Final Report

2021/2022 Pavement Management Program Update

City of Trinidad

November 2022

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Executive Summary

The Humboldt County Association of Governments (HCAOG) is a Joint Powers Agency composed of the seven incorporated cities (Trinidad, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad), and the County of Humboldt. It is the designated Regional Transportation Planning Agency (RTPA) as well as the Service Authority for Freeway Emergencies (SAFE). As a part of this process, in 2021, HCAOG acquired the services of an engineering consultant, Nichols Consulting Engineers, Chtd. (NCE), to provide professional and technical services preparing pavement management program (PMP) updates for the county and the cities under HCOAG.

This report summarizes the results of the 2021/2022 update for the City of Trinidad (City) and its purpose is to help educate policy makers about the current condition of the pavement network and the impact of various funding scenarios on future network condition.

The City's pavement network consists of 2.9 centerline miles of streets, which represents an investment of approximately $4.4 million. In 2022, NCE collected pavement condition data using the Metropolitan Transportation Commission's (MTC) modified ASTM survey procedures. The survey data were entered into the StreetSaver® database, which the City uses as a PMP decision-support tool.

Overall, the City's pavement network is currently in "Fair" condition with an average pavement condition index (PCI) of 63. Approximately 44.1 percent of the network is in "Good" condition with 16.5 percent in "Poor" condition. The City does not have any streets in the "Failed" condition.

Based on the budget needs analysis, City needs to spend $2.0 million over the next ten years to bring the street network to a condition that can be maintained with on-going preventive maintenance in the most cost-effective way. Three alternative budget scenarios were performed to illustrate the impacts of different funding levels. The following table lists each scenario with its corresponding ten-year budget, the PCI and deferred maintenance at the end of the analysis period.

Table ES1. Description and Results of the Performed Budget Scenarios

Scenario	Description	10-Year Budget ($M)	2032 PCI	2032 Deferred Maintenance ($M)
1	Existing Budget of $30K/Year	0.3	46	2.7
2	Maintain PCI at 63	1.3	64	1.5
3	Best Management Practice	2.3	82	0.0

NCE recommends that the City pursue Scenario 2, which will maintain the existing network PCI at 63 throughout the next decade. This scenario will increase the portion of the network in "Good" condition and slow the increase in deferred maintenance. It will require $1.3 million over the next ten years.

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1 Introduction and Background

In 2021, the Humboldt County Association of Governments (HCAOG) solicited interest among its member agencies in participating in a collaborative region-wide pavement management program (PMP) update. The last region wide PMP update was performed in 2017.

The engineering consultant acquired to provide professional and technical services for the PMP updates in the Humboldt region was Nichols Consulting Engineers, Chtd. (NCE). The eight participating member agencies included the Cities of Trinidad, Blue Lake, Eureka, Ferndale, Fortuna, Rio Dell, Trinidad, and the County of Humboldt.

In general, PMPs are "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.[1]"

The goals of the 2021/2022 update were to:

- Update the existing pavement network inventory to include new streets,
- Perform pavement condition surveys,
- Update historical maintenance records (e.g., previously resurfaced pavements),
- Update the maintenance and rehabilitation decision tree and associated costs,
- Perform budgetary analyses and determine funding needs, and
- Prepare a final PMP report documenting the results of the update.

To update the City's PMP, NCE performed walking condition survey using the Metropolitan Transportation Commission's (MTC) modified[2] ASTM D6433[3] survey procedures for entire City's network. Walking surveys were performed by one or two-person crews to record all pavement distresses. The surveys did not include non-pavement issues such as traffic, safety and road hazards, geometric issues, shoulders, sidewalks, curb and gutters, drainage issues, or immediate maintenance needs. All survey data were entered into the City's StreetSaver® database, and pavement condition index (PCI) calculations were performed. NCE then coordinated

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

[2] PCI Distress Identification Manuals (AC 4th Edition, PCC 3rd Edition), Metropolitan Transportation Commission, San Francisco, CA March 2016.

[3] ASTM D6433-18 Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys, ASTM International, West Conshohocken, PA, 2018, www.astm.org.

with agency representatives and reviewed and updated the City's decision tree including maintenance and rehabilitation (M&R) strategies and treatment unit costs. A budget needs analysis was then performed, and three budget scenarios were analyzed for the street network.

This report answers the following questions for the City of Trinidad (City):

- What does the City's pavement network include?
- What is the current condition of the pavement network?
- What are the City's current M&R strategies?
- How much finding is required to perform all needed M&R treatments over the next ten years?
- What effect with the City's existing funding have on the network condition and overall deferred maintenance?
- What effect will other funding levels have on the network condition and deferred maintenance?

2 Network Summary

The City is responsible for maintaining approximately 2.9 centerline miles of streets (or 28 pavement sections). The network is composed entirely of asphalt concrete (AC) pavement. Table 1 summarizes the street network by functional classification.

Table 1. Network Summary Statistics

Functional Class	Number of Sections	Centerline Miles	Lane Miles	Network Area (%)
Major Collector	6	0.7	1.5	35.7
Minor Collector	4	0.6	1.2	19.7
Local	18	1.6	3.1	44.6
Total	**28**	**2.9**	**5.8**	**100.0**

The street network replacement cost is estimated to be approximately $4.4 million. This can be viewed as the value of the pavement network and is the amount needed to fund a reconstruction of the entire paved network. This is approximately double compared to the estimate provided in 2017 PMP update. The replacement cost is calculated by multiplying the total pavement area by the unit cost of reconstruction of the pavement structure. The unit cost of reconstruction has increased by an average of 78% for all functional classes since the last update due to changes in treatment strategies and increased material costs. As a result, the replacement cost has increased overall. It does not include related infrastructure assets such as sidewalks, signals, markings, signs, or storm drains.

3 Pavement Condition

Pavement condition is typically quantified using the pavement condition index (PCI), which ranges from 100 (best) to 0 (worst). Pavement condition is affected by the environment, traffic loads and volumes, construction materials, and age. Figure 1 shows examples of streets with varying PCIs.

The PCI scale is divided into four general condition categories. Pavements in "Good" condition have a PCI above 70, pavements in "Fair" condition have a PCI between 50 and 69, pavements in "Poor" condition have a PCI between 25 and 49, and finally pavements in "Failed" condition have a PCI below 25.

Figure 1. Examples of Streets with Different PCIs

A list of all sections in the network along with their attributes, including the PCI at the time of last inspection, is provided in Appendix A. For convenience, two versions are provided – one sorted alphabetically by street name and the other sorted by descending PCI.

3.1 CITY'S PAVEMENT CONDITION INDEX

The current average PCI for the City's network is 63. This value is an area-weighted calculation performed in StreetSaver® and is based on the condition survey performed in 2022.

Figure 2 illustrates the City's historical network PCI for the streets. There is a clear downward trend in pavement condition over the last decade due to constricted City budget and less M&R activities since previous update.

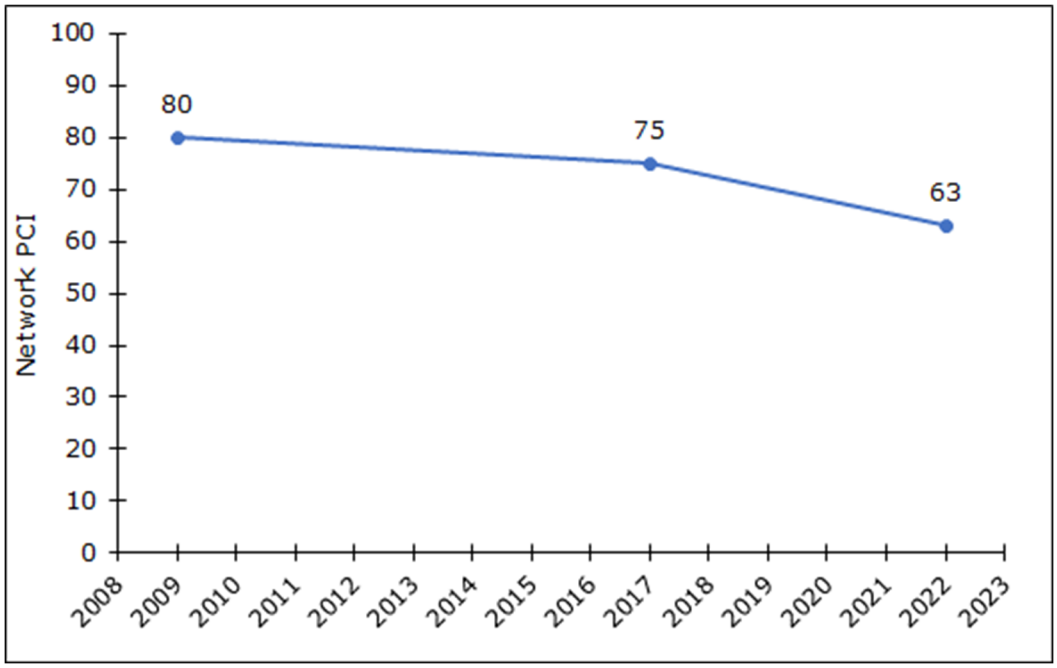


Figure 2. Historical Network PCI since 2009

3.2 CITY'S NETWORK CONDITION BREAKDOWN

Figure 3 breaks down the current street network PCI by functional classification. City's minor collectors are in "Good" condition with an average PCI of 74. The major collectors and locals are in "Fair" condition with an average PCI of 56 and 64, respectively. Table 2 summarizes the street network by condition category and functional classification. Approximately less than half of the street network is in "Good" condition with nearly more than one-third of street network in "Fair" condition. The City does not have any streets in "Failed" condition.

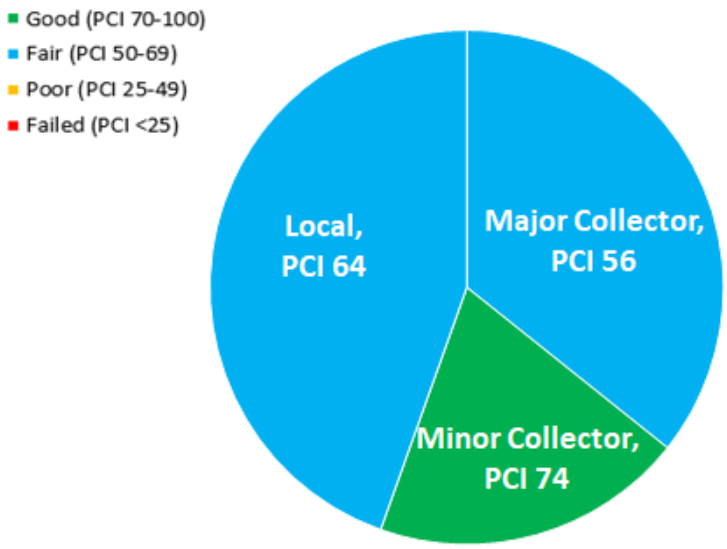


Figure 3. Network Condition Breakdown by Functional Classification

Table 2. Pavement Condition Breakdown by Functional Class

Condition Category	PCI Range	Major Collector (%)	Minor Collector (%)	Local (%)	Entire Network (%)
Good	70-100	13.6	14.9	15.6	44.1
Fair	50-69	8.0	2.5	28.9	39.4
Poor	25-49	14.2	2.3	0.0	16.5
Failed	<25	0.0	0.0	0.0	0.0
Total	-	**35.8**	**19.7**	**44.5**	**100.0**

3.3 PCI COMPARISON WITH NEIGHBORING AGENCIES

Figure 4 shows the City's average network PCI compared to other HCAOG agencies as well as the statewide average PCI from the 2020 California Statewide Local Streets and Roads Needs Assessment[4]. As illustrated, the City's average network PCI three point above the average of HCAOG agencies and three points below the 2020 statewide average.

[4] "California Statewide Local Streets and Roads Needs Assessment 2020 Update". Nichols Consulting Engineers, Chtd., CA, 2021.

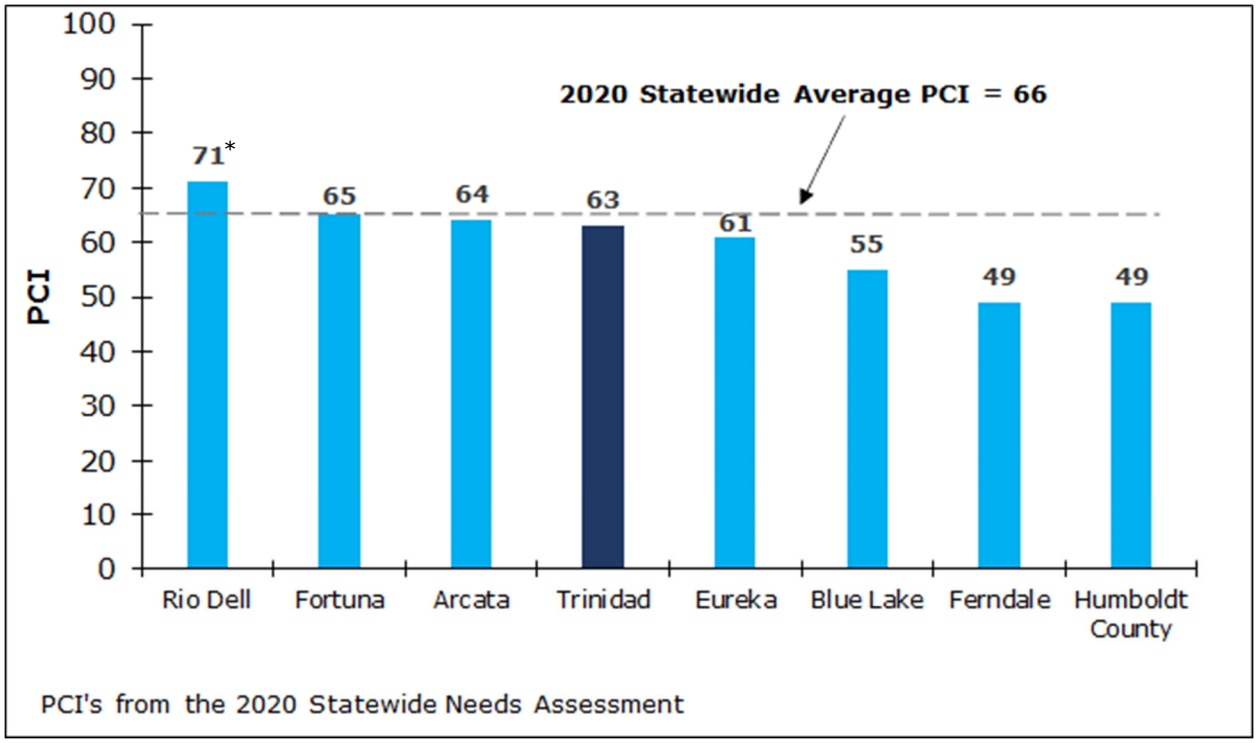


Figure 4. Comparison of Network PCI to Other HCAOG Agencies

*The PCI of Rio Dell is not final and is under further investigation.

4 Maintenance and Rehabilitation Strategies

The City's current M&R strategies include cost-effective preventive treatments. In general, slurry seals will be applied to pavements in "Good" condition; pavements in "Fair" condition will receive a slurry seal with dig-out or a thin hot mix asphalt (HMA) overlay depending on the presence of the amount of load-related distresses; pavements in "Poor" and "Failed" conditions will receive thick mill and HMA overlay. The City's M&R strategies are formalized into a decision tree[5] (presented in Appendix B), which is instrumental in performing the budget needs analysis and budget scenarios. Note that pavement strategies were modified based on City's comments in this update.

Experience and research have shown that it costs much less to maintain pavement in good condition than to repair pavement that has already failed. Figure 5 shows the unit cost for the collectors as example. As shown in Figure 5, by allowing pavements to deteriorate, streets that once cost $5.50/square yard (SY) to seal may soon cost $91.75 to mill and overlay. In other words, delaying repairs can significantly increase M&R costs. Note that a slurry seal can be placed on approximately 17 times as many lane miles as those requiring thick HMA overlay for the pavements with failed condition.

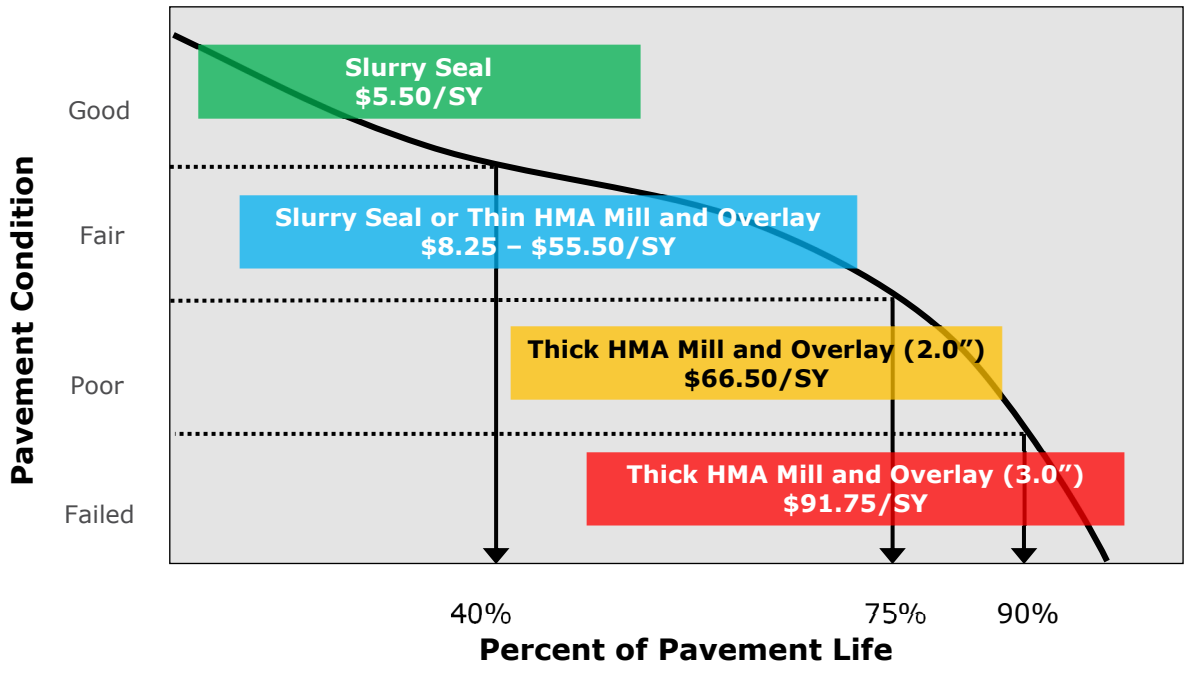


Figure 5. Costs of Maintaining Pavements Over Time

[5] Note: The StreetSaver® "Maintenance and Rehabilitation Decision Tree" divides the "Fair" condition category to separate pavements with primarily non-load-related distresses (e.g., longitudinal cracking) from those with load-related distresses (e.g., fatigue cracking).

5 Budget Analyses

Based on the principle that it costs less to maintain streets in good condition than it does to repair those that have failed, cost-effective PMPs employ strategies that eliminate the deferred maintenance[6] and then maintain the network with on-going preventive maintenance. Such strategies bring the network condition to an optimal PCI that can be maintained over time.

The first step in developing such a cost-effective strategy is to determine the total maintenance budget needs of the network. The next step is to conduct alternative budget scenario analyses. In consultation with the City, three funding scenarios were selected for analysis and performed using StreetSaver®:

- **Scenario 1: Existing Budget of $30k/Year**– This scenario assumes the City will spend approximately $30,000 per year on pavement M&R for the next ten years. City budget includes Road Maintenance and Rehabilitation Account fund (RMRA or SB1 fund).
- **Scenario 2: Maintain PCI** – This scenario aims to maintain the existing network PCI at 63 over the next ten years.
- **Scenario 3: Best Management Practices** – This scenario aims to achieve a maintainable network over the next ten years by eliminating the deferred maintenance by the end of the analysis period.

The budget needs analysis and budget scenarios are presented in the following subsections. The detailed results of the budget needs analysis are provided in Appendix C. The detailed results of the budget scenarios are provided in Appendix D. Additionally, maps illustrating the current pavement condition and the projected 2032 pavement condition for each scenario are provided in Appendix E.

[6] Deferred maintenance is M&R not performed due to insufficient funding.

5.1 BUDGET NEEDS ANALYSIS

The total budget needs for the network represents the cost associated with performing M&R treatments at the optimal time – optimal meaning the PCI is maximized and the cost is minimized – over the analysis period. This was done by performing a budget needs analysis in StreetSaver® with an inflation rate of four percent for an analysis period of ten years.

Table 3 shows the results of the budget needs analysis. The total budget needs for the City for the next ten years is estimated to be $2.0 million. Of the total budget needs, approximately $220 thousand (11.0 percent) is devoted to preventive maintenance, while the rest is allocated for more costly rehabilitation and reconstruction treatments.

Table 3. Summary Results for Budget Needs Analysis

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Budget Needs ($K)	989	12	279	0	0	82	94	381	89	93	2,020
Treated PCI	87	82	84	81	79	79	78	82	81	82	NA
Untreated PCI	63	60	57	54	51	48	45	42	39	36	NA

If the City follows this ideal, cost-effective strategy, the average network PCI will immediately increase as a large amount of deferred maintenance is addressed in the first year, and then stabilize in the low-80s. This type of budget, that addresses all the deferred maintenance in the first year, is known as front-loaded. Alternatively, if no maintenance is performed over the next ten years, the network PCI will drop to 36 by 2032.

5.2 SCENARIO 1: EXISTING BUDGET OF $30K/YEAR

This scenario assumes the City will have $30,000 per year for pavement M&R starts in 2024 for following years. Trinity Street rehabilitation was scheduled to construct in 2023 which would cost approximately $192,000 based on the information provided by the City. The scheduled project is incorporated into the assessment. Since the City has a very small annual budget, the StreetSaver® program was not able to spend the entire amount of $30,000 on each year because of individual high project cost and lack of eligible projects within small budget amount. Consequently, the budgets that was not used in each fiscal year was accumulated to the following years. As shown in Table 4 and Figure 6, the network PCI will decrease to 46 and the deferred maintenance will be more than double by the end of 2032. Additionally, 18.5 percent of the network will be in "Failed" condition with less than quarter of the network in "Good" condition. A list of sections selected for treatment are provided in Appendix F.

Table 4. Summary Results for Scenario 1

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Budget ($K)	192*	0	30	10	51	11	9	0	17	10	330
Deferred Maintenance ($M)	0.8	1.0	1.3	1.7	1.8	1.9	2.1	2.3	2.5	2.7	NA
Treated PCI	68	64	63	60	58	55	53	50	48	46	NA

*Includes Scheduled Project in 2023 (Trinity Street)

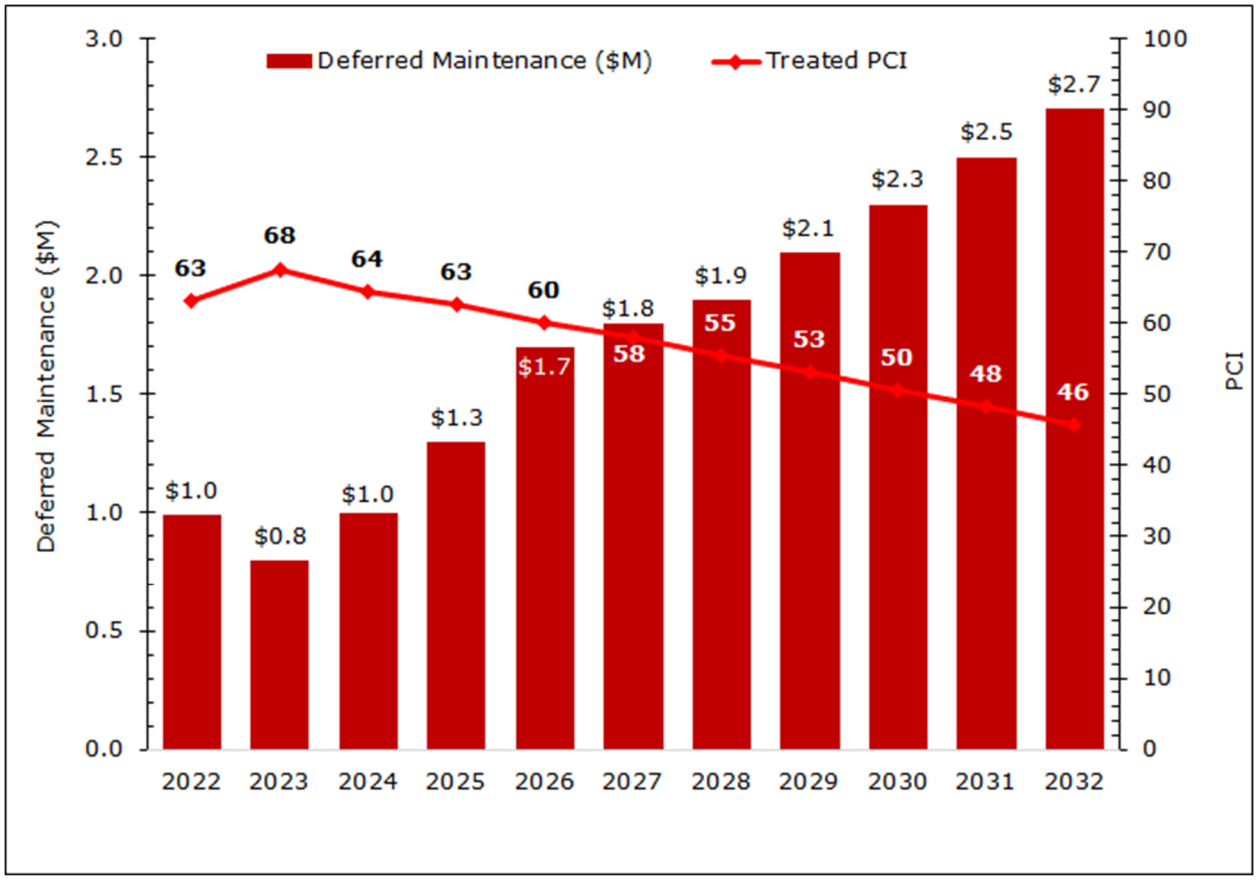


Figure 6. PCI vs Deferred Maintenance for Scenario 1

5.3 SCENARIO 2: MAINTAIN PCI ($1.3M/10 YEARS)

This scenario aims to maintain the existing network PCI at 63 over the analysis period. As shown in Table 5 and Figure 7, the network PCI will be maintained at or around 63 for most of analysis period and the financial commitment required to accomplish this goal is $1.3 million over ten years. This will result in more than half of the network being in "Good" condition with 11.5 percent in "Failed" condition. The deferred maintenance will increase to $1.5 million by 2032.

Table 5. Summary Results for Scenario 2

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Budget ($K)	192*	0	35	156	133	142	168	106	174	238	1,344
Deferred Maintenance ($M)	0.8	1.0	1.3	1.5	1.6	1.5	1.5	1.6	1.6	1.5	NA
Treated PCI	68	64	63	63	63	63	63	62	63	64	NA

*Includes Scheduled Project in 2023 (Trinity Street)

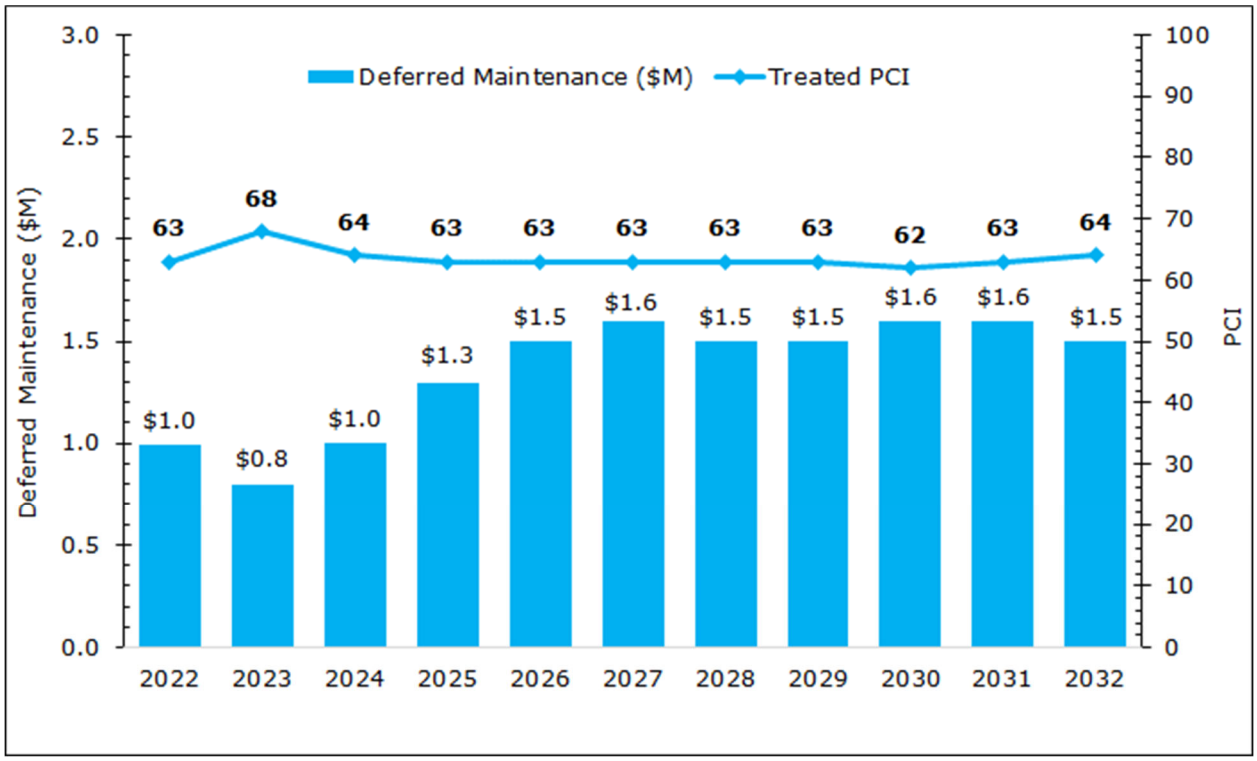


Figure 7. PCI vs Deferred Maintenance for Scenario 2

5.4 SCENARIO 3: BEST MANAGEMENT PRACTICES ($2.3M/10 YEARS)

This scenario aims to eliminate the deferred maintenance over the analysis period. As shown in Table 6 and Figure 8, the financial commitment required for this goal is $2.3 million over ten years. This will result in 90.3 percent of the network in "Good" condition with no streets in "Poor" or "Failed" condition. The network PCI will increase significantly and be stabilized in the low-80s to the end of analysis period. The deferred maintenance will be eliminated by the year of 2029.

Table 6. Summary Results for Scenario 3

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
Budget ($K)	192*	366	307	251	242	209	280	316	42	70	2,275
Deferred Maintenance ($M)	0.8	0.6	0.7	0.5	0.4	0.3	0.0	0.0	0.0	0.0	NA
Treated PCI	68	73	74	75	77	79	82	84	82	82	NA

*Includes Scheduled Project in 2023 (Trinity Street)

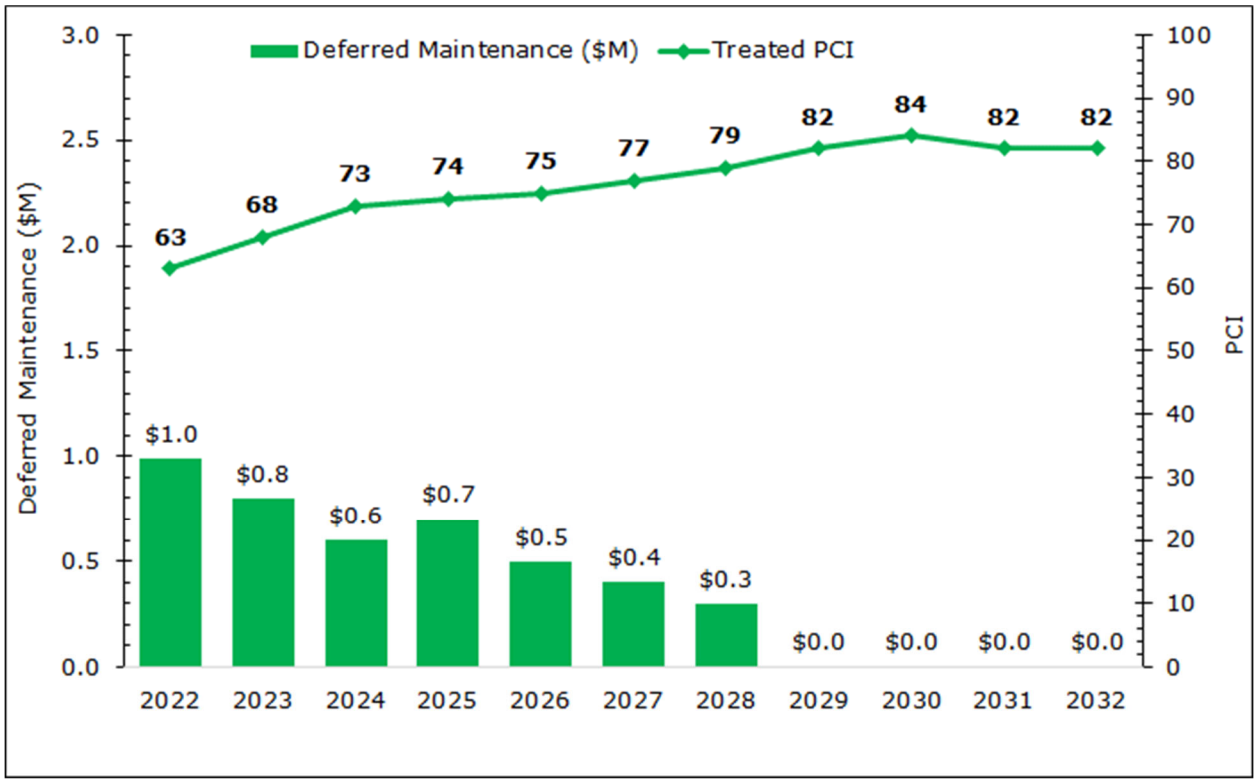


Figure 8. PCI vs Deferred Maintenance for Scenario 3

5.5 SCENARIO COMPARISONS

Figure 9 graphically compares the annual changes in PCI for each of the three scenarios. As previously noted, the average network PCI will decrease to 46 in Scenario 1, be maintained at or around 63 in Scenario 2 and will increase to 82 in Scenario 3.

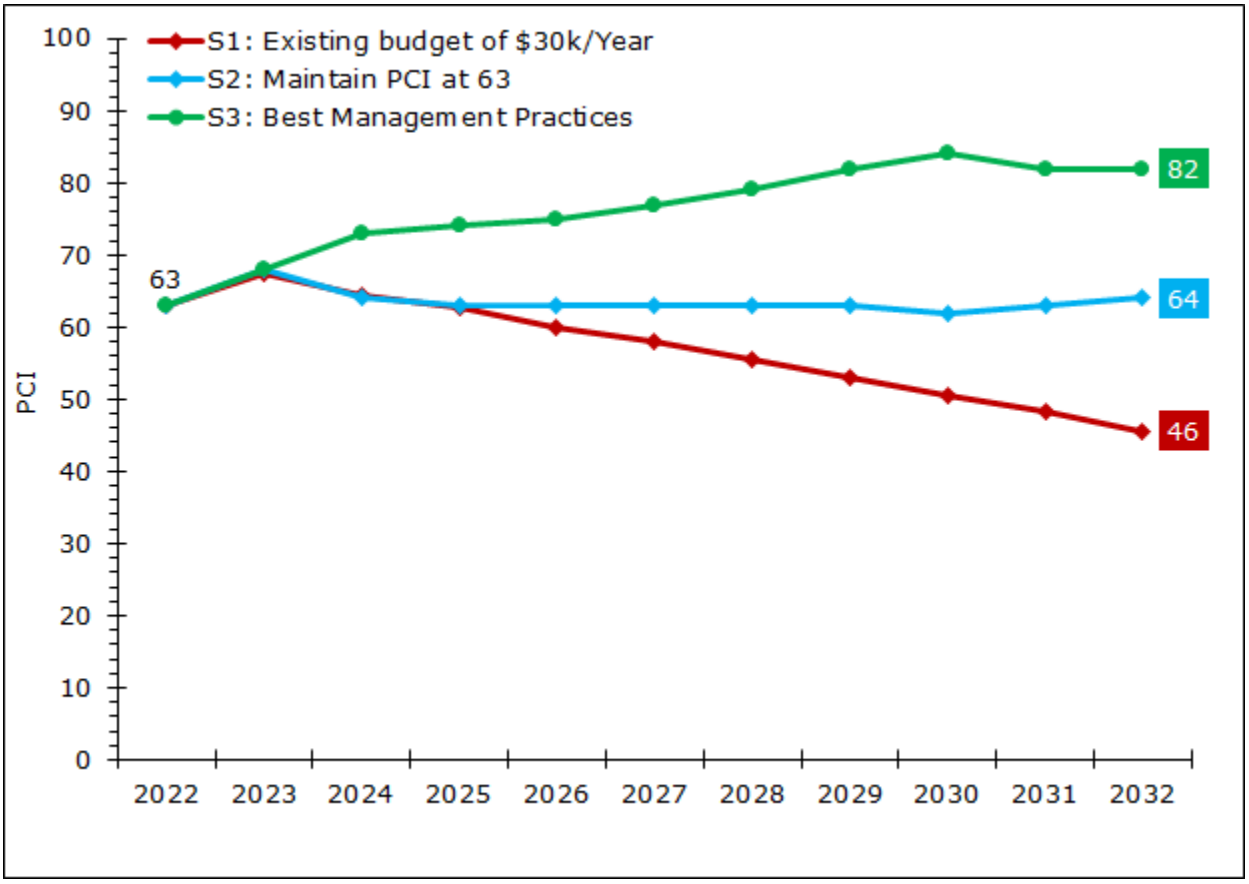


Figure 9. Comparison of Annual PCI by Scenario

Figure 10 illustrates the changes in deferred maintenance over time for each scenario. For Scenario 1, the deferred maintenance will be more than double as $2.7 million. In Scenario 2 it will increase by approximately 50 percent to $1.5 million. In Scenario 3 the deferred maintenance will be eliminated from 2029 to the end of analysis period.

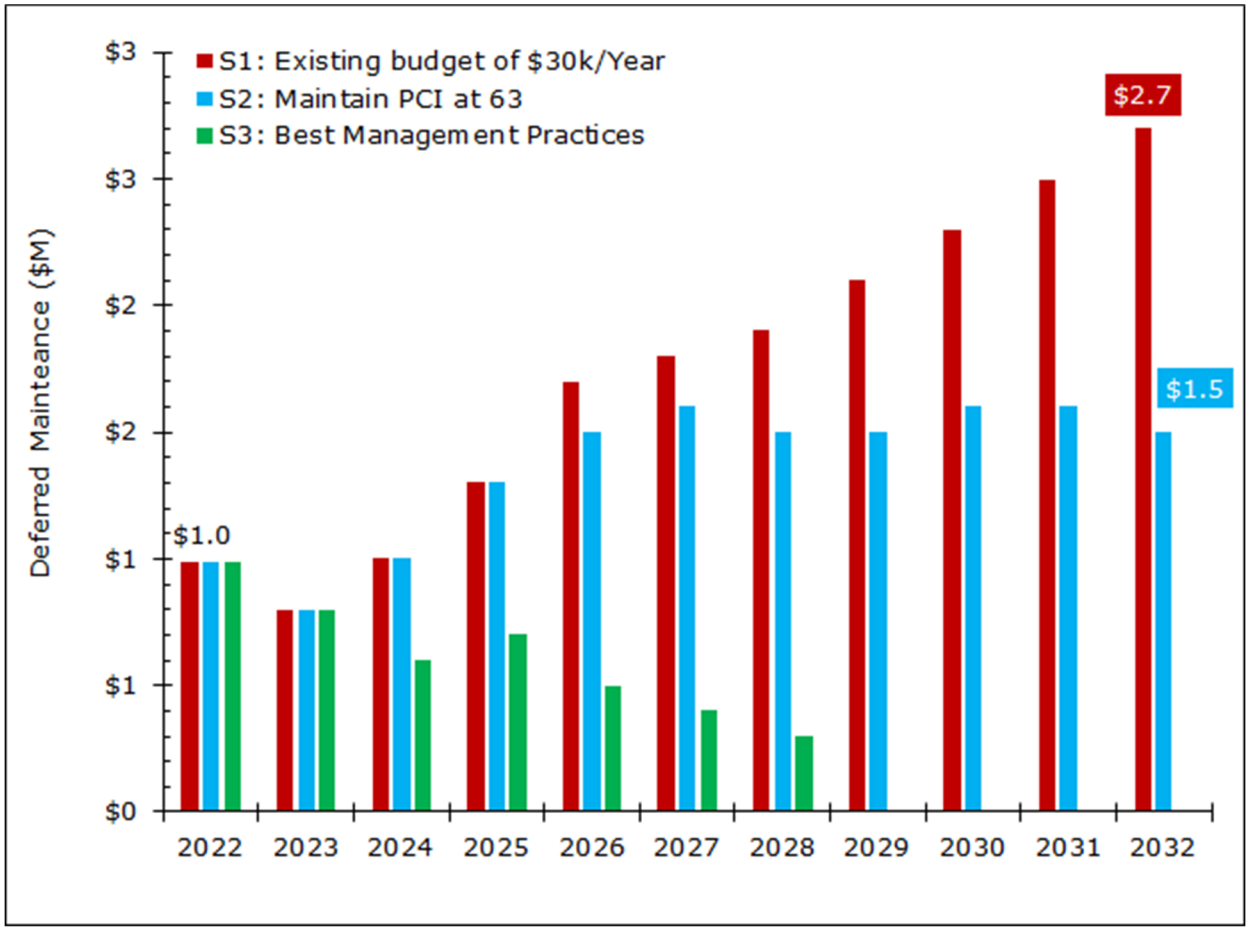


Figure 10. Comparison of Annual Deferred Maintenance by Scenario

Figure 11 illustrates the percent change in pavement condition for each scenario. As noted earlier, currently about 44.1% of the network is in "Good" condition with no section in "Failed" condition. For Scenario 1, the portion of the network in "Good" condition will decrease to approximately less than quarter of the network, while the portion in "Failed" condition will increase to 18.5 percent. The portion of the network in "Good" condition will increase in both Scenarios 2 and 3. Approximately 11.5 percent of the network will be in "Failed" condition in Scenario 2.

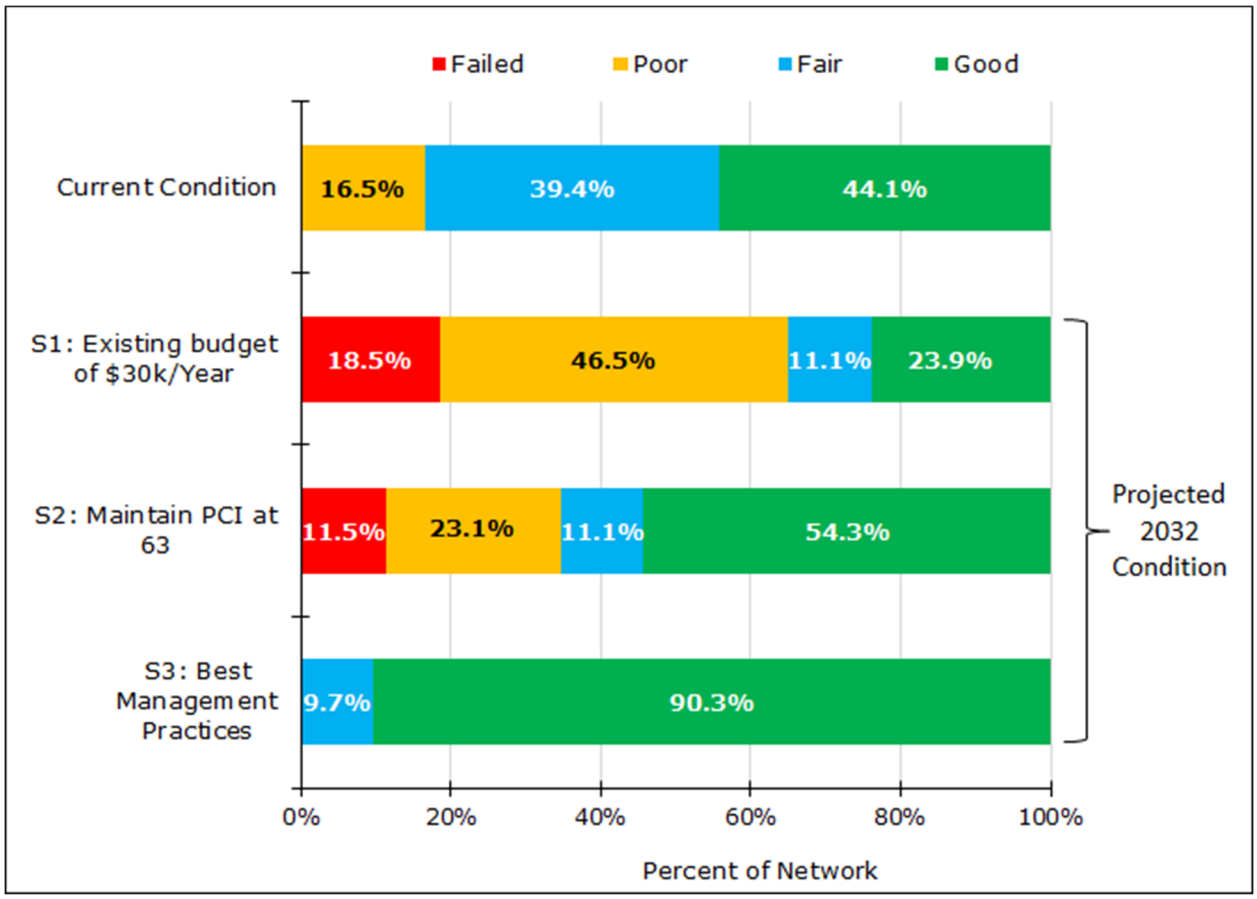


Figure 11. Comparison of Pavement Condition Breakdown by Scenario

6 Conclusion and Recommendations

In summary, the City of Trinidad has an investment of $4.4 million in the pavement network. Overall, the City's streets are in "Fair" condition with a 2022 average network PCI of 63. Approximately 44.1 percent of the street network is in "Good" condition with 16.5 percent in "Poor" condition and no streets in "Failed" condition.

The analyses indicate that the City needs to spend approximately $2.0 million on maintenance and rehabilitation over the next ten years to optimally repair all pavement sections, thus bringing the network into a condition that can be maintained with on-going preventive maintenance. In the long run, this strategy will save the City money by preventing future pavement deterioration to levels requiring rehabilitation or reconstruction.

Based on the data collected and the scenarios analyzed and presented in this report, NCE offers the following recommendations.

1. **Funding** - The primary goal of PMPs should be to offer users a safe and functional pavement network without unduly increasing the maintenance burden in the future. With that in mind, the minimum recommended scenario for the City is Scenario 2, which requires approximately $1.3 million over the next ten years. This budget allocation will maintain the overall network PCI at 63, increase the portion of the network in "Good" condition, and slow the increase in deferred maintenance.

   To address the gap between the City's existing funding and the recommended scenario, NCE recommends the City pursue additional funding sources. Potential sources include:

<u>Federal Funding Sources</u>

- Bipartisan Infrastructure Investment and Jobs Act (IIJA)
- Regional Surface Transportation Program (RSTP)
- Surface Transportation Program (STP)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Community Development Block Grants (CDBG)
- Federal Emergency Management Agency (FEMA)

<u>State Funding Sources</u>

- State Transportation Improvement Program (STIP)
- AB 2766 (vehicle surcharge)
- Vehicle License Fees (VLF)
- CalRecycle grants
- Transportation Development Act (TDA)
- Traffic Safety Fund
- Transportation Uniform Mitigation Fee (TUMF)

Local/Regional Funding Sources

- Development impact fees
- General funds
- Various assessment districts (lighting, maintenance, flood control, community facilities)
- Traffic impact fees
- Utilities (e.g., stormwater, water, wastewater enterprise funds)
- Parcel/property taxes
- Vehicle registration fees
- Vehicle code fines

2. **Pavement Management Strategies –** Since a significant portion of the City's streets are currently in "Good" condition (44.1 percent), it is important to maintain that condition to the extent possible. Preservation occurs when streets with PCIs higher than 70 receive treatments such as surface seals (slurry, chip, microsurfacing, etc.). Seals are relatively inexpensive treatments that prevent moisture ingress and thus preserve the integrity of the underlying base material. NCE recommends that the City balance preventive maintenance with rehabilitation and reconstruction projects to preserve pavements in "Good" condition, improve pavements in "Poor" condition, and avoid increasing the deferred maintenance.
3. **Reinspection Strategies –** In order to make appropriate management decisions based on current data, NCE recommends that the City perform condition inspections on major and minor collectors every 2 years and on locals at least every 4 to 5 years. Additionally, since StreetSaver® and other prediction models do not yet take into account the effect of specialized materials such as asphalt-binders with rubber or polymers, the actual performance of city pavements may not be fully captured in the analysis models. For this additional reason, NCE recommends regular pavement condition surveys to ensure model accuracy and relevance.
4. **M&R Decision Tree –** NCE recommends that the City annually review and update the M&R treatment strategies and associated unit costs to reflect current construction techniques and changing costs. This will ensure that the results for the budget analyses are reliable and as accurate as possible.

Appendix A

Section Description Inventory

Section Description Inventory Report

This report lists a variety of section description information for each of the City's pavement sections. It lists the street and section identifiers, limits, number of lanes, functional class, surface type, length, width, area, Inspected PCI, and PCI date.

All of the City's pavement sections are included in the report. Two versions of the report are provided. The first is sorted alphabetically by Street Name and Section ID and the second report is sorted by descending PCI. The field descriptions in this report are listed below:

COLUMN	DESCRIPTION
Street ID	Street Identification - A code up to ten characters/digits to identify the street. Generally, the street name is truncated to six characters. The Street ID should be unique for each street.
Section ID	Section Identification - A code up to ten characters/digits to identify the section number. The Section ID must be unique for each section of one street.
Street Name	Street Name - The name of the street as indicated by street signs in the field.
Begin Location	Beginning limit of the section.
End Location	Ending limit of the section.
No. of Lanes	Number of travel lanes.
Functional Class (FC)	Functional Classification: R (Local), MaC (Major Collector), MiC (Minor Collector)
Length (ft)	Length of the section in feet.
Width (ft)	Average width of the section in feet.
Area (sf)	Area of section in square feet.
Surface Type (ST)	Surface Type: AC = Asphalt Concrete
PCI Date	The last inspection date or rehabilitation date.
PCI	Average PCI for the section. The value is based on the last inspection.

Section Description Inventory – Sorted by Street Name

City of Trinidad - 2022 PMP Update
Section Description Inventory
Sorted by Name

Street ID	Section ID	Street Name	Begin Location	End Location	No. of Lanes	FC	ST	Length (ft)	Width (ft)	Area (sf)	PCI Date	PCI
T-AZAWAY	010	AZALEA WAY	PACIFIC CT	EDWARDS ST	2	L	AC	122	11	1,342	10/25/2022	55
T-BERRRD	010	BERRY ROAD	TRINIDAD FRONTAGE RD	NE END	2	L	AC	1085	16	17,360	6/23/2022	53
T-EASTST	010	EAST STREET	OCEAN AVE	VIEW AVE	2	L	AC	353	21	7,413	6/23/2022	66
T-EDWAST	010	EDWARDS STREET	SW END	PIER PARKING LOT	2	MaC	AC	701	30	21,030	10/25/2022	28
T-EDWAST	020	EDWARDS STREET	GALINDO ST	HECTOR ST	2	MaC	AC	710	30	21,300	10/25/2022	51
T-EDWAST	030	EDWARDS STREET	HECTOR ST	TRINITY ST	2	MaC	AC	302	36	10,872	6/23/2022	92
T-EDWAST	040	EDWARDS STREET	TRINITY ST	OCEAN AVE	2	L	AC	316	34	10,744	6/23/2022	71
T-EWINST	010	EWING STREET	EDWARDS ST	N END	2	L	AC	479	18	8,622	6/23/2022	76
T-GALIST	010	GALINDO STREET	VAN WYCKE ST	EDWARDS ST	2	L	AC	289	22	6,358	10/25/2022	100
T-H101UP	010	HIGHWAY 101 UNDER PASS	HIGHWAY 101 SB OFF RAMP	HIGHWAY 101 NB OFF RAMP	2	MaC	AC	304	26	7,904	10/25/2022	51
T-HECTST	010	HECTOR STREET	EDWARDS ST	UNDERWOOD ST	2	L	AC	358	18	6,444	10/25/2022	75
T-HIMADR	010	HIMALAYA DRIVE	BERRY RD	E END	2	L	AC	640	17	10,880	6/23/2022	51
T-JANISCT	10	JANIS COURT	PATRICK POINT DRIVE	WEST END	2	L	AC	165	25	4,125	6/23/2022	73
T-MAINST	010	MAIN STREET	TRINITY ST	HIGHWAY 101 SB OFF RAMP	2	MaC	AC	1023	38	38,874	6/23/2022	77
T-OCEAVE	010	OCEAN AVENUE	EDWARDS ST	MAIN ST	2	L	AC	919	21	19,299	6/23/2022	57
T-PACICT	010	PACIFIC COURT	SOUTH END	NORTH END	2	L	AC	262	14	3,668	6/23/2022	85
T-PAPODR	010	PATRICKS POINT DRIVE	MAIN ST	N CITY LIMIT	2	MiC	AC	294	31	9,114	6/23/2022	57
T-PARKST	010	PARKER STREET	HECTOR ST	TRINITY ST	2	L	AC	325	24	7,800	10/25/2022	73
T-SCENDR	010	SCENIC DRIVE	MAIN ST	CITY LIMIT	2	MiC	AC	930	22	20,460	6/23/2022	99
T-SCENDR	020	SCENIC DRIVE	LANFORD RD	S CITY LIMIT	2	MiC	AC	1563	22	34,386	6/23/2022	75
T-STAGRD	010	STAGECOACH ROAD	MAIN ST	N CITY LIMIT	2	L	AC	172	20	3,440	6/23/2022	71
T-TRFRRD	010	TRINIDAD FRONTAGE ROAD	WESTHAVEN DR	BERRY RD	2	L	AC	398	31	12,338	6/23/2022	58
T-TRINST	010	TRINITY STREET	EDWARDS ST	MAIN ST	2	MaC	AC	891	35	31,185	6/23/2022	45
T-UNWDDR	010	UNDERWOOD DRIVE	N END	HECTOR ST	2	L	AC	829	14	11,606	6/23/2022	58
T-VAWYST	010	VAN WYCKE STREET	EDWARDS ST	E END	2	L	AC	535	16	8,560	10/25/2022	56
T-VIEAVE	010	VIEW AVENUE	EAST ST	MAIN ST	2	L	AC	760	23	17,480	6/23/2022	64
T-WESTDR	010	WESTHAVEN DRIVE	HIGHWAY 101 NB OFF RAMP	E CITY LIMIT	2	MiC	AC	303	28	8,484	10/25/2022	37
T-WESTST	010	WEST STREET	TRINITY ST	OCEAN AVE	2	L	AC	306	20	6,120	6/23/2022	80

FC: Functional Classification (L: Local, MaC: Major Collector, MiC: Minor Collector)
ST: Surface Type (AC: Asphalt Concrete)

Section Description Inventory – Sorted by Descending PCI

City of Trinidad 2022 PMP Update
Section Description Inventory
Sorted by Descending PCI

Street ID	Section ID	Street Name	Begin Location	End Location	No. of Lanes	FC	ST	Length (ft)	Width (ft)	Area (sf)	PCI Date	PCI
T-GALIST	010	GALINDO STREET	VAN WYCKE ST	EDWARDS ST	2	L	AC	289	22	6,358	10/25/2022	100
T-SCENDR	010	SCENIC DRIVE	MAIN ST	CITY LIMIT	2	MiC	AC	930	22	20,460	6/23/2022	99
T-EDWAST	030	EDWARDS STREET	HECTOR ST	TRINITY ST	2	MaC	AC	302	36	10,872	6/23/2022	92
T-PACICT	010	PACIFIC COURT	SOUTH END	NORTH END	2	L	AC	262	14	3,668	6/23/2022	85
T-WESTST	010	WEST STREET	TRINITY ST	OCEAN AVE	2	L	AC	306	20	6,120	6/23/2022	80
T-MAINST	010	MAIN STREET	TRINITY ST	HIGHWAY 101 SB OFF RAMP	2	MaC	AC	1023	38	38,874	6/23/2022	77
T-EWINST	010	EWING STREET	EDWARDS ST	N END	2	L	AC	479	18	8,622	6/23/2022	76
T-HECTST	010	HECTOR STREET	EDWARDS ST	UNDERWOOD ST	2	L	AC	358	18	6,444	10/25/2022	75
T-SCENDR	020	SCENIC DRIVE	LANFORD RD	S CITY LIMIT	2	MiC	AC	1563	22	34,386	6/23/2022	75
T-JANISCT	10	JANIS COURT	PATRICK POINT DRIVE	WEST END	2	L	AC	165	25	4,125	6/23/2022	73
T-PARKST	010	PARKER STREET	HECTOR ST	TRINITY ST	2	L	AC	325	24	7,800	10/25/2022	73
T-EDWAST	040	EDWARDS STREET	TRINITY ST	OCEAN AVE	2	L	AC	316	34	10,744	6/23/2022	71
T-STAGRD	010	STAGECOACH ROAD	MAIN ST	N CITY LIMIT	2	L	AC	172	20	3,440	6/23/2022	71
T-EASTST	010	EAST STREET	OCEAN AVE	VIEW AVE	2	L	AC	353	21	7,413	6/23/2022	66
T-VIEAVE	010	VIEW AVENUE	EAST ST	MAIN ST	2	L	AC	760	23	17,480	6/23/2022	64
T-TRFRRD	010	TRINIDAD FRONTAGE ROAD	WESTHAVEN DR	BERRY RD	2	L	AC	398	31	12,338	6/23/2022	58
T-UNWDDR	010	UNDERWOOD DRIVE	N END	HECTOR ST	2	L	AC	829	14	11,606	6/23/2022	58
T-OCEAVE	010	OCEAN AVENUE	EDWARDS ST	MAIN ST	2	L	AC	919	21	19,299	6/23/2022	57
T-PAPODR	010	PATRICKS POINT DRIVE	MAIN ST	N CITY LIMIT	2	MiC	AC	294	31	9,114	6/23/2022	57
T-VAWYST	010	VAN WYCKE STREET	EDWARDS ST	E END	2	L	AC	535	16	8,560	10/25/2022	56
T-AZAWAY	010	AZALEA WAY	PACIFIC CT	EDWARDS ST	2	L	AC	122	11	1,342	10/25/2022	55
T-BERRRD	010	BERRY ROAD	TRINIDAD FRONTAGE RD	NE END	2	L	AC	1085	16	17,360	6/23/2022	53
T-EDWAST	020	EDWARDS STREET	GALINDO ST	HECTOR ST	2	MaC	AC	710	30	21,300	10/25/2022	51
T-H101UP	010	HIGHWAY 101 UNDER PASS	HIGHWAY 101 SB OFF RAMP	HIGHWAY 101 NB OFF RAMP	2	MaC	AC	304	26	7,904	10/25/2022	51
T-HIMADR	010	HIMALAYA DRIVE	BERRY RD	E END	2	L	AC	640	17	10,880	6/23/2022	51
T-TRINST	010	TRINITY STREET	EDWARDS ST	MAIN ST	2	MaC	AC	891	35	31,185	6/23/2022	45
T-WESTDR	010	WESTHAVEN DRIVE	HIGHWAY 101 NB OFF RAMP	E CITY LIMIT	2	MiC	AC	303	28	8,484	10/25/2022	37
T-EDWAST	010	EDWARDS STREET	SW END	PIER PARKING LOT	2	MaC	AC	701	30	21,030	10/25/2022	28

FC: Functional Classification (L: Local, MaC: Major Collector, MiC: Minor Collector)
ST: Surface Type (AC: Asphalt Concrete)

Appendix B

Maintenance and Rehabilitation Decision Tree

Maintenance and Rehabilitation (M&R) Decision Tree

This report presents the current maintenance and rehabilitation decision tree that exists in the database. The decision tree forms the basis for all of the budgetary computations included in this report. ***Changes to the decision tree will make the results in the budget reports invalid.*** All pavement treatment unit costs relevant to the road 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 – Very Good. All preventive maintenance treatment listings are assigned only to sections in Condition Category I where the PCI ≥ 70. Sections with PCI values less than 70 are assigned to treatments listed in Categories II through V.

In the preventive maintenance category (PCI ≥ 70), 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 5 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 a certain number of 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 (PCI less than 70). Each line is defined by a specific combination of functional classification, surface type, and condition category.

COLUMN	**DESCRIPTION**
Functional Class	Functional Classification identifying the branch
Surface	Surface Type identifying the branch number.
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. slurry sealing). Third Row (Restoration Treatment) indicates surface restoration (e.g. overlay).
Treatment	Name of treatments from the "Treatment Descriptions" report.
Yrs. Between Crack Seals	First Row - number of years between successive treatment applications specified in the first row (i.e. CRACK treatment).

COLUMN	DESCRIPTION
Yrs. Between Surface Seals	Second Row - number of years between successive treatment applications specified in the second row (i.e. SURFACE treatment).
Number of Sequential Seals	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.

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

Decision Tree

Printed: 9/13/2022

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	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$5.50		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$8.25		7	
		III - Good, Load Related		1.5" AC OVERLAY W/ DIGOUTS	$55.50			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$66.50			
		V - Very Poor		3"AC OVERLAY W/ DIGOUTS	$91.75			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$5.50		7	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$8.25		7	
		III - Good, Load Related		1.5" AC OVERLAY W/ DIGOUTS	$55.50			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$66.50			
		V - Very Poor		3"AC OVERLAY W/ DIGOUTS	$91.75			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	4		
			Surface Treatment	SLURRY SEAL	$2.50		7	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$4.00			
		III - Good, Load Related		SLURRY SEAL W/ DIGOUTS	$6.00			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$40.00			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	$57.00			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		15	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		DO NOTHING	$0.00			
		III - Good, Load Related		DO NOTHING	$0.00			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$1.92			
		V - Very Poor		THIN AC OVERLAY(1.5 INCHES)	$7.47			

Functional Class and Surface combination not used

Selected Treatment is not a Surface Seal

Decision Tree

Printed: 9/13/2022

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	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$5.25		8	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$7.50		8	
		III - Good, Load Related		1.5" AC OVERLAY W/ DIGOUTS	$49.00			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$58.75			
		V - Very Poor		3"AC OVERLAY W/ DIGOUTS	$77.75			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$5.25		8	
			Restoration Treatment	DO NOTHING	$0.00			99
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$7.50		8	
		III - Good, Load Related		1.5" AC OVERLAY W/ DIGOUTS	$49.00			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$58.75			
		V - Very Poor		3"AC OVERLAY W/ DIGOUTS	$77.75			
	AC/PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	4		
			Surface Treatment	SLURRY SEAL	$2.50		8	
			Restoration Treatment	DO NOTHING	$0.00			3
		II - Good, Non-Load Related		SLURRY SEAL W/ DIGOUTS	$4.00			
		III - Good, Load Related		SLURRY SEAL W/ DIGOUTS	$5.00			
		IV - Poor		SURFACE TREATMENT (CAPE OR SLURRY)	$10.00			
		V - Very Poor		2" AC OVERLAY W/ DIGOUTS	$40.00			

Functional Class and Surface combination not used

Selected Treatment is not a Surface Seal

Appendix C

Budget Need Analysis Results

Budget Needs Reports

The purpose of this section 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 the analysis period. The Budget Needs represents the "ideal world" funding levels, while the Budget Scenario 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 provided. An interest rate of 4% and an inflation factor of 4% were used to project the costs for the analysis period. 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.

Budget Needs reports included in this appendix are listed below:

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

Needs - Projected PCI/Cost Summary

This report summarizes and projects the network PCI over the ten-year analysis period, both with and without treatments applied. It also reports the associated costs, which are based on the treatment unit costs presented in the M&R decision tree.

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.

Needs - Projected PCI/Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/15/2022

Year	PCI Treated	PCI Untreated	PM Cost	Rehab Cost	Cost
2023	87	63	$34,496	$954,478	$988,974
2024	82	60	$0	$12,293	$12,293
2025	84	57	$0	$279,000	$279,000
2026	81	54	$0	$0	$0
2027	79	51	$0	$0	$0
2028	79	48	$4,512	$77,588	$82,100
2029	78	45	$8,407	$85,210	$93,616
2030	82	42	$65,942	$315,459	$381,401
2031	81	39	$31,809	$57,228	$89,037
2032	82	36	$76,486	$16,824	$93,310

	% PM	PM Total Cost	Rehab Total Cost	Total Cost
	10.97%	$221,652	$1,798,079	$2,019,731

Needs - Preventive Maintenance Treatment/Cost Summary

This report summarizes each preventive maintenance treatment type, quantity of pavement affected, and total costs over the analysis 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., 2023, 2024, 2025, etc.).
Area Treated	Quantities in linear feet (Seal Cracks) or square yard (Slurry Seal).
Cost	Maintenance treatment cost.

Needs - Preventive Maintenance Treatment/Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/15/2022

Treatment	Year	Area Treated		Cost
SLURRY SEAL	2023	6,364.89	sq. yd.	$34,496
	2028	706.44	sq. yd.	$4,512
	2029	1,208	sq. yd.	$8,407
	2030	9,111	sq. yd.	$65,942
	2031	4,318.89	sq. yd.	$31,809
	2032	10,053.89	sq. yd.	$76,486
	Total	31,763.11		$221,652
	Total Quantity	31,763.11		$221,652

Needs - Rehabilitation Treatment/Cost Summary

This report summarizes each rehabilitation treatment type, quantity of pavement affected, and total costs over the analysis 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., 2023, 2024, 2025, etc.).
Area Treated	Quantities in square yard.
Cost	Rehabilitation treatment cost.

Needs - Rehabilitation
Treatment/Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/15/2022

Treatment	Year	Area Treated	Cost
1.5" AC OVERLAY W/ DIGOUTS	2023	7,391 sq.yd.	$377,542
	2025	4,687.33 sq.yd.	$275,282
	2030	4,319.33 sq.yd.	$315,459
	Total	16,397.67 sq.yd.	$968,283
2" AC OVERLAY W/ DIGOUTS	2023	7,953.22 sq.yd.	$519,520
	2028	878.22 sq.yd.	$71,055
	2029	1,012.67 sq.yd.	$85,210
	Total	9,844.11 sq.yd.	$675,785
SLURRY SEAL W/ DIGOUTS	2023	7,466.33 sq.yd.	$57,416
	2024	1,576 sq.yd.	$12,293
	2025	458.33 sq.yd.	$3,718
	2028	716 sq.yd.	$6,533
	2031	5,575.44 sq.yd.	$57,228
	2032	1,576 sq.yd.	$16,824
	Total	17,368.11 sq.yd.	$154,011

Total Cost	$1,798,079

Appendix D

Budget Scenario Results

Scenario 1: Existing Budget of $30K/Year

Cost Summary Report
Network Condition Summary Report

Scenarios - Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC1: Funding Level = $30,000/Year

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2023	0%	$192,400	II	$0	Non-Project	$0	$0	$758,551	Funded	$0
			III	$0					Unmet	$2,829
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$192,308						
2024	0%	$0	II	$0	Non-Project	$0	$0	$962,383	Funded	$0
			III	$0					Unmet	$213
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						
2025	21%	$30,000	II	$23,184	Non-Project	$5,440	$740	$1,315,056	Funded	$0
			III	$0					Unmet	$659
			IV	$0	Project	$0				
			V	$0						
			Total	$23,184						
			Project	$0						
2026	0%	$9,900	II	$0	Non-Project	$0	$0	$1,670,057	Funded	$0
			III	$0					Unmet	$632
			IV	$9,854	Project	$0				
			V	$0						
			Total	$9,854						
			Project	$0						
2027	0%	$50,700	II	$0	Non-Project	$0	$0	$1,846,687	Funded	$0
			III	$49,680					Unmet	$0
			IV	$0	Project	$0				
			V	$0						
			Total	$49,680						
			Project	$0						
2028	41%	$11,100	II	$6,533	Non-Project	$4,343	$196	$1,920,723	Funded	$0
			III	$0					Unmet	$6,619
			IV	$0	Project	$0				
			V	$0						
			Total	$6,533						
			Project	$0						
2029	100%	$8,500	II	$0	Non-Project	$8,407	$93	$2,101,224	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						
2030	0%	$0	II	$0	Non-Project	$0	$0	$2,349,907	Funded	$0
			III	$0					Unmet	$654
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						

Scenarios Criteria:

Criteria:

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2031	100%	$17,200	II	$0	Non-Project	$17,112	$88	$2,501,421	Funded	$0
			III	$0					Unmet	$768
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						
2032	0%	$10,300	II	$4,351	Non-Project	$5,279	$0	$2,660,779	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$0						
			Total	$4,351						
			Project	$0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$192,308	$25,519	$0	$7,948
Residential/Local	$93,602	$15,062	$0	$4,426
Grand Total:	$285,910	$40,581	$0	$12,374

Scenarios Criteria:

Criteria:

Scenarios - Network Condition Summary

Interest: 4% Inflation: 4% Printed: 11/16/2022

Scenario: Trinidad-SC1: Funding Level = $30,000/Year

Year	Budget	PM
2023	$192,400	0%
2024	$0	0%
2025	$30,000	20.6%
2026	$9,900	0%

Year	Budget	PM
2027	$50,700	0%
2028	$11,100	40.9%
2029	$8,500	100%
2030	$0	0%

Year	Budget	PM
2031	$17,200	100%
2032	$10,300	0%

Projected Network Average PCI by Year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2023	63	68	0.17	0.34
2024	60	64	0	0
2025	57	63	0.28	0.56
2026	54	60	0.02	0.05
2027	51	58	0.06	0.12
2028	48	55	0.13	0.25
2029	45	53	0.06	0.11
2030	42	50	0	0
2031	39	48	0.18	0.35
2032	36	46	0.10	0.21

Percent Network Area by Functional Class and Condition Category

Condition in base year 2023, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	28.5%	15.6%	0.0%	44.1%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	16.5%	3.0%	0.0%	19.5%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2023 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	37.0%	15.6%	0.0%	52.6%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	8.0%	3.0%	0.0%	11.0%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2032 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	17.0%	6.9%	0.0%	23.9%
II / III	0.0%	0.0%	11.1%	0.0%	11.1%
IV	0.0%	20.0%	26.6%	0.0%	46.5%
V	0.0%	18.5%	0.0%	0.0%	18.5%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Scenarios Criteria: Area ID = T - Trinidad

Scenario 2: Maintain PCI at 63

Cost Summary Report
Network Condition Summary Report

Scenarios - Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC2: Maintain PCI at 63

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2023	0%	$192,400	II	$0	Non-Project	$0	$0	$758,551	Funded	$0
			III	$0					Unmet	$2,829
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$192,308						
2024	0%	$0	II	$0	Non-Project	$0	$0	$962,383	Funded	$0
			III	$0					Unmet	$213
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						
2025	33%	$35,000	II	$23,184	Non-Project	$11,615	$75	$1,308,880	Funded	$0
			III	$0					Unmet	$659
			IV	$0	Project	$0				
			V	$0						
			Total	$23,184						
			Project	$0						
2026	0%	$156,000	II	$0	Non-Project	$0	$0	$1,517,847	Funded	$0
			III	$0					Unmet	$632
			IV	$155,641	Project	$0				
			V	$0						
			Total	$155,641						
			Project	$0						
2027	0%	$133,000	II	$0	Non-Project	$0	$0	$1,605,498	Funded	$0
			III	$0					Unmet	$0
			IV	$132,571	Project	$0				
			V	$0						
			Total	$132,571						
			Project	$0						
2028	3%	$142,000	II	$6,533	Non-Project	$4,512	$32	$1,539,408	Funded	$0
			III	$51,667					Unmet	$5,378
			IV	$78,642	Project	$0				
			V	$0						
			Total	$136,843						
			Project	$0						
2029	5%	$168,000	II	$0	Non-Project	$8,407	$0	$1,545,252	Funded	$0
			III	$0					Unmet	$0
			IV	$159,404	Project	$0				
			V	$0						
			Total	$159,404						
			Project	$0						
2030	0%	$106,000	II	$0	Non-Project	$0	$0	$1,632,064	Funded	$0
			III	$0					Unmet	$654
			IV	$105,985	Project	$0				
			V	$0						
			Total	$105,985						
			Project	$0						

Scenarios Criteria:

Criteria:

Year	PM	Budget	Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2031	10%	$174,000	II $0	Non-Project	$17,112	$114	$1,598,702	Funded	$0
			III $0					Unmet	$768
			IV $156,161	Project	$0				
			V $0						
			Total $156,161						
			Project $0						
2032	0%	$238,000	II $0	Non-Project	$0	$0	$1,492,488	Funded	$0
			III $0					Unmet	$0
			IV $0	Project	$0				
			V $237,788						
			Total $237,788						
			Project $0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$505,847	$25,519	$0	$7,702
Residential/Local	$794,038	$16,127	$0	$3,431
Grand Total:	$1,299,885	$41,646	$0	$11,133

Scenarios Criteria:

Criteria:

Scenarios - Network Condition Summary

Interest: 4% Inflation: 4% Printed: 11/16/2022

Scenario: Trinidad-SC2: Maintain PCI at 63

Year	Budget	PM
2023	$192,400	0%
2024	$0	0%
2025	$35,000	33.4%
2026	$156,000	0%

Year	Budget	PM
2027	$133,000	0%
2028	$142,000	3.2%
2029	$168,000	5%
2030	$106,000	0%

Year	Budget	PM
2031	$174,000	9.9%
2032	$238,000	0%

Projected Network Average PCI by Year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2023	63	68	0.17	0.34
2024	60	64	0	0
2025	57	63	0.39	0.78
2026	54	63	0.18	0.35
2027	51	63	0.21	0.41
2028	48	63	0.31	0.62
2029	45	63	0.23	0.46
2030	42	62	0.08	0.15
2031	39	63	0.32	0.64
2032	36	64	0.11	0.23

Percent Network Area by Functional Class and Condition Category

Condition in base year 2023, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	28.5%	15.6%	0.0%	44.1%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	16.5%	3.0%	0.0%	19.5%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2023 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	37.0%	15.6%	0.0%	52.6%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	8.0%	3.0%	0.0%	11.0%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2032 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	24.0%	30.3%	0.0%	54.3%
II / III	0.0%	0.0%	11.1%	0.0%	11.1%
IV	0.0%	20.0%	3.2%	0.0%	23.1%
V	0.0%	11.5%	0.0%	0.0%	11.5%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Scenarios Criteria: Area ID = T - Trinidad

Scenario 3: Best Management Practice

Cost Summary Report
Network Condition Summary Report

Scenarios - Cost Summary

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC3: Unconstrained Budget

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2023	0%	$192,400	II	$0	Non-Project	$0	$0	$758,551	Funded	$0
			III	$0					Unmet	$2,829
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$192,308						
2024	9%	$366,000	II	$33,867	Non-Project	$33,650	$0	$596,587	Funded	$0
			III	$0					Unmet	$0
			IV	$298,280	Project	$0				
			V	$0						
			Total	$332,146						
			Project	$0						
2025	0%	$307,000	II	$3,718	Non-Project	$0	$0	$657,346	Funded	$0
			III	$229,350					Unmet	$122
			IV	$72,837	Project	$0				
			V	$0						
			Total	$305,906						
			Project	$0						
2026	1%	$251,000	II	$0	Non-Project	$2,407	$103	$502,602	Funded	$0
			III	$47,769					Unmet	$0
			IV	$200,181	Project	$0				
			V	$0						
			Total	$247,950						
			Project	$0						
2027	0%	$242,000	II	$0	Non-Project	$0	$0	$440,616	Funded	$0
			III	$0					Unmet	$0
			IV	$241,598	Project	$0				
			V	$0						
			Total	$241,598						
			Project	$0						
2028	2%	$209,000	II	$6,533	Non-Project	$4,512	$86	$260,837	Funded	$0
			III	$0					Unmet	$2,217
			IV	$92,175	Project	$0				
			V	$105,228						
			Total	$203,937						
			Project	$0						
2029	3%	$280,000	II	$0	Non-Project	$8,407	$0	$0	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$271,271						
			Total	$271,271						
			Project	$0						
2030	0%	$316,000	II	$0	Non-Project	$0	$0	$0	Funded	$0
			III	$315,459					Unmet	$0
			IV	$0	Project	$0				
			V	$0						
			Total	$315,459						
			Project	$0						

Scenarios Criteria:

Criteria:

Year	PM	Budget		Rehabilitation		Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2031	100%	$42,000	II	$0	Non-Project	$41,536	$464	$0	Funded	$0
			III	$0					Unmet	$0
			IV	$0	Project	$0				
			V	$0						
			Total	$0						
			Project	$0						
2032	61%	$70,000	II	$27,050	Non-Project	$42,918	$0	$29,525	Funded	$0
			III	$0					Unmet	$512
			IV	$0	Project	$0				
			V	$0						
			Total	$27,050						
			Project	$0						

Summary

Functional Class	Rehabilitation	Prev. Maint.	Funded Stop Gap	Unmet Stop Gap
Collector	$1,410,871	$112,486	$0	$3,427
Residential/Local	$726,755	$20,943	$0	$2,253
Grand Total:	$2,137,626	$133,429	$0	$5,680

Scenarios Criteria:

Criteria:

Scenarios - Network Condition Summary

Interest: 4% Inflation: 4% Printed: 11/16/2022

Scenario: Trinidad-SC3: Unconstrained Budget

Year	Budget	PM
2023	$192,400	0%
2024	$366,000	9%
2025	$307,000	0%
2026	$251,000	1%
2027	$242,000	0%
2028	$209,000	2.2%
2029	$280,000	3%
2030	$316,000	0%
2031	$42,000	100%
2032	$70,000	61.3%

Projected Network Average PCI by Year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles
2023	63	68	0.17	0.34
2024	60	73	0.96	1.92
2025	57	74	0.38	0.77
2026	54	75	0.44	0.88
2027	51	77	0.25	0.50
2028	48	79	0.34	0.67
2029	45	82	0.19	0.38
2030	42	84	0.19	0.39
2031	39	82	0.37	0.74
2032	36	82	0.59	1.19

Percent Network Area by Functional Class and Condition Category

Condition in base year 2023, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	28.5%	15.6%	0.0%	44.1%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	16.5%	3.0%	0.0%	19.5%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2023 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	37.0%	15.6%	0.0%	52.6%
II / III	0.0%	10.4%	26.0%	0.0%	36.4%
IV	0.0%	8.0%	3.0%	0.0%	11.0%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Condition in year 2032 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	0.0%	55.4%	34.9%	0.0%	90.3%
II / III	0.0%	0.0%	9.7%	0.0%	9.7%
Total	0.0%	55.4%	44.6%	0.0%	100.0%

Scenarios Criteria: Area ID = T - Trinidad

Appendix E

Pavement Condition Maps

Current Network Condition - 2022

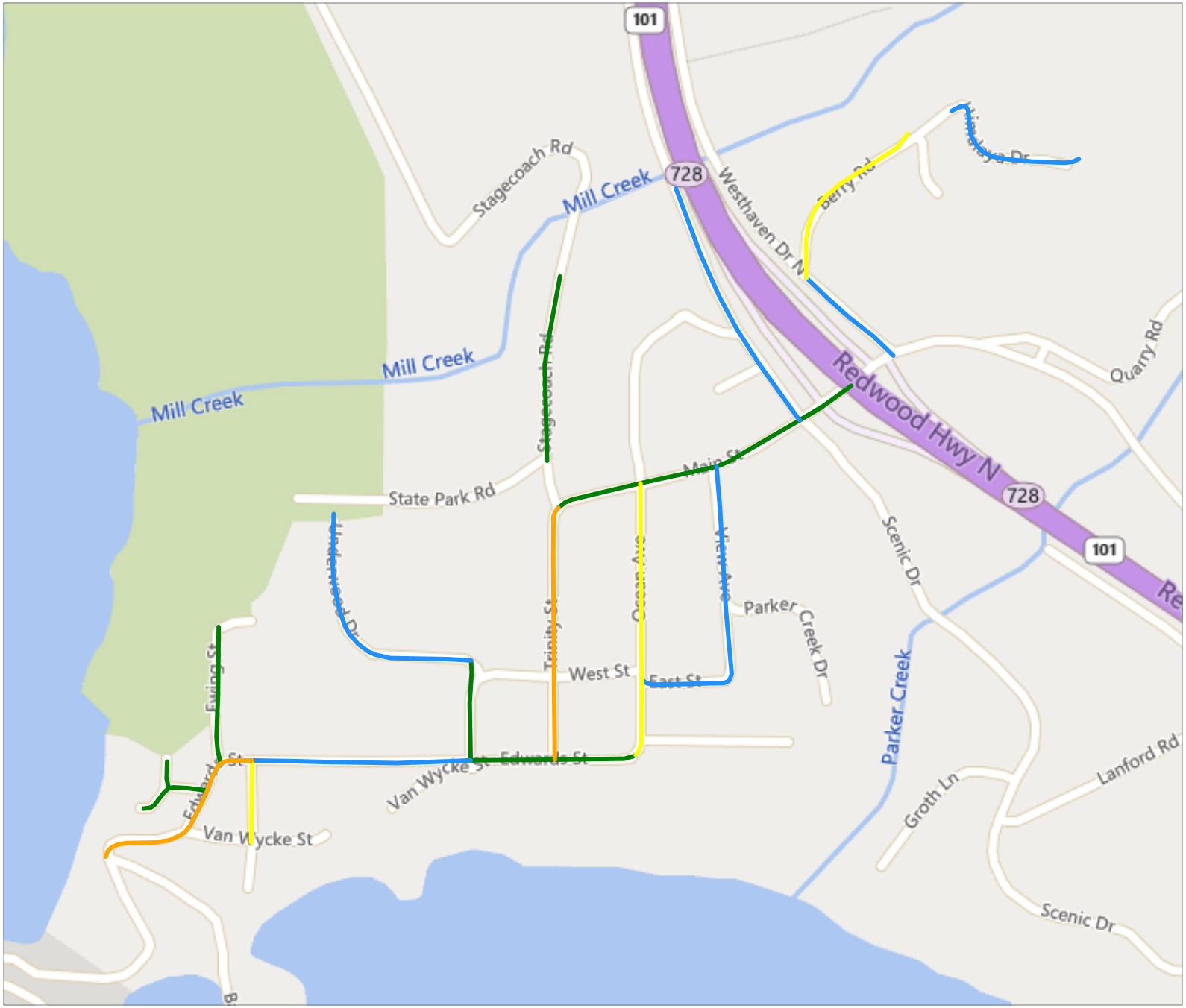
HCAOG

Current PCI Condition

Printed: 9/15/2022

Feature Legend

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



Scenario 1: Existing Budget of $30K/Year

Projected Street Network Condition - 2032

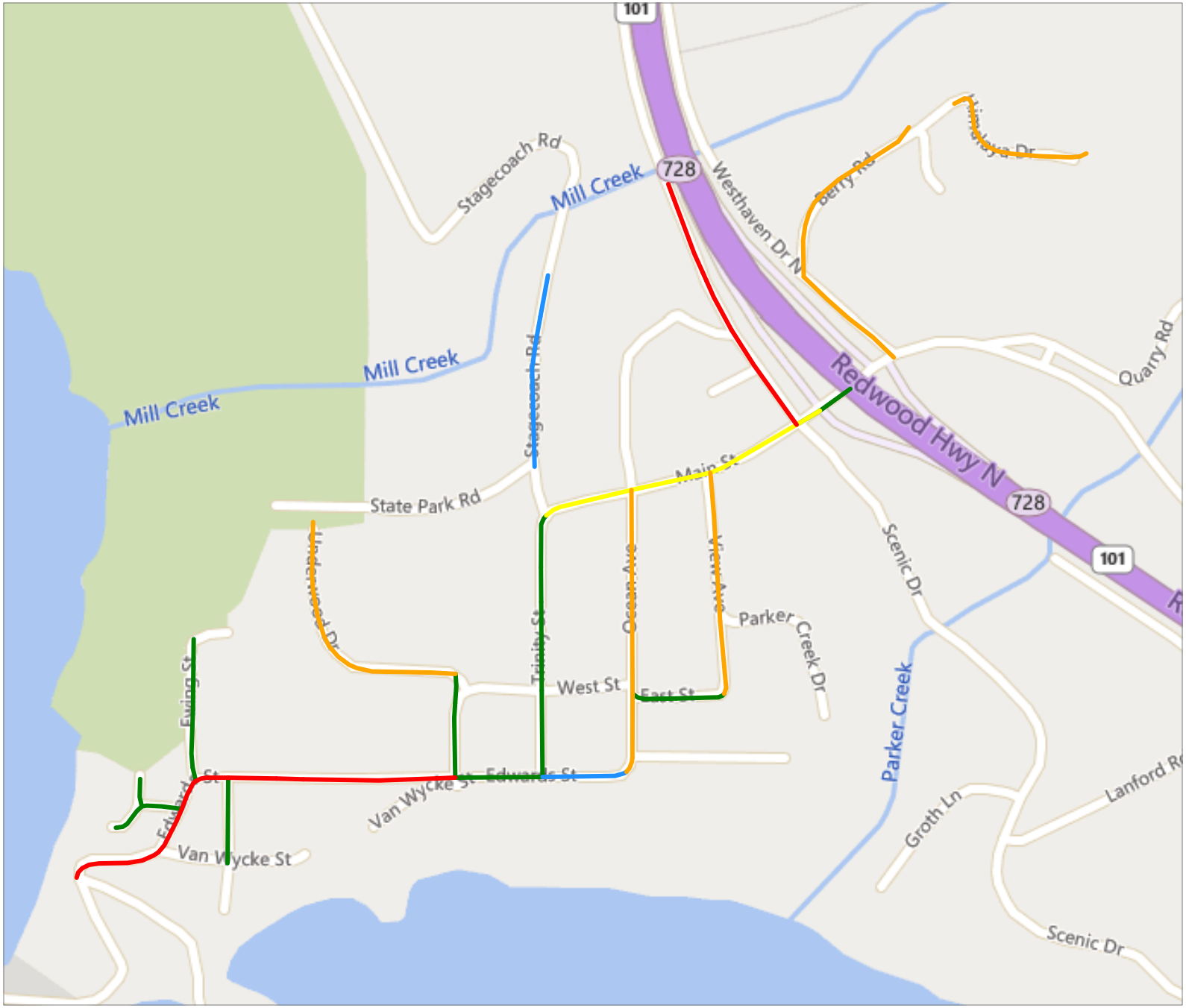
HCAOG

Scenario PCI Condition

Trinidad-SC1: Funding Level = $30,000/Year - 2032 Project Period - Total Rehab for 2032: $10,227 - Printed: 9/15/2022

Feature Legend

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



Scenario 2: Maintain PCI at 63

Projected Street Network Condition - 2032

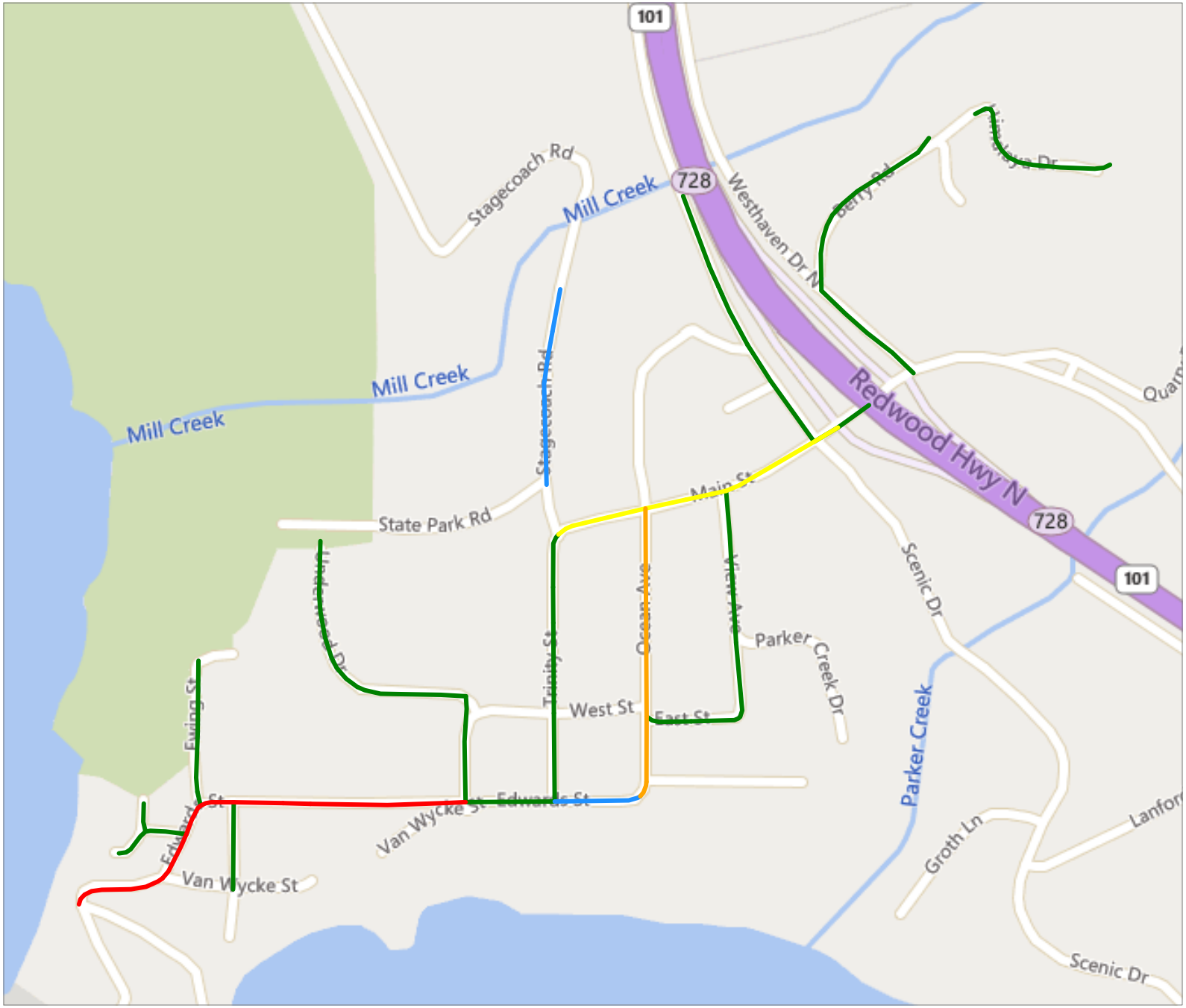
HCAOG

Scenario PCI Condition

Trinidad-SC2: Maintain PCI at 66 - 2032 Project Period - Total Rehab for 2032: $10,227 - Printed: 9/15/2022

Feature Legend

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



Scenario 3: Best Management Practice

Projected Street Network Condition - 2032

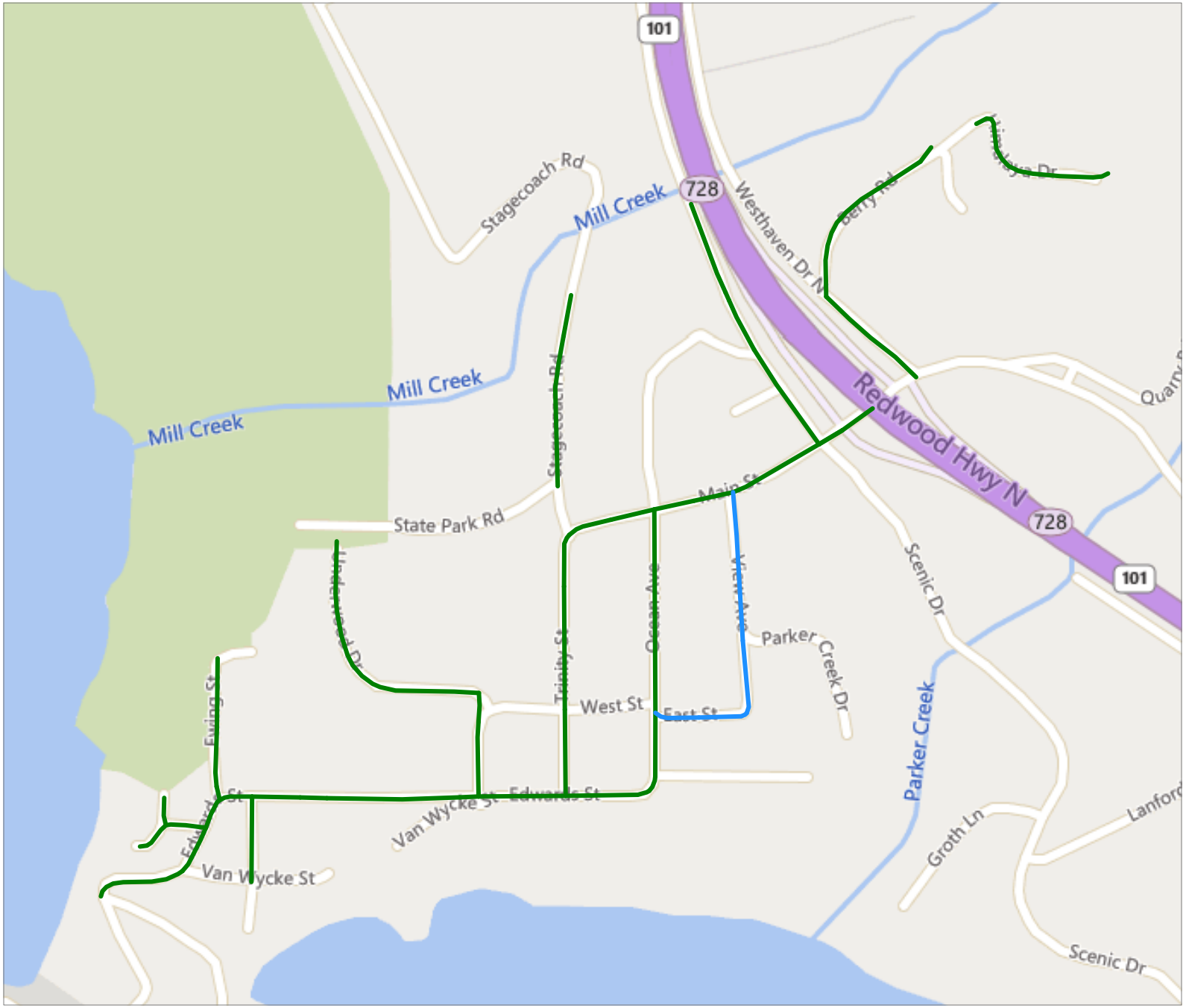
HCAOG

Scenario PCI Condition

Trinidad-SC3: Unconstrained Budget - 2032 Project Period - Total Rehab for 2032: $79,101 - Printed: 9/15/2022

Feature Legend

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



Appendix F

Sections Selected for Treatment – Scenario 1

Scenarios - Sections Selected for Treatment

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC1: Funding Level = $30,000/Year

Year	Budget	PM
2023	$192,400	0%
2024	$0	0%
2025	$30,000	20.6%
2026	$9,900	0%

Year	Budget	PM
2027	$50,700	0%
2028	$11,100	40.9%
2029	$8,500	100%
2030	$0	0%

Year	Budget	PM
2031	$17,200	100%
2032	$10,300	0%

Year: 2023

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
**TRINITY STREET	EDWARDS ST	MAIN ST	T-TRINST	010	891	35	31,185	MaC	AC	T - Trinidad	43	43	100	$192,308	8,406	MILL AND THIN OVERLAY
												Treatment Total		$192,308		
							Year 2023 Area Total		31,185			Year 2023 Total		$192,308		

Year: 2025

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
EAST STREET	OCEAN AVE	VIEW AVE	T-EASTST	010	353	21	7,413	L	AC	T - Trinidad	65	61	72	$6,682	11,296	SLURRY SEAL W/ DIGOUTS
EDWARDS STREET	TRINITY ST	OCEAN AVE	T-EDWAST	040	316	34	10,744	L	AC	T - Trinidad	70	67	76	$9,684	11,664	SLURRY SEAL W/ DIGOUTS
JANIS COURT	PATRICKS POINT DRIVE	W END	T-JANISCT	010	165	25	4,125	L	AC	T - Trinidad	72	69	78	$3,718	11,645	SLURRY SEAL W/ DIGOUTS
STAGECOACH ROAD	MAIN ST	N CITY LIMIT	T-STAGRD	010	172	20	3,440	L	AC	T - Trinidad	70	67	76	$3,101	11,664	SLURRY SEAL W/ DIGOUTS
												Treatment Total		$23,184		
EWING STREET	EDWARDS ST	N END	T-EWINST	010	479	18	8,622	L	AC	T - Trinidad	75	72	81	$5,440	16,924	SLURRY SEAL
												Treatment Total		$5,440		
							Year 2025 Area Total		34,344			Year 2025 Total		$28,624		

Year: 2026

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
AZALEA WAY	PACIFIC CT	EDWARDS ST	T-AZAWAY	010	122	11	1,342	L	AC	T - Trinidad	55	48	100	$9,854	5,707	2" AC OVERLAY W/ DIGOUTS
												Treatment Total		$9,854		
							Year 2026 Area Total		1,342			Year 2026 Total		$9,854		

** - Treatment from Project Selection

Scenarios Criteria: Area ID = T - Trinidad

Scenarios - Sections Selected for Treatment

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC1: Funding Level = $30,000/Year

Year: 2027

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
PARKER STREET	HECTOR ST	TRINITY ST	T-PARKST	010	325	24	7,800	L	AC	T - Trinidad	73	66	100	$49,680	5,191	1.5" AC OVERLAY W/ DIGOUTS
												Treatment Total		$49,680		
				Year 2027 Area Total			7,800					Year 2027 Total		$49,680		

Year: 2028

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
HECTOR STREET	EDWARDS ST	UNDERWOOD ST	T-HECTST	010	358	18	6,444	L	AC	T - Trinidad	75	66	76	$6,533	10,342	SLURRY SEAL W/ DIGOUTS
												Treatment Total		$6,533		
WEST STREET	TRINITY ST	OCEAN AVE	T-WESTST	010	306	20	6,120	L	AC	T - Trinidad	79	71	80	$4,343	15,017	SLURRY SEAL
												Treatment Total		$4,343		
				Year 2028 Area Total			12,564					Year 2028 Total		$10,877		

Year: 2029

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
EDWARDS STREET	HECTOR ST	TRINITY ST	T-EDWAST	030	302	36	10,872	MaC	AC	T - Trinidad	91	79	87	$8,407	15,745	SLURRY SEAL
												Treatment Total		$8,407		
				Year 2029 Area Total			10,872					Year 2029 Total		$8,407		

Year: 2031

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
SCENIC DRIVE	MAIN ST	CITY LIMIT	T-SCENDR	010	930	22	20,460	MiC	AC	T - Trinidad	97	80	88	$17,112	14,656	SLURRY SEAL
												Treatment Total		$17,112		
				Year 2031 Area Total			20,460					Year 2031 Total		$17,112		

Scenarios - Sections Selected for Treatment

Interest: 4.00% Inflation: 4.00% Printed: 11/16/2022

Scenario: Trinidad-SC1: Funding Level = $30,000/Year

Year: 2032

Road Name	Begin Location	End Location	Street ID	Section ID	Length	Width	Area	FC	Surface Type	Area ID	Treatment Current PCI	Treatment PCI Before	Treatment PCI After	Cost	Rating	Treatment
PACIFIC COURT	SOUTH END	NORTH END	T-PACICT	010	262	14	3,668	L	AC	T - Trinidad	84	70	79	$4,351	8,968	SLURRY SEAL W/ DIGOUTS
												Treatment Total		$4,351		
GALINDO STREET	VAN WYCKE ST	EDWARDS ST	T-GALIST	010	289	22	6,358	L	AC	T - Trinidad	96	78	86	$5,279	12,266	SLURRY SEAL
												Treatment Total		$5,279		
							Year 2032 Area Total		10,026			Year 2032 Total		$9,629		
							Grand Total Section Area:		128,593			Grand Total		$326,490		

Scenarios Criteria: Area ID = T - Trinidad