FM	15	325.5	4K00	4.0	5.0	$1,950	Point Repair								
187	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	33.0	4D31	3.5	5.0	$1,200	Point Repair								
188	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	52.9	4D31	3.5	5.0	$1,200	Point Repair								
189	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	56.4	4D31	3.5	5.0	$1,200	Point Repair								
190	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	69.0	4D31	3.5	5.0	$1,200	Point Repair								
191	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	76.3	4D31	3.5	5.0	$1,200	Point Repair								
192	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	104.5	4D31	3.5	5.0	$1,200	Point Repair								
193	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	176.5	4D31	3.5	5.0	$1,200	Point Repair								
194	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	205.0	4D31	3.5	5.0	$1,200	Point Repair	$16,800	$18,000	$1,200	$36,310	1	$101,668	$53,110	$54,310
195	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	232.1	4D31	3.5	5.0	$1,200	Point Repair								
196	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	256.9	4D31	3.5	5.0	$1,200	Point Repair								
197	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	267.7	4D31	3.5	5.0	$1,200	Point Repair								
198	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	287.6	4D31	3.5	5.0	$1,200	Point Repair								
199	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	291.1	4D31	3.5	5.0	$1,200	Point Repair								
200	Wilson Ave w/o Norma St	42183-42188	42183-0	42188-363.1	363.10	6	VCP	FM	14	361.8	4D31	3.5	5.0	$1,200	Point Repair								
201	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	19.4	4C21	3.9	5.0	$2,160	Point Repair								
202	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	24.4	4C21	3.9	5.0	$2,160	Point Repair								
203	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	48.9	4C21	3.9	5.0	$2,160	Point Repair								
204	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	52.9	4C21	3.9	5.0	$2,160	Point Repair								
205	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	124.5	4C21	3.9	5.0	$2,160	Point Repair								
206	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	160.8	4C21	3.9	5.0	$2,160	Point Repair								
207	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	168.8	4C21	3.9	5.0	$2,160	Point Repair	$30,240	$30,240	$0	$56,355	0	$149,175	$86,595	$86,595
208	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	182.1	4C21	3.9	5.0	$2,160	Point Repair								
209	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	186.0	4C21	3.9	5.0	$2,160	Point Repair								
210	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	198.1	4C21	3.9	5.0	$2,160	Point Repair								
211	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	223.5	4C21	3.9	5.0	$2,160	Point Repair								
212	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	252.2	4C21	3.9	5.0	$2,160	Point Repair								
213	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	256.5	4C21	3.9	5.0	$2,160	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
214	China Lake Blvd n/o Ridgecrest blvd	52255-42276	52255-0	42276-331.5	331.50	15	VCP	FM	14	324.6	4C21	3.9	5.0	$2,160	Point Repair								
215	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	38.4	4B3B	3.5	5.0	$1,950	Point Repair								
216	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	38.4	4B3B	3.5	5.0	$1,950	Point Repair								
217	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	86.4	4B3B	3.5	5.0	$1,950	Point Repair								
218	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	106.2	4B3B	3.5	5.0	$1,950	Point Repair								
219	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	132.9	4B3B	3.5	5.0	$1,950	Point Repair								
220	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	155.7	4B3B	3.5	5.0	$1,950	Point Repair								
221	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	179.8	4B3B	3.5	5.0	$1,950	Point Repair								
222	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	195.8	4B3B	3.5	5.0	$1,950	Point Repair	$27,300	$48,750	$21,450	$58,875	11	$160,925	$86,175	$107,625
223	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	215.9	4B3B	3.5	5.0	$1,950	Point Repair								
224	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	239.8	4B3B	3.5	5.0	$1,950	Point Repair								
225	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	266.5	4B3B	3.5	5.0	$1,950	Point Repair								
226	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	305.3	4B3B	3.5	5.0	$1,950	Point Repair								
227	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	321.9	4B3B	3.5	5.0	$1,950	Point Repair								
228	China Lake Blvd n/o Graaf Ave	62288-62289	62288-0	62289-392.5	392.50	12	VCP	FM	14	358.3	4B3B	3.5	5.0	$1,950	Point Repair								
229	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	10.3	4A38	3.6	5.0	$1,650	Point Repair								
230	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	254.1	4A38	3.6	5.0	$1,650	Point Repair								
231	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	273.0	4A38	3.6	5.0	$1,650	Point Repair								
232	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	275.9	4A38	3.6	5.0	$1,650	Point Repair								
233	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	285.4	4A38	3.6	5.0	$1,650	Point Repair								
234	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	294.8	4A38	3.6	5.0	$1,650	Point Repair								
235	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	301.4	4A38	3.6	5.0	$1,650	Point Repair	$19,800	$33,000	$13,200	$36,685	8	$116,725	$56,485	$69,685
236	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	301.4	4A38	3.6	5.0	$1,650	Point Repair								
237	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	310.7	4A38	3.6	5.0	$1,650	Point Repair								
238	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	320.2	4A38	3.6	5.0	$1,650	Point Repair								
239	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	323.4	4A38	3.6	5.0	$1,650	Point Repair								
240	Balsam St s/o Coso Ave	52244-52245	52244-333.5	52245-0	333.50	8	VCP	FM	12	329.8	4A38	3.6	5.0	$1,650	Point Repair								
241	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	5.9	4A31	3.5	5.0	$1,800	Point Repair								
242	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	14.3	4A31	3.5	5.0	$1,800	Point Repair								
243	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	30.5	4A31	3.5	5.0	$1,800	Point Repair								
244	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	50.4	4A31	3.5	5.0	$1,800	Point Repair								
245	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	66.6	4A31	3.5	5.0	$1,800	Point Repair								
246	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	114.9	4A31	3.5	5.0	$1,800	Point Repair	$19,800	$21,600	$1,800	$43,199	1	$126,274	$62,999	$64,799
247	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	123.3	4A31	3.5	5.0	$1,800	Point Repair								
248	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	167.7	4A31	3.5	5.0	$1,800	Point Repair								
249	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	236.6	4A31	3.5	5.0	$1,800	Point Repair								
250	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	256.8	4A31	3.5	5.0	$1,800	Point Repair								
251	Norma St s/o Plum Upjohn Ave	42068-42091	42068-0	42091-332.3	332.30	10	VCP	FM	11	280.9	4A31	3.5	5.0	$1,800	Point Repair								
252	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	121.5	4A32	3.4	5.0	$1,650	Point Repair								
253	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	135.4	4A32	3.4	5.0	$1,650	Point Repair								
254	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	191.4	4A32	3.4	5.0	$1,650	Point Repair								
255	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	194.9	4A32	3.4	5.0	$1,650	Point Repair								
256	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	226.5	4A32	3.4	5.0	$1,650	Point Repair								
257	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	230.2	4A32	3.4	5.0	$1,650	Point Repair	$18,150	$21,450	$3,300	$37,972	2	$120,820	$56,122	$59,422
258	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	240.1	4A32	3.4	5.0	$1,650	Point Repair								
259	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	250.6	4A32	3.4	5.0	$1,650	Point Repair								
260	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	260.8	4A32	3.4	5.0	$1,650	Point Repair								
261	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.2	42267-0	345.20	8	VCP	FM	11	327.6	4A32	3.4	5.0	$1,650	Point Repair								
262	Ridgecrest Blvd e/o Sunset Pl	42266-42267	42266-345.4	42267-0	345.20	8	VCP	FM	11	334.4	4A32	3.4	5.0	$1,650	Point Repair								
263	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	6.3	4B32	3.9	5.0	$2,160	Point Repair								
264	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	38.9	4B32	3.9	5.0	$2,160	Point Repair								
265	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	46.9	4B32	3.9	5.0	$2,160	Point Repair								
266	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	88.7	4B32	3.9	5.0	$2,160	Point Repair								
267	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	101.0	4B32	3.9	5.0	$2,160	Point Repair								
268	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	129.9	4B32	3.9	5.0	$2,160	Point Repair	$23,760	$28,080	$4,320	$29,954	2	$79,290	$53,714	$58,034
269	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	134.1	4B32	3.9	5.0	$2,160	Point Repair								
270	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	138.1	4B32	3.9	5.0	$2,160	Point Repair								
271	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	150.3	4B32	3.9	5.0	$2,160	Point Repair								
272	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	158.5	4B32	3.9	5.0	$2,160	Point Repair								
273	Argus Ave w/o China Lake Blvd	52251-52252	52251-0	52252-176.2	176.20	15	VCP	FM	11	162.4	4B32	3.9	5.0	$2,160	Point Repair								
274	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	26.1	4A38	3.6	5.0	$1,650	Point Repair								
275	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	85.7	4A38	3.6	5.0	$1,650	Point Repair								
276	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	92.6	4A38	3.6	5.0	$1,650	Point Repair								
277	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	113.5	4A38	3.6	5.0	$1,650	Point Repair								
278	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	120.3	4A38	3.6	5.0	$1,650	Point Repair	$16,500	$29,700	$13,200	$41,624	8	$132,440	$58,124	$71,324
279	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	148.0	4A38	3.6	5.0	$1,650	Point Repair								
280	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	161.6	4A38	3.6	5.0	$1,650	Point Repair								
281	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	175.5	4A38	3.6	5.0	$1,650	Point Repair								
282	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	186.1	4A38	3.6	5.0	$1,650	Point Repair								
283	Perdew Ave w/o W. Alene Ave	62268-62304	62268-0	62304-378.4	378.40	8	VCP	FM	10	260.6	4A38	3.6	5.0	$1,650	Point Repair								
284	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	14.1	4C33	3.9	5.0	$1,650	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
285	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	31.3	4C33	3.9	5.0	$1,650	Point Repair								
286	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	180.5	4C33	3.9	5.0	$1,650	Point Repair								
287	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	183.4	4C33	3.9	5.0	$1,650	Point Repair								
288	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	187.0	4C33	3.9	5.0	$1,650	Point Repair								
289	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	187.0	4C33	3.9	5.0	$1,650	Point Repair								
290	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	207.9	4C33	3.9	5.0	$1,650	Point Repair	$23,100	$28,050	$4,950	$36,773	3	$117,005	$59,873	$64,823
291	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	213.8	4C33	3.9	5.0	$1,650	Point Repair								
292	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	238.5	4C33	3.9	5.0	$1,650	Point Repair								
293	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	253.9	4C33	3.9	5.0	$1,650	Point Repair								
294	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	264.6	4C33	3.9	5.0	$1,650	Point Repair								
295	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	284.1	4C33	3.9	5.0	$1,650	Point Repair								
296	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	312.3	4C33	3.9	5.0	$1,650	Point Repair								
297	Robertson Ave e/o Warner St	42201-42202	42201-0	42202-334.3	334.30	8	VCP	FM	14	323.7	4C33	3.9	5.0	$1,650	Point Repair								
298	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	35.6	4A33	3.8	5.0	$1,650	Point Repair								
299	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	158.3	4A33	3.8	5.0	$1,650	Point Repair								
300	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	167.3	4A33	3.8	5.0	$1,650	Point Repair								
301	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	170.5	4A33	3.8	5.0	$1,650	Point Repair								
302	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	173.5	4A33	3.8	5.0	$1,650	Point Repair								
303	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	185.7	4A33	3.8	5.0	$1,650	Point Repair	$18,150	$23,100	$4,950	$35,475	3	$112,875	$53,625	$58,575
304	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	232.0	4A33	3.8	5.0	$1,650	Point Repair								
305	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	241.1	4A33	3.8	5.0	$1,650	Point Repair								
306	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	265.3	4A33	3.8	5.0	$1,650	Point Repair								
307	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	268.9	4A33	3.8	5.0	$1,650	Point Repair								
308	Robertson Ave w/o China Lake Blvd	42203-42204	42203-0	42204-322.5	322.50	8	VCP	FM	11	308.5	4A33	3.8	5.0	$1,650	Point Repair								
309	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	49.7	4A34	3.7	5.0	$2,475	Point Repair								
310	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	90.4	4A34	3.7	5.0	$2,475	Point Repair								
311	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	102.7	4A34	3.7	5.0	$2,475	Point Repair								
312	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	160.1	4A34	3.7	5.0	$2,475	Point Repair								
313	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	176.3	4A34	3.7	5.0	$2,475	Point Repair	$24,750	$34,650	$9,900	$58,460	4	$161,160	$83,210	$93,110
314	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	197.1	4A34	3.7	5.0	$2,475	Point Repair								
315	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	229.0	4A34	3.7	5.0	$2,475	Point Repair								
316	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	270.1	4A34	3.7	5.0	$2,475	Point Repair								
317	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	290.8	4A34	3.7	5.0	$2,475	Point Repair								
318	California Ave e/o S. Gateway Blvd	44053-44054	44053-0	44054-316	316.00	18	VCP	FM	10	306.9	4A34	3.7	5.0	$2,475	Point Repair								
319	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	74.8	4A32	3.8	5.0	$1,800	Point Repair								
320	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	83.6	4A32	3.8	5.0	$1,800	Point Repair								
321	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	141.7	4A32	3.8	5.0	$1,800	Point Repair								
322	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	171.8	4A32	3.8	5.0	$1,800	Point Repair								
323	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	181.3	4A32	3.8	5.0	$1,800	Point Repair								
324	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	202.1	4A32	3.8	5.0	$1,800	Point Repair	$18,000	$21,600	$3,600	$41,990	2	$122,740	$59,990	$63,590
325	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	226.0	4A32	3.8	5.0	$1,800	Point Repair								
326	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	246.2	4A32	3.8	5.0	$1,800	Point Repair								
327	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	277.4	4A32	3.8	5.0	$1,800	Point Repair								
328	Las Flores Ave w/o Helena St	52106-52116	52106-0	52116-323	323.00	10	VCP	FM	10	290.9	4A32	3.8	5.0	$1,800	Point Repair								
329	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	35.1	4A35	3.7	5.0	$1,650	Point Repair								
330	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	44.3	4A35	3.7	5.0	$1,650	Point Repair								
331	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	53.5	4A35	3.7	5.0	$1,650	Point Repair								
332	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	78.0	4A35	3.7	5.0	$1,650	Point Repair								
333	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	81.1	4A35	3.7	5.0	$1,650	Point Repair								
334	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	89.6	4A35	3.7	5.0	$1,650	Point Repair	$16,500	$24,750	$8,250	$17,061	5	$54,285	$33,561	$41,811
335	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	95.4	4A35	3.7	5.0	$1,650	Point Repair								
336	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	95.4	4A35	3.7	5.0	$1,650	Point Repair								
337	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	97.8	4A35	3.7	5.0	$1,650	Point Repair								
338	Norma St n/o Atkins Ave	62270-62271	62270-0	62271-155.1	155.10	8	VCP	FM	10	104.8	4A35	3.7	5.0	$1,650	Point Repair								
339	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	4.8	4EOO	4.0	5.0	$1,950	Point Repair								
340	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	8.3	4EOO	4.0	5.0	$1,950	Point Repair								
341	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	12.1	4EOO	4.0	5.0	$1,950	Point Repair								
342	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	16.1	4EOO	4.0	5.0	$1,950	Point Repair								
343	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	20.1	4EOO	4.0	5.0	$1,950	Point Repair								
344	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	24.0	4EOO	4.0	5.0	$1,950	Point Repair	$19,500	$19,500	$0	$24,915	0	$68,101	$44,415	$44,415
345	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	31.7	4EOO	4.0	5.0	$1,950	Point Repair								
346	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	40.2	4EOO	4.0	5.0	$1,950	Point Repair								
347	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	44.4	4EOO	4.0	5.0	$1,950	Point Repair								
348	W. Howell Ave w/o china Lake Blvd	52209-52210	52209-166.1	52210-0	166.10	12	VCP	FM	10	160.8	4EOO	4.0	5.0	$1,950	Point Repair								
349	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	8.5	4A32	3.8	5.0	$1,800	Point Repair								
350	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	12.4	4A32	3.8	5.0	$1,800	Point Repair								
351	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	44.6	4A32	3.8	5.0	$1,800	Point Repair								
352	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	59.7	4A32	3.8	5.0	$1,800	Point Repair								
353	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	95.8	4A32	3.8	5.0	$1,800	Point Repair								
354	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	140.1	4A32	3.8	5.0	$1,800	Point Repair	$18,000	$21,600	$3,600	$36,751	2	$107,426	$54,751	$58,351
355	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	164.1	4A32	3.8	5.0	$1,800	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
356	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	172.3	4A32	3.8	5.0	$1,800	Point Repair								
357	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	200.7	4A32	3.8	5.0	$1,800	Point Repair								
358	Triangle Dr n/o china Lake Blvd	62283-62287	62283-0	62287-282.7	282.70	10	VCP	FM	10	273.4	4A32	3.8	5.0	$1,800	Point Repair								
359	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	42.0	4A38	3.6	5.0	$1,200	Point Repair								
360	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	54.4	4A38	3.6	5.0	$1,200	Point Repair								
361	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	57.6	4A38	3.6	5.0	$1,200	Point Repair								
362	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	72.9	4A38	3.6	5.0	$1,200	Point Repair								
363	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	103.5	4A38	3.6	5.0	$1,200	Point Repair	$12,000	$25,200	$13,200	$39,424	8	$125,440	$51,424	$64,624
364	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	168.1	4A38	3.6	5.0	$1,200	Point Repair								
365	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	174.3	4A38	3.6	5.0	$1,200	Point Repair								
366	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	259.3	4A38	3.6	5.0	$1,200	Point Repair								
367	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	268.4	4A38	3.6	5.0	$1,200	Point Repair								
368	China Lake n/o Triangle Dr	62285-62286	62285-0	62286-358.4	358.40	8	VCP	FM	10	283.5	4A38	3.6	5.0	$1,200	Point Repair								
369	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	9.7	4A3A	3.4	5.0	$1,800	Point Repair								
370	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	66.6	4A3A	3.4	5.0	$1,800	Point Repair								
371	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	90.9	4A3A	3.4	5.0	$1,800	Point Repair								
372	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	119.7	4A3A	3.4	5.0	$1,800	Point Repair								
373	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	123.7	4A3A	3.4	5.0	$1,800	Point Repair								
374	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	131.9	4A3A	3.4	5.0	$1,800	Point Repair								
375	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	189.0	4A3A	3.4	5.0	$1,800	Point Repair	$23,400	$41,400	$18,000	$43,225	10	$126,350	$66,625	$84,625
376	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	197.2	4A3A	3.4	5.0	$1,800	Point Repair								
377	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	213.7	4A3A	3.4	5.0	$1,800	Point Repair								
378	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	221.7	4A3A	3.4	5.0	$1,800	Point Repair								
379	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	295.1	4A3A	3.4	5.0	$1,800	Point Repair								
380	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	307.2	4A3A	3.4	5.0	$1,800	Point Repair								
381	Norma St. at Petris Ave	42066-42067	42066-0	42067-332.5	332.50	10	VCP	FM	13	323.4	4A3A	3.4	5.0	$1,800	Point Repair								
382	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	5.8	4F31	4.0	5.0	$1,200	Point Repair								
383	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	14.8	4F31	4.0	5.0	$1,200	Point Repair								
384	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	25.3	4F31	4.0	5.0	$1,200	Point Repair								
385	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	57.0	4F31	4.0	5.0	$1,200	Point Repair								
386	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	71.2	4F31	4.0	5.0	$1,200	Point Repair	$10,800	$12,000	$1,200	$24,220	1	$67,816	$35,020	$36,220
387	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	83.6	4F31	4.0	5.0	$1,200	Point Repair								
388	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	90.8	4F31	4.0	5.0	$1,200	Point Repair								
389	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	105.0	4F31	4.0	5.0	$1,200	Point Repair								
390	Norma St s/o Wilson Ave	42185(A)-42188	42185(A)-0	42188-242.2	242.20	6	VCP	FM	9	238.9	4F31	4.0	5.0	$1,200	Point Repair								
391	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	5.6	4923	3.9	4.9	$1,650	Point Repair								
392	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	12.4	4923	3.9	4.9	$1,650	Point Repair								
393	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	19.5	4923	3.9	4.9	$1,650	Point Repair								
394	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	23.1	4923	3.9	4.9	$1,650	Point Repair								
395	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	148.3	4923	3.9	4.9	$1,650	Point Repair	$14,850	$14,850	$0	$27,852	0	$88,620	$42,702	$42,702
396	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	166.0	4923	3.9	4.9	$1,650	Point Repair								
397	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	169.4	4923	3.9	4.9	$1,650	Point Repair								
398	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	176.4	4923	3.9	4.9	$1,650	Point Repair								
399	Ridgecrest Blvd e/o Sunset St	42260-42261	42260-0	42261-253.2	253.20	8	VCP	FM	9	250.5	4923	3.9	4.9	$1,650	Point Repair								
400	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	6.9	4933	3.9	4.9	$1,650	Point Repair								
401	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	17.7	4933	3.9	4.9	$1,650	Point Repair								
402	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	118.3	4933	3.9	4.9	$1,650	Point Repair								
403	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	173.6	4933	3.9	4.9	$1,650	Point Repair								
404	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	184.1	4933	3.9	4.9	$1,650	Point Repair	$14,850	$19,800	$4,950	$27,918	3	$88,830	$42,768	$47,718
405	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	194.6	4933	3.9	4.9	$1,650	Point Repair								
406	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	198.0	4933	3.9	4.9	$1,650	Point Repair								
407	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	205.0	4933	3.9	4.9	$1,650	Point Repair								
408	Ridgecrest Blvd e/o Sunset St (2p)	42261-42265	42261-0	42265-253.8	253.80	8	VCP	FM	9	211.9	4933	3.9	4.9	$1,650	Point Repair								
409	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	31.4	4932	3.8	4.9	$1,650	Point Repair								
410	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	47.1	4932	3.8	4.9	$1,650	Point Repair								
411	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	97.6	4932	3.8	4.9	$1,650	Point Repair								
412	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	116.0	4932	3.8	4.9	$1,650	Point Repair								
413	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	161.2	4932	3.8	4.9	$1,650	Point Repair	$14,850	$18,150	$3,300	$36,135	2	$114,975	$50,985	$54,285
414	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	164.2	4932	3.8	4.9	$1,650	Point Repair								
415	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	230.9	4932	3.8	4.9	$1,650	Point Repair								
416	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	316.3	4932	3.8	4.9	$1,650	Point Repair								
417	Ridgecrest Regional Hospital	62196-62197	62196-0	62197-328.5	328.50	8	VCP	FM	9	322.4	4932	3.8	4.9	$1,650	Point Repair								
418	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	15.1	4900	4.0	4.9	$1,950	Point Repair								
419	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	35.3	4900	4.0	4.9	$1,950	Point Repair								
420	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	55.7	4900	4.0	4.9	$1,950	Point Repair								
421	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	76.1	4900	4.0	4.9	$1,950	Point Repair								
422	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	88.2	4900	4.0	4.9	$1,950	Point Repair	$17,550	$17,550	$0	$27,900	0	$76,260	$45,450	$45,450
423	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	113.7	4900	4.0	4.9	$1,950	Point Repair								
424	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	117.7	4900	4.0	4.9	$1,950	Point Repair								
425	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	121.7	4900	4.0	4.9	$1,950	Point Repair								
426	Graaf Ave w/o China Lake Blvd	62289-62306	62289-0	62306-186	186.00	12	VCP	FM	9	166.7	4900	4.0	4.9	$1,950	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
427	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	44.1	4837	3.5	4.8	$2,475	Point Repair								
428	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	64.6	4837	3.5	4.8	$2,475	Point Repair								
429	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	134.1	4837	3.5	4.8	$2,475	Point Repair								
430	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	192.1	4837	3.5	4.8	$2,475	Point Repair								
431	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	204.8	4837	3.5	4.8	$2,475	Point Repair	$19,800	$37,125	$17,325	$53,114	7	$146,421	$72,914	$90,239
432	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	224.9	4837	3.5	4.8	$2,475	Point Repair								
433	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	233.4	4837	3.5	4.8	$2,475	Point Repair								
434	California Ave Btwn Greenlawn St and Jacquelyn Ct	43174-43177	43174-0	43177-287.1	287.10	18	VCP	FM	8	241.7	4837	3.5	4.8	$2,475	Point Repair								
435	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	102.2	4831	3.9	4.8	$2,550	Point Repair								
436	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	163.8	4831	3.9	4.8	$2,550	Point Repair								
437	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	194.6	4831	3.9	4.8	$2,550	Point Repair								
438	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	204.7	4831	3.9	4.8	$2,550	Point Repair								
439	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	240.6	4831	3.9	4.8	$2,550	Point Repair								
440	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	245.6	4831	3.9	4.8	$2,550	Point Repair								
441	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	260.7	4831	3.9	4.8	$2,550	Point Repair								
442	California Ave e/o Lilac St	44093-44101	44093-0	44101-320	320.00	21	VCP	FM	8	316.5	4831	3.9	4.8	$2,550	Point Repair	$20,400	$22,950	$2,550	$62,400	1	$176,800	$82,800	$85,350
443	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	11.8	4D37	3.8	5.0	$1,650	Point Repair								
444	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	21.0	4D37	3.8	5.0	$1,650	Point Repair								
445	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	27.2	4D37	3.8	5.0	$1,650	Point Repair								
446	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	30.5	4D37	3.8	5.0	$1,650	Point Repair								
447	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	39.5	4D37	3.8	5.0	$1,650	Point Repair								
448	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	70.2	4D37	3.8	5.0	$1,650	Point Repair								
449	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	76.7	4D37	3.8	5.0	$1,650	Point Repair								
450	Sanders St s/o Argus Ave	52233-52238	52233-0	52238-173.7	173.70	8	VCP	FM	8	156.8	4D37	3.8	5.0	$1,650	Point Repair	$13,200	$24,750	$11,550	$19,107	7	$60,795	$32,307	$43,857
451	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	4.9	4C35	3.8	5.0	$1,650	Point Repair								
452	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	21.6	4C35	3.8	5.0	$1,650	Point Repair								
453	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	45.3	4C35	3.8	5.0	$1,650	Point Repair								
454	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	117.3	4C35	3.8	5.0	$1,650	Point Repair								
455	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	123.6	4C35	3.8	5.0	$1,650	Point Repair								
456	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	232.0	4C35	3.8	5.0	$1,650	Point Repair								
457	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	241.1	4C35	3.8	5.0	$1,650	Point Repair								
458	From Gold Canyon St to Cisco St	53072(A)-53119	53072(A)-0	53119-266.7	266.70	8	VCP	FM	8	266.7	4C35	3.8	5.0	$1,650	Point Repair	$13,200	$21,450	$8,250	$29,337	5	$93,345	$42,537	$50,787
459	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	18.8	483A	3.4	4.8	$1,650	Point Repair								
460	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	31.4	483A	3.4	4.8	$1,650	Point Repair								
461	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	171.6	483A	3.4	4.8	$1,650	Point Repair								
462	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	255.4	483A	3.4	4.8	$1,650	Point Repair								
463	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	292.8	483A	3.4	4.8	$1,650	Point Repair								
464	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	299.0	483A	3.4	4.8	$1,650	Point Repair								
465	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	326.9	483A	3.4	4.8	$1,650	Point Repair								
466	Balsam St s/o Howell Ave	52198-52200	52198-0	52200-331.9	331.90	8	VCP	FM	8	329.9	483A	3.4	4.8	$1,650	Point Repair	$13,200	$31,350	$18,150	$36,509	11	$116,165	$49,709	$67,859
467	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	119.3	4836	3.6	4.8	$1,650	Point Repair								
468	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	149.9	4836	3.6	4.8	$1,650	Point Repair								
469	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	167.9	4836	3.6	4.8	$1,650	Point Repair								
470	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	267.8	4836	3.6	4.8	$1,650	Point Repair								
471	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	335.1	4836	3.6	4.8	$1,650	Point Repair	$13,200	$23,100	$9,900	$41,613	6	$132,405	$54,813	$64,713
472	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	350.5	4836	3.6	4.8	$1,650	Point Repair								
473	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	374.3	4836	3.6	4.8	$1,650	Point Repair								
474	W. Ward Ave w/o China Lake Blvd	62193-62197	62193-0	62197-378.3	378.30	8	VCP	FM	8	374.5	4836	3.6	4.8	$1,650	Point Repair								
475	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	32.0	483D	3.2	4.8	$2,160	Point Repair								
476	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	40.2	483D	3.2	4.8	$2,160	Point Repair								
477	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	56.1	483D	3.2	4.8	$2,160	Point Repair								
478	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	104.5	483D	3.2	4.8	$2,160	Point Repair								
479	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	110.1	483D	3.2	4.8	$2,160	Point Repair								
480	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	176.9	483D	3.2	4.8	$2,160	Point Repair								
481	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	227.6	483D	3.2	4.8	$2,160	Point Repair								
482	Fairview St s/o Las Flores Ave	52219-52220	52219-0	52220-332.9	332.90	15	VCP	FM	8	281.1	483D	3.2	4.8	$2,160	Point Repair	$17,280	$54,000	$36,720	$56,593	17	$149,805	$73,873	$110,593
483	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	37.6	4737	3.3	4.7	$1,650	Point Repair								
484	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	58.6	4737	3.3	4.7	$1,650	Point Repair								
485	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	119.3	4737	3.3	4.7	$1,650	Point Repair								
486	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	125.4	4737	3.3	4.7	$1,650	Point Repair								
487	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	195.0	4737	3.3	4.7	$1,650	Point Repair	$11,550	$23,100	$11,550	$34,144	7	$108,640	$45,694	$57,244
488	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	222.1	4737	3.3	4.7	$1,650	Point Repair								
489	S. Gemstone St s/o Calif Ave	43082-43091	43082-0	43091-310.4	310.40	8	VCP	FM	7	234.4	4737	3.3	4.7	$1,650	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
490	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	193.3	4A3F	3.2	5.0	$1,650	Point Repair								
491	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	199.7	4A3F	3.2	5.0	$1,650	Point Repair								
492	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	202.8	4A3F	3.2	5.0	$1,650	Point Repair								
493	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	212.2	4A3F	3.2	5.0	$1,650	Point Repair	$11,550	$28,050	$16,500	$34,496	10	$109,760	$46,046	$62,546
494	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	230.7	4A3F	3.2	5.0	$1,650	Point Repair								
495	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	246.2	4A3F	3.2	5.0	$1,650	Point Repair								
496	Sanders St n/o W. French Ave	52232-52233	52232-0	52233-313.6	313.60	8	VCP	FM	7	289.6	4A3F	3.2	5.0	$1,650	Point Repair								
497	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	10.4	4733	3.7	4.7	$1,650	Point Repair								
498	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	40.4	4733	3.7	4.7	$1,650	Point Repair								
499	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	103.6	4733	3.7	4.7	$1,650	Point Repair								
500	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	118.5	4733	3.7	4.7	$1,650	Point Repair	$11,550	$16,500	$4,950	$17,864	3	$56,840	$29,414	$34,364
501	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	127.1	4733	3.7	4.7	$1,650	Point Repair								
502	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	133.3	4733	3.7	4.7	$1,650	Point Repair								
503	From Gold Canyon St to Cisco St	53072-53072(A)	53072-0	53072(A)-162.4	162.40	8	VCP	FM	7	157.1	4733	3.7	4.7	$1,650	Point Repair								
504	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	39.9	4736	3.2	4.7	$1,800	Point Repair								
505	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	52.0	4736	3.2	4.7	$1,800	Point Repair								
506	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	124.4	4736	3.2	4.7	$1,800	Point Repair								
507	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	145.4	4736	3.2	4.7	$1,800	Point Repair	$12,600	$23,400	$10,800	$28,782	6	$84,132	$41,382	$52,182
508	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	157.5	4736	3.2	4.7	$1,800	Point Repair								
509	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	165.7	4736	3.2	4.7	$1,800	Point Repair								
510	Upjohn Ave Btwn Allen St and Norma St	42090-42091	42090-0	42091-221.4	221.40	10	VCP	FM	7	219.7	4736	3.2	4.7	$1,800	Point Repair								
511	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	15.0	4A21	3.8	5.0	$1,200	Point Repair								
512	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	36.3	4A21	3.8	5.0	$1,200	Point Repair								
513	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	52.5	4A21	3.8	5.0	$1,200	Point Repair								
514	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	56.1	4A21	3.8	5.0	$1,200	Point Repair	$8,400	$8,400	$0	$8,910	0	$24,948	$17,310	$17,310
515	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	63.1	4A21	3.8	5.0	$1,200	Point Repair								
516	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	75.7	4A21	3.8	5.0	$1,200	Point Repair								
517	Norma St n/o Haloid Ave	42185-42185(A)	42185-0	42185(A)-89.1	89.10	6	VCP	FM	7	82.5	4A21	3.8	5.0	$1,200	Point Repair								
518	Ridgecrest Blvd e/o Sierra View St	42255-42256	42255-0	42256-353.3	353.30	8	VCP	FM	3	63.9	4335	4.3	4.3	$1,650	Point Repair								
519	Ridgecrest Blvd e/o Sierra View St	42255-42256	42255-0	42256-353.3	353.30	8	VCP	FM	3	311.7	4335	4.3	4.3	$1,650	Point Repair	$4,950	$13,200	$8,250	$38,863	5	$123,655	$43,813	$52,063
520	Ridgecrest Blvd e/o Sierra View St	42255-42256	42255-0	42256-353.3	353.30	8	VCP	FM	3	339.4	4335	4.3	4.3	$1,650	Point Repair								
521	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	10.2	4739	3.2	4.7	$1,650	Point Repair								
522	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	41.3	4739	3.2	4.7	$1,650	Point Repair								
523	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	72.9	4739	3.2	4.7	$1,650	Point Repair								
524	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	111.0	4739	3.2	4.7	$1,650	Point Repair	$11,550	$26,400	$14,850	$37,972	9	$120,820	$49,522	$64,372
525	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	159.8	4739	3.2	4.7	$1,650	Point Repair								
526	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	286.2	4739	3.2	4.7	$1,650	Point Repair								
527	Ridgecrest Blvd w/o Station Ave	42273-42274	42273-0	42274-345.2	345.20	8	VCP	FM	7	314.3	4739	3.2	4.7	$1,650	Point Repair								
528	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	1.5	4700	4.0	4.7	$2,160	Point Repair								
529	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	17.0	4700	4.0	4.7	$2,160	Point Repair								
530	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	239.9	4700	4.0	4.7	$2,160	Point Repair								
531	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	251.5	4700	4.0	4.7	$2,160	Point Repair	$15,120	$15,120	$0	$54,077	0	$143,145	$69,197	$69,197
532	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	263.5	4700	4.0	4.7	$2,160	Point Repair								
533	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	288.2	4700	4.0	4.7	$2,160	Point Repair								
534	S. China Lake Blvd n/o Calif. Ave	42277-42278	42277-0	42278-318.1	318.10	15	VCP	FM	7	300.4	4700	4.0	4.7	$2,160	Point Repair								
535	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	7.7	473B	3.2	4.7	$1,650	Point Repair								
536	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	94.1	473B	3.2	4.7	$1,650	Point Repair								
537	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	181.1	473B	3.2	4.7	$1,650	Point Repair								
538	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	187.8	473B	3.2	4.7	$1,650	Point Repair	$11,550	$36,300	$24,750	$35,244	15	$112,140	$46,794	$71,544
539	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	210.6	473B	3.2	4.7	$1,650	Point Repair								
540	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	224.2	473B	3.2	4.7	$1,650	Point Repair								
541	S. Desert Candles St s/o church Ave	43115-43118	43118-0	43115-320.4	320.40	8	VCP	FM	7	277.3	473B	3.2	4.7	$1,650	Point Repair								
542	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	20.5	4734	3.6	4.7	$1,800	Point Repair								
543	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	159.6	4734	3.6	4.7	$1,800	Point Repair								
544	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	200.0	4734	3.6	4.7	$1,800	Point Repair								
545	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	208.1	4734	3.6	4.7	$1,800	Point Repair	$12,600	$19,800	$7,200	$42,926	4	$125,476	$55,526	$62,726
546	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	232.8	4734	3.6	4.7	$1,800	Point Repair								
547	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	259.1	4734	3.6	4.7	$1,800	Point Repair								
548	W. Las Flores Ave e/o Alvord St	52125-52131	52125-0	52131-330.2	330.20	10	VCP	FM	7	307.7	4734	3.6	4.7	$1,800	Point Repair								
549	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	259.3	473C	3.3	4.7	$1,650	Point Repair								
550	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	262.3	473C	3.3	4.7	$1,650	Point Repair								
551	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	265.3	473C	3.3	4.7	$1,650	Point Repair								
552	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	268.6	473C	3.3	4.7	$1,650	Point Repair	$11,550	$47,850	$36,300	$39,831	22	$126,735	$51,381	$87,681
553	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	289.8	473C	3.3	4.7	$1,650	Point Repair								
554	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	295.7	473C	3.3	4.7	$1,650	Point Repair								
555	Inyokern Rd 4p e/o Norma St	62275-62276	62275-0	62276-362.1	362.10	8	VCP	FM	7	337.9	473C	3.3	4.7	$1,650	Point Repair								
556	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	135.1	4631	3.9	4.6	$2,475	Point Repair								
557	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	161.1	4631	3.9	4.6	$2,475	Point Repair								
558	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	171.2	4631	3.9	4.6	$2,475	Point Repair	$14,850	$17,325	$2,475	$49,210	1	$135,660	$64,060	$66,535
559	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	187.1	4631	3.9	4.6	$2,475	Point Repair								
560	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	202.0	4631	3.9	4.6	$2,475	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
561	California Ave w/o Richmond St	44058-44077	44058-0	44077-266	266.00	18	VCP	FM	6	227.7	4631	3.9	4.6	$2,475	Point Repair								
562	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	44.9	4634	3.6	4.6	$1,650	Point Repair								
563	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	72.0	4634	3.6	4.6	$1,650	Point Repair								
564	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	80.7	4634	3.6	4.6	$1,650	Point Repair	$9,900	$16,500	$6,600	$38,247	4	$121,695	$48,147	$54,747
565	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	105.1	4634	3.6	4.6	$1,650	Point Repair								
566	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	166.2	4634	3.6	4.6	$1,650	Point Repair								
567	Alley n/o Atkins Ave w/o Norma St	62261-62271	62261-347.7	62271-0	347.70	8	VCP	FM	6	186.9	4634	3.6	4.6	$1,650	Point Repair								
568	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	8.6	4633	3.7	4.6	$2,160	Point Repair								
569	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	21.3	4633	3.7	4.6	$2,160	Point Repair								
570	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	33.1	4633	3.7	4.6	$2,160	Point Repair	$12,960	$19,440	$6,480	$56,287	3	$148,995	$69,247	$75,727
571	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	74.5	4633	3.7	4.6	$2,160	Point Repair								
572	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	153.6	4633	3.7	4.6	$2,160	Point Repair								
573	S. China Lake Blvd n/o Wilson Ave	42196-42205	42196-331.1	42205-0	331.10	15	VCP	FM	6	237.2	4633	3.7	4.6	$2,160	Point Repair								
574	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	14.4	4636	3.5	4.6	$2,160	Point Repair								
575	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	17.8	4636	3.5	4.6	$2,160	Point Repair								
576	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	78.3	4636	3.5	4.6	$2,160	Point Repair	$12,960	$25,920	$12,960	$28,067	6	$74,295	$41,027	$53,987
577	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	11.5	4636	3.5	4.6	$2,160	Point Repair								
578	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	126.8	4636	3.5	4.6	$2,160	Point Repair								
579	Argus Ave e/o Balsam St	52246-52251	52246-165.1	52251-0	165.10	15	VCP	FM	6	146.6	4636	3.5	4.6	$2,160	Point Repair								
580	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	37.3	463C	3.5	4.6	$1,950	Point Repair								
581	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	41.9	4633	3.5	4.6	$1,950	Point Repair								
582	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	70.3	4633	3.5	4.6	$1,950	Point Repair	$11,700	$17,550	$5,850	$49,590	3	$135,546	$61,290	$67,140
583	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	94.3	4633	3.5	4.6	$1,950	Point Repair								
584	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	177.5	4633	3.5	4.6	$1,950	Point Repair								
585	Alley w/o China Lake Blvd n/o Reeves Ave	62307-62320	62307-0	62320-330.6	330.60	12	VCP	FM	6	264.0	4633	3.5	4.6	$1,950	Point Repair								
586	Norma St. ns/o Upjohn Ave	42067-42068	42067-0	42068-326.7	326.70	10	VCP	FM	5	55.8	4537	3.3	4.5	$1,800	Point Repair								
587	Norma St. ns/o Upjohn Ave	42067-42068	42067-0	42068-326.7	326.70	10	VCP	FM	5	76.0	4537	3.3	4.5	$1,800	Point Repair								
588	Norma St. ns/o Upjohn Ave	42067-42068	42067-0	42068-326.7	326.70	10	VCP	FM	5	100.6	4537	3.3	4.5	$1,800	Point Repair	$9,000	$21,600	$12,600	$42,471	7	$124,146	$51,471	$64,071
589	Norma St. ns/o Upjohn Ave	42067-42068	42067-0	42068-326.7	326.70	10	VCP	FM	5	239.3	4537	3.3	4.5	$1,800	Point Repair								
590	Norma St. ns/o Upjohn Ave	42067-42068	42067-0	42068-326.7	326.70	10	VCP	FM	5	308.4	4537	3.3	4.5	$1,800	Point Repair								
591	California Ave e/o Richmond St	44081-44088	44081-0	44088-317.3	317.30	21	VCP	FM	5	6.1	4531	3.8	4.5	$2,550	Point Repair								
592	California Ave e/o Richmond St	44081-44088	44081-0	44088-317.3	317.30	21	VCP	FM	5	82.6	4531	3.8	4.5	$2,550	Point Repair								
593	California Ave e/o Richmond St	44081-44088	44081-0	44088-317.3	317.30	21	VCP	FM	5	102.5	4531	3.8	4.5	$2,550	Point Repair	$12,750	$15,300	$2,550	$61,874	1	$175,308	$74,624	$77,174
594	California Ave e/o Richmond St	44081-44088	44081-0	44088-317.3	317.30	21	VCP	FM	5	128.1	4531	3.8	4.5	$2,550	Point Repair								
595	California Ave e/o Richmond St	44081-44088	44081-0	44088-317.3	317.30	21	VCP	FM	5	300.9	4531	3.8	4.5	$2,550	Point Repair								
596	Sanders St n/o Panamint Ave	52228-52232	52228-0	52232-307.1	307.10	8	VCP	FM	4	92.0	4435	3.4	4.4	$1,650	Point Repair								
597	Sanders St n/o Panamint Ave	52228-52232	52228-0	52232-307.1	307.10	8	VCP	FM	4	95.1	4435	3.4	4.4	$1,650	Point Repair	$6,600	$14,850	$8,250	$33,781	5	$107,485	$40,381	$48,631
598	Sanders St n/o Panamint Ave	52228-52232	52228-0	52232-307.1	307.10	8	VCP	FM	4	128.5	4435	3.4	4.4	$1,650	Point Repair								
599	Sanders St n/o Panamint Ave	52228-52232	52228-0	52232-307.1	307.10	8	VCP	FM	4	187.5	4435	3.4	4.4	$1,650	Point Repair								
600	Sanders St s/o Coso Ave	52236-52237	52236-0	52237-330.2	330.20	8	VCP	FM	5	5.2	4533	3.6	4.5	$1,650	Point Repair								
601	Sanders St s/o Coso Ave	52236-52237	52236-0	52237-330.2	330.20	8	VCP	FM	5	7.7	4533	3.6	4.5	$1,650	Point Repair								
602	Sanders St s/o Coso Ave	52236-52237	52236-0	52237-330.2	330.20	8	VCP	FM	5	20.8	4533	3.6	4.5	$1,650	Point Repair	$8,250	$13,200	$4,950	$36,322	3	$115,570	$44,572	$49,522
603	Sanders St s/o Coso Ave	52236-52237	52236-0	52237-330.2	330.20	8	VCP	FM	5	166.8	4533	3.6	4.5	$1,650	Point Repair								
604	Sanders St s/o Coso Ave	52236-52237	52236-0	52237-330.2	330.20	8	VCP	FM	5	203.8	4533	3.6	4.5	$1,650	Point Repair								
605	Ridgecrest Blvd e/o Station Ave	42274-42275	42274-0	42275-355.3	355.30	8	VCP	FM	5	3.5	453A	2.9	4.5	$1,650	Point Repair								
606	Ridgecrest Blvd e/o Station Ave	42274-42275	42274-0	42275-355.3	355.30	8	VCP	FM	5	75.8	453A	2.9	4.5	$1,650	Point Repair								
607	Ridgecrest Blvd e/o Station Ave	42274-42275	42274-0	42275-355.3	355.30	8	VCP	FM	5	230.2	453A	2.9	4.5	$1,650	Point Repair	$8,250	$24,750	$16,500	$39,083	10	$124,355	$47,333	$63,833
608	Ridgecrest Blvd e/o Station Ave	42274-42275	42274-0	42275-355.3	355.30	8	VCP	FM	5	268.6	453A	2.9	4.5	$1,650	Point Repair								
609	Ridgecrest Blvd e/o Station Ave	42274-42275	42274-0	42275-355.3	355.30	8	VCP	FM	5	351.4	453A	2.9	4.5	$1,650	Point Repair								
610	Balsam St n/o Howell Ave	52199-52200	52199-0	52200-300.3	300.30	8	VCP	FM	5	229.1	453E	3.1	4.5	$1,650	Point Repair								
611	Balsam St n/o Howell Ave	52199-52200	52199-0	52200-300.3	300.30	8	VCP	FM	5	259.5	4536	3.1	4.5	$1,650	Point Repair								
612	Balsam St n/o Howell Ave	52199-52200	52199-0	52200-300.3	300.30	8	VCP	FM	5	265.5	4536	3.1	4.5	$1,650	Point Repair	$8,250	$18,150	$9,900	$33,033	6	$105,105	$41,283	$51,183
613	Balsam St n/o Howell Ave	52199-52200	52199-0	52200-300.3	300.30	8	VCP	FM	5	265.5	4536	3.1	4.5	$1,650	Point Repair								
614	Balsam St n/o Howell Ave	52199-52200	52199-0	52200-300.3	300.30	8	VCP	FM	5	296.8	4536	3.1	4.5	$1,650	Point Repair								
615	Church Ave e/o S. Desert Candles St	43117-43118	43117-0	43118-263.1	263.10	8	VCP	FM	5	80.7	453D	3.2	4.5	$1,650	Point Repair								
616	Church Ave e/o S. Desert Candles St	43117-43118	43117-0	43118-263.1	263.10	8	VCP	FM	5	138.0	453D	3.2	4.5	$1,650	Point Repair								
617	Church Ave e/o S. Desert Candles St	43117-43118	43117-0	43118-263.1	263.10	8	VCP	FM	5	154.0	453D	3.2	4.5	$1,650	Point Repair	$8,250	$39,600	$31,350	$28,941	19	$92,085	$37,191	$68,541
618	Church Ave e/o S. Desert Candles St	43117-43118	43117-0	43118-263.1	263.10	8	VCP	FM	5	200.5	453D	3.2	4.5	$1,650	Point Repair								
619	Church Ave e/o S. Desert Candles St	43117-43118	43117-0	43118-263.1	263.10	8	VCP	FM	5	244.3	453D	3.2	4.5	$1,650	Point Repair								
620	Inyokern Rd 3p e/o Norma St	62274-62275	62274-0	62275-365	365.00	8	VCP	FM	5	7.3	453A	3.3	4.5	$1,650	Point Repair								
621	Inyokern Rd 3p e/o Norma St	62274-62275	62274-0	62275-365	365.00	8	VCP	FM	5	74.0	453A	3.3	4.5	$1,650	Point Repair								
622	Inyokern Rd 3p e/o Norma St	62274-62275	62274-0	62275-365	365.00	8	VCP	FM	5	126.0	453A	3.3	4.5	$1,650	Point Repair	$8,250	$31,350	$23,100	$40,150	14	$127,750	$48,400	$71,500
623	Inyokern Rd 3p e/o Norma St	62274-62275	62274-0	62275-365	365.00	8	VCP	FM	5	132.1	453A	3.3	4.5	$1,650	Point Repair								
624	Inyokern Rd 3p e/o Norma St	62274-62275	62274-0	62275-365	365.00	8	VCP	FM	5	232.6	453A	3.3	4.5	$1,650	Point Repair								
625	E/O china Lake Blvd s/o Bowman Rd	32041-32042	32041-0	32042-454.1	454.10	12	VCP	FM	4	182.6	4432	3.2	4.4	$1,950	Point Repair								
626	E/O china Lake Blvd s/o Bowman Rd	32041-32042	32041-0	32042-454.1	454.10	12	VCP	FM	4	187.0	4432	3.2	4.4	$1,950	Point Repair	$7,800	$11,700	$3,900	$68,115	2	$186,181	$75,915	$79,815
627	E/O china Lake Blvd s/o Bowman Rd	32041-32042	32041-0	32042-454.1	454.10	12	VCP	FM	4	242.3	4432	3.2	4.4	$1,950	Point Repair								
628	E/O china Lake Blvd s/o Bowman Rd	32041-32042	32041-0	32042-454.1	454.10	12	VCP	FM	4	314.2	4432	3.2	4.4	$1,950	Point Repair								
629	E. California Ave Btwn S. Gemstone St and S. Gold Canyon St	43091-43101	43091-0	43101-330.3	330.30	18	VCP	FM	4	105.7	4434	3.3	4.4	$2,475	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
630	E. California Ave Btwn S. Gemstone St and S. Gold Canyon St	43091-43101	43091-0	43101-330.3	330.30	18	VCP	FM	4	111.1	4434	3.3	4.4	$2,475	Point Repair	$9,900	$19,800	$9,900	$61,106	4	$168,453	$71,006	$80,906
631	E. California Ave Btwn S. Gemstone St and S. Gold Canyon St	43091-43101	43091-0	43101-330.3	330.30	18	VCP	FM	4	182.7	4434	3.3	4.4	$2,475	Point Repair								
632	E. California Ave Btwn S. Gemstone St and S. Gold Canyon St	43091-43101	43091-0	43101-330.3	330.30	18	VCP	FM	4	314.9	4434	3.3	4.4	$2,475	Point Repair								
633	Alley s/o Ridgecrest Blvd w/o S. Gemstone St	43152-43153	43152-0	43153-187	187.00	8	VCP	FM	4	10.6	4433	3.6	4.4	$1,650	Point Repair	$6,600	$11,550	$4,950	$20,570	3	$65,450	$27,170	$32,120
634	Alley s/o Ridgecrest Blvd w/o S. Gemstone St	43152-43153	43152-0	43153-187	187.00	8	VCP	FM	4	35.2	4433	3.6	4.4	$1,650	Point Repair								
635	Alley s/o Ridgecrest Blvd w/o S. Gemstone St	43152-43153	43152-0	43153-187	187.00	8	VCP	FM	4	90.4	4433	3.6	4.4	$1,650	Point Repair								
636	Alley s/o Ridgecrest Blvd w/o S. Gemstone St	43152-43153	43152-0	43153-187	187.00	8	VCP	FM	4	110.2	4433	3.6	4.4	$1,650	Point Repair								
637	California Ave w/o Forest Knoll St	43177-43180	43177-0	43180-286	286.00	18	VCP	FM	4	56.9	4432	3.7	4.4	$2,475	Point Repair	$9,900	$14,850	$4,950	$52,910	2	$145,860	$62,810	$67,760
638	California Ave w/o Forest Knoll St	43177-43180	43177-0	43180-286	286.00	18	VCP	FM	4	196.6	4432	3.7	4.4	$2,475	Point Repair								
639	California Ave w/o Forest Knoll St	43177-43180	43177-0	43180-286	286.00	18	VCP	FM	4	212.8	4432	3.7	4.4	$2,475	Point Repair								
640	California Ave w/o Forest Knoll St	43177-43180	43177-0	43180-286	286.00	18	VCP	FM	4	225.4	4432	3.7	4.4	$2,475	Point Repair								
641	California Ave e/o Primerose St	43215-43218	43215-0	43218-286.1	286.10	18	VCP	FM	4	30.9	4400	4.0	4.4	$2,475	Point Repair	$9,900	$9,900	$0	$52,929	0	$145,911	$62,829	$62,829
642	California Ave e/o Primerose St	43215-43218	43215-0	43218-286.1	286.10	18	VCP	FM	4	42.9	4400	4.0	4.4	$2,475	Point Repair								
643	California Ave e/o Primerose St	43215-43218	43215-0	43218-286.1	286.10	18	VCP	FM	4	174.2	4400	4.0	4.4	$2,475	Point Repair								
644	California Ave e/o Primerose St	43215-43218	43215-0	43218-286.1	286.10	18	VCP	FM	4	202.1	4400	4.0	4.4	$2,475	Point Repair								
645	Sunset Pl n/o Upjohn Ave	42089-42090	42089-400	42090-0	400.00	6	VCP	FM	4	15.6	4C00	4.0	5.0	$1,200	Point Repair	$4,800	$4,800	$0	$40,000	0	$112,000	$44,800	$44,800
646	Sunset Pl n/o Upjohn Ave	42089-42090	42089-400	42090-0	400.00	6	VCP	FM	4	22.5	4C00	4.0	5.0	$1,200	Point Repair								
647	Sunset Pl n/o Upjohn Ave	42089-42090	42089-400	42090-0	400.00	6	VCP	FM	4	29.5	4C00	4.0	5.0	$1,200	Point Repair								
648	Sunset Pl n/o Upjohn Ave	42089-42090	42089-400	42090-0	400.00	6	VCP	FM	4	133.8	4C00	4.0	5.0	$1,200	Point Repair								
649	Sunset St s/o Ridgecrest Blvd	42259-42260	42259-0	42260-389.4	389.40	8	VCP	FM	4	33.8	4432	3.0	4.4	$1,650	Point Repair	$6,600	$9,900	$3,300	$42,834	2	$136,290	$49,434	$52,734
650	Sunset St s/o Ridgecrest Blvd	42259-42260	42259-0	42260-389.4	389.40	8	VCP	FM	4	198.3	4432	3.0	4.4	$1,650	Point Repair								
651	Sunset St s/o Ridgecrest Blvd	42259-42260	42259-0	42260-389.4	389.40	8	VCP	FM	4	230.5	4432	3.0	4.4	$1,650	Point Repair								
652	Sunset St s/o Ridgecrest Blvd	42259-42260	42259-0	42260-389.4	389.40	8	VCP	FM	4	232.9	4432	3.0	4.4	$1,650	Point Repair								
653	Rosstrand Btwn church Ave and Ridgecrest Blvd	42263-42264	42263-0	42264-392.4	394.20	8	VCP	FM	4	12.3	4431	3.8	4.4	$1,650	Point Repair	$6,600	$8,250	$1,650	$43,362	1	$137,970	$49,962	$51,612
654	Rosstrand Btwn church Ave and Ridgecrest Blvd	42263-42264	42263-0	42264-392.4	394.20	8	VCP	FM	4	75.0	4431	3.8	4.4	$1,650	Point Repair								
655	Rosstrand Btwn church Ave and Ridgecrest Blvd	42263-42264	42263-0	42264-392.4	394.20	8	VCP	FM	4	335.8	4431	3.8	4.4	$1,650	Point Repair								
656	Rosstrand Btwn church Ave and Ridgecrest Blvd	42263-42264	42263-0	42264-392.4	394.20	8	VCP	FM	4	339.7	4431	3.8	4.4	$1,650	Point Repair								
657	Argus Ave w/o Norma St	52012-52013	52012-352	52013-0	352.00	8	VCP	FM	4	4.5	4400	4.0	4.4	$1,650	Point Repair	$6,600	$6,600	$0	$38,720	0	$123,200	$45,320	$45,320
658	Argus Ave w/o Norma St	52012-52013	52012-352	52013-0	352.00	8	VCP	FM	4	198.1	4400	4.0	4.4	$1,650	Point Repair								
659	Argus Ave w/o Norma St	52012-52013	52012-352	52013-0	352.00	8	VCP	FM	4	234.7	4400	4.0	4.4	$1,650	Point Repair								
660	Argus Ave w/o Norma St	52012-52013	52012-352	52013-0	352.00	8	VCP	FM	4	277.4	4400	4.0	4.4	$1,650	Point Repair								
661	Norma St s/o coso Ave	52014-52015	52014-0	52015-330.8	330.80	8	VCP	FM	4	134.2	443A	3.3	4.4	$1,650	Point Repair	$6,600	$24,750	$18,150	$36,388	11	$115,780	$42,988	$61,138
662	Norma St s/o coso Ave	52014-52015	52014-0	52015-330.8	330.80	8	VCP	FM	4	179.8	443A	3.3	4.4	$1,650	Point Repair								
663	Norma St s/o coso Ave	52014-52015	52014-0	52015-330.8	330.80	8	VCP	FM	4	244.1	443A	3.3	4.4	$1,650	Point Repair								
664	Norma St s/o coso Ave	52014-52015	52014-0	52015-330.8	330.80	8	VCP	FM	4	259.9	443A	3.3	4.4	$1,650	Point Repair								
665	Norma St n/o coso Ave	52015-52016	52015-0	52016-334.3	334.30	8	VCP	FM	4	87.1	443B	3.2	4.4	$1,650	Point Repair	$6,600	$31,350	$24,750	$36,773	15	$117,005	$43,373	$68,123
666	Norma St n/o coso Ave	52015-52016	52015-0	52016-334.3	334.30	8	VCP	FM	4	96.4	443B	3.2	4.4	$1,650	Point Repair								
667	Norma St n/o coso Ave	52015-52016	52015-0	52016-334.3	334.30	8	VCP	FM	4	193.7	443B	3.2	4.4	$1,650	Point Repair								
668	Norma St n/o coso Ave	52015-52016	52015-0	52016-334.3	334.30	8	VCP	FM	4	280.4	443B	3.2	4.4	$1,650	Point Repair								
669	Balsam St n/o Felspar Ave	52197-52198	52197-332.8	52198-0	332.80	8	VCP	FM	4	3.9	4433	3.6	4.4	$1,650	Point Repair	$6,600	$11,550	$4,950	$36,608	3	$116,480	$43,208	$48,158
670	Balsam St n/o Felspar Ave	52197-52198	52197-332.8	52198-0	332.80	8	VCP	FM	4	22.6	4433	3.6	4.4	$1,650	Point Repair								
671	Balsam St n/o Felspar Ave	52197-52198	52197-332.8	52198-0	332.80	8	VCP	FM	4	68.7	4433	3.6	4.4	$1,650	Point Repair								
672	Balsam St n/o Felspar Ave	52197-52198	52197-332.8	52198-0	332.80	8	VCP	FM	4	291.9	4433	3.6	4.4	$1,650	Point Repair								
673	Norma St s/o Inyokern Rd	62271-62272	62271-0	62272-136.1	136.10	8	VCP	FM	4	17.3	443A	3.3	4.4	$1,650	Point Repair	$6,600	$23,100	$16,500	$14,971	10	$47,635	$21,571	$38,071
674	Norma St s/o Inyokern Rd	62271-62272	62271-0	62272-136.1	136.10	8	VCP	FM	4	51.4	443A	3.3	4.4	$1,650	Point Repair								
675	Norma St s/o Inyokern Rd	62271-62272	62271-0	62272-136.1	136.10	8	VCP	FM	4	66.7	443A	3.3	4.4	$1,650	Point Repair								
676	Norma St s/o Inyokern Rd	62271-62272	62271-0	62272-136.1	136.10	8	VCP	FM	4	88.2	443A	3.3	4.4	$1,650	Point Repair								
677	S. China Lake Blvd n/o Church Ave	42243-42244	42243-330.9	42244-0	330.90	15	VCP	FM	4	4.7	4431	3.8	4.4	$2,160	Point Repair	$8,640	$10,800	$2,160	$56,253	1	$148,905	$64,893	$67,053
678	S. China Lake Blvd n/o Church Ave	42243-42244	42243-330.9	42244-0	330.90	15	VCP	FM	4	10.4	4431	3.8	4.4	$2,160	Point Repair								
679	S. China Lake Blvd n/o Church Ave	42243-42244	42243-330.9	42244-0	330.90	15	VCP	FM	4	22.5	4431	3.8	4.4	$2,160	Point Repair								
680	S. China Lake Blvd n/o Church Ave	42243-42244	42243-330.9	42244-0	330.90	15	VCP	FM	4	164.2	4431	3.8	4.4	$2,160	Point Repair								
681	W. Las Flores Ave e/o Warner St	52131-52219	52219-0	52131-334.6	334.60	10	VCP	FM	4	65.9	4435	3.4	4.4	$1,800	Point Repair	$7,200	$16,200	$9,000	$43,498	5	$127,148	$50,698	$59,698
682	W. Las Flores Ave e/o Warner St	52131-52219	52219-0	52131-334.6	334.60	10	VCP	FM	4	69.7	4435	3.4	4.4	$1,800	Point Repair								
683	W. Las Flores Ave e/o Warner St	52131-52219	52219-0	52131-334.6	334.60	10	VCP	FM	4	92.8	4435	3.4	4.4	$1,800	Point Repair								
684	W. Las Flores Ave e/o Warner St	52131-52219	52219-0	52131-334.6	334.60	10	VCP	FM	4	125.1	4435	3.4	4.4	$1,800	Point Repair								
685	Holly Canyon St n/o church Ave	43123-43124	43123-308	43124-0	308.00	8	VCP	FM	3	11.1	4335	3.4	4.3	$1,650	Point Repair	$4,950	$13,200	$8,250	$33,880	5	$107,800	$38,830	$47,080
686	Holly Canyon St n/o church Ave	43123-43124	43123-308	43124-0	308.00	8	VCP	FM	3	172.6	4335	3.4	4.3	$1,650	Point Repair								
687	Holly Canyon St n/o church Ave	43123-43124	43123-308	43124-0	308.00	8	VCP	FM	3	228.0	4335	3.4	4.3	$1,650	Point Repair								
688	California Ave e/o Orchard St	43218-44053	43218-0	44053-326.1	326.10	18	VCP	FM	3	142.0	4332	3.6	4.3	$2,475	Point Repair	$7,425	$12,375	$4,950	$60,329	2	$166,311	$67,754	$72,704
689	California Ave e/o Orchard St	43218-44053	43218-0	44053-326.1	326.10	18	VCP	FM	3	301.0	4332	3.6	4.3	$2,475	Point Repair								
690	California Ave e/o Orchard St	43218-44053	43218-0	44053-326.1	326.10	18	VCP	FM	3	314.0	4332	3.6	4.3	$2,475	Point Repair								
691	California Ave w/o Valley St	44054-44057	44054-0	44057-316.5	316.50	18	VCP	FM	3	94.3	4333	3.5	4.3	$2,475	Point Repair	$7,425	$14,850	$7,425	$58,553	3	$161,415	$65,978	$73,403
692	California Ave w/o Valley St	44054-44057	44054-0	44057-316.5	316.50	18	VCP	FM	3	188.1	4333	3.5	4.3	$2,475	Point Repair								
693	California Ave w/o Valley St	44054-44057	44054-0	44057-316.5	316.50	18	VCP	FM	3	203.4	4333	3.5	4.3	$2,475	Point Repair								
694	Balsam St n/o Argus Ave	52245-52246	52245-0	52246-328	328.00	8	VCP	FM	3	235.8	4333	3.5	4.3	$1,650	Point Repair	$4,950	$9,900	$4,950	$36,080	3	$114,800	$41,030	$45,980
695	Balsam St n/o Argus Ave	52245-52246	52245-0	52246-328	328.00	8	VCP	FM	3	326.1	4333	3.5	4.3	$1,650	Point Repair								
696	Balsam St n/o Argus Ave	52245-52246	52245-0	52246-328	328.00	8	VCP	FM	3	327.3	4333	3.5	4.3	$1,650	Point Repair								
697	N. Sanders St s/o W. Station Ave	52258-42274	52258-0	42274-255.3	255.30	8	VCP	FM	3	46.0	4300	4.0	4.3	$1,650	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
698	N. Sanders St s/o W. Station Ave	52258-42274	52258-0	42274-255.3	255.30	8	VCP	FM	3	158.2	4300	4.0	4.3	$1,650	Point Repair	$4,950	$4,950	$0	$28,083	0	$89,355	$33,033	$33,033
699	N. Sanders St s/o W. Station Ave	52258-42274	52258-0	42274-255.3	255.30	8	VCP	FM	3	248.8	4300	4.0	4.3	$1,650	Point Repair								
700	Cisco St w/o Sandora St	53071-53072	53071-0	53072-360.5	360.50	8	VCP	FM	3	10.9	4338	3.2	4.3	$1,650	Point Repair	$4,950	$18,150	$13,200	$39,655	8	$126,175	$44,605	$57,805
701	Cisco St w/o Sandora St	53071-53072	53071-0	53072-360.5	360.50	8	VCP	FM	3	277.5	4338	3.2	4.3	$1,650	Point Repair								
702	Cisco St w/o Sandora St	53071-53072	53071-0	53072-360.5	360.50	8	VCP	FM	3	322.4	4338	3.2	4.3	$1,650	Point Repair								
703	Norma St s/o Haloid Ave	42184-42185	42184-200.8	42185-0	200.80	6	VCP	FM	3	37.2	4800	4.0	4.8	$1,650	Point Repair	$4,950	$4,950	$0	$20,080	0	$56,224	$25,030	$25,030
704	Norma St s/o Haloid Ave	42184-42185	42184-200.8	42185-0	200.80	6	VCP	FM	3	91.4	4800	4.0	4.8	$1,650	Point Repair								
705	Norma St s/o Haloid Ave	42184-42185	42184-200.8	42185-0	200.80	6	VCP	FM	3	109.2	4800	4.0	4.8	$1,650	Point Repair								
706	Ridgecrest Blvd w/o Sunset St	42256-42260	42256-332.3	42260-0	332.30	8	VCP	FM	3	14.0	4333	3.8	4.3	$1,650	Point Repair	$4,950	$9,900	$4,950	$36,553	3	$116,305	$41,503	$46,453
707	Ridgecrest Blvd w/o Sunset St	42256-42260	42256-332.3	42260-0	332.30	8	VCP	FM	3	80.2	4333	3.8	4.3	$1,650	Point Repair								
708	Ridgecrest Blvd w/o Sunset St	42256-42260	42256-332.3	42260-0	332.30	8	VCP	FM	3	222.9	4333	3.8	4.3	$1,650	Point Repair								
709	Ridgecrest Blvd w/o Warner St	42269-42272	42269-0	42272-102.2	102.20	8	VCP	FM	3	29.6	4322	3.2	4.3	$1,650	Point Repair	$4,950	$8,250	$3,300	$11,242	2	$35,770	$16,192	$19,492
710	Ridgecrest Blvd w/o Warner St	42269-42272	42269-0	42272-102.2	102.20	8	VCP	FM	3	61.0	4322	3.2	4.3	$1,650	Point Repair								
711	Ridgecrest Blvd w/o Warner St	42269-42272	42269-0	42272-102.2	102.20	8	VCP	FM	3	96.0	4322	3.2	4.3	$1,650	Point Repair								
712	N. Norma St n/o Vera Ave	52005-52006	52005-0	52006-360.1	360.10	8	VCP	FM	3	113.4	4334	3.0	4.3	$1,650	Point Repair	$4,950	$11,550	$6,600	$39,611	4	$126,035	$44,561	$51,161
713	N. Norma St n/o Vera Ave	52005-52006	52005-0	52006-360.1	360.10	8	VCP	FM	3	149.2	4334	3.0	4.3	$1,650	Point Repair								
714	N. Norma St n/o Vera Ave	52005-52006	52005-0	52006-360.1	360.10	8	VCP	FM	3	288.7	4334	3.0	4.3	$1,650	Point Repair								
715	Helena Ave s/o Las Flores Ave	52115-52116	52115-0	52116-327.9	327.90	8	VCP	FM	3	199.4	4331	3.1	4.3	$1,650	Point Repair	$4,950	$6,600	$1,650	$36,069	1	$114,765	$41,019	$42,669
716	Helena Ave s/o Las Flores Ave	52115-52116	52115-0	52116-327.9	327.90	8	VCP	FM	3	227.2	4331	3.1	4.3	$1,650	Point Repair								
717	Helena Ave s/o Las Flores Ave	52115-52116	52115-0	52116-327.9	327.90	8	VCP	FM	3	327.7	4331	3.1	4.3	$1,650	Point Repair								
718	Howell Ave e/o Sanders St	52196-52200	52196-0	52200-302.4	302.40	8	VCP	FM	3	11.7	4332	3.2	4.3	$1,650	Point Repair	$4,950	$8,250	$3,300	$33,264	2	$105,840	$38,214	$41,514
719	Howell Ave e/o Sanders St	52196-52200	52196-0	52200-302.4	302.40	8	VCP	FM	3	114.6	4332	3.2	4.3	$1,650	Point Repair								
720	Howell Ave e/o Sanders St	52196-52200	52196-0	52200-302.4	302.40	8	VCP	FM	3	148.2	4332	3.2	4.3	$1,650	Point Repair								
721	Alley w/o China Lake Blvd n/o Felspar Ave	52211-52212	52211-0	52212-334.1	334.10	12	VCP	FM	3	26.2	4300	4.0	4.3	$1,950	Point Repair	$5,850	$5,850	$0	$50,115	0	$136,981	$55,965	$55,965
722	Alley w/o China Lake Blvd n/o Felspar Ave	52211-52212	52211-0	52212-334.1	334.10	12	VCP	FM	3	30.9	4300	4.0	4.3	$1,950	Point Repair								
723	Alley w/o China Lake Blvd n/o Felspar Ave	52211-52212	52211-0	52212-334.1	334.10	12	VCP	FM	3	334.0	4300	4.0	4.3	$1,950	Point Repair								
724	Cisco St e/o Arondo St	53065-53066	53065-0	53066-345.8	345.80	8	VCP	FM	3	2.3	433B	3.2	4.3	$1,650	Point Repair	$4,950	$21,450	$16,500	$38,038	10	$121,030	$42,988	$59,488
725	Cisco St e/o Arondo St	53065-53066	53065-0	53066-345.8	345.80	8	VCP	FM	3	48.6	433B	3.2	4.3	$1,650	Point Repair								
726	Cisco St e/o Arondo St	53065-53066	53065-0	53066-345.8	345.80	8	VCP	FM	3	310.5	433B	3.2	4.3	$1,650	Point Repair								
727	Gold Canyon Dr e/o Sandora St	53120-53121	53120-0	53121-278.5	278.50	10	VCP	FM	3	52.3	4331	3.1	4.3	$1,800	Point Repair	$5,400	$7,200	$1,800	$36,205	1	$105,830	$41,605	$43,405
728	Gold Canyon Dr e/o Sandora St	53120-53121	53120-0	53121-278.5	278.50	10	VCP	FM	3	72.5	4331	3.1	4.3	$1,800	Point Repair								
729	Gold Canyon Dr e/o Sandora St	53120-53121	53120-0	53121-278.5	278.50	10	VCP	FM	3	96.8	4331	3.1	4.3	$1,800	Point Repair								
730	Joyner Ave w/o Norma St	62091-62092	62091-0	62092-323.1	323.10	8	VCP	FM	3	59.1	4331	3.2	4.3	$1,650	Point Repair	$4,950	$6,600	$1,650	$35,541	1	$113,085	$40,491	$42,141
731	Joyner Ave w/o Norma St	62091-62092	62091-0	62092-323.1	323.10	8	VCP	FM	3	237.4	4331	3.2	4.3	$1,650	Point Repair								
732	Joyner Ave w/o Norma St	62091-62092	62091-0	62092-323.1	323.10	8	VCP	FM	3	254.9	4331	3.2	4.3	$1,650	Point Repair								
733	Ridgecrest Regional Hospital	62195-62196	62195-0	62196-332.4	332.40	8	VCP	FM	3	125.3	433A	3.2	4.3	$1,650	Point Repair	$4,950	$21,450	$16,500	$36,564	10	$116,340	$41,514	$58,014
734	Ridgecrest Regional Hospital	62195-62196	62195-0	62196-332.4	332.40	8	VCP	FM	3	198.4	433A	3.2	4.3	$1,650	Point Repair								
735	Ridgecrest Regional Hospital	62195-62196	62195-0	62196-332.4	332.40	8	VCP	FM	3	210.5	433A	3.2	4.3	$1,650	Point Repair								
736	S. China Lake Blvd n/o Haloid Ave	42182-42196	42182-330.1	42196-0	330.10	15	VCP	FM	3	11.0	4338	3.3	4.3	$2,160	Point Repair	$6,020	$23,300	$17,280	$56,117	8	$148,545	$62,137	$79,417
737	S. China Lake Blvd n/o Haloid Ave	42182-42196	42182-330.1	42196-0	330.10	15	VCP	FM	3	137.2	4338	3.3	4.3	$2,160	Point Repair								
738	S. China Lake Blvd n/o Haloid Ave	42182-42196	42182-330.1	42196-0	330.10	15	VCP	FM	3	143.2	4338	3.3	4.3	$1,700	Point Repair								
739	Triangle Dr 2p s/o Alley	62282-62283	62282-0	62283-280.9	280.90	10	VCP	FM	3	55.0	4332	3.8	4.3	$1,800	Point Repair	$5,400	$9,000	$3,600	$36,517	2	$106,742	$41,917	$45,517
740	Triangle Dr 2p s/o Alley	62282-62283	62282-0	62283-280.9	280.90	10	VCP	FM	3	95.1	4332	3.8	4.3	$1,800	Point Repair								
741	Triangle Dr 2p s/o Alley	62282-62283	62282-0	62283-280.9	280.90	10	VCP	FM	3	179.9	4332	3.8	4.3	$1,800	Point Repair								
742	Gold Canyon Dr w/o Sandora St	53080-53081	53080-0	53081-383.3	383.30	8	VCP	FM	3	37.3	4337	2.6	4.3	$1,650	Point Repair	$4,950	$16,500	$11,550	$42,163	7	$134,155	$47,113	$58,663
743	Gold Canyon Dr w/o Sandora St	53080-53081	53080-0	53081-383.3	383.30	8	VCP	FM	3	321.1	4337	2.6	4.3	$1,650	Point Repair								
744	Gold Canyon Dr w/o Sandora St	53080-53081	53080-0	53081-383.3	383.30	8	VCP	FM	3	361.4	4337	2.6	4.3	$1,650	Point Repair								
745	Norma St Btwn Wilson Ave and Robertson Ave	42187-42188	42187-330.5	42188-0	330.50	6	VCP	FM	2	191.7	4232	3.5	4.2	$1,200	Point Repair	$2,400	$4,800	$2,400	$33,050	2	$92,540	$35,450	$37,850
746	Norma St Btwn Wilson Ave and Robertson Ave	42187-42188	42187-330.5	42188-0	330.50	6	VCP	FM	2	202.5	4232	3.5	4.2	$1,200	Point Repair								
747	W. French Ave. Btwn Alvord St. and Warner St.	52229-52230	52229-294.0	52230-0	294.00	8	VCP	FM	2	115.4	4231	3.7	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$32,340	1	-$102,900	$35,640	$37,290
748	W. French Ave. Btwn Alvord St. and Warner St.	52229-52230	52229-294.0	52230-0	294.00	8	VCP	FM	2	162.6	4231	3.7	4.2	$1,650	Point Repair								
749	N. Balsam St. s/o Las Flores Ave	52242-52243	52242-301.4	52243-0	301.40	8	VCP	FM	2	2.4	4236	3.2	4.2	$1,650	Point Repair	$3,300	$13,200	$9,900	$33,154	6	$105,490	$36,454	$46,354
750	N. Balsam St. s/o Las Flores Ave	52242-52243	52242-301.4	52243-0	301.40	8	VCP	FM	2	2.4	4236	3.2	4.2	$1,650	Point Repair								
751	Perdew Ave e/o Wayne St	62267-62268	62267-0	62268-373.8	373.80	8	VCP	FM	2	277.9	4236	3.2	4.2	$1,650	Point Repair	$3,300	$13,200	$9,900	$41,118	6	$130,830	$44,418	$54,318
752	Perdew Ave e/o Wayne St	62267-62268	62267-0	62268-373.8	373.80	8	VCP	FM	2	284.6	4236	3.2	4.2	$1,650	Point Repair								
753	California Ave e/o china Lake Blvd	42278-43085	42278-215.1	43085-0	215.10	18	VCP	FM	2	9.0	4232	3.5	4.2	$2,475	Point Repair	$4,950	$9,900	$4,950	$39,794	2	$109,701	$44,744	$49,694
754	California Ave e/o china Lake Blvd	42278-43085	42278-215.1	43085-0	215.10	18	VCP	FM	2	152.6	4232	3.5	4.2	$2,475	Point Repair								
755	E. California Ave at Grande Way	43085-43086	43085-0	43086-233.2	233.20	18	VCP	FM	2	188.2	4233	3.4	4.2	$2,475	Point Repair	$4,950	$12,375	$7,425	$43,142	3	$118,932	$48,092	$55,517
756	E. California Ave at Grande Way	43085-43086	43085-0	43086-233.2	233.20	18	VCP	FM	2	208.5	4233	3.4	4.2	$2,475	Point Repair								
757	California Ave Btwn S. Gold Canyon St and Silver Ridge St	43101-43107	43101-330.1	43107-0	330.10	18	VCP	FM	2	6.5	4200	4.0	4.2	$2,475	Point Repair	$4,950	$4,950	$0	$61,069	0	$168,351	$66,019	$66,019
758	California Ave Btwn S. Gold Canyon St and Silver Ridge St	43101-43107	43101-330.1	43107-0	330.10	18	VCP	FM	2	17.3	4200	4.0	4.2	$2,475	Point Repair								
759	California Ave Btwn Desert Candle St and Holly Canyon St	43122-43126	43122-0	43126-330.4	330.40	18	VCP	FM	2	65.8	4237	3.2	4.2	$2,475	Point Repair	$4,950	$22,275	$17,325	$61,124	7	$168,504	$66,074	$83,399
760	California Ave Btwn Desert Candle St and Holly Canyon St	43122-43126	43122-0	43126-330.4	330.40	18	VCP	FM	2	311.8	4237	3.2	4.2	$2,475	Point Repair								
761	California Ave e/o Valley St	44057-44058	44057-0	44058-265.2	265.20	18	VCP	FM	2	15.4	4235	3.3	4.2	$2,475	Point Repair	$4,950	$17,325	$12,375	$49,062	5	$135,252	$54,012	$66,387
762	California Ave e/o Valley St	44057-44058	44057-0	44058-265.2	265.20	18	VCP	FM	2	221.1	4235	3.3	4.2	$2,475	Point Repair								
763	Balsam St n/o Coso Ave	52243-52244	52243-0	52244-301.2	301.20	8	VCP	FM	2	191.4	4231	3.4	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$33,132	1	$105,420	$36,432	$38,082
764	Balsam St n/o Coso Ave	52243-52244	52243-0	52244-301.2	301.20	8	VCP	FM	2	296.2	4231	3.4	4.2	$1,650	Point Repair								

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
765	Sunset St at Wilson Ave	42229-42231	42229-0	42231-386.4	386.40	8	VCP	FM	2	11.7	4234	3.1	4.2	$1,650	Point Repair	$3,300	$9,900	$6,600	$42,504	4	$135,240	$45,804	$52,404
766	Sunset St at Wilson Ave	42229-42231	42229-0	42231-386.4	386.40	8	VCP	FM	2	41.8	4234	3.1	4.2	$1,650	Point Repair								
767	Sunset St s/o Church Ave	42231(A)-42232	42231(A)-0	42232-397	397.00	8	VCP	FM	2	258.9	4235	3.0	4.2	$1,650	Point Repair	$3,300	$11,550	$8,250	$43,670	5	$138,950	$46,970	$55,220
768	Sunset St s/o Church Ave	42231(A)-42232	42231(A)-0	42232-397	397.00	8	VCP	FM	2	378.2	4235	3.0	4.2	$1,650	Point Repair								
769	Sunset Place n/o Church Ave	42233-42234	42234-0	42233-390	390.00	8	VCP	FM	2	87.8	4233	3.1	4.2	$1,650	Point Repair	$3,300	$8,250	$4,950	$42,900	3	$136,500	$46,200	$51,150
770	Sunset Place n/o Church Ave	42233-42234	42234-0	42233-390	390.00	8	VCP	FM	2	98.9	4233	3.1	4.2	$1,650	Point Repair								
771	Sunset St n/o Church Ave	42258-42259	42258-0	42259-394	394.00	8	VCP	FM	2	166.5	4231	3.0	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$43,340	1	$137,900	$46,640	$48,290
772	Sunset St n/o Church Ave	42258-42259	42258-0	42259-394	394.00	8	VCP	FM	2	351.1	4231	3.0	4.2	$1,650	Point Repair								
773	Ridgecrest Blvd e/o Warner St	42272-42273	42272-0	42273-244.1	244.10	8	VCP	FM	2	14.7	4232	2.4	4.2	$1,650	Point Repair	$3,300	$6,600	$3,300	$26,851	2	$85,435	$30,151	$33,451
774	Ridgecrest Blvd e/o Warner St	42272-42273	42272-0	42273-244.1	244.10	8	VCP	FM	2	170.8	4232	2.4	4.2	$1,650	Point Repair								
775	Desert Candles St n/o Church Ave	43119-43120	43119-304.8	43120-0	304.80	8	VCP	FM	2	202.6	4232	3.5	4.2	$1,650	Point Repair	$3,300	$6,600	$3,300	$33,528	2	$106,680	$36,828	$40,128
776	Desert Candles St n/o Church Ave	43119-43120	43119-304.8	43120-0	304.80	8	VCP	FM	2	203.5	4232	3.5	4.2	$1,650	Point Repair								
777	N. Norma St s/o Argus Ave	52006-52013	52006-0	52013-360.1	360.10	8	VCP	FM	2	129.8	423A	3.1	4.2	$1,650	Point Repair	$3,300	$23,100	$19,800	$39,611	12	$126,035	$42,911	$62,711
778	N. Norma St s/o Argus Ave	52006-52013	52006-0	52013-360.1	360.10	8	VCP	FM	2	138.3	423A	3.1	4.2	$1,650	Point Repair								
779	Norma St s/o Las Flores Ave	52016-52098	52016-0	52098-330	330.00	8	VCP	FM	2	231.2	4239	3.2	4.2	$1,650	Point Repair	$3,300	$18,150	$14,850	$36,300	9	$115,500	$39,600	$54,450
780	Norma St s/o Las Flores Ave	52016-52098	52016-0	52098-330	330.00	8	VCP	FM	2	234.3	4239	3.2	4.2	$1,650	Point Repair								
781	Sanders St s/o Howell Ave	52194-52196	52194-333.6	52196-0	333.60	8	VCP	FM	2	7.0	4231	3.7	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$36,696	1	$116,760	$39,996	$41,646
782	Sanders St s/o Howell Ave	52194-52196	52194-333.6	52196-0	333.60	8	VCP	FM	2	114.7	4231	3.7	4.2	$1,650	Point Repair								
783	Balsam St s/o Argus Ave	52241-52246	52241-0	52246-382.2	382.20	8	VCP	FM	2	9.0	4234	3.0	4.2	$1,650	Point Repair	$3,300	$9,900	$6,600	$42,042	4	$133,770	$45,342	$51,942
784	Balsam St s/o Argus Ave	52241-52246	52241-0	52246-382.2	382.20	8	VCP	FM	2	139.6	4234	3.0	4.2	$1,650	Point Repair								
785	Gold Canyon Dr e/o Sandora St	53119-53120	53119-0	53120-91.8	91.80	10	VCP	FM	2	38.6	4231	3.7	4.2	$1,800	Point Repair	$3,600	$5,400	$1,800	$11,934	1	$34,884	$15,534	$17,334
786	Gold Canyon Dr e/o Sandora St	53119-53120	53119-0	53120-91.8	91.80	10	VCP	FM	2	54.9	4231	3.7	4.2	$1,800	Point Repair								
787	Atkins Ave w/o Norma St	62252-62270	62252-0	62270-213.4	213.40	8	VCP	FM	2	15.9	4233	3.4	4.2	$1,650	Point Repair	$3,300	$8,250	$4,950	$23,474	3	$74,690	$26,774	$31,724
788	Atkins Ave w/o Norma St	62252-62270	62252-0	62270-213.4	213.40	8	VCP	FM	2	176.5	4233	3.4	4.2	$1,650	Point Repair								
789	Norma St s/o Atkins Ave	62269-62270	62269-333.3	62270-0	333.30	8	VCP	FM	2	34.3	4237	3.2	4.2	$1,650	Point Repair	$3,300	$14,850	$11,550	$36,663	7	$116,655	$39,963	$51,513
790	Norma St s/o Atkins Ave	62269-62270	62269-333.3	62270-0	333.30	8	VCP	FM	2	173.7	4237	3.2	4.2	$1,650	Point Repair								
791	S. China Lake Blvd n/o Robertson Ave	42205-42243	42205-330.2	42243-0	330.20	15	VCP	FM	2	57.9	4233	3.4	4.2	$2,160	Point Repair	$4,320	$10,800	$6,480	$56,134	3	$148,590	$60,454	$66,934
792	S. China Lake Blvd n/o Robertson Ave	42205-42243	42205-330.2	42243-0	330.20	15	VCP	FM	2	76.3	4233	3.4	4.2	$2,160	Point Repair								
793	S. China Lake Blvd s/o California Ave	42244-42278	42244-0	42278-337.2	337.20	12	VCP	FM	2	37.0	4233	3.4	4.2	$1,950	Point Repair	$3,900	$9,750	$5,850	$50,580	3	$138,252	$54,480	$60,330
794	S. China Lake Blvd s/o California Ave	42244-42278	42244-0	42278-337.2	337.20	12	VCP	FM	2	335.9	4233	3.4	4.2	$1,950	Point Repair								
795	Robertson Rd e/o Silver Ridge St	43113-43114	43113-262.3	43114-0	262.30	8	VCP	FM	2	153.0	4236	3.2	4.2	$1,650	Point Repair	$3,300	$13,200	$9,900	$28,853	6	$91,805	$32,153	$42,053
796	Robertson Rd e/o Silver Ridge St	43113-43114	43113-262.3	43114-0	262.30	8	VCP	FM	2	155.2	4236	3.2	4.2	$1,650	Point Repair								
797	Robertson Rd w/o Desert Candles St	43114-43115	43114-265	43115-0	265.00	8	VCP	FM	2	74.0	4235	3.0	4.2	$1,650	Point Repair	$3,300	$11,550	$8,250	$29,150	5	$92,750	$32,450	$40,700
798	Robertson Rd w/o Desert Candles St	43114-43115	43114-265	43115-0	265.00	8	VCP	FM	2	141.6	4235	3.0	4.2	$1,650	Point Repair								
799	Church Ave at S. Fire Opel St	43116-43117	43116-264.3	43117-0	264.30	8	VCP	FM	2	133.7	4236	3.2	4.2	$1,650	Point Repair	$3,300	$13,200	$9,900	$29,073	6	$92,505	$32,373	$42,273
800	Church Ave at S. Fire Opel St	43116-43117	43116-264.3	43117-0	264.30	8	VCP	FM	2	190.0	4236	3.2	4.2	$1,650	Point Repair								
801	S. Sunland St n/o Church Ave	43150-43151	43150-0	43151-328.8	328.80	10	VCP	FM	2	148.9	4231	3.7	4.2	$1,800	Point Repair	$3,600	$5,400	$1,800	$42,744	1	$124,944	$46,344	$48,144
802	S. Sunland St n/o Church Ave	43150-43151	43150-0	43151-328.8	328.80	10	VCP	FM	2	291.7	4231	3.7	4.2	$1,800	Point Repair								
803	S. Sunland St n/o Calif. Ave	42162-42163	42162-0	42163-231	231.00	8	VCP	FM	2	28.9	4236	3.2	4.2	$1,650	Point Repair	$3,300	$13,200	$9,900	$25,410	6	$80,850	$28,710	$38,610
804	S. Sunland St n/o Calif. Ave	42162-42163	42162-0	42163-231	231.00	8	VCP	FM	2	109.8	4236	3.2	4.2	$1,650	Point Repair								
805	Alley w/o china Lake Blvd n/o Howell Ave	52201-52210	52201-292.4	52210-0	292.40	8	VCP	FM	2	6.0	4200	4.0	4.2	$1,650	Point Repair	$3,300	$3,300	$0	$32,164	0	$102,340	$35,464	$35,464
806	Alley w/o china Lake Blvd n/o Howell Ave	52201-52210	52201-292.4	52210-0	292.40	8	VCP	FM	2	63.8	4200	4.0	4.2	$1,650	Point Repair								
807	Fairview St n/o Argus Ave	52222-52224	52222-0	52224-330.1	330.10	15	VCP	FM	2	179.3	423J	3.0	4.2	$1,950	Point Repair	$3,900	$20,730	$16,830	$61,069	11	$148,545	$64,969	$81,799
808	Fairview St n/o Argus Ave	52222-52224	52222-0	52224-330.1	330.10	15	VCP	FM	2	204.9	423J	3.0	4.2	$1,950	Point Repair								
809	Alley w/o China Lake Blvd n/o Argus Ave	52250-52251	52250-0	52251-330	330.00	8	VCP	FM	2	5.8	4231	3.7	4.2	$1,650	Point Repair	$3,300	$4,500	$1,200	$54,450	1	$115,500	$57,750	$58,950
810	Alley w/o China Lake Blvd n/o Argus Ave	52250-52251	52250-0	52251-330	330.00	8	VCP	FM	2	27.3	4231	3.7	4.2	$1,650	Point Repair								
811	Triangle Dr s/o Alley	62281-62282	62281-0	62282-246.1	246.10	10	VCP	FM	2	30.7	4200	4.0	4.2	$1,800	Point Repair	$3,600	$3,600	$0	$31,993	0	$93,518	$35,593	$35,593
812	Triangle Dr s/o Alley	62281-62282	62281-0	62282-246.1	246.10	10	VCP	FM	2	126.2	4200	4.0	4.2	$1,800	Point Repair								
813	China Lake Blvd s/o Inyokern Rd	62284-62285	62284-333	62285-0	333.00	8	VCP	FM	2	37.1	4231	3.7	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$36,630	1	$116,550	$39,930	$41,580
814	China Lake Blvd s/o Inyokern Rd	62284-62285	62284-333	62285-0	333.00	8	VCP	FM	2	240.7	4231	3.7	4.2	$1,650	Point Repair								
815	Trisha Ct at Sierra View St	52056-52057	52056-0	52057-381.9	381.90	8	VCP	FM	2	237.2	4231	3.7	4.2	$1,650	Point Repair	$3,300	$4,950	$1,650	$42,009	1	$133,665	$45,309	$46,959
816	Trisha Ct at Sierra View St	52056-52057	52056-0	52057-381.9	381.90	8	VCP	FM	2	355.6	4231	3.7	4.2	$1,650	Point Repair								
817	Gold Canyon Dr 3p e/o La Mirage Ln	53079-53080	53079-0	53080-362	362.00	8	VCP	FM	2	350.4	4233	2.9	4.2	$1,650	Point Repair	$3,300	$8,250	$4,950	$39,820	3	$126,700	$43,120	$48,070
818	Gold Canyon Dr 3p e/o La Mirage Ln	53079-53080	53079-0	53080-362	362.00	8	VCP	FM	2	353.2	4233	2.9	4.2	$1,650	Point Repair								
819	Alley w/o China Lake Blvd s/o Graaf Ave	62306-62307	62306-0	62307-330.9	330.90	12	VCP	FM	2	97.6	4233	3.4	4.2	$1,950	Point Repair	$3,900	$9,750	$5,850	$49,635	3	$135,669	$53,535	$59,385
820	Alley w/o China Lake Blvd s/o Graaf Ave	62306-62307	62306-0	62307-330.9	330.90	12	VCP	FM	2	323.6	4233	3.4	4.2	$1,950	Point Repair								
821	Del Rosa Dr n/o Cielo Ave	22038-22039	22038-0	22039-320.6	320.60	8	VCP	FM	1	58.5	4132	2.8	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$35,266	2	$112,210	$36,916	$40,216
822	Park View Dr w/o S. Gemstone St	43081-43082	43081-0	43082-291.8	291.80	8	VCP	FM	1	27.6	4134	3.2	4.1	$1,650	Point Repair	$1,650	$8,250	$6,600	$32,098	4	$102,130	$33,748	$40,348
823	Alley s/o Ridgecrest Blvd Btwen S. Gold Canyon St and Silver ridge St.	43154-43155	43154-0	43155-333.1	333.10	8	VCP	FM	1	20.5	4132	3.0	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$36,641	2	$116,585	$38,291	$41,591
824	Alley s/o Ridgecrest Blvd Btwen Silver ridge St. and S. fire opal St.	43155-43156	43155-0	43156-332.8	332.80	8	VCP	FM	1	6.2	4131	3.0	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$36,608	1	$116,480	$38,258	$39,908
825	Lincoln St. n/o Upjohn Ave.	44060-44061	44060-0	44061-314.2	314.20	8	VCP	FM	1	3.9	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$34,562	0	$109,970	$36,212	$36,212
826	Alley s/o Ridgecrest Blvd Btwen Springdale St. and Broadway St.	43208-43210	43208-0	43210-281.2	281.20	8	VCP	FM	1	82.5	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$30,932	0	$98,420	$32,582	$32,582
827	Panamint Ave e/o Alvord St.	52225-52226	52225-418.9	52226-0	418.90	8	VCP	FM	1	54.1	4131	2.7	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$46,079	1	$146,615	$47,729	$49,379
828	W. French Ave. Btwn Alvord St. and Warner St.	52230-52231	52230-0	52231-291	291.00	8	VCP	FM	1	17.2	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$32,010	1	$101,850	$33,660	$35,310
829	Sydnor Ave e/o Scott St.	62014-62015	62014-0	62015-350.8	350.80	8	VCP	FM	1	134.1	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$38,588	0	$122,780	$40,238	$40,238
830	Weiman Ave e/o Sierra View St	62036-62037	62036-346.6	63037-0	346.60	8	VCP	FM	1	0.2	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$38,126	0	$121,310	$39,776	$39,776
831	W. Garis Ave Btwn sierra View St and Norma St.	62084-62085	62084-0	62085-326	326.00	8	VCP	FM	1	129.5	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$35,860	0	$114,100	$37,510	$37,510
832	Atkins Ave e/o Griffin St	62251-62252	62251-0	62252-350.3	350.30	8	VCP	FM	1	181.0	4133	2.8	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$38,533	3	$122,605	$40,183	$45,133

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
833	Alley n/o Atkins Ave e/o N. Gordon St.	62255-62256	62255-0	62256-318.6	318.60	8	VCP	FM	1	234.9	4135	3.2	4.1	$1,650	Point Repair	$1,650	$9,900	$8,250	$35,046	5	$111,510	$36,696	$44,946
834	College entrance	13003-13004	13003-0	13304-191.5	191.50	8	VCP	FM	1	15.4	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$21,065	0	$67,025	$22,715	$22,715
835	E/O china Lake Blvd s/o Bowman Rd	32042-32136	32042-0	32136-453.7	453.70	12	VCP	FM	1	1.9	4121	2.3	4.1	$1,950	Point Repair	$1,950	$1,950	$0	$68,055	0	$186,017	$70,005	$70,005
836	S. Allen St Btwn W. Vulcan Ave and W. hood Ave.	32116-32117	32116-256.7	32117-0	256.70	8	VCP	FM	1	1.7	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$28,237	0	$89,845	$29,887	$29,887
837	Norma St. n/o Rader St	42065-42066	42065-0	42066-329.6	396.60	10	VCP	FM	1	164.3	4133	2.5	4.1	$1,800	Point Repair	$1,800	$7,200	$5,400	$51,558	3	$150,708	$53,358	$58,758
838	Howell Ave e/o N. Peg St.	52165-52166	52165-0	52166-132.4	132.40	8	VCP	FM	1	101.7	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$14,564	0	$46,340	$16,214	$16,214
839	Alley w/o China Lake Blve n/o Coso Ave	52248-52249	52248-311.4	52249-0	311.40	8	VCP	FM	1	21.0	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$34,254	0	$108,990	$35,904	$35,904
840	Sierra View St Btwn Alene Ave and Atkins Ave	62241-62249	62241-0	62249-343.9	343.90	8	VCP	FM	1	12.3	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$37,829	0	$120,365	$39,479	$39,479
841	Graaf Ave Btwn Watne St and China Lake Blvd	62295(A)-62295	62295(A)-291.5	62295-0	291.50	8	VCP	FM	1	248.7	4132	3.3	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$32,065	2	$102,025	$33,715	$37,015
842	Alene Ave w/o Ewing cir	62298-62300	62298-198.6	62300-0	198.60	8	VCP	FM	1	2.2	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$21,846	0	$69,510	$23,496	$23,496
843	Ewing Cir n/o Alene Ave	62299-62300	62299-208.1	62300-0	208.10	8	VCP	FM	1	5.7	4132	3.3	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$22,891	2	$72,835	$24,541	$27,841
844	Graaf Ave e/o Alene Ave	62305-62306	62305-0	62306-282.6	282.60	8	VCP	FM	1	280.7	4133	3.5	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$31,086	3	$98,910	$32,736	$37,686
845	Lenore St s/o Church Ave	43075-43078	43075-0	43078-330.3	330.30	8	VCP	FM	1	29.0	4132	3.5	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$36,333	2	$115,605	$37,983	$41,283
846	S. Gemstone St n/o Calif Ave	43090-43091	43090-0	43091-277.2	277.20	8	VCP	FM	1	246.6	4132	3.3	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$30,492	2	$97,020	$32,142	$35,442
847	S. Gold Canyon St s/o Calif Ave	43099-43101	43099-0	43101-303.4	303.40	8	VCP	FM	1	112.4	4133	3.2	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$33,374	3	$106,190	$35,024	$39,974
848	S. Gold Canyon St n/o Calif Ave	43100-43101	43100-0	43101-394.5	394.50	6	VCP	FM	1	39.5	4133	3.2	4.1	$1,650	Point Repair	$1,650	$5,250	$3,600	$39,450	3	$110,460	$41,100	$44,700
849	S. Silver Ridge St s/o Calif Ave	43105-43107	43105-0	43107-304	304.00	8		FM	1	29.3	4134	3.2	4.1	$1,650	Point Repair	$1,650	$8,250	$6,600	$33,440	4	$106,400	$35,090	$41,690
850	S. Silver Ridge St n/o Calif Ave	43106-43107	43106-0	43107-391.2	391.20	6		FM	1	133.2	4135	3.2	4.1	$1,200	Point Repair	$1,200	$7,200	$6,000	$39,120	5	$109,536	$40,320	$46,320
851	California Ave btwn Holly Canyon St and Sunland	43126-43163	43126-0	43163-337	337.00	18	VCP	FM	1	231.8	4137	3.1	4.1	$2,475	Point Repair	$2,475	$19,800	$17,325	$62,345	7	$171,870	$64,820	$82,145
852	Alley s/o Ridgecrest Blvd e/o S. Gemstone St	43153-43154	43153-332	43154-0	332.00	8	VCP	FM	1	327.4	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$36,520	0	$116,200	$38,170	$38,170
853	California Ave e/o Forest Knoll St	43180-43183	43180-0	43183-286.4	286.40	18	VCP	FM	1	276.0	4133	3.2	4.1	$2,475	Point Repair	$2,475	$9,900	$7,425	$52,984	3	$146,064	$55,459	$62,884
854	California Ave e/o Springdale St	43183-43212	43183-286	43212-0	286.00	18	VCP	FM	1	67.1	4131	3.5	4.1	$2,475	Point Repair	$2,475	$4,950	$2,475	$52,910	1	$145,860	$55,385	$57,860
855	California Ave e/o Broadway St	43212-43215	43212-287.3	43215-0	287.30	18	VCP	FM	1	149.8	4131	3.5	4.1	$2,475	Point Repair	$2,475	$4,950	$2,475	$53,151	1	$146,523	$55,626	$58,101
856	Upjohn Ave e/o Richmond St	44006-44007	44006-0	44007-197.3	197.30	21	VCP	FM	1	192.9	4100	4.0	4.1	$2,550	Point Repair	$2,550	$2,550	$0	$38,474	0	$109,008	$41,024	$41,024
857	California Ave at Richmond St	44077-44080	44077-0	44080-147.3	147.30	21	VCP	FM	1	83.0	4132	3.3	4.1	$2,550	Point Repair	$2,550	$7,650	$5,100	$28,724	2	$81,383	$31,274	$36,374
858	California Ave w/o Lilac St	44088-44093	44088-0	44093-332.1	332.10	21	VCP	FM	1	151.7	4134	3.2	4.1	$2,550	Point Repair	$2,550	$12,750	$10,200	$64,760	4	$183,485	$67,310	$77,510
859	Fairview St s/o Argus Ave	52223-52224	52223-0	52224-370	370.00	6	VCP	FM	1	34.4	4131	3.5	4.1	$1,200	Point Repair	$1,200	$2,400	$1,200	$37,000	1	$103,600	$38,200	$39,400
860	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	6.1	4134	3.9	4.1	$2,160	Point Repair								
861	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	121.2	4134	3.9	4.1	$2,160	Point Repair								
862	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	231.6	4134	3.9	4.1	$2,160	Point Repair								
863	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	244.5	4134	3.9	4.1	$2,160	Point Repair								
864	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	261.8	4134	3.9	4.1	$2,160	Point Repair	$21,600	$28,800	$7,200	$42,952	4	$148,680	$64,552	$71,752
865	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	269.9	4134	3.9	4.1	$2,160	Point Repair								
866	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	298.5	4134	3.9	4.1	$2,160	Point Repair								
867	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	306.6	4134	3.9	4.1	$2,160	Point Repair								
868	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	322.8	4134	3.9	4.1	$2,160	Point Repair								
869	Argus Ave e/o Fairview St	52224-52238	52224-0	52238-330.4	330.40	15	VCP	FM	10	326.9	4134	3.9	4.1	$2,160	Point Repair								
870	Panamint Ave e/o Sanders St	52227-52228	52227-120.1	52228-0	120.10	6	VCP	FM	1	85.2	4100	4.0	4.1	$1,200	Point Repair	$1,200	$1,200	$0	$12,010	0	$33,628	$13,210	$13,210
871	Sanders St n/o Argus Ave	52237-52238	52237-0	52238-328.3	328.30	8	VCP	FM	1	111.8	4133	3.2	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$36,113	3	$114,905	$37,763	$42,713
872	Argus Ave w/o Balsam St	52238-52246	52238-0	52246-291.3	291.30	15	VCP	FM	1	9.9	4131	3.0	4.1	$2,160	Point Repair	$2,160	$4,320	$2,160	$49,521	1	$131,085	$51,681	$53,841
873	W. Station Ave e/o Alvord St	52256-52257	52256-381.8	52257-0	381.80	8	VCP	FM	1	329.8	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$41,998	1	$133,630	$43,648	$45,298
874	W. Station Ave w/o N. Sanders St	52257-52258	52257-380	52258-0	380.00	8	VCP	FM	1	1.5	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$41,800	1	$133,000	$43,450	$45,100
875	Langely Ave Btwn Nevada St and Downs St	41108-42076	41108-0	42076-319.6	319.60	8	VCP	FM	1	194.8	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$35,156	0	$111,860	$36,806	$36,806
876	Norma St n/o Robertson Ave	42186-42187	42186-115.3	42187-0	115.30	6	VCP	FM	1	14.4	4132	3.3	4.1	$1,200	Point Repair	$1,200	$3,600	$2,400	$11,530	2	$32,284	$12,730	$15,130
877	Rosstrand n/o Church Ave	42262-42263	42262-0	42263-397.3	397.30	8	VCP	FM	1	375.8	4133	3.2	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$43,703	3	$139,055	$45,353	$50,303
878	Ridgecrest Blvd at Alvord St	42268-42269	42268-0	42269-345.2	345.20	8	VCP	FM	1	322.6	4134	3.2	4.1	$1,650	Point Repair	$1,650	$8,250	$6,600	$37,972	4	$120,820	$39,622	$46,222
879	Warner St s/o Ridgecrest Blvd	42271-42272	42271-351	42272-0	351.00	8	VCP	FM	1	245.2	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$38,610	0	$122,850	$40,260	$40,260
880	S. Fire Opel St n/o Church Ave	43108-43109	43108-0	43109-303.1	303.10	8	VCP	FM	1	219.1	4134	3.2	4.1	$1,650	Point Repair	$1,650	$8,250	$6,600	$33,341	4	$106,085	$34,991	$41,591
881	S. fire Opel St s/o Calif Ave	43109-43111	43109-0	43111-301	301.00	8	VCP	FM	1	54.6	4132	3.2	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$33,110	2	$105,350	$34,760	$38,060
882	Norma St n/o Argus Ave	52013-52014	52014-331.4	52013-0	331.40	8	VCP	FM	1	286.8	413A	3.1	4.1	$1,650	Point Repair	$1,650	$19,800	$18,150	$36,454	11	$115,990	$38,104	$56,254
883	Las Flores Ave w/o Sierra View St	52027-52028	52027-0	52028-224.8	224.80	10	VCP	FM	1	144.5	4100	4.0	4.1	$1,800	Point Repair	$1,800	$1,800	$0	$29,224	0	$85,424	$31,024	$31,024
884	Florence St s/o Las Flores Ave	52105-52106	52105-0	52016-327.6	327.60	8	VCP	FM	1	327.5	4136	3.1	4.1	$1,650	Point Repair	$1,650	$11,550	$9,900	$36,036	6	$114,660	$37,686	$47,586
885	Alvord St s/o Las Flores Ave	52124-52125	52124-0	52125-328.6	328.60	8	VCP	FM	1	40.9	4131	3.0	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$36,146	1	$115,010	$37,796	$39,446
886	Warner St s/o Las Flores Ave	52130-52131	52130-0	52131-319.3	319.30	8	VCP	FM	1	31.3	4100	3.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$35,123	0	$111,755	$36,773	$36,773
887	Warner St s/o Felspar Ave	52182-52183	52182-0	52183-332.7	332.70	12	VCP	FM	1	2.2	4100	4.0	4.1	$1,950	Point Repair	$1,950	$1,950	$0	$49,905	0	$136,407	$51,855	$51,855
888	Sanders St n/o Howell Ave	52195-52196	52195-301.7	52196-0	301.70	8	VCP	FM	1	92.8	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$33,187	0	$105,595	$34,837	$34,837
889	Howell Ave e/o Balsam St	52200-52210	52200-0	52210-164.2	164.20	8	VCP	FM	1	3.9	4131	3.0	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$18,062	1	$57,470	$19,712	$21,362
890	W. Drummond Ave e/o Sanders St	52204-52205	52204-0	52205-302.9	302.90	8	VCP	FM	1	171.6	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$33,319	1	$106,015	$34,969	$36,619
891	W. Drummond Ave e/o Sanders St (2p)	52205-52206	52205-161	52206-0	161.00	8	VCP	FM	1	116.7	4133	3.2	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$17,710	3	$56,350	$19,360	$24,310
892	Cisco St e/o Arondo St	53066-53067	53066-0	53067-360.0	360.30	8	VCP	FM	1	237.4	4137	3.0	4.1	$1,650	Point Repair	$1,650	$13,200	$11,550	$39,633	7	$126,105	$41,283	$52,833
893	Cisco St e/o Nadeau St	53069-53070	53069-0	53070-364.1	364.10	8	VCP	FM	1	343.5	4132	3.0	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$40,051	2	$127,435	$41,701	$45,001
894	Gold Canyon Dr e/o Sandora St	53119(A)-53119	53119(A)-0	53119-51.7	51.70	10	VCP	FM	1	18.5	4131	3.5	4.1	$1,800	Point Repair	$1,800	$3,600	$1,800	$6,721	1	$19,646	$8,521	$10,321
895	Gold Canyon Dr e/o Sandora St	53121-53122	53121-0	53122-374.2	374.20	10	VCP	FM	1	22.6	4131	3.0	4.1	$1,800	Point Repair	$1,800	$3,600	$1,800	$48,646	1	$142,196	$50,446	$52,246
896	Gold Canyon Dr w/o Gateway Blvd	53122-53123	53122-0	53123-376.8	376.80	10	VCP	FM	1	7.4	4135	3.0	4.1	$1,800	Point Repair	$1,800	$10,800	$9,000	$48,984	5	$143,184	$50,784	$59,784
897	Gold Canyon Dr w/o Gateway Blvd	53123-53148	53123-0	53148-374.3	374.30	10	VCP	FM	1	205.3	4100	4.0	4.1	$1,800	Point Repair	$1,800	$1,800	$0	$48,659	0	$142,234	$50,459	$50,459
898	W. Ward Ave e/o Wayne St	62190-62191	62190-373.5	62191-0	373.50	8	VCP	FM	1	19.1	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$41,085	1	$130,725	$42,735	$44,385
899	Sanders St s/o W. St. George Ave	42151-42155	42151-0	42155-266.2	266.20	8	VCP	FM	1	5.0	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$29,282	0	$93,170	$30,932	$30,932
900	Upjohn Ave w/o China Lake Blvd	42161-42173	42161-0	42173-321.1	321.10	12	VCP	FM	1	187.1	4100	4.0	4.1	$1,950	Point Repair	$1,950	$1,950	$0	$48,165	0	$131,651	$50,115	$50,115
901	Ridgecrest Blvd w/o China Lake Blvd	42275-42276	42275-0	42276-343.6	343.60	8	VCP	FM	1	26.7	4136	3.1	4.1	$1,650	Point Repair	$1,650	$11,550	$9,900	$37,796	6	$120,260	$39,446	$49,346
902	S. Desert Candles St s/o Robertson Rd	43112-43115	43112-123.6	43115-0	123.60	8	VCP	FM	1	114.9	4132	3.3	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$13,596	2	$43,260	$15,246	$18,546
903	S. Desert Candles St n/o church Ave	43118-43119	43118-0	43119-57.6	57.60	8	VCP	FM	1	36.3	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$6,336	0	$20,160	$7,986	$7,986

Grade 4 Structural Defects	Location	Pipe ID	Upstream MH (Start Pt-ft)	Downstream MH (End Pt-ft.)	Length of pipe (feet)	Pipe Diameter (inches)	Pipe Material	Defect Description	No. of #4 Defects	Loc. #4 Defect frm Start Pt.	Defect Grades & Count	Pipe Ratings Index	Likelihood of Failure (LoF)	Probable Cost of Repair ($)	Type of Repair	Probable Total Cost of Point Repair 4 ONLY ($)	Probable Total Cost of Point Repair 4 and 3 ($)	Probable Cost of Adding 3 Repairs ($)	Probable Cost of CIPP Repair ($)	# of 3 Defects	Remove and Replace complete line	Point Repair and CIPP 5, 4 ONLY ($)	Point Repair and CIPP 5, 4, and 3 ($)
904	S. Sunland St s/o calif Ave	43151-43163	43151-0	43163-329.5	329.50	10	VCP	FM	1	144.7	4139	3.1	4.1	$1,800	Point Repair	$1,800	$18,000	$16,200	$42,835	9	$125,210	$44,635	$60,835
905	Richmond St s/o Ridgecrest Blvd	44075-44076	44075-0	44076-158	158.00	10	VCP	FM	1	1.5	4112	2.0	4.1	$1,800	Point Repair	$1,800	$1,800	$0	$20,540	0	$60,040	$22,340	$22,340
906	w/o China Lake Blvd n/o Las Flores Ave	52187-52188	52187-260	52188-0	260.00	8	VCP	FM	1	144.4	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$28,600	0	$91,000	$30,250	$30,250
907	W. Drummond Ave w/o China Lake Blvd	52206-52207	52206-0	52207-166	166.00	12	VCP	FM	1	87.9	4137	3.1	4.1	$1,950	Point Repair	$1,950	$15,600	$13,650	$24,900	7	$68,060	$26,850	$40,500
908	N. Sanders St n/o Las Flores Ave	52216-52217	52216-0	52217-332.4	332.40	12	VCP	FM	1	197.4	4131	3.4	4.1	$1,950	Point Repair	$1,950	$3,900	$1,950	$49,860	1	$136,284	$51,810	$53,760
909	Fairview St n/o Coso Ave	52220-52221	52220-0	52221-333.7	333.70	15	VCP	FM	1	28.5	4138	3.0	4.1	$2,160	Point Repair	$2,160	$19,440	$17,280	$56,729	8	$150,165	$58,889	$76,169
910	Alley s/o Triangle Dr	62280-62281	62280-0	62281-170.8	170.80	8	VCP	FM	1	26.4	4111	2.5	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$18,788	0	$59,780	$20,438	$20,438
911	China Lake n/o Triangle Dr	62286-62287	62286-0	62287-30.1	30.10	8	VCP	FM	1	16.8	4121	3.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$3,311	0	$10,535	$4,961	$4,961
912	Sunset St n/o Upjohn Ave	42228-42229	42228-0	42229-400.1	400.10	8	VCP	FM	1	394.7	413G	3.0	4.1	$1,650	Point Repair	$1,650	$19,800	$18,150	$44,011	11	$140,035	$45,661	$63,811
913	N. Alvord St at French Ave	52119-52120	52119-0	52120-271.2	271.20	8	VCP	FM	1	209.5	4132	3.0	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$29,832	2	$94,920	$31,482	$34,782
914	Balsam St at French Ave	52240-52241	52240-0	52241-385	385.00	8	VCP	FM	1	174.1	4138	3.0	4.1	$1,650	Point Repair	$1,650	$14,850	$13,200	$42,350	8	$134,750	$44,000	$57,200
915	Dolphin Ave w/o Downs St	31029-31030	31029-0	31030-226.1	226.10	8	VCP	FM	1	142.9	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$24,871	0	$79,135	$26,521	$26,521
916	Boston Ave w/o Inyo St	41052-41053	41052-0	41053-330.2	330.20	8	VCP	FM	1	317.2	4131	3.5	4.1	$1,650	Point Repair	$1,650	$3,300	$1,650	$36,322	1	$115,570	$37,972	$39,622
917	Robertson Ave e/o Norma St	42197-42198	42197-298.2	42198-0	298.20	8	VCP	FM	1	25.3	4132	3.3	4.1	$1,650	Point Repair	$1,650	$4,950	$3,300	$32,802	2	$104,370	$34,452	$37,752
918	Lenore St n/o Wilson Ave	43074-43075	43074-0	43075-334.8	334.80	8	VCP	FM	1	113.0	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$36,828	0	$117,180	$38,478	$38,478
919	Norma St n/o Bowman Rd	42059(A)-42059	42059(A)-210.7	42059-0	210.70	8	VCP	FM	1	210.7	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$23,177	0	$73,745	$24,827	$24,827
920	Gordon St s/o Church Ave	42215-42216	42215-0	42216-350.7	350.70	8	VCP	FM	1	135.3	4135	3.2	4.1	$1,650	Point Repair	$1,650	$9,900	$8,250	$38,577	5	$122,745	$40,227	$48,477
921	Randall St n/o Lynn Way	52059-52060	52059-303.6	52060-0	303.60	8	VCP	FM	1	210.4	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$33,396	0	$106,260	$35,046	$35,046
922	Florence St s/o Argus Ave	52101-52102	52101-0	52102-315.1	315.10	8	VCP	FM	1	75.2	4133	3.2	4.1	$1,650	Point Repair	$1,650	$6,600	$4,950	$34,661	3	$110,285	$36,311	$41,261
923	Warner St s/o Argus Ave	52126-52127	52126-0	52127-374.2	374.20	8	VCP	FM	1	3.0	4136	2.9	4.1	$1,650	Point Repair	$1,650	$11,550	$9,900	$41,162	6	$130,970	$42,812	$52,712
924	Gold Canyon Dr e/o La Mirage Ln	53078-53079	53078-370.4	53079-0	370.40	8	VCP	FM	1	358.2	4111	2.5	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$40,744	0	$129,640	$42,394	$42,394
925	Judy Way w/o Carolyn St	61005-61008	61005-0	61008-330.7	330.70	8	VCP	FM	1	88.5	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$36,377	0	$115,745	$38,027	$38,027
926	Alley w/o downs St n/o Atkins Ave	61148-61153	61148-0	61153-171.5	171.50	8	VCP	FM	1	138.5	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$18,865	0	$60,025	$20,515	$20,515
927	Camino El Canon n/o Paseo Airosa	22047-22048	22047-0	22048-241.5	241.50	8	VCP	FM	1	1.1	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$26,565	0	$84,525	$28,215	$28,215
928	Downs St n/o Wildrose Ave	31040-31107	31040-0	31107-334	334.00	8	VCP	FM	1	253.6	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$36,740	0	$116,900	$38,390	$38,390
929	Ranger St n/o Dolphin Ave	31048-31048	31047-342.4	31048-0	342.40	8	VCP	FM	1	201.3	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$37,664	0	$119,840	$39,314	$39,314
930	McCall St s/o Franklin Ave	31065-31066	31065-0	31066-322.7	322.70	8	VCP	FM	1	317.7	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$35,497	0	$112,945	$37,147	$37,147
931	McCall St n/o Bataan Ave	31092-31093	31092-0	31093-385.4	385.40	8	VCP	FM	1	282.4	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$42,394	0	$134,890	$44,044	$44,044
932	Bataan Ave w/o Ranger St	31097-31099	31097-288.7	31099-0	288.70	8	VCP	FM	1	143.1	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$31,757	0	$101,045	$33,407	$33,407
933	Sahara Dr 2p w/o La Mirage Ln	53098B-53099	53098B-0	53099-16.8	16.80	8	VCP	FM	1	12.5	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$1,848	0	$5,880	$3,498	$3,498
934	Sahara Dr w/o La Mirage Ln	53099-53102	53099-0	53102-127.1	127.10	8	VCP	FM	1	125.1	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$13,981	0	$44,485	$15,631	$15,631
935	Alley w/o China Lake Blvd s/o Reeves Ave	62321-62322	62321-0	62322-330.2	330.20	12	VCP	FM	1	18.3	4132	3.0	4.1	$1,950	Point Repair	$1,950	$5,850	$3,900	$49,530	2	$135,382	$51,480	$55,380
936	Las Flores Ave e/o N. Mono St	51053-51055	51053-316.1	51055-0	316.60	8	VCP	FM	1	2.2	4100	4.0	4.1	$1,650	Point Repair	$1,650	$1,650	$0	$34,826	0	$110,810	$36,476	$36,476
Total length (feet) of pipes containing Grade 4(These pipes don't contain Grade 5 defects) structural defects														Total probable cost of repairs:	$ 1,704,380		$1,704,380	$3,176,630	$1,472,250	$9,215,653		$27,399,240	$10,920,033	$12,392,283
included within the Phase 2 - Sewer System Rehabilitation Project: 7323.70														Total probable cost of repairs: Phase 2 Grade 4 ONLY	$328,170		$328,170	$499,050	$170,880	$1,297,955		$3,558,343	$1,626,125	$1,797,005
																Phase 2	4 only	4 and 3	3 only	CIPP		R&R	PR and CIPP 5,4 ONLY	PR and CIPP 5,4 and 3

Shading indicates those sewer segments within Phase 2 - Sewer System Rehabilitation Project.

FM Fracture Multiple
JOL Joint Offset Large

Defect Grades & Count are described as follows:

- The number shown is the PACP rater's shorthand way of expressing the number of occurrences for the two highest occuring severity Grades.
- The first character is the hightest severity Grade occurring along the pipe segment length.
- The second character is the total number of occurrences of the highest severity Grade in the pipe segment
- If the total number exceeds 9, then alphabetic characters are used. (e.g A= 10 to 14, B= 15 to 19, C= 20 to 24, etc.)
- The third character is the next highest severity Grade occurring along the pipe segment length.
- The fourth character is the total number of occurrences of the second highest severity Grade occurrences, as derived above.

Pipe size (in)	$/ft	Repair	Ridgecrest CIPP/ft	Ridgecrest R&R/Lf	Ridgecrest Real cost
6	400	$1,200	100	280	
8	550	$1,650	110	350	150
10	600	$1,800	130	380	175
12	650	$1,950	150	410	200
15	720	$2,160	170	450	225
18	825	$2,475	185	510	250
21	850	$2,550	195	552.5	260

Manholes on Phase 2 and West Ward Avenue Project

MH No.	Street Location	Surrounded By	MH Cvr Cond.	Grd Rng/Frm Cond.	Steps Cond.	Chim/Cone Cond.	Barrel Cond.	Bench/Base Cond.	Channel Cond.	Observed Flow	Recommended Action	Priority Ranking	Repair Action
62098	W. Ward Ave	AC									Replace / Could Not Open	5	Per recommemded action
62043A	W. Ward Ave	AC									Replace / Not Inspected	5	Per recommemded action
62093	W. Ward Ave	AC		Possible MH Isp 62092							Replace / Not Inspected	5	Per recommemded action
62097	W. Ward Ave	AC	Good	None	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	5	Per recommemded action
62191	W. Ward Ave	AC	Good	Cracked	Deteriorated	Fair	Good	Fair	Fair		Replace	5	Per recommemded action
62192	W. Ward Ave	AC	Good	Cracked	Deteriorated	Fair	Poor	Poor	Poor	Normal	Replace	5	Per recommemded action
62193	W. Ward Ave	AC	Good	Fair	Deteriorated	Fair	Fair	Fair	Fair	Normal	Replace	5	Per recommemded action
62198	W. Ward Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Turbulant	Replace	5	Per recommemded action
62197	W. Ward Ave	AC	Good	Cracked	Deteriorated	Poor	Poor	Poor	Poor	Turbulant	Replace	5	Per recommemded action
62327	W. Ward Ave	AC	Good	Cracked	Good	Fair	Fair	Good	Good	Normal	Replace	5	Per recommemded action
62094	W. Ward Ave	AC	Good	Good	Deteriorated	Fair	Fair	Fair	Fair	Normal	Replace	5	Per recommemded action
62095	W. Ward Ave	AC	Good	Good	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	5	Per recommemded action
62096	W. Ward Ave	AC	Good	None	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	5	Per recommemded action
62326	W. Ward Ave	AC	Good	Cracked	Deteriorated	Poor	Poor	Fair	Fair	Fast	Replace	5	Per recommemded action
62325	W. Ward Ave	AC	Good	Cracked	Good	Good	Good	Good	Good	Fast	Replace Ring, Cover	5	Per recommemded action
62196	Alley West of China Lake Blvd	AC	Good	Good	Deteriorated	Good	Good	Good	Good	Normal	Replace Cover	5	Per recommemded action
62190	W. Ward Ave	AC	Good	Good	Good	Good	Good	Good	Good	Dry	Replace Cover	5	Per recommemded action
62324	W. Ward Ave	AC	Good	Good	Good	Good	Good	Good	Good	Fast	Replace Cover	5	Per recommemded action
44058	California Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
52254	China Lake Blvd	AC	Good	Good	Deteriorated	Fair	Fair	Fair	Fair	Slow	Replace	4	Per recommemded action
52255	China Lake Blvd	AC	Good	Good/Poor	Deteriorated	Fair	Fair		Good	Normal	Replace	4	Per recommemded action
42278	China Lake Blvd	AC	Good	Good	Deteriorated	Good		Poor		Fast	Replace	4	Per recommemded action
42276	China Lake Blvd	AC	Good	Cracked	Deteriorated	Fair	Fair		None	Normal	Replace	4	Per recommemded action
52253	China Lake Blvd	AC	Good	Good	None	Fair	Fair		Good	Normal	Replace	4	Per recommemded action
53071	Cisco St	AC									Could Not Open Bolted	4	Per recommemded action
53070	Cisco St	AC									Could Not Open Bolted	4	Per recommemded action
43126	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
43122	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
43163	E. California Ave	AC	Good	None/Good	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
44057	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
44053	E. California Ave	AC	Good	None/Good	None	Fair	Fair	Fair	Fair	Normal	Replace	4	Per recommemded action
43215	E. California Ave	AC	Good	None/Good	Deteriorated	Fair	Fair	Poor	Poor	Normal	Replace	4	Per recommemded action
43171	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Poor	Poor	Normal	Replace	4	Per recommemded action
43212	E. California Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Normal	Replace	4	Per recommemded action
44054	E. California Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Poor	Poor	Fast	Replace	4	Per recommemded action
43174	E. California Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Poor	Poor	Normal	Replace	4	Per recommemded action
44077	E. California Ave	AC	Good	Cracked	None	Fair	Good	Fair	Fair	Fast	Replace	4	Per recommemded action
43180	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
43177	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
43183	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
43218	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
31162	S. Mahan St	AC	Good	Cracked	Good	Good	Good	Fair	Good	Slow	Replace	4	Per recommemded action
31167	S. Mahan St	AC									Not Located	4	Per recommemded action

Manholes on Phase 2 and West Ward Avenue Project

MH No.	Street Location	Surrounded By	MH Cvr Cond.	Grd Rng/Frm Cond.	Steps Cond.	Chim/Cone Cond.	Barrel Cond.	Bench/Base Cond.	Channel Cond.	Observed Flow	Recommended Action	Priority Ranking	Repair Action
43107	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
43085	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
43091	E. California Ave	AC	Good	Cracked	None	Fair	Fair	Fair	Fair	Fast	Replace	4	Per recommemded action
43086	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
43111	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
43101	E. California Ave	AC									Seized Not opened. Posible earthquake damage	4	Per recommemded action
32096	W. Wildrose Ave	AC	Good	Light corrosion on Bottom	Good	Fair	Fair	Good	Good	Normal	Replace	4	Per recommemded action
31166	S. Mahan St	AC	Good	Cracked	None	Good	Good	Good	Good	Slow	Replace Ring and Cover	4	Per recommemded action
32095	S. Wildrose Ave	AC	Good	Cracked	Good	Good	Good	Good	Good	Slow	Replace Ring and Cover	4	Per recommemded action
42277	China Lake Blvd	AC	Good	Good	Deteriorated	Good	Good	None	Good	Normal	Replace Cover	4	Per recommemded action
52252	China Lake Blvd	AC	Good	Cracked	Deteriorated	Good	Good	Good	Good	Normal	Replace Cover	4	Per recommemded action
31161	S. Mahan St	AC	Good	Good	None	Good	Good	Good	Good	Stagnant	Replace Cover	4	Per recommemded action
61115	W. Ward Ave	AC	Good	Cracked	Deteriorated	Good	Good	Fair	Fair	Slow	Replace	3	Per recommemded action
62040	W. Ward Ave	AC	Good	Cracked	Deteriorated	Good	Good	Fair	Fair	Normal	Replace	3	Per recommemded action
62049	W. Ward Ave	AC	Good	Good	Good	Fair	Fair	Fair	Fair	Normal	Replace	3	Per recommemded action
62042	W. Ward Ave	AC	Cracked	Good	Deteriorated	Fair	Good	Fair	Fair	Fast	Replace	3	Per recommemded action
62043	W. Ward Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	3	Per recommemded action
62050	W. Ward Ave	AC	Good	Good	Deteriorated	Fair	Fair	Fair	Fair	Normal	Replace	3	Per recommemded action
62052	W. Ward Ave	AC	Good	Good	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	3	Per recommemded action
62051	W. Ward Ave	AC	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Fast	Replace	3	Per recommemded action
62041	W. Ward Ave	AC	Good	Cracked	Good	Good	Fair	Good	Good	Fast	Replace Barrel, Ring, Cover	3	Per recommemded action
62322	Alley West of China Lake Blvd	AC	Good	Good	Deteriorated	Fair	Good	Good	Good	Normal	Replace Chimmey, Cone, Cover		Per recommemded action
61114	Downs St	Soil/Median	Good	Cracked	Deteriorated	Fair	Fair	Fair	Fair	Stagnant	Replace/Raise Cover above soil		Per recommemded action
61112	Downs St	AC	Good	None	Deteriorated	Fair	Fair	Fair	Fair	Normal	Replace		Per recommemded action
52224	Fairview St	AC	Good	Good	Deteriorated	Good	Good	Good	Good	Normal	Replace Cover		Per recommemded action
52223	Fairview St	AC	Good	Cracked	Deteriorated	Good	Good	Fair	Fair	Stagnant	Replace		Per recommemded action
42007	N/S of Bowman	Soil	Good	Cracked	Deteriorated	Fair	Fair	Fair	Good	Normal	Replace		Per recommemded action
42006	N/S of Bowman	AC									Not Located		Per recommemded action
62092	Norma St	AC	Good	Cracked	Good	Good	Good	Good	Good	Slow	Replace Ring, Cover		Per recommemded action
62189	Palo Verde Dr	AC	Good	Good	Good	Fair	Fair	Fair	Good	Normal	Replace		Per recommemded action
52225	Panamint Ave	AC	Good	Good	Good	Good	Good	Good	Good	Dry	Replace Cover		Per recommemded action
52226	Panamint Ave	AC	Good	Good	Good	Good	Good	Good	Good	Slow	Replace Cover		Per recommemded action
62039	Sierra View St	AC	Good	Cracked	Good	Fair	Fair	Fair	Fair	Normal	Replace		Per recommemded action
62048	Sierra View St	AC	Good	Good	Good	Fair	Good	Fair	Fair	Slow	Replace		Per recommemded action
42234	Sunset Place	AC	Good	Good	None	Good	Good	Good	Good	Normal	Replace Cover		Per recommemded action
42233	Sunset Place	Soil	Good	Cracked	Good	Fair	Fair	Poor	Poor		Replace		Per recommemded action
42041	Sunset St	AC	Good	Good	Good	Fair	Good	Good	Good	Stagnant	Replace Chimmey, Cone, Cover		Per recommemded action
42040	Sunset St cleanout	AC	Good	Cracked	None	Fair	Poor	None	Good	Dry	Replace Cleanout		Per recommemded action
61074	Ward Ave	AC	Good	Good	Deteriorated	Good	Good	Fair	Fair	Normal	Replace		Per recommemded action
63018	Ward Ave	AC	Good	Good	None	Good	Good	Good	Good	Normal	Replace Cover		Per recommemded action
62323	Wayne St	AC	Good	Cracked	Good	Fair	Fair	Fair	Good	Slow	Replace		Per recommemded action

= Cells highlighted in gray color indicate manholes that are included within Ridgecrest - Phase II Sewer Improvement Program

Manholes on Phase 2 and West Ward Avenue Project

MH No.	Street Location	Surrounded By	MH Cvr Cond.	Grd Rng/Frm Cond.	Steps Cond.	Chim/Cone Cond.	Barrel Cond.	Bench/Base Cond.	Channel Cond.	Observed Flow	Recommended Action	Priority Ranking	Repair Action
	= Cells highlighted in green color indicate manholes that are included within West Ward Avenue Street Rehabilitayion Project and Sewer System Rehabilitation												
	= Cells highlighted in lite orange color indicate manholes that are included within Ridgecrest - Phase II Sewer Improvement Program												

Appendix C

C1. Overflow Emergency Response Plan

C2. Sample SSO Report Form

C1. Overflow Emergency Response Plan

City of Ridgecrest

Overflow Emergency Response Plan

Original Prepared by City of Ridgecrest — May 2009

Updated by Michael K. Nunley & Associates, Inc. — September 2022

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List of Acronyms

CDFW	California Department of Fish and Wildlife
CITY	City of Ridgecrest or its Delegate(s)
CIWQS	California Integrated Water Quality System
CPO	Chief Plant Operator
EH	Environmental Health Department
FOG	Fats, Oils, and Grease
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollution Discharge Elimination System
OERP	Overflow Emergency Response Plan
OES	Office of Emergency Services
PPE	Personal Protective Equipment
RWQCB	Regional Water Quality Control Board
SOP	Standard Operating Procedure
SSOR	Sanitary Sewer Overflow Report
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirement
WWTF	Wastewater Treatment Facility

1.0 INTRODUCTION

1.1 Purpose

The purpose of this Sanitary Sewer Overflow Emergency Response Plan (OERP) is to ensure that City of Ridgecrest (City) staff follow established guidelines to identify, contain, clean, investigate, and report Sanitary Sewer Overflows (SSOs). In the event of a SSO, this OERP will help guide City staff to achieve compliance with the Statewide Waste Discharge Requirements (WDRs) for Wastewater Collection Agencies. This procedures manual complies with the OERP requirements of the WDR. City Public Works Wastewater Division staff are required to know and follow these procedures.

This plan shall not supersede existing emergency plans or Standard Operating Procedures (SOPs) unless directed by the City Public Works Director.

1.2 Goals

The primary goals of this OERP are to protect public health and safety, prevent adverse impacts to the environment, and facilitate compliance with all regulatory requirements.

1.3 Objectives

This OERP will help the City of Ridgecrest achieve the following objectives:

- Provision of timely and proper notifications of responders, regulatory agencies, and other potentially affected entities.
- Provision of appropriate customer service
- Protection of the wastewater treatment facility, collection system, and all appurtenances
- Protection of collection system personnel
- Protection of private and public property beyond the collection and treatment facilities
- Minimizing adverse impacts of SSOs
- Ensuring corrective action is taken in a timely manner
- Ensuring accurate and consistent identification, investigation, and reporting
- Ensuring appropriate City staff are aware of and follow the OERP, and address emergency operations and other necessary response activities

1.4 Regulatory Requirements

On May 2, 2006, The State Water Resources Control Board (SWRCB) adopted Water Quality Order No. 2006-0003, requiring all public wastewater collection system agencies in California with greater than one mile of sewers to be regulated under General WDR. The SWRCB action mandates the development of a Sewer System Management Plan (SSMP) and the reporting of SSOs using an electronic reporting system. An audit of the plan is required every two years to identify the effectiveness of the SSMP, and an overall update of the SSMP (using the audits to identify the sections and content of the SSMP to update) is required every five years from the date the original document was approved and certified.

Element 6 of the SSMP states the City shall implement an OERP that identifies measures to protect public health and the environment. At a minimum, the plan shall include:

1. Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;
2. A program to ensure appropriate response to all overflows;

3. Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (i.e., health agencies, regional water boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the Monitoring and Reporting Program (MRP). All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDR or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;
4. Procedures to ensure that appropriate Staff and contractor personnel are aware of and follow the OERP and are appropriately trained;
5. Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and
6. A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSO, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge

1.5 Training

The City sees the value in proper training of staff for emergency purposes and intends to continue staff training. The role of each person during an emergency has been established and is clear and concise. The City staff that may be called upon to respond are required to have been properly trained.

2.0 SEWER SYSTEM OVERFLOW DETECTION AND INFORMATION GATHERING

2.1 Initial Detection of Potential SSO

SSOs may be detected by system employees or the public. The City Wastewater Treatment Facility (WWTF) is primarily responsible for receiving phone calls from the public of potential SSOs, and for forwarding work orders to the Wastewater Division. The Public Works Department can also receive telephone calls from the public regarding potential SSO situations. The WWTF and Public Works Department can receive phone calls Monday through Friday from 8:00 am to 5:00 pm. If an SSO occurs during non-office hours, the City of Ridgecrest Police Department receives after-hour emergency sewer calls and notifies the appropriate standby personnel for immediate response. **Table 2-1** below lists the appropriate contact information for the public to initially report SSO events. In addition, the City of Ridgecrest publishes the telephone numbers on its website at www.ridgecrest-ca.gov.

Table 2-1: SSO Reporting Quick References

During Office Hours:	
Wastewater Treatment Facility	760-446-4631
Public Works Department	760-499-5080
Emergency Afterhours:	
Ridgecrest Police Department	760-499-5100

When City staff members notice an SSO during their regular activities, they shall call in, notify the Chief Plant Operator (CPO) and begin responding to the situation immediately. Dispatching personnel should record all relevant overflow information and dispatch additional response crews, as necessary. The CPO or the delegated wastewater staff are on standby during non-office hours and are aware of low manholes and prone SSO areas that may have the highest risk of overflow.

2.2 Information Gathering

The office assistant, police dispatcher, or whoever receives the initial call regarding a potential SSO, should obtain all relevant information available regarding the overflow, including:

- Time and date call was received
- Specific location
- Description of problem
- Time potential SSO was noticed by caller
- Caller's name and contact information
- Observations of the caller (e.g., odor, duration, location, etc.)
- Other relevant information that will enable the responding investigator and crews to quickly locate, assess, and stop the overflow

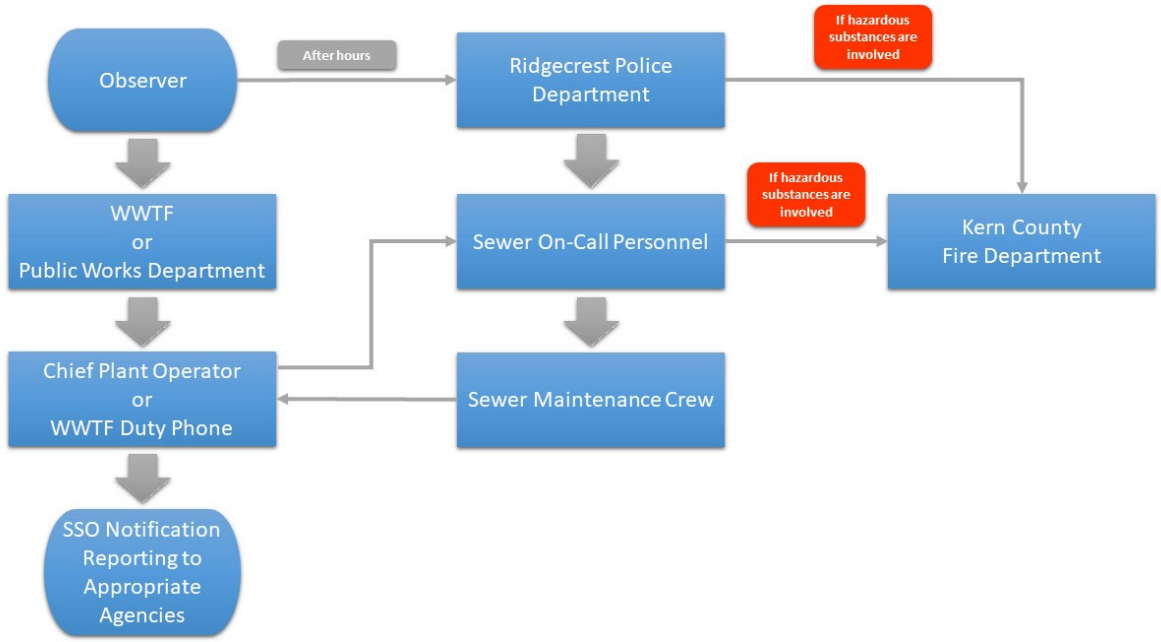
The operator that receives the initial SSO notification shall record the overflow information and create a work order for assignment to the Wastewater Division.

3.0 SEWER SYSTEM OVERFLOW RESPONSE

3.1 Initial Response

Once a potential SSO has been reported, the CPO (760-590-0886) or the WWTF Duty phone (760-608-7660) should be contacted and a field verification of the potential SSO shall be performed. **Figure 3-1** depicts the chain of communications for responding to a SSO. Until verified, the report of a potential sewer spill shall not be referred to as a "SSO."

Figure 3-1: Chain of Communication for Responding to a SSO



The First Responder is responsible for assessing the spill and filling out the Sanitary Sewer Overflow Report (SSOR). The First Responder is responsible for contacting the appropriate agencies impacted as soon as the spill is under control or assistance has arrived. **Table 3-1** lists the applicable agencies that are to be contacted.

Table 3-1: Agency Notification Contact Information

Agency	Department	Phone Number
Kern County Health Department	Environmental Health Division	661-862-8740
	Emergency Response	661-549-9927
CRWQCB Lahontan Region	Victorville Office	760-241-6583
Kern County Office of Emergency Services	Emergency Operations Center	661-873-2602
	Emergency Communication Center	661-324-6551
California Office of Emergency Services (Cal OES)	Warning Center	916-845-8911
California Department of Fish & Wildlife	Central Region	559-243-4005

3.2 Dispatching Crews

Crews and equipment shall be available to immediately respond to any reported SSO locations within the City of Ridgecrest's service area. Additional maintenance personnel shall be "on call" in the event extra crews are needed. All

personnel being dispatched to an SSO should proceed immediately to the site. Any delays or conflicts in assignments must be immediately reported to the CPO for resolution. The CPO will visit the site of the SSO, if possible, to ensure provisions of this OERP and other directives are met.

3.2.1 Instructions and Work Orders

Wastewater Division personnel should receive instructions from the first responder or CPO regarding appropriate crews, materials, supplies, and equipment needed. Dispatchers shall ensure that the entire message has been received and acknowledged by the crews who were dispatched. All standard communications procedures should be followed.

3.2.2 Preliminary Assessment of Damage to Private and Public Property

Responsible crews should report their findings, including possible damage to private and public property, to the CPO immediately upon completing their investigation. If the CPO has not received findings from the field crew within one hour, the CPO will contact the response crew to determine the status of the investigation.

The dispatched crews should use discretion in assisting the property owner/occupant as reasonably as they can to avoid inflicting further damage to private property. Crews should be aware that the Division could face increased liability for any further damages to private property during assistance. The response crews shall enter private property for purposes of assessing damages. Photographs and/or video footage should be taken of the outdoor area of the SSO to thoroughly document the nature and extent of impacts and shall be forwarded to the CPO.

3.2.3 Coordination with Hazardous Material Response

Upon arrival at the scene of a SSO, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface, or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the sewer investigator or response crew should immediately contact the CPO for guidance before taking further action.

Should the supervisor determine the need to alert the hazardous material response team, the sewer investigator or crew shall await the arrival of the Kern County Fire Department to take over the scene. Any vehicle engine, portable pump, or open flame can provide the ignition for an explosion or fire should flammable fluids or vapors be present. All personnel should keep a safe distance and observe caution until assistance arrives.

Only when that authority determines it is safe and appropriate for the sewer investigator and crew to proceed can they then proceed under this OERP with the correction, containment, and clean-up activities.

3.3 SSO Correction, Containment, and Clean-Up

SSOs can occur despite preventative maintenance and sewer rehabilitation efforts. Spills may result from blockages, failures, and other natural or man-made causes. The City is constantly on alert and ready to respond to any potential sewer overflow situations.

Under most circumstances, the City will handle all response actions with its own maintenance crews. They have the skills and experience to respond rapidly and in the most appropriate manner. An important issue with respect to an emergency response is to ensure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system. Circumstances may arise when the City could benefit from the support of private-sector construction assistance. This may be true in the case of large diameter pipes buried to depths requiring shoring and dewatering, should excavation be required. The City of Ridgecrest may also choose to use private contractors for open excavation operations that might exceed one day.

3.3.1 SSO Correction

It is the responsibility of the first personnel who arrive at the SSO site to protect the health and safety of the public by mitigating the impact of the overflow to the highest extent possible. Should the overflow not be the responsibility of the City of Ridgecrest but there is imminent danger to public health, public or private property, or to the quality of waters of the United States, then emergency action should be taken until the responsible party assumes responsibility and provides actions. Upon arrival at an SSO, the response crew should do the following:

- Determine the cause of the overflow
    - Stoppage/Blockage: Caused by debris; fats, oils, and grease (FOG); roots; or vandalism
    - Under Capacity SSO: Caused when the flow entering a pipeline is more than it can carry (e.g., rainfall event exceeds the performance storm)
    - Operator Error: Caused by a sewer system backup resulting from a treatment plant operator error
    - Structural Problem or Failure: Caused by structural pipe defects (e.g., fracture, break, collapse, etc.)
- Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in determining the cause
- Determine if private property is impacted
    - Contact the Kern County Department of Environmental Health if private property is impacted
- Take immediate steps to stop the overflow
    - Relieve pipeline stoppage/blockage
    - Repair defective pipeline
- Request additional personnel, materials, supplies, or equipment, if necessary, that will expedite and minimize the impact of the overflow.

3.3.1.1 Additional Measures Under Potentially Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made to set up a portable by-pass pumping operation around the obstruction. Appropriate measures shall be taken to determine the proper size and number of pumps required to effectively handle the sewage flow. Continuous or periodic monitoring of the by-pass pumping operation shall be implemented as required. Regulatory agency issues shall be addressed in conjunction with emergency repairs.

3.3.2 SSO Containment

The City's goal for SSO containment is to initiate measures to contain the overflowing sewage and recover, where possible, sewage which has already been discharged, minimizing the impact to public health and the environment. To successfully contain the SSO, the response crew should do the following:

- Determine the immediate destination of the overflow
    - Storm drain
    - Curb gutter
    - Desert, creek bed, etc.
    - Private property
- Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and
- Take immediate steps to contain the overflow
    - Block or bag storm drains
    - Recover through vacuum truck
    - Divert into downstream manhole
- Isolate the SSO to ensure there is no public contact. The area is to be cordoned off with tape, barricades, warning signs, or traffic/crowd control setups as necessary.

3.3.2.1 Sampling and Lab Tests

If necessary, samples should be collected as soon as possible. The response crew shall call the CPO and request that samples be taken at the spill location. Samples will be taken approximately 500 feet upstream of the spill, and 500 and 1,000 feet downstream. The lab should be instructed to test for Total Coliform. If unacceptable levels are observed, continued composite sampling will be done until coliform/BOD levels are within permitted limits.

3.3.3 SSO Clean-Up

Upon successfully correcting and containing the SSO, the dispatched crew shall thoroughly clean-up the affected site. During clean-up, the crew shall ensure:

- Sanitary habits are utilized while working in the affected area, and prior to returning to normal work duties. Personnel utilize proper Personal Protective Equipment (PPE) during clean-up activities.
- No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) remains. Solids and debris are to be flushed, swept, raked, picked-up, and transported for proper disposal.
- The overflow site is disinfected and deodorized. Disinfection shall be achieved with diluted bleach (10:1 dilution) or other approved solution. Additionally, equipment used should be disinfected.
- Where sewage has resulted in ponding, the pond should be pumped dry, and the residue properly disposed. If a ponded area contains sewage that cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a body of water that may contain fish or other aquatic life, bleach or other appropriate disinfectants should not be applied. The California Department of Fish & Wildlife (CDFW) should be contacted for specific instructions.
- Use of portable aerators where complete recovery of sewage is not practical and severe oxygen depletion in existing surface water is expected.
- The overflow site is to remain secured to prevent contact by the public until the site has been thoroughly cleaned.

4.0 SEWER SYSTEM OVERFLOW REPORTING

4.1 SSO Reporting

Upon completion of SSO correction, containment, and clean-up, the CPO will use the SSOR to complete the final spill reports and submit them to the SWRCB California Integrated Water Quality System (CIWQS) database, the Lahontan Regional Water Quality Control Board (RWQCB), California Office of Emergency Services (Cal OES), the Kern County Office of Emergency Services (Kern County OES), California Department of Fish & Wildlife (CDFW), and the Kern County Environmental Health Department (Kern County EH), as needed.

The City of Ridgecrest is registered with the SWRCB CIWQS electronic sewage spill reporting system. A SSOR will be completed for all reportable spills. The information recorded on the SSOR is entered into CIWQS in accordance with the mandated reporting timelines. Copies of the SSOR will be in the City of Ridgecrest WWTF office.

Additionally, public notification measures will be implemented, as necessary. Notification may include temporary signage to indicate pollution of surface water or ground water due to an SSO and/or notification through media outlets. The Public Works Director will be the contact person for media notification.

4.2 SSO Categories and Reporting Timeframes

There are three main categories for defining SSOs. It is important that all City staff are familiar with and able to define each type, in the event of being dispatched to a potential SSO site. Categorizing a SSO accurately is essential for correctly following reporting and notification protocol. The categories and reporting instructions of each SSO are:

Category 1 SSO

- **Definition**: Discharges of untreated or partially treated wastewater of **any volume** resulting from an enrollee's sanitary sewer system failure or flow condition that:
    - Reach surface water and/or reach a drainage channel tributary to a surface water, or
    - Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (i.e., infiltration pit, percolation pond).
- **Reporting**: Must be reported to Cal OES within two (2) hours. Reporting can be provided without substantially impeding cleanup or other emergency measures. Initial reporting of Category 1 SSO must be made to the Online SSO System as soon as possible but no later than three (3) business days after the City is made aware of the SSO. Additional information may be added to the certified report, in the form of an attachment, at any time within the three-day period.

Category 2 SSO

- **Definition**: Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
- **Reporting**: Submit draft report within three (3) business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date.

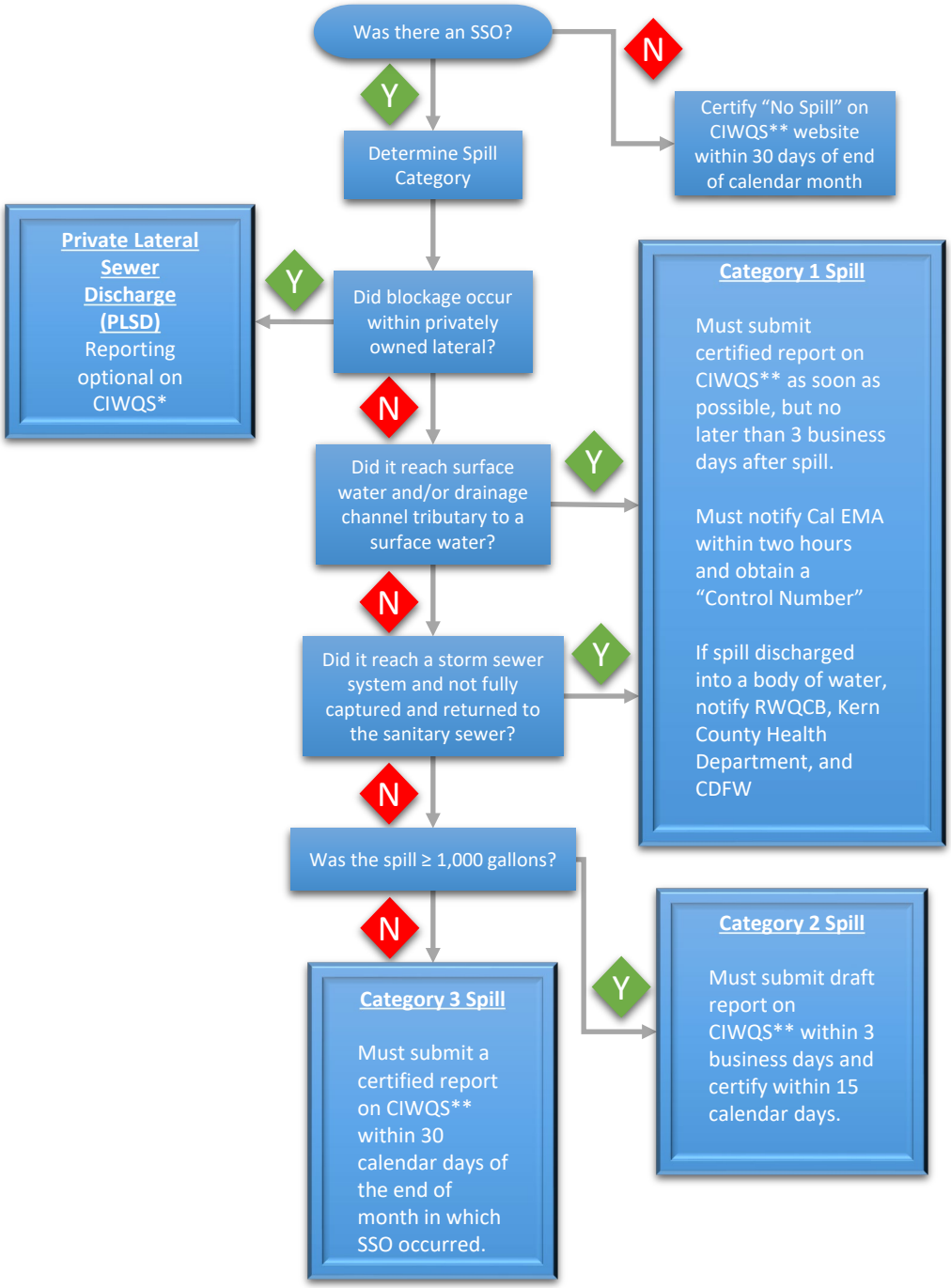
Category 3 SSO

- **Definition**: All other discharges of untreated or partially treated wastewater resulting from an enrollees sanitary sewer system failure or flow condition.
- **Reporting**: Submit a certified report within 30 calendar days of the end of month in which the SSO occurred.

The above reporting requirements do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies or State law. The Kern County EH will be notified on an as needed basis. In the event that the CIWQS database is not available, the City must fax all required information to the appropriate RWQCB offices in accordance with the time schedules identified above. In such event, The City must also enter all required information into the CIWQS electronic database as soon as practical. A flowchart for determining a SSO's category type and how to properly report it, can be seen in **Figure 4-1** below.

If there are no SSOs during a calendar month, the City will provide, within 30 days after the end of each calendar month, a statement through the CIWQS database certifying that there were no SSOs for the designated month.

Figure 4-1: SSO Categories and Chain of Communication for Reporting to CIWQS



* These reporting requirements do not preclude other emergency notification requirements and timeframes mandated by other regulatory agencies.
** If CIWQS website is not available, you must email or fax all required information to RWQCB and reattempt as soon as possible.

C2. Sample SSO Report Form

SANITARY SEWER OVERFLOW REPORT

STOPPAGE/OVERFLOW

NAME OF PERSON COMPLETING THIS REPORT:

DATE OF REPORT: **MAP OF LOCATION - YES___ NO___**

INCIDENT STREET ADDRESS/SITE:

CITY: RIDGECREST **COUNTY:** KERN **ZIP CODE:** 93555

SSO OCCURRED IN - LATERAL___ MAIN LINE___

WEATHER AT TIME OF SSO - DRY___ RAIN___ **AMBIENT TEMP.____**

LINE SEGMENT/STRUCTURE ID:

SSO DETAILS

DATE OF SSO: **TIME REPORTED:** **CREW ARRIVAL TIME:**

REPORTING PARTY:

DATE SSO STOPPED: **TIME SSO STOPPED:**

SSO DURATION: **SSO RATE (GAL/MIN):**

EST. SSO VOLUME RECOVERED: **EST. SSO VOLUME:**

HOW WAS VOLUME CALCULATED:

CLEAN UP METHODS USED:

AMOUNT FLUSHED: **AMOUNT FLUSH WATER RECOVERED:**

FINAL SSO DESTINATION:

RECEIVING WATERS AFFECTED - YES____ **NO____**

EVIDENCE OF FISH KILL - YES___ **NO___**

EST. VOLUME DISCHARGED TO RECEIVING WATERS: N/A

AREA BARRICADED - YES___ NO___ **SIGNS POSTED - YES___ NO___**

PICTURE/VIDEO TAKEN - YES___ NO___

SAMPLES COLLECTED - YES___ NO___

WHO SAMPLED: **DATE/TIME SAMPLED:**

SAMPLE LOCATIONS: UPSTREAM___ DOWNSTREAM___ DISCHARGE POINT___

SAMPLE RESULTS: FECAL COLIFORM: **DO:**
AMMONIA/NITROGEN:

SUSPECTED CAUSE OF SSO: BLOCKAGE____ INFRASTRUCTURE FAILURE____

DESCRIBE SOURCE AND CAUSE OF SSO:

RECOMMENDED FOLLOWUP ACTIONS

CURRENT PM FREQUENCY: 30 DAY___ 60 DAY___ 90 DAY___ ZONE_____

DATE OF LAST PM:

RECOMMENDED ACTIONS: TV___ RE-RUN___ CHANGE CLEANING SCHEDULE___

REPAIR LINE SEGMENT___ REPLACED LINE SEGMENT___

DATE OF FOLLOW UP ACTION:

ACTION THAT OCCURRED:

NOTES

Appendix D

D1. Food Service Establishment List

D2. FOG Best Management Practices Manual

D3. CalFOG Grease Hauling & Rendering Companies

D4. High Priority Line Cleaning List

D1. Food Service Establishment List

City of Ridgecrest
Sewer System Management Plan
List of Food Service Establishments

Food Service Establishment (FSE)	Address
5 Star Tobacco	1028 N Norma St
Albertacos	212 S China Lake Bl
Albertons 1376	1301 N Norma St
Albertsons 331	927 S China Lake Bl
Ale's Steakhouse and Bar	1030 N Norma St
Alvord St Mini Mart	104 N Alvord St
American Legion Post 684	641 W Inyokern Rd
Arby's 5270	830 N China Lake Bl
Bahay Kubo	1315 N Norma St
Bankok House Restaurant	303 W Inyokern Rd
Baskin Robbins	501 N China Lake Bl, Unit D
Beanster's Espresso	1601 Triangle Dr
Bevridge Drive Thru	201 S China Lake Bl
Big Lots #4611	840 N China Lake Bl
Blue Moon Market	1509 N Norma St
Burroughs High School	500 French Ave
Casa Corona	1429 N China Lake Bl
Chen's China Lake Buffet	138 N China Lake Bl
China Express	723 N China Lake Bl
1-Stop Market	1501 N China Lake Bl
Cocina Caliente Casual Mexican Eatery	901 S China Lake Bl
Comfort Inn/Quality Inn	507 S China Lake Bl
Crest Donuts	960 N Norma St
Del Taco 179	1020 N Norma St
Denny's 6371	104 N China Lake Bl
DJ's Pub	135 Garnet Ave
Dollar General 14155	500 W Drummond Av
Dollar Tree Store 2177	100 N China Lake Bl
Domino's Pizza	856 A N China Lake Bl
Eagles Lodge #3243	301 W Ridgecrest Bl
Eastridge Market	435 E Ridgecrest Bl
Ed's Mini Mart	1400 N Norma
Elks Lodge #1913	201 E Church Ave
Ephen Tacos	221 E Ridgecrest Bl
Faller Elementary School	1500 W Upjohn Av
Fastrip Food Store #894	345 S China Lake Bl
Flight Line Tap Room	259 Balsam St
Friends of the Fair	520 S Richmond Rd
Fujisan Sushi	800 N China Lake Bl
Furys Sports Bar	1353 W Inyokern Rd
Gateway Elementary School	501 S Gateway Bl
Golden Dragon Chinese Restaurant	945 N Norma St

City of Ridgecrest
Sewer System Management Plan
List of Food Service Establishments

Food Service Establishment (FSE)	Address
Golden Ox	440 S China Lake Bl
Grocery Outlet of Ridgecrest	120 N China Lake Bl
Hampton Inn and Suites Ridgecrest	104 Sydnor St
Historical Society of Upper Mojave Desert	230 W Ridgecrest Bl
Howard's Mini Mart	851 W Upjohn Av
Immanuel Baptist Church of Ridgecrest	1201 N China Lake Bl
Immanuel Christian School	201 W Graaf Av
Indian Wells Valley Masonic Lodge #684	625 N Norma St
Indian Wells Drive Thru	441 W ridgecrest Bl
Indian Wells Valley Youth Baseball	201 S Downs St
Jack in the Box 3314	919 S China Lake Bl
James Monroe Middle School	340 W Church Ave
Jess Mini Mart	1631 S China Lake Bl
John's Pizza	348 W Ridgecrest Bl
Kenk USA	935 S China Lake Bl
Korean Market	305 W Inyokern Rd
Krispy Donuts	860 N China Lake Bl
Kristy's	430 S China Lake Bl
La Fiesta	119 N China Lake Bl
Las Flores School	720 W Las Flores Ave
little Caesars Pizza	906 N China Lake Bl
Lugo's Grill	908 N Norma St
Mac's	901 N Heritage Dr
Marshalls #1238	700 N China Lake Bl
McDonald's	150 N China Lake Bl
Mesquite High School	140 W Drummond Av
Midway Café	831 N China Lake Bl
Minit Shop Deli	843 E Ridgecrest Bl
Mon Reve	126 Balsam St
Moose Lodge 0258	150 W reeves Av
Murray Middle School	200 E Drummond Av
My Enchanted Cottage	214 W Ridgecrest Bl
Olveras Restaurant	120 W Ridgecrest Bl
Opportunities for Learning	900 N Norma St
Orient Outlet	821 N China Lake Bl
Papa John's Pizza	820 N China Lake Bl
Pierce School	674 N Gold Canyon St
Pita Fresh	1140 N China Lake Bl
Pizza Factory (Ridgecrest)	1601 Triangle Dr
Pizza Hut	634 S China Lake Bl, Unit A
Pony Espresso	1355 N Norma St
Pony Espresso (Cerro Coso)	3000 College Heights Bl

City of Ridgecrest
Sewer System Management Plan
List of Food Service Establishments

Food Service Establishment (FSE)	Address
Puff N Stuff Smoke Shop	634 S China Lake bl
Pure Healing Foods 2	972 N Norma St
Red Rock Liquor & Market	111 E California Ave
Ridgecrest Cinemas	1631 Triangle Dr
Ridgecrest Elemetary Academy	325 S Downs St
Ridgecrest Nutrition Program	125 S Warner St
Ridgecrest Oasis Christian Center Apostolic Church	100 E Dolphin Ave
Ridgecrest Regional Hospital	1081 N China Lake Bl
Ridgecrest Regional Hospital DBA Bella Sera	1131 N China Lake Bl
Ridgecrest Subway (Bowman)	901 S china Lake Bl
Ridgecrest United Methodist Church	639 N Norma St
Rite Aid 5845	101 N China Lake Bl
Roxanne's Café	901 N China Lake Bl
Sage Mart	841 N Downs St
Sam's Place Mini Mart	829 W Inyokern Rd
Spring Hill Suites	113 E Sydnor Av
St Ann Catholic Church	416 W Church St
Starbucks Coffee #6959	1245 N China Lake Bl
Stater Bros Market 109	800 N China Lake Bl
Subway Sandwiches (China Lake)	815 N China Lake Bl
Taco Bell	1240 N China Lake Bl
Taqueria Bernardino	841 N Downs St, Unit B
Tender Cut Meats	1111 W Graaf Ave, Unit D
The Barn	1617 N China Lake Bl
The Lumpia Lady (Food Truck)	Food Stand, No Address Listed
The Partners Bar	1033 W Inyokern Rd
Tokyo House	890 N China Lake Bl, Unit A
Veterans of Foreign Wars Ship - 4084	117 N Alvord St
Walgreens #9030	101 W Drummond Av
Walmart 1600	201 E Bowman Rd
Wienerschnitzel 379	220 S China Lake Bl
Wingstop	750 N China Lake Bl, Unit A
Xin Bowl Asian Bistro	1110 N China Lake Bl
Roaming Dog Kitchen (Food Truck)	121 W French Ave
Carl's Jr.	230 S China Lake Bl
Burger King	139 N China Lake Bl
VEN a Communal Eatery (Food Truck)	299-251 Balsam St
Aloha Hawaiian & Grill	138 N China Lake Bl
Charleys Cheesesteaks	501 N China Lake Bl, Unit C
High Desert Haven	1240 Colege Heights Bl

D2. FOG Best Management Practices Manual

City of Ridgecrest

Fats, Oils and Grease
Best Management Practices Manual

Original	April 2009
Updated	September 2022

Table of Contents

List of Attachments

List of Acronyms

°C / °F	Degrees Celsius / Degrees Fahrenheit
BMP	Best management practice
CFR	Code of Federal Regulations
City	City of Ridgecrest
CSA	Compliance Schedule Agreement
CWA	Clean Water Act
EPA	US Environmental Protection Agency
FAQ	Frequently asked question
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
GCD	Grease Control Device
GI	Grease Interceptor
gpm	Gallons per minute
hrs	Hours
lbs	Pounds
O&G	Oils and Grease
ppm	Parts per million
RWQCB	Regional Water Quality Control Board
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow (Sewer Overflows / Sewer Spills)
SWRCB	State Water Resources Control Board
UPC	Uniform Plumbing Code
WWTP	Wastewater Treatment Plant

FATS, OILS AND GREASE BEST MANAGEMENT PRACTICES MANUAL

1.1 Introduction

Fats, Oils and grease, also called FOG in the wastewater business, can have negative impacts on wastewater collection and treatment systems. A large percentage of wastewater collection system blockages can be traced to FOG. Blockages in the wastewater collection system are serious, causing Sanitary Sewer Overflows (SSOs), manhole overflows, and sewage backups in homes and businesses. Two types of FOG pollutants are common to wastewater systems. Petroleum-based oil and grease (also called non-polar FOG) occur at businesses using oil and grease and are identified and regulated by municipalities through local limits and associated pretreatment permit conditions. Animal and vegetable-based oil and grease (also called polar FOG) are more difficult to regulate due to the large number of restaurants and fast-food outlets in our community.

Many of the nation's fast-food restaurant chains participate in FOG recycling programs which are intended to ensure that grease trap and grease interceptors are properly installed and, most importantly, properly maintained. Knowledgeable municipal pretreatment staff, working with business owners, can effectively prevent FOG buildup and the problems associated for both the City's Public Works Department and the restaurant owner.

This manual was written to provide food service establishments (FSEs) such as restaurant and fast-food business managers and owners with information about animal and vegetable-based oil and grease pollution prevention techniques and preventing oil and grease discharges to the sewer system. The manual identifies the City's legal authority to address FOG, answers frequently asked questions (FAQs), identifies best management practices (BMPs) with regard to FOG management equipment, provides guidance regarding support services, clarifies prohibitions, defines grease control devices in detail, and identifies and specifies record keeping and reporting requirements. The Attachments contain all FOG related forms to be used by the FSE and City and include: Grease Interceptor/Trap Log, Grease Barrel Collection Log, and Exhaust Hood Maintenance Log. Copies of the forms may also be found on the City's website at: www.ridgecrest-ca.gov.

1.2 Regulatory Framework and Legal Authority

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs), collectively known as the California Water Boards, are tasked with the vision of providing "abundant clean water for human uses and environmental protection to sustain California's future." Under the federal Clean Water Act (CWA) and the State's Porter-Cologne Water Quality Control Act, the State and Regional Water Boards have regulatory responsibility for protecting the water quality of California's water resources (including lakes, estuaries, streams, etc.). The SWRCB created Order No. 2006-0003-DWQ regarding statewide general waste discharge requirements for sanitary sewer systems that includes the development and implementation of a system-specific Sewer System Management Plan (SSMP). Element 7, FOG Control Program, of the SSMP lists requirements for the installation of grease removal devices, design standards for the removal devices, maintenance requirements, BMP requirements, and record keeping and reporting requirements.

The CWA is the primary Federal statute regulating the protection of the nation's water. It aims to prevent, reduce, and eliminate pollution in the nation's water to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," as described in section 101(a). The CWA's implementing regulations are codified at 40 Code of Federal Regulations (CFR) specifically, 40 CFR 403.5 (National Pretreatment Standards: Prohibited Discharges). Section 403.5 includes regulations limiting pollutants that can be discharged to a wastewater treatment plant (WWTP) including solid or viscous pollutants (including FOG) that can cause obstructions to the flow. Information on the National Pretreatment Standards can be found at: https://www.epa.gov/.

Furthermore, there are Uniform Plumbing Code (UPC) requirements, standards, and specifications requiring FSE's to install grease interceptors and grease traps to reduce FOG in the wastewater discharges. Finally, various City Codes have been implemented to clarify the City's authority to address FOG as follows:

- City Code § 16-112 – General usage
- City Code § 16-115 – Industrial wastes; limitations
- City Code § 16-116 – Protective measures; general
- City Code § 16-118 – National Categorical Pretreatment Standards
- City Code § 16-119 – Pretreatment compliance schedule
- City Code § 16-120 – Reporting requirements for permittee
- City Code § 16-121 – Public notification of violations
- City Code § 16-122 – State requirements
- City Code § 16-123 – More stringent limitations

All FSEs are required to obtain a FOG Wastewater Discharge Permit to discharge wastewater into the sewer system and pay a fee as set by the fee schedule. Grease interceptors shall be required for all new and existing FSE's during the plan review/ building permit process. FSE's that operate without a grease control interceptor may be required to pay an annual Grease Disposal Mitigation Fee to equitably cover the costs of increased maintenance and administration of the sewer system. For more information on the City's authority, please visit the City's website at: www.ridgecrest-ca.gov.

1.3 Frequently Asked Questions (FAQs)

The following frequently asked questions are answered below:

- Is grease a problem?
- What is FOG and where does it come from?
- What do FSEs need to know about FOG?
- What is a grease trap and how does it work?
- What is a grease interceptor?
- How do I clean my grease trap and grease interceptor?
- Can you recommend a maintenance schedule?
- Do I have a grease trap?
- Do I need a grease trap or grease interceptor?
- Is the grease trap I have adequate?
- What if I don't install a grease trap?
- Who determines if I need a grease trap or interceptor?
- What are the criteria for inspecting grease traps?
- How can I get in compliance?
- How do I report sewage spills/SSOs?

Is grease a problem?

In the wastewater business, the answer is an emphatic YES! Grease is singled out for special attention because of its poor solubility in water and its tendency to separate from the liquid solution.

Large amounts of oil and grease in the wastewater cause trouble in the collection system pipes. It clings to the walls of sewer lines and decreases pipe capacity, resulting in sewer lines that require cleaning more often and/or replacement sooner than would otherwise be expected due to deterioration of the lines. Oil and grease also hamper effective treatment at the wastewater treatment plant.

FOG in a warm liquid may not appear harmful. But, as the liquid cools, the grease or fat congeals, separating from the liquid, causing mats on the surface of settling tanks and digesters. It can also coat the interior of sewer lines and other surfaces which may cause blockage, malfunction, or shutdown of wastewater treatment units.

Problems caused by wastes from restaurants and other grease-producing establishments have served as the basis for ordinances and regulations governing the discharge of FOG-type materials to the sanitary sewer system. This type of waste has forced the requirement of the installation of preliminary treatment facilities, commonly known as grease traps or interceptors.

What is FOG and where does it come from?

FOG refers to fats, oils, and grease. FOG is commonly found in meats, sauces, gravy, dressing, deep-fried foods, baked goods, cheese, and butter. FOG waste is most commonly generated by processing or serving food.

What do FSEs need to know about FOG?

City of Ridgecrest ordinances prohibit sewer overflows and require Ridgecrest Wastewater to monitor and control these overflows. The City is required to develop and implement a FOG Control Program. The City uses video surveillance cameras and system mapping to identify blockages caused by FOG as well as the sources that contribute to the blockages. Those responsible for FOG will be liable for costs incurred by the City in responding to blockages.

What is a grease trap and how does it work?

A trap is a small reservoir built into the wastewater piping a short distance from the FOG producing area. Baffles in the reservoir retain the wastewater long enough for the FOG to rise to the surface. The FOG can then be removed and disposed of properly. See **Section 1.7.1** for a description of how the various components of a grease trap function and to see an illustration.

What is a grease interceptor?

An interceptor is a larger system than a grease trap and consists of a vault located on the exterior of the building. The vault includes a minimum of two compartments, and flow between each compartment is designed for FOG retention. The capacity of the interceptor provides adequate holding time so that the wastewater has time to cool, allowing any remaining FOG, not collected by the traps, time to solidify. While the FOG rises to the surface, food solids (sludge) and grit settle to the bottom and remain there until such time that the interceptor is cleaned. Grease interceptors shall be sized as recommended by the Uniform Plumbing Code and as approved by the City of Ridgecrest. See **Section 1.7.3** for a description of how the various components of a grease interceptor function.

How do I clean my grease trap and grease interceptor?

Refer to **Section 1.7.2** (Grease Trap Maintenance) and **Section 1.7.4** (Grease Interceptor Maintenance).

Can you recommend a maintenance schedule?

All grease interceptors should be cleaned at least every 90 days or when accumulated FOG and solids reach 25% of the capacity. Some establishments will find it necessary to clean their traps a lot more often, depending on their grease load and discharge characteristics. If the establishment has to clean grease traps and grease interceptors too often, the owner should consider installing a larger trap or interceptor.

Do I have a grease trap?

If the establishment is uncertain whether it has a grease trap, the owner should contact the City of Ridgecrest Public Works Department at (760) 499-5080 for assistance.

Do I need a grease trap or grease interceptor?

Any establishment that introduces grease or oil into the drainage and sewage system in quantities large enough to cause line blockages or hinder sewage treatment is required to install a grease trap or interceptor. Interceptors are required for high volume restaurants (full menu establishments operating 16 hours/day and/or serving 500+ meals per day) and large commercial establishments such as hotels, hospitals, factories, grocery stores, and school kitchens. Grease traps are required for small volume (fast food or take-out restaurants with limited menus, minimum dishwashing, and/or minimal seating capacity). Medium volume establishments may be required to install an interceptor depending upon the size of the establishment.

Is the grease trap I have adequate?

The UPC requires that no grease trap have a capacity less than 20 gallons per minute (gpm) or more than 55 gpm. The size of the trap depends upon the number of fixtures connected to it. The following table provides criteria for sizing grease traps:

Total number of fixtures connected	Required rate of flow, gpm	Grease retention capacity, lbs
1	20	40
2	25	50
3	35	70
4	50	100

The maintenance schedule will also depend largely upon the size. If a grease trap or interceptor is not maintained regularly it will not provide the necessary grease removal. The establishment should work out a specific cleaning schedule that is right for the establishment. All grease traps need to have the grease cleaned out periodically and no one likes to do the job. It is a dirty job. Running extremely hot water down the drain only moves the problem further into the sewer lines. It does not go away. Catch the grease at the source! This is the most economical means to reduce your costs.

What if I don't Install a grease trap?

If the establishment uses grease and oil in food preparation, it will eventually encounter a maintenance problem with a plugged building sewer line. The blockage can create a sewer backup situation and ultimately a potential health problem in the establishment. Someone will have to pay for removing the blockage. If the problem is in the building sewer line, then the establishment has direct responsibility for paying for the maintenance. If the blockage or restriction is in the public sewer main, and it can be proven that the establishment is the cause of the blockage, then the establishment will have to pay for the public sewer to be maintained. Blocking a sanitary sewer line is also a violation of the Federal Clean Water Act and City Code (see **Section 1.2** for applicable regulations).

Who determines if I need a grease trap or interceptor?

The UPC shall guide the Design Engineer in the selection of grease traps and grease interceptors. Furthermore, City of Ridgecrest Codes (see **Section 1.2**) will assist the FSE in determining if a grease trap or interceptor is required. All administrative authorities prohibit the discharge of materials that can solidify and create blockages in the wastewater collection system or treatment plants. The City of Ridgecrest's Public Works Department makes periodic inspections to see that no health problems exist due to improperly maintained grease interceptors. These rules will be enforced if a problem exists. The City of Ridgecrest reserves the right to conduct continuous inspections should any FOG issues exist in the area.

What are the criteria for inspecting grease traps?

All FSEs may be inspected. City of Ridgecrest uses the following criteria during the inspection of grease traps and interceptors:

Percent of Trap Filled	Trap Condition
<25	Good
25-50	Fair
>50	Poor

If the trap is in FAIR condition, the establishment is advised to keep an eye on the maintenance schedule. The cleaning frequency may need to be increased. If the trap is in POOR condition, the establishment will be issued a compliance order to have it cleaned immediately. The establishment will be required to contact the City of Ridgecrest's Public Works Department within 15 days to verify that the grease trap has been properly cleaned.

How can I get in compliance?

The establishment should contact the City of Ridgecrest Public Works Department at (760) 499-5080. If a grease trap or interceptor is needed, the establishment will be required to purchase a permit for the device through the Permit Center located in City Hall. This will enable the Public Works Department to assist the establishment in determining the appropriate cleaning schedules and advise if a problem shows up in the wastewater collection system.

How do I report sewage spills/SSOs?

Contact the City at (760) 499-5084 or (760) 499-5000 to report. Contact the Police Department after hours to report spills. Do not just leave a message.

1.4 Best Management Practices (BMPs)

The following BMPs are provided to assist FSE's with developing procedures to reduce the amount of FOG in their wastewater, thereby reducing maintenance needs and costs associated with their grease control devices. These BMPs also minimize the likelihood of blockages that can back up into an FSE or an adjacent property, release to the environment, and/or be subject to an enforcement action. Employee training and awareness are key to the successful implementation of the BMPs identified herein.

The following Best Management Practices (BMPs) Tables are provided below:

- Table 1 - Prevent Blockages in the Sanitary Sewer System
- Table 2 - Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System
- Table 3 - Prevent Fats, Oils and Grease from Releases to the Environment Through the Storm Drain System

Table 1 - Prevent Blockages in the Sanitary Sewer System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Train kitchen staff and other employees about how they can help ensure BMPs are implemented. Suggest training of new staff during onboarding and existing staff twice annually.	People are more willing to support an effort if they understand the basis for it.	All the subsequent benefits of BMPs will have a better chance of being implemented.	Talk to the establishment manager about the training program that he/she has implemented.
Post "No Grease" signs (in commonly spoken languages) above sinks and on the front of dishwashers.	Signs will remind staff not to pour used fry grease, hood-vent grease, or any other used FOG down the sink drain and to properly dispose of them in a recycle barrel. Contrary to popular belief, adding hot water, detergent, or even commercial degreasers does not liquify the grease long enough to escape your drains.	These reminders will help minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.	Check appropriate locations of “No Grease” signs.
Use water temperatures less than 140°F in all sinks, especially the pre-rinse sink, before the mechanical dishwasher. The mechanical dishwasher requires a minimum temperature of 160°F, but the UPC prohibits discharging the dishwasher to grease traps.	Temperatures in excess of 140°F will dissolve grease, but the grease can re-congeal or solidify in the sanitary sewer collection system as the water cools.	The FSE will reduce its cost for the energy, gas or electric for heating the water.	Check boiler or hot water discharge temperature. Measure the temperature of the hot water being discharged from the closest sink to the water heater.
Use a three-sink dishwashing system, which includes sinks for washing, rinsing, and sanitizing in a 50-100 parts per million (ppm) bleach solution. Water temperatures are less than 140°F (See above).	The three-sink system uses water temperatures less than 140°F where a mechanical dishwasher requires a minimum temperature of 160°F (See above). Note: The UPC prohibits the discharge of dishwasher water to grease traps.	The FSE will reduce its costs for the energy - gas or electric for heating the water for the mechanical dishwasher and for operating the dishwasher.	Measure temperature of the hot water at the three-sink system.

Table 1 - Prevent Blockages in the Sanitary Sewer System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Recycle waste cooking oil.	There are many waste oil recyclers throughout Kern County. This is a cost recovery opportunity. See **Section 1.6**, Haulers and Recyclers, below.	The FSE may be paid for the waste material and will reduce the amount of garbage it must pay to have hauled away.	Obtain name of recycler used. Review recycling records. Confirm records with recycler. The FSE shall maintain records for a minimum of 5 years.
"Dry wipe" pots, pans, and dishware prior to dishwashing. Soak up oils and grease around fryer baskets and dispose of the in the trash. For a 50% reduction in FOG discharge, disconnect and remove garbage disposals.	The grease and food that remains in pots, pans, and dishware will likely go to the landfill. By "dry wiping" and disposing in garbage receptacles, the material will not be sent to the grease traps and interceptors.	This will reduce the amount of material going to grease traps and interceptors, which will require less frequent cleaning, reducing maintenance costs.	Observe dishwashing practices.
Dispose of food waste by recycling and/or solid waste removal rather than the pre-rinse sink. Install fine-meshed screens in the drain of each sink. Collect screened material and dispose of in the garbage.	Some recyclers will take food waste for animal feed. In the absence of such recyclers, the food waste can be disposed of. Solid waste can accommodate 20 percent liquid so even your gravies and other oily sauces can be sent to the dumpster. Handle solid waste wisely for health safety: secure trash bags, dump daily, and keep dumpster lid secured.	Recycling of food wastes will reduce the cost of solid waste disposal. Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.	Inspect grease traps and interceptors for food waste accumulation. Confirm the recycler or solid waste removal company with the establishment manager.
Avoid spills. When spills occur, dry spills should be swept or vacuumed while FOG spills should be covered with absorbent materials (e.g., sand, sawdust, "kitty" litter, salt, paper towels, etc.) and disposed of in the trash.	FOG and food that are spilled and wiped up should not be intentionally rinsed down sinks and sent to the grease traps and interceptors. If those materials are wiped up and disposed of in the trash, they will go to the landfill instead of potentially ending up in the sanitary sewer collection system.	Recycling of food waste (as mentioned above) and solid waste disposal of spilled FOG and food waste will reduce the frequency and cost of grease trap and interceptor cleaning.	Confirm the recycler or solid waste removal company with the establishment manager.

Table 1 - Prevent Blockages in the Sanitary Sewer System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Clean building drains at least one time per year.	Building drains can accumulate spilled FOG, solids, debris, etc. that can make their way into the sanitary sewer collection system.	Routine cleaning will reduce amount of material going to grease interceptors (reducing maintenance costs for interceptor) and will prevent plugging of the sewer line between the FSE and the sanitary sewer system. If the line plugs, the sewer line may back up into the establishment, and the business will need to hire someone to unplug it.	Collect, wipe up, and vacuum out FOG, solids, debris, etc. prior to cleaning drain with soap and water.
Use disposal paper products, rather than dishware.	To minimize/eliminate dishwashing.	Disposal paper products will reduce the frequency and cost of grease trap and interceptor cleaning, and reduce water utility costs.	None.

Table 2 - Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Witness all grease trap or interceptor cleaning/maintenance activities to ensure the device is properly operating. Verify that no removed water or materials are reintroduced into the sewer system other than at qualified disposal stations.	Grease trap/interceptor pumpers may take shortcuts. If the establishment manager inspects the cleaning operation and ensures it is consistent with the procedures in **Sections 1.7.2 and 1.7.4, and on the reverse side of the Grease Interceptor/Trap Log**, they are more assured of getting full value for their money.	The establishment will ensure it is getting value for the cost of cleaning the grease trap or interceptor. Otherwise, the establishment may be paying for cleaning more often than necessary.	None.
Clean undersink grease traps weekly. If grease traps are more than 50% full when cleaned weekly, the cleaning frequency needs to be increased. Verify that no removed water or materials are reintroduced into the sewer system other than at qualified disposal stations. Document the inspection and cleaning on the Grease Interceptor/Trap Log in **Attachment 2.**	Undersink grease traps have less volume than grease interceptors. Weekly cleaning of undersink grease traps by the establishment's maintenance staff will reduce the cost of cleaning the grease interceptor. If the establishment does not have a grease interceptor, the undersink grease trap is the only means of preventing grease from enter the sanitary sewer system. If the grease trap is not providing adequate protection, the local sewer agency may require installation of a grease interceptor.	This will extend the length of the cleaning cycle for grease interceptors that the establishment maintains.	Visually inspect the contents of the undersink grease trap. Inspect cleaning records. Refer to **Section 1.7.1** below.

Table 2 - Properly Maintain Grease Traps and Interceptors to Prevent Introduction into the Sanitary Sewer System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Inspect and fully clean grease interceptors monthly at a minimum (more often if less than 75% of the capacity remains). During the inspection check the integrity of baffles and check the inlet piping for flow restrictions. Open both manholes and confirm that the "tees" on pipes are intact. During the inspection, the grease layer should be documented by pushing a garden hoe handle through the grease layer and taking a core sample with a "sludge judge." Verify that no removed water or materials are reintroduced into the sewer system other than at qualified disposal stations. Document the inspection and cleaning on the Grease Interceptor/Trap Log in **Attachment 2.**	Grease interceptors must be cleaned routinely to ensure that grease accumulation does not cause the interceptor to operate poorly. The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged by the establishment.	Routine cleaning will prevent plugging of the sewer line between the FSE and the sanitary sewer system. If the line plugs, the sewer line may back up into the establishment, and the business will need to hire someone to unplug it.	Verify that no more than 25% of the depth is taken up by the combination of grease (top) and sediment (bottom). Inspect cleaning records. Refer to **Section 1.7.3** below.
Keep a maintenance log	The maintenance log serves as a record of the frequency and volume of cleaning the interceptor. It is required by the pretreatment program to ensure that grease trap/interceptor maintenance is performed on a regular basis.	The maintenance log serves as a record of cleaning frequency and can help the establishment manager optimize cleaning frequency to reduce cost.	Inspect maintenance log. Note that inspection and cleaning records must be maintained on the premises for a period of 5 years (minimum) and be readily available for inspection by City of Ridgecrest personnel. Confirm the maintenance log with the grease hauler identified.

Table 3 - Prevent Fats, Oils and Grease from Releases to the Environment Through the Strom Drain System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Cover outdoor grease and oil storage containers. Some local jurisdictions will have BMPs in place for stormwater also.	Uncovered grease and oil storage containers can collect rainwater. Since grease and oil float, the rainwater can cause an overflow onto the ground. Such an overflow will eventually reach the stormwater system and nearby streams.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**see Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	Observe storage area for signs of oil and grease. Inspect containers for covers. Remove covers to ensure containers have not overflowed and do not have excess water.
Locate grease dumpsters and storage containers away from storm drain catch basins.	The farther away from the catch basin, the more time someone has to clean up spills or drainage prior to entering the storm drain system. Be aware of oil and grease dripped on the ground while carrying waste to the dumpster, as well as oil and grease that may "ooze" from the dumpster.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**see Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	Observe storage area for signs of oil and grease. Inspect the closest catch basin for signs of accumulated grease and oil.

Table 3 - Prevent Fats, Oils and Grease from Releases to the Environment Through the Strom Drain System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Install spill controls (AKA drop 90's or "elbows" in catch basins if grease dumpsters and containers must be nearby.	Spill controls extend below the water surface and trap floatable materials like oil and grease, preventing them from traveling further downstream.	The discharge of grease and oil to the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**see Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	Check the nearest catch basin and drainage paths for signs of oil and grease. Require spill controls if the basin is within 20 feet of grease dumpsters or containers, or if there are signs of grease in the catch basin at any distance.
Use absorbent pads or other material in the storm drain catch basins if grease dumpsters and containers must be located nearby. Do not use free flowing absorbent materials such as "kitty litter" or sawdust.	Absorbent pads and other materials can serve as an effective barrier to grease and oil entering the storm drain system.	The discharge of grease and oil the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**see Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	Check the nearest catch basin and drainage paths for signs of grease and oil. Require absorbent pads if the basin is within 20 feet of grease dumpsters or containers, or if there are signs of grease in the catch basin at any distance. Do not permit the use of free-flowing absorbent material such as "kitty litter."

Table 3 - Prevent Fats, Oils and Grease from Releases to the Environment Through the Strom Drain System			
BMP	**Reason For BMP**	**Benefits to FSE**	**Pretreatment Inspection Tips**
Use absorbent pads or other materials to clean up spilled material around outdoor equipment, containers, or dumpsters. Do not use free flowing absorbent materials such as “kitty litter” or sawdust that can be discharges to the storm drain system.	Absorbent pads or materials can help clean up grease and oil that is spilled on the ground and prevent it from flowing to the storm drain system.	The discharge of grease and oil the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	If grease and oil are observed on the ground in the storage area, recommend the use of absorbents to minimize movement of the grease and oil. Do not permit the use of free-flowing absorbent material such as “kitty litter.”
Routinely clean kitchen exhaust system filters.	If grease and oil escape through the kitchen exhaust system, it can accumulate on the roof of the establishment and eventually enter the storm drain system when it rains.	The discharge of grease and oil the storm drain system will degrade the water quality of receiving streams by adding biological and chemical oxygen demand to the stream. Discharging grease and oil into the storm drain is prohibited by City, State, and Federal regulations (**Section 1.2**). Failure to prevent the discharge of grease and oil into the storm drainage system may result in legal penalties, fines, and/or physical disconnection from the sanitary sewer.	None.

1.5 Prohibitions

DO NOT…	Basis
Do not discharge fats, oils and grease in concentrations that will cause an obstruction to the flow in a sewer or allow the FOG to pass through or cause interference at the wastewater treatment facility.	Grease can solidify and trap other solid particles to completely plug the wastewater collection system.
Do not discharge grease, improperly shredded garbage, animal guts or tissues, paunch manure, bones, hide, hair, fleshings, or entrails.	These materials in combination or alone can cause blockages and other operations and maintenance problems in the wastewater collection and treatment system.
Do not discharge wastewater with temperatures in excess of 140°F to any grease traps. This includes water from mechanical dishwashers that have a minimum required temperature of 160°F.	Temperature in excess of 140°F will dissolve grease, but the grease can re-congeal and cause blockages further downstream in the sanitary sewer collection system as the water cools. Note: High temperature water, such as from a dishwasher, is discharged to the remotely located grease interceptor, if there is one. The remote location and the high volume of the interceptor allows the water time to cool so there is not a problem with dissolving grease and moving it further downstream. The high volume also provides dilution to the detergents in the dishwasher waste.
Do not discharge waste from a food waste disposal unit to any grease traps.	The food waste will greatly reduce the capacity of the grease trap for retaining grease and can cause worse problems with blockages.
Do not discharge caustics, acids, solvents, or other emulsifying agents.	Though emulsifying agents can dissolve solidified grease, the grease can re-congeal further downstream in the sanitary sewer collection system. Caustics, acids, and solvents can have other harmful effects on the wastewater treatment system and can be a hazard to employees working the wastewater collection system. These types of substances can damage the sewage collection system leaving the discharger liable for damages.
Do not discharge fats, wax, grease or oils containing substances that will become viscous between 32°F (0°C) and 150°F (65°C).	The temperatures shown are temperatures that can occur in the wastewater collection and treatment system. If these substances congeal, solidify, or become too viscous, they can cause blockages and other operations and maintenance problems.
Do not clean equipment outdoors in an area where water can flow to the gutter, storm drain, or street.	Grease and dirt will be washed off the equipment and released to the environment.

1.6 Support Services (Haulers and Recyclers)

Choosing a grease hauler

When selecting a grease hauler, be aware that services and prices can vary. Minimum services should include:

- Complete pumping and cleaning of the interceptor and sample box, rather than just skimming the grease layer.
- Deodorizing and thorough cleaning of affected areas, as necessary.
- Disposal/reclamation at an approved location. Each business shall retain a manifest indicating to whom the FOG/debris was released and also to where it was disposed by the hauler. Said records shall be kept for a minimum of 5 years.
- Notes concerning the condition of the interceptor, including pictures for City review (upon request).
- Complete pumping and cleaning record.

You and your hauler should agree on an adequate cleaning frequency to avoid blockage of the line.

1.7 Grease Control Devices

The following sub sections describe in detail the operations, function, and maintenance of common grease control devices (i.e., grease traps and grease interceptors). An installation checklist has been provided for easy reference, however, manufacturer operation and maintenance manuals must be consulted for additional detail.

Each new grease control device that is installed to replace or upgrade an existing grease control device will be required to meet all criteria required by the current uniform plumbing code. For properties with multiple FSE's on a single parcel, each FSE shall be individually and separately responsible for installation and maintenance of the grease interceptor. A single grease interceptor can be used to service multiple FSE's only upon approval by the City of Ridgecrest Public Works Director.

1.7.1 How a Grease Trap Works

Figure 1 and the table below describe the operations of a grease trap. Also, see **Section 1.7.3** for Grease Interceptor Operations.

A	Flow from four or fewer kitchen fixtures enters the grease trap.
B	An approved flow control or restricting device is installed to restrict the flow to the grease trap to the rated capacity of the trap.
C	Air intake valves allow air into the open space of the grease trap to prevent siphonage and back-pressure.
D	The baffles help to retain grease toward the upstream end of the grease trap since grease floats and will generally not go under the baffle. This helps to prevent grease from leaving the grease trap and moving further downstream where it can cause blockage problems.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease trap and will need to be removed during routine grease trap cleaning.
F	Oil and grease floats on the water surface and accumulates behind the baffles. The oil and grease, and any floating solids, will be removed during routine grease trap cleaning.
G	Air relief is provided to maintain proper air circulation within the grease trap
H	Some grease traps have a sample point at the outlet end of the trap to sample the quality of the grease trap effluent.
I	A cleanout is provided at the outlet or just downstream of the outlet to provide access into the pipe to remove any blockages.
J	The water exits the grease trap through the outlet pipe and continues on to the grease interceptor or to the sanitary sewer system.

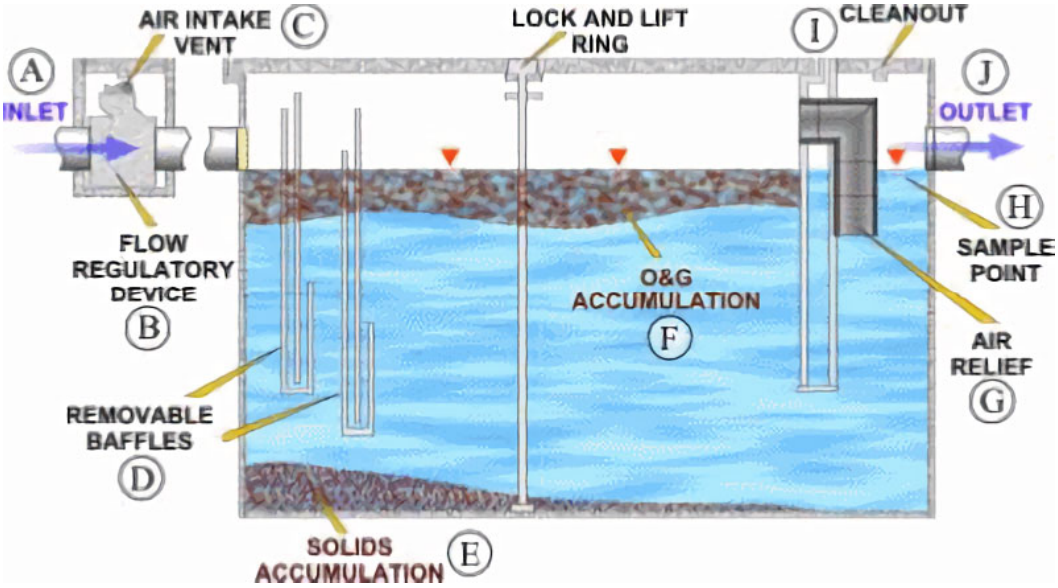


Figure 1 - Diagram of Grease Trap

1.7.2 Grease Trap Maintenance

Grease trap maintenance is usually performed by maintenance staff, or employees of the establishment. When performed properly and at the appropriate frequency, grease trap maintenance can greatly reduce the discharge of FOG into the wastewater collection system. The required maintenance frequency for grease traps depends greatly on the amount of FOG a facility generates as well as any BMPs that the establishment implements to reduce the FOG discharged into its sanitary sewer system. Grease traps have less volume than grease interceptors and require more frequent cleaning. It is recommended that grease traps be cleaned weekly by the establishment's staff. In many cases, an establishment that cleans their grease traps more frequently and implements BMPs will realize financial benefit through a reduction in their required grease interceptor maintenance frequency. Refer to **Section 1.4** for examples of BMPs that FOG generating establishments should Implement.

WARNING! Do not use hot water, acids, caustics, solvents, or emulsifying agents when cleaning grease traps and interceptors.

Grease trap maintenance is outlined in the table below. See also **Section 1.7.4** for Grease Interceptor Maintenance**.**

Step	Action
1	Bail out any water in the trap to facilitate cleaning. The water should not be discharged to the sanitary sewer.
2	Remove baffles if possible.
3	Dip the accumulated grease, and any floating solids, out of the trap and deposit in a watertight container.
4	Scrape the sides, the lid, and the baffles with a putty knife to remove as much of the grease as possible and deposit the grease into a watertight container.
5	Scrape and remove any solids that deposited on the bottom of the grease trap and properly dispose of for pickup by solid waste haulers to a landfill.
6	Contact a hauler or recycler for grease pick-up.
7	Replace the baffle and the lid.
8	Record the volume of grease removed on the maintenance log.

1.7.3 How a Grease Interceptor Works

Figure 2 and the table below describe the operations of an Exterior Grease Interceptor.

A	Flow from undersink grease traps or directly from plumbing fixtures enters the grease interceptor. The UPC requires that all flow entering the interceptor must enter through the inlet pipe.
B	An approved flow control or restricting device is installed to restrict the flow to the grease interceptor to the rated capacity of the interceptor.
C	An air intake vent allows air into the open space of the grease interceptor to prevent siphonage and back-pressure.
D	Oil and grease floats on the water surface and accumulates behind the grease retaining fittings and the wall separating the compartments. The FOG materials will be removed during routine grease interceptor cleaning.
E	Solids in the wastewater that do not float will be deposited on the bottom of the grease interceptor and will need to be removed during routine grease interceptor cleaning.
F	Grease retaining fittings extend down into the water to within 12 inches of the bottom of the interceptor. Because grease floats, it generally does not enter the fitting and is not carried into the next compartment. The fittings also extend above the water surface to provide air relief.
G	Some interceptors have a sample box so that inspectors or employees of the establishment can periodically take effluent samples. Having a sample box is recommended by the UPS but not required.
H	Flow exits the interceptor through the outlet pipe and continues to the sanitary sewer system.

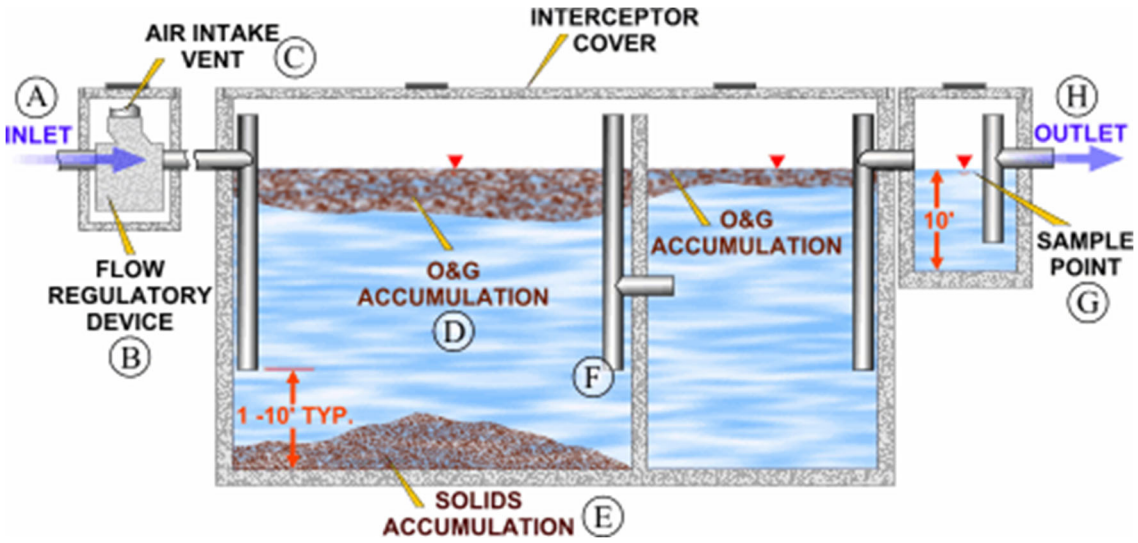


Figure 2 - Diagram of Grease Interceptor

1.7.4 Grease Interceptor Maintenance

Grease interceptors, due to their size, must be cleaned by licensed grease haulers or recyclers. Licensed septic haulers may also pump out grease interceptors and haul the waste to an approved facility. Grease interceptor maintenance consists of removing the entire volume (liquids and solids) from the grease interceptor and properly disposing of the material in accordance with all Federal, State, and/or local laws. When performed properly and at the appropriate frequency, grease interceptor maintenance can greatly reduce the discharge of FOG into the wastewater collection system. The required maintenance frequency depends greatly on the amount of FOG a facility generates and any BMPs that the establishment implements to reduce FOG discharged into its sanitary sewer system. Generally, all grease interceptors should be cleaned at least every 90 days or when accumulated FOG and solids reach 25% of the capacity. A proper maintenance procedure for a grease interceptor is outlined below. NOTE: Since the establishment is liable for the condition of their pretreatment devices, it is advised that the establishment owners/representatives witness all cleaning/maintenance activities to verify that the interceptor is being fully cleaned and properly maintained.

Step	Action
1	Contact a grease hauler or recycler for cleaning. See **Section 1.6**, Grease Haulers and Recyclers.
2	Ensure that all flow is stopped to the interceptor by shutting the isolation valve in the inlet piping to the interceptor.
3	Remove the lid and bail out any water in the trap or interceptor to facilitate cleaning. Verify that no removed water or materials are reintroduced into the sewer system other than at qualified disposal stations.
4	Remove baffles if possible.
5	Dip the accumulated grease out of the interceptor and deposit in an appropriate grease barrel to be hauled away.
6	Pump out solids from the bottom and then the remaining liquids.
7	Scrape the sides, the lid, and the baffles to remove as much of the grease as possible and pump this removed material from the interceptor.
8	Replace the baffle (if necessary) and the lid.
9	Record the date of the service, the name of the operator, the volume of grease removed, any notes from the service, and sign the maintenance log. Retain and require a manifest of the disposal location.

1.7.5 Grease Control Device Installation Checklist

Number	Item Description
1	Point of use grease trap serves not more than four separate fixtures. Grease trap is sized based upon the number of fixtures discharging to it. See **Section 1.2**, FAQ's.
2	Grease traps have a water seal of not less than two inches in depth or the diameter of its outlet, whichever is greater.
3	No food waste disposal unity or dishwasher is connected to or discharges into any grease trap. Food waste disposal units or dishwasher may discharge to exterior grease interceptor.
4	Waste from toilets and urinals does not discharges to the grease interceptor.
5	Waste in excess of 140°F is not discharged to any grease trap. (Dishwasher with a min. temperature of 160°F is not discharged to any grease trap.)
6	The vertical distance between the fixture outlets and grease trap weirs is as short as practical.
7	Grease interceptor is as close as practical to the fixtures served.
8	Each fixture connected to a grease trap is provided with an approved type flow control or restricting device installed in a readily accessible and visible location. Devices shall be designed so that the flow through the devices at no time exceeds the rated capacity of the grease trap or interceptor.
9	Each fixture discharging into a grease trap or interceptor is individually trapped and vented in an approved manner.
10	Appropriate grease trap or interceptor is installed.
11	Grease interceptor is easily accessible for inspection and cleaning and access does not require the use of ladders or the removal of bulky equipment.
12	There is a minimum of one access point into each compartment of the interceptor and no access points are greater than 10 feet apart. Each access opening is leak-resistant and cannot slide, rotate, or flip.
13	Location of grease interceptor is shown on approved building plans. Drawings of interceptor are complete and have all dimensions, capacities, reinforcing and structural design calculations.
14	Grease interceptor is not installed in any part of a building where food is handled. Location shall meet the approval of the Administrative Authority (Design Engineer and the City of Ridgecrest).
15	The inlet and outlet fittings shall be a baffle tee (or similar flow device) that extends at least 4 inches above the water level to within 12 inches of the bottom of the interceptor. The outlet tee out of a sample box shall extend at least 6 inches below the water surface. Flow between the separate compartments is through a baffle tee or bend that extends down to within 12 inches of the bottom of the interceptor.
16	The liquid depth of a grease interceptor shall be greater than or equal to 2'-6" and less than 6'-0".

Number	Item Description
17	There shall be a minimum of 9 inches of open vent space above the water level to the top of the interceptor. The airspace has a minimum capacity equal to 12-1/2% ($1/8^{th}$) of the grease interceptor's liquid volume.
18	The grease interceptor has at least one square foot of surface area for every 45 gallons of liquid capacity.
19	All waste enters the interceptor through the inlet pipe.
20	Grease interceptor cover is gastight and has a minimum opening of 20 inches in diameter.
21	Grease interceptors located in areas of pedestrian or vehicle travel are adequately designed to support the imposed loads. Review of structural calculation may be required to verify adequacy.
22	Redwood baffles are not installed in grease interceptor.
23	A sample box is provided on the outlet side of the grease interceptor as recommended by the UPC so that the Administrative Authority can periodically sample the effluent quality. For additional information refer to the City of Ridgecrest Engineering Design Standards on the City website.
24	Grease interceptor is permanently and legibly marked with the manufacturer's name of trademark, model number, UPC certification mark and registration (if product is listed by the International Association of Plumbing and Mechanical Officials), and any other markings required by law.

1.8 Permits, Record Keeping, and Reporting Requirements

Any FSE proposing to discharge wastewater containing FOG into the City's sewer system is required to obtain a FOG Wastewater Discharge Permit from the City when applying for or renewing its annual business license. If you have not turned in a FOG Wastewater Discharge Permit, please fill out the FOG Wastewater Discharge Permit Application in **Attachment 1** and return it to Public Works at City Hall.

Under certain circumstances, the City may require and FSE to enter into a CSA. CSA's may include, but are not limited to, the following:

- BMPs implemented by the establishment
- Description of the FSE operation
- Description of the location and size of any grease interceptors and grease traps present
- Description of how the grease interceptor or grease trap will be maintained (cleaned), including frequency
- Description of how the FSE will comply with reporting requirements

The forms attached to this manual contain recordkeeping logs that FSE's shall use to document servicing and maintenance of grease control devices and removal of grease. FSE's will be required to keep current logs. If there are multiple establishments discharging to an obstructed pipeline, it will be assumed that those establishments not following BMPs contributed to the sanitary sewer overflow.

The City has developed the six (6) forms in the Attachments for use by FSEs as follows:

- Attachment 1 - FOG Wastewater Discharge Permit Application
- Attachment 2 - Grease Interceptor/Trap Log
- Attachment 3 - Grease Barrel Collection Log
- Attachment 4 - Exhaust Hood Maintenance Log
- Attachment 5 - Grease Control Device & BMP Inspection Report
- Attachment 6 - Proper Pump Out Procedure for Grease Interceptor

Attachment 1 - FOG Wastewater Discharge Permit Application

FATS, OILS, GREASE WASTEWATER DISCHARGE PERMIT APPLICATION

Application Date:	Month		Day		Year	Assessors Tax Number (ATN) Number:

Business Name:	Contact Person Name & Title:
Physical Address:	Mailing Address: (If Different)
Telephone Number:	24 Hour Emergency Phone Number:
E-mail:	Fax. Number:
Principal/Owner/Major Shareholders Name and Address:	If leased, Property Manager Name and Address:
	Property Manager Phone Number:
	Property Manager Emergency Phone Number

Is your company a limited food serice establishment? (A limited food preparation establishment is not considered a Food Service Establishment (FSE) when engaged only in reheating, hot holding or assembly of ready to eat food products and as a result, there is no wastewater discharge containing a significant amount of FOG. A limited food preparation establishment does not include any operation that changes the form, flavor, or consistency of food.)	Yes / No
Do you have garbage disposal or waste food grinder?	Yes / No
Do you have drain screens?	Yes / No
Do you have an exhaust hood?	Yes / No
Do you have an indoor grease trap?	Yes / No
Do you have an outdoor grease interceptor?	Yes / No
Approximatley how many employees do you have?	

Please Provide a description of your FSE including hours of operation, cuisine, service activities, and anything else that my help the Department evaluate your application.

CERTIFICATION: I certify under penalty of law that the information is true and accurate and complete to the best of my knowledge. I also understand this is not a permit but rather an application for a permit.

Signature: Title: Print Name: Date:

City of Ridgecrest WWTF - 100 W. California Ave, Ridgecrest, CA 93555 - (760) 499-5084

Attachment 2 - Grease Interceptor/Trap Log

GREASE INTERCEPTOR/TRAP LOG

Useful Information on the back

KEEP ON FILE ON PREMISES FOR NO LESS THAN 2 YEARS

INSTRUCTIONS: To be filled out by the Food Service Establisment and filed in the FSE On-Site Compliance Binder. Use this form to record pumping, inspection and maintenance of your grease interceptor/trap. The company working on the interceptor/trap should sign this form if possible. If this form is not available when the interceptor/trap is serviced, the servicing company should leave a signed receipt with the service information. Record that information on this log. **Manifest is required.**

Business Name:

Address:

MANAGER: Your initial on this form acknowledges that the service establishment hasdisposed of its grease in a lawful manner, accounts accurately for the volume of grease disposed of and that the interceptor/trap has been maintained properly.

	DATE	SERVICED BY:	VOLUME	MGR	NOTES
1.					
2.					
3.					
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19.					
20.					

If the grease and solids occupy greater than 25 percent of a grease interceptor or grease trap's capacity, the FSE is required to perform a full cleaning of the interceptor/trap. Cleaning of an interceptor must be performed by a licensed waste hauler with an approved license from an authorizing agency. Both vaults of a grease interceptor shall be left completely empty upon completion of the pumping operation. The grease mat, liquids, sludge, and scrapings from the interior walls must be removed. Under **NO** circumstances, may the waste hauler reintroduce the removed water or materials into the City's sewer system, other than at qualified disposal stations. Flushing an interceptor with hot water, or the use of chemicals or other agents to dissolve or emulsify grease and allow it to flow into the wastewater treatment system is a violation of City Code. Since the FSE is the generator of the grease waste, it is liable for the condition of their pretreatment devices. It is recommended that the FSE owner or designee witness all cleaning and maintenance activities to verify that the grease interceptor is being fully cleaned and properly maintained. 72 hour notice is required to the City of Ridgecrest so that the Pretreatment Inspector may be present should they desire. Any introduction of contaminants into the Sanitary Sewer warrants the issuance of an Administrative Citation.

Attachment 3 - Grease Barrel Collection Log

GREASE BARREL COLLECTION LOG

KEEP ON FILE ON PREMISES FOR NO LESS THAN 2 YEARS

INSTRUCTIONS: To be filled out by the Food Service Establisment and filed in the FSE On-Site Compliance Binder. Use this form to record grease collection pick-up times and volumes. The company collecting the waste grease should sign this form if possible. If this form is not available when pick-ups are made, the collecting company should leave a signed receipt with the collection information. Record that information on this log.

Business Name:

Address:

MANAGER: Your initial on this form acknowledges that the service establishment has disposed of its grease in a lawful manner and accounts accurately for the volume of grease disposed.

	DATE	SERVICED BY:	VOLUME	MGR	NOTES
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

Attachment 4 - Exhaust Hood Maintenance Log

EXHAUST HOOD MAINTENANCE LOG

KEEP ON FILE ON PREMISES FOR NO LESS THAN 2 YEARS

INSTRUCTIONS: To be filled out by the Food Service Establisment and filed in the FSE On-Site Compliance Binder. Use this form to record cleaning and maintenance of exhaust hoods and ducts, by contracted cleaning services or by regularly scheduled in-house maintenance.

Business Name:

Address:

MANAGER: Your signature on this form acknowledges that the service establishment has performed proper maintenance on its exhaust hoods.

	DATE	SERVICED BY:	MANAGER:	NOTES
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				

Attachment 5 - Grease Control Device & BMP Inspection Report

GREASE CONTROL DEVICE & BEST MANAGEMENT PRACTICES INSPECTION REPORT

Name of Facility:	Physical Address:

Name/Title of Facility Contact:	Mailing Address:
Phone Number:	Email Address:

Facility / BMP Inspection:

1.		Food Grinder in Use	Installation/useage not recommended per city SSMP
2.		Grease Collection Maintenance Log	Must be kept current and available
3.		Exhaust Hood Maintenance Log	Must be kept current and available
4.		Employee Training Log	Must be kept current and available
5.		Drain Screens Installed/Maintained	Must be present and in good working condition
6.		Food Waste Practices	Food Waste must not be placed in the sink(s)
7.		Dry Wiping Practices	Cookware & Dishes Dry Wiped of food before washing
8.		Emergency Spill Response Materials	Grease Absorbent Materials ready in case of a spill
9.		BMP Poster(s) in approved areas	BMP Materials Visible in food Prep & dishwashing areas
10.		Other:	

Remarks:

( )	Facility is in **COMPLIANCE**. No corrective action is required at this time
( )	**NOTICE OF NON-COMPLIANCE**

Grease Control Device (GCD):

11.		Is the Grease Interceptor accessible for Inspection?
12.		Is the Interceptor within its capacity?
13.		Does the Sample Box have Excessive oil and Grease?
14.		Is the Discharge (Effluent) Line Clear?
15.		Are the Baffle Tubes Plugged, Submerged, Damaged or Missing?
16.		Other:

Remarks:

( )	Facility is in **COMPLIANCE**. No corrective action is required at this time
( )	**NOTICE OF NON-COMPLIANCE**

The Items marked as deficient must be corrected within _____ days from the date of this notice.

Acknowledgement of receipt by Facility Contact	Inspector
_____ Date _____	_____ Date _____
Print Name:	Print Name:

Attachment 6 - Proper Pump Out Procedure for Grease Interceptor

PROPER PUMP OUT PROCEDURE FOR GREASE INTERCEPTOR

KEEP ON FILE ON PREMISES FOR NO LESS THAN 2 YEARS

If the grease and solids occupy greater than 25 percent of a grease interceptor or grease trap's capacity, the FSE is required to perform a full cleaning of the interceptor/trap. Cleaning of an interceptor must be performed by a licensed waste hauler with an approved license from an authorizing agency. Both vaults of a grease interceptor shall be left completely empty upon completion of the pumping operation. The grease mat, liquids, sludge, and scrapings from the interior walls must be removed. Under **NO** circumstances, may the waste hauler reintroduce the removed water or materials into the City's sewer system, other than at qualified disposal stations. Flushing an interceptor with hot water, or the use of chemicals or other agents to dissolve or emulsify grease and allow it to flow into the wastewater treatment system is a violation of City Code. Since the FSE is the generator of the grease waste, it is liable for the condition of their pretreatment devices. Since the FSE is paying for the cleaning service, the FSE owner or designee may want to witness all cleaning and maintenance activities to verify that the grease interceptor is being fully cleaned and properly maintained.

Step 1:	Skim the entire grease cap and debris from the top of the interceptor. The interceptor may need to be agitated slightly to loosen the grease cap.
Step 2:	Place vacuum tube all the way into the interceptor to suck remaining solids from the bottom.
Step 3:	Vacuum water out of the interceptor.
Step 4:	Scrape and clean the sides and bottom of the trap. This may be done by "backflowing" the water from the pump truck or by using a hot water source to pressure wash the interceptor. Make sure the walls and baffles of the trap are completely clean.
Step 5:	Vacuum remaining water out of the trap.
Step 6:	Check that the sanitary "T's" on the inlet and outlet sides of the interceptor are not clogged or loose
Step 7:	Make sure that the baffle is secure and in place.
Step 8:	Inspect the interceptor for any cracks or defects.
Step 9:	Check that lids are securely and properly seated after completion of pumping.

D3. CalFOG Grease Hauling & Rendering Companies

Grease Hauling and Rendering Companies

Fresno		
Fresno	All Valley Environmental, Inc.	(559) 498-8378
Fresno	Ameriguard Maintenance Services	(800) 347-7876 xt 14
Kern		
Kern	All Valley Environmental, Inc.	(559) 498-8378
Kern	Ameriguard Maintenance Services	(800) 347-7876 xt 14
Kern	Baker Commodities	800 427 0696
Kern	One More Time	(800) 624-5504
Kern	SMC Grease Specialist	(951) 788-6042
Kings		
Kings	All Valley Environmental, Inc.	(559) 498-8378
Kings	Ameriguard Maintenance Services	(800) 347-7876 xt 14
Kings	ModestoTallow/Florin Tallow Co.	(209) 522-7224
Kings	ModestoTallow/Florin Tallow Co.	(800) 564-7204
Kings	One More Time	(800) 624-5504
Monterey		
Monterey	All Valley Environmental, Inc.	(559) 498-8378
Monterey	Ameriguard Maintenance Services	(800) 347-7876 xt 14
Monterey	Bay Pumping	(831) 320 5229
Monterey	Greenline/Tom's Septic Tank Service	(831) 422-2298
Monterey	One More Time	(800) 624-5504
Monterey	P.S.T.S (Peninsula Septic Tank Service)	(831) 659-2465
Monterey	Pioneer Liquid Transport	(800) 804-7327
Monterey	Salinas Tallow	(800) 621-9000
Monterey	Salinas Tallow Co.	(831) 422-6436
Monterey	Trap Recyclers Inc	(408) 892-3824
Monterey	Trap Recyclers Inc	(800) 994-7867
San Luis Obispo		
San Luis Obispo	All Valley Environmental, Inc.	(559) 498-8378
San Luis Obispo	Ameriguard Maintenance Services	(800) 347-7876 xt 14
San Luis Obispo	Bay Pumping	(831) 320 5229
San Luis Obispo	Clay's Septic and Jetting, Inc	(805) 929-5065
San Luis Obispo	One More Time	(800) 624-5504
San Luis Obispo	Salinas Tallow	(800) 621-9000
Santa Barbara		
Santa Barbara	All Valley Environmental, Inc.	(559) 498-8378
Santa Barbara	Ameriguard Maintenance Services	(800) 347-7876 xt 14
Santa Barbara	Bay Pumping	(831) 320 5229
Santa Barbara	Biodiesel Industries, Inc.	(805) 683 8103
Santa Barbara	Clay's Septic and Jetting, Inc	(805) 929-5065
Santa Barbara	One More Time	(800) 624-5504
Santa Barbara	Salinas Tallow	(800) 621-9000
Santa Barbara	SMC Grease Specialist	(951) 788-6042

D4. High Priority Line Cleaning List

City of Ridgecrest
Sewer System Management Plan
High Priority Line Cleaning List

Name	Associated Manhole	Cleaning Frequency
McDonalds Line	MH #53002	3 Month
Pierce School Line	MH #53072	3 Month
Immanuel Christian School Line	MH #62305	3 Month
Casa Corona Restaurant Line	MH #62307	3 Month
Downs/Drummond	MH #51160	3 Month

Appendix E

SSO Logs and Trend Data (2009-2020)

City of Ridgecrest
Sewer System Management Plan
SSO Logs and Trend Data (2009-2020)

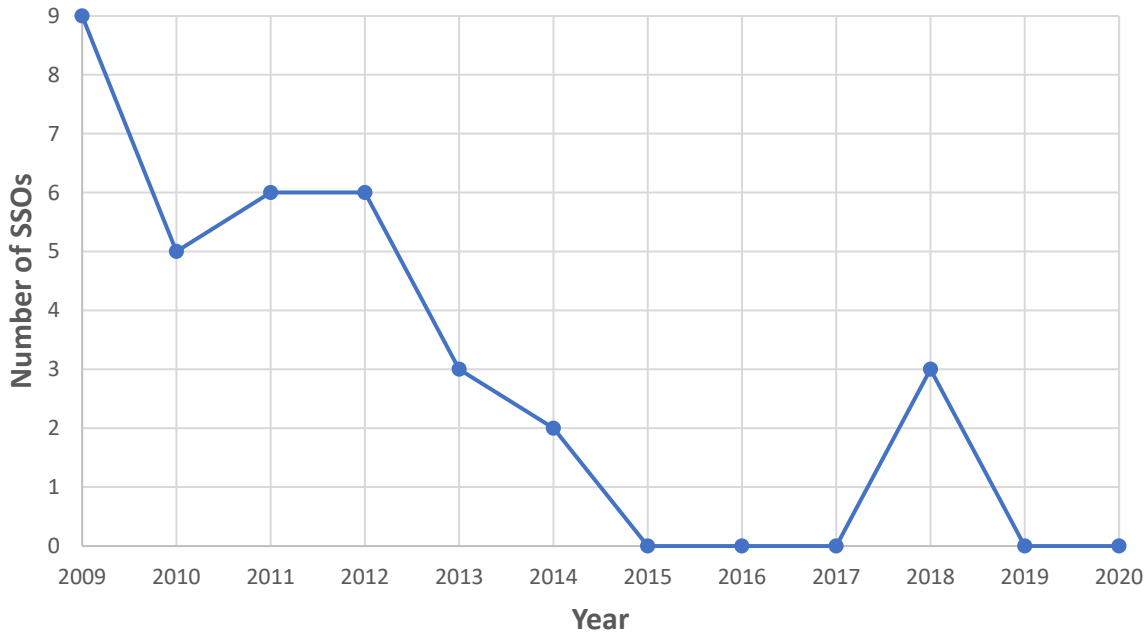
SSO Report Log Summary (2009-2020)						
Date	**SSO Type**	**Structure ID/Location**	**SSO Event ID**	**Location**	**Description**	**Cause**
12/30/2018	Category 3	MH ID: 31179	855118	Vulcan Ave/Downs St	325 gal. to curb line	Grease
12/10/2018	Category 2	MH ID: 62194b	Unknown	1081 N China Lake Blvd	280 gal. to hospital parking lot	Rag ball/Debris
12/09/2018	Category 2	MH ID: 53113	Unknown	Sand Dune Ln/Palm Dr	230-250 gal. to curb line	Grease
01/13/2014	Category 3	Unknown	805928	236 W Drummond St	221 gal. to curb line	Grease
06/10/2014	Category 3	MH ID: 42088	807479	500 BLK. W. UPJOHN	102 gal. to curb line	Grease
10/21/2013	Category 2	MH ID: 53114	Unknown	Sand Dune/Palm	<70 gal. to cement culvert	Grease
10/01/2013	Category 3	MH ID: 42075	800562	621 S Downs St	400 gal. to curb line	Vandalism
02/28/2013	Category 2	MH ID: 43028	792344	509 Silver Ridge	150 gal. to curb line	Grease
12/31/2012	Category 2	MH ID: 62262	790666	Perdew/N Norma	150 gal. to curb line	Grease
11/21/2012	Category 2	MH ID: 53115	790665	Gold Canyon/Sandune Ln	400 gal. to desert	Vandalism
11/07/2012	Category 2	MH ID: 62312	790663	439 Reeves	125 gal. to curb line	Grease
07/15/2012	Category 2	Unknown	785171	700 Gold Canyon	600 gal. to desert	Vandalism
05/05/2012	Category 2	Unknown	782035	318 County Line Rd	100 gal. to desert	Debris
04/04/2012	Category 2	Unknown	782034	236 Drummond Ct	120 gal. to curb line	Roots
09/19/2011	Category 2	Lat: 35*38’25” N Long: 117*41’17” W	771760	900 S Downs St	<100 gal. to curb line	Grease
07/30/2011	Category 2	Lat: 35*36’59.7” N Long: 117*40’44.5” W	Unknown	525 W Wilson	<100 gal. to dirt curb	Grease
07/22/2011	Category 2	Lat: 35*37’44.7” N Long: 117*39’32” W	Unknown	Intersection Sand Dune/Palm	<100 gal. to curb line	Vandalism
03/22/2011	Private	Lat: 35*38’58” N Long: 117*40’43” W	N/A	1599 N Norma	Private Property	Unknown
03/16/2011	Category 2	Lat: 35*38’25” N Long: 117*41’17” W	Unknown	900 S Downs St	500 gal. to Catch Basin	Grease
03/10/2011	Category 2	Lat: 35*38’56” N Long: 117*40’43” W	Unknown	1400 N Norma	450-500 gal. to curb line	Grease
01/15/2011	Category 2	Lat: 35*37’50” N Long: 117*39’12” W	764999	700 Block Gold Canyon	300 gal. to desert	Vandalism
11/15/2010	Category 2	Lat: 35*35’9” N Long: 117*40’20” W	Unknown	Kendall/Wild Thorn	240 gal. to curb line and catch basin	Grease

City of Ridgecrest
Sewer System Management Plan
SSO Logs and Trend Data (2009-2020)

SSO Report Log Summary (2009-2020)						
Date	**SSO Type**	**Structure ID/Location**	**SSO Event ID**	**Location**	**Description**	**Cause**
10/16/2010	Category 2	Lat: 35*37'7" N Long: 117*41'0" W	Unknown	700 Block W Church St	200 gal. to curb line	Grease
04/05/2010	Category 2	Unknown	Unknown	Church/Warner	500 gal. to curb line	Grease
01/02/2010	Stoppage	Lat: 35*37'4" N Long: 117*40'13" W	Unknown	110 W Robertson	Unknown	Unknown
01/01/2010	Category 2	Lat: 35*37'7" N Long: 117*41'0" W	Unknown	700 Block W Church St	200 gal. to curb line	Roots
10/03/2009	Private	Lat: 35*34'36" N Long: 117*40'21" W	Unknown	CCCC Stadium	250 gal. to parking lot	Debris
09/16/2009	Category 2	Lat: 35*38'56" N Long: 117*40'38" W	Unknown	413 W Perdew	125 gal. to curbline 300'	Grease
09/11/2009	Stoppage	Lat: 35*38'59" N Long: 117*41'30" W	Unknown	1219 S Mahan St	Unknown	Roots
07/07/2009	Stoppage	Unknown	Unknown	500 W Upjohn	Unknown	Debris
04/20/2009	Category 2	Unknown	Unknown	400 W Las Flores	Unknown	Grease
04/14/2009	Category 2	Unknown	Unknown	900 S Downs	Unknown	Grease
03/12/2009	Category 2	Unknown	Unknown	350 W Church	Unknown	Grease
01/29/2009	Category 2	Unknown	Unknown	525 E R/C Blvd	Unknown	Grease
01/28/2009	Stoppage	Unknown	Unknown	Dog Pound	Dog Hair Blockage	Debris
01/19/2009	Category 2	Unknown	Unknown	236 Drummond Ct	Unknown	Roots

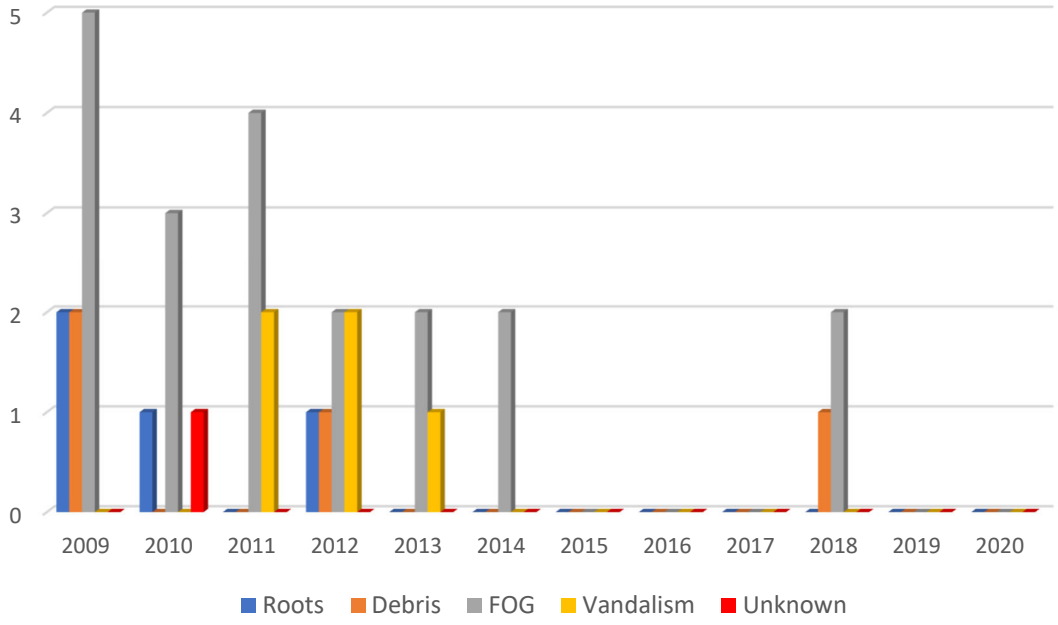
City of Ridgecrest
Sewer System Management Plan
SSO Logs and Trend Data (2009-2020)

SSO Trends	
Year	**Number of SSOs**
2009	9
2010	5
2011	6
2012	6
2013	3
2014	2
2015	0
2016	0
2017	0
2018	3
2019	0
2020	0



City of Ridgecrest
Sewer System Management Plan
SSO Logs and Trend Data (2009-2020)

SSOs by Cause					
	Roots	**Debris**	**FOG**	**Vandalism**	**Unknown**
2009	2	2	5	0	0
2010	1	0	3	0	1
2011	0	0	4	2	0
2012	1	1	2	2	0
2013	0	0	2	1	0
2014	0	0	2	0	0
2015	0	0	0	0	0
2016	0	0	0	0	0
2017	0	0	0	0	0
2018	0	1	2	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0



Appendix F

Sewer System Management Plan Audit Report Form

Biennial Sewer System Management Plan Audit Report

Date: _____

The purpose of the Sewer System Management Plan (SSMP) Audit is to evaluate the effectiveness of The City of Ridgecrest's SSMP and to identify whether updates are needed. This document was designed to meet the requirements of State Water Resources Control Board Order No. 2006-0003-DWQ as revised by Order No. WQ 2013-0058-EXEC. Documentation of SSMP audits are kept on file at the City of Ridgecrest Wastewater Treatment Facility, and an indication is made in the California Integrated Water Quality System (CIWQS) database that the audit was completed.

Directions*:* *Please update the following items in the SSMP:*

- Current List of City Council Members and Contact Information
- Current List of Public Works Staff and Contact Information
- List of Food Service Establishments (FSEs)
- High Priority Line Cleaning (HPLC) List
- Capital Improvement Program (CIP)
- SSO Logs and Trend Data

Directions*: Please indicate **YES** or **NO** for each question. To answer the following questions, refer to the text of the SSMP Element, any referenced material in the text, all corresponding attachments, and any data collected to assist in assessing SSMP effectiveness. For any **NO** responses describe the updates or changes needed and the timeline to completion in "Description of Scheduled Updates/Changes to the SSMP" on the last page of this form.*

ELEMENT 1. GOALS

1. Are the goals stated in the SSMP still appropriate and accurate? **YES / NO**

ELEMENT 2. ORGANIZATION

2. Is the SSMP up-to-date with organization and staffing contact information? **YES / NO**

ELEMENT 3. LEGAL AUTHORITY

3. Does the SSMP reference up-to-date information about legal authority? **YES / NO**

4. Does the City of Ridgecrest have sufficient legal authority to control sewer use and maintenance? **YES / NO**

ELEMENT 4. OPERATIONS AND MAINTENANCE PROGRAM

4.a Map of the Sanitary Sewer System

5. Does the SSMP reference up-to-date information about maps? **YES / NO**

6. Are collection system maps complete, up-to-date, and sufficiently detailed? **YES / NO**

4.b Preventative Maintenance Program

7. Does the SSMP contain up-to-date information about preventive operations and maintenance activities? **YES / NO**

8. Are the City's preventive maintenance activities sufficient and effective in reducing and preventing SSOs and blockages? **YES / NO**

4.c Rehabilitation and Replacement Plan

9. Does the SSMP contain up-to-date information about the rehabilitation and replacement program? **YES / NO**

10. Does the SSMP contain up-to-date information about Closed Circuit Television (CCTV) inspections? **YES / NO**

11. Are scheduled inspections and the condition assessment system effective in identifying, prioritizing, and addressing deficiencies? **YES / NO**

12. Does the Capital Improvement Plan (CIP) address prioritized projects for collection system assets? **YES / NO**

4.d Training

13. Does the SSMP contain up-to-date information about existing training programs? **YES / NO**

14. Do supervisors believe their staff are sufficiently trained? **YES / NO**

15. Are staff satisfied with the training opportunities and support offered to them? **YES / NO**

4.e Equipment and Replacement Part Inventories

16. Does the SSMP reference up-to-date information about equipment and replacement part inventories? **YES / NO**

ELEMENT 5. DESIGN AND PERFORMANCE PROVISIONS

17. Does the SSMP contain up-to-date information about design and construction standards? **YES / NO**

ELEMENT 6. SSO & BACKUP RESPONSE PLAN

18. Does the SSMP contain an up-to-date version of SSO Response Plan? **YES / NO**

19. Is the Response Plan effective in handling SSOs? (if **YES**, indicate specific information under the "Evaluation of the Effectiveness of the SSMP" section below) **YES / NO**

ELEMENT 7. FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM

20. Does the SSMP reference or contain up-to-date information about the City's FOG control program? **YES / NO**

21. Is the current FOG program effective in documenting and controlling FOG sources? **YES / NO**

22. Are all public outreach materials for the FOG program current? **YES / NO**

ELEMENT 8. SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

23. Does the SSMP reference or contain up-to-date information about the City's capacity assessment activities and documentation? **YES / NO**

24. Is the City sufficiently addressing hydraulic deficiencies? **YES / NO**

ELEMENT 9. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

25. Does the SSMP reference up-to-date information about the City's data collection and organization (e.g. use of CMMS, performance indicators, etc.)? **YES / NO**

26. Is the City's data collection and organization sufficient to evaluate the effectiveness of the SSMP? **YES / NO**

ELEMENT 10. SSMP PROGRAM AUDITS

27. Will this SSMP Audit be completed by every two years starting in 2014? **YES / NO**

ELEMENT 11. COMMUNICATION PROGRAM

28. Is the City's website up-to-date, including information related to providing an opportunity for public input on the SSMP? **YES / NO**

Evaluation of the Effectiveness of the SSMP

Use the information as indicated in Element 9 above or any other performance measures such as meeting the goal of cleaning so many miles per year, or number of SSOs, or funds spend on rehabilitation/replacement, etc. (whatever metrics apply)

Description of Scheduled Updates/Changes to the SSMP

For each question answered **NO**, describe the content of any necessary updates/changes and the timeline for completion.

Appendix G

Sewer System Management Plan Change Log

City of Ridgecrest
Sewer System Management Plan
Change Log

Date	SSMP Element/Section	Description of Change/ Revision Made	Authorized By
09/14/22	All Elements/Sections	2009 SSMP was outdated and needed a complete revision	Travis Reed Jim Humphrey