Pavement Management System Implementation

Final Report

June 2019

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Submitted to:

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Executive Summary

NCE was selected by the Fresno Council of Governments (Fresno COG) to implement a pavement management system for the City of Huron (City). This project included eight other cities (Coalinga, Fowler, Firebaugh, San Joaquin, Kingsburg, Mendota, Orange Cove, and Selma) as well. The purpose of this project is to help inform and educate policy makers on the conditions of the street network.

The City is responsible for the maintenance and repair of approximately 10.9 centerline miles of streets and alleys. The network's Pavement Condition Index (PCI) is 67. The City utilizes the StreetSaver® pavement management software and collects pavement distresses in compliance with ASTM D6433-16[1].

The following budget scenarios were performed as part of this update. The scenarios study the impact of funding on the PCI for a period of ten years.

Scenario 1: $500,000 per year – An annual paving budget of $500,000 will decrease the network PCI to 66 over the next ten years.

Scenario 2: $520,000 per year – The City will need approximately $520,000 per year in order to maintain the current network PCI at 67 over the next ten years.

Scenario 3: $570,000 per year – At approximately $570,000 per year, the network PCI will gradually increase to 70 over the next ten years.

Scenario 4: $830,000 per year – In order to improve the network PCI to 80 over the next ten years, the City will need to spend approximately $830,000 per year.

Scenario 5: $1 million per year – At $1 million per year, the network PCI will increase to 86 by the end of FY 2028/29.

NCE recommends that the City increase the budget to at least $570,000 per year in order to improve the PCI to 70.

[1] ASTM. "ASTM D6433-16." Standard Practice for Roads and Parking Lots Pavement Condition Index Inspections.

Background

With the passing of SB 1, Fresno COG has allocated funds to develop the Multi-jurisdictional PMS for nine local cities within the Region that currently do not have such a program in place. By assisting these cities with the creation of a PMS, the Region will have the resource available to them to prioritize roadway improvements and better manage their roadway repair and maintenance more efficiently.

To achieve this goal, Fresno COG selected NCE to implement a pavement management system for nine cities, including the City of Huron. The other eight cities are Coalinga, Fowler, Firebaugh, San Joaquin, Kingsburg, Mendota, Orange Cove, and Selma.

Broadly, a "… *pavement management system (PMS) is designed to provide objective information and useful data for analysis so that … managers can make more consistent, cost-effective, and defensible decisions related to the preservation of a pavement network*."[2] In other words, a PMS is designed to assist cities with answering questions such as:

- What comprises the City's street network and what are the conditions of the streets?
- How will the condition of the City-maintained streets respond over time to maintenance and rehabilitation (M&R) treatments proposed under the existing funding levels?
- What M&R strategies exist to improve the current street conditions?
- What is the backlog of M&R work that should be done in order to achieve the City's pavement condition goal?
- What are the future M&R needs?
- What are the street repair priorities?
- How much funding is needed in order to improve current pavement conditions?

In order to answer the questions above, Fresno COG selected a PMS software program called StreetSaver®, which was developed by the Metropolitan Transportation Commission (MTC) and is widely used throughout California to perform pavement management work.

[2] AASHTO "Guidelines for Pavement Management Systems". American Association of State Highway and Transportation Officials, Washington DC, July 1990.

Study Objectives

The goal of this project is to implement the StreetSaver PMS and populate it with current pavement conditions and to perform funding analyses with respect to the City's M&R program.

The objectives of this study were to:

- Setup the PMS database based on the City's shapefile or the shapefile publicly available on Fresno County's website
- Perform pavement condition inspections of the entire street network and determine the PCI of each street section as well as the street network PCI.
- Develop appropriate M&R strategies.
- Perform budgetary analyses and determine the M&R funding needs.
- Present a strategy for the most cost-effective program.

Finally, this report links the recommended repair program costs to the City's current and projected budget alternatives to improve the overall network condition. It also assesses the adequacy of existing revenues to meet the recommended maintenance needs.

Scope of Work

First, NCE performed pavement condition inspections of the City-maintained streets and alleys in November 2018 using the walking inspection method. Pavement distress data were collected and entered into StreetSaver to calculate the section's PCI. The condition inspections did not address non-pavement issues such as traffic, safety, street hazards, geometric issues, drainage issues, or immediate maintenance needs. As part of this task, a Quality Control Plan was developed and implemented and a copy is included in Appendix A.

Upon completion of the data collection activities, NCE reviewed and discussed M&R strategies with the City staff. This included selecting appropriate and effective treatments such as surface seals, overlays or reconstructions, as well as determining unit costs. The unit costs represent the overall project cost which incorporated material costs along with any related construction, engineering and design costs and were based on recent bid abstracts from the City as well as surrounding agencies. Once appropriate M&R alternatives were defined, they were entered into the StreetSaver® database for budgetary analyses.

NCE next performed a budget needs analysis using a period of ten years with an annual inflation rate of 3 percent. This identified M&R recommendations for each street section and determined the total M&R requirements over the analysis period under various funding levels.

Pavement Network and Current Condition

The City is responsible for the repair and maintenance of approximately 10.9 centerline miles of streets, of which 3.3 miles are collector, 7.6 miles are residential, and 0.3 miles are alley. Streets, or pavements, are one of the City's most valuable assets with an estimated replacement value is of $16.6 million. This does not include the value of other non-pavement street components, such as curb and gutters, sidewalks, or drainage. Additionally, there are approximately 5.4 centerline miles of gravel roads within the City limit but they are not included with the City's centerline miles nor they are part of the budget scenario analysis.

The PCI is a measurement of pavement grade or condition and ranges from 0 to 100. A newly constructed street will have a PCI of 100, while a failed street will have a PCI of 25 or less. The pavement condition is primarily affected by climate, traffic loads and volumes, subgrade failure, construction materials and age. Some of the distresses manifested by pavement as it ages or fails are:

Asphalt Concrete (AC) Pavement:

- Alligator (Fatigue) Cracking*
- Bleeding
- Block Cracking
- Bumps and Sags
- Corrugation
- Depression
- Edge Cracking
- Longitudinal/Transverse Cracking
- Joint reflection cracking
- Patching and Utility Cut Patching
- Potholes
- Rutting*
- Shoving*
- Slippage Cracking*
- Raveling
- Weathering

Table 1 and Figure 1 on the next page illustrate the definitions of the pavement condition categories. Streets in "Fair" condition include streets with both non-load related (e.g., weathering or raveling) and load related (e.g., alligator cracking) distresses. Because the causes of these distresses are markedly different, the treatments used to address these conditions are also different, as are the costs of these treatments. Generally, streets with load-related distress are more expensive to repair. The two categories of distress are identified by II (non-load related) and III (load related). StreetSaver® assigns the appropriate treatments and costs to streets identified within each category.

Table 1: Pavement Condition Categories

Condition Category		PCI	Pavement Description
(I)	Good	70-100	Pavements which have minimal surface distress which may include some hairline longitudinal/transverse cracks and/or weathering. The pavement structure is sound and minor oxidation may occur.
(II)	Fair, Non-Loaded	50-69	Pavements which have a significant level of distress that are predominantly non-load related such as longitudinal/transverse cracks, bleeding, block cracking, weathering and raveling, etc. The pavement structure is sound and some oxidation has occur.
(III)	Fair, Load-Related	50-69	Pavements which have a significant level of distress that are predominantly load related such as alligator cracking and minor rutting, etc. The pavement structure is becoming deficient (minimal base failure).
(IV)	Poor	25-49	The pavement has moderate to severe surface distresses. Extensive weathering or raveling, block cracking, and load-related distresses such as alligator cracking, rutting, and potholes may occur.
(V)	Very Poor	0-24	The pavement has severe weather-related distress as well as large quantities of load-related distresses. The pavement is nearing the end of its service life.

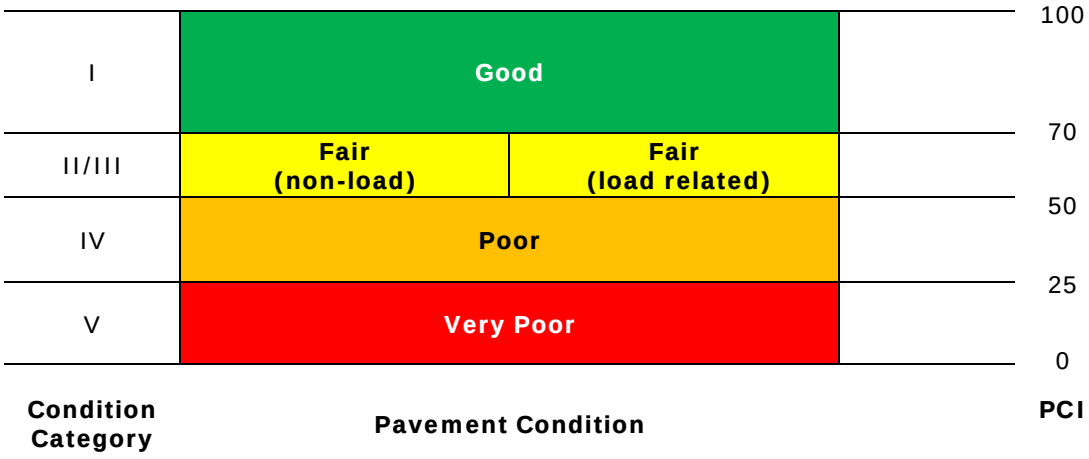


Figure 1: Pavement Condition Categories

The photos in Figure 2 below illustrate streets with a range of PCIs.

The photo on the right is from a portion of 9th Street between M Street to O Street. Pavement surface displayed minimal distresses; in fact, only minor weather-related distress was recorded during the inspection. PCI = 95 (Good)

The photo on the right is from 11th Street between N Street to O Street. The pavement surface began to exhibit considerable amount of weather-related distresses such as longitudinal and transverse cracking. PCI = 77 (Fair)

The photo on the left is from M Street between 3rd Street to 4th Street. At this point, significant load-related distresses such as alligator cracking can be found along with block cracking and longitudinal cracking. The pavement had also oxidized substantially. PCI = 54 (Poor)

The photo on the left is from Palmer Avenue from O Street to R Street and it shows a street that is near the end of its service life. Extensive load-related distresses such as alligator cracking can be found throughout the entire section. The surface of the pavement is heavily raveled. PCI = 25 (Very Poor)

Figure 2: Examples of Streets with Different PCIs

Based on our November 2018 inspection, the City's average weighted (by area) PCI[3] is 67 which is considered a "Good" condition. However, the average PCI does not completely describe the street network. Table 2 summarizes the City's street network and the PCI by functional classification.

[3] The weighted average PCI is a result of multiplying the area of each street section by the PCI of that section, totaling all sections together and then dividing by the total of the network area or functional classification.

Table 2. Pavement Network and Condition Summary

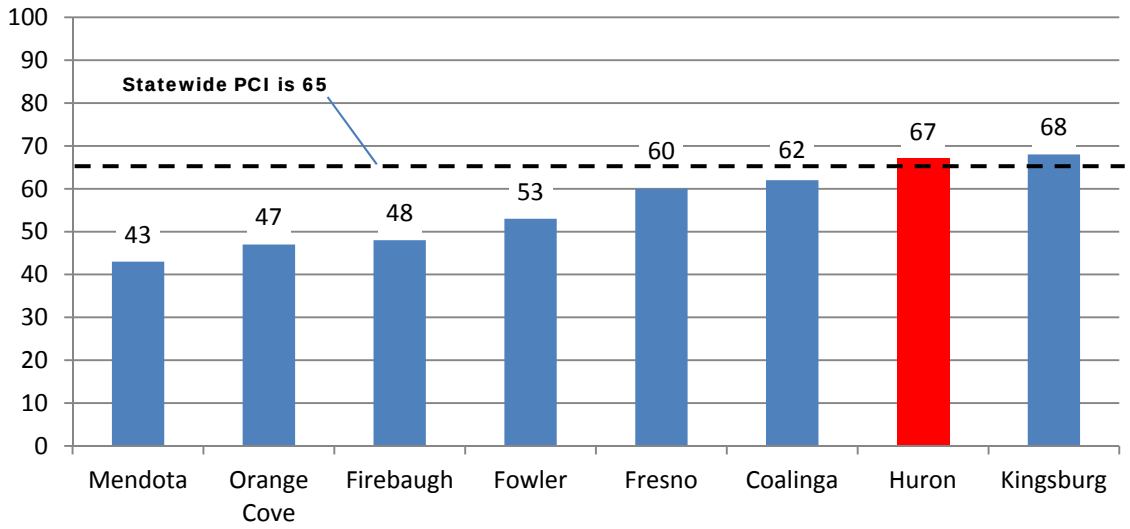
Functional Class	Centerline Miles	Lane Miles	Pavement Area (sq ft)	% Pavement Area	Average Weighted PCI
Collector	3.3	6.6	748,965	31.5%	65
Residential	7.6	14.9	1,596,444	67.2%	67
Other / Alley	0.3	0.6	30,082	1.3%	60
Total	**10.9**	**21.6**	**2,375,491**	**100.0%**	**67**
Gravel Streets	5.4	10.4	674,234	N/A	N/A

Table 3 summarizes the network condition by condition category. Approximately 42.1 percent of the City's streets are in "Good" condition, 55.4 percent are in either "Fair" or "Poor" condition, and 2.4 percent are in the "Very Poor" category.

Table 3. Pavement Condition Breakdown by Functional Class and Condition Category

Condition Category	PCI Range	Collector	Residential	Other / Alley	Entire Network
Good (I)	70-100	12.7%	29.1%	0.4%	42.1%
Fair (II / III)	50-69	11.4%	27.4%	0.0%	38.8%
Poor (IV)	25-49	6.8%	9.0%	0.9%	16.6%
Very Poor (V)	0-24	0.7%	1.8%	0.0%	2.4%
Total (%)		**31.5%**	**67.2%**	**1.3%**	**100.0%**

The City's average network PCI of 67 is among the upper third of comparable cities as shown in Figure 3.



*PCI information for the City of Fresno is from the 2018 Statewide Needs

Figure 3: Huron PCI Comparison with Other Agencies

Current Maintenance and Rehabilitation Practices

Preventive maintenance treatments such as crack seal and slurry seals are suitable for pavements in the "Good" condition and should be applied every seven years if the pavement condition is appropriate. As pavement condition deteriorates to lower levels, hot mix asphalt (HMA) overlays, Cold-in-Place recycling (CIR), and full-depth reclamation (FDR) should be performed. These are considered "rehabilitation or reconstruction". Localized base repairs are commonly used as preparatory work prior to applying overlays. A detailed M&R decision tree can be found in Appendix C.

History has shown that it costs less to maintain streets in good condition than to repair ones that have failed. By letting pavements deteriorate, streets that once cost $3.50 per square yard (SY) to seal may, in a few years, cost as much as $64.50/SY to reconstruct. With rising costs, the timeliness of repairs becomes more critical.

After the acceptance of Senate Bill 1 in 2018, agencies within the Fresno County area experienced anywhere between 30 to 40 percent construction cost increase due to a shortage of construction materials and available contractors.

Figure 4 illustrates that pavement maintenance follows the old colloquial saying of "pay now or pay more later". The pavement deterioration curve shown by the blue line illustrates how pavement deteriorates over time. In general, arterials are expected to have a service life of 20 years, while residentials may exceed 30 years.

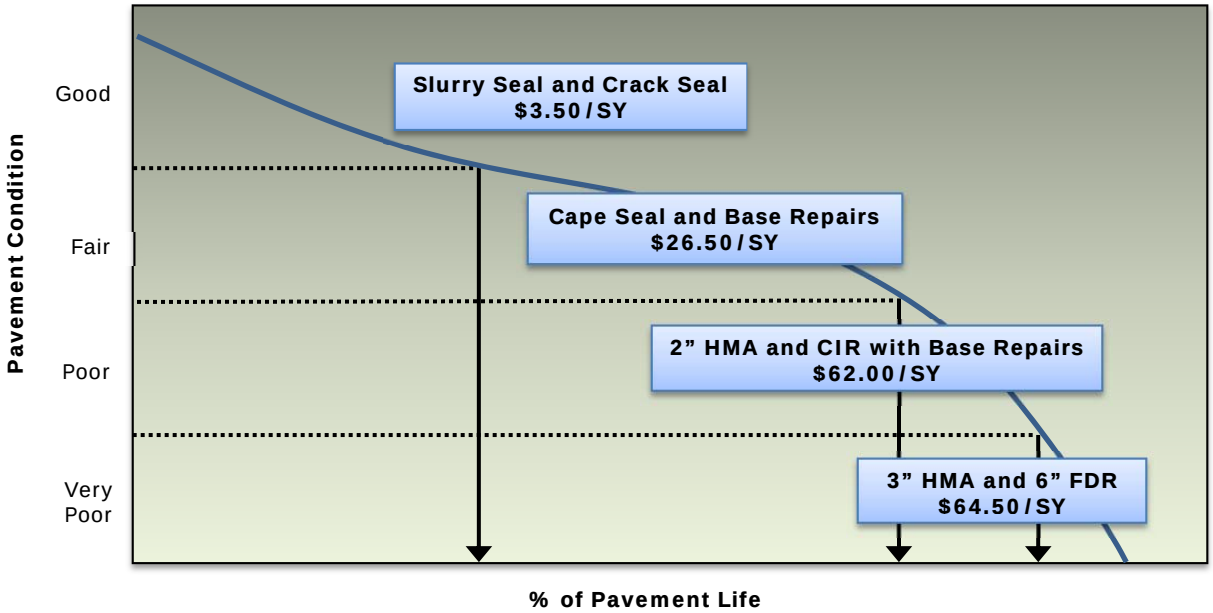


Figure 4: Costs of Maintaining Pavements over Time

Budget Needs

Once the pavement condition and the appropriate maintenance method has been determined, it is possible to determine the funding needed for maintenance of the City's streets. Simplistically, the StreetSaver® program seeks to answer the following questions:

If funding is not a constraint, how much money is needed to bring streets to a state of good repair? And maintain it at that level over the next ten years?

Therefore, based on the principle that it costs less to maintain streets in good condition, rather than focusing on fixing those in poor condition, StreetSaver® develops a funding strategy that will improve the overall condition of the streets and then maintain it at that level. The condition and functional classification of each street determines the appropriate treatment and cost from the decision tree.

For example, 4th Street has a PCI ranging between 54 and 64, and the appropriate treatment is a chip seal and base repairs, then the area of the pavement section is multiplied by the unit cost to determine the total treatment cost. Additional surface seals over the next ten years may also be applied to preserve the pavement condition, if necessary.

Using this process, the entire street network for the City was evaluated and totaled. The resulting maintenance needs will be approximately $8.2 million over the next ten years using an annual inflation rate of 3.0 percent. If the City follows the needs funding strategy recommended by the program, the average PCI will fluctuate in the mid-80s over the next ten years. If however, no funding is allocated to street pavement maintenance, the streets will deteriorate and the network PCI will drop to 42 by the end of fiscal year (FY) 2028/29.

The results of the budget needs analysis are summarized in Table 4.

Table 4. Results of Budget Needs 2019 – 2028

Fiscal Year (FY)	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget Needs ($M)	N/A	4.7	0.5	0.3	0.0	0.1	0.1	0.7	0.9	0.1	0.6	8.2
Treated PCI	67	86	85	84	83	83	82	82	84	84	84	N/A
Untreated PCI	67	63	61	59	57	54	52	50	47	45	42	N/A

In this analysis, the total funding needed is "front-loaded;" i.e., it is less expensive to repair the streets in the first year than in subsequent years due to the effect of deferring maintenance and inflation. Although very few agencies can afford this

"front-loaded" approach, it highlights the next treatments each street section needs and becomes a reference point for other funding scenarios.

The first year's budget needs of $4.7 million is also the City's current deferred maintenance. Deferred maintenance consists of pavement maintenance, preservation, and rehabilitation activities that are needed, but cannot be performed due to lack of funding. It is also referred to as the unfunded backlog. Shrinking budgets have forced many cities and counties to defer much-needed pavement maintenance activities. Deferring these activities results in an increased frequency of citizen complaints about the condition of the pavement network and a higher cost to repair these streets.

The prediction models in StreetSaver® may result in a more conservative performance due to the impacts of newer and more cost-effective technologies are not included at this time. For example, if improved materials are utilized, e.g., asphalt-binder with rubber or polymers, the actual performance of these treatments may be under-stated by the models. However, if the City assesses the pavement conditions regularly, the prediction of future conditions will continue to improve.

Budget Scenarios

Having determined the ten-year maintenance needs of the City's street network, the next step in developing a cost-effective M&R strategy is to conduct "what-if" analyses. Using the StreetSaver® budget scenario module, the impacts of the City's budget can be evaluated. This module seeks to answer the following questions:

If funding is constrained, what is the most cost-effective way to spend the funds? What are the consequences on the PCI and deferred maintenance? Which streets will be prioritized for repairs and when will they be repaired?

The program determines the effects of the different funding scenarios on PCI and deferred maintenance. By examining the effects on these performance measures, the advantages and disadvantages of different funding levels and maintenance strategies become clear.

The following scenarios were performed:

Scenario 1: $500,000 per year – An annual paving budget of $500,000 will decrease the network PCI to 66 over the next ten years.

Scenario 2: $520,000 per year – The City will need approximately $520,000 per year in order to maintain the current network PCI at 67 over the next ten years.

Scenario 3: $570,000 per year – At approximately $570,000 per year, the network PCI will gradually increase to 70 over the next ten years.

Scenario 4: $830,000 per year – In order to improve the network PCI to 80 over the next ten years, the City will need to spend approximately $830,000 per year.

Scenario 5: $1 million per year – At $1 million per year, the network PCI will increase to 86 by the end of FY 2028/29.

Summaries of the results of each scenario are provided starting from the next page. Note that "Rehabilitation" accounts for overlay and reconstruction work, while "Preventive Maintenance" accounts for all surface seal-type work. Detailed results of the budget needs and scenarios are presented in Appendices D and E.

Scenario 1: $500,000 per year

This scenario shows the impact of an annual paving budget of $500,000 per year over ten years. The deferred maintenance will increase to $5.23 million by the end of FY 2028/29. At the end of the analysis period, 75.8 percent of the network will be in "Good" condition. The percentage of the "Very Poor" condition streets will increase to 22.4 percent. Table 5 and Figure 5 summarize the results from Scenario 1.

Table 5. Summary of Results for Scenario 1

Fiscal Year	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget ($M)	N/A	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	5.00
Rehabilitation ($M)	N/A	0.32	0.40	0.37	0.45	0.46	0.39	0.38	0.35	0.35	0.35	3.83
Preventive Maintenance ($M)	N/A	0.18	0.10	0.13	0.05	0.04	0.11	0.12	0.15	0.15	0.15	1.17
Deferred Maintenance ($M)	4.75	4.25	4.44	4.86	5.19	5.31	5.74	5.55	5.34	5.39	5.23	N/A
Treated PCI	67	66	66	66	66	66	66	66	66	66	66	N/A

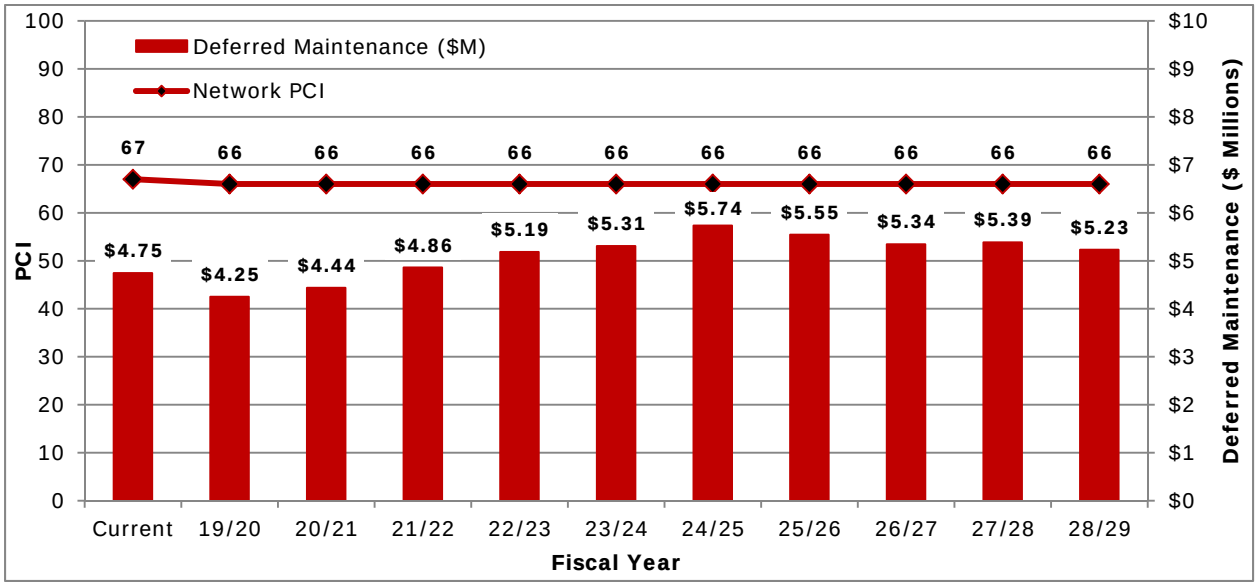


Figure 5: PCI vs. Deferred Maintenance for Scenario 1

Scenario 2: $520,000 per year

With an annual budget of approximately $520,000 per year, the City will eventually maintain the PCI over the next ten years. The deferred maintenance will increase to $4.96 million. Approximately 78.1 percent of the streets will be in "Good" condition, and the "Very Poor" streets will increase to 21.9 percent. Table 6 and Figure 6 summarize the results from Scenario 2.

Table 6. Summary of Results for Scenario 2

Fiscal Year	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget ($M)	N/A	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	5.20
Rehabilitation ($M)	N/A	0.32	0.47	0.40	0.49	0.50	0.44	0.43	0.45	0.34	0.43	4.28
Preventive Maintenance ($M)	N/A	0.20	0.05	0.12	0.03	0.02	0.08	0.09	0.07	0.18	0.09	0.92
Deferred Maintenance ($M)	4.75	4.25	4.36	4.74	5.03	5.12	5.52	5.28	5.05	5.18	4.96	N/A
Treated PCI	67	66	66	66	66	66	67	67	67	67	67	N/A

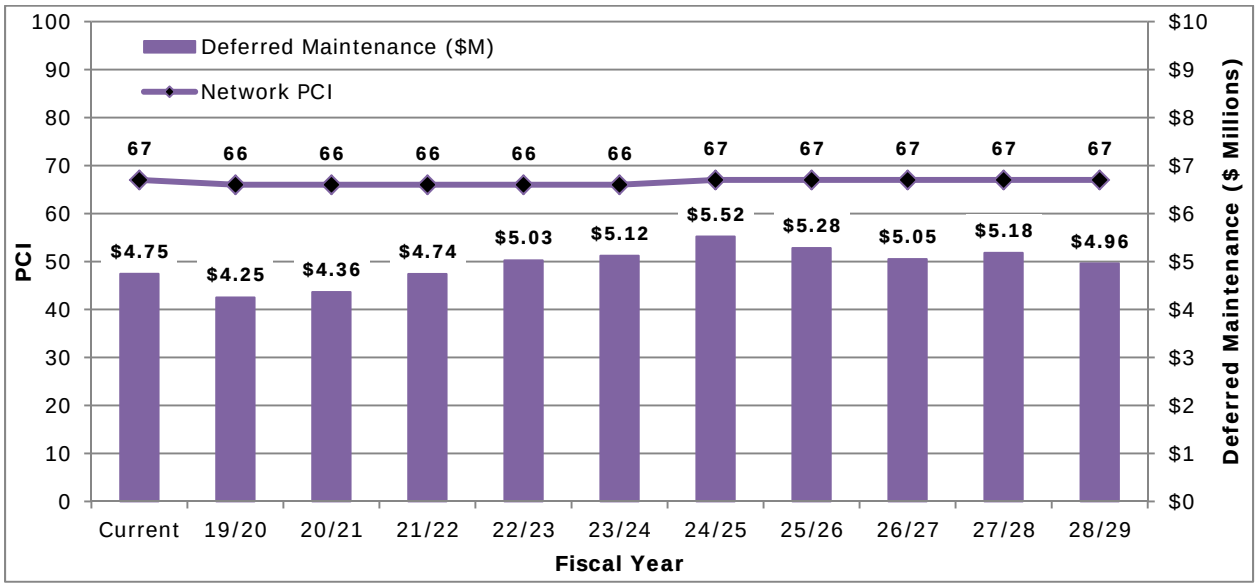


Figure 6: PCI vs. Deferred Maintenance for Scenario 2

Scenario 3: $570,000 per year

If the City increases the annual budget to $570,000 per year, the network PCI will gradually improve to 70 over the next ten years. The deferred maintenance will decrease by 12 percent to $4.18 million in FY 2028/29. Approximately 81.3 percent of the network will be in "Good" condition and 18.7 percent in "Very Poor" condition. Table 7 and Figure 7 summarize the results from Scenario 3.

Table 7. Summary of Results for Scenario 3

Fiscal Year	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget ($M)	N/A	0.57	0.57	0.57	0.56	0.57	0.57	0.57	0.57	0.57	0.57	5.68
Rehabilitation ($M)	N/A	0.41	0.52	0.37	0.50	0.50	0.49	0.49	0.40	0.47	0.47	4.62
Preventive Maintenance ($M)	N/A	0.16	0.05	0.20	0.06	0.07	0.08	0.08	0.17	0.10	0.10	1.06
Deferred Maintenance ($M)	4.75	4.18	4.23	4.59	4.83	4.96	5.31	5.01	4.79	4.47	4.18	N/A
Treated PCI	67	67	67	67	67	67	68	68	68	69	70	N/A

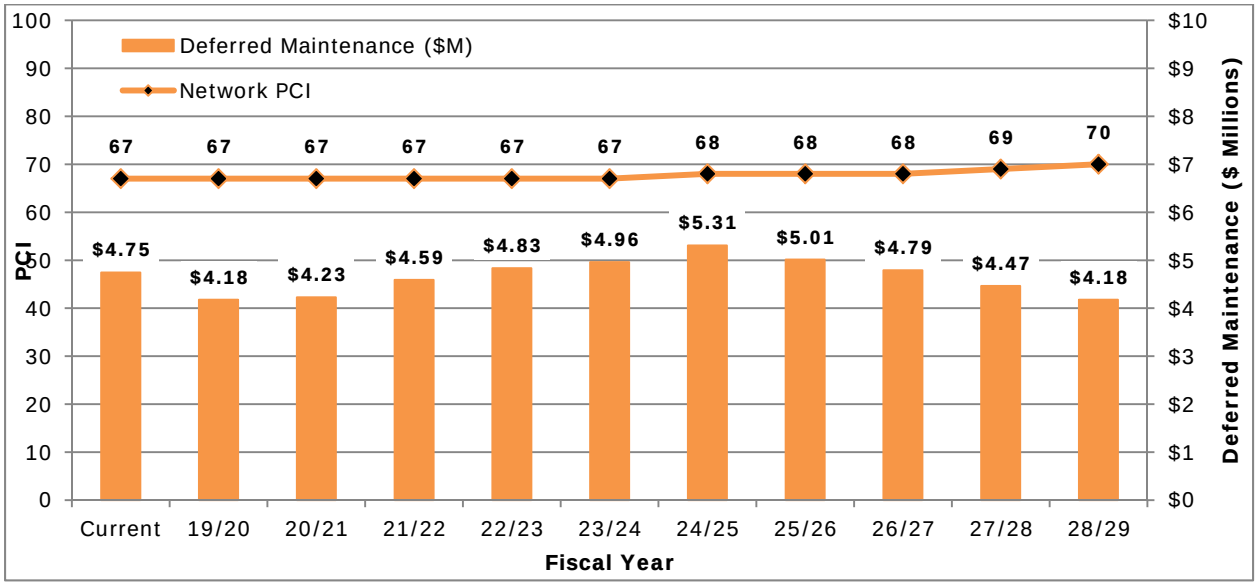


Figure 7: PCI vs. Deferred Maintenance for Scenario 3

Scenario 4: $830,000 per year

An annual budget of $830,000 is required in order to improve the network PCI to 80 over the next ten years. At this funding level, the deferred maintenance will decrease to $1.57 million by FY 2028/29. In addition, 92.8 percent of the streets will be in "Good" or "Fair" condition, and 6.5 percent in "Very Poor" condition. Table 8 and Figure 8 summarize the results from Scenario 4.

Table 8. Summary of Results for Scenario 4

Fiscal Year	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget ($M)	N/A	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	8.3
Rehabilitation ($M)	N/A	0.63	0.79	0.66	0.78	0.78	0.74	0.66	0.56	0.67	0.67	6.9
Preventive Maintenance ($M)	N/A	0.20	0.04	0.17	0.05	0.05	0.09	0.17	0.27	0.16	0.16	1.4
Deferred Maintenance ($M)	4.75	3.97	3.75	3.82	3.79	3.52	3.59	2.98	2.51	1.98	1.57	N/A
Treated PCI	67	67	69	70	71	72	73	75	76	78	80	N/A

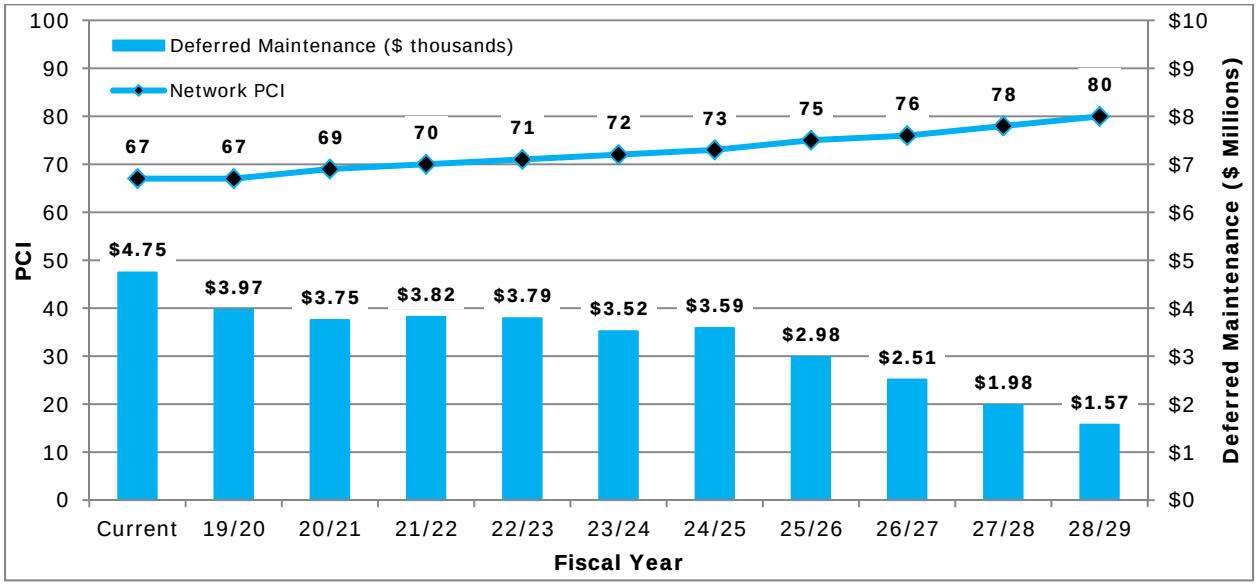


Figure 8: PCI vs. Deferred Maintenance for Scenario 4

Scenario 5: $1 million per year

With $1 million annually, the network PCI will improve to 86 over the next ten years and the deferred maintenance will essentially be eliminated. Every street section will be in the "Good" condition category by the end. Table 9 and Figure 9 summarize the results from Scenario 5.

Note that less than $1 million will be needed in the last 2 years

Table 9. Summary of Results for Scenario 5

Fiscal Year	Current	19/20	20/21	21/22	22/23	23/24	24/25	25/26	26/27	27/28	28/29	Total
Budget ($M)	N/A	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.53	9.4
Rehabilitation ($M)	N/A	0.82	0.92	0.80	0.90	0.97	0.88	0.84	0.75	0.77	0.37	8.0
Preventive Maintenance ($M)	N/A	0.18	0.08	0.20	0.10	0.03	0.12	0.16	0.25	0.11	0.16	1.4
Deferred Maintenance ($M)	4.75	3.79	3.42	3.32	3.09	2.65	2.49	1.75	1.10	0.36	0.00	N/A
Treated PCI	67	68	70	72	73	74	77	79	82	85	86	N/A

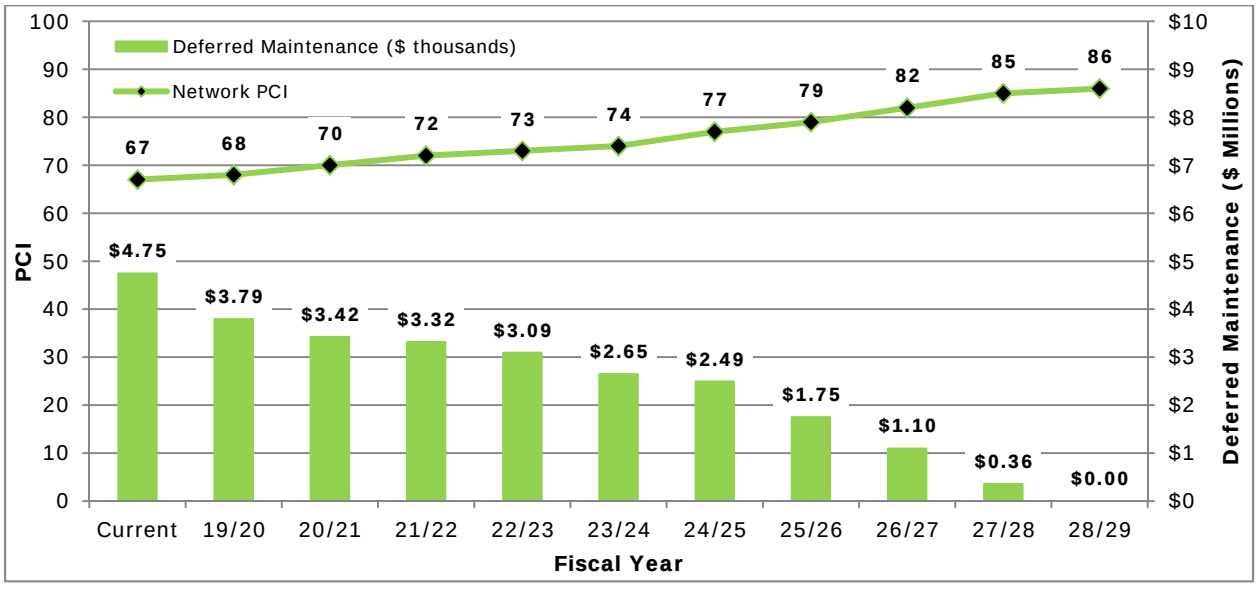


Figure 9: PCI vs. Deferred Maintenance for Scenario 5

Summary

Figure 10 and 11 compares the resulting PCIs and deferred maintenance for all budget scenarios.

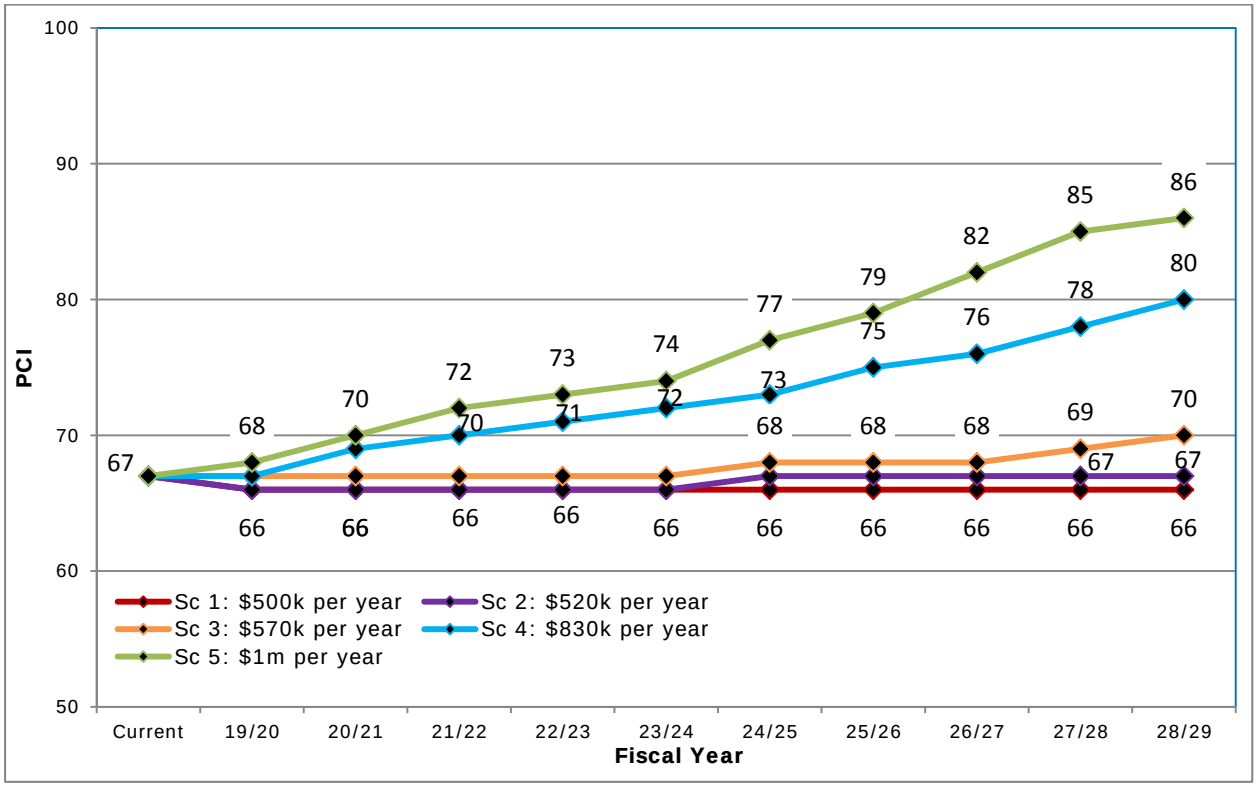


Figure 10: PCI Comparisons between Scenarios

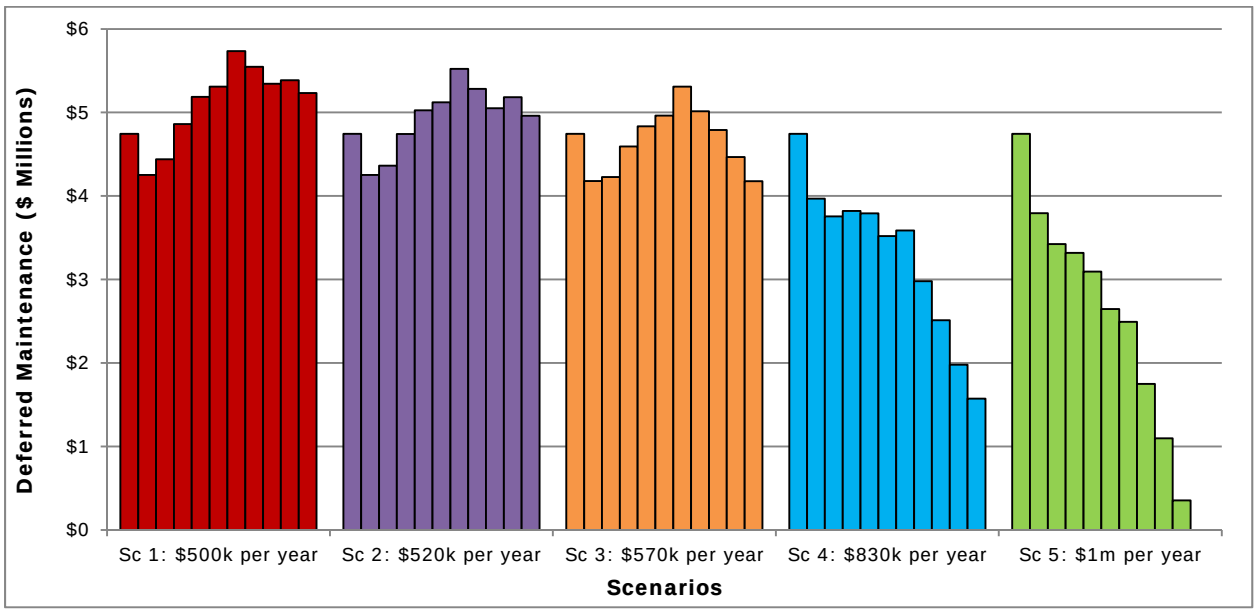


Figure 11: Deferred Maintenance Comparisons between Scenarios

Figure 12 compares the change in the pavement condition distribution between the current condition and the five budget scenarios.

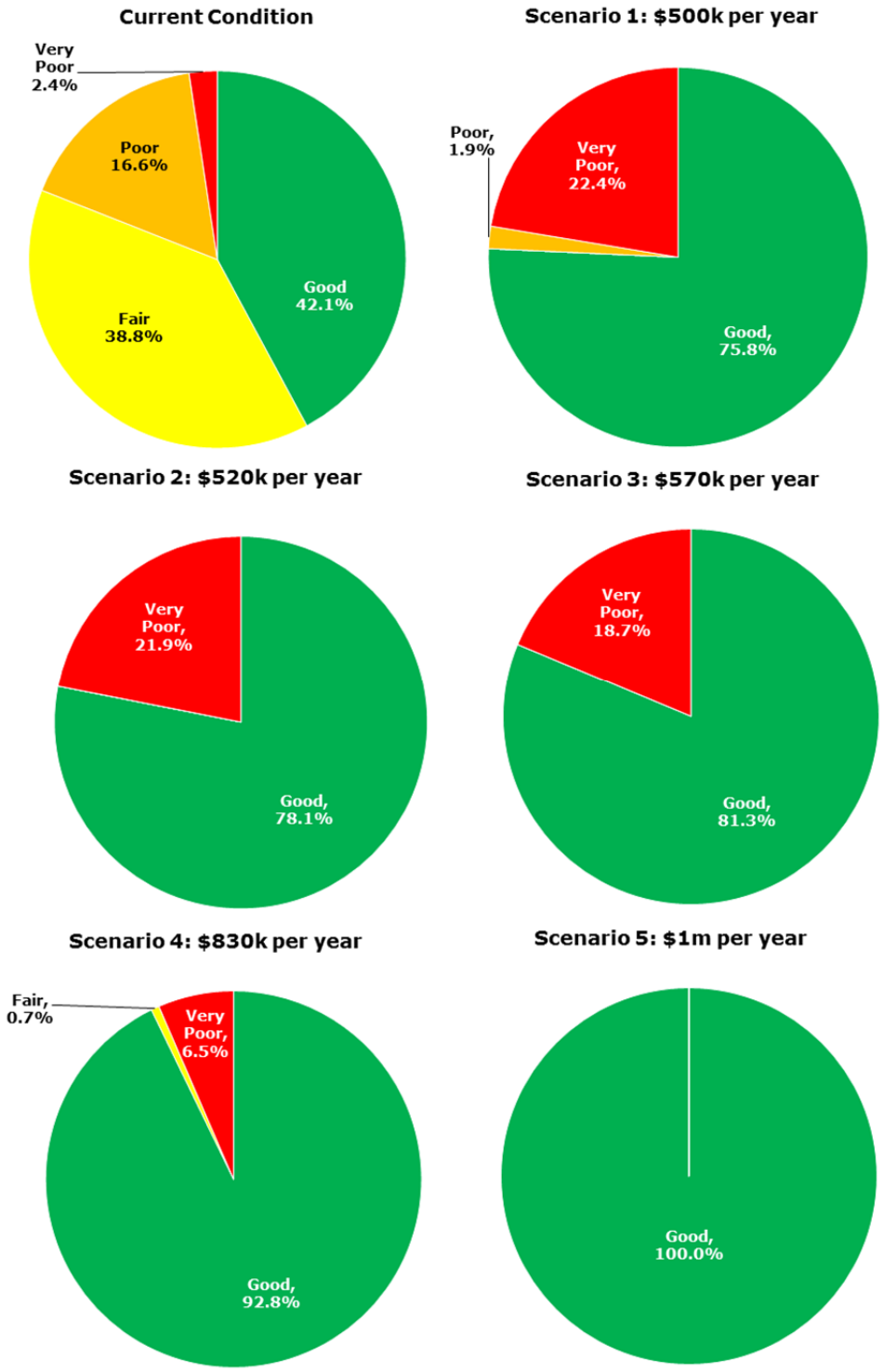


Figure 12: Resulting Pavement Condition Breakdown for Scenarios

Recommendations

The City of Huron has a substantial investment in its street network with an estimated total replacement cost of $16.6 million. Overall, the street network is in the "Fair" condition with a citywide average PCI of 67. Based on the data collected and the results of the scenario analyses, NCE recommends that the City implement the following:

1. **Pavement Funding**
   Scenarios 1 to 3 illustrate that a slight increase in funding can generate a measurable effect on the overall pavement network condition. NCE recommends that the City should consider a funding of approximately $570,000 per year n (Scenario 3). In addition, the network condition will be mostly in the "Good" category with only 18.7 percent in the "Very Poor" condition. Improving the pavement condition to the "Good" category will allow the City to preserve the streets through preventive maintenance methods such as slurry seals which are significantly cheaper than overlays.

2. **Pavement Maintenance Strategies**
   NCE recommends that the City consider alternative treatments such as Full-depth reclamation (FDR) and cold-in-place recycling (CIR)s which are alternatives to reconstruction and conventional overlays. These treatments could potentially offer cost savings of approximately 20 to 30 percent compared to traditional treatments.

   Due to the relatively small size of each pavement project, NCE recommends that the City investigate the option of combining paving projects with neighboring agencies in order to take advantage of economies of scale.

3. **Re-inspection Strategies**
   In order to monitor future pavement performance and on-going maintenance needs, NCE recommends that the City inspects the arterial and collector network every two years and the residential network and alleys every five to six years.

4. **M&R Decision Tree**
   NCE recommends that the City review and update the M&R decision tree and the associated unit costs annually to reflect new construction techniques and changing costs so the funding analysis will continue to be reliable and accurate.

5. **Additional Funding**

NCE recommends that the City take full advantage of SB 1 and actively pursue additional pavement funding sources if feasible. Some examples of funding sources are listed:

Federal

- Community Development Block Grants (CDBG)
- Congestion Mitigation & Air Quality Improvement (CMAQ)
- Surface Transportation Block Grant Program (STBG)
- Highway Safety Improvement Program (HSIP)

State

- State Transportation Improvement Program (STIP)
- Active Transportation Program (ATP)
- Vehicle License Fee (VLF)
- CalRecycle grants
- Transportation Development Act (TDA)

Local

- Local sales taxes
- Development impact fees
- Traffic impact and transportation mitigation fees
- Utility tax
- Parking and various permit fees
- Parcel taxes

Appendix A

Quality Control Plan

QC Plan

Pavement Management Program
2018

NCE

Point Richmond, CA
501 Canal Blvd. Suite I
Pt. Richmond, CA 94804

Fresno COG

Table of Contents

Appendix

1.0 INTRODUCTION

When performing data collection in any field, the need for quality control is paramount. This need for quality data is essential for accurate planning, analysis and design. NCE's "Quality Assurance Management Plan" (QAMP), which was last revised in March 2009, affirms that:

> *"NCE is dedicated to achieving technical and management excellence and to delivering professional engineering and environmental services that meet or exceed our clients' needs. NCE's Quality Assurance (QA) Program is designed to achieve these goals. This QA Management Plan (QAMP) describes NCE's QA Program, which is based on four principles: client satisfaction, employee participation, problem prevention, and continuous quality improvements."*

NCE's QAMP establishes minimum quality standards for performance and procedures for assuring that our clients receive quality service. It requires the participation of employees at every level. It encourages Project Managers and technical staff to take pride in their work and responsibility for ensuring that the work is done correctly the first time. The program is designed to reduce the incidence of problems related to quality and results in implementation, where necessary, of corrective actions and modification of work procedures to minimize the incidence of future problems.

NCE has also prepared detailed and specific Quality Control Plans for projects, and the most notable example is for the **Long Term Pavement Performance (LTPP) – Western Regional Support Contract** for the Federal Highway Administration. This is a 150 page document that covers data collection on highways, including deflection, profile, pavement distresses, traffic, maintenance and rehabilitation history, materials testing and sampling as well as a document control.

1.1 Objectives

This document constitutes a formal Quality Control Plan (QCP) for the Fresno Council of Governments to include The Cities of Colinga, Firebaugh, Fowler, Huron, Kingsburg, Mendota, Orange Grove, San Joaquin and Selma (OCG). Specifically, it is intended for the 2018 Pavement Management Program Update project. The focus is on data collection issues.

1.2 Structure

The following components are addressed in this QC Plan:

- Condition survey procedures used
- Accuracy required for data collection
- Inspector qualifications and experience
- Safety

2.0 QUALITY CONTROL PLAN

2.1 Condition Survey Procedure

The governing documents in performing condition surveys are:

- "PAVER™ Pavement Distress Identification Manual for Asphalt Surfaced Roads and Parking Lots", US Army Corps of Engineers ERDC-CERL June 2009.
- "PAVER™ Pavement Distress Identification Manual for Concrete Surfaced Roads and Parking Lots", US Army Corps of Engineers ERDC-CERL June 2009.

Any exceptions to the above procedures are discussed with the agency before any surveys are performed. These are usually related to distresses or situations that are not covered in the manuals. Examples include slippage cracks, roller check marks or edge cracking on streets with no curbs and gutters. Others include the use of seals or open-graded asphalt concrete mixes. Any modifications must be documented and submitted to the City for approval.

All surveys are performed as ***walking*** surveys, and a minimum 10% sampling rate is utilized. Field crews are typically composed of a one-person crew on residential streets and some collectors, and up to two-person crews for major arterials, depending on traffic volumes and speeds. The safety of field personnel is paramount in all instances.

The sample unit selected must be representative of the entire pavement section. This assumes that the section is homogeneous; if it is not homogeneous, then the section must be split according to the criteria agreed upon by the agency. Typically, the criteria used are:

- Pavement condition
- Construction age, if known
- Maintenance history, if known
- Traffic volumes (or functional classification as a surrogate)
- Surface types e.g. asphalt concrete or Portland cement concrete
- Geometric elements e.g. widths

Any modifications to the section inventory data will be documented and provided to the City.

Typical sample unit dimensions are 100 ft long by the width of the street. Since the maximum size of a sample unit allowed under StreetSaver is 4000 sf, streets that are wider than 40 feet wide will have shorter lengths (generally 50 feet) or if they are divided by a raised median, separate sample units taken in each direction.

Any pavement areas that are not representative of the section will be noted and surveyed as a special sample unit.

2.2 Accuracy Required For Data Collection

The accuracy required for data collection has two components, both of which are further described in the following paragraphs.

- Re-inspections
- PCI comparisons with past surveys

2.2.1 Random and Systematic Re-inspection

A minimum of 5% of the total sample units will be re-inspected and this 5% will be selected based on both a random and a systematic basis. All re-inspections are made by an engineer or inspector other than the original inspector.

Random Re-inspections

Random re-inspections will include a representative selection across the following categories:

- Functional classes i.e. arterials, collectors, locals;
- Surface types e.g. asphalt concrete or Portland cement concrete;
- Pavement conditions e.g. good, fair, poor;
- Inspectors;
- Geographical areas, if applicable.

Systematic Re-inspections

For systematic re-inspections, this could be due to noticed trends such as specific treatment types (e.g. open-graded mixes), a specific inspector or geographical area. In such cases, more than 5% will be re-inspected.

Acceptability Criteria

At the time of re-inspection, the actual distresses will be re-inspected and verified, and any corrections made, if necessary. The following acceptance criteria shall be applied to the re-inspection as required by the Metropolitan Transportation Commission (MTC):

1) At least 50 percent of the PCI values for the re-inspected sections must be within +/- 5 PCI points of the original inspection PCI values.
2) No more than 12 percent of the PCI values for the re-inspected sections can be greater than +/- 15 PCI points of the original inspection PCI values

If the above acceptance criteria are not met then an additional 5% will be re-inspected. This will continue until the re-inspected sections meet the acceptability criteria.

2.2.2 PCI Comparison with Past Surveys

As another level of quality control, the new PCIs are compared with the previous PCI. If they differ by more than ±15 PCI points, these sections are automatically flagged for further investigation.

If PCI is +15 points:

The section is investigated to see if a maintenance and rehabilitation event has occurred since the last survey, but which has not been recorded. This can only be resolved with feedback from the agency. Typically, it may include activities such as:

- Crack sealing activities – changes medium or high severity cracking to low severity
- Patching activities - alligator cracking that has been removed and patched, so that the resultant PCI is increased.
- Surface seals
- Overlays

If PCI is -15points

The section is checked to see if the average deterioration rate (usually 3 to 4 points per year) is exceeded. If the drop in PCI is within the range of what is acceptable, no further action is required. If the drop is more than the acceptable range, a re-inspection will be performed. The default performance curves in the StreetSaver program are the basis for what is acceptable.

2.3 Inspectors Qualification and Experience

All NCE's inspectors are required to attend formal training on condition distress surveys. For example, any of NCE's inspectors working on the LTPP project are required to attend a week-long training workshop every year to maintain their certifications. The Regional Transportation Commission (RTC) of Washoe County requires inspectors to be calibrated prior to performing any work using the ASTM D6433 protocols (also known as the MicroPAVER surveys).

Similarly, in agencies that use the MTC StreetSaver system, NCE's inspectors attend the distress training conducted by MTC. After the formal training, they work with an experienced inspector before they are allowed to work on their own. Within the first month of working on their own, up to 20% of their work is checked weekly. Any necessary corrections are made immediately.

Finally, NCE conducts a one-day training and calibration workshop for all NCE staff involved with data collection. This is conducted once a year.

Resumes of NCE's technicians utilized on this project are included in Appendix A.

3.0 SAFETY PROCEDURE

NCE administers a health and safety program in compliance with the Nevada Occupational Safety and Health act (Section 618.383) and Cal OSHA Title VIII, Section 3203. The program is documented in NCE's *Workplace Safety Program Manual.*

Generally, the safety procedures include:

- Inspectors to wear a safety vest at all times;
- Flashing beacon on all vehicles utilized for surveys; and
- Stopped vehicles to be parked at locations away from moving traffic e.g. nearby parking, shoulders etc.

On streets where there is a high volume of traffic or high speeds, additional measures may be necessary, such as:

- Surveys to occur during off-peak periods or on weekends;
- Additional inspector to watch out for traffic; and
- Traffic flaggers in extreme cases.

In extreme cases where it is not possible to walk on the pavement surface, surveys will be performed from sidewalks or raised medians. However, this is extremely rare for city or county roads/streets; this is most often encountered on state highways, and lane closures are the most likely option at this point.

APPENDIX A

RESUMES OF FIELD INSPECTORS

Franc Escobedo
Engineering Field Technician

Mr. Franc Escobedo has over 15 years of experience as a pavement management technician for NCE. He has performed numerous pavement condition inspections throughout California, Idaho, and Washington. His experience includes distress collection across various Pavement Management Systems including the Metropolitan Transportation Commission StreetSaver, PAVER, Cartegraph, and Hansen systems.

Additionally, Mr. Escobedo has completed both the OCTA PAVER and MTC "Distress Identification" courses for both Asphalt Concrete and Portland Cement Pavements and now assists with the training of agency staff on both courses.

Mr. Escobedo performs all activities relating to pavement data collection using hardcopy forms or tablets. As part of the quality control process, he performs cross-checks of data in the PMS database. He also regularly performs quality control checks of field collected data and pavement maintenance history to ensure that PMS databases are accurate and up-to-date. During this process, he also generates detailed reports, which are necessary to perform his cross-checks of the collected data.

His field experience and expertise are added benefits to agencies during field training. Listed below are a collection of agencies for which Mr. Escobedo has performed condition inspections – they total over 6,000 centerline miles of roads and streets.

Representative Projects

Pavement Management

Pavement Management Inspections | ***Engineering Field Technician***

- Ada County, Idaho
- Agoura Hills
- Anaheim
- Antioch
- Bakersfield
- Bell
- Buena Park
- Camarillo
- Chula Vista
- Commerce
- Corona
- Cudahy
- Dana Point
- Davis
- El Centro
- El Cerrito
- Elk Grove
- Encinitas
- Fairfield
- Fremont
- Fullerton
- Hayward
- Hillsborough
- Humboldt County
- Inyo County
- La Habra
- Lake County
- Lake Forest
- Lemon Grove
- Marin County
- Martinez
- Mendocino County
- Milpitas
- Mission Viejo
- Mono County
- Mountain View
- Newark
- Orange County
- Palm Springs
- Redwood City
- San Clemente
- San Diego County
- San Dimas
- San Ramon
- Santa Cruz County
- Santa Maria
- Seal Beach
- Siskiyou County
- South Lake Tahoe
- Stanislaus County
- Stanton
- Thousand Oaks
- Torrance
- Tulare
- Tuolumne County
- Tustin
- Vallejo
- Vernon
- Vista
- Walnut Creek
- West Covina
- West Sacramento

Projects included various forms of inspections for pavement distress data collection, such as walking, windshield, and/or semi-automated.

Education
Computer Operations Program
Computer Learning Center, Los Angeles, CA, 1983-84
Network Engineering & Administrative Program
Computer Learning Center, Anaheim, CA, 1997
Certified Network Administration
Computer Learning Center, Anaheim, CA 1997

Registrations and Certifications
OCTA PAVER Certification 2016

MTC StreetSaver Rater Certification Program (expires September 2019)

Joined NCE
2004

Total Years of Experience
15

David Bivins
Senior Engineering Technician

Mr. Bivins has over 17 years of experience as a pavement management technician. As a senior technician, his experience extends beyond data collection for pavement distresses. Mr. Bivins is one of NCE's most experienced distress collectors and a primary choice for working with and training of our clients in field data collection activities.

Mr. Bivins performs all functions relating to data collection using paper forms or a tablet. As part of the quality control process, he performs cross-checks of data in the PMS database. He has performed quality control checks of field collected data and pavement maintenance history to ensure that PMS databases are accurate and up-to-date. During this process, Mr. Bivins also generates detailed reports, which are needed to help perform his cross-checks of the collected data.

His field experience and expertise is an added benefit to agencies during field training. Having performed data collection for agencies all over the State of California, Mr. Bivins has a depth of experience related to pavement types and conditions from performing condition surveys on more than 15,000 centerline miles of roads and streets. In addition, Mr. Bivins is proficient and certified in the two most popular distress identification procedures – PAVER and StreetSaver. He attends annual in-house training and assists in training local agencies on distress identification and collection procedures.

Education
Civil Engineering Courses
San Francisco State University, 1994
AutoCAD Advanced Course
CAD Masters, Walnut Creek, CA, 1997

Registrations and Certifications
MTC StreetSaver Rater Certification Program (expires September 2019)

Joined NCE
2011

Total Years of Experience
17 years

Representative Projects

Pavement Management

Pavement Management System Updates | *Senior Field Technician*
Various Cities and Counties, CA

Projects included various forms of surveys for pavement distress data collection, this may have included walking, windshield, and/or semi-automated.

- Ada County, ID
- Alameda County
- Albany
- Buena Park
- Campbell
- Chula Vista
- Citrus Heights
- Danville
- Davis
- East Bay Regional Park District
- Elk Grove
- Fairfield
- Folsom
- Fremont
- Fullerton
- Hayward
- Humboldt County
- Inyo County
- Lafayette
- Lake County
- Los Gatos
- Mammoth Lakes
- Marin County
- Mendocino County
- Mission Viejo
- Modesto
- Newark
- Orinda
- Pebble Beach
- Placer County
- San Bruno
- San Mateo County
- Santa Barbara County
- Santa Cruz
- Santa Cruz County
- Santa Rosa
- Stanislaus County
- Stanton
- Torrance
- West Sacramento

Jacob Rajnowski
Field Technician

Mr. Rajnowski joined NCE in 2016 as a as a pavement management technician and is experienced in collecting distress data and coring samples for pavement management systems. He is currently collecting pavement distress data for the Counties of Sonoma and Lake.

He is certified by the Metropolitan Transportation Commission's (MTC) to perform pavement distress inspections; the certification testing involves passing a rigorous field test.

Apart from conducting field inspections, Mr. Rajnowski performs all functions related to data collection and is an active participant in the QC process, including crosschecks of data in the PMS database, quality control checks of field collected data and pavement maintenance history to ensure that PMS databases are accurate and up to date. During this process, detailed reports are generated to perform crosschecks of the data collected. Additionally, Mr. Rajnowski has completed the OCTA PAVER™ 'Distress Identification' course for Asphalt Concrete and Portland Cement Pavements. He has performed condition surveys at San Francisco since 2016.

Education
Sterling High School, Sterling, IL, 2003

Joined NCE
2016

Registrations and Certifications
OCTA PAVER Certification 2017
MTC Certification 2016

Total Years of Experience
2 years

Representative Projects

Pavement Management

Pavement Management System Updates | ***Field Technician***
Various Cities and Counties, CA
Projects included various forms of surveys for pavement distress data collection, this may have included walking, windshield, and/or semi-automated.

- Ada County, ID
- Buena Park
- Half Moon Bay
- Humboldt County
- Lake County
- Lincoln
- Martinez
- Mission Viejo
- Moreno Valley
- Placer County
- Pleasant Hill
- San Francisco
- Sonoma County
- Stockton
- Trinity County
- Ventura County
- Walnut Creek
- Yolo County

Appendix B

Section Description Inventory
Section PCI Listing - Street Network

I. Sorted by Street Name
II. Sorted by Descending PCI
III. Gravel Streets

Section Description Inventory Report

This report lists a variety of section description information for each of the City's street pavement sections. It lists the street and section identifiers, limits, functional class, surface type, number of lanes, lengths, widths, and inspected PCI.

All of the City's vehicular street sections are included in the report. The report is sorted alphabetically by Street Name and Section ID and by descending PCIs. The field descriptions in this report are listed.

A list of gravel streets are also included.

Header	Description
STREET ID	Street identification in StreetSaver® unique for each street
STREET NAME	The name of the street as indicated by street signs in the field
SECTION ID	Section identification number in StreetSaver® unique for each section of one street
BEG LOCATION	Beginning limit of the section
END LOCATION	Ending limit of the section
LENGTH (FT)	Length of the section in feet
WIDTH (FT)	Average width of the section in feet
AREA (SF)	Area of the section in square feet
FC	Functional Classification (A – Arterial, C – Collector, R – Residential/Local, O – Other/Alley)
# OF LANES	Number of travel lanes of the section
SURFACE TYPE	Surface Type (AC = Asphalt Concrete Pavement, AC/AC = AC Overlay of AC Pavement, Gravel =)
PCI DATE	Last pavement inspection date
PCI	Average inspected PCI for the section.

Street ID	Street Name	Section ID	Beg Location	End Location	Length (ft)	Width (ft)	Area (sf)	FC	# of Lanes	Surface Type	PCI Date	PCI
1ST	01ST ST	0100	GUADALUPE	END	937	36	33,732	R	2	AC	11/14/2018	63
2ND	02ND ST	0100	GUADALUPE	N ST	934	37	34,558	R	2	AC	11/14/2018	58
2ND	02ND ST	0200	N ST	O ST	221	36	7,956	R	2	AC	11/14/2018	60
3RD	03RD ST	0100	END	M ST	719	36	25,884	R	2	AC	11/14/2018	45
3RD	03RD ST	0200	M ST	N ST	247	36	8,892	R	2	AC	11/14/2018	39
4TH	04TH ST	0100	LASSEN	AZTECA	1,155	34	39,270	C	2	AC	11/14/2018	54
4TH	04TH ST	0200	AZTECA	M ST	491	34	16,694	C	2	AC	11/14/2018	64
4TH	04TH ST	0300	M ST	O ST	997	34	33,898	C	2	AC	11/14/2018	63
5TH	05TH ST	0100	CENTRAL	END	287	53	15,211	R	2	AC/AC	11/14/2018	91
5TH	05TH ST	0200	END	M ST	298	36	10,728	R	2	AC	11/14/2018	60
5TH	05TH ST	0300	M ST	O ST	948	36	34,128	R	2	AC/AC	11/14/2018	95
6TH	06TH ST	0100	END	O ST	361	37	13,357	R	2	AC/AC	11/14/2018	84
7TH	07TH ST	0100	END	M ST	365	36	13,140	R	2	AC	11/15/2018	71
8TH	08TH ST	0100	END	M ST	489	36	17,604	R	2	AC	11/14/2018	59
8TH	08TH ST	0200	M ST	END	452	53	23,956	R	2	AC/AC	11/14/2018	95
9TH	09TH ST	0100	LASSEN	M ST	1,341	50	67,050	C	2	AC	11/15/2018	53
9TH	09TH ST	0200	M ST	O ST	935	50	46,750	C	2	AC/AC	11/15/2018	95
9TH	09TH ST	0300	O ST	1,093' E/O O ST	1,093	50	54,650	C	2	AC	11/15/2018	95
9TH	09TH ST	0400	1,093' E/O O ST	1,593' E/O O ST	500	32	16,000	C	2	AC	11/15/2018	0
10TH	10TH ST	0100	LASSEN	M ST	1,104	52	57,408	C	2	AC	11/15/2018	49
10TH	10TH ST	0200	M ST	N ST	473	52	24,596	C	2	AC	11/15/2018	55
11TH	11TH ST	0100	LASSEN	M ST	951	53	50,403	C	2	AC	11/15/2018	60
11TH	11TH ST	0200	M ST	N ST	450	53	23,850	C	2	AC	11/14/2018	76
11TH	11TH ST	0300	N ST	O ST	488	53	25,864	C	2	AC	11/14/2018	77
11TH	11TH ST	0400	P ST	R ST	418	34	14,212	R	2	AC	11/16/2018	94
12TH	12TH ST	0100	END	LASSEN	563	36	20,268	R	2	AC	11/14/2018	75
12TH	12TH ST	0200	M ST	N ST	457	52	23,764	R	2	AC	11/14/2018	46
13TH	13TH ST	0200	M ST	O ST	704	52	36,608	R	2	AC	11/15/2018	46
14TH	14TH ST	0100	M ST	O ST	702	36	25,272	R	2	AC	11/15/2018	50
A-E/OLA ST	ALLEY E/O LOS ANGELES ST	0100	TORNADO	CHERRY	530	17	9,010	O	2	AC	11/15/2018	46
ALLEY11	ALLEY N/O 11TH	0400	N ST	O ST	448	21	9,408	O	2	AC	11/15/2018	97
ALLEY4	ALLEY N/O 4TH	0100	CENTRAL	END	648	18	11,664	O	2	AC	11/14/2018	40
APPLE	APPLE AVE	0100	ORANGE	LOS ANGELES	545	36	19,620	R	2	AC	11/13/2018	62
APPLE	APPLE AVE	0200	LOS ANGELES	LASSEN	376	51	19,176	R	2	AC	11/13/2018	55
AZTECA	AZTECA BLVD	0100	END	4TH	1,236	42	51,912	R	2	AC	11/14/2018	59
CENTRAL	CENTRAL AVE	0100	4TH ST	5TH ST	2,736	53	145,008	R	2	AC/AC	11/13/2018	80
CENTRAL	CENTRAL AVE	0200	5TH ST	HURON	585	45	26,325	R	2	AC/AC	11/13/2018	87
CHERRY	CHERRY AVE	0100	GRANADA	ORANGE	303	37	11,211	R	2	AC	11/13/2018	77
CHERRY	CHERRY AVE	0200	ORANGE	LOS ANGELES	439	37	16,243	R	2	AC	11/13/2018	72
CHERRY	CHERRY AVE	0300	LOS ANGELES	LASSEN	338	37	12,506	R	2	AC	11/13/2018	39
CORTE	CORTE WY	0100	END	LASSEN	436	23	10,028	R	2	AC	11/13/2018	7
CROCKER	CROCKER AVE	0100	END	LOS ANGELES	383	36	13,788	R	2	AC/AC	11/13/2018	93
CROCKER	CROCKER AVE	0200	LOS ANGELES	END	317	36	11,412	R	2	AC/AC	11/13/2018	93
DINERO	DINERO WY	0100	4TH ST	HURON	901	23	20,723	R	2	AC	11/14/2018	97
FRESNO	FRESNO ST	0100	RAILROAD	MYRTLE	989	13	12,857	R	1	AC	11/13/2018	9

Street ID	Street Name	Section ID	Beg Location	End Location	Length (ft)	Width (ft)	Area (sf)	FC	# of Lanes	Surface Type	PCI Date	PCI
GIFFIN	GIFFEN	0100	11TH ST	MOUREN DR	250	35	8,750	R	2	AC/AC	11/16/2018	68
GIFFIN	GIFFEN	0200	MOUREN DR	PALMER AVE	461	35	16,135	R	2	AC	11/16/2018	68
GRANADA	GRANADA AVE	0100	TORNADO	MYRTLE	878	37	32,486	R	2	AC	11/13/2018	55
GUADALUPE	GUADALUPE AVE	0100	END	1ST ST	112	37	4,144	R	2	AC	11/14/2018	59
GUADALUPE	GUADALUPE AVE	0200	1ST ST	2ND ST	296	36	10,656	R	2	AC	11/14/2018	64
HOME	HOME AVE	0100	ORANGE	LOS ANGELES	296	36	10,656	R	2	AC	11/13/2018	61
HURON	HURON AVE	0100	LASSEN AVE	CENTRAL AVE	330	30	9,900	C	2	AC/AC	12/5/2018	100
HURON	HURON AVE	0200	CENTRAL AVE	END	243	30	7,290	C	2	AC	11/14/2018	87
LST	L ST	0100	10TH ST	11TH ST	361	52	18,772	R	2	AC	11/14/2018	64
LST	L ST	0200	11TH ST	END	346	52	17,992	R	2	AC	11/14/2018	50
LOSANGELES	LOS ANGELES ST	0100	TORNADO	MYRTLE	1,239	37	45,843	R	2	AC	11/13/2018	49
LOSANGELES	LOS ANGELES ST	0200	MYRTLE	RAILROAD	838	36	30,168	R	2	AC/AC	11/13/2018	94
MST	M ST	0100	3RD ST	4TH ST	235	52	12,220	R	2	AC	11/16/2018	54
MST	M ST	0200	4TH ST	7TH ST (S)	883	52	45,916	R	2	AC/AC	11/16/2018	95
MST	M ST	0300	7TH ST (S)	9TH	784	52	40,768	R	2	AC	11/16/2018	54
MST	M ST	0400	9TH ST	11TH ST	853	52	44,356	R	2	AC	11/16/2018	50
MST	M ST	0500	11TH ST	PALMER	1,743	52	90,636	R	2	AC	11/16/2018	62
MOUREN	MOUREN DR	0100	O ST	GIFFEN	1,091	33	36,003	R	2	AC/AC	11/14/2018	94
MYRTLE	MYRTLE AVE	0100	GRANADA	LOS ANGELES (N)	895	37	33,115	R	2	AC	11/13/2018	48
MYRTLE	MYRTLE AVE	0200	LOS ANGELES (N)	LASSEN	580	36	20,880	R	2	AC	11/13/2018	57
NST	N ST	0100	1ST ST	3RD ST	505	36	18,180	R	2	AC	11/14/2018	44
NST	N ST	0200	5TH ST	O ST	1,029	37	38,073	R	2	AC/AC	11/14/2018	95
NST	N ST	0300	10TH ST	11TH ST	380	50	19,000	R	2	AC	11/15/2018	13
NST	N ST	0400	11TH ST	13TH ST	791	53	41,923	R	2	AC	11/15/2018	50
OST	O ST	0100	1ST ST	4TH ST	901	30	27,030	R	2	AC	11/14/2018	57
OST	O ST	0200	4TH ST	END	1,013	43	43,559	R	2	AC	11/14/2018	87
OST	O ST	0300	ALLEY N/O 8TH ST	9TH ST	179	21	3,759	R	2	AC	11/15/2018	89
OST	O ST	0400	END	11TH ST	204	53	10,812	R	2	AC	11/14/2018	56
OST	O ST	0500	11TH ST	MOUREN	281	53	14,893	R	2	AC/AC	11/14/2018	95
OST	O ST	0600	13TH ST	PALMER	560	33	18,480	R	2	AC	11/14/2018	53
ORANGE	ORANGE AVE	0100	TORNADO	MYRTLE	1,052	36	37,872	R	2	AC	11/13/2018	71
PST	P ST	0100	11TH ST	MOUREN	176	32	5,632	R	2	AC/AC	11/16/2018	96
PALMER	PALMER AVE	0100	LASSEN	O ST	925	36	33,300	C	2	AC	11/16/2018	47
PALMER	PALMER AVE	0200	O ST	R ST	867	47	40,749	C	2	AC	11/16/2018	25
PALMER	PALMER AVE	0300	R ST	GIFFEN	832	47	39,104	C	2	AC	11/16/2018	50
PALMER	PALMER AVE	0400	GIFFEN	END	2,415	40	96,600	C	2	AC/AC	11/16/2018	95
RST	R ST	0100	PALMER	END	488	26	12,688	R	2	AC	11/16/2018	84
RAILROAD	RAILROAD AVE	0100	END	960' W/O LASSEN	600	36	21,600	R	2	AC/AC	11/13/2018	94
RAILROAD	RAILROAD AVE	0200	960' W/O LASSEN	LASSEN	960	38	36,480	C	2	AC	11/13/2018	76
SILVA	SILVA AVE	0100	END	1ST ST	112	35	3,920	R	2	AC	11/14/2018	60
SILVA	SILVA AVE	0200	2ND ST	3RD ST	232	36	8,352	R	2	AC	11/14/2018	39
STANFORD	STANFORD AVE	0100	END	LOS ANGELES	266	36	9,576	R	2	AC/AC	11/13/2018	94
STANFORD	STANFORD AVE	0200	LOS ANGELES	END	320	36	11,520	R	2	AC/AC	11/13/2018	93
TORNADO	TORNADO AVE	0100	GRANADA	LASSEN	939	31	29,109	C	2	AC	11/13/2018	42

Street ID	Street Name	Section ID	Beg Location	End Location	Length (ft)	Width (ft)	Area (sf)	FC	# of Lanes	Surface Type	PCI Date	PCI
HURON	HURON AVE	0100	LASSEN AVE	CENTRAL AVE	330	30	9,900	C	2	AC/AC	12/5/2018	100
ALLEY11	ALLEY N/O 11TH	0400	N ST	O ST	448	21	9,408	O	2	AC	11/15/2018	97
DINERO	DINERO WY	0100	4TH ST	HURON	901	23	20,723	R	2	AC	11/14/2018	97
PST	P ST	0100	11TH ST	MOUREN	176	32	5,632	R	2	AC/AC	11/16/2018	96
5TH	05TH ST	0300	M ST	O ST	948	36	34,128	R	2	AC/AC	11/14/2018	95
8TH	08TH ST	0200	M ST	END	452	53	23,956	R	2	AC/AC	11/14/2018	95
9TH	09TH ST	0200	M ST	O ST	935	50	46,750	C	2	AC/AC	11/15/2018	95
9TH	09TH ST	0300	O ST	1,093' E/O O ST	1,093	50	54,650	C	2	AC	11/15/2018	95
MST	M ST	0200	4TH ST	7TH ST (S)	883	52	45,916	R	2	AC/AC	11/16/2018	95
NST	N ST	0200	5TH ST	O ST	1,029	37	38,073	R	2	AC/AC	11/14/2018	95
OST	O ST	0500	11TH ST	MOUREN	281	53	14,893	R	2	AC/AC	11/14/2018	95
PALMER	PALMER AVE	0400	GIFFEN	END	2,415	40	96,600	C	2	AC/AC	11/16/2018	95
11TH	11TH ST	0400	P ST	R ST	418	34	14,212	R	2	AC	11/16/2018	94
LOSANGELES	LOS ANGELES ST	0200	MYRTLE	RAILROAD	838	36	30,168	R	2	AC/AC	11/13/2018	94
MOUREN	MOUREN DR	0100	O ST	GIFFEN	1,091	33	36,003	R	2	AC/AC	11/14/2018	94
RAILROAD	RAILROAD AVE	0100	END	960' W/O LASSEN	600	36	21,600	R	2	AC/AC	11/13/2018	94
STANFORD	STANFORD AVE	0100	END	LOS ANGELES	266	36	9,576	R	2	AC/AC	11/13/2018	94
CROCKER	CROCKER AVE	0100	END	LOS ANGELES	383	36	13,788	R	2	AC/AC	11/13/2018	93
CROCKER	CROCKER AVE	0200	LOS ANGELES	END	317	36	11,412	R	2	AC/AC	11/13/2018	93
STANFORD	STANFORD AVE	0200	LOS ANGELES	END	320	36	11,520	R	2	AC/AC	11/13/2018	93
5TH	05TH ST	0100	CENTRAL	END	287	53	15,211	R	2	AC/AC	11/14/2018	91
OST	O ST	0300	ALLEY N/O 8TH ST	9TH ST	179	21	3,759	R	2	AC	11/15/2018	89
CENTRAL	CENTRAL AVE	0200	5TH ST	HURON	585	45	26,325	R	2	AC/AC	11/13/2018	87
HURON	HURON AVE	0200	CENTRAL AVE	END	243	30	7,290	C	2	AC	11/14/2018	87
OST	O ST	0200	4TH ST	END	1,013	43	43,559	R	2	AC	11/14/2018	87
6TH	06TH ST	0100	END	O ST	361	37	13,357	R	2	AC/AC	11/14/2018	84
RST	R ST	0100	PALMER	END	488	26	12,688	R	2	AC	11/16/2018	84
CENTRAL	CENTRAL AVE	0100	4TH ST	5TH ST	2,736	53	145,008	R	2	AC/AC	11/13/2018	80
11TH	11TH ST	0300	N ST	O ST	488	53	25,864	C	2	AC	11/14/2018	77
CHERRY	CHERRY AVE	0100	GRANADA	ORANGE	303	37	11,211	R	2	AC	11/13/2018	77
11TH	11TH ST	0200	M ST	N ST	450	53	23,850	C	2	AC	11/14/2018	76
RAILROAD	RAILROAD AVE	0200	960' W/O LASSEN	LASSEN	960	38	36,480	C	2	AC	11/13/2018	76
12TH	12TH ST	0100	END	LASSEN	563	36	20,268	R	2	AC	11/14/2018	75
CHERRY	CHERRY AVE	0200	ORANGE	LOS ANGELES	439	37	16,243	R	2	AC	11/13/2018	72
7TH	07TH ST	0100	END	M ST	365	36	13,140	R	2	AC	11/15/2018	71
ORANGE	ORANGE AVE	0100	TORNADO	MYRTLE	1,052	36	37,872	R	2	AC	11/13/2018	71
GIFFIN	GIFFEN	0100	11TH ST	MOUREN DR	250	35	8,750	R	2	AC/AC	11/16/2018	68
GIFFIN	GIFFEN	0200	MOUREN DR	PALMER AVE	461	35	16,135	R	2	AC	11/16/2018	68
4TH	04TH ST	0200	AZTECA	M ST	491	34	16,694	C	2	AC	11/14/2018	64
GUADALUPE	GUADALUPE AVE	0200	1ST ST	2ND ST	296	36	10,656	R	2	AC	11/14/2018	64
LST	L ST	0100	10TH ST	11TH ST	361	52	18,772	R	2	AC	11/14/2018	64
1ST	01ST ST	0100	GUADALUPE	END	937	36	33,732	R	2	AC	11/14/2018	63
4TH	04TH ST	0300	M ST	O ST	997	34	33,898	C	2	AC	11/14/2018	63
APPLE	APPLE AVE	0100	ORANGE	LOS ANGELES	545	36	19,620	R	2	AC	11/13/2018	62
MST	M ST	0500	11TH ST	PALMER	1,743	52	90,636	R	2	AC	11/16/2018	62

Street ID	Street Name	Section ID	Beg Location	End Location	Length (ft)	Width (ft)	Area (sf)	FC	# of Lanes	Surface Type	PCI Date	PCI
HOME	HOME AVE	0100	ORANGE	LOS ANGELES	296	36	10,656	R	2	AC	11/13/2018	61
2ND	02ND ST	0200	N ST	O ST	221	36	7,956	R	2	AC	11/14/2018	60
5TH	05TH ST	0200	END	M ST	298	36	10,728	R	2	AC	11/14/2018	60
11TH	11TH ST	0100	LASSEN	M ST	951	53	50,403	C	2	AC	11/15/2018	60
SILVA	SILVA AVE	0100	END	1ST ST	112	35	3,920	R	2	AC	11/14/2018	60
8TH	08TH ST	0100	END	M ST	489	36	17,604	R	2	AC	11/14/2018	59
AZTECA	AZTECA BLVD	0100	END	4TH	1,236	42	51,912	R	2	AC	11/14/2018	59
GUADALUPE	GUADALUPE AVE	0100	END	1ST ST	112	37	4,144	R	2	AC	11/14/2018	59
2ND	02ND ST	0100	GUADALUPE	N ST	934	37	34,558	R	2	AC	11/14/2018	58
MYRTLE	MYRTLE AVE	0200	LOS ANGELES (N)	LASSEN	580	36	20,880	R	2	AC	11/13/2018	57
OST	O ST	0100	1ST ST	4TH ST	901	30	27,030	R	2	AC	11/14/2018	57
OST	O ST	0400	END	11TH ST	204	53	10,812	R	2	AC	11/14/2018	56
10TH	10TH ST	0200	M ST	N ST	473	52	24,596	C	2	AC	11/15/2018	55
APPLE	APPLE AVE	0200	LOS ANGELES	LASSEN	376	51	19,176	R	2	AC	11/13/2018	55
GRANADA	GRANADA AVE	0100	TORNADO	MYRTLE	878	37	32,486	R	2	AC	11/13/2018	55
4TH	04TH ST	0100	LASSEN	AZTECA	1,155	34	39,270	C	2	AC	11/14/2018	54
MST	M ST	0100	3RD ST	4TH ST	235	52	12,220	R	2	AC	11/16/2018	54
MST	M ST	0300	7TH ST (S)	9TH	784	52	40,768	R	2	AC	11/16/2018	54
9TH	09TH ST	0100	LASSEN	M ST	1,341	50	67,050	C	2	AC	11/15/2018	53
OST	O ST	0600	13TH ST	PALMER	560	33	18,480	R	2	AC	11/14/2018	53
14TH	14TH ST	0100	M ST	O ST	702	36	25,272	R	2	AC	11/15/2018	50
LST	L ST	0200	11TH ST	END	346	52	17,992	R	2	AC	11/14/2018	50
MST	M ST	0400	9TH ST	11TH ST	853	52	44,356	R	2	AC	11/16/2018	50
NST	N ST	0400	11TH ST	13TH ST	791	53	41,923	R	2	AC	11/15/2018	50
PALMER	PALMER AVE	0300	R ST	GIFFEN	832	47	39,104	C	2	AC	11/16/2018	50
10TH	10TH ST	0100	LASSEN	M ST	1,104	52	57,408	C	2	AC	11/15/2018	49
LOSANGELES	LOS ANGELES ST	0100	TORNADO	MYRTLE	1,239	37	45,843	R	2	AC	11/13/2018	49
MYRTLE	MYRTLE AVE	0100	GRANADA	LOS ANGELES (N)	895	37	33,115	R	2	AC	11/13/2018	48
PALMER	PALMER AVE	0100	LASSEN	O ST	925	36	33,300	C	2	AC	11/16/2018	47
12TH	12TH ST	0200	M ST	N ST	457	52	23,764	R	2	AC	11/14/2018	46
13TH	13TH ST	0200	M ST	O ST	704	52	36,608	R	2	AC	11/15/2018	46
A-E/OLA ST	ALLEY E/O LOS ANGELES ST	0100	TORNADO	CHERRY	530	17	9,010	O	2	AC	11/15/2018	46
3RD	03RD ST	0100	END	M ST	719	36	25,884	R	2	AC	11/14/2018	45
NST	N ST	0100	1ST ST	3RD ST	505	36	18,180	R	2	AC	11/14/2018	44
TORNADO	TORNADO AVE	0100	GRANADA	LASSEN	939	31	29,109	C	2	AC	11/13/2018	42
ALLEY4	ALLEY N/O 4TH	0100	CENTRAL	END	648	18	11,664	O	2	AC	11/14/2018	40
3RD	03RD ST	0200	M ST	N ST	247	36	8,892	R	2	AC	11/14/2018	39
CHERRY	CHERRY AVE	0300	LOS ANGELES	LASSEN	338	37	12,506	R	2	AC	11/13/2018	39
SILVA	SILVA AVE	0200	2ND ST	3RD ST	232	36	8,352	R	2	AC	11/14/2018	39
PALMER	PALMER AVE	0200	O ST	R ST	867	47	40,749	C	2	AC	11/16/2018	25
NST	N ST	0300	10TH ST	11TH ST	380	50	19,000	R	2	AC	11/15/2018	13
FRESNO	FRESNO ST	0100	RAILROAD	MYRTLE	989	13	12,857	R	1	AC	11/13/2018	9
CORTE	CORTE WY	0100	END	LASSEN	436	23	10,028	R	2	AC	11/13/2018	7
9TH	09TH ST	0400	1,093' E/O O ST	1,593' E/O O ST	500	32	16,000	C	2	AC	11/15/2018	0

Street ID	Street Name	Section ID	Beg Location	End Location	Length (ft)	Width (ft)	Area (sf)	FC	# of Lanes	Surface Type	PCI Date	PCI
9TH	09TH ST	0500	1,593' E/O O ST	SISKIYOU	1,980	40	79,200	C	2	GRAVEL		0
10TH	10TH ST	0300	N ST	O ST	438	52	22,776	C	2	GRAVEL		0
13TH	13TH ST	0100	END	M ST	148	52	7,696	R	2	GRAVEL		0
A-E/OCENTR	ALLEY E/O CENTRAL AVE	0100	5TH	HURON	461	24	11,064	O	2	GRAVEL		0
A-E/OGRANA	ALLEY E/O GRANADA AVE	0100	TORNADO	CHERRY	311	20	6,220	O	2	GRAVEL		0
A-E/OGRANA	ALLEY E/O GRANADA AVE	0200	CHERRY	MYRTLE	578	20	11,560	O	2	GRAVEL		0
A-E/OLASAV	ALLEY E/O LASSEN AVE	0100	ALLEY N/O 8TH	9TH	173	53	9,169	O	2	GRAVEL		0
A-E/OLASAV	ALLEY E/O LASSEN AVE	0200	PALMER	ALLEY N/O PALMER	179	15	2,685	O	2	GRAVEL		0
A-E/OLASAV	ALLEY E/O LASSEN AVE	0300	PALMER	ALLEY N/O PALMER	179	36	6,444	O	2	GRAVEL		0
A-E/OLA ST	ALLEY E/O LOS ANGELES ST	0200	CHERRY	APPLE	371	20	7,420	O	2	GRAVEL		0
A-E/OLA ST	ALLEY E/O LOS ANGELES ST	0300	APPLE	ALLEY N/O APPLE	151	20	3,020	O	2	GRAVEL		0
A-E/O M ST	ALLEY E/O M ST	0100	4TH ST	ALLEY N/O 4TH	121	30	3,630	O	2	GRAVEL		0
A-E/O M ST	ALLEY E/O M ST	0200	ALLEY N/O 8TH ST	9TH ST	143	20	2,860	O	2	GRAVEL		0
A-E/O M ST	ALLEY E/O M ST	0300	8TH ST	ALLEY N/O 8TH ST	142	30	4,260	O	2	GRAVEL		0
ALLEY10	ALLEY N/O 10TH	0100	LASSEN AVE	L ST	498	20	9,960	O	2	GRAVEL		0
ALLEY10	ALLEY N/O 10TH	0200	L ST	M ST	423	20	8,460	O	2	GRAVEL		0
ALLEY10	ALLEY N/O 10TH	0300	M ST	N ST	413	20	8,260	O	2	GRAVEL		0
ALLEY10	ALLEY N/O 10TH	0400	N ST	O ST	411	20	8,220	O	2	GRAVEL		0
ALLEY11	ALLEY N/O 11TH	0100	LASSEN	L ST	316	18	5,688	O	2	GRAVEL		0
ALLEY11	ALLEY N/O 11TH	0200	L ST	M ST	428	20	8,560	O	2	GRAVEL		0
ALLEY11	ALLEY N/O 11TH	0300	M ST	N ST	424	20	8,480	O	2	GRAVEL		0
ALLEY12	ALLEY N/O 12TH	0100	M ST	N ST	418	20	8,360	O	2	GRAVEL		0
ALLEY13	ALLEY N/O 13TH	0100	M ST	N ST	666	20	13,320	O	2	GRAVEL		0
ALLEY4	ALLEY N/O 4TH	0200	END	M ST	456	20	9,120	O	2	GRAVEL		0
ALLEY4	ALLEY N/O 4TH	0300	M ST	O ST	916	20	18,320	O	2	GRAVEL		0
ALLEY5	ALLEY N/O 5TH	0100	M ST	NST	343	20	6,860	O	2	GRAVEL		0
ALLEY5	ALLEY N/O 5TH	0200	N ST	O ST	548	20	10,960	O	2	GRAVEL		0
ALLEY8	ALLEY N/O 8TH	0100	ALLEY W/O M ST	M ST	409	20	8,180	O	2	GRAVEL		0
ALLEY8	ALLEY N/O 8TH	0200	M ST	O ST	885	18	15,930	O	2	GRAVEL		0
A-N/OAPPLE	ALLEY N/O APPLE AVE	0100	ORANGE	LOS ANGELES	507	20	10,140	O	2	GRAVEL		0
A-N/OAPPLE	ALLEY N/O APPLE AVE	0200	LOS ANGELES	LASSEN	461	20	9,220	O	2	GRAVEL		0
A-N/OCHERR	ALLEY N/O CHERRY ACE	0100	ORANGE	LOS ANGELES	493	20	9,860	O	2	GRAVEL		0
A-N.OHOME	ALLEY N/O HOME AVE	0100	ORANGE	LOS ANGELES	269	20	5,380	O	2	GRAVEL		0
A-N/OPALME	ALLEY N/O PALMER AVE	0100	ALLEY E/O LASSEN	R ST	978	20	19,560	O	2	GRAVEL		0
A-S/O13TH	ALLEY S/O 13TH ST	0100	END	M ST	138	20	2,760	O	2	GRAVEL		0
PALMER	PALMER AVE	0500	END	SISKIYOU	316	40	12,640	C	2	GRAVEL		0
PALMER	PALMER AVE	0600	CITY LIMIT	CITY LIMIT	2,425	16	38,800	R	1	GRAVEL		0
SISKIYOU	SISKYOU AVE	0100	TORNADO	9TH ST	4,797	16	76,752	R	2	GRAVEL		0

Appendix C

Maintenance and Rehabilitation (M&R) Decision Tree

Maintenance and Rehabilitation Decision Tree

This report presents the current maintenance and rehabilitation (M&R) decision tree that exists in the database. The decision tree forms the basis for all of the budgetary computations that are included in this volume. ***Changes to the decision tree will make the results in the budget reports invalid.*** All pavement treatment unit costs relevant to the street types in the database were updated.

The decision tree lists the treatments and costs selected for preventive maintenance and rehabilitation activities. Each line represents a specific combination of functional classification and surface type.

The preventive maintenance portion of the report is identified as Condition Category I – Good. All preventive maintenance treatment listings are assigned only to sections in Condition Category I. Street sections with PCI values under this range are assigned to treatments listed in Categories II through V.

In the preventive maintenance category, a time sequence is used to identify the appropriate treatment and cost. Each preventive maintenance treatment description consists of three parts: 1) a CRACK treatment, 2) a SURFACE treatment, and 3) a RESTORATION treatment. These three parts allow the user to specify one of three different preventive maintenance treatments depending on the prior maintenance history of the section.

1. The CRACK treatment part can be used to specify the most frequent type of preventive maintenance activity planned (typically crack seals).
2. The SURFACE treatment part can be used to specify more extensive and less frequent preventive maintenance activities, such as chip seals or slurry seals. For example, a crack seal can be specified on a 3-year cycle with a slurry seal specified after seven years.
3. The RESTORATION part can be used to specify a surface restoration treatment (such as an overlay) to be performed after a specified number of surface treatments. For example, after three successive slurry seals, an overlay can be specified instead of another slurry seal.

Rehabilitation treatments are assigned to sections in Condition Categories II through V. Each line is defined by a specific combination of functional classification, surface type, and condition category.

The City adjusted the PCI thresholds for budget analysis in StreeSaver® for different functional classifications to meet the goal of improving the PCI.

- Arterial/Collector functional class
  - Good 70-100
  - Fair 50-69
  - Poor 25-49
  - Very Poor 0-24

- Residential/Local/Alley functional class
    - Good 70-100
    - Fair 50-69
    - Poor 25-49
    - Very Poor 0-24

COLUMN	DESCRIPTION
Functional Class	Functional Classification identifying the branch number.
Surface	Surface Type identifying the branch number. Surface Type (AC Pavement, AC/AC = AC Overlay of AC Pavement, AC/PCC = AC Overlay of PCC Pavement, PCC = PCC Pavement, ST = Surface treatment over gravel base/subgrade).
Condition Category	Condition Category (I through V).
Treatment Type	First Row (Crack Treatment) indicates localized treatment (e.g. crack sealing). Second Row (Surface Treatment) indicates surface treatment (e.g. microsurfacing). Third Row (Restoration Treatment) indicates surface restoration (e.g. overlay).
Treatment	Name of treatments from the "Treatment Descriptions" report.
Cost/SqYd, except Seal Cracks in LF	Average unit cost per square yard for each treatment except for “SEAL CRACKS” which is cost per linear feet.
Yrs. Between Crack Seals	First Row - number of years between successive treatment applications specified in the first row (i.e. CRACK treatment).
Yrs. Between Surface Seals	Second Row - number of years between successive treatment applications specified in the second row (i.e. SURFACE treatment).
# of Surface Seals before Overlay	Number of times that the treatment application in the second row (i.e. SURFACE treatment) will be performed prior to performing the treatment application in the third row.

Treatments highlighted in yellow indicated that a specific functional class and surface combination does not exist within the City (i.e. an AC overlay of PCC pavement arterial street, a surface treatment over gravel base/subgrade pavement residential street, etc.). Therefore, treatments for these functional class and surface combination will be “Do Nothing”.

Note that the treatments assigned to each section should not be blindly followed in preparing a street maintenance program. Engineering judgment and project level analysis should be applied to ensure that the treatment is appropriate and cost effective for the section.

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$4.00		7	
			Restoration Treatment	2" HMA+CIR+BASE REPAIRS	$60.50			3
		II - Good, Non-Load Related		CAPE SEAL+CRACK SEAL	$18.50			
		III - Good, Load Related		CAPE SEAL+BASE REPAIRS	$26.50			
		IV - Poor		2" HMA+CIR+BASE REPAIRS	$60.50			
		V - Very Poor		3" HMA+FDR	$67.00			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$4.00		7	
			Restoration Treatment	2" HMA+CIR+BASE REPAIRS	$60.50			3
		II - Good, Non-Load Related		CAPE SEAL+CRACK SEAL	$18.50			
		III - Good, Load Related		CAPE SEAL+BASE REPAIRS	$26.50			
		IV - Poor		2" HMA+CIR+BASE REPAIRS	$60.50			
		V - Very Poor		3" HMA+FDR	$67.00			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

City of Huron
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Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			
	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

City of Huron
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Decision Tree

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Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Collector	AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.50		7	
			Restoration Treatment	2" HMA+CIR+BASE REPAIRS	$62.00			3
		II - Good, Non-Load Related		CHIP SEAL+CRACK SEAL	$11.00			
		III - Good, Load Related		CHIP SEAL+BASE REPAIRS	$18.00			
		IV - Poor		2" HMA+CIR+BASE REPAIRS	$62.00			
		V - Very Poor		3" HMA+FDR	$64.50			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.50		7	
			Restoration Treatment	2" HMA+CIR+BASE REPAIRS	$62.00			3
		II - Good, Non-Load Related		CHIP SEAL+CRACK SEAL	$11.00			
		III - Good, Load Related		CHIP SEAL+BASE REPAIRS	$18.00			
		IV - Poor		2" HMA+BASE REPAIRS	$62.00			
		V - Very Poor		3" HMA+FDR	$64.50			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

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Decision Tree

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Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Collector	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			
	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

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Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.25		7	
			Restoration Treatment	2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			3
		II - Good, Non-Load Related		TYPE III SLURRY SEAL+CRACK SEAL	$3.25			
		III - Good, Load Related		TYPE III SLURRY SEAL+BASE REPAIRS	$10.00			
		IV - Poor		2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			
		V - Very Poor		3" HMA+FDR	$62.00			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.25		7	
			Restoration Treatment	2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			3
		II - Good, Non-Load Related		TYPE III SLURRY SEAL+CRACK SEAL	$3.25			
		III - Good, Load Related		TYPE III SLURRY SEAL+BASE REPAIRS	$10.00			
		IV - Poor		2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			
		V - Very Poor		3" HMA+FDR	$62.00			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

City of Huron
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Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			
	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

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Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Other	AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.25		7	
			Restoration Treatment	2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			3
		II - Good, Non-Load Related		TYPE III SLURRY SEAL+CRACK SEAL	$3.25			
		III - Good, Load Related		TYPE III SLURRY SEAL+BASE REPAIRS	$10.00			
		IV - Poor		2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			
		V - Very Poor		3" HMA+FDR	$62.00			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.00	3		
			Surface Treatment	TYPE III SLURRY SEAL+CRACK SEAL	$3.25		7	
			Restoration Treatment	2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			3
		II - Good, Non-Load Related		TYPE III SLURRY SEAL+CRACK SEAL	$3.25			
		III - Good, Load Related		TYPE III SLURRY SEAL+BASE REPAIRS	$10.00			
		IV - Poor		2" MILL AND HMA OVERLAY+BASE REPAIRS	$47.00			
		V - Very Poor		3" HMA+FDR	$62.00			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

City of Huron
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Huron, CA 93234

Decision Tree

Printed: 04/04/2019

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Other	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			
	ST	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		DO NOTHING	$0.00			
		V - Very Poor		DO NOTHING	$0.00			

Functional Class and Surface combination not used

Appendix D

Budget Needs

I. Projected PCI/Cost Summary

II. Rehabilitation Treatment/Cost Summary

III. Preventive Maintenance Treatment/Cost Summary

Budget Needs Reports

The purpose of this module is to answer the question: ***If the City had all the money in the world, what sections should be fixed and how much will it cost?*** Based on the Maintenance & Rehabilitation (M&R) decision tree and the PCIs of the sections, the program will then select a maintenance or rehabilitation action and compute the total costs over a period of ten years. The Budget Needs represents the "ideal world" funding levels, while the Budget Scenarios reports in the next section represent the most "cost effective" prioritization possible for the actual funding levels.

A budget needs analysis has been performed. The summary results from the analysis are shown below. An interest rate of 3% and an inflation factor of 3% were used to project the costs for the next ten years. This report shows the total ten-year budget that would be required to meet the City's standards as exemplified in the M&R decision tree.

As indicated in the report, with a budget of $8.16 million over the next ten years the PCI of the street network will improve from the current level of 67 to 84 by fiscal year (FY) 2028/29. If no treatments are programmed, the weighted average PCI is projected to deteriorate to 42 by FY 2028/29.

Budget Needs reports included in this volume are listed below:

- Projected PCI/Cost Summary
- Preventative Maintenance Treatment/Cost Summary
- Rehabilitation Treatment/Cost Summary

Needs - Projected PCI / Cost Summary

This report summarizes and projects the City's network PCI values over a ten-year period, both with and without treatments applied. These costs are based on those in the M&R decision tree. It also projects the costs over a ten-year period.

COLUMN	DESCRIPTION
Year	Year in the analysis period.
PCI Treated	Projected network average PCI with all needed treatments applied.
PCI Untreated	Projected network average PCI without any treatments applied.
PM Cost	Total preventive maintenance treatment cost.
Rehab Cost	Total rehabilitation treatment cost.
Cost	The budget required for each year in the analysis period to meet the City's standard as shown on the M&R decision tree.
Total Cost	Total budget required over a ten-year period.

City of Huron
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Needs - Projected PCI/Cost Summary

Inflation Rate = 3.00 %

Printed: 04/01/2019

Year	PCI Treated	PCI Untreated	PM Cost	Rehab Cost	Cost
2019	86	63	$26,524	$4,718,478	$4,745,002
2020	85	61	$19,170	$448,322	$467,492
2021	84	59	$67,080	$275,494	$342,574
2022	83	57	$25,777	$7,293	$33,070
2023	83	54	$50,073	$90,873	$140,946
2024	82	52	$128,906	$0	$128,906
2025	82	50	$557,983	$112,274	$670,257
2026	84	47	$802,364	$113,632	$915,996
2027	84	45	$124,299	$0	$124,299
2028	84	42	$595,551	$0	$595,551

% PM	PM Total Cost	Rehab Total Cost	Total Cost
29.37%	$2,397,727	$5,766,366	$8,164,093

Needs - Rehabilitation Treatment/Cost Summary

This report summarizes each rehabilitation treatment type, quantity of pavement affected, and total costs over the ten-year period. It also summarizes the total quantities and costs over the next ten years.

COLUMN	DESCRIPTION
Treatment	Type of rehabilitation treatments needed.
Year	Year in the analysis period (i.e. 2019, 2021, 2022 etc).
Area Treated	Quantities in square yard.
Cost	Rehabilitation treatment cost.

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Needs - Rehabilitation Treatment/Cost Summary

Inflation Rate = 3.00 % Printed: 04/01/2019

Treatment	Year		Area Treated		Cost
2" HMA+CIR+BASE REPAIRS	2019		17,657.89	sq.yd.	$1,094,791
		Total	17,657.89	sq.yd.	$1,094,791
2" MILL AND HMA OVERLAY+BASE REPAIRS	2019		40,373.44	sq.yd.	$1,897,557
		Total	40,373.44	sq.yd.	$1,897,557
3" HMA+FDR	2019		18,409.33	sq.yd.	$1,175,769
		Total	18,409.33	sq.yd.	$1,175,769
CHIP SEAL+BASE REPAIRS	2019		8,129.78	sq.yd.	$146,336
	2020		8,129.78	sq.yd.	$150,727
	2021		4,363.33	sq.yd.	$83,324
	2025		3,766.44	sq.yd.	$80,952
		Total	24,389.33	sq.yd.	$461,339
CHIP SEAL+CRACK SEAL	2019		10,188.11	sq.yd.	$112,070
	2020		10,188.11	sq.yd.	$115,432
	2021		9,436.22	sq.yd.	$110,121
	2023		5,600.33	sq.yd.	$69,336
	2025		1,854.89	sq.yd.	$24,364
	2026		6,703.33	sq.yd.	$90,687
		Total	43,971	sq.yd.	$522,010
TYPE III SLURRY SEAL+BASE REPAIRS	2019		12,616.44	sq.yd.	$126,165
	2020		8,033.22	sq.yd.	$82,744
	2021		2,180	sq.yd.	$23,128
		Total	22,829.67	sq.yd.	$232,037
TYPE III SLURRY SEAL+CRACK SEAL	2019		51,010.56	sq.yd.	$165,790
	2020		29,697.11	sq.yd.	$99,419
	2021		17,088.44	sq.yd.	$58,921
	2022		2,053.33	sq.yd.	$7,293
	2023		5,887.56	sq.yd.	$21,537
	2025		1,792.78	sq.yd.	$6,958
	2026		5,740.22	sq.yd.	$22,945
		Total	113,270	sq.yd.	$382,863

Total Cost $5,766,366

Needs - Preventive Maintenance Treatment/Cost Summary

This report summarizes each preventive maintenance treatment type, quantity of pavement affected, and total costs over the ten-year period. It also summarizes the total quantities and costs over the next ten years.

COLUMN	DESCRIPTION
Treatment	Type of preventive maintenance treatments needed.
Year	Year in the analysis period (i.e. 2019, 2021, 2022, etc).
Area Treated	Quantities in linear feet (Seal Cracks) or square yard (Slurry Seal).
Cost	Maintenance treatment cost.

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Needs - Preventive Maintenance Treatment/Cost Summary

Inflation Rate = 3.00 %

Printed: 04/01/2019

Treatment	Year	Area Treated		Cost
2" HMA+CIR+BASE REPAIRS	2025	7,096.22	sq.yd.	$525,343
	2026	5,600.33	sq.yd.	$427,038
	2028	3,766.44	sq.yd.	$304,691
	Total	16,463		$1,257,072
2" MILL AND HMA OVERLAY+BASE REPAIRS	2028	2,053.33	sq.yd.	$125,920
	Total	2,053.33		$125,920
SEAL CRACKS	2019	513.6	ft.	$515
	2020	45.37	ft.	$47
	2022	580.14	ft.	$639
	2023	1,778.37	ft.	$2,014
	2024	1,583.98	ft.	$1,841
	2025	1,322.79	ft.	$1,589
	2026	1,280.11	ft.	$1,582
	2027	1,389.65	ft.	$1,765
	2028	554.99	ft.	$730
	Total	9,048.99		$10,722
TYPE III SLURRY SEAL+CRACK SEAL	2019	7,781.22	sq.yd.	$26,009
	2020	5,649.89	sq.yd.	$19,123
	2021	19,454.67	sq.yd.	$67,080
	2022	6,678.56	sq.yd.	$25,138
	2023	12,312.44	sq.yd.	$48,059
	2024	33,256.67	sq.yd.	$127,065
	2025	7,916	sq.yd.	$31,051
	2026	90,862.11	sq.yd.	$373,744
	2027	29,699.11	sq.yd.	$122,534
	2028	38,723.11	sq.yd.	$164,210
	Total	252,333.78		$1,004,013
	Total Quantity	279,899.1		$2,397,727

Appendix E

Scenario Summary Reports

I. Cost Summary

II. Network Condition Summary

City of Huron
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Scenarios - Cost Summary

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $500K per year

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2019	$20,000	$500,000	II $89,674	Non-Project	$26,524	$0	$4,252,381	Funded	$0
			III $63,880					Unmet	$31,179
			IV $312,530	Project	$0				
			V $0						
			Total $466,084						
			Project $0						
2020	$20,000	$500,000	II $21,016	Non-Project	$19,170	$830	$4,438,753	Funded	$0
			III $18,590					Unmet	$0
			IV $375,033	Project	$0				
			V $0						
			Total $414,639						
			Project $0						
2021	$11,530	$500,000	II $89,847	Non-Project	$11,527	$3	$4,860,804	Funded	$0
			III $23,128					Unmet	$559
			IV $353,663	Project	$0				
			V $0						
			Total $466,638						
			Project $0						
2022	$20,000	$500,000	II $0	Non-Project	$25,777	$0	$5,186,310	Funded	$0
			III $0					Unmet	$0
			IV $453,180	Project	$0				
			V $0						
			Total $453,180						
			Project $0						
2023	$6,040	$500,000	II $0	Non-Project	$6,036	$4	$5,309,241	Funded	$0
			III $0					Unmet	$0
			IV $460,951	Project	$0				
			V $0						
			Total $460,951						
			Project $0						

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2024	$100,000	$500,000	II $0	Non-Project	$110,525	$0	$5,735,275	Funded	$0
			III $0					Unmet	$47,686
			IV $388,534	Project	$0				
			V $0						
			Total $388,534						
			Project $0						
2025	$100,000	$500,000	II $6,958	Non-Project	$108,292	$0	$5,546,212	Funded	$0
			III $0					Unmet	$288
			IV $384,040	Project	$0				
			V $0						
			Total $390,998						
			Project $0						
2026	$100,000	$500,000	II $35,851	Non-Project	$109,624	$0	$5,343,599	Funded	$0
			III $0					Unmet	$648
			IV $353,301	Project	$0				
			V $0						
			Total $389,152						
			Project $0						
2027	$92,200	$500,000	II $25,847	Non-Project	$92,176	$24	$5,386,870	Funded	$0
			III $0					Unmet	$0
			IV $343,417	Project	$0				
			V $0						
			Total $369,264						
			Project $0						
2028	$100,000	$500,000	II $0	Non-Project	$126,736	$0	$5,232,863	Funded	$0
			III $0					Unmet	$0
			IV $327,899	Project	$0				
			V $0						
			Total $327,899						
			Project $0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$461,943	$124,043	$0	$50,118
Other	$47,053	$8,321	$0	$1,431
Residential/Local	$3,618,343	$504,023	$0	$28,811
Grand Total:	$4,127,339	$636,387	$0	$80,360

City of Huron
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Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $500K per year

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2019	$500,000	$20,000	2023	$500,000	$6,040	2027	$500,000	$92,200
2020	$500,000	$20,000	2024	$500,000	$100,000	2028	$500,000	$100,000
2021	$500,000	$11,530	2025	$500,000	$100,000			
2022	$500,000	$20,000	2026	$500,000	$100,000			

Projected Network Average PCI by year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2019	63	66	2.50	4.99
2020	61	66	0.83	1.66
2021	59	66	1.27	2.53
2022	57	66	1.39	2.77
2023	54	66	0.82	1.64
2024	52	66	2.33	4.67
2025	50	66	2.80	5.61
2026	47	66	2.27	4.53
2027	45	66	3.12	6.24
2028	42	66	2.59	5.18

Percent Network Area by Functional Class and Condition Category

Condition in base year 2019, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	12.7%	26.9%	0.4%	40.0%
II / III	0.0%	6.9%	24.1%	0.0%	31.0%
IV	0.0%	6.7%	14.4%	0.9%	22.0%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2019 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	13.4%	39.5%	0.8%	53.7%
II / III	0.0%	6.2%	13.6%	0.0%	19.8%
IV	0.0%	6.7%	12.3%	0.5%	19.5%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2028 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	13.4%	61.6%	0.8%	75.8%

IV	0.0%	0.0%	1.9%	0.0%	1.9%
V	0.0%	18.1%	3.7%	0.5%	22.4%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

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Scenarios - Cost Summary

Interest: 3.00% Inflation: 3.00% Printed: 04/01/2019

Scenario: $520k per year

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2019	$25,000	$520,000	II $89,674	Non-Project	$26,524	$0	$4,252,381	Funded	$0
			III $63,880					Unmet	$31,179
			IV $312,530	Project	$0				
			V $0						
			Total $466,084						
			Project $0						
2020	$20,000	$520,000	II $0	Non-Project	$19,170	$830	$4,362,992	Funded	$0
			III $18,590					Unmet	$248
			IV $471,810	Project	$0				
			V $0						
			Total $490,400						
			Project $0						
2021	$11,530	$520,000	II $89,847	Non-Project	$11,527	$3	$4,742,437	Funded	$0
			III $23,128					Unmet	$559
			IV $393,996	Project	$0				
			V $0						
			Total $506,971						
			Project $0						
2022	$25,000	$520,000	II $0	Non-Project	$25,777	$0	$5,025,223	Funded	$0
			III $0					Unmet	$0
			IV $492,349	Project	$0				
			V $0						
			Total $492,349						
			Project $0						
2023	$25,000	$520,000	II $0	Non-Project	$5,947	$19,053	$5,120,657	Funded	$0
			III $0					Unmet	$0
			IV $483,616	Project	$0				
			V $0						
			Total $483,616						
			Project $0						

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2024	$60,000	$520,000	II $0	Non-Project	$78,706	$0	$5,522,216	Funded	$0
			III $0					Unmet	$46,543
			IV $439,170	Project	$0				
			V $0						
			Total $439,170						
			Project $0						
2025	$60,000	$520,000	II $6,958	Non-Project	$78,177	$0	$5,282,226	Funded	$0
			III $0					Unmet	$288
			IV $434,325	Project	$0				
			V $0						
			Total $441,283						
			Project $0						
2026	$60,000	$520,000	II $0	Non-Project	$73,335	$0	$5,050,692	Funded	$0
			III $0					Unmet	$1,072
			IV $446,479	Project	$0				
			V $0						
			Total $446,479						
			Project $0						
2027	$60,000	$520,000	II $76,972	Non-Project	$102,495	$0	$5,182,602	Funded	$0
			III $0					Unmet	$0
			IV $339,779	Project	$0				
			V $0						
			Total $416,751						
			Project $0						
2028	$60,000	$520,000	II $0	Non-Project	$86,891	$0	$4,961,063	Funded	$0
			III $0					Unmet	$0
			IV $327,899	Project	$0				
			V $104,842						
			Total $432,741						
			Project $0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$601,884	$112,350	$0	$50,790
Other	$151,895	$8,570	$0	$1,431
Residential/Local	$3,862,065	$387,629	$0	$27,668
Grand Total:	$4,615,844	$508,549	$0	$79,890

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Scenarios - Cost Summary

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2019	$25,000	$570,000	II $69,270	Non-Project	$26,524	$0	$4,178,826	Funded	$0
			III $63,880					Unmet	$31,021
			IV $406,489	Project	$0				
			V $0						
			Total $539,639						
			Project $0						
2020	$20,000	$570,000	II $0	Non-Project	$19,170	$830	$4,227,057	Funded	$0
			III $18,590					Unmet	$0
			IV $510,969	Project	$0				
			V $0						
			Total $529,559						
			Project $0						
2021	$11,530	$570,000	II $137,149	Non-Project	$11,527	$3	$4,592,752	Funded	$0
			III $23,128					Unmet	$0
			IV $356,366	Project	$0				
			V $0						
			Total $516,643						
			Project $0						
2022	$25,000	$570,000	II $0	Non-Project	$63,130	$0	$4,833,693	Funded	$0
			III $0					Unmet	$0
			IV $492,349	Project	$0				
			V $0						
			Total $492,349						
			Project $0						
2023	$25,000	$570,000	II $0	Non-Project	$68,692	$0	$4,963,019	Funded	$0
			III $0					Unmet	$0
			IV $487,706	Project	$0				
			V $0						
			Total $487,706						
			Project $0						

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2024	$60,000	$570,000	II	$0	Non-Project	$82,154	$0	$5,309,056	Funded	$0
			III	$0					Unmet	$46,277
			IV	$486,718	Project	$0				
			V	$0						
			Total	$486,718						
			Project	$0						
2025	$60,000	$570,000	II	$6,958	Non-Project	$68,736	$0	$5,014,939	Funded	$0
			III	$0					Unmet	$0
			IV	$492,055	Project	$0				
			V	$0						
			Total	$499,013						
			Project	$0						
2026	$60,000	$570,000	II	$90,687	Non-Project	$74,838	$0	$4,790,851	Funded	$0
			III	$0					Unmet	$0
			IV	$401,855	Project	$0				
			V	$0						
			Total	$492,542						
			Project	$0						
2027	$60,000	$570,000	II	$0	Non-Project	$92,103	$0	$4,465,583	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$470,341						
			Total	$470,341						
			Project	$0						
2028	$60,000	$570,000	II	$0	Non-Project	$97,228	$0	$4,176,882	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$471,313						
			Total	$471,313						
			Project	$0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$1,008,781	$122,064	$0	$49,294
Other	$148,841	$8,112	$0	$1,431
Residential/Local	$3,828,201	$473,926	$0	$26,572
Grand Total:	$4,985,823	$604,102	$0	$77,298

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Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $570K per year

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2019	$570,000	$25,000	2023	$570,000	$25,000	2027	$570,000	$60,000
2020	$570,000	$20,000	2024	$570,000	$60,000	2028	$570,000	$60,000
2021	$570,000	$11,530	2025	$570,000	$60,000			
2022	$570,000	$25,000	2026	$570,000	$60,000			

Projected Network Average PCI by year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2019	63	67	2.47	4.94
2020	61	67	0.87	1.74
2021	59	67	1.49	2.98
2022	57	67	1.71	3.42
2023	54	67	1.34	2.68
2024	52	68	2.50	5.00
2025	50	68	3.04	6.07
2026	47	68	2.67	5.34
2027	45	69	2.60	5.21
2028	42	70	2.70	5.41

Percent Network Area by Functional Class and Condition Category

Condition in base year 2019, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	12.7%	26.9%	0.4%	40.0%
II / III	0.0%	6.9%	24.1%	0.0%	31.0%
IV	0.0%	6.7%	14.4%	0.9%	22.0%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2019 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	12.7%	40.3%	0.8%	53.8%
II / III	0.0%	6.9%	13.6%	0.0%	20.6%
IV	0.0%	6.7%	11.5%	0.5%	18.7%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2028 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	16.5%	63.5%	1.3%	81.3%

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Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $570K per year

V	0.0%	15.0%	3.7%	0.0%	18.7%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Scenarios Criteria:

City of Huron
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Scenarios - Cost Summary

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $830K per year

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2019	$25,000	$830,000	II $89,674	Non-Project	$26,524	$0	$3,967,247	Funded	$0
			III $63,880					Unmet	$29,966
			IV $597,665	Project	$0				
			V $0						
			Total $751,219						
			Project $0						
2020	$20,000	$830,000	II $0	Non-Project	$19,170	$830	$3,754,973	Funded	$0
			III $18,590					Unmet	$248
			IV $786,143	Project	$0				
			V $0						
			Total $804,733						
			Project $0						
2021	$11,530	$830,000	II $137,149	Non-Project	$11,527	$3	$3,821,177	Funded	$0
			III $23,128					Unmet	$0
			IV $641,696	Project	$0				
			V $0						
			Total $801,973						
			Project $0						
2022	$25,000	$830,000	II $22,296	Non-Project	$25,777	$0	$3,791,175	Funded	$0
			III $0					Unmet	$0
			IV $629,905	Project	$0				
			V $125,300						
			Total $777,501						
			Project $0						
2023	$25,000	$830,000	II $0	Non-Project	$48,229	$0	$3,519,560	Funded	$0
			III $0					Unmet	$0
			IV $593,921	Project	$0				
			V $177,440						
			Total $771,361						
			Project $0						

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2024	$60,000	$830,000	II $23,654	Non-Project	$61,951	$0	$3,586,581	Funded	$0
			III $0					Unmet	$35,260
			IV $582,784	Project	$0				
			V $159,850						
			Total $766,288						
			Project $0						
2025	$60,000	$830,000	II $6,958	Non-Project	$160,575	$0	$2,979,994	Funded	$0
			III $0					Unmet	$0
			IV $66,447	Project	$0				
			V $594,133						
			Total $667,538						
			Project $0						
2026	$60,000	$830,000	II $90,687	Non-Project	$112,649	$0	$2,512,374	Funded	$0
			III $0					Unmet	$0
			IV $0	Project	$0				
			V $562,922						
			Total $653,609						
			Project $0						
2027	$60,000	$830,000	II $0	Non-Project	$99,339	$0	$1,979,030	Funded	$0
			III $0					Unmet	$0
			IV $0	Project	$0				
			V $608,715						
			Total $608,715						
			Project $0						
2028	$60,000	$830,000	II $0	Non-Project	$151,954	$0	$1,572,380	Funded	$0
			III $0					Unmet	$0
			IV $0	Project	$0				
			V $628,361						
			Total $628,361						
			Project $0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$3,042,629	$121,590	$0	$45,965
Other	$140,203	$8,109	$0	$259
Residential/Local	$4,048,466	$587,996	$0	$19,250
Grand Total:	$7,231,298	$717,695	$0	$65,475

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Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $830K per year

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2019	$830,000	$25,000	2023	$830,000	$25,000	2027	$830,000	$60,000
2020	$830,000	$20,000	2024	$830,000	$60,000	2028	$830,000	$60,000
2021	$830,000	$11,530	2025	$830,000	$60,000			
2022	$830,000	$25,000	2026	$830,000	$60,000			

Projected Network Average PCI by year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2019	63	67	2.69	5.39
2020	61	69	1.12	2.24
2021	59	70	1.61	3.22
2022	57	71	1.80	3.61
2023	54	72	1.49	2.78
2024	52	73	2.56	5.11
2025	50	75	3.48	6.96
2026	47	76	3.25	6.50
2027	45	78	2.92	5.85
2028	42	80	3.90	7.60

Percent Network Area by Functional Class and Condition Category

Condition in base year 2019, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	12.7%	26.9%	0.4%	40.0%
II / III	0.0%	6.9%	24.1%	0.0%	31.0%
IV	0.0%	6.7%	14.4%	0.9%	22.0%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2019 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	13.4%	41.8%	0.8%	56.0%
II / III	0.0%	6.2%	13.6%	0.0%	19.8%
IV	0.0%	6.7%	10.0%	0.5%	17.2%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2028 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	26.2%	65.3%	1.3%	92.8%

II / III	0.0%	0.7%	0.0%	0.0%	0.7%
V	0.0%	4.6%	1.9%	0.0%	6.5%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

City of Huron
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Scenarios - Cost Summary

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $1m per year

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2019	$20,000	$1,000,000	II $89,674	Non-Project	$26,524	$0	$3,794,313	Funded	$0
			III $63,880					Unmet	$29,230
			IV $770,599	Project	$0				
			V $0						
			Total $924,153						
			Project $0						
2020	$20,000	$1,000,000	II $21,016	Non-Project	$19,170	$830	$3,424,217	Funded	$0
			III $18,590					Unmet	$0
			IV $846,607	Project	$0				
			V $71,155						
			Total $957,368						
			Project $0						
2021	$20,000	$1,000,000	II $137,149	Non-Project	$11,527	$8,473	$3,318,371	Funded	$0
			III $23,128					Unmet	$0
			IV $682,173	Project	$0				
			V $121,650						
			Total $964,100						
			Project $0						
2022	$20,000	$1,000,000	II $0	Non-Project	$82,997	$0	$3,093,900	Funded	$0
			III $0					Unmet	$0
			IV $899,665	Project	$0				
			V $0						
			Total $899,665						
			Project $0						
2023	$20,000	$1,000,000	II $0	Non-Project	$6,036	$13,964	$2,645,659	Funded	$0
			III $0					Unmet	$0
			IV $465,950	Project	$0				
			V $503,401						
			Total $969,351						
			Project $0						

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2024	$100,000	$1,000,000	II	$0	Non-Project	$115,531	$0	$2,492,872	Funded	$0
			III	$0					Unmet	$27,014
			IV	$582,784	Project	$0				
			V	$299,863						
			Total	$882,647						
			Project	$0						
2025	$100,000	$1,000,000	II	$31,322	Non-Project	$90,762	$9,238	$1,749,440	Funded	$0
			III	$0					Unmet	$0
			IV	$66,447	Project	$0				
			V	$768,592						
			Total	$866,361						
			Project	$0						
2026	$100,000	$1,000,000	II	$90,687	Non-Project	$124,829	$0	$1,096,628	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$705,296						
			Total	$795,983						
			Project	$0						
2027	$100,000	$1,000,000	II	$0	Non-Project	$109,300	$0	$355,006	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$774,522						
			Total	$774,522						
			Project	$0						
2028	$100,000	$1,000,000	II	$0	Non-Project	$163,332	$0	$0	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$365,657						
			Total	$365,657						
			Project	$0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$3,858,078	$131,230	$0	$37,940
Other	$140,203	$8,109	$0	$259
Residential/Local	$4,401,526	$610,669	$0	$18,045
Grand Total:	$8,399,807	$750,008	$0	$56,244

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Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $1m per year

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2019	$1,000,000	$20,000	2023	$1,000,000	$20,000	2027	$1,000,000	$100,000
2020	$1,000,000	$20,000	2024	$1,000,000	$100,000	2028	$1,000,000	$100,000
2021	$1,000,000	$20,000	2025	$1,000,000	$100,000			
2022	$1,000,000	$20,000	2026	$1,000,000	$100,000			

Projected Network Average PCI by year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2019	63	68	2.86	5.73
2020	61	70	1.29	2.57
2021	59	72	1.78	3.56
2022	57	73	2.17	4.33
2023	54	74	1.21	2.43
2024	52	77	3.10	6.20
2025	50	79	4.01	7.83
2026	47	82	3.27	6.53
2027	45	85	3.61	7.23
2028	42	86	3.44	6.88

Percent Network Area by Functional Class and Condition Category

Condition in base year 2019, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	12.7%	26.9%	0.4%	40.0%
II / III	0.0%	6.9%	24.1%	0.0%	31.0%
IV	0.0%	6.7%	14.4%	0.9%	22.0%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2019 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	13.4%	43.2%	0.8%	57.4%
II / III	0.0%	6.2%	13.6%	0.0%	19.8%
IV	0.0%	6.7%	8.6%	0.5%	15.8%
V	0.0%	5.2%	1.8%	0.0%	7.0%
Total	0.0%	31.5%	67.2%	1.3%	100.0%

Condition in year 2028 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	31.5%	67.2%	1.3%	100.0%

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Network Condition Summary

Interest: 3% Inflation: 3% Printed: 03/18/2019

Scenario: $1m per year

Total	0.0%	31.5%	67.2%	1.3%	100.0%

Appendix F

Scenario 3: $570,000 per year (Improve Network PCI to 70)

Sections Selected for Treatment

Based on the recommended annual budget of $570,000 (Scenario 3), the "Sections Selected for Treatment" list provides the City with potential candidates for treatment based on each section's functional classification, PCI, treatment history, and available funding.

This list should not be blindly followed when preparing a street maintenance program. Engineering judgment and project level analysis should be applied to ensure that the treatment is appropriate and cost effective.

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2019	$570,000	$25,000	2023	$570,000	$25,000	2027	$570,000	$60,000
2020	$570,000	$20,000	2024	$570,000	$60,000	2028	$570,000	$60,000
2021	$570,000	$11,530	2025	$570,000	$60,000			
2022	$570,000	$25,000	2026	$570,000	$60,000			

Year: 2019

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
12TH ST	M ST	N ST	12TH	0200	457	52	23,764	R	AC		45	44	100	$124,101	9,543	2" MILL AND HMA OVERLAY+BASE REPAIRS
03RD ST	END	M ST	3RD	0100	247	36	8,892	R	AC		44	43	100	$46,436	9,603	2" MILL AND HMA OVERLAY+BASE REPAIRS
ALLEY E/O LOS ANGELES ST	TORNADO	CHERRY	A-E/OLA ST	0100	530	17	9,010	O	AC		45	44	100	$47,053	9,542	2" MILL AND HMA OVERLAY+BASE REPAIRS
L ST	11TH ST	END	LST	0200	346	52	17,992	R	AC		49	48	100	$93,959	9,263	2" MILL AND HMA OVERLAY+BASE REPAIRS
N ST	1ST ST	3RD ST	NST	0100	505	36	18,180	R	AC		43	42	100	$94,940	9,655	2" MILL AND HMA OVERLAY+BASE REPAIRS
											Treatment Total			$406,489		
APPLE AVE	ORANGE	LOS ANGELES	APPLE	0100	545	36	19,620	R	AC		61	60	71	$21,800	12,109	TYPE III SLURRY SEAL+BASE REPAIRS
ORANGE AVE	TORNADO	MYRTLE	ORANGE	0100	1,052	36	37,872	R	AC		70	69	78	$42,080	10,588	TYPE III SLURRY SEAL+BASE REPAIRS
											Treatment Total			$63,880		
11TH ST	N ST	O ST	11TH	0300	488	53	25,864	C	AC		76	75	83	$10,059	32,604	TYPE III SLURRY SEAL+CRACK SEAL
12TH ST	END	LASSEN	12TH	0100	563	36	20,268	R	AC		74	73	82	$7,319	32,812	TYPE III SLURRY SEAL+CRACK SEAL
01ST ST	GUADALUPE	N ST	1ST	0100	937	36	33,732	R	AC		62	61	72	$12,181	37,996	TYPE III SLURRY SEAL+CRACK SEAL
07TH ST	END	M ST	7TH	0100	365	36	13,140	R	AC		70	69	78	$4,745	32,582	TYPE III SLURRY SEAL+CRACK SEAL
CHERRY AVE	GRANADA	ORANGE	CHERRY	0100	303	37	11,211	R	AC		76	75	84	$4,049	32,502	TYPE III SLURRY SEAL+CRACK SEAL

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2019

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
GIFFEN	11TH ST	MOUREN DR	GIFFIN	0100	250	35	8,750	R	AC/AC		67	67	76	$3,160	34,243	TYPE III SLURRY SEAL+CRACK SEAL
GIFFEN	MOUREN DR	PALMER AVE	GIFFIN	0200	461	35	16,135	R	AC		67	66	76	$5,827	32,004	TYPE III SLURRY SEAL+CRACK SEAL
GUADALUPE AVE	1ST ST	2ND ST	GUADALUPE	0200	296	36	10,656	R	AC		63	62	72	$3,848	31,023	TYPE III SLURRY SEAL+CRACK SEAL
L ST	10TH ST	11TH ST	LST	0100	361	52	18,772	R	AC		63	62	72	$6,779	31,023	TYPE III SLURRY SEAL+CRACK SEAL
M ST	11TH ST	PALMER	MST	0500	1,743	52	90,636	R	AC		61	60	71	$32,730	37,269	TYPE III SLURRY SEAL+CRACK SEAL
R ST	PALMER	END	RST	0100	488	26	12,688	R	AC		83	82	90	$4,582	27,455	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$95,279		
06TH ST	END	O ST	6TH	0100	361	37	13,357	R	AC/AC		83	82	84	$32	700,211	SEAL CRACKS
CENTRAL AVE	4TH ST	5TH ST	CENTRAL	0100	2,736	53	145,008	R	AC/AC		79	79	80	$483	870,430	SEAL CRACKS
												Treatment Total		$515		
					Year 2019 Area Total		555,547					Year 2019 Total		$566,163		

Year: 2020

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
13TH ST	M ST	O ST	13TH	0200	704	52	36,608	R	AC		45	42	100	$196,911	9,386	2" MILL AND HMA OVERLAY+BASE REPAIRS
14TH ST	M ST	O ST	14TH	0100	702	36	25,272	R	AC		49	46	100	$135,936	9,143	2" MILL AND HMA OVERLAY+BASE REPAIRS
MYRTLE AVE	GRANADA	LOS ANGELES (N)	MYRTLE	0100	895	37	33,115	R	AC		47	44	100	$178,122	9,274	2" MILL AND HMA OVERLAY+BASE REPAIRS
												Treatment Total		$510,969		
CHERRY AVE	ORANGE	LOS ANGELES	CHERRY	0200	439	37	16,243	R	AC		71	69	78	$18,590	10,229	TYPE III SLURRY SEAL+BASE REPAIRS
												Treatment Total		$18,590		
HURON AVE	CENTRAL AVE	END	HURON	0200	243	30	7,290	C	AC		86	83	90	$2,921	32,577	TYPE III SLURRY SEAL+CRACK SEAL

City of Huron
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Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2020

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
O ST	4TH ST	END	OST	0200	1,013	43	43,559	R	AC		86	84	91	$16,202	24,794	TYPE III SLURRY SEAL+CRACK SEAL
													Treatment Total	$19,123		
CENTRAL AVE	5TH ST	HURON	CENTRAL	0200	585	45	26,325	R	AC/AC		86	84	85	$47	1,123,431	SEAL CRACKS
													Treatment Total	$47		
						Year 2020 Area Total				188,412			Year 2020 Total	$548,729		

Year: 2021

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
LOS ANGELES ST	TORNADO	MYRTLE	LOSANGELES	0100	1,239	37	45,843	R	AC		48	42	100	$253,982	9,068	2" MILL AND HMA OVERLAY+BASE REPAIRS
O ST	13TH ST	PALMER	OST	0600	560	33	18,480	R	AC		52	46	100	$102,384	8,867	2" MILL AND HMA OVERLAY+BASE REPAIRS
													Treatment Total	$356,366		
APPLE AVE	ORANGE	LOS ANGELES	APPLE	0100	545	36	19,620	R	AC		61	68	78	$23,128	13,079	TYPE III SLURRY SEAL+BASE REPAIRS
													Treatment Total	$23,128		
11TH ST	M ST	N ST	11TH	0200	450	53	23,850	C	AC		75	69	78	$30,926	8,798	CHIP SEAL+CRACK SEAL
RAILROAD AVE	960' W/O LASSEN	LASSEN	RAILROAD	0200	960	38	36,480	C	AC		75	69	78	$47,302	8,797	CHIP SEAL+CRACK SEAL
													Treatment Total	$78,228		
01ST ST	GUADALUPE	N ST	1ST	0100	937	36	33,732	R	AC		62	69	78	$12,923	41,208	TYPE III SLURRY SEAL+CRACK SEAL
CENTRAL AVE	5TH ST	HURON	CENTRAL	0200	585	45	26,325	R	AC/AC		86	84	91	$10,086	25,803	TYPE III SLURRY SEAL+CRACK SEAL
GUADALUPE AVE	1ST ST	2ND ST	GUADALUPE	0200	296	36	10,656	R	AC		63	69	78	$4,083	30,658	TYPE III SLURRY SEAL+CRACK SEAL
L ST	10TH ST	11TH ST	LST	0100	361	52	18,772	R	AC		63	69	78	$7,192	30,658	TYPE III SLURRY SEAL+CRACK SEAL
M ST	11TH ST	PALMER	MST	0500	1,743	52	90,636	R	AC		61	68	78	$34,723	40,257	TYPE III SLURRY SEAL+CRACK SEAL

City of Huron
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Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2021

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
O ST	ALLEY N/O 8TH ST	9TH ST	OST	0300	179	21	3,759	R	AC		88	84	91	$1,441	23,789	TYPE III SLURRY SEAL+CRACK SEAL
														Treatment Total		$70,448
							Year 2022 Area Total			328,153				Year 2022 Total		$528,170

Year: 2022

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
M ST	9TH ST	11TH ST	MST	0400	853	52	44,356	R	AC		49	41	100	$253,116	8,858	2" MILL AND HMA OVERLAY+BASE REPAIRS
N ST	11TH ST	13TH ST	NST	0400	791	53	41,923	R	AC		49	41	100	$239,233	8,859	2" MILL AND HMA OVERLAY+BASE REPAIRS
														Treatment Total		$492,349
06TH ST	END	O ST	6TH	0100	361	37	13,357	R	AC/AC		83	78	86	$5,271	22,543	TYPE III SLURRY SEAL+CRACK SEAL
CENTRAL AVE	4TH ST	5TH ST	CENTRAL	0100	2,736	53	145,008	R	AC/AC		79	76	84	$57,220	31,215	TYPE III SLURRY SEAL+CRACK SEAL
														Treatment Total		$62,491
11TH ST	N ST	O ST	11TH	0300	488	53	25,864	C	AC		76	77	79	$105	755,193	SEAL CRACKS
12TH ST	END	LASSEN	12TH	0100	563	36	20,268	R	AC		74	77	79	$80	734,416	SEAL CRACKS
07TH ST	END	M ST	7TH	0100	365	36	13,140	R	AC		70	74	76	$61	691,966	SEAL CRACKS
CHERRY AVE	GRANADA	ORANGE	CHERRY	0100	303	37	11,211	R	AC		76	79	81	$41	748,921	SEAL CRACKS
GIFFEN	11TH ST	MOUREN DR	GIFFIN	0100	250	35	8,750	R	AC/AC		67	72	74	$43	732,878	SEAL CRACKS
GIFFEN	MOUREN DR	PALMER AVE	GIFFIN	0200	461	35	16,135	R	AC		67	71	74	$83	655,038	SEAL CRACKS
HURON AVE	LASSEN AVE	CENTRAL AVE	HURON	0100	330	30	9,900	C	AC/AC		93	84	86	$18	1,290,491	SEAL CRACKS
ORANGE AVE	TORNADO	MYRTLE	ORANGE	0100	1,052	36	37,872	R	AC		70	74	76	$176	691,912	SEAL CRACKS
R ST	PALMER	END	RST	0100	488	26	12,688	R	AC		83	84	85	$32	732,663	SEAL CRACKS
														Treatment Total		$639
							Year 2022 Area Total			400,472				Year 2022 Total		$555,479

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2023

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
APPLE AVE	LOS ANGELES	LASSEN	APPLE	0200	376	51	19,176	R	AC		54	45	100	$112,710	8,420	2" MILL AND HMA OVERLAY+BASE REPAIRS
M ST	3RD ST	4TH ST	MST	0100	235	52	12,220	R	AC		53	44	100	$71,825	8,484	2" MILL AND HMA OVERLAY+BASE REPAIRS
M ST	7TH ST (S)	9TH	MST	0300	784	52	40,768	R	AC		53	44	100	$239,621	8,484	2" MILL AND HMA OVERLAY+BASE REPAIRS
O ST	END	11TH ST	OST	0400	204	53	10,812	R	AC		55	46	100	$63,550	8,347	2" MILL AND HMA OVERLAY+BASE REPAIRS
												Treatment Total		$487,706		
11TH ST	P ST	R ST	11TH	0400	418	34	14,212	R	AC		92	84	91	$5,777	22,277	TYPE III SLURRY SEAL+CRACK SEAL
09TH ST	M ST	O ST	9TH	0200	935	50	46,750	C	AC/AC		92	83	90	$20,463	27,890	TYPE III SLURRY SEAL+CRACK SEAL
PALMER AVE	GIFFEN	END	PALMER	0400	2,415	40	96,600	C	AC/AC		92	83	90	$42,282	26,666	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$68,522		
CHERRY AVE	ORANGE	LOS ANGELES	CHERRY	0200	439	37	16,243	R	AC		71	73	75	$80	668,340	SEAL CRACKS
CROCKER AVE	END	LOS ANGELES	CROCKER	0100	383	36	13,788	R	AC/AC		92	84	85	$27	1,042,976	SEAL CRACKS
CROCKER AVE	LOS ANGELES	END	CROCKER	0200	317	36	11,412	R	AC/AC		92	84	85	$22	1,042,976	SEAL CRACKS
HURON AVE	CENTRAL AVE	END	HURON	0200	243	30	7,290	C	AC		86	84	86	$19	904,948	SEAL CRACKS
STANFORD AVE	LOS ANGELES	END	STANFORD	0200	320	36	11,520	R	AC/AC		92	84	85	$22	1,042,976	SEAL CRACKS
												Treatment Total		$170		
					Year 2023 Area Total		300,791					Year 2023 Total		$556,398		

Year: 2024

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
GRANADA AVE	TORNADO	MYRTLE	GRANADA	0100	878	37	32,486	R	AC		54	43	100	$196,670	8,289	2" MILL AND HMA OVERLAY+BASE REPAIRS

City of Huron
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Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2024

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
MYRTLE AVE	LOS ANGELES (N)	LASSEN	MYRTLE	0200	580	36	20,880	R	AC		56	45	100	$126,408	8,161	2" MILL AND HMA OVERLAY+BASE REPAIRS
O ST	1ST ST	4TH ST	OST	0100	901	30	27,030	R	AC		56	45	100	$163,640	8,161	2" MILL AND HMA OVERLAY+BASE REPAIRS
												Treatment Total		$486,718		
05TH ST	CENTRAL	END	5TH	0100	287	53	15,211	R	AC/AC		90	84	91	$6,368	30,534	TYPE III SLURRY SEAL+CRACK SEAL
05TH ST	M ST	O ST	5TH	0300	948	36	34,128	R	AC/AC		93	84	91	$14,287	22,978	TYPE III SLURRY SEAL+CRACK SEAL
08TH ST	M ST	END	8TH	0200	452	53	23,956	R	AC/AC		93	84	91	$10,029	22,978	TYPE III SLURRY SEAL+CRACK SEAL
09TH ST	O ST	1,093' E/O O ST	9TH	0300	1,093	50	54,650	C	AC		94	83	90	$24,638	28,906	TYPE III SLURRY SEAL+CRACK SEAL
ALLEY N/O 11TH	N ST	O ST	ALLEY11	0400	448	21	9,408	O	AC		94	83	90	$3,939	22,830	TYPE III SLURRY SEAL+CRACK SEAL
CROCKER AVE	END	LOS ANGELES	CROCKER	0100	383	36	13,788	R	AC/AC		92	84	91	$5,773	23,635	TYPE III SLURRY SEAL+CRACK SEAL
CROCKER AVE	LOS ANGELES	END	CROCKER	0200	317	36	11,412	R	AC/AC		92	84	91	$4,778	23,635	TYPE III SLURRY SEAL+CRACK SEAL
O ST	11TH ST	MOUREN	OST	0500	281	53	14,893	R	AC/AC		93	84	91	$6,235	22,978	TYPE III SLURRY SEAL+CRACK SEAL
STANFORD AVE	LOS ANGELES	END	STANFORD	0200	320	36	11,520	R	AC/AC		92	84	91	$4,823	23,635	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$80,870		
11TH ST	M ST	N ST	11TH	0200	450	53	23,850	C	AC		75	70	73	$132	574,612	SEAL CRACKS
01ST ST	GUADALUPE	N ST	1ST	0100	937	36	33,732	R	AC		62	75	77	$155	946,931	SEAL CRACKS
APPLE AVE	ORANGE	LOS ANGELES	APPLE	0100	545	36	19,620	R	AC		61	74	77	$94	910,754	SEAL CRACKS
GUADALUPE AVE	1ST ST	2ND ST	GUADALUPE	0200	296	36	10,656	R	AC		63	73	76	$53	651,032	SEAL CRACKS
L ST	10TH ST	11TH ST	LST	0100	361	52	18,772	R	AC		63	73	76	$93	651,032	SEAL CRACKS
M ST	11TH ST	PALMER	MST	0500	1,743	52	90,636	R	AC		61	74	77	$432	911,176	SEAL CRACKS
O ST	4TH ST	END	OST	0200	1,013	43	43,559	R	AC		86	83	85	$123	702,130	SEAL CRACKS
RAILROAD AVE	960' W/O LASSEN	LASSEN	RAILROAD	0200	960	38	36,480	C	AC		75	70	73	$202	574,500	SEAL CRACKS
												Treatment Total		$1,284		
							Year 2024 Area Total			546,667		Year 2024 Total		$568,872		

** - Treatment from Project Selection

Scenarios Criteria:

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2025

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
02ND ST	GUADALUPE	N ST	2ND	0100	934	37	34,558	R	AC		57	44	100	$215,491	7,970	2" MILL AND HMA OVERLAY+BASE REPAIRS
02ND ST	N ST	O ST	2ND	0200	221	36	7,956	R	AC		59	47	100	$49,611	7,825	2" MILL AND HMA OVERLAY+BASE REPAIRS
05TH ST	END	M ST	5TH	0200	298	36	10,728	R	AC		59	47	100	$66,896	7,825	2" MILL AND HMA OVERLAY+BASE REPAIRS
08TH ST	END	M ST	8TH	0100	489	36	17,604	R	AC		58	46	100	$109,772	7,902	2" MILL AND HMA OVERLAY+BASE REPAIRS
GUADALUPE AVE	END	1ST ST	GUADALUPE	0100	112	37	4,144	R	AC		58	46	100	$25,841	7,902	2" MILL AND HMA OVERLAY+BASE REPAIRS
SILVA AVE	END	1ST ST	SILVA	0100	112	35	3,920	R	AC		59	47	100	$24,444	7,825	2" MILL AND HMA OVERLAY+BASE REPAIRS
												Treatment Total		$492,055		
GIFFEN	MOUREN DR	PALMER AVE	GIFFIN	0200	461	35	16,135	R	AC		67	69	78	$6,958	27,137	TYPE III SLURRY SEAL+CRACK SEAL
HURON AVE	LASSEN AVE	CENTRAL AVE	HURON	0100	330	30	9,900	C	AC/AC		93	81	88	$4,598	29,275	TYPE III SLURRY SEAL+CRACK SEAL
LOS ANGELES ST	MYRTLE	RAILROAD	LOSANGELES	0200	838	36	30,168	R	AC/AC		93	84	91	$13,009	27,343	TYPE III SLURRY SEAL+CRACK SEAL
M ST	4TH ST	7TH ST (S)	MST	0200	883	52	45,916	R	AC/AC		93	82	90	$19,799	24,175	TYPE III SLURRY SEAL+CRACK SEAL
N ST	5TH ST	O ST	NST	0200	1,029	37	38,073	R	AC/AC		93	82	90	$16,417	24,183	TYPE III SLURRY SEAL+CRACK SEAL
RAILROAD AVE	END	960' W/O LASSEN	RAILROAD	0100	600	36	21,600	R	AC/AC		93	84	91	$9,314	27,343	TYPE III SLURRY SEAL+CRACK SEAL
STANFORD AVE	END	LOS ANGELES	STANFORD	0100	266	36	9,576	R	AC/AC		93	84	91	$4,130	27,343	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$74,225		
11TH ST	N ST	O ST	11TH	0300	488	53	25,864	C	AC		76	71	74	$142	581,193	SEAL CRACKS
12TH ST	END	LASSEN	12TH	0100	563	36	20,268	R	AC		74	74	77	$99	648,485	SEAL CRACKS
12TH ST	M ST	N ST	12TH	0200	457	52	23,764	R	AC		45	84	85	$53	917,330	SEAL CRACKS
03RD ST	END	M ST	3RD	0100	247	36	8,892	R	AC		44	84	85	$20	917,330	SEAL CRACKS

** - Treatment from Project Selection

Scenarios Criteria:

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2025

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
06TH ST	END	O ST	6TH	0100	361	37	13,357	R	AC/AC		83	79	81	$51	551,577	SEAL CRACKS
07TH ST	END	M ST	7TH	0100	365	36	13,140	R	AC		70	71	74	$73	603,853	SEAL CRACKS
ALLEY E/O LOS ANGELES ST	TORNADO	CHERRY	A-E/OLA ST	0100	530	17	9,010	O	AC		45	84	85	$20	917,330	SEAL CRACKS
CENTRAL AVE	4TH ST	5TH ST	CENTRAL	0100	2,736	53	145,008	R	AC/AC		79	80	82	$513	755,948	SEAL CRACKS
CENTRAL AVE	5TH ST	HURON	CENTRAL	0200	585	45	26,325	R	AC/AC		86	84	86	$52	1,001,129	SEAL CRACKS
CHERRY AVE	GRANADA	ORANGE	CHERRY	0100	303	37	11,211	R	AC		76	76	78	$51	665,766	SEAL CRACKS
GIFFEN	11TH ST	MOUREN DR	GIFFIN	0100	250	35	8,750	R	AC/AC		67	70	73	$48	660,275	SEAL CRACKS
L ST	11TH ST	END	LST	0200	346	52	17,992	R	AC		49	84	85	$40	917,330	SEAL CRACKS
N ST	1ST ST	3RD ST	NST	0100	505	36	18,180	R	AC		43	84	85	$41	917,330	SEAL CRACKS
ORANGE AVE	TORNADO	MYRTLE	ORANGE	0100	1,052	36	37,872	R	AC		70	71	74	$210	603,679	SEAL CRACKS
O ST	ALLEY N/O 8TH ST	9TH ST	OST	0300	179	21	3,759	R	AC		88	83	85	$11	681,046	SEAL CRACKS
R ST	PALMER	END	RST	0100	488	26	12,688	R	AC		83	81	82	$45	692,570	SEAL CRACKS
													Treatment Total	$1,469		
									Year 2025 Area Total	646,358			Year 2025 Total	$567,749		

Year: 2026

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
AZTECA BLVD	END	4TH	AZTECA	0100	1,236	42	51,912	R	AC		58	43	100	$333,414	7,784	2" MILL AND HMA OVERLAY+BASE REPAIRS
HOME AVE	ORANGE	LOS ANGELES	HOME	0100	296	36	10,656	R	AC		60	46	100	$68,441	7,644	2" MILL AND HMA OVERLAY+BASE REPAIRS
													Treatment Total	$401,855		
11TH ST	M ST	N ST	11TH	0200	450	53	23,850	C	AC		75	68	77	$35,851	7,522	CHIP SEAL+CRACK SEAL
RAILROAD AVE	960' W/O LASSEN	LASSEN	RAILROAD	0200	960	38	36,480	C	AC		75	68	77	$54,836	7,521	CHIP SEAL+CRACK SEAL
													Treatment Total	$90,687		
11TH ST	N ST	O ST	11TH	0300	488	53	25,864	C	AC		76	72	80	$12,371	25,128	TYPE III SLURRY SEAL+CRACK SEAL

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2026

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
12TH ST	END	LASSEN	12TH	0100	563	36	20,268	R	AC		74	75	83	$9,002	26,470	TYPE III SLURRY SEAL+CRACK SEAL
03RD ST	END	M ST	3RD	0100	247	36	8,892	R	AC		44	84	90	$3,950	22,097	TYPE III SLURRY SEAL+CRACK SEAL
07TH ST	END	M ST	7TH	0100	365	36	13,140	R	AC		70	72	81	$5,836	26,658	TYPE III SLURRY SEAL+CRACK SEAL
CHERRY AVE	GRANADA	ORANGE	CHERRY	0100	303	37	11,211	R	AC		76	77	85	$4,980	26,136	TYPE III SLURRY SEAL+CRACK SEAL
DINERO WY	4TH ST	HURON	DINERO	0100	901	23	20,723	R	AC		94	80	88	$9,204	24,476	TYPE III SLURRY SEAL+CRACK SEAL
GIFFEN	11TH ST	MOUREN DR	GIFFIN	0100	250	35	8,750	R	AC/AC		67	71	80	$3,887	28,303	TYPE III SLURRY SEAL+CRACK SEAL
ORANGE AVE	TORNADO	MYRTLE	ORANGE	0100	1,052	36	37,872	R	AC		70	72	81	$16,820	26,659	TYPE III SLURRY SEAL+CRACK SEAL
P ST	11TH ST	MOUREN	PST	0100	176	32	5,632	R	AC/AC		94	81	89	$2,502	24,703	TYPE III SLURRY SEAL+CRACK SEAL
R ST	PALMER	END	RST	0100	488	26	12,688	R	AC		83	81	88	$5,636	23,899	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$74,188		
13TH ST	M ST	O ST	13TH	0200	704	52	36,608	R	AC		45	84	85	$84	890,612	SEAL CRACKS
14TH ST	M ST	O ST	14TH	0100	702	36	25,272	R	AC		49	84	85	$58	890,612	SEAL CRACKS
09TH ST	M ST	O ST	9TH	0200	935	50	46,750	C	AC/AC		92	84	85	$105	1,088,411	SEAL CRACKS
CHERRY AVE	ORANGE	LOS ANGELES	CHERRY	0200	439	37	16,243	R	AC		71	71	73	$95	574,938	SEAL CRACKS
HURON AVE	CENTRAL AVE	END	HURON	0200	243	30	7,290	C	AC		86	79	81	$29	729,423	SEAL CRACKS
MYRTLE AVE	GRANADA	LOS ANGELES (N)	MYRTLE	0100	895	37	33,115	R	AC		47	84	85	$76	890,612	SEAL CRACKS
PALMER AVE	GIFFEN	END	PALMER	0400	2,415	40	96,600	C	AC/AC		92	84	85	$203	1,126,656	SEAL CRACKS
												Treatment Total		$650		
					Year 2026 Area Total		549,816				Year 2026 Total			$567,380		

Year: 2027

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
10TH ST	M ST	N ST	10TH	0200	473	52	24,596	C	AC		53	13	100	$223,296	6,459	3" HMA+FDR
09TH ST	1,093' E/O O ST	1,593' E/O O ST	9TH	0400	500	32	16,000	C	AC		0	0	100	$145,257	6,459	3" HMA+FDR

** - Treatment from Project Selection

Scenarios Criteria:

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2027

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
ALLEY N/O 4TH	CENTRAL	END	ALLEY4	0100	648	18	11,664	O	AC		39	14	100	$101,788	5,655	3" HMA+FDR
												Treatment Total		$470,341		
12TH ST	M ST	N ST	12TH	0200	457	52	23,764	R	AC		45	82	89	$10,871	23,121	TYPE III SLURRY SEAL+CRACK SEAL
13TH ST	M ST	O ST	13TH	0200	704	52	36,608	R	AC		45	84	90	$16,747	21,454	TYPE III SLURRY SEAL+CRACK SEAL
14TH ST	M ST	O ST	14TH	0100	702	36	25,272	R	AC		49	84	90	$11,561	21,454	TYPE III SLURRY SEAL+CRACK SEAL
ALLEY E/O LOS ANGELES ST	TORNADO	CHERRY	A-E/OLA ST	0100	530	17	9,010	O	AC		45	82	89	$4,122	23,121	TYPE III SLURRY SEAL+CRACK SEAL
CHERRY AVE	ORANGE	LOS ANGELES	CHERRY	0200	439	37	16,243	R	AC		71	72	80	$7,431	25,909	TYPE III SLURRY SEAL+CRACK SEAL
HURON AVE	CENTRAL AVE	END	HURON	0200	243	30	7,290	C	AC		86	79	87	$3,592	26,804	TYPE III SLURRY SEAL+CRACK SEAL
L ST	11TH ST	END	LST	0200	346	52	17,992	R	AC		49	82	89	$8,231	23,121	TYPE III SLURRY SEAL+CRACK SEAL
N ST	1ST ST	3RD ST	NST	0100	505	36	18,180	R	AC		43	82	89	$8,317	23,121	TYPE III SLURRY SEAL+CRACK SEAL
O ST	4TH ST	END	OST	0200	1,013	43	43,559	R	AC		86	80	88	$19,926	23,733	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$90,798		
11TH ST	P ST	R ST	11TH	0400	418	34	14,212	R	AC		92	84	85	$44	641,628	SEAL CRACKS
01ST ST	GUADALUPE	N ST	1ST	0100	937	36	33,732	R	AC		62	74	76	$177	836,564	SEAL CRACKS
09TH ST	O ST	1,093' E/O O ST	9TH	0300	1,093	50	54,650	C	AC		94	84	86	$156	801,010	SEAL CRACKS
APPLE AVE	ORANGE	LOS ANGELES	APPLE	0100	545	36	19,620	R	AC		61	73	76	$107	803,750	SEAL CRACKS
GUADALUPE AVE	1ST ST	2ND ST	GUADALUPE	0200	296	36	10,656	R	AC		63	71	74	$64	565,261	SEAL CRACKS
LOS ANGELES ST	TORNADO	MYRTLE	LOSANGELES	0100	1,239	37	45,843	R	AC		48	84	85	$108	864,672	SEAL CRACKS
L ST	10TH ST	11TH ST	LST	0100	361	52	18,772	R	AC		63	71	74	$112	565,261	SEAL CRACKS
M ST	11TH ST	PALMER	MST	0500	1,743	52	90,636	R	AC		61	73	76	$493	804,123	SEAL CRACKS
O ST	13TH ST	PALMER	OST	0600	560	33	18,480	R	AC		52	84	85	$44	864,672	SEAL CRACKS
												Treatment Total		$1,305		
					Year 2027 Area Total		556,779					Year 2027 Total		$562,444		

** - Treatment from Project Selection

Scenarios Criteria:

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Year: 2028

Street Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surf Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
11TH ST	LASSEN	M ST	11TH	0100	951	53	50,403	C	AC		58	16	100	$471,313	6,271	3" HMA+FDR
												Treatment Total		$471,313		
01ST ST	GUADALUPE	N ST	1ST	0100	937	36	33,732	R	AC		62	75	84	$15,894	37,008	TYPE III SLURRY SEAL+CRACK SEAL
APPLE AVE	ORANGE	LOS ANGELES	APPLE	0100	545	36	19,620	R	AC		61	75	83	$9,245	36,202	TYPE III SLURRY SEAL+CRACK SEAL
CENTRAL AVE	5TH ST	HURON	CENTRAL	0200	585	45	26,325	R	AC/AC		86	81	89	$12,404	23,771	TYPE III SLURRY SEAL+CRACK SEAL
GUADALUPE AVE	1ST ST	2ND ST	GUADALUPE	0200	296	36	10,656	R	AC		63	72	81	$5,021	25,138	TYPE III SLURRY SEAL+CRACK SEAL
L ST	10TH ST	11TH ST	LST	0100	361	52	18,772	R	AC		63	72	81	$8,845	25,138	TYPE III SLURRY SEAL+CRACK SEAL
M ST	11TH ST	PALMER	MST	0500	1,743	52	90,636	R	AC		61	75	83	$42,705	36,212	TYPE III SLURRY SEAL+CRACK SEAL
O ST	ALLEY N/O 8TH ST	9TH ST	OST	0300	179	21	3,759	R	AC		88	80	88	$1,772	22,986	TYPE III SLURRY SEAL+CRACK SEAL
												Treatment Total		$95,886		
05TH ST	M ST	O ST	5TH	0300	948	36	34,128	R	AC/AC		93	84	85	$76	877,385	SEAL CRACKS
06TH ST	END	O ST	6TH	0100	361	37	13,357	R	AC/AC		83	75	77	$70	493,725	SEAL CRACKS
08TH ST	M ST	END	8TH	0200	452	53	23,956	R	AC/AC		93	84	85	$54	877,385	SEAL CRACKS
ALLEY N/O 11TH	N ST	O ST	ALLEY11	0400	448	21	9,408	O	AC		94	83	84	$31	625,710	SEAL CRACKS
CENTRAL AVE	4TH ST	5TH ST	CENTRAL	0100	2,736	53	145,008	R	AC/AC		79	78	80	$672	655,921	SEAL CRACKS
CROCKER AVE	END	LOS ANGELES	CROCKER	0100	383	36	13,788	R	AC/AC		92	84	86	$29	931,879	SEAL CRACKS
CROCKER AVE	LOS ANGELES	END	CROCKER	0200	317	36	11,412	R	AC/AC		92	84	86	$24	931,879	SEAL CRACKS
GIFFEN	MOUREN DR	PALMER AVE	GIFFIN	0200	461	35	16,135	R	AC		67	73	75	$92	576,228	SEAL CRACKS
HURON AVE	LASSEN AVE	CENTRAL AVE	HURON	0100	330	30	9,900	C	AC/AC		93	83	84	$29	941,002	SEAL CRACKS
M ST	9TH ST	11TH ST	MST	0400	853	52	44,356	R	AC		49	84	85	$107	839,487	SEAL CRACKS
N ST	11TH ST	13TH ST	NST	0400	791	53	41,923	R	AC		49	84	85	$101	839,487	SEAL CRACKS
O ST	11TH ST	MOUREN	OST	0500	281	53	14,893	R	AC/AC		93	84	85	$33	877,385	SEAL CRACKS
STANFORD AVE	LOS ANGELES	END	STANFORD	0200	320	36	11,520	R	AC/AC		92	84	86	$24	931,879	SEAL CRACKS
												Treatment Total		$1,342		
							Year 2028 Area Total			643,687				Year 2028 Total		$568,541

** - Treatment from Project Selection

Scenarios Criteria:

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenarios - Sections Selected for Treatment

Interest: 3.00% Inflation: 3.00% Printed: 03/18/2019

Scenario: $570K per year

Total Section Area:	4,716,682	Grand Total	$5,589,925

Appendix G

GIS Maps

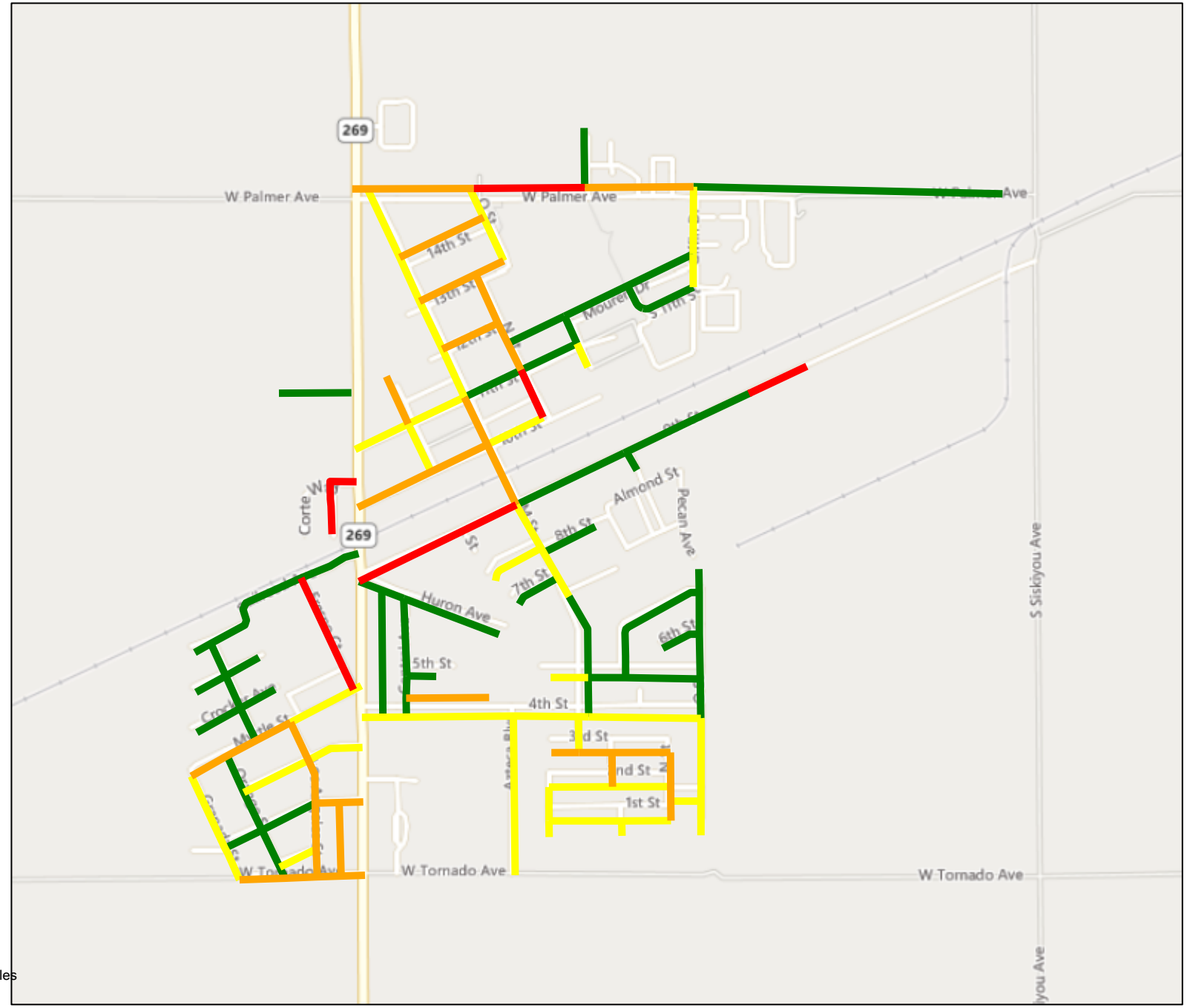
City of Huron
6311 S. Lassen Ave
Huron, CA 93234

2019 PCI Condition

Printed: 4/4/2019

Feature Legend

- Category I - Very Good
- Category II - Good (Non-Load)
- Category III - Good (Load)
- Category IV - Poor
- Category V - Very Poor



0 0.1 0.2 0.3 0.4 0.5
Miles

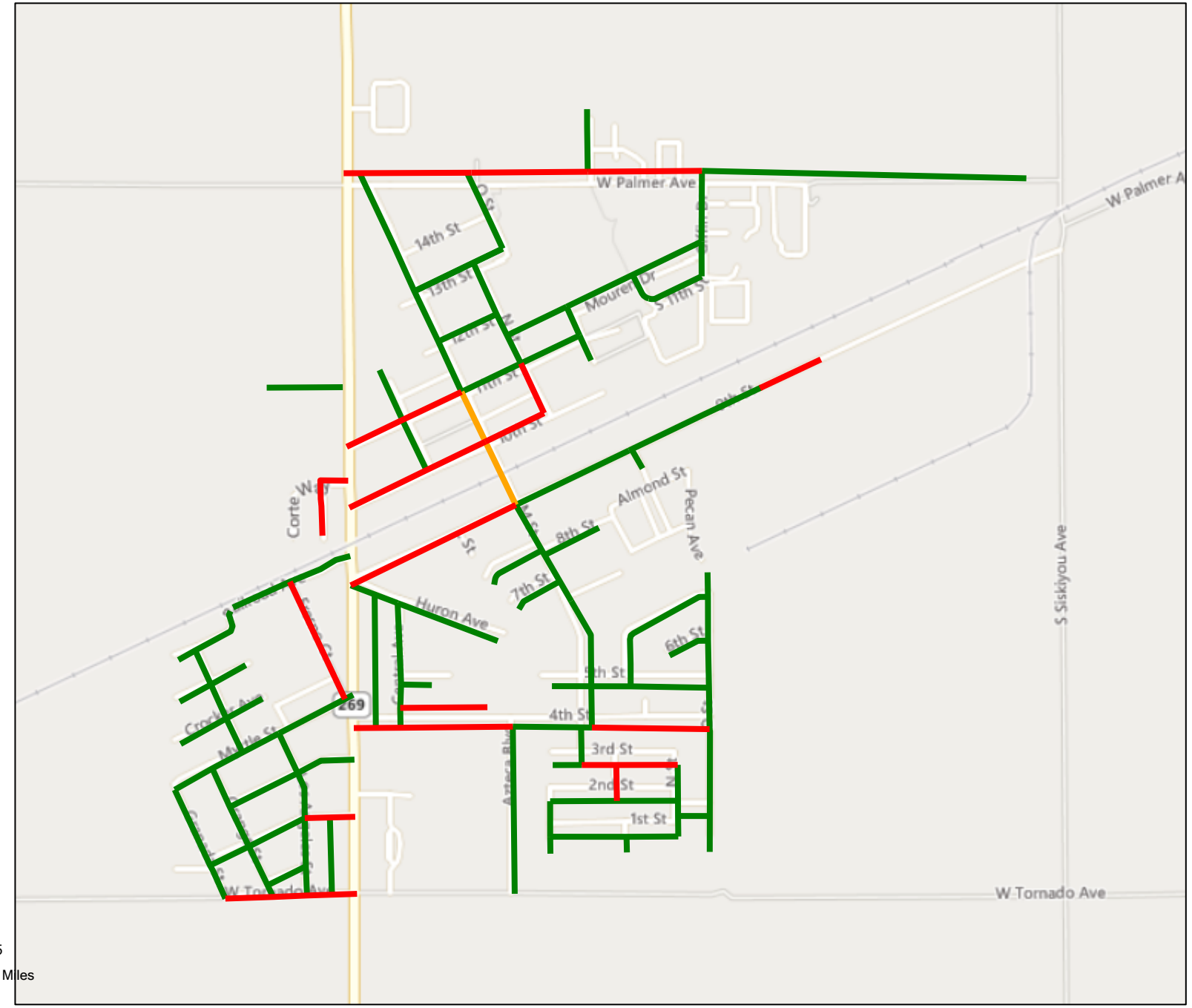
City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenario 1 PCI Condition

$500,000 per year - 2028 Project PCI is 66 - Printed: 3/18/2019

Feature Legend

- Category I - Very Good
- Category IV - Poor
- Category V - Very Poor



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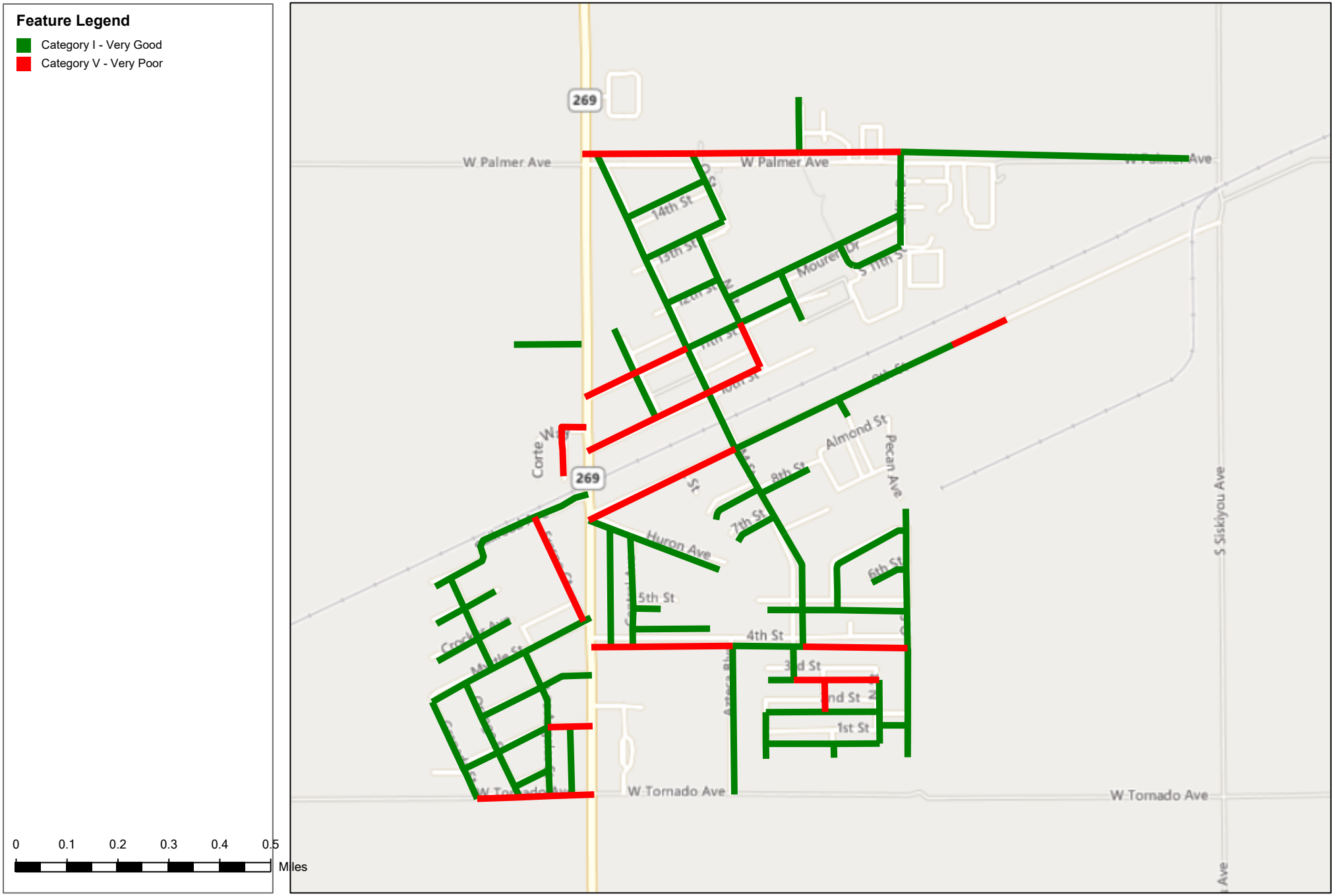
Miles

City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenario 2 PCI Condition

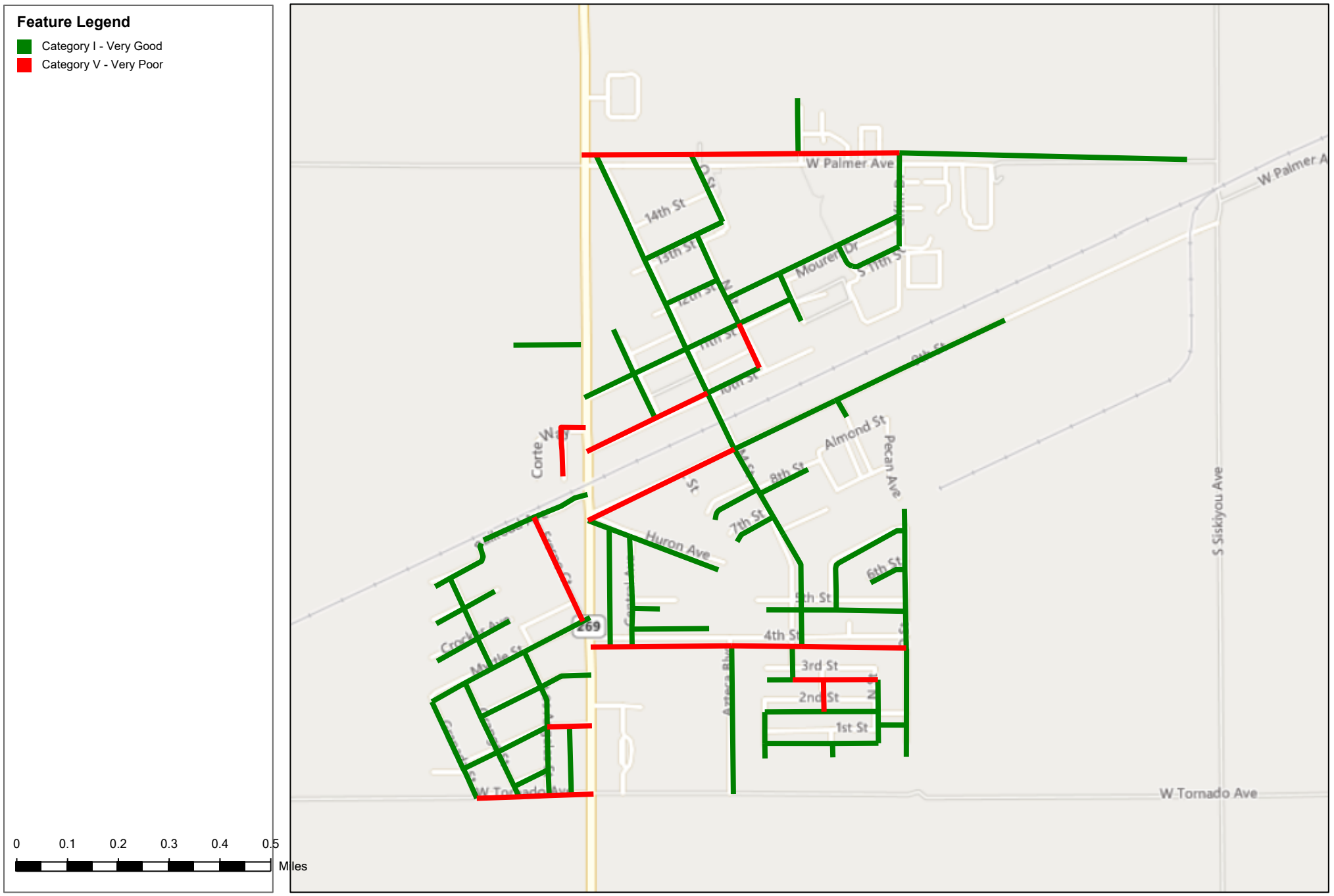
$520,000 per year - 2028 Project PCI is 67 - Printed: 3/18/2019



City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenario 3 PCI Condition

$570,000 per year - 2028 Project PCI is 70 - Printed: 3/18/2019



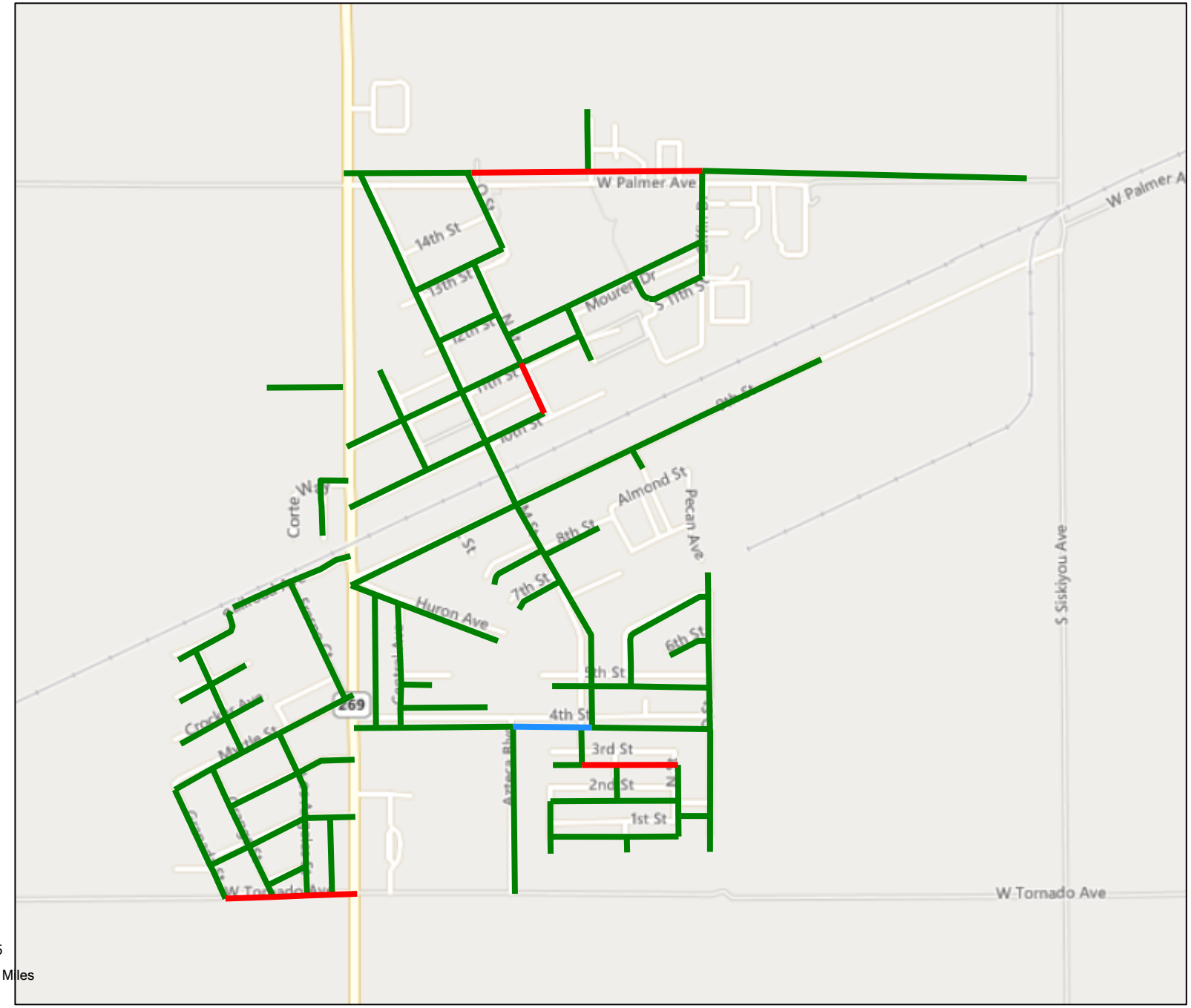
City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenario 4 PCI Condition

$830,000 per year - 2028 Project PCI is 80 - Printed: 3/18/2019

Feature Legend

- Category I - Very Good
- Category II - Good (Non-Load)
- Category V - Very Poor



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Miles

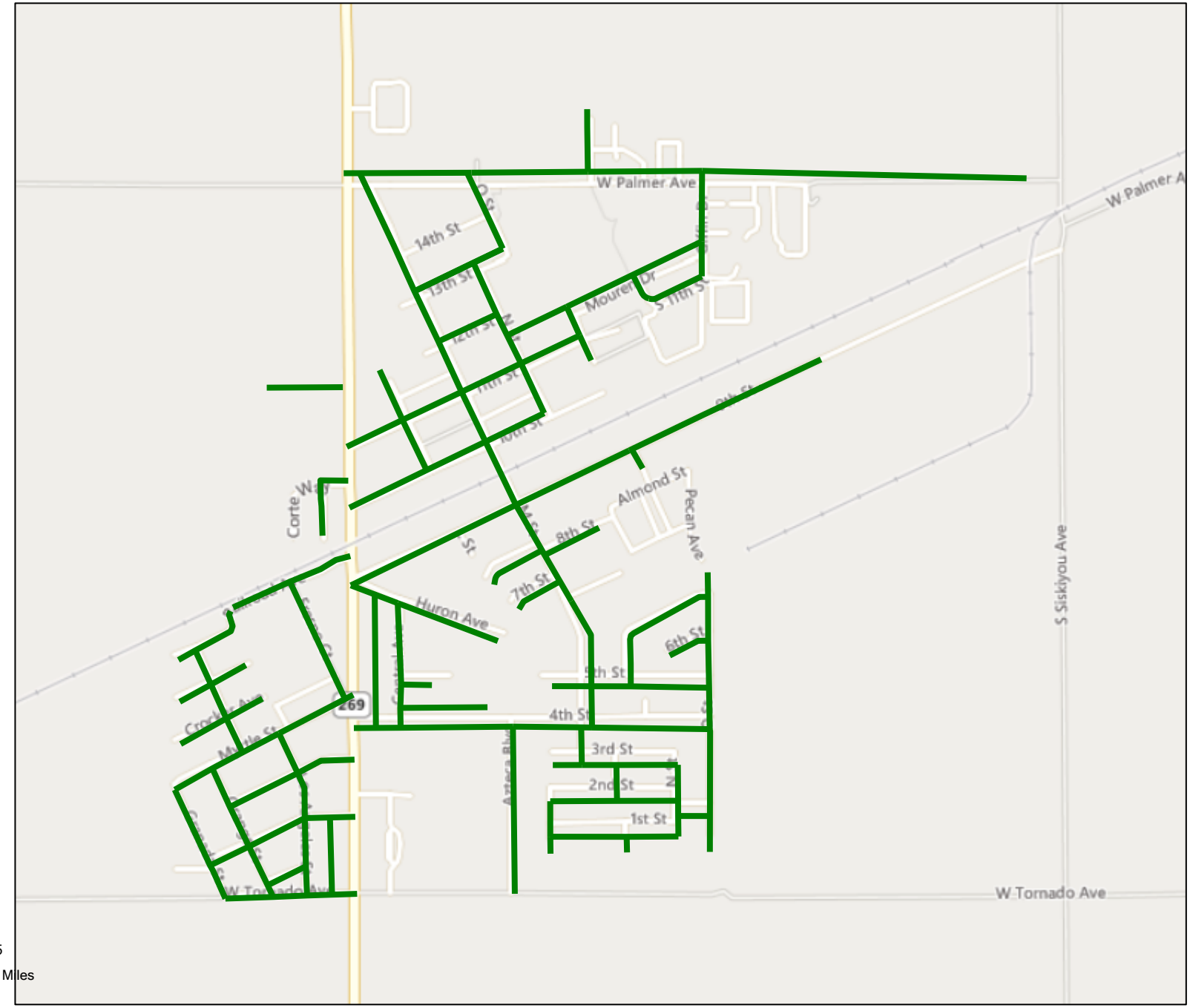
City of Huron
6311 S. Lassen Ave
Huron, CA 93234

Scenario 5 PCI Condition

$1 Million per year - 2028 Project PCI is 86 - Printed: 3/18/2019

Feature Legend

Category I - Very Good



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Miles